



Embedded IoT Solutions for Transportation

- In-vehicle
- Public Transit Surveillance
- Station Management
- Railway Systems



ADVANTECH

Enabling an Intelligent Planet

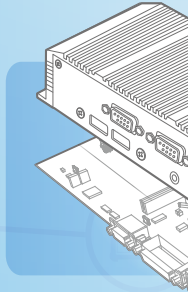


IoT Solutions
Alliance
Premier

www.advantech.com

About Advantech Embedded IoT Solutions

Worldwide Leader in Embedded Design and Services



Advantech: Partnering for Smart City & IoT Solutions

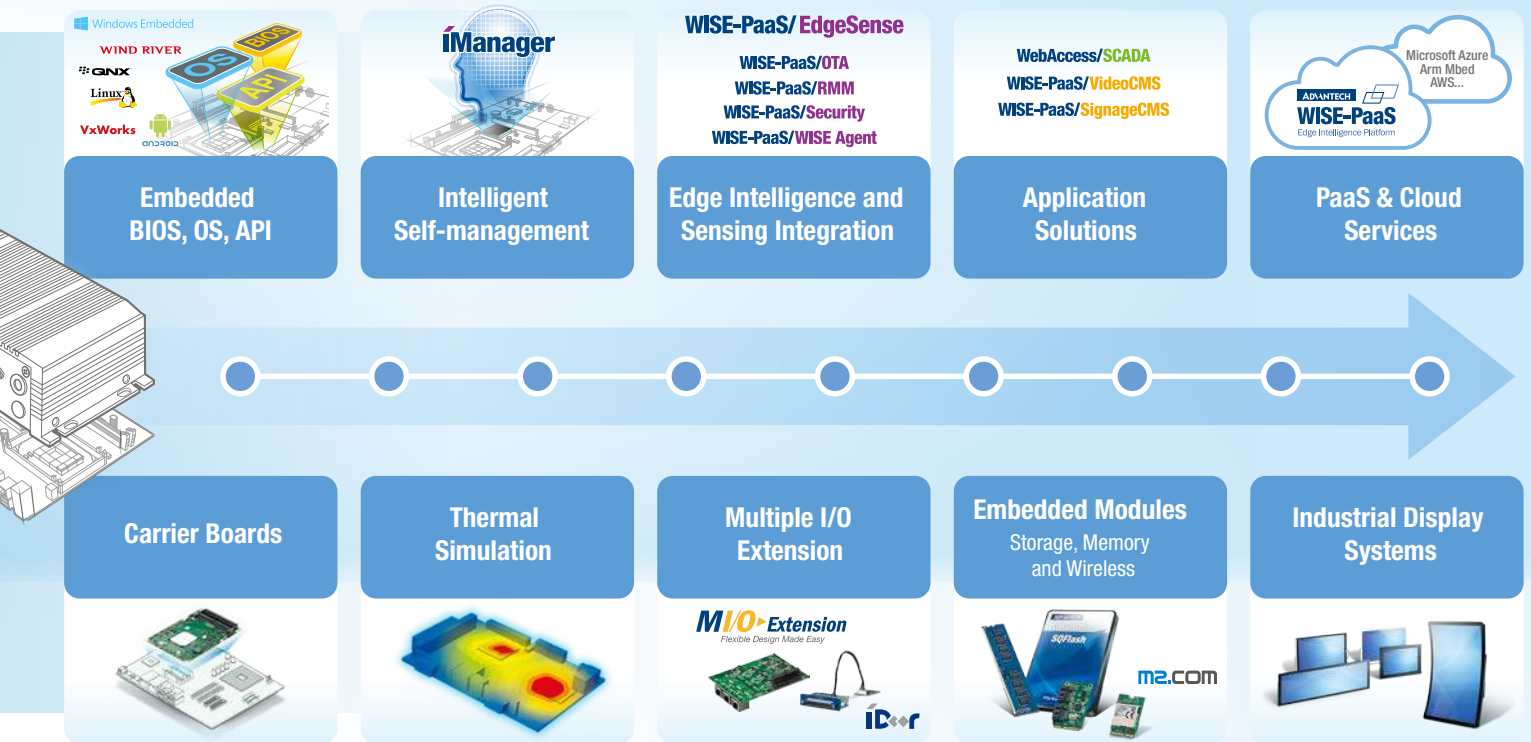
Founded in 1983, Advantech is a leader in providing trusted, innovative embedded platforms and services. Advantech offers customer-centric design services and embedded boards and systems with global logistics support. We cooperate closely with our partners to help provide complete solutions for a wide array of applications across a diverse range of industries. Our mission is to enable an intelligent planet and empower the development of smarter working and living. With Advantech, there is no limit to the applications and innovations our products make possible.

World-Class Recognition

Advantech is an authorized alliance partner of both Intel® and Microsoft®. Our customers find the technologies we use inside our products to be widely compatible with other products in the global marketplace. Interbrand, the world renowned brand consulting firm, recognized Advantech as one of the Top 20 Taiwanese Global Brands for many years. Advantech appreciates this recognition of our efforts to build a trusted, global brand; it also symbolizes a promise we give to our business partners, which is to keep building a trustworthy brand that is recognized everywhere and improves the lives of all.

Timely Support at Your Convenience

Advantech has over 20 regional hotlines and offices throughout 23 countries, with over 8,000 employees to provide efficient, professional services for customer care, product selection, technical support, and order handling. Through our call centers and online stores, customers worldwide enjoy the convenience of Advantech's multi-service channels to reduce business turnaround time. Together with the four logistics centers in Taiwan, China, Europe, and the United States, our global service network offers an extensive spectrum of services that includes warehousing, logistics, peripheral certification, sourcing & purchasing, and RMA & value-added services, and technical support & training.



Advantech Embedded IoT

To address the growing market for IoT applications, Advantech developed a series of integrated IoT solutions and services that expands the IoT value chain and ecosystem. Advantech's WISE-PaaS software allows all embedded solutions to be integrated with all types of wireless data acquisition solutions. WISE-PaaS software is designed for manageability with security functions, and sensor-to-cloud connectivity solutions to make it easier for you to create your own IoT infrastructure.

Integrated Embedded Computing Solutions

- Wireless IoT Modules and Sensor Nodes
- Edge Intelligence Solutions
- WISE-PaaS/EdgeSense Software Services
- IoT Cloud Services - Azure/ Arm Mbed/ AWS
- Embedded Board Solutions: COM/ ESBC/ AIMB
- RISC Computing Platforms
- Embedded Systems
- Digital Signage & Industrial Displays
- In-Vehicle & Railway Systems
- Industrial Storage and Memory Solutions
- Embedded Software Solutions

Ecosystem Partnership

Advantech allies with many leading partners in the industry such as Intel, Microsoft, AMD, Freescale, and TI, to provide the latest technologies and products.

Leading Embedded Technologies

As a pioneer in the embedded market, Advantech offers leading embedded technologies, develops value-added embedded software services and researches innovative form factors.

Dedicated Regional Embedded Service Teams

To meet all the requirements from embedded applications, Advantech devotes regionally-based embedded service teams worldwide to offer dedicated design-in services that enable our customers to reach their customers more quickly.

One-stop Service Design-in IoT Integration

Advantech provides a one-stop service model to integrate embedded boards, systems, software, displays, peripherals, as well as IoT cloud service and devices to help customers target their markets.

Embedded IoT Solutions for Intelligent Transportation

The global market for Intelligent Transportation Systems (ITS) is projected to reach US\$34.8 billion by 2022, driven by a growing population, inadequate road infrastructures, and the need to enhance road safety, whilst reducing traffic congestion and pollution through smart and efficient traffic management (GIA report, 2016). To respond to market trends, Advantech cooperates closely with partners to help provide a diverse range of solutions for intelligent transportation applications. We not only provide the latest embedded computing products but we also offer more value through our various embedded design-in and software services. We provide certified design, multiple I/O, and flexible integration services to fulfill any application requirements.

Market Insights

In the growing intelligent transportation system market, innovative services relating to different modes of transport as well as traffic management and safer use of resources will become more and more essential.

Eco Partners

Advantech collaborates with established ecosystem partners to provide infrastructure building blocks such as CCTV & IP cameras required for delivering integrated and innovative solutions to the transportation market.



Integrated Services

Incorporating the latest design ideas and technologies, Advantech embedded transportation platforms are all integrated with a series of software solutions and various wireless communications to make our systems more manageable and secure.

