SUSIAccess

Remote Device Management

ADVANTECH

Enabling an Intelligent Planet

SUSIAccess is an application for System Integrators (SI) that centralizes monitoring and managing of remote embedded devices in real-time. SUSIAccess is designed to be cloud-based and provide on-demand software services so SIs can automatically download and upgrade applications as needed. By providing a ready-to-use remote access solution, SIs can focus more on their own applications, and let SUSIAccess configure the system, monitor their devices' health, and recover any systems.

SUSIAccess Features:

- **Intuitive GUI**
  User-friendly design means customers can execute remote management applications more easily and quickly.
- **Centralized Management**
  Deploy, upgrade and maintain Apps to remote devices through a simple friendly management interface.
- **Reliable Operation**
  Highly effective system recovery and protection program that assures remote device reliability.

McAfee Acronis

www.advantech.com/IndustrialCloud

Advantech Headquarters
No.1 Alley 20, Lane 26, Rueiguang Road,
Neihu District, Taipei, Taiwan, 11491, R.O.C.
Tel: 886-2-2792-7818
Fax: 886-2-2794-7304

EmbCore

Embedded Boards, Modules and Software Services

November **2012** No.**9**

Cover Story

Industrial Displays

The Next Growth Engine in Intelligent Systems Era

SUSIAccess
Remote Device Management

- Advantech Integrated Industrial Display Solutions
- 3rd Generation Intel® Core™ Platform with Intelligent Remote Management Solutions
- SUSIAccess: The Key to Pioneering Connected System Management
- Simplify Signage Development with OPS Design

Hot Products

New Embedded Platforms with 3rd Generation Intel® Core™ i Processors

Full spectrum of embedded platforms with high performance, low power and excellent graphics

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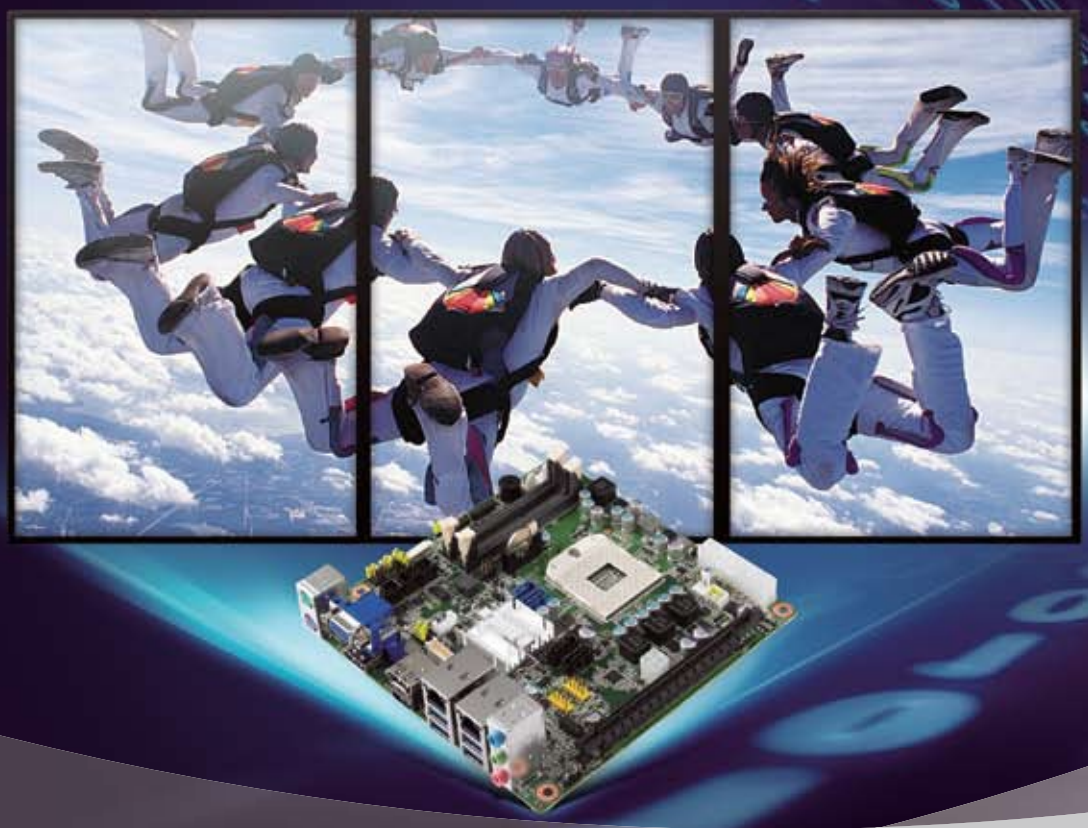
ARK-DS762

MIO-5290

AIMB-273

Tri-View, High Performance



ADVANTECH

Enabling an Intelligent Planet

New Embedded Platforms with 3rd Generation Intel® Core™ i Processors

Advantech provides a comprehensive range of embedded platforms with 3rd generation Intel® Core™ i3/i5/i7 processors that deliver up to 15% more CPU performance, up to 60% more 3D graphics performance (via more and faster execution units), and up to 1.8x faster transcoding speed via Quick Sync Video. With smart performance, built-in graphics, manageability and security, the new platforms are optimized for applications in industrial automation, digital signage, surveilance, medical, transportation and gaming.

SOM-5892 (QM77)

COM-Express R2.0 Type 6

- 3 Independent displays supporting: VGA, LVDS, DVI, HDMI, DisplayPort
- PCIe x16, 7 PCIe x1, 2 SATAIII, 2 SATAII, 8 USB 2.0, 4 USB 3.0, GbE

MIO-5290 (QM77)

3.5" MI/O-Compact Extension SBC

- 3 independent displays supporting: VGA, LVDS, HDMI, DisplayPort
- 2 USB 3.0, 4 USB 2.0, 2 SATAIII, 2 GbE and 2 Mini PCIe w/ 1 mSATA

AIMB-273 (QM77)

Mini-ITX

- 3 independent displays supporting: VGA, LVDS, HDMI, 2 DisplayPort
- Intel vPro, AMT 8.0, PECI 3.0, 4 USB 3.0, Software RAID 0,1,5,10, TPM 1.2 (optional)

AIMB-582 (Q77/C216)

MicroATX

- 3 independent displays supporting: VGA, LVDS (or eDP), DVI, DisplayPort
- Intel AMT 8.0, PECI 3.0, 4 USB 3.0, Software RAID 0,1,5,10, TPM 1.2 (optional)

AIMB-782 (Q77)

ATX

- 1 PCIe x16, 1 PCIe x4,1 PCIe x1, and 4 PCI expansion slots
- 2 SATA3.0, 4 SATA2.0, 10 USB 2.0, 4 USB 3.0, Dual GbE and dual display of VGA/DVI-D

PCE-5127 (Q77)

PICMG 1.3 SHB

- PCIe x16, 4 master PCI to backplanes, 2 SATA3.0, 4 SATA2.0; 9 USB 2.0, 3 USB 3.0, Dual GbE and VGA
- Supports low-noise solution and TPM 1.2(optional)

ARK-DS262 (QM77)

OPS Digital Signage Media Player

- OPS Compliant (supports DisplayPort/ HDMI-CEC)
- MiniPCIe expansion slot

ARK-DS762 (QM77)

Digital Signage Media Player

- 3 independent HDMI outputs
- MiniPCIe expansion slot

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Advantech Headquarter
No.1 Alley 20, Lane 26, Rueiguang Road,
Neihu District, Taipei, Taiwan, 11491, R.O.C.
Tel: 886-2-2792-7818
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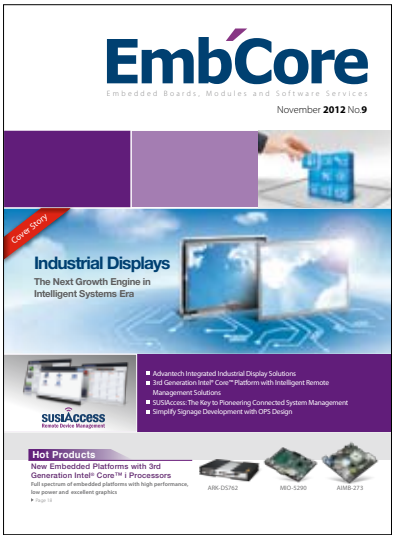

Cover Story

Integrated Industrial Display Solutions

Published by
Advantech Co., Ltd.

Publisher
Miller Chang

Address
No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei, Taiwan 114
Tel +886-2-2792-7818
Website www.advantech.com/Embcore

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Embedded Core Group

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Windows Embedded

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Successful Factors in Building Embedded Cloud Applications

McAfee Acronis

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AUO 3M

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Accelerating the Transition towards RISC Computing

ARM Texas Instruments

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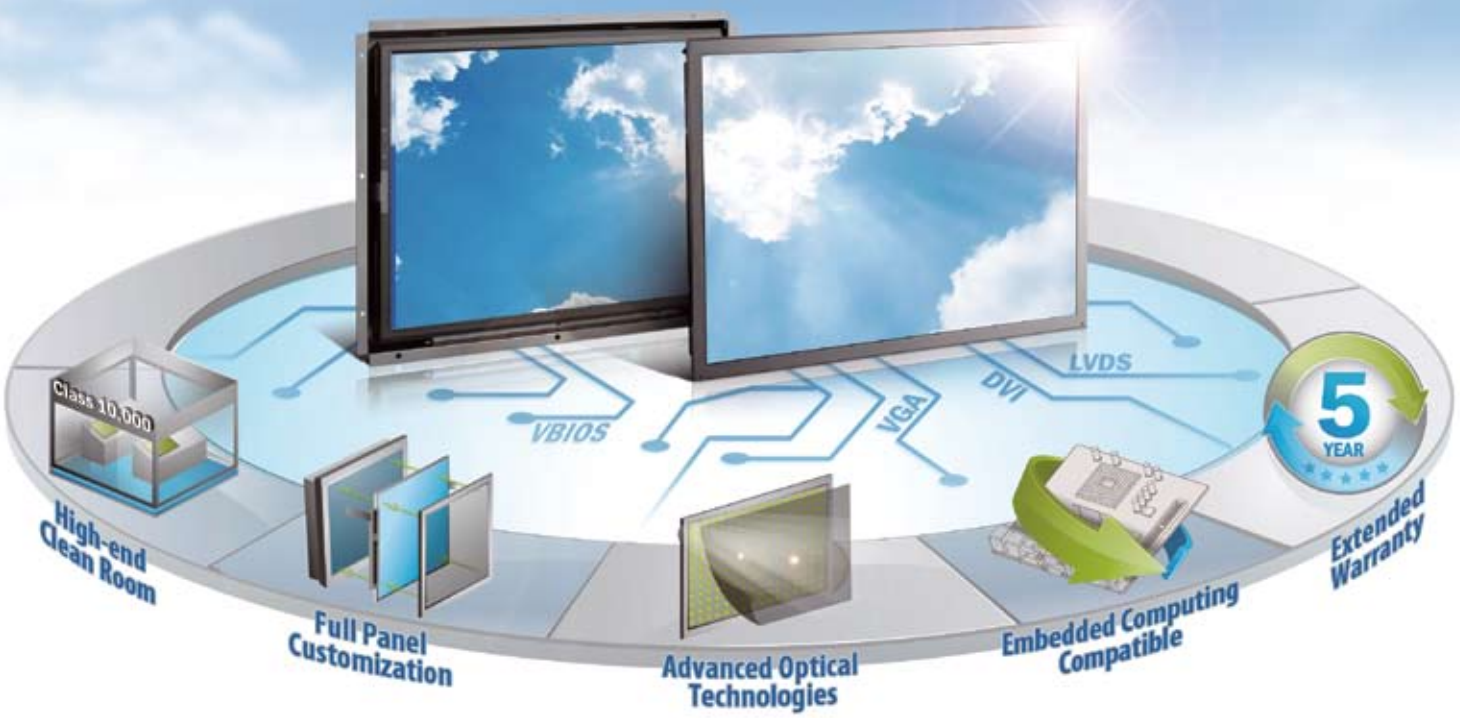
Industrial Displays: The Next Growth Engine in Intelligent Systems Era

According to a recent IDC report, in 2020, there will be 25 billion intelligent devices with embedded computers that serve as their digital brain. And, most of these intelligent devices will require at least one display screen to enable us to interact with machines. Industrial display solutions are an essential part of the intelligent city concept. The potential is immense and the opportunities are everywhere. For example, the digital signage market will account for 21% of this huge opportunity while video surveillance and POS/KIOSK will contribute about 33% and 20% respectively. Digital signage applications are already everywhere in our daily lives. Over the next several years, the digital signage market will be more inclined towards outdoor advertising and interactively leverage mobile and touch technology to deepen consumer engagement. Therefore, large format displays normally above 32" will be required to be sunlight readable with touchscreen functions. In the POS and KIOSK markets, retailers are increasingly demanding multi-touch capabilities particularly for kiosks solutions. Enhanced capabilities will enable retailers to further interact with customers creating new sales opportunities. What's more, some new innovative emerging consumer services will migrate into industrial markets as well, such as visual search, and gesture touch features.