Certifications

To serve ruggedized environments in transportation applications, our products feature in-vehicle and rolling stock certifications (eMark & EN50155), and wide operating temperature designs.



In-vehicle: Mobile Surveillance, Infotainment System, Fleet Management, Payment Card Reader

Public Transit Surveillance: Traffic Management, Highway ETC, Street Surveillance, Parking

Station Management: Control Room, Automatic Gate Machine, Ticket Vending Machine, Passenger Information System

Railway Systems: Rolling Stock PIS & BYOD, In-train Surveillance, Locomotive Control, Wayside Interlocking

3 Winning Facts



Certified Design



Diverse Communications



Flexible Integration



Embedded Design-In Services

Advantech design-in service provides tailor-made systems or boards to meet your specific requirements, with diverse levels of customization, flexibility of manufacture, and global technical and logistical support. With strong customization capability and experience in medical grade devices and systems, Advantech not only delivers qualified transportation computing products, but also acts as a strategic and innovative partner for medical customers.

Transportation Certification

Advantech ARK in-vehicle series fanless embedded computers have various safety certifications, including eMark, EN50155, and EN50121 and can be marketed in countries that observe strict safety standards.



EN 50121-3-2 Rolling stock – Apparatus:
The EN 50121 set of standards is designed as a framework for railway EMC management. This part EN50121-3-2 applies to emission and immunity aspects of EMC for electrical and electronic apparatus intended for use on railway rolling stock. It is also used as a means of dealing with the impracticality of immunity testing a complete vehicle.



EN 50155: EN 50155 is an international standard covering electronic equipment used on rolling stock for railway applications. The standard covers aspects of this electronic equipment, including temperature, humidity, shock, vibration, and other parameters.



eMark: e-Mark is based on EU Directive and is a safety certification mark which the European Commission requires that member states apply it on a motor vehicle, parts and systems.

Core Technologies Design-in

Advantech holds the most complete ISO certifications in the IPC industry that endorse our capability to manufacture products from different industries and demonstrate our commitment to worldwide regulations and standards compliance. Our facilities and products carry at minimum ISO 9001 and 14001 certifications while others hold additional certifications such as ISO 13485, 17025, TL9000, ISO/TS 16949, OHSAS18001, ROHS, and QC080000.

Embedded Hardware Capabilities

Various Form Factors of Board Level Products:

Various Form Factors of Board Level Products: Advantech provides a full range of embedded boards in different form factors for integration into a variety of industry chassis.

Embedded System Solutions:

We develop diverse range of systems and chassis with robust mechanical/thermal features. We also offer total display solutions from industrial display kits and industrial monitors, to display enhancement solutions to meet your specific needs.

Integrated Peripheral Modules:

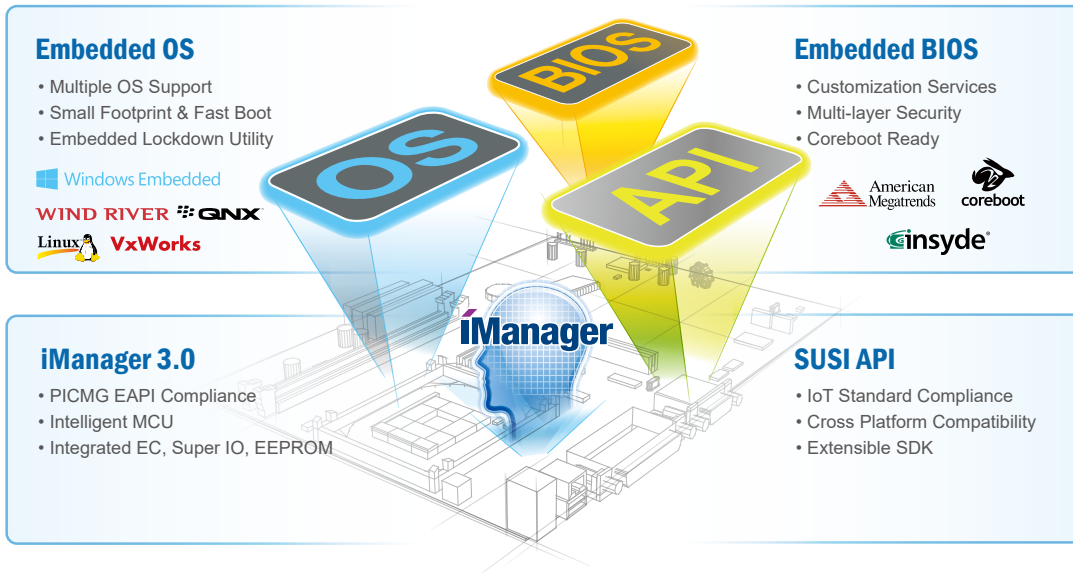
For value-added integration, we offer a range of industrial grade peripherals including industrial storage, memory, embedded wireless, and industrial displays.

Full Spectrum of x86 & RISC Platforms for Embedded IoT & Verticals



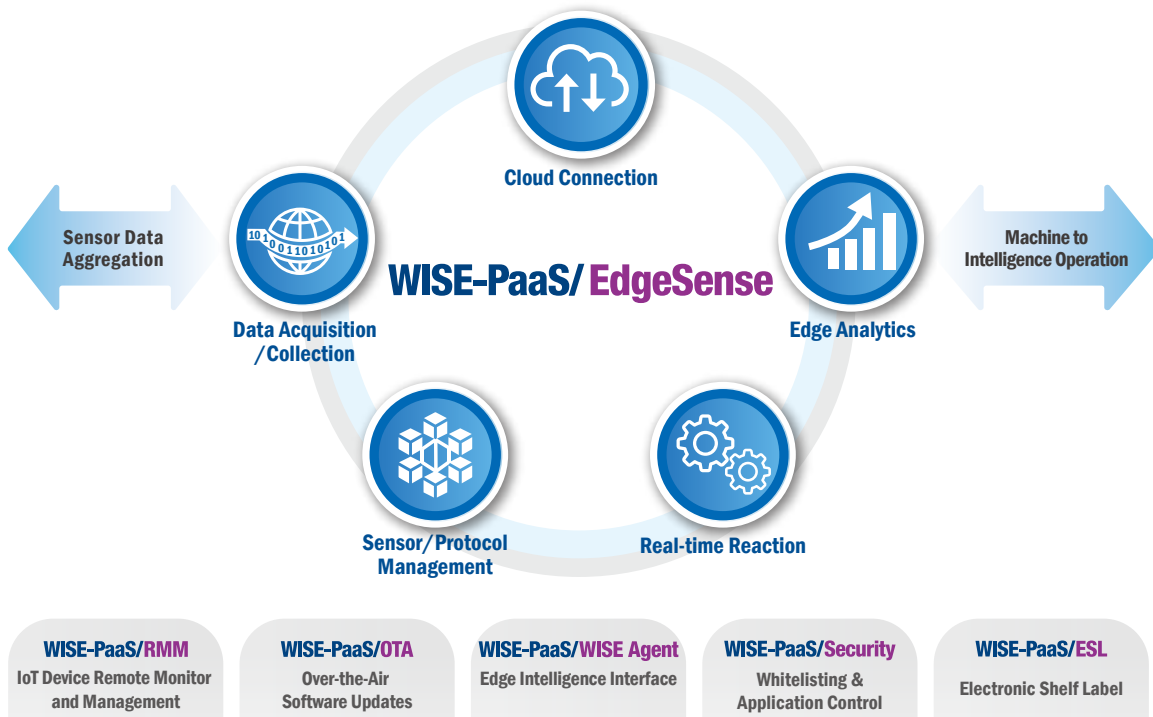
Embedded Software Capabilities

Advantech embedded software services includes embedded BIOS services, OS services and industrial cloud services. Embedded software services help decrease design effort and project complexity, and accelerate product development.



WISE-PaaS/EdgeSense- Edge Intelligence & Sensing Integration

WISE-PaaS/EdgeSense is an edge intelligence and sensing integration software solution that incorporates sensor data aggregation, over-the-air software-in-time updates, edge analytics, cloud applications, and secure end-to-end data protection for fast and easy real-time device-to-cloud operational intelligence.



In-vehicle

In-vehicle computers are used in buses, trucks, and emergency vehicle installations. These applications require strong vibration resistance and wide temperature, low power designs. They also need expansion flexibility to support various devices and wireless communications such as 3G/LTE and GPS. Advantech offers industrial-grade, high computing, multiple I/O, certified designs (eMark, EN50155) for a range of in-vehicle applications. Supporting wide power input (compliant with ISO-7637-2), wireless communication, GPS, anti-vibration and shock-resistant design (MIL-810), they are easy to install solutions that speed your time-to-market and reduce cost for space critical, in-vehicle applications.

Mobile Surveillance



Embedded Systems



4-8 PoE support
ARK-2250V



In-Vehicle certification
ARK-2151V



IoT Device Management & Video Analytics

WISE-PaaS/VideoCMS **WISE-PaaS/RMM**

Storage



2.5" SATA-SSD
SQF-S25 830

Memory



SODIMM DDR3 memory
SQR-SD3M

Infotainment System



Embedded Systems



Video processing
ARK-2250V



Thin design
EPC-T1217

Industrial Display



Industrial touch LCD kit
IDK-1000 series

Embedded Boards



7th Gen Intel® Core i
SOM-5898



Multiple display
MIO-5251

IoT Device & Content Management

WISE-PaaS/RMM **WISE-PaaS/OTA**
WISE-PaaS/SignageCMS

Application Requirements:

Mobile Surveillance

- Flexible interface for cameras
- Video processing capability

Infotainment System

- Multimedia display and video processing
- High computing power for limited spaces

Fleet Management

- Diverse wireless communications to track vehicles locations
- Data acquisition, storage, and evaluation

Payment Card Reader

- Limited space
- No signal interruption

Fleet Management



Embedded Systems



GPS support
ARK-2121V



Wireless communication
UTX-3117

Embedded Boards



Intel® Pentium®/Celeron®
SOM-3569

Industrial Display



Touch monitors
IDK-1110W

Storage



mSATA-SSD
SQF-SMS 640

IoT Device Management

WISE-PaaS/RMM **WISE-PaaS/OTA**

Payment Card Reader



Embedded Systems



ESD/EMI protection
ARK-2121V



Thin design
EPC-T2285

Embedded Boards



Power saving
RSB-4411

Storage



mSATA-SSD
SQF-SMS 640

Memory



WT SODIMM DDR3 memory
SQR-SD3I

IoT Device & Security Management

WISE-PaaS/Security

Public Transit Surveillance

Public transportation has been a target for terrorists in recent years. Subways and subway stations are also popular muggings or pick pocketing locations in larger cities. A comprehensive video surveillance system can help reduce crime or theft opportunities, and can be useful in identifying theft, violence, gang activity or other suspicious behavior so it may be stopped. Advantech offers a series of IoT software built into embedded systems, boards, and peripherals, with high performance computing power and rugged design for harsh outdoor environments. PoE ports can be used for IP cameras to capture street footage as well as identify threats which are ideal for outdoor applications.

Traffic Management



Embedded Systems



Multiple I/O
ARK-2151S



Four PoE supported
ARK-2121S



IoT Device & Security Management

WISE-PaaS/RMM **WISE-PaaS/Security**

Storage



2.5" SATA-SSD
SQF-S25 830

Memory



SODIMM DDR3 memory
SQR-SD3I

Highway ETC



Embedded Systems



Multiple I/O
ARK-2151S



Four PoE supported
ARK-2121S



Storage



2.5" SATA-SSD
SQF-S25 830

Memory



WT SODIMM DDR3 memory
SQR-SD3I

Embedded Boards



7th Gen Intel® Core i
AIMB-505

IoT Device Management & Video Analytics

WISE-PaaS/RMM **WISE-PaaS/VideoCMS**

Application Requirements:

Traffic Management

- Multiple device connection
- Light control
- Centralized remote management

Highway ETC

- Automated vehicle identification
- Transaction processing
- Toll ticket payment

Street Surveillance

- Multiple Gigabit Ethernet ports for IP cameras
- High performance supports image recognition
- Wireless communications for real-time data integration

Parking

- Vehicle identification
- Video surveillance
- Displays capability

Street Surveillance



Embedded Systems



IP camera support
ARK-2151S



Wireless communication
UTX-3117

Embedded Boards



3rd Gen Intel® Xeon®
AIMB-502

Storage



2.5" SATA-SSD
SQF-S25 830

Memory



SODIMM DDR3 memory
SQR-SD3M

IoT Device Management & Video Analytics

WISE-PaaS/RMM

WISE-PaaS/VideoCMS

Parking



Embedded Systems



Rugged design
ARK-2121S



LoRa gateway + node
WISE-3610 + WISE-1510

Embedded Boards



4th Gen Intel® Core i
AIMB-203



Intel® Pentium & Atom
MIO-2360

Industrial Display



Flat fronted touch design
IDP31-215

Storage



Industrial SD card
SQF-ISD

IoT Device Management & Video Analytics

WISE-PaaS/RMM

WISE-PaaS/VideoCMS

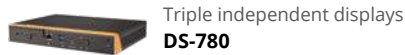
Station Management

Station management systems consist of an integrated platform that includes control room, automatic fare collection, ticket vending machines, kiosks, and others. Due to their complexity, station management systems require stable and scalable hardware to keep them operating 24/7 and software for device monitoring and centralized management. Advantech's embedded boards, systems, and peripherals are well-known for ruggedized features and full range offerings with flexible expansion.

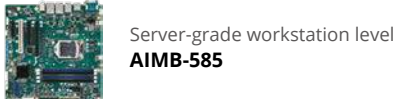
Control Room



Embedded Systems



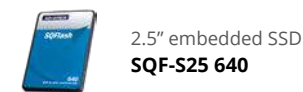
Embedded Boards



Industrial Display



Storage



Content Management

WISE-PaaS/SignageCMS

Automatic Gate Machine



Embedded Systems



Embedded Boards



Industrial Display



Storage



IoT Device Management

WISE-PaaS/OTA

Application Requirements:

Control Room

- High-performance computing
- Storage capability
- Remote manageability

Automatic Gate Machine

- Rich I/O connections
- Self-inspections
- Wireless connectivity

Ticket Vending Machine

- Multiple Gigabit Ethernet Ports
- High performance supports image recognition
- Wireless communications for real-time data integration

Passenger Information System

- Powerful image processing
- Multiple display capability
- Remote manageability and support multimedia formats

Ticket Vending Machine



Embedded Systems



IP cameras support
ARK-2151S



Wireless communication
UTX-3117

Embedded Boards



3rd Gen Intel® Xeon®
AIMB-502

Storage



2.5" SATA-SSD
SQF-S25 830

Memory



WT SODIMM DDR4 MEMORY
SQR-SD4I

IoT Device & Content Management

WISE-PaaS/RMM **WISE-PaaS/SignageCMS**
WISE-PaaS/VideoCMS

Passenger Information System



Embedded Systems



Slim type
DS-081



OPS for airport PIS
DS-280



High graphic performance
EPC-T1227

Embedded Boards



Intel® Pentium® /Celeron®
AIMB-216



Intel® Atom with triple display
MIO-5350

Industrial Display



Wide-view angle
IDS-3000/ 5000 series

Content Management

WISE-PaaS/VideoCMS

Railway Systems

Railway applications include station infrastructures, rolling stock systems, and wayside control. The vibration resistance standard is very strict and requires EN-50155 & EN-50121 certification and M12 connectors to enhance and secure railway operations. Also, wireless communications and security management are vital for trains to connect to backend systems so Advantech provides high computing and certified embedded systems for intelligent video analytics such as object and motion detection to ensure security and safety. The rugged design of our embedded boards and peripherals are suitable for rolling stock systems with anti-vibration and anti-shock support. All the embedded computing platforms we provide are integrated with WISE-PaaS - IoT software services to help manage devices remotely and securely.