Advantech has developed integrated industrial display solutions to fulfill versatile market needs. Instead of just providing display hardware, we offer value-added solutions such as sunlight readable and touchscreen integrations. Our ultra high-brightness display kit series is designed especially for outdoor applications and provides 8.4"~55" 1200-nit industrial grade LCDs with touch solutions. For easy integration, we have ultra slim open-frame monitors which are 20% thinner and lighter than the industry average, thus saving installation costs and time. Advantech also offers vertically focused display solutions. Our digital signage display series include large format displays and stretched displays with 16:3 super wide ratios. What's more, as a global leader in embedded solutions, we provide one-stop shopping to system integrators. Our embedded platforms and industrial displays give customers a highly integrated compatible solution and solid foundation for efficient development.

Advantech has made continual advances in the industrial display solutions market. Now we are focusing on the next level, developing three strategies to catch this 25 billion intelligent devices business opportunity. We also expect more and more ecosystem partners to work together with Advantech to drive the same vision and direction. First of all, we will continue to build strong sales forces in each region. Secondly, we will completely integrate displays with embedded boards and systems. Finally, we will develop vertical market focused solutions especially for digital signage, gaming and medical applications. Advantech's industrial display solutions will step forward to a more integrated solution and drive business growth into a new era of intelligent systems.

Miller Chang
Advantech Embedded Core Group
Associate Vice President



Advantech Integrated Industrial Display Solutions

By Antony Wu, Director of Product Management, Advantech

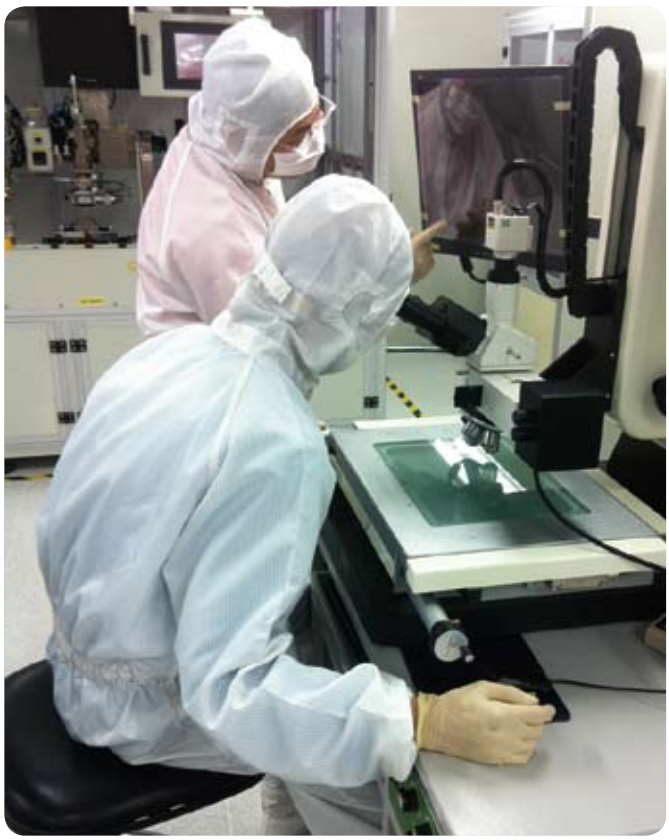
Since their development in 1980s and up to now, industrial displays have been widely used in many embedded applications such as machine automation, ticketing machines, digital signage, etc. From the early 80s until the beginning of this century, the CRT dominated the market for industrial display applications. But since the 90s, LCDs have gradually replaced them. Not only has display technology improved but the display features available to the user have become more versatile. Touchscreens bring a new level of interaction to industrial displays so they not only display information but also serve as an interactive interface between humans and computers.

In the era of cloud computing, application environments are expanding to outdoor locations and readability under strong sunlight has become an issue. On top of that, many system integrators face compatibility issues while integrating displays and embedded boards. As a result, they often need to invest a considerable amount of time and resources to solve these issues. So far, only one supplier in the market has been able to provide value-added and highly integrated embedded solutions to solve these environmental and system integration issues. Advantech, as a leader in embedded computing, is the first and only embedded platform provider offering highly integrated and value-added display solutions.

Advantech provides integrated industrial display solutions to deliver faster time to market for embedded system integrators. Our solutions not only include a wide-range of display products, but also guaranteed compatibility with our embedded platforms including LVDS/VGA cables, VBIOS and touch driver support. What's more, Advantech has built a Class 10,000 LCD clean room to provide high quality manufacturing and value-added services, and provides long-term commitment to customers with an industry-leading 5-year extended warranty.

High-end Clean Room

In order to provide high quality products and develop its own capabilities, Advantech built a class 10,000 clean room which is located in Donghu, Taiwan in 2010. With this clean room addition, Advantech is able to increase LCD display capabilities and value-added solutions. The class 10,000 clean room requires strict temperature and humidity control flow, and pressurization to keep the environment free of particles. In Advantech's clean room, the temperature is controlled at 23˚C(± 3˚C) while humidity is within 55% (± 5%) with ISO 9001/14001 certification. With streamlined operation, the monthly production runs up to 30,000 pieces. All the product manufacturing and LCD panel enhancements such as sunlight readable and touchscreen integration are processed with professional equipment such as laminating, autoclave and IC bonding machines. Moreover, Advantech implements a shop flow control system, therefore guarantees good quality control and reliability. With a full range of product offering and in-house technologies, our clean room can produce a variety of products that exactly meet customers' needs with high optical performance, quality, and reliability. This investment reinforces Advantech's strong engineering design and manufacturing capabilities for industrial display solutions.



Embedded Computing Compatible

Advantech provides total embedded solutions, including embedded boards, industrial displays and industrial peripheral modules. To better serve our customers, we provide an integrated solution for industrial displays and embedded boards with compatible LVDS cables, V-BIOS settings and touch driver support for all OS. Cabling can be a nightmare for system integrators so we designed consolidated LVDS cables so platforms don't need a lot of cabling built in. We also perform comprehensive firmware tests, with V-BIOS settings on the board, so customers can enjoy real plug-and-play benefits when using our displays and embedded boards. Last but not least, all Advantech display products include suitable LED driver boards. Customers find that Advantech products shorten product development time, save R&D and product validation costs, and achieve faster time to market. There is no other providor that offers such highly integrated display solutions with embedded platforms.

Comprehensive Product Offering

Advantech provides a comprehensive range of display products with different levels of integration from pure industrial-grade LCD panels, to semi-integrated industrial monitors such as open frame monitors, to front-mount industrial monitors. We offer full integration flexibility to fulfill different application needs.

Industrial Grade LCD Panel

The Advantech Industrial Display Kit series provides an industrial grade of LCD panel with resistive touch solution and versatile customization solutions. This IDK series offers a chassis-free and cost-efficient display solution, giving customers the most flexibility possible in a mechanical design. For this series, we provide two solutions: IDK-1000, with 250~400 nits brightness for indoor applications, and IDK-2000, with 1200 nits ultra high brightness for outdoor applications. Designed with a highly efficient and low-power LED backlight, IDK-2000 achieves 1200 nits providing excellent sunlight readability and still consumes 20% less power than competing models in the market. Moreover, the surface temperature of the LCD panel is below 40°C while running, making it ideal for any location. We also provide optional VR brightness control and auto-dimming with a light sensor on the LED backlight, so the display can automatically adjust its brightness to the environment, thus saving up to 50% of its energy. Most important of all, all industrial display kits in the series are tested and proven to work perfectly with Advantech embedded boards with LVDS cables, V-BIOS setting and touch driver support.

Semi-integrated Monitors

For those who need simple integration and have the capability to design their own enclosure face plates, open frame monitors are the best choice. Advantech Ultra Slim Open Frame Monitor, IDS-3000 Series, provides industrial LED monitors with ultra slim and light designs that provide more than 20% space savings. Their open-front bezel architecture enables flexible and customized face plates for easy re-engineering and is ideal for any embedded applications. Also, the series supports -20 ~ 60° C operating temperatures. Designed with integrated brackets and VESA holes on the back cover, the IDS-3000 series provides flexible mounting options, including rear and VESA mounting, which enable simple integration with any embedded application.

Digital Signage Displays

Advantech Digital Signage Display series is designed especially for digital signage applications. The professional displays are not only attractive, but rugged enough to withstand the constant interactivity with longer life. Product offerings include large format digital signage displays DSD-3000 series and stretched digital signage displays DSD-5000 which provides 16:3 super wide ratio for flexible and innovative applications. Moreover, all digital signage displays can be easily integrated with Advantech ARK-DS series, providing a total solution for digital signage applications.

Value-added Solutions

Unlike the consumer market, the vertical market has very specific environmental requirements, be it sunlight readability, rugged design, or extended operating temperature. To ensure successful deployment, a right solution that meets environmental requirements is crucial. Advantech has designed a full range of value-added display solutions featuring optical bonding, high brightness, and sunlight readability to provide a "right" solution that optimize customers' applications. This gives Advantech the capability to offer high add-on value, cost-efficient features, and customization services as well. Among core display technologies, Advantech focuses on sunlight readability, ultra brightness, optical bonding, LCD repair and touchscreen integration capabilities. All of these solutions are processed in our Class 10000 clean room with ISO certification.

Optical Bonding

This is a technique for affixing a touchscreen or anti-reflective glass directly onto the LCD panel with optical glue to eliminate the air gap in between. Optical bonding solutions reduce the reflectance to 0.2% and increase the contrast rate by 10%, thus enhancing display sunlight readability. This technology can be applied to touchscreens and AR glass (for improved ruggedness) with a re-workable process.

High Brightness
Advantech has focused on high brightness technologies and can enhance display brightness from 450 nits to 2000 nits. To solve power consumption and thermal issues, Advantech designs low-power and highly efficient LED backlights with a combination of optical films. As a result, our solution not only provides excellent sunlight readability with low power consumption, but also high uniformity and up to 90% increased contrast and color saturation.

Sunlight Readable
In addition to the high brightness solution, Advantech also offers cost-efficient sunlight readable solutions. We laminate an anti-reflective film onto the LCD panel; this reduces the reflectivity to 2% without causing any mechanical change Panel Repair

Panel Repair
With professional LCD know-how and equipment, Advantech provides a full range of panel repair services to our customers. Our repair services cover everything from driver IC, to polarizer, to backlight, and help extend lifetime and durability.

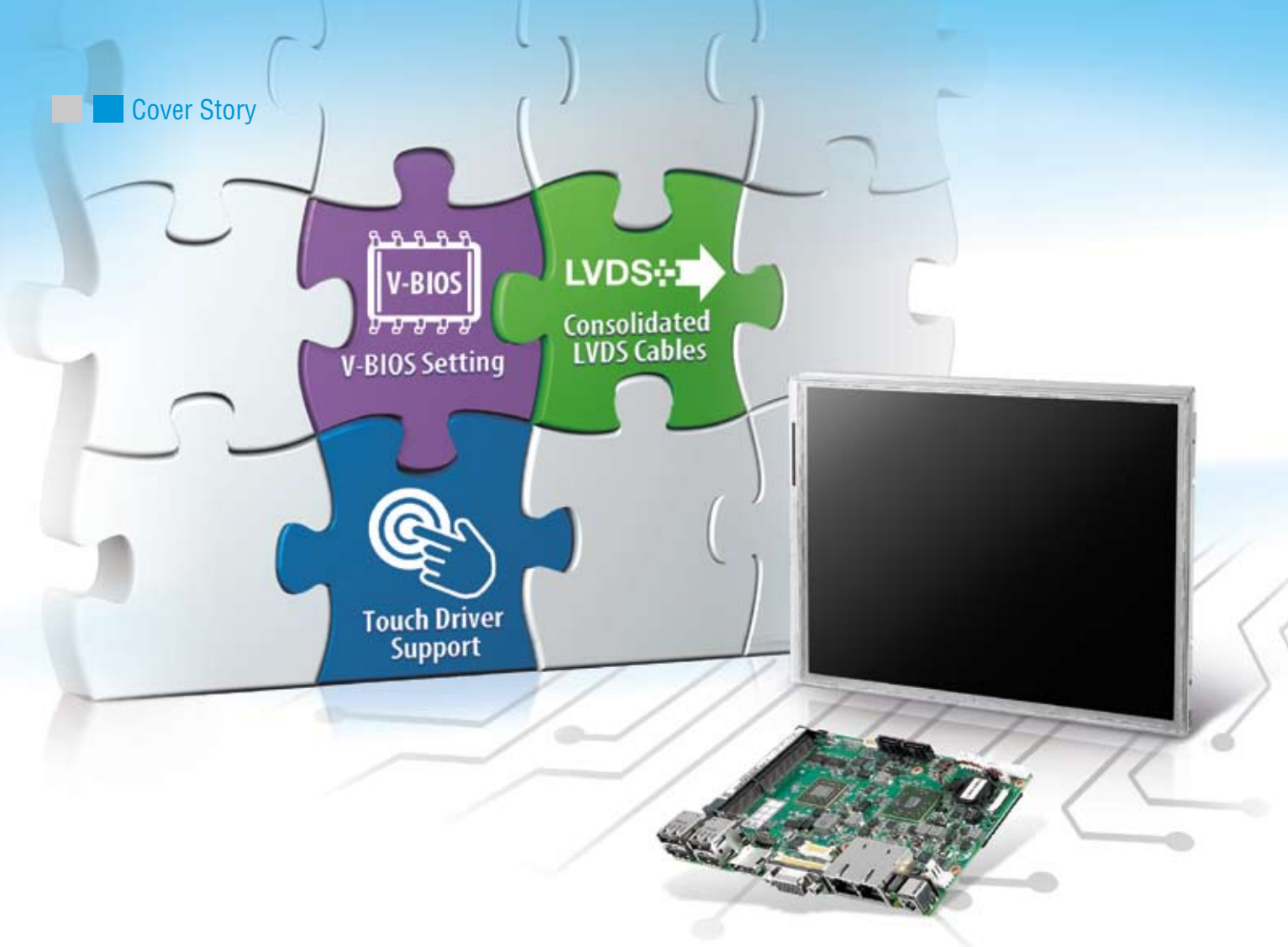
Touchscreen Integration
Advantech offers versatile touchscreen integration services, including resistive, capacitive, and projected capacitive touch with seamless integration and customization capabilities.