Rolling Stock PIS & BYOD



Embedded Systems



Video processing
ARK-2231R

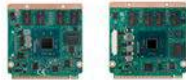


Industrial Display



Anti-vibration certification
DSD-5028/ DSD-5038

Embedded Boards



Intel® Pentium®/Celeron®
SOM-3567/ SOM-3568

Storage



2.5" SATA-SSD
SQF-S25 830

IoT Device & Content Management

WISE-PaaS/RMM **WISE-PaaS/SignageCMS**
WISE-PaaS/OTA

In-train Surveillance



Embedded Systems



4-8 PoE & M12 connector
for railway app
ARK-2231R



Storage



2.5" SATA-SSD
SQF-S25 830

Memory



WT SODIMM DDR3 memory
SQR-SD31

Embedded Boards



6th Gen Intel® Core i
MIO-5272

IoT Device Management & Video Analytics

WISE-PaaS/RMM **WISE-PaaS/OTA**
WISE-PaaS/VideoCMS

Application Requirements:

Rolling Stock PIS & BYOD

- Railway certification – EN50155
- Multimedia displays

In-train Surveillance

- Multiple CCTV and camera installation
- Video processing and storage

Locomotive Control

- Connect to backbone for train-wide networks
- Real-time data transmission

Wayside Interlocking

- No signal interruption
- Real-time data transmission

Locomotive Control



Embedded Systems



Multifunction vehicle bus
ARK-2250R



Industrial Display



Open-frame type
IDS-3000 series

Embedded Boards



Intel® Atom CPU
SOM-7569/ PCM-3365



Arm Cortex-A9 i.MX6
ROM-3420

Storage



mSATA-SSD
SQF-SMS 640

IoT Device Management

WISE-PaaS/RMM

Wayside Interlocking



Embedded Systems



Signaling & controlling
ARK-2250R



Storage



mSATA-SSD
SQF-SMS 640

Memory



WT SODIMM DDR4 MEMORY
SQR-SD4I

Embedded Boards



Intel® Atom CPU
SOM-7567/ SOM-7569/ PCM-3365

IoT Device Management & Video Analytics

WISE-PaaS/Security **WISE-PaaS/OTA**
WISE-PaaS/VideoCMS

Successful Cases

Enhancing Vehicle Security with Mobile Video Surveillance

The issue of security for vehicles and buildings has always been a concern to business owners and managers. The ability to track, monitor, and keep updated with their assets remotely is an important requirement for cutting losses, improving service efficiency, and streamlining workflow.



Application Requirements

With mobile NVR solutions, robustness, wide operating temperature support, compact and solid design with wireless options (WiFi/3G/4G) are basic requirements. To connect to an IP camera, PoE (Power over Ethernet) is a must. This allows a single cable to provide both data connection and electric power to devices, which makes ease of installation and less cabling. And not forgetting video capability to provide live views, recording, and slow video analytics.

Solutions

Advantech's ARK-2250V and ARK-2250R Modular Fanless Computers for transportation are designs with extendable mechanical design. In order to ensure transportation systems run stably in harsh environments, all series are certified by E-mark, EN50155, EN50121, IEC 61373, or 5M3 certifications. Depending on different usage scenarios, the maximum operating temperature can reach -40~70 °C with a fanless cooling system.



Electronic Bus Fare Collection System

The bus fare collection system makes more efficient management possible; the system can integrate payment, video surveillance, passenger information, bus tracking, and infotainment. Passengers like the convenience of the Fare Collection System (FCS), and are encouraging its wider deployment throughout the city.



Application Requirements

The vehicular environment is beset by electrical variations, shock and vibration, dust, and sometimes temperature extremes. To ensure safety and reliability, in-vehicle computers require special designs that combat these evils, and these design features distinguish them from standard IT products. In terms of wireless communication, the system needs to support diverse wireless communications, plus a GPS receiver for route tracking purposes.

Solutions

Advantech provided a mobile NVR solution, ARK-2121V, which included a vehicle-grade fanless system, 7" inch open frame touch monitor, and megapixel IP cameras. The fanless system features an on-board MCU to handle power ignition management; the system unit can be powered on and shut down automatically, triggered by either ignition signal or car battery health; the four built-in PoE ports provide for simple and easy IP camera connections through just one RJ-45 cat.6 cable per camera. Advantech WISE-PaaS/RMM software let system integrators conveniently develop their own remote monitoring and control functions, vehicle ignition management, and peripheral connection management such as PoE status, GPS, and G-sensor.



Advantech LPWAN Solutions for Smart Parking Sensor

All parked vehicles on the street are required to be in legal parking spaces, so it's useful for drivers to know if spaces are available in advance. However, it's inefficient to build parking sensors with cables over on-street parking spaces, so long range lower power wireless technologies can help to solve the deployment of on-street smart parking sensors.



Application Requirements

A magnetic sensor company was looking for a Low Power Wide Area Network (LoRaWAN) wireless solution to detect the presence or absence of vehicles in street parking spaces. The sensor company had abundant knowledge of magnetic sensors and algorithms, but they lacked wireless technology experience to complete the smart parking solution.

Solutions

Advantech's WISE-1510 LoRaWAN IoT sensor nodes offer long range and lower power features based on the LoRaWAN standard, so the sensor company was able to build the smart parking sensor applications based around WISE-1510. In future, Advantech will launch the WISE-3610 LoRaWAN IoT Gateway bundled with WISE-PaaS/RMM to support the demand of private LoRaWAN eco-systems.



Smart Street Lighting System for Environmental Monitoring

Thousands of street lights illuminate the city helping drivers and pedestrians find their way home safely. But huge amounts of electrical power are consumed doing this, so reducing consumption saves money and of course, helps the environment.

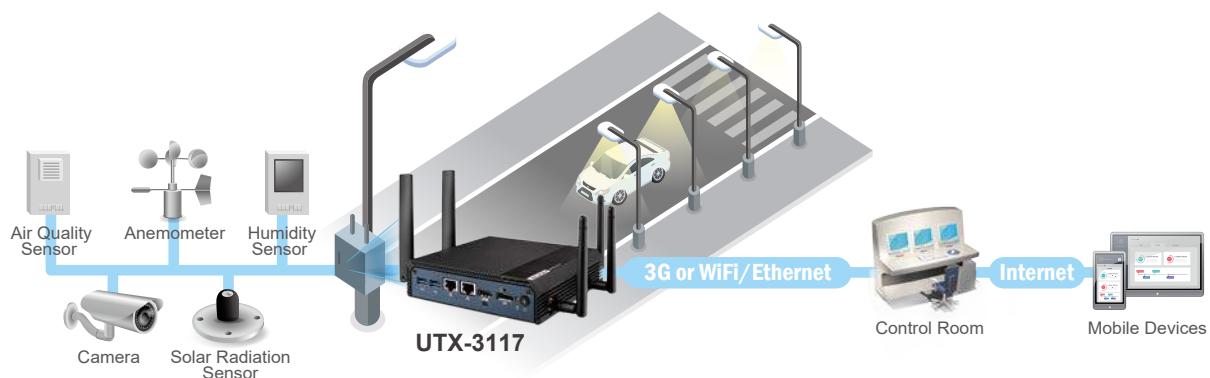


Application Requirements

A smart street lighting solution is the best way to meet these requirements. The city government decided to implement a solution with solar radiation sensors, environmental air quality sensors, and industrial computers in a smart street lighting system that automatically adjusted brightness when sensing daylight changing and vehicles or people approaching. To complete the system, a powerful IoT gateway computer is also needed to collect and control all data from these sensors.

Solutions

Advantech's UTX-3117 uses several sensors and RF technology to switch lights on/off according to solar radiation, with an automatic 50-70% light dimming feature to save on power without decreasing safety, as brightness increases if approaching cars or pedestrians are detected. UTX-3117 powered by Intel latest Atom platform which has better CPU and graphic performance. It's a fanless, palm-size design with a double sided thermal solution that supports extended temperature operation. UTX-3117 offers 3 RF modules and 5 antennas and it has Advantech's intelligent software WISE-PaaS integrated to offer a total solution for bridging connectivity from sensors to the cloud.



Successful Cases

Advantech Digital Signage Solutions Enhance China's Flight Information Display Systems

To meet growing demand, China continues to expand the number of airports, posing enormous challenges to the air traffic management system. To ensure smooth operations with high passenger and freight volume, China accelerates the implementation of its Strategy for Modernizing Air Traffic Management.

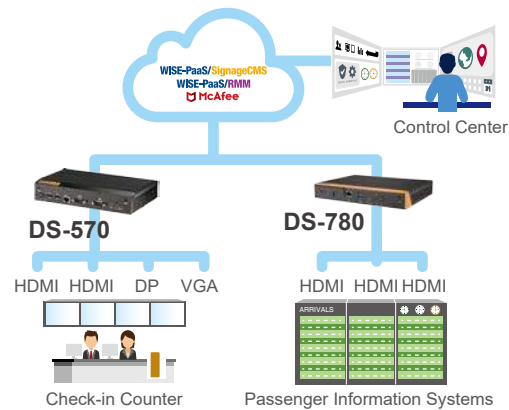


Application Requirements

FIDS deployed near important entrances, check-in counters, and boarding gates provides real-time information on flights, weather reports, transportation, airport services and more, keeping passengers well informed with up-to-date travel information.

Solutions

Advantech provides high stability and high performance digital signage solutions for FIDS applications. Powered by Intel® Celeron® J1900 quad-core processor and integrated NVIDIA GeForce GT 730M graphic module, the compact, fanless digital signage player DS-570 can playback multimedia content up to 4K2K resolution and drive up to 4 independent displays. Another FIDS upgrade project will deploy DS-780, which is powered by 6th Generation Intel® Core™ i series processors and integrated with HD 520 for advanced graphics computing. Its modular design features VESA mount capability, allowing for easy installation and removal for maintenance without disturbing the screens; this greatly accelerates installation and saves on cost for the system integrator.



Virtual Teller Machine in China

To provide these additional services, this customer needed a highly reliable hardware design with multiple USB and serial ports, and additional expansion slots to connect with several external devices. Not surprisingly, data security is becoming a crucial issue not only for data protection but also for data backups and storage.

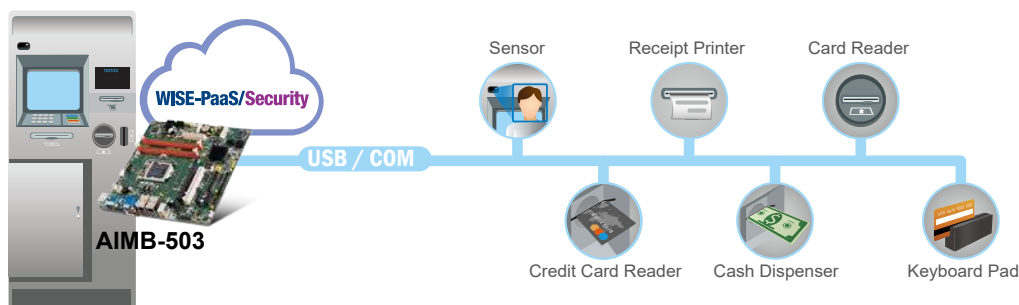


Application Requirements

To provide these additional services, this customer needed a highly reliable hardware design with multiple USB and serial ports, and additional expansion slots to connect with several external devices.

Solutions

Advantech AIMB-503YH has up to 16 USB ports and 10 Serial ports, so customers can connect directly with multiple external devices like cash dispensers, receipt printers, scanners etc. It also supports dual independent displays and 3 PCIe slots for high expansibility. Moreover, the enhanced USB power switch design helps customers control USB power on/off and their application independently via GPIO for maximum reliability. Moreover, by building in Advantech's WISE-PaaS/RMM IoT remote management and WISE-PaaS/Security software for centralized management, the customer enjoyed better device status prediction and maintenance, high availability and connectivity.



Rugged and Customizable 2.5" Single Board Computer for In-Vehicle Trinity Wi-Fi System

When taking a high-speed train, many passengers experience communication problems such as bad signals, poor data transmission and disconnections due to fast moving location relative to cell towers and demanding terrains such as mountains and tunnels.

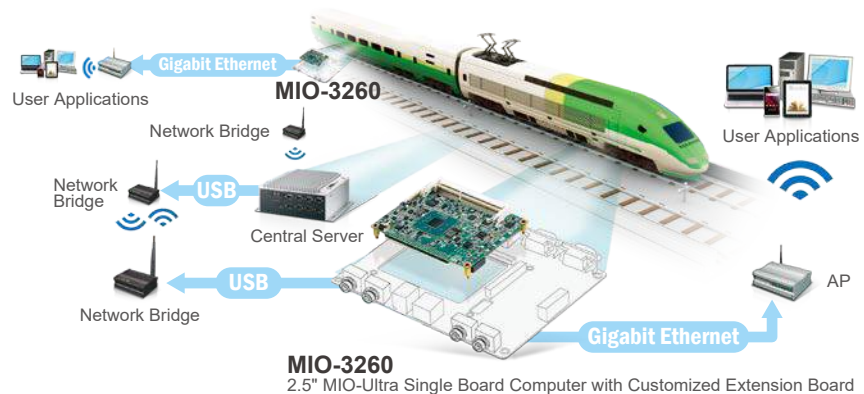


Application Requirements

Trinity In-vehicle Wi-Fi systems can easily transfer data from one carriage to another by connecting each router fixed on the exterior of each carriage and sharing the signal wirelessly through each carriage. But, the system requires ultra-slim embedded computing boards in each coach to constantly transfer data through M12 ports, and the data center server installed in the locomotive which controls the database delivers the information to each router.

Solutions

Advantech's MIO-3260 delivers excellent CPU performance with up to quad core processing; making it ideal for high speed, in-vehicle signal resolution and data communication, and router to router networking. The 2 x 64-pin internal expansion connectors and customized module board increase I/O flexibility and make MIO-3260 a simple cableless solution.



COM Express Mini Module Enables Locomotive Remote Monitoring and Diagnostic System

To create a wireless transmission platform to operate between railway locomotives and control center, the system needs to be integrated all locomotive travel logs and malfunction information, it should provide locations, real-time status, statistical analysis, as well as conducting detailed analysis by calling various specialist software packages.

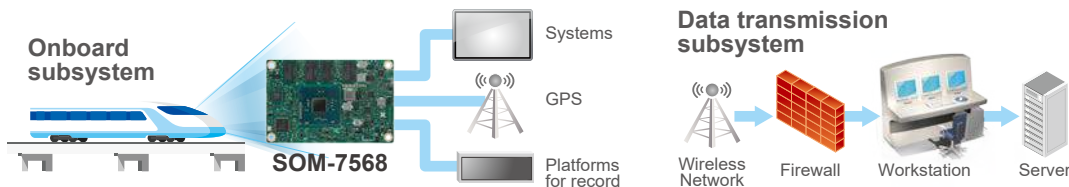


Application Requirements

Since the system would be used on railway locomotives, the operating environment would be demanding. Space was at a premium, and the system must remain reliable in spite of constant shaking and vibration; it must also be fanless, yet able to function under a wide range of ambient temperatures.

Solutions

We recommended Advantech's COM Express mini to the customer. SOM-7568 is equipped with the latest Intel® Atom™ processor. Its significantly improved CPU performance fulfilled the target performance requirements. Environmental conditions in the transportation business, especially the vibration and shock encountered, demand rock-solid, dependable performance. The on-board memory and storage served by the COMe SOM-7568 high-precision connector provide outstanding shock resistance.



WISE-PaaS IoT Software Solutions

WISE-PaaS/ EdgeSense

WISE-PaaS/RMM

WISE-PaaS/OTA

WISE-PaaS/Security

	WISE-PaaS/RMM		WISE-PaaS/OTA		WISE-PaaS/Security
Introduction	IoT Device Remote Monitoring and Management Platform		Over-the-Air Software Upgrade Management Services		IoT Security Management
Feature Highlights	<ul style="list-style-type: none"> Hardware Monitoring: Remotely monitor hardware status, including CPU temperature, fan speed, voltage, HDD smart information, etc. Software Monitoring: Remotely monitor software status, including CPU and memory usage. Device Management: Devices / Group/ Map view 		<ul style="list-style-type: none"> Lightweight and reliable MQTT device connection Automatic mode means all parts of the upgrade are under control Scheduling mode lets you plan your updates Supports open framework, which can integrate 3rd party storage easily, such as, local storage FTP, or public storage 		<ul style="list-style-type: none"> Central security management monitors and reports data from all managed clients Remote deployment of security policies Flexibility to add McAfee modules to fulfill different vertical applications Dashboard with analytical reports
Hardware Requirements	WISE-PaaS/RMM Cloud	WISE-PaaS/RMM Agent	WISE-PaaS/OTA Cloud	WISE-PaaS/OTA Agent	<ul style="list-style-type: none"> Microsoft Windows Server 2012/2012R2/2008/2008 R2 64-bit Intel Pentium D or higher, RAM 8GB or higher, HDD 200GB or higher
	<ul style="list-style-type: none"> Intel® Core™ i3 2.3 GHz CPU or above 4GB RAM 25 GB root partition for the system 100 GB data storage partition (for documents and indexing) OS: Windows Server 2008 R2 64-bit, Windows Server 2012/2012 R2 64-bit, Windows 10 64-bit, Windows 8/8.1 64-bit, Windows 7 SP1 64-bit 	<ul style="list-style-type: none"> Advantech HW with SUSI driver 3.02/4.0 support (or above), which is required for HWM (Hardware Monitoring Management) function to work normally OS: Windows 10 32-bit/64-bit, Windows 7 SP1 32-bit/64-bit, Ubuntu 16.04, CentOS 7, Yocto 	<ul style="list-style-type: none"> Intel® Core™ i3 2.3 GHz CPU or above 4GB RAM 25 GB root partition for the system 100 GB data storage partition (for documents and indexing) OS: Windows Server 2008 R2 64-bit, Windows Server 2012/2012 R2 64-bit, Windows 10 64-bit, Windows 8/8.1 64-bit, Windows 7 SP1 64-bit 	<ul style="list-style-type: none"> OS: Windows 10 32-bit/64-bit, Windows 7 SP1 32-bit/64-bit, Ubuntu 16.04, CentOS 7, Yocto, and Android 6 (request by project) 	
Product Ordering Number	WISE-PaaS/RMM Pro (max 10 devices): 32EMRMP31B WISE-PaaS/RMM Pro (max 50 devices): 32EMRMP31C WISE-PaaS/RMM Pro (max 200 devices): 32EMRMP31D WISE-PaaS/RMM Pro (Site License): 32EMRMP31E		WISE-PaaS/OTA Pro (max 100 devices): 32EMOTAP2B WISE-PaaS/OTA Pro (max 500 devices): 32EMOTAP2C		Acronis True Image 2016 Personal: 31WPSALO16 WISE-PaaS/Security ePolicy Orchestrator: 31WPSEP001 McAfee Endpoint Security 10: 31WPSMES0A McAfee Integrity Control: 31WPSMIC01 McAfee Embedded Control: 31WPSMEC01 McAfee Application Control: 31WPSMAC01 McAfee Application Control with ePO: 31WPSMAP01
Marketplace Ordering Number	VIP Membership: 98DPWSPA0A (highly recommended) Regular membership: 98DPWSPAP1 *Join WISE-PaaS membership to redeem above applications with better service and discount				