Extended Warranty and Services
Warranty issues and after sales service are major concerns for system integrators. Advantech values and understands the importance of quality support and services. In addition to 3-year longevity support, we also offer a basic 2-year warranty (average is 1 year) and 3 to 5 years of warranty options to increase the level of service even further. Why does Advantech deliver such an extended warranty? The reason is that Advantech has built its own class 10000 clean room where we manufacture products and provide repair services with controlled high quality. With professional LCD know-how and equipment, Advantech provides a full range of panel repair services to its customers. Our repair services include driver IC, polarizer and backlight, to help extend the product lifetime and durability.

Advantech industrial displays are constantly evolving to provide highly integrated, value-added display solutions, helping system integrators accelerate their time to market. We offer customers comprehensive product offerings with full integration flexibility, and a wide range of value-added solutions to meet different application environments. Advantech also offers one-stop shopping solutions for compatible industrial displays and embedded boards in a timely and cost-effective manner. We are committed to providing high quality products and solutions with extended warranties and services. Advantech continues to refine its integrated display solutions to meet customer demands fully.

Advantech Full-Range Product Line

Industrial LCDs	Ultra High Brightness LCDs	Slim Open Frame Monitors	Digital Signage Displays	Stretched Digital Signage Displays
IDK-1000	IDK-2000	IDS-3000	DSD-3000	DSD-5000
• 5.7”~21.5” Industrial touch panels • 250~450 nits brightness • Indoor applications • LVDS signal interface	• 8.4”~31.5” industrial LCD panels • 1200 nits ultra high brightness • Outdoor applications • Wide temperature support • LVDS signal interface	• 6.5”~19” open frame monitors • Slim and light design • Integrated bracket design for efficient installation • DVI/VGA interface • Rear/VESA mounting	• 32”, 42”, 55” digital signage displays • Wide viewing angles • HDMI/DVI/VGA interface • Wall mount	• 28"(16:3), 38"(16:4.5) stretched displays • Better image and low power • DVI/VGA interface • Wall mount

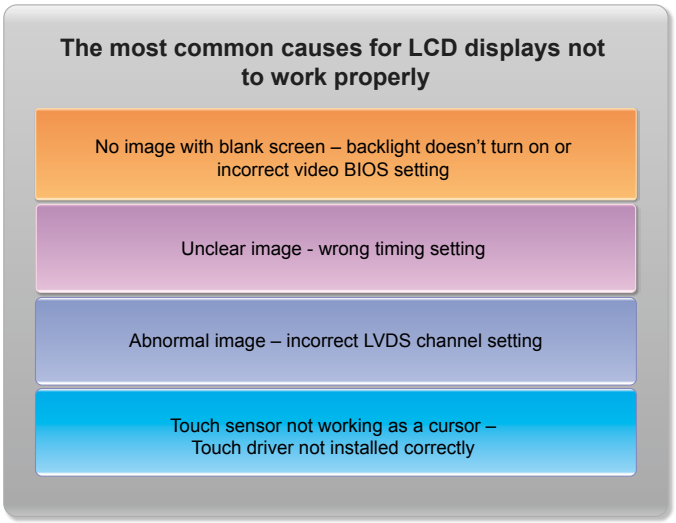


Seamless Display Solutions with Embedded Platforms

By Pamela Lin, Product Manager, Advantech

Generally, when system developers integrate LCD displays and industrial embedded boards into their application, the first step is to ensure that the signal and power input to the display are successfully connected through the embedded board. It's also important to check if the signal from the LCD display is compatible with the embedded board, and the power input from the embedded board meets display requirements. If the wrong signal input is transmitted to the display, a blank display without any image will result. And, if the wrong power input is transmitted to the LCD backlight , it could cause either the backlight to fail, or the backlight module to burn. Aside from incompatible signals and power inputs, there are other factors that need to be considered.

When an engineer gets an embedded board and an LCD display, the first thing they need to do is check the pin assignments on the display and the embedded board for signal interface and backlight power output information. Configuring suitable signals and power cables can take time. When cables arrive, the engineer needs to check if the video BIOS (VBIOS) settings can support the desired display resolutions or not. In fact overall, it can take quite a long time to fix all compatibility issues in order to get a perfect display image. The whole confirmation process may take up to few weeks or so to make sure the LCD display works in perfect harmony with the embedded board. And if there are still problems, it can take a lot of trial and error to test and debug everything, so finding a better way to overcome all these compatibility issues would be extremely useful.



In response to all these issues, Advantech provides helpful tools and services for SIs to choose seamless display solutions with embedded boards. We provide compatible cables, appropriate VBIOS settings and touch controller drivers for different OS platforms so system developers don't have to configure everything themselves and can focus their design efforts on adding their own core value.

Consolidated LVDS Cable Design

To transmit correct LVDS signals successfully from embedded boards to displays requires configuring power inputs, color settings and compatible LVDS pin assignments. Different displays, board and cables require different configurations resulting in thousands of variables, so Advantech consolidated LVDS cable design with two main types of LVDS connectors: 20-pin and 40-pin which are already on Advantech's embedded boards. As a result, it's simpler to utilize the same LVDS cable design for different embedded board and display combinations. Advantech's standard LVDS cable is 500 mm in length and is also available in customized lengths.

Besides cable design, LVDS signal power affects if the display can turn on correctly. When it comes to LVDS signal power input, it is either 3.3 V or 5 V, Advantech's embedded boards support both power voltages making it easy to switch to either via a jumper.

LVDS data signal inputs have 4 selections – 18-bit / 24-bit/ 36-bit /48-bit, and for sizes under 15" the display supports dual options for both 18-bit and 24-bit. Customers just choose one data signal as long as the embedded board supports mapping in the VBIOS setting. All LVDS cables that Advantech provides support either 18-bit or 24-bit. An inaccurate LVDS data signal setting will cause an abnormal image but through the VBIOS you can easily set it back to the correct pin assignment setting.

Ready Video BIOS Setting

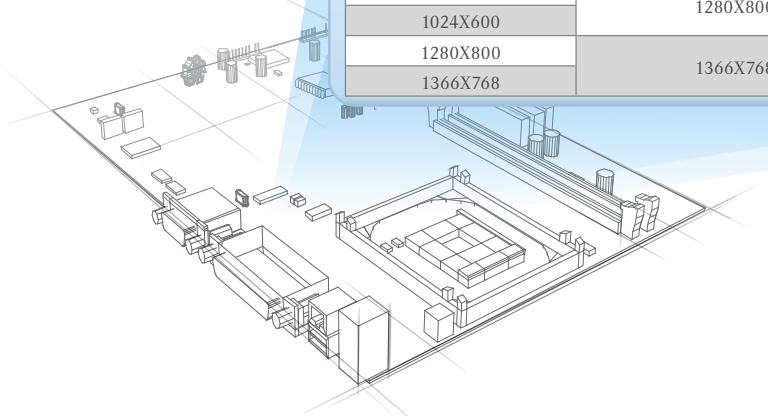
With Advantech industrial display solution and embedded board platforms, compatibility testing between display and embedded boards ensures the VBIOS setting supports most common configurations. Without the correct VBIOS setting, there will be a blank screen or image which means no signals are coming out the embedded board. Apart from the VBIOS common support list, Advantech has application engineers to customize the VBIOS and provide helpful support for each individual customer on request.

Looking at the following configurations, there are many different combinations of VBIOS based on two factors:

- TFT LCD display resolution
- Display LVDS data signal – 18- bit (262K colors) or 24- bit (16.2M / 16.7M colors)

VBIOS setting combination

18 bits	24 bits	*36/48 bits (Dual-Channel)
320X240	1024X768	1280X1024
640X480		
800X600	800X480	1440X900
1024X768		
800X480	1280X800	1920X1080
1024X600		
1280X800	1366X768	1920X1200
1366X768		



*Note:
For sizes under 15" (including 15"), normally LVDS supports both 18-bit and 24-bit via one channel LVDS cable, and for sizes above 17", LVDS supports 24-bit with 2 LVDS channels which means 24 x 2 = 48-bits.

Smart Backlight Control Solution

There are two types of TFT LCD display backlight design – traditional CCFL (lamp) or LED backlight. The trend for panel makers is for backlight designs to gradually implement LED technology. LED backlight designs mean less power consumption which reduces heat and LEDs are energy saving making them environment friendly.

Backlight power is normally either 5V or 12V input so Advantech embedded boards provide both values from the same connector, controlled through different pin assignments. CCFL designs need an inverter as a backlight driver as well as an LED driver board for LED backlight design, and both inverter and LED driver board will need 12V power input. Generally speaking, the LED driver board controls the backlight via PWM dimming, while the inverter controls the backlight via DC dimming, so embedded boards must provide backlight dimming control in order to adjust the brightness correctly.

For Advantech sunlight readable display solutions – IDK-2000 series provides a 1200-nit ultra brightness solution for superior visibility for outdoor applications. The IDK-2000 series supports an auto-dimming function with a light sensor which detects the ambient environmental light and adjusts the display brightness automatically. During the day time, when the sunlight is strong, the display will need higher brightness in order to provide good visibility, but during the night, the display could reduce the brightness to 30% which is bright enough for night time viewing. Advantech also provides software service – iManager which is already built into embedded boards to control the dimming function via a light sensor on LED driver board.

Comprehensive Touch Driver Support

Last but not least, more and more industrial applications including HMI machines, vending machines, and self-service kiosks, all have interactive interfaces which means touch screen technologies have increasingly predominated. In the past, for industrial applications, the most adopted solution was Resistive Touch (RT) technology which has less EMI interference concerns, and is easily controlled by finger or stylus and is the most cost effective option. Advantech offers various touch solutions and controllers supporting a combination of interfaces like RS232 and USB. We also provide compatible touch drivers for different OS, including Win XP, WinCE , embedded.

Projected Capacitive Touch (PCT) solutions are also available for project based requirements. The biggest difference between PCT and RT technologies is that PCT provides multi-touch sensitivity from at least 2 points. Under Windows 7 and Windows 8, multi-touch solutions are enabled automatically without any touch drivers needed. However, PCT touch drivers for other OS versions are still available.

Smart Auto-dimming Function

Power management is an important issue for industrial applications that run 24/7. Advantech designs a smart auto-sensor on the LED backlight for its ultra high brightness displays, IDK-2000 series. The display can automatically adjust its brightness to the external environment, thus significantly saving energy up to 50%.

Smart Selection Wizard

In order to provide an efficient total solution that saves development time, Advantech matches compatible cables and backlight display solutions with different Advantech embedded boards for our customers. The online “Build Your Display” function is a smart selection wizard that can help you quickly find appropriate cable configurations. With a simple click, you can get a solution package including – embedded board, IDK series industrial display kit, and LVDS and backlight cable part numbers so you can directly contact with an Advantech sales person.
The online " Build Your Display " wizard is now on the Advantech website:
http://www.advantech.com/buildyourdisplay

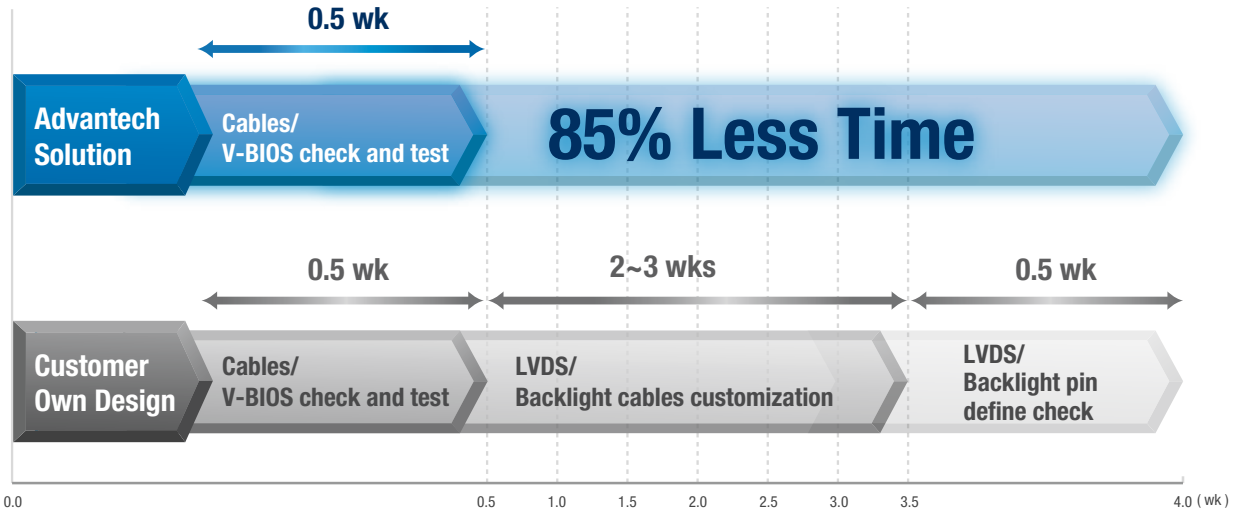
Faster Time to Market

Normally, it takes around 3-4 weeks for system integrators to finish LCD display and embedded board integration from pin definition checks, to cable customization and testing. Configuring suitable signals and cables can take around half a week. And making sample of cables might take around two weeks at the earliest and four weeks at latest. Finally, when cables arrive, it takes half a week to test and make sure the LCD display works perfectly with the embedded board. If there are any compatibility issues, it also takes time for system integrators to figure out the problem. With Advantech ready solutions, customers only need half a week for verification, thus enjoying faster time to market.

All Advantech displays and embedded boards undergo rigorous compatibility testing early on to ensure all cables are functioning properly, VBIOS settings are correct for the right display resolution, and touch drivers are setup and working. A seamless display solution provides greater efficiency for customers so they don't need to waste time and effort in bringing their innovative applications to market.

Advantech provides seamless display solutions with Advantech embedded boards , so system developers can focus on adding their own core value and enjoy faster time-to-market.

Advantech solution includes:
- Compatible displays and embedded boards with pre-testing
- LVDS/Backlight cables
- Ready VBIOS setting
- Local AE technical support



Ultra High Brightness Displays for Outdoor Applications

By Esther Lin, Product Manager, Advantech

The scope of applications for industrial displays is always increasing, such as in factory automation, ATMs, ticketing kiosks and many more places. Nowadays, industrial displays are everywhere. Traditionally, industrial displays function only to display information, but because of developments in touch screen and cloud technologies, industrial displays have been transformed into interactive Human Machine Interfaces (HMI), and as a result, we see more and more outdoor applications appearing. Specifications for outdoor applications are totally different from general displays. For outdoor displays, many different environmental factors need to be considered. For example, when we use a mobile phone (normally 350 nits) outdoors, the screen usually looks washed out or becomes invisible under strong sunlight, the reason being that ambient light is too strong (normally 10,000 nits) causing strong reflections that reduce readability of the screen. Outdoor applications also suffer extreme temperature fluctuations which mist up the screen between the two glass layers (LCD & touch sensor) making the image unclear. So to address these issues, Advantech provides a 1200 nits ultra high brightness display solution - IDK-2000, which is perfect for outdoor and semi-outdoor applications.

1200 nits Ultra High Brightness

Advantech IDK-2000 is designed with a 1200 nits high brightness display which is bright enough to be read in direct sunlight. With a high level of brightness and wide viewing angles, IDK-2000 series provides optimal readability, whether in direct or indirect sunlight conditions. Since the backlight brightness has increased, it also enhances color saturation levels and provides better uniformity for all round better optical performance and visibility under bright sunlight conditions.

High Performance, Low Power LED Backlight Built-in

IDK-2000 uses in-house designed high brightness LED backlight technology which has high performance and low power advantages. The series uses an LED light bar in place of CCFL as the backlight source. This, coupled with optical films, advanced reflection pattern design on the light guide bottom, and special radiation technology enable it to achieve 1200 nit brightness with a low-power backlight source. With our advanced LED backlight design, the IDK-2000 series achieves excellent power saving; about 20% less energy than competing products with the same level of brightness. For example, a 17" LCD at 1000 nits usually consumes 35W while Advantech IDK-2000 series only consumes 29.47W, resulting in displays that run cooler with maximum reliability. Normally, when the backlight brightness increases, heat issues increase also. To solve this, Advantech developed special thermal technology to allow lower temperatures of less than 40°C on the display surface at start up.

Smart Auto-Dimming Function

Power management is an important issue for applications that run 24/7 to ensure long life and extended use. Advantech designs a smart auto-dimming light sensor on the LED backlight module, so the display can automatically adjust its brightness to the external environment. The auto-dimming light sensor can detect ambient light in the external environment, and increase the display brightness when the ambient light gets stronger and decrease the brightness otherwise, which can significantly save energy up to 50%. Because outdoor applications usually face fluctuating temperature changes, IDK-2000 series supports -30~85°C operating temperature for the display and -20~70°C for the LED driver board, ensuring the device can work properly even in unforgiving environments.

Advantech provides a full range of 1200 nit industrial displays from 8.4" to 31.5" with flexible customizable touchscreen solutions and optical bonding; and all are compatible with Advantech embedded boards and systems. In future, more and more outdoor applications will emerge in a multitude of application fields, such as information displays in train stations, drive-through digital menus outside fast food restaurants, gas station kiosks and more, which represents a huge potential market. To meet this demand, Advantech has developed a comprehensive range of high brightness display products with integrated value-added solutions to make your embedded development fast and efficient.

Advantech Ultra High Brightness Displays

Model Name	IDK-2108	IDK-2110	IDK-2112	IDK-2115	IDK-2117	IDK-2119	IDK-2131
Size	8.4"	10.4"	12"	15"	17"	19"	31.5"
Resolution	800 x 600	800 x 600	800 x 600	1024 x 768	1280 x 1024	1280 x 1024	1366 x 768
Colors	262K/16.2M	262K/16.2M	262K/16.2M	262K/16.2M	16.7M	16.7M	16.7M
Contrast Ratio	600:1	500:1	600:1	700:1	1000:1	1100:1	3000:1
Brightness	1200 nits	1200 nits	1200 nits	1200 nits	1200 nits	1200 nits	1200 nits
Operating Temperature	-30~85°C	-30~85°C	-30~85°C	-30~85°C	0~50°C	0~50°C	0~50°C
Power Consumption	5.35W	7.1W	9.46W	16.06W	29.47W	36.64W	61.9W
Touch Option	4-wire Resistive	4-wire Resistive	5-wire Resistive	5-wire Resistive	5-wire Resistive	5-wire Resistive	N/A

Design with Leading Display Technologies

By Pamela Lin, Product Manager, Advantech

Compared to commercial grade displays, industrial displays require ruggedness and longevity, and they must be able to operate in a wide range of temperatures and weather conditions. Industrial displays are usually designed with longer life using more reliable materials for the backlight module and optical film. Normally industrial displays will come with better optical performance and higher brightness of around 500 nits compared with 200 ~300 nits for commercial grade LCDs. As industrial applications become more diverse and demanding, industrial displays need to come in a variety of sizes and value-added solutions such as sunlight readable and water/dust proof to meet diverse application environments. To optimize customer's applications, Advantech provides value-added display solutions with leading display technologies which allow flexible customization and more suitable display products to customers. Among the core technologies, Advantech focuses on optical enhancement technologies such as sunlight readable, ultra high brightness, optical bonding and touchscreen integration. All of these in-house technologies are developed and manufactured in our own class 10,000 clean room.

Advantech Class 10,000 Clean room

Advantech is committed to the development of industrial display technologies and has built a Class 10,000 LCD clean room to develop our capabilities. With monthly capacity of 30,000 pieces and our in-house capabilities, Advantech can bring high add-on value, cost-efficiency, and higher quality features to our products. Moreover, our LCD clean room is committed to the

highest quality and reliability of our products and services. All of these manufacturing and solutions are processed in our Class 10,000 grade clean room with ISO 9001/14001 certification. Among core display technologies, Advantech focuses on sunlight readable, ultra high brightness, optical bonding, and versatile touch screen integration with industry-leading 5-year extended warranty. We also provide on-demand value-added display solutions and tailor-made industrial display solutions to fit and fulfill all customers' application needs.

Sunlight Readable Solution

Industrial Leading Ultra High Brightness Technology

For outdoor applications such as automated parking systems and outdoor digital signage which are normally installed under strong sunlight conditions, better sunlight readability is needed. Given that most displays are used in indoor applications, a display with a brightness of only 250~400 nits will make the image look washed out because the ambient sunlight is stronger and of a higher value than the display itself, so reflections will make reading and viewing difficult. Also, in applications where touch screens are deployed, touch screens reduce the light that is emitted from the display making them look faded. So to solve this, Advantech developed an ultra high brightness solution with an in-house designed LED backlight module.

In order to provide higher 1200 nit brightness, and still keep low power consumption, Advantech designed its own backlight modules, including LED light bar and light guide. The LED light bar is designed with high efficiency low power LEDs with a particular layout design for thermal solutions which consumes 20% less power than competing models, and keeps display surface temperatures under 40˚C. This also provides even better color saturation and uniformity. The specialized light guide will also optimize the optical performance of LEDs and provide the best brightness efficiency. Our ultra high brightness technology achieves excellent sunlight readability and uses a smart auto-dimming function so that the display can adjust its brightness by detecting the current ambient light conditions and adjusting the display accordingly. The detected ambient light will be submitted as different levels of voltage input for the LED driver board, which then generates different voltages to compensate the backlight brightness of the display. For example, at noon when the sunlight is very strong, the display provides strong backlight for good visibility, but during the night, the display decreases the backlight brightness to save power and provide just enough visibility. The IDK-2000 series is perfectly designed for all variable light conditions and is the best choice for outdoor applications.

Cost-Efficient Anti-Reflection Solution

For fully out-door environments, ultra high brightness technology delivers excellent visibility and meets harsh environment requirements. For semi-outdoor applications where the sunlight is not that strong, Advantech provides an economical solution which laminates an anti-reflective film onto the display, reducing the light reflection by less than 2% with a clearer image compared with the original display. With a class 10,000 clean room and professional facilities, we have the capability to manufacture displays with anti-reflection film lamination. We use polarizer lamination machines to place the anti-reflection film onto the display surface, and in order to keep the display as flat as possible without bubbles, we use autoclave machines to deliver a quality assured product. Our anti-reflection solution is ideal for semi-outdoor applications like kiosk and vending machines.

Why Choose Industrial Grade Displays?

Compared to commercial displays, industrial displays are usually designed with longer longevity. Moreover, industrial displays feature with wide operating temperature and rugged design for harsh environments.

Specification	Industrial Grade Display	Commercial Grade Display
Product Longevity	3~5 years	1~2 years
Operating Temperature	-30 ~ 85 ˚C	0 ~ 50 ˚C
Backlight MTBF	Up to 50,000 hours	20,000 hours
EMI Solution	Yes	No
Anti-shock/ Anti-dust	High	Low
Mechanical Design	Rugged metal frame	Fragile plastic frame
Technical Support	High	Low

• Longer Product Life • Wide Operating Temperature • Rugged Design

Advanced Optical Bonding Solution

Advantech's optical bonding solution delivers a ruggedized design and a more visible solution for outdoor applications. Traditionally, for touch screens or tempered glass we'll use an adhesive tape to affix them which is most common, but sometimes this creates an air gap in between which can cause high light reflection and reduces the brightness. So to avoid light absorption by reflection, we inject optical adhesive in between the display panel and the top layer which reduces reflection rates to 0.2% and gives it higher brightness and better contrast ratio without impacting on power consumption. Furthermore, Advantech's specially formulated optical adhesive provides good transparency, high yield production, and UV resistance to avoid yellowing. The injection machine provides precise adhesive injection after the heating process to make the optical adhesive harden quickly.

Touch screen Integration Solutions

Touchscreen Integration Service

More and more displays need interactive interfaces to communicate with end users, therefore, touch panel demand has increased. Normally we put the touch screen on top of the display, and we usually use air bonding manufacturing to put the tape with adhesive on the inactive area around the perimeter of the module. Advantech standard touch panel integrated solution – IDK-1000 series, uses air bonding manufacturing to provide the most cost effective solution for touch panels and also high yield production. All the touch panel assembly will be done in our 10,000 grade clean room. This provides a clean environment and avoids too many particles getting in between the panel and touch screen. Moreover, Advantech implemented an OQC process flow and rules to ensure the quality of the touch panel assembly. With strict production of fixtures for touchscreens, and OQC examination, Advantech provides a worry free touch panel assembly solution for all our customers.