Multimedia Management Software

WISE-PaaS/SignageCMS

Media Type	Image, Video, Scrolling Text, Bulletin Board, Time, Flash, PowerPoint, Webpage
Program Management	Customize Program Layouts, Program Preview, Urgent Cast
Output	HD/Full HD Output, Portrait/Landscape Display, Multi-screen Output, Audio Output
Schedule Management	Daily/Weekly/Monthly Schedule, Appointment Dispatch, Dispatch Records
Remote Player Management	Unlimited Multipoint Dispatching, Player Group Setting Remote Power on/off (Intel AMT), Remote Software Upgrade, Auto Shutdown Setting, Hardware Monitoring, Software Monitoring, Screenshot Real-time Monitoring
System Management	Authorization Setting, Simultaneous Editing, System backup/ Recovery, Resume Download, Differential Download, App Monitoring
Operating System	Server: Windows 7 or above Windows Server 2008 or above Client: Windows 7 (Embedded/POSReady)

Wireless IoT Sensor Nodes and Gateways

M2.COM IoT Sensor Node Modules



Wireless IoT Gateways



Model Name	WISE-1510
Form Factor	M.2 TYPE 2230-D3-E
Standard	LoRaWAN LoRa Private Network (WISE-Link)
MCU	ARM Cortex-M4 Processor
Memory	RAM 64KB Flash 256KB
Wireless Frequency	863-870MHz for Europe 902-928MHz for North America 920-928MHz for Japan 920-925MHz for Taiwan 470-510 MHz for China 915-928MHz for Australia
Topology	Star network
Transmit Power	Up to +18dBm
Receiver Sensitivity	Up to -136dBm at SF = 12 / 125KHz
Data Rate	50 kbps at FSK mode for Europe 21.9 kbps at SF7 mode for North America 5.47 kbps at SF7 mode for Japan
I/O Interface	1 UART (4-wire, support RTC/CTS) 1 I ² C 8 GPIO 1 PWM 1 SPI 4 ADC 1 USB (device only)
Power Requirement	3.3V
Operating Temperature	-40 ~ 85 °C
Dimension	22 x 30 mm
Operating System	mbed OS
Certifications	CE/FCC/IC/TELEC/VCCI/NCC/RCM

Model Name		WISE-3610	WISE-3620
Process System	CPU	Qualcomm ARM Cortex-A7 Quad 716MHz	Qualcomm ARM Cortex-A7 Quad 716MHz
	DRAM	256MB DDR3L	256MB DDR3L
	Flash	128MB	128MB
I/O Interface	Serial Port	1 x RS-232/422/485 (DB9 Male)	1 x RS-232/422/485 (DB9 Male)
	USB	1 x USB 3.0	1 x USB 3.0
	LAN	1 x LAN 10/100/1000Mbps 1 x WAN 10/100/1000Mbps	1 x LAN 10/100/1000Mbps 1 x WAN 10/100/1000Mbps
	Antenna Port	6 (2 for Wi-Fi, 2 for LoRa, 2 optional for 3G/LTE)	4 (2 for Wi-Fi, 2 optional for 3G/LTE)
Wireless	Standard	IEEE 802.11a/b/g/n/ac LoRa	IEEE 802.11a/b/g/n/ac
	Frequency Band	Wi-Fi: 2.4GHz/5GHz LoRa: 863~870MHz, 902~928MHz, 470~510MHz	2.4GHz/5GHz
	Data Rate	Wi-Fi 11n 2x2 40MHz max: 300Mbps 11ac 2x2 80MHz max: 866.7Mbps LoRa: EU868 max: 50 Kbps (DR7) US902 & TW920 max: 21.9 Kbps (DR13) JP923 & CN470 max: 5.47 Kbps (DR5)	11n 2x2 40MHz max: 300Mbps 11ac 2x2 80MHz max: 866.7Mbps Support MU-MIMO
	Support Nodes	500	200
	Expansion	1 x full size mini PCIe slot for 3G/LTE Dual microSIM slots	2 x full size mini PCIe slots for 3G/LTE Dual microSIM slots
	Platform	OS	OpenWRT Linux
Indicator and Button	LED	1 Power 1 USB 1 LoRa status 1 2.4G Wi-Fi status 1 5G Wi-Fi status 1 WWAN status	1 Power 1 USB 1 2.4G Wi-Fi status 1 5G Wi-Fi status 1 WWAN status
	Button	1 x Reset button	1 x Reset button
	Switch	-	-
	SD Socket	1 x microSD slot	1 x microSD slot
Mechanical	Dimensions	188mm x 150mm x 39mm	188mm x 150mm x 39mm
	Mounting	Metal bracket wall mount	Metal bracket wall mount
Environmental	Operating Temperature	-20 ~ 70 °C	-20 ~ 70 °C
Power	DC-input	DC-input 9~ 24V	DC-input 9~ 24V
	Power Consumption	18W (Max)	16W (Max)
Certifications		CE/FCC/IC/TELEC/SRRC/NCC	CE/FCC/IC/TELEC/SRRC/NCC

Computer On Modules



Model Name	SOM-5992	SOM-5898	SOM-7569	SOM-7567	
Form Factor	COM Express Basic	COM Express Basic	COM Express Mini	COM Express Mini	
Pin-out Type	COM R3.0 Type 7	COM R2.1 Type 6	COM R2.1 Type 10	COM R2.1 Type 10	
Processor System	CPU	Intel® Xeon® Processor D-1500 Product Family	7th Gen. Intel Core i7/i5/i3/Xeon	Intel® Atom™ E3900 & Pentium® and Celeron® N Series Processors	Intel® Atom E3800 and Celeron® Processor Series
	Base Frequency	2.2 - 1.3GHz	3.0 - 2.1GHz	1.6/1.3/1.1GHz	2.00/1.91/1.83/1.46/1.33GHz
	Processor Core	16/12/8/6/4/2	4/2	4/2	4/2/1
	LLC	24/18/12/9/6/3MB	8/6/3MB	2MB	2/1/512KB
	CPU TDP	45/35/25W	45/35/25W	12/9/6W	10/7.5/6/5W
	Chipset	-	Intel QM175/CM238	Integrated in CPU	Integrated in CPU
Memory	Technology	DDR4 1866/2133/2400MHz	DDR4 1866/2133/2400MHz	One channel DDR3L 1866 MT/s	DDR3L 1333/1066
	ECC Support	ECC and non-ECC	non-ECC and ECC (Xeon SKU Only)	Support by default	-
	Max. Capacity	64GB	32GB	8GB	4GB
	Socket	4x 260P SODIMM	2 x 260P SODIMM	Onboard DDR	Onboard
Graphics	Controller	-	Intel® HD Graphics	Intel HD Graphics	Intel HD Graphics
	Max. Frequency	-	1.05GHz ~ 350MHz	550-750MHz	400-854MHz
	VGA	-	1	-	-
	LCD (TTL/LVDS/eDP)	-	LVDS 2-CH 18/24-bit BOM optional eDP	LVDS: Single-channel 18/24-bit, up to 1366 x 768 eDP: Up to 4096x2160 @ 60 Hz	LVDS 1-ch 18/24-bit, up to 1366 x 768 resolution
	DDI (HDMI/DVI/DisplayPort)	-	2 BOM optional 3	HDMI 1.4b: Upto 3840 x 2160 @ 30 Hz DP 1.2: Upto 4096x160 @ 60 Hz	Up to 2560 x 1600 resolution
	SDVO	-	-	-	-
	TV-out	-	-	-	-
	Multiple Displays	-	Dual/Triple	Dual	Dual
Expansion	PCIe x16	1 (x16, x8, x4)	1 (x16, x8, x4)	-	-
	PCIe x8	1 (x8, x4)	-	-	-
	PCIe x1	7 (x4, x2, x1)	8 (x4, x2, x1)	4 PClex1, 1PClex4 (optional)	3 (Optional 4)
	PCI Masters	-	-	-	-
	ISA Bus	-	-	-	-
	LPC	1	1	Yes	Yes
Serial Bus	SMBus	1	1	Yes	Yes
	I2C Bus	1	1	Yes	Yes
	CAN Bus	-	1 (optional)	Optional	-
Ethernet	Controller	Intel I210AT/I210IT	Intel I219LM	Intel I210IT/I210AT	Intel I210IT
	Speed	10/100/1000Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
I/O	SATA	2	4	2 Ports, Support Gen 1 (1.5 Gb/s) or Gen2 (3 Gb/s) and Gen3.1 (6Gb/s)	1 (Optional 2)
	PATA Channel	-	-	-	-
	USB3.0	4	4	2	1
	USB2.0	4	8	8	4
	Audio	-	HD Audio	Intel® HD Audio	HD Audio
	SPI Bus	1	1	Yes	1
	GPIO	8	8	8-bit GPIO	8
	SDIO (GPIO pin shared)	-	-	Optional	-
	Watchdog	1	1	65536 level, 0 ~ 65535 sec	0 ~ 65535 sec
	COM Port	2 (2-wire)	2 (2-wire)	2 Ports (2-Wire)	2 (2-wire)
	LPT/FDD	-	-	-	-
	PS/2	-	-	-	-
	IR	-	-	-	-
	Onboard Storage	-	-	Up to 64GB eMMC 5.0 interface	MLC SSD up to 64GB, SLC SSD up to 32GB
	TPM	TPM2.0	TPM 2.0	TPM2.0 (B1 version only)	-
	Power	Power Type	ATX: Vin, VSB, AT: Vin	ATX: Vin, VSB; AT: Vin	ATX, AT
Supply Voltage		Vin: 8.5-20V VSB: 4.75-5.25V RTC Battery: 2.0-3.3V	Vin: 8.5-20V VSB: 4.75-5.25V RTC Battery: 2.0-3.3V	Vin: 4.75-20V, VSB: 4.75-5.25V RTC Battery: 2.0-3.3V	Vin: 4.75-20V, VSB: 4.75-5.25V RTC Battery: 2.0-3.3V
Power Consumption Max. (burn-in)		50.26 W	48.05 W	12.886 W (N4200) 11.999 W (N3350)	16.56 W (E3845)
Power Consumption Idle		12.3W	6.8W	2.555 W (N4200) 2.783 W (N3350)	8.04 W (E3845)
Environment	Operating Temp.	0 ~ 60 °C (32 ~ 140 °F)	0 ~ 60 °C (32 ~ 140 °F)	0 ~ 60 °C (32 ~ 140 °F)	0 ~ 60 °C (32 ~ 140 °F)
	Extended Temp. (Optional)	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 85 °C (-40 ~ 185 °F)
Mechanical	Dimensions	125 x 95mm (4.92" x 3.74")	125 x 95mm (4.92" x 3.74")	84 x 55 mm (3.3" x 2.17")	84 x 55 mm (3.3" x 2.17")



Model Name		SOM-3569	SOM-3568	SOM-3567
Form Factor		Qseven	Qseven	Qseven
Pin-out Type		QSeven 2.1	Qseven 2.1	Qseven 2.1
Processor System	CPU	Intel® Atom™ E3900 & Pentium® and Celeron® N Series Processors	Intel Pentium N3710 Intel Celeron N3160/N3060/N3010 Intel Atom™ X5-E8000	Intel® Atom E3800 and Celeron® Processor Series
	Base Frequency	1.6 - 1.1GHz	1.04 - 1.6GHz	1.33GHz - 2.00GHz
	Processor Core	4/2	4/2	4/2
	LLC	2MB	2MB	2/1MB & 512KB
	CPU TDP	6/9/12W	6/5/4W	10/8/6/5W
Memory	Chipset	-	-	-
	Technology	LPDDR4-2400	DDR3L-1600	DDR3L-1333/1066
	ECC Support	-	-	-
	Max. Capacity	Up to 8GB	8GB	8GB
Graphics	Socket	Onboard	Onboard	Onboard
	Controller	Intel® HD Graphics	Intel® HD Graphics	Intel® HD Graphics
	Max. Frequency	550-750MHz	320-700MHz	400 - 854MHz
	VGA	-	-	-
	LCD (TTL/LVDS/eDP)	Dual Channel 18/24-bit LVDS, up to 1920 x 1200	LVDS 2-CH 18/24-bit BOM optional eDP	LVDS 2-CH 18/24-bit
	DDI (HDMI/DVI/DisplayPort)	1 DDI port supports HDMI/DP HDMI 1.4b: up to 3840 x 2160 @ 30Hz DP 1.2: up to 4096 x 2160 @ 60Hz	2	1
	SDVO	-	-	-
	TV-out	-	-	-
	Multiple Displays	Dual Display	Dual/Triple	Dual
	Expansion	PCIe x16	-	-
PCIe x1		4 PClex1	3 (Optional 4)	3 (Optional 4)
PCI Masters		-	-	-
ISA Bus		-	-	-
LPC		1	1	1
Serial Bus	SMBus	1	1	1
	I ² C Bus	1	1	1
	CAN Bus	1	-	-
Ethernet	Controller	Intel I210IT	Intel I211AT	Intel I210IT
	Speed	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
I/O	SATA	2 Ports, Support Gen3.1 (6Gb/s) and Gen2 (3 Gb/s) or Gen 1(1.5 Gb/s)	2	2
	PATA Channel	-	-	-
	USB3.0	1 Port (up to 2 Ports by BOM option)	2	1
	USB2.0	8 Ports	5	6
	Audio	HD Audio	HD Audio	HD Audio
	SPI Bus	Support SPI BIOS EEPROM	1	1
	GPIO	-	-	-
	SDIO (GPIO pin shared)	Support SD 3.0	-	-
	Watchdog	65536 level, 0 ~ 65535 sec	1	1
	COM Port	4-wire COM 2 Ports; optional mux with GPIO 8-bit	1 (4-wire)	1 (4-wire)
	LPT/FDD	-	-	-
	PS/2	-	-	-
	IR	-	-	-
	Onboard Storage	eMMC5.0, 4GB to 64GB	eMMC4.51 up to 32GB	eMMC4.51 up to 32GB
	TPM	Yes	-	-
Power	Power Type	ATX: Vin, VSB, AT: Vin	ATX: Vin, VSB, AT: Vin	ATX: Vin, VSB, AT: Vin
	Supply Voltage	Vin: 5V±5%, VSB: 5V±5%, RTC Battery: 2.0-3.3V	Vin: 5V±5%, VSB: 5V±5%, RTC Battery: 2.0-3.3V	Vin: 5V±5%, VSB: 5V±5%, RTC Battery: 2.0-3.3V
	Power Consumption Max.	11.73 W (N4200)	6.64 W	11.96 W (E3845)
	Power Consumption Idle	4.43 W (N4200)	5.52 W	3.28 W (E3845)
Environment	Operating Temp.	0 ~ 60 °C (32 ~ 140 °F)	0 ~ 60 °C (32 ~ 140 °F)	0 ~ 60 °C (32 ~ 140 °F)
	Extended Temp. (Optional)	-40 ~ 85 °C (-40 ~ 185 °F)	-	-40 ~ 85 °C (-40 ~ 185 °F)
Mechanical	Dimensions	70 x 70 mm (2.75" x 2.75")	70 x 70 mm (2.75" x 2.75")	70 x 70 mm (2.75" x 2.75")