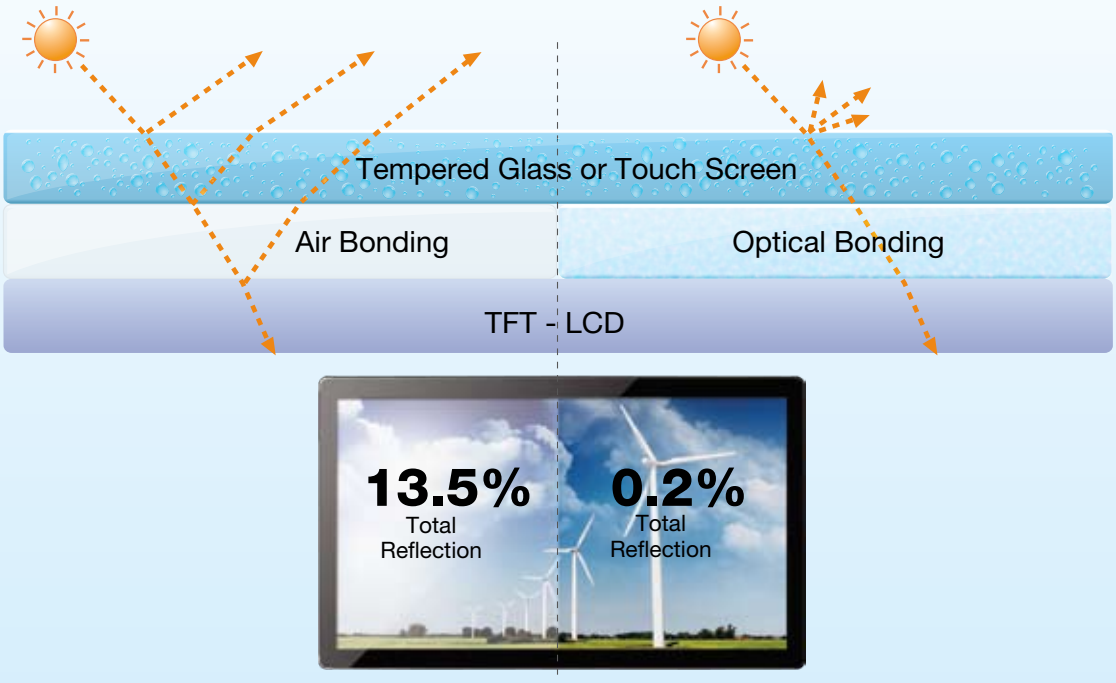
Touch Controller with Versatile OS Drivers

Apart from a touchscreen integration solution, Advantech also provides compatible touch controllers with combo interfaces for RS232 and USB, and also with OS drivers including Windows XP, Win 7, Embedded XP, Mac, Linux, Android, and DOS.

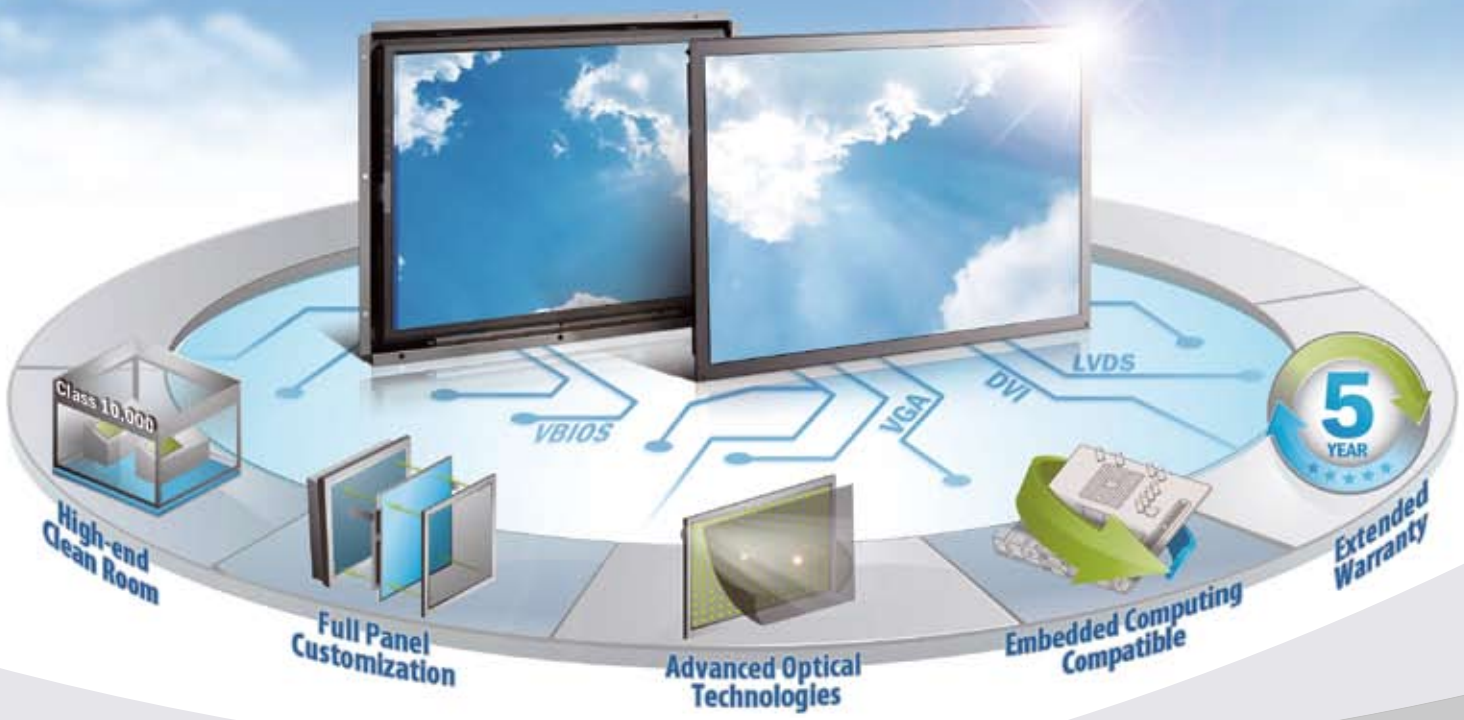
Advantech provides integrated industrial display solutions to deliver faster time-to-market for embedded system integrators. Not merely a hardware provider, Advantech also develops value-added complete solutions for a wide array of industrial display applications. Most important of all, Advantech provides compatible display solutions with embedded platforms and will keep developing new technology for display solutions in order to continually service system integrators in the industrial field.

Optical Bonding Solution

With optical bonding adhesive, there is no air gap thus reducing reflections significantly, and improving the readability of the display.



Advantech Integrated Industrial Display Solutions



ADVANTECH Industrial Display Solutions

Advantech Industrial Display Solutions
Seamless Integration with Embedded Platforms

Advantech provides integrated industrial display solutions to deliver faster time to market for embedded system integrators. Our solutions not only include wide-ranging display products, but also guaranteed compatibility with embedded platforms including LVDS/VGA cables, VBIOS and touch driver support. What's more, Advantech has built a Class 10,000 LCD clean room to provide high quality manufacturing and value-added services, and provides long-term commitment to customers with an industry-leading 5-year extended warranty.

Value-added Solutions:

- Leading High Brightness Technologies
- Advanced Optical Bonding Solutions
- Excellent Sunlight Readable Solutions
- Versatile Touch Screen Integrations

IDK-1000 Series
Industrial LCD Panels
- 5.7”~21.5” size options
- 200~450 nits brightness
- LVDS signal interface

IDK-2000 Series
Ultra High Brightness LCDs
- 8.4”~31.5” size options
- 1,200 nits high brightness
- LVDS signal interface

IDS-3000 Series
Ultra Slim Open Frame Monitors
- 6.5”~19” size options
- DVI/VGA interface
- Rear/VESA mounting

DSD-3000 Series
Digital Signage Displays
- 32”, 42”, 55” size options
- HDMI/DVI/VGA interface
- Wall mount

DSD-5000 Series
Stretched Digital Signage Displays
- 28"(16:3), 38"(16:4.5) size options
- DVI/VGA interface
- Wall mount

Advantech Headquarter
No.1 Alley 20, Lane 26, Rueiguang Road,
Neihu District, Taipei, Taiwan, 11491, R.O.C.
Tel: 886-2-2792-7818
Fax: 886-2-2794-7304

www.advantech.com

3rd Generation Intel® Core™ Platform with Intelligent Remote Management Solutions

By David Liu, Shawn Fan and Charlie Wu, Product Manager, Advantech

It seems like only yesterday that Intel introduced the first and then second generation of Core processors, and now the third generation is here. We will cover its new features and strengths, and highlights some of the first Advantech products to take advantage of Intel's latest and most powerful processor platform.

What is the 3rd Generation Intel Core Processor all about?

This is the latest and most advanced processor family from Intel and includes:

- 3rd generation CPUs with a new 22nm manufacturing process
- Powerful GPU integrated into the CPU
- New "Panther Point" chipset family that all support Intel HD graphics
- 82579LM "Lewisville" GbE (Gigabit Ethernet) chip

3rd generation processors are not about dramatic increases in clock speeds; they are all about increased efficiency, lower power consumption, and better graphics performance.

Benefits of the New Platform

Compared to the 2nd generation predecessor family, equivalent 3rd generation Intel Core processors deliver up to 15% more CPU performance, up to 60% more 3D graphics performance (via more and faster execution units), and up to 1.8x transcoding speeds via Quick Sync Video. There is also support for Microsoft DirectX 11 (as opposed to 10.1 in Sandy Bridge), OpenGL 3.1 (instead of 3.0) and, new, OpenCL 1.1. Combined with native USB 3.0 and PCIe 3.0 (x16 PCIe generation 3 lanes) support, embedded systems can now process much higher data loads and provide quicker, richer and more complex visuals on up to three simultaneous displays. There are new Intel technologies that address data security, system responsiveness, and manageability. And the 3rd Gen is cross-compatible (both socket and pin) with the 2nd Gen, so chips and/or chipsets can be upgraded without additional design cost.

Improved GPU Performance

Intel's 3rd Generation Core processor platform is to a large extent about improvements in graphics speed and features. This has been a bit of a weak point in earlier Intel chips with integrated graphics, and often made discrete graphics necessary. The 3rd gen goes a long way to fixing that.

3rd generation GPUs can have 16 instead of just 12 execution units, and each execution unit is almost twice as powerful. There are numerous architectural performance improvements and graphics-specific cache. There is Microsoft DirectX 11 (as opposed to 10.1 in Sandy Bridge), OpenGL 3.1 (instead of 3.0) and, new, OpenCL 1.1 support that offers GPGPU (general processing on the GPU) capabilities. According to Intel, for media and graphics-intensive designs this all adds up to 60% more 3D graphics performance, and up to 1.8x HD-to-HD transcode speed in Quick Sync Video. With overall better graphics experience, extended standards support, and ability to drive up to three independent displays, integrated graphics are now able to handle most jobs.

Power Management and Scalability

Of particular interest to embedded systems designers, mobile 3rd gen Core processors have software-configurable TDP for thermally sensitive projects (as low as 13 watts in an i7 processor). This provides form factor flexibility, better performance per watt for longer battery life (or a smaller battery). In the 3rd gen, if additional cooling is available, TDP can be increased. If less is available, it can be throttled. The 3rd gen also supports low power DDR3L memory and a low power mode, as well as various design optimizations to provide maximum efficiency across a full range of operations.

Special Embedded Systems Versions

Intel provides a selection of 3rd gen Core processors in embedded versions. This means 7-year long life support (including WiFi chip), special OS validation, higher reliability to meet embedded conditions, various form factors and packaging, ECC in BGA SKUs, and cross compatibility with Intel 6 Series Express chipsets.

Intel® 3rd Generation Core™ Processors in Advantech Embedded Platforms

Processor	Core	Threads	Nm	TDP	Cache	Base Speed	Turbo Speed	Chipset	vPro	EEC
Core i7-3770	4	8	22	95	8 MB	3.40GHz	3.90GHz	Q77	Yes	Yes
Core i5-35505	4	4	22	65	6 MB	3.00GHz	3.70GHz	Q77	Yes	Yes
Core i3-3220	2	2	22	55	3 MB	3.30GHz	NA	Q77	Yes	
Core i7-3615QE	4	8	22	45	6 MB	2.30GHz	3.30GHz	QM77	Yes	Yes
Core i7-3612QE	4	8	22	35	6 MB	2.10GHz	3.10GHz	QM77	Yes	Yes
Core i7-3610QE	4	8	22	45	6 MB	2.30GHz	3.30GHz	QM77	Yes	Yes
Core i7-3555LE	2	4	22	25	4 MB	2.50GHz	3.10GHz	QM77	Yes	Yes
Core i7-3517UE	2	4	22	17	4 MB	1.70GHz	3.00GHz	QM77	Yes	Yes
Core i5-3610ME	2		22	35	3 MB	2.70GHz	3.30GHz	QM77	Yes	No
Core i3-3120ME	2	4	22	35	3 MB	2.40GHz	NA	QM77	Yes	No
Core i3-3217UE	2	4	22	17	3 MB	1.60GHz	NA	QM77	Yes	Yes

Advantech Products with Intel 3rd Gen. Core Processor Platforms

Low Power Solutions

SOM-5892 COM-Express Basic

The SOM-5892 is a COM-Express Basic CPU module that can be configured with a wide variety of standard, low voltage, and ultra low voltage mobile 3rd Gen Core i3, i5 and i7 processors with integrated Intel HD graphics and the new Mobile Intel QM77 chipset. Despite its small size (3.74 x 4.92 inches), the SOM-5892 supports seven PCIe x1, a PCIe x16, two 300 MB/s and two 600 MB/s SATA channels, eight USB 2.0, four USB 3.0, 8-bit GPIO, HD audio, Watchdog Timer and up to 16GB of DDR3 or DDR3L RAM in two SODIMM slots. The module can support up to three independent displays via VGA, LVDS, DVI, HDMI and DisplayPort. A COM-Express development board is available as well.

MIO-5290 3.5" MI/O Extension Single Board Computer

Advantech created the stackable architecture MI/O Extension Single Board Computer as a SBC design with flexible multiple I/O support (hence the name MI/O) and unified extended interface connector. The new MIO-5290 uses the QM77 chipset, supports either 1600MHz DDR3 or low power 1333MHz DDR3L, USB 3.0, SATA III (600 MB/s), AMT 8.0, and can drive three independent displays (VGA, DP, 48-bit LVDS, HDMI). The MIO-5290 is available with 3rd Gen Core i3 and i7 CPUs.

AIMB-273 Mini ITX

The Mini ITX AIMB-273 industrial motherboard is designed for embedded projects with power draw limitations that still need good performance and powerfulgraphics.Available with a new mobile Intel 3rd Gen Core i7-3610QE processor and QM77 chipset (as well as 2nd Gen i3/i5/i7 processors), these compact boards have integrated GFX Gen 7 graphics, offer AMT 8.0, triple simultaneous display capability (HDMI/DP/LVDS/VGA), a superfast PCIe 3.0 x16 slot and a mini-PCIe slot, 2 SATA II 300 and SATA III 600 channels each, 4 USB 2.0 and 4 USB 3.0, 2 RS-232, dual gigabit Ethernet, Watchdog Timer, optional TPM 1.2, and embedded software APIs.

High Performance Solutions

AIMB-582 MicroATX

The AIMB-582 MicroATX (9.6 x 9.6 inches) industrial motherboard comes with the new Q77 chipset and is available with a variety of powerful dual or quad core Intel 3rd Gen Core i3, i5, and i7 processors with Turbo speeds up to 3.4GHz, as well as Xeon and Pentium processors. Four standard DIMM sockets accommodate up to 32GB of DDR3 RAM with speeds of up to 1600MHz. The board supports dual/triple displays of DVI, LVDS/eDP, CRT, Display Port, dual Gigabit Ethernet and provides a total of four expansion slots (2 standard PCI, and one Gen 2 PCIe x4 and one Gen 3 PCIe x16 each). The board includes 2 SATA 600, 4 SATA 300, SATA RAID support, 12 USB ports (four of which are USB 3.0), HD audio, AMT 8.0, GPIO, optional TPM 1.2 as well as legacy support (serial, parallel, PS/2), making the AIMB-582 board a perfect choice for projects such as video surveillance systems and other high-end industrial applications.

Digital Signage Solutions

ARK-DS262

The very compact (200 x 120 x 30 mm) ARK-DS262 is an Intel OPS (Open Pluggable Specification) digital signage platform that helps standardize the design and development of digital signage solutions. With its Panther Point QM77 chipset and 2.5GHz 3rd Gen Core i7-3555LE processor, the ARK-DS262 provides the processing and graphics performance as well as I/O interface flexibility required for a wide variety of signage projects.

ARK-DS762

Designed for advanced digital media player and signage projects, the ARK-DS762 combines high processing and graphics performance (Intel 3rd Gen Core i Processor up to 45 watts TDP) with rich I/O (including USB 3.0) and extra flexibility via optional expansion modules. The ARK-DS762 can support three independent HDMI displays.

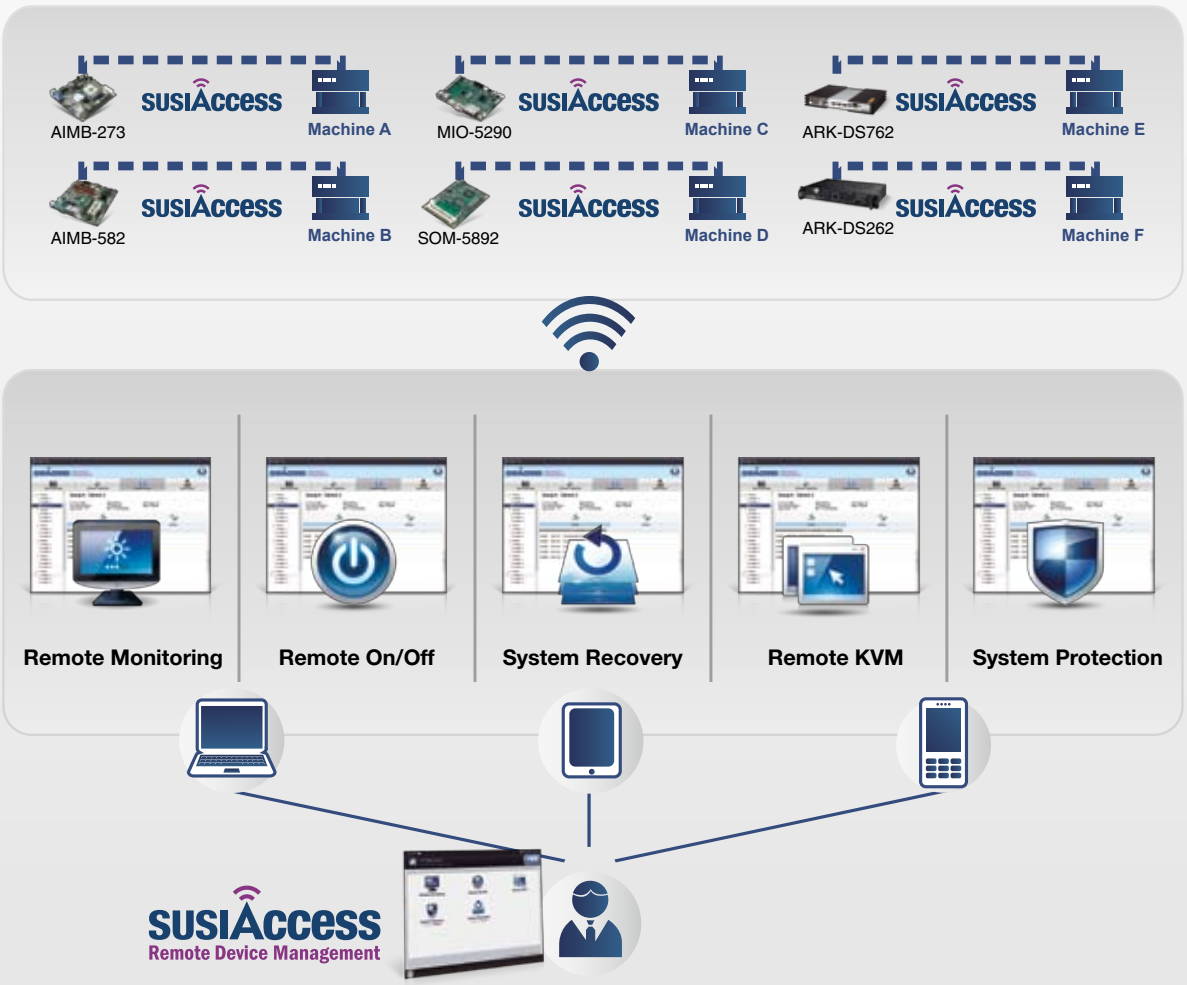
Intelligent Embedded Software Inside Advantech Platforms

These new boards and systems not only provide access to Intel's 3rd Gen Core processors, but also offer comprehensive embedded software API and utilities with iManager chipset thus supporting Watchdog Timers, GPIO, SMBUS, hardware monitor, brightness control, and BIOS Flash.

Moreover, all Advantech embedded platforms are pre-loaded with the remote management tool SUSIAccess. SUSIAccess provides remote device monitoring, remote on/off, desktop connection, system recovery and system protection features that help customers control multiple clients through a single console for remote device management. Software programs through the industrial cloud will immediately grasp sudden equipment malfunctions, real-time equipment maintenance, and enhance system security protection mechanisms, improve maintenance efficiency and reduce administration time.

How SUSIAccess Makes Advantech 3rd Generation Intel® Core™ Platforms More Intelligent ?

Advantech all new embedded computing are pre-loaded with SUSIAccess providing intelligent remote device management and monitoring. With SUSIAccess on your device, you can remotely switch machines on and off, access the desktop, recover a system and configure protection features.



SUSIAccess: The Key to Pioneering Connected System Management

By Chris Lin, Senior Manager, Advantech

Cloud services have been widely talked about and used in various applications such as cloud storage and video/audio streaming services. However, these consumer applications are not really suited for industrial use. Industrial applications are more focused on the “machine”, including device monitoring and control, system security, data acquisition and processing, rather than work and entertainment. Nowadays, more and more embedded devices are equipped with network connectivity, and have evolved into “intelligent systems” and “smart devices”. This trend will boost the demand for industrial cloud services and the growth of intelligent embedded devices.

According to a recent IDC survey, there will be 25 billion smart devices and intelligent systems in operation around the world by 2020, creating a future prototype for the intelligent city. “Intelligent systems” combined with the “Internet of Things” will drive the next phase of the embedded device market.

SUSIAccess 2.0: Designed for Connected System Management

Advantech has watched the trend in industrial cloud services since 2010 and are continuously investing resources on developing easy-to-use cloud services for our customers to remotely manage and secure their embedded devices. Advantech's SUSIAccess 2.0, launched in April, 2012, is the best solution for remote device management and security. SUSIAccess 2.0 is a remote management application for customers to monitor, control and protect remote embedded devices in real-time. It provides cloud-based software services so customers can download and upgrade applications when they need.

All Advantech Embedded Computing products are pre-loaded with SUSIAccess, providing our customers with device monitoring, remote power on-off, remote desktop connection, and system recovery and system protection features that help customers to manage multiple remote client devices through a single console. Software programs installed on clients can record sudden equipment malfunctions and send alarms immediately. Power on-off features can switch off devices that are not in use saving energy and cost. System recovery and protection enhances each device's reliability and security.

All the above features provided by SUSIAccess significantly improve maintenance efficiency and reduce personnel cost and time as well as power consumption. SUSIAccess also has an intuitive graphical user interface that significantly reduces the learning curve. Even non-IT personnel can get familiar with SUSIAccess in a short time.

Key Features of SUSIAccess 2.0

Remote Monitoring

For inspecting the real-time status of embedded devices, such as temperatures, internet connection speeds, fan speeds and voltages. When monitored values exceed warning thresholds, alarm messages will be sent automatically. Maintenance personnel are able to resolve problems at the earliest time and prevent potentially expensive losses.

Remote On-off

Sets power on/off schedules for remotely located embedded devices. The software can turn-off devices when they are not being used so that the power consumption will be reduced. This green design feature saves energy costs.

System Recovery

Used to back up a system image by schedule or on-demand, and then restore a system after disaster strikes. Hot-Backup can be executed in the background without stopping the OS operation. One-click recovery is also supported for fast system recovery. This function is powered by Acronis True Image technology.

System Protection

To help system administrators ensure all remote devices are protected from cyber threats and malware attacks, SUSIAccess, unlike traditional anti-virus software, adopts a "white list" mechanism to prevent all un-registered software from execution. This is an ultimate method of system protection. Automatic alarm notification is also supported. This function is powered by McAfee's Embedded Security solution.

Remote KVM

To access remotely located embedded devices for diagnostics or trouble-shooting without the need for on-site service. SUSIAccess utilizes remote desktop technology that can allow system administrators to control remote devices from the console side, quickly achieving real-time support and significantly reducing time and labor costs.

Build Up Customized Intelligent Systems for Any Scenario

- Stay in sync with device health status
- Protect system from any threats
- Quick access to remote devices
- Automatically send alarm notifications
- Timely backup and recover systems
- Save maintenance and energy cost

Deploying SUSIAccess in Any Scenario

Managing Embedded Systems in Automated Factories

The Challenge

As manufacturing machines become more sophisticated, machine vendors are beginning to adopt small fanless embedded systems as the controlling platform. When a factory deploys a large number of such systems, effectively managing them is a great challenge.

SUSIAccess Solution

To fulfill factory automation market demands, Advantech launched a series of fanless embedded systems which support features such as cooling optimization, wide input voltage support, wide operating temperature support, high extensibility and rugged design. However, without an effective management system, it's hard to control and manage these devices which are often mounted in hard-to-reach or widely spread locations. That's why Advantech offers SUSIAccess software to provide centralized device management capabilities so that customers don't need to visit each individual device to maintain and update them.

A factory's administrator can use a regular PC or server as the SUSIAccess server, and all the remote devices connect to this server as clients to be monitored. Through a centralized management console, the administrator can monitor each device's status in real-time in a single window.

Moreover, SUSIAccess provides a robust system protection mechanism which is widely adopted by banks for ATMs. It can prevent all cyber attacks and malware/viruses from intruding systems. And, scheduled system backups ensure that devices can be recovered to their last working condition in case a system becomes unstable or damaged.

Monitoring Road Surveillance Systems Deployed in Urban Areas

The Challenge

At present, road surveillance systems are widely deployed in urban areas by police forces, monitoring traffic and tracking crime scenes. The systems have to be robust, able to transmit video in real-time, and record video on storage devices for future investigation. Therefore, road surveillance systems must be highly available and easy to recover if errors happen.

Usually in the police's monitoring center, there will be several TV screens playing each video in turn. Observing officers watch the video looking for road offences, and they notify maintenance staff if any videos become unstable or break up. There are situations though when videos cannot be monitored all the time such that if a video playback fails, then no technical support will be requested and important recordings may be lost.

SUSIAccess Solution

To satisfy real-time support demands of surveillance systems, SUSIAccess is the best solution that can monitor each surveillance system's status, sending out alarm messages by eMail or SMS to notify administrators and officers of system malfunctions.

Many surveillance systems are installed in remote locations and require a great deal of time and effort to maintain. Administrators can use the remote KVM functions to control remote devices through a PC console in their office to greatly improve the efficiency of system maintenance.

All Advantech Embedded Solutions Preloaded SUSIAccess

Computer On Modules

SOM-7565
COM-Express R2.0 Mini
- Embedded Intel® Atom™ Processor N2600 + NM10

SOM-6765
COM-Express R2.0 Compact
- Embedded Intel® Atom™ Processor N2600/N2800/D2550 + NM10

SOM-5892
COM-Express R2.0 Basic
- Embedded Intel® Core™ i7/i5/i3/ Celeron® processor + QM77

MI/O Extension SBCs

MIO-2261
2.5" MI/O-Ultra SBC
- Intel® Atom™ N2600/ N2800 Pico-ITX, 2.5" MI/O-Ultra SBC

MIO-5250
3.5" MI/O-Compact SBC
- Intel® Atom™ N2600/ D2550, 3.5" MI/O-Compact SBC

MIO-5290
3.5" MI/O-Compact SBC
- Intel® Core™ i7 / i3, 3.5 " MI/O-Compact SBC w/ DDR3/DDR3L SO-DIMM support up to 8GB

Single Board Computers

PCM-3363
PCI-104
- Intel® Atom™ N455/D525 PCI-104 SBC

PCM-9389
3.5" SBC
- Intel® Atom™ N455/D525 3.5" SBC w/ PC/104 expansion

PCM-9363
3.5" SBC
- Atom™ N455/D525 3.5" SBC, w/ DDR3 memory support

Industrial Motherboards

AIMB-273
Mini-ITX
- Intel® Core™ i7/i5/i3 mobile processor (PGA) with Intel QM77 chipset

AIMB-501
Micro-ATX
- Intel LGA1155 socket supports Intel Core i7/i5/i3 processor with H61chipset

SIMB-M02
Micro-ATX
- Intel Cedar View-M (N2600) / -D (D2550) processor with Intel NM10 Chipeset

Fanless Embedded Box PCs

ARK-1120
Ultra Slim Series
- Intel® Atom™ processor N455 1.66 GHz + ICH8M, DDR3 memory support, palm-size system and low power consumption

ARK-2120F
Easy I/O Flexibility Series with 3 GbE and 6 COM
- Intel® Atom™ N2600 1.6 GHz/D2550 1.86 GHz , support DC 12-24V wide range power input

ARK-2120L
Easy I/O Flexibility Series
- Intel® Atom™ N2600 1.6 GHz/D2550 1.86 GHz , DDR3 memory supports up to 4 GB

Digital Signage Media Players

ARK-DS262
OPS Digital Signage Media Player
- 3rd generation Intel® Core™ i7 processor-based signage media player

ARK-DS520
ION2 based Digital Signage Media Player
- Intel® Atom™ D525 (fan) or N455 process (fanless) and integrated NVIDIA GT218 (ION2) graphic module for Full HD playback

ARK-DS762
3 HDMI Independent Display Digital Signage Media Player
- 3rd Generation Intel® Core™ i7/i5/i3 Processor-based up to 45W

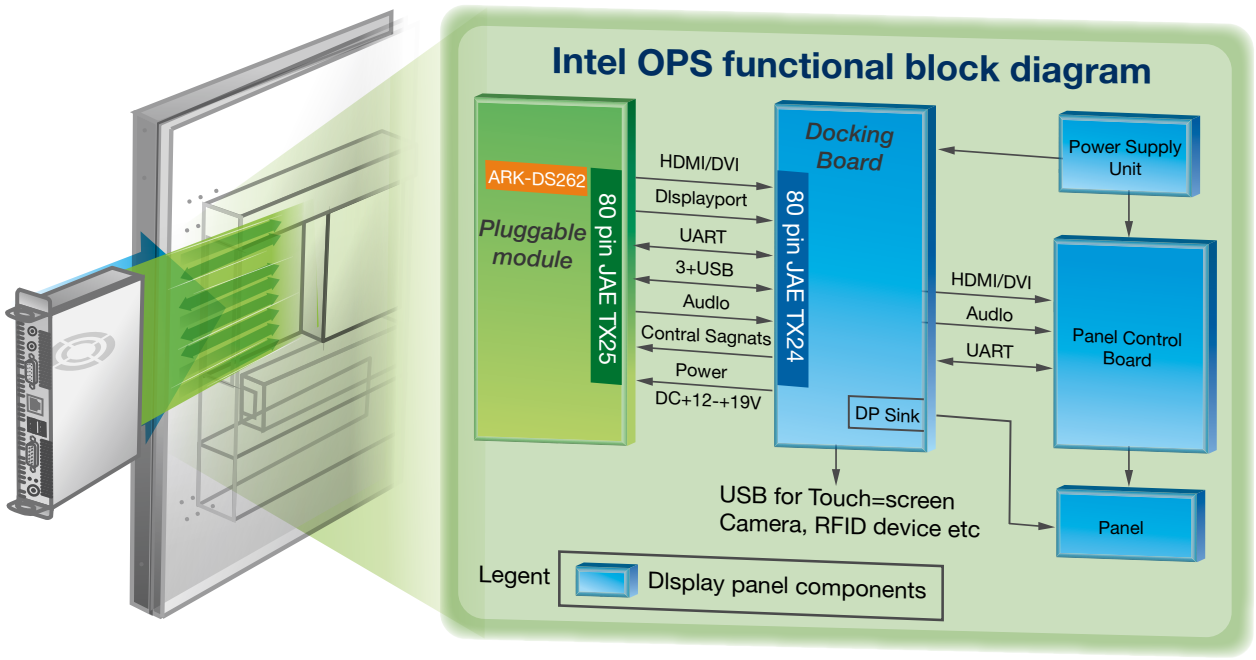
Simplify Signage Development with OPS Design

By Weihsu Huang, Product Manager, Advantech

With increasing importance, digital signage has been praised as the next generation marketing platform and a competitive tool for companies seeking to extend their global reach. Not so long ago, digital signage development was often deemed to be difficult due to a lack of standards. In terms of multimedia specifications, digital server synchronization, or integration between multimedia player and display, system integration still remains a challenging task. Integration between the media player and the panel exemplifies this challenge. Because customers use various types of graphic interfaces like: DVI, HDMI, and VGA, system integrators are forced to install cables, components and devices separately, which leads to higher labor costs and makes system maintenance more difficult. Over time, this has naturally obstructed digital signage development.

In response, Intel has called for and released the Open Pluggable Specification (OPS), an open platform to help standardize the design and development of digital signage devices. The most important aspect of OPS is its universal hardware specification, which requires the size of the integrated device and display to be 200 x 119 x 30mm. This enables hardware to be seamlessly integrated. Secondly, OPS standardizes signal definitions. The use of HDMI and power sharing via JAE 80-pin connector, which serves as a bridge between the device and the display, facilitates communication and further simplifies device installation, usage, maintenance, and upgrades. OPS enables digital signage manufacturers to deploy interchangeable systems faster and in larger volume, whilst lowering costs for development and implementation.

Advantech, a leading industrial computer manufacturer, promptly echoed the call for the OPS standard by forming an OPS partnership with Intel. Advantech has since released its new ARK-DS220 & ARK-DS262 digital signage platform, which combines both OPS and numerous creative design concepts.



Maximized Cooling to Ensure System Stability

All OPS devices will be designed as pluggable modules with slot-in integration in order to lower the cost for digital signage installation and maintenance. Since the device and the display are closely connected, it is necessary to build an adequate cooling structure to maintain system stability. Advantech has put careful thought into the thermal design, hoping to maximize the cooling effect.

Of course, during operation, the CPU, hardware and other major components generate heat. The heat generated is mainly in the interior of the machine. So Advantech installed a fan inside the model to effectively transfer the hot air out. Air exchange takes place at the air inlet on the front side of the device, taking in the cold air in order to achieve a heat balance. The fan then takes in cold air and expels hot air, and the heat will finally exit through the air outlet.
In order to increase overall system cooling efficiency, Advantech reminds customers to always keep the cold air in and the hot air out. This is true regardless of airflow direction or heat balance design. An 8000 rpm fan should be installed on each side of the display. In addition, internal temperature should be maintained under 40 degrees Celsius and airflow should be at 1.5 m/s.

Scenario-based Design to Meet User Requirements

As the old saying goes, "The devil is in the detail." Advantech has instilled design ingenuity in every detail in order to create quality products that can be applied to any user scenario and meet the needs of users. Advantech continues to uphold its standard in paying very close attention to even minute details during the development of a new Digital Signage platform.

Dust free:

Take ARK-DS220 as an example, the air outlet in the top cover initially posed a potential hazard to the system. Because the air outlet exposed the fan to the exterior environment, it easily accumulated dust. Long-term dust accumulation without proper cleaning could result in deteriorating cooling performance, and even cause the processor to overheat, which in turn would gradually decrease system stability. To solve this issue, Advantech installed an iron filter for its ARK-DS220F fan-based model. The iron filter covers the air outlet to keep dust at bay and can be easily unscrewed for proper cleaning.

Easy Use:

The design of ARK-DS220 and ARK-DS262 allows for easy maintenance during operation. In previous designs disassembly was often troublesome and required the use of tools. With this in mind, Advantech designed 1 cm cylinders on each side of the device which serve as handles for maintenance. ARK-DS220 and ARK-DS262 allow customers to easily disassemble the machine by just pulling the handles on each side.

Aesthetic Appeal:

Advantech has incorporated both industrial design and aesthetic appeal in its designs. This is done in order to make sure that industrial computers are no longer dull in appearance, but are rather engineered designs that possess aesthetic form and practical function. Following this logic, it is easy to understand why Advantech chose to coat the chassis with a layer of paint rather than just leaving it as unfinished metal.

Accelerating Implementation with Turnkey Package

With over 30-year experience, Advantech now develops turnkey signage solutions that are comprehensive and easy-to-apply to your signage applications. They meet all your needs for reliability, security and manageability. All Advantech signage boxes come pre-loaded with embedded OS, along with SUSIAccess remote device management software, data protection software by Acronis, and system security software by McAfee. By providing ready-to-use turnkey signage solutions, system integrators can focus more on their own applications and save development time and resources.

OPS (Open Pluggable Standard) Signage Media Players Product Selection

Model Name	ARK-DS262	ARK-DS220
Features	• 3rd generation Intel® Core™ i7 processor-based platform • Supports HDMI, eDP, UART, USB3.0/2.0 via JAE 80-pin connector • Supports 4x PCIex1, USB3.0/2.0, SATA, LPC & SMB by optional 2nd JAE 60-pin connector • Designed compliant with Energy Star 5.0	• Intel® Atom™ D525 dual-core (fan-based) or Intel® Atom™ N455 single-core processor (fanless) platform • Integrated NVIDIA GT218 (ION2) graphic module for Full HD playback • Supports HDMI, DP, UART, and USB2.0 via JAE 80-pin connector

Turnkey Signage Solutions

Key to Success

ADVANTECH

Enabling an Intelligent Planet

Covers All Your Signage Requirements

Advantech has powered thousands of digital signage applications across every industry/market and has recently developed these turnkey signage solution offerings. Now it is easy to create signage solutions, knowing that reliability, security and manageability are assured. All Advantech digital media players come pre-loaded with an embedded OS, along with SUSIAccess remote device management software, Acronis data protection software, and system security software by McAfee. By turnkey signage solutions, System Integrators can save important development time and focus on their own applications. Results: better apps, quick time-to-market.

Data Protection
- Full/Hot/Scheduled Backup
- On-click Recovery

Remote Management
- Remote Monitoring
- Remote ON/OFF
- Remote KVM

Windows® Embedded Ready
- Multi-language: ENG, JPN, CHT, CHS
- Multi-Touch Support
- Motion Sensor Technology Support

System Security
- White List Protection
- Solidify the HDD
- Unauthorized Activity Warning

ARK-DS220
ION2-based Intel® Atom™ OPS Digital Media Player for Full HD

ARK-DS262
3rd Generation Intel® Core™ i7 OPS Digital Media Player

ARK-DS520
ION2-based Intel® Atom™ Digital Media Player for Full HD

ARK-DS762
3rd Generation Intel® Core™ i7/i5/i3 Digital Media Player with 3 x HDMI Independent Display

Advantech Headquarters
No. 1, Alley 20, Lane 26, Rueiguang Road,
Neihu District, Taipei 114, Taiwan, R. O. C.
Tel: 886-2-27927818
Email: Digital.signage@advantech.com.tw

www.advantech.com

intel Intelligent Systems Alliance Premier

Windows® Embedded Gold Partner

McAfee Acronis SUSIAccess Remote Device Management

300% Performance Acceleration by Next Generation WiFi Module

By Jim Pao, Product Manager, Advantech

With the rapidly growing demand for higher WLAN speeds, IEEE 802.11n has become the Wi-Fi mainstream standard. 802.11n improves WiFi performance by using Multiple Input Multiple Output (MIMO) technology and channel-bonding to achieve high throughput. But, this can double the chance of interference when 11n combines two beams at the receiving end. So to solve this problem, advanced RF beamforming technology is used to reduce interference by changing the directionality of the signal array.

Now, one of the challenges for Wi-Fi is more range & throughput, and the transmit beamforming (TxBF) technique is the most effective and efficient technology with the minimum changes and investment needed. TxBF is non-proprietary wireless technology, so it can be used with many applications, and immediately provide up to 300% improvement. TxBF is also one of the optional features in IEEE 802.11n and also as part of the 802.11ac wireless specification. It is expected to become 802.11ac standard on Wi-Fi devices in 2013. Advantech foresees this trend and also introduces this new technology into our WiFi module products.

What is Beamforming?

In the simplest explanation, beamforming is a method of transmitting two or more phase-shifted signals to effectively concentrate the radio frequency energy onto the target client location making a louder signal. The result is a better signal, SNR (Signal to Noise Ratio) and great throughput. The AP (or Transmitter) only needs to receive a single packet from the client to “know” and lock onto the better signal path. And by analysis of a multiple of packets, it can “decide” which multipath options are the best choices. This involves not only combining and boosting total power gain by using multiple antennas, but also phasing the antenna signals so that a higher signal “beam” is in the chosen angular direction. At the same time, there is less energy used in dead-end directions, it also means less interference. The technology is ideal for those applications which require high speed wireless connection such as logistic, warehousing, retail, and hospitality and mobile devices.

Range Improvement

AP (Transmitter)	receivers (clients)	Without Beamforming	Beamforming
11n 2x2	legacy	around 50 (meter)	around 50 to 85 (meter)
11n 2x3	11n 1x1	around 70 (meter)	around 105 to 120 (meter)
11n 4x4	11n 1x1	around 70 (meter)	around 140 to 210 (meter)

Throughput Improvement (range at 50 meters)

AP (Transmitter)	receivers (clients)	Without Beamforming	Beamforming
11n 2x2	legacy	around 8 (Mbps)	around 20 (Mbps)
11n 2x2	11n 1x1	around 20 (Mbps)	around 45 (Mbps)
11n 4x4	11n 1x1	around 23 (Mbps)	around 70 (Mbps)

There are two general types of implementation of TxBF: implicit beam forming (open loop) and explicit beam forming (closed loop).

Implicit Beamforming (open loop) and Explicit Beamforming (closed loop)

Implicit beamforming (open loop)

Open loop means the AP (transmitter) has limited feedback to work on and to estimate where the client location is. This method assumes that the RF channel is mutual, is symmetrical, and uses the weights derived from the received signals to set the transmitting beam pattern. It then exchanges some information with the client to calibrate the phase-shift differences. The advantage is only a small load on the receiver and only places minimal transmission overheads.

Explicit beamforming (closed loop)

Closed loop means that transmissions are improved by a feedback channel between the AP (Transmitter) and receiver. So, the receivers (clients) need to provide feedback about direction and signal quality (like signal path, phase shift, and so on). Then, the AP (Transmitter) uses the measured channel information to derive the optimal beam to the receiver.

Advantech WiFi Modules with Beamforming Technology

Advantech introduces Qualcomm Atheros advanced technologies, SST (Signal-Sustain Technology) into our embedded WiFi Module, EWM-W135H01E, which is the 802.11a/b/g/n 2.4/5 GHz dual-band Single-chip AR9382 with 2-stream solution. The SST is a set of advanced technologies and features which include LDPC, Transmit Beamforming and MLD. The result is an increased link rate of the WLAN signal of up to 100% at short ranges, and up to 50% at mid ranges, and up to 25% at long ranges.

Beamforming, a non-proprietary technology, is not only compatible with the 802.11ac products, but also part of the new standard specification of 802.11ac and 802.11ad. Advantech has been working on developing next WiFi standard, 802.11ac and 802.11ad products and will adopt the Boardcom BCM4352 802.11ac solution in our new WiFi modules. The new module will be featured with beamforming technology, and the wireless connection speed is up to 867Mbps. With high speed advantage, it would be good for high-speed markets, such as entertainment, gaming, HD Video streaming.

Summary

Beamforming is an excellent way to improve the range, throughput and interference of signals. Plus it can be implemented with minimum changes to current existing systems. It is especially good at dealing with Wireless dead-zones, and good at mid-range applications. Inversely, a client user (like a tablet) with beamforming technology can better leverage the wireless signal from an access point that does not have beamforming. Advantech introduces a series of embedded modules with beamforming technology such as EWM-W135H01E with Qualcomm Atheros SST (Signal-Sustain Technology) to improve range and throughput performance. In 2012 Q4, a new standard WiFi 802.11ac 867 Mbps module with beamforming will be available. Also, Advantech will release Wilocity WIL6110, 802.11ad high speed solution up to 4.6Gbps.

EWM-W135H01E Highlight

Outstanding Performance

- Supports Qualcomm Atheros Signal-Sustain Technology (SST) that enhances rate-over-range performance.
- Supports Qualcomm Atheros' Fast Channel Switch (FCS) that reduces channel switching time between the 2.4 GHz and 5 GHz bands from 10 ms to 1 ms.
- Supports 5/10/20/40MHz channel to maximize bandwidth efficiency.
- Dual-band 2.4/5GHz 802.11abgn, 2-stream 2T2R, data rate up to 300Mbps

Low Power Consumption

- Dynamic MIMO Power Save supports 1x1 downshift to lower power consumption.

Enhanced Security

- Supports 802.11x authentication, WPA, WEP-64, WEP-128, WEP-152 and 128-bit AES/TKIP encryption

Comprehensive Support

- 3-year longevity support
- Multi OS support: Windows XP/Vista/7 and Linux support
- Completed module certification reference

New Products

Powered by iManager 2.0 - the Intelligent Mini-ITX AIMB-273 with 3rd Generation Intel® Core i Processors

AIMB-273 is the first Mini-ITX motherboard integrated with Advantech's iManager 2.0- intelligent system management tool that provides a set of standardized APIs, integrating several unique OS independent hardware monitoring/control/configuration capabilities needed by embedded system integrators to enhance reliability and lighten development effort. Based on the Intel® QM77 chipset and the latest Intel® Core™ i processor. AIMB-273 integrates Intel HD Graphics with DX11 support to deliver enhanced graphics performance that supports three independent displays using VGA, HDMI, LVDS, and two DisplayPorts on board. AIMB-273 is an ideal platform for a multitude of applications such as medical equipment, digital signage, ATM/Kiosks and much more.

ARK-DS762 Supports 3 x HDMI Independent Displays

Designed for advanced digital media player and signage projects, the ARK-DS762 combines high processing and graphics performance (Intel® 3rd Gen Core i Processor up to 45 watts TDP) with rich I/O (including USB 3.0) and extra flexibility via optional expansion modules. The ARK-DS762 can support 3 x HDMI independent displays, and supports Microsoft® Kinect™ technology that allows a screen to become a virtual interactive mirror that can be controlled with gestures or spoken commands. It's ideal for multi-display applications in retail stores, stadiums, corporate lobbies, restaurants, hotels and other public spaces.

Advantech IDS-3000, the Industry-Leading Slim and Light Open Frame Monitors

IDS-3000 open frame monitors provide ultra slim and light designs with size options from 6.5" to 19" sizes. All the modes are only around 30 mm thick while most competing models are over 40 mm thick. As a result, IDS-3000 saves more than 20% space ideal for space-limited applications. The open front bezel design allows flexible and customized face plates for easy re-engineering ideal for any embedded application. The series has also incorporated brackets on the chassis edges and VESA holes on the back cover supporting both rear and VESA mounting. Moreover IDS-3000 supports -20~60° C wide range operating temperature. IDS-3000 with slim and light design perfectly meets multiple application needssuch as information kiosks, monitor control, gaming and more.

Advantech WiFi Modules with Intel® 7-Year Longevity and Wide Temperature Support

Advantech announced 3 new industrial grade embedded wireless modules from Intel® with 7 years longevity support. The EWM-W137H is a dual-band, IEEE802.11a/b/g/n 2T2R WiFi module, which supports wide-temperature operation from -40 to 85°C. It is designed for high-performance and reliability in the harshest of outdoor environments such as military and in-vehicle applications. EWM-W146H is a dual-band, IEEE802.11a/b/g/n 3T3R WiFi Module, which reliably delivers WiFi speeds of up to 450 Mbps, while EWM-W138H is a dual-band, IEEE802.11a/b/g/n 2T2R WiFi Module, which delivers up to 300 Mbps of bandwidth.

2012 Star Product Selection Guide

3rd Generation Intel® Core™ i Processor-based Platforms

COM-Express Basic

SOM-5892

- Intel Core i7/i5/i3
- 125 x 95 mm (4.92" x 3.74")
- Dual Channel up to 16GB

3.5" MI/O-Compact SBC

MIO-5290

- Intel Core i7/i3
- 146 x 102 mm (5.7" x 4")
- DDR3/DDR3L up to 8GB

Mini-ITX

AIMB-273

- Intel Core i7/i5/i3
- 170 mm x 170 mm (6.69" x 6.69")
- Dual Channel up to 8GB

MicroATX

AIMB-582

- Intel Core i7/i5/i3
- 244 mm x 244 mm (9.6" x 9.6")
- Dual Channel up to 32GB

ATX

AIMB-782

- Intel Core i7/i5/i3
- 304.8 x 244 mm (12" x 9.6")
- Dual Channel DDR3 1066/1333/1600

Digital Signage Player

ARK-DS262

- Intel Core i7
- 200 x 30 x 119 mm (7.87" x 1.18" x 4.65")
- Dual Channel DDR3 1066/1333

Digital Signage Player

ARK-DS762

- Intel Core i7/i5/i3
- 240 x 35 x 174.5 mm (9.6" x 1.38" x 6.87")
- Dual Channel DDR3 1066/1333

Intel® Atom™ N2000/D2000 Processor-based Platforms

COM-Express Mini Module

SOM-7565

- Intel Atom N2600
- 84 x 55 mm (3.3" x 2.17")
- On-board DDR3 2GB

COM-Express Compact Module

SOM-6765

- Intel Atom N2600/ N2800/D2550
- 95 x 95 mm (3.74" x 3.74")
- DDR3 up to 4GB

2.5" MI/O-Ultra SBC

MIO-2261

- Intel Atom N2600/ N2800
- 100 x 72 mm (3.9" x 2.8")
- DDR3 up to 4GB

3.5" MI/O-Compact SBC

MIO-5250

- Intel Atom N2600/ D2550
- 146 x 102 mm (5.7" x 4")
- DDR3 up to 4GB

Mini-ITX

AIMB-214

- Intel Atom N2600/ D2550
- 170 mm x 170 mm (6.69" x 6.69")
- DDR3 SODIMM up to 4GB

Fanless Box PC

ARK-2120

- Intel Atom N2600/ D2550
- 264.50 x 68.39 x 137.25 mm (10.41" x 2.69" x 5.40")
- DDR3 up to 4GB

Intel® Atom™ E6xx Processor-based Platforms

COM-Express Mini

SOM-7564

- Standalone Intel Atom E6xx Processor Series
- 84 x 55 mm (3.3"x2.17")
- On-board Memory 1GB

AMD® G-series Processor-based Platforms Selection Guide

Mini-ITX

AIMB-223

- AMD G-series Dual/ Single Core Processor + A55E
- 170 x170 mm (6.69" x 6.69")
- DDR3 SO-DIMM up to 4GB

3.5" MI/O-Compact

MIO-5270

- AMD G-series Dual/ Single Core Processor + A50M FCH
- 146 x 102 mm (5.7" x 4")
- DDR3 SO-DIMM up to 4GB

Digital Signage Player

ARK-DS306

- AMD G-series Dual/ Single Core Processor + A50M FCH
- 230.6 x 133 x 44.4 mm (9.08" x 5.24" x 1.75")
- DDR3 SO-DIMM up to 4GB