Embedded Single Board Computers

MI/O Extension 3.5" SBCs



Model Name		MIO-5350	MIO-5251
Form Factor		3.5" MI/O-Compact	3.5" MI/O-Compact
Processor System	CPU	Intel® Pentium N4200 Celeron N3350 & Atom™ E3950/E3940/E3930	Intel Atom E3825/ E3845, Celeron J1900
	CPU TDP	6W/6W/12W/9W/6W	6W/ 10W/ 10W
	Frequency	1.1GHz/1.1GHz/1.6GHz/1.6GHz/1.3GHz	1.33 GHz/ 1.91 GHz/ 2(Turbo: 2.42) GHz
	Core Number	4/2/4/4/2	2/ 4/ 4
	L2 Cache	2	1MB/ 2MB
	L3 Cache	-	-
	BIOS	AMI UEFI 64 Mb	AMI UEFI 64Mbit
Memory	Chipset	-	-
	Technology	DDR3L 1867 MHz	DDR3L 1066/1333MHz
	Max. Capacity	8 GB	8 GB
Display	Socket	1 x 204-pin SODIMM	1 x 204-pin SODIMM
	Controller	Intel Gen9 graphic engine	Intel Gen7 graphic engine
	Graphic Memory	Share with system memory up to 1792MB	Share with system memory up to 384 MB
	VGA	2560 x 1600 at 60Hz	Up to 2560 x 1600 at 60Hz
	LCD (LVDS/eDP)	48-bit LVDS up to WUXGA 1920 x 1200 at 60Hz	LVDS 48-bit, up to 1920 x 1200 at 60Hz eDP (optional): up to 2560 x 1600 at 60Hz
	DDI (HDMI/DVI/DisplayPort)	HDMI 1.4a for HD video playback, 1080P at 60Hz Displayport*, up to 2560 x 1600 at 60Hz	HDMI: up to 1920 x 1080 at 60Hz DisplayPort (optional): up to 2560 x 1600 at 60Hz
	Multiple Display	VGA + LVDS (eDP *) + HDMI (DP*)	VGA+HDMI/DP, VGA+LVDS/eDP, HDMI/DP+LVDS/eDP
Expansion Interface	Mini PCIe	1 x Full size	1 x Full-size
	SIM Socket	-	1
	SMBus	1	1
	IC	1 (Shares with SMBus pin)	1 (Shares with SMBus pin)
	MIOe	Displayport(optional), SMBus, 3 x USB2.0, LPC, 1 x PCIe x1, line out, +5 Vsb/+12 Vsb power, Power On, Reset#	SMBus, 3xUSB2.0, LPC, 1 x PCIe, line-out, DisplayPort (optional), Reset, Power On, +5Vsb, +12Vsb
Ethernet	Controller	GbE1 & GbE2: Intel i210	GbE1 & GbE2: Intel i210
	Speed	10/100/1000Mbps	10 /100/ 1000 Mbps
	Connector	RJ45 x 2	RJ45 x 2
Audio	Audio Interface	High Definition Audio	High Definition Audio
	CODEC	Realtek ALC888S	Realtek ALC888S
	Amplifier	Optional via MIOe	Optional via MIOe
	Connector	Line-in, Line-out, Mic-in	Line-in, Line-out, Mic-in
WatchDog Timer		255 levels timer interval, programmable by software	255 levels timer interval
Storage	SATA	2* SATAIII (Max. Data Transfer Rate up to 6.0 Gb/s)	1, up to 3Gb/s (300MB/s)
	mSATA	1 x Full size	1 x Full-size
	CFast	-	-
I/O	USB3.0	2	1
	USB2.0	4 (2 from Rear, 2 from Internal)	3 (3 from rear, 1 from internal)
	GPIO	8-bit general purpose input/output	8-bit general purpose input/output
	COM Port	2xRS-232, 2xRS-232/422/485 with RS-485 auto flow control	2 x RS-232, 2 x RS-232/422/485 with RS-485 auto flow control
	Reset Button	1	1
	Smart Fan	-	-
	Security	TPM	TPM 2.0 (optional)
Power	Power Type	AT/ATX	Single 12V DC power input
	Power Supply Voltage	Single 12V DC power input	Supports single 12V input, ±10%
	Connector	ATX 2x2P/ DC Jack	ATX 2x2P (DC Jack optional)
	Power Consumption (Idle)	N4200: 0.4A @ 12V (4.80W) N3350: 0.4A @ 12V (4.80W)	E3825: 5.42 W / E3845: 6.12W / J1900: 5.88 W
	Power Consumption (Full Load)	N4200: 1.26A @ 12V (15.12W) N3350: 1.29 @ 12V (15.48W)	E3825: 9.72 W / E3845: 11.04W / J1900: 13.32 W
	Battery	Lithium 3 V / 210 mAh	Lithium 3V/ 210 mA
Environment	Operational Temperature	(Operational humidity: 40 °C @ 95% RH Non-Condensing)	0 ~ 60 °C (32 ~ 140 °F) (Operational humidity: 40 °C @ 95% RH Non-Condensing)
Physical Characteristics	Dimensions (L x W x H)	146 x 102 mm (5.7" x 4")	146 x 102 mm (5.7" x 4")
Operating System	Microsoft Windows	Yes	Yes
	Linux	Yes	Yes
	SUSIAccess/ WISE-PaaS/RMM	Yes	Yes
	iManager/SUSI 4.0	Yes	Yes
Certification	EMC	CE, FCC	CE, FCC



MIO 5272	
3.5" MI/O-Compact	
Intel Core i7-7600U/i7-6600U/ i5-6300U/i3-6100U / Celeron 3955U	
15W	
2.8(Turbo: 3.9)GHz/ 2.6(Turbo: 3.4)GHz/ 2.4(Turbo: 3.0) GHz/ 2.3 GHz/ 2.0 GHz	
2	
-	
4MB/4MB/ 3MB/ 3MB/ 2MB	
AMI UEFI 128 Mbit	
-	
DDR3L 1333/1600 MHz	
16 GB	
2 x 204-pin SODIMM	
Intel® HD Graphics 500 series	
Share with system memory up to 3968MB	
Up to 1920 x 1200 at 60 Hz	
LVDS 48-bit, up to 1920 x 1200 at 60Hz	
HDMI: up to 4096 x 2160 at 24 Hz	
VGA + HDMI + LVDS	
2 x Full-size	
1	
1	
1 (Shares with SMBus pin)	
SMBus, USB3.0, LPC, 2 x PCIe, line-out, Displayport (optional), Reset, PowerOn, +5Vsb, +12Vsb	
GbE1: Intel i219, GbE2: Intel i210	
10/ 100/ 1000 Mbps	
RJ45 x 2	
High Definition Audio	
Realtek ALC888S	
Optional via MIOe	
Line-in, Line-out, Mic-in	
255 levels timer inte	
2, up to 6 Gb/s (600 MB/s)	
Supports either mSATA or full size miniPCIe, default support mSATA	
-	
2	
4 (2 from rear, 2 from internal)	
8-bit general purpose input/output	
2 x RS-232/422/485 with RS-485 auto flow control	
1	
-	
TPM 2.0 (optional)	
Single 12V DC power input	
Supports single 12V input, ± 10%	
ATX 2x2P (DC Jack optional)	
i7 7600U: TBD i7 6600U: 6.46 W / i5 6300U: 5.26 W / i3 6100U: 5.02 W, / Celeron 3955U: 4.88 W	
i7 7600U: TBD i7 6600U: 22.03 W, / i5 6300U: 20.87 W, / i3 6100U: 20.45 W, / Celeron 3955U: 17.81 W	
Lithium 3 V / 210 mA	
0 ~ 60 °C (32 ~ 140 °F)(Operational humidity: 40 °C @ 95% RH Non-Condensing)	
146 x 102 mm (5.7" x 4")	
Yes	
Yes	
Yes	
Yes	
CE, FCC	

MI/O Extension 2.5" Pico-ITX



Model Name		MIO-2360
Form Factor		2.5" MI/O-Ultra (Pico-ITX)
Processor System	CPU	Intel® Pentium N4200/ Intel® Celeron N3350
	CPU TDP	6W
	Frequency	2.5GHz/2.4GHz
	Core Number	4/2
	L2 Cache	2
	L3 Cache	-
	BIOS	AMI EFI 64 Mbit
Memory	Chipset	-
	Technology	DDR3L-1866MHz
	Max. Capacity	8GB
	Socket	1 x 204-pin SODIMM
Display	Controller	Intel Gen9 graphic engine
	Graphic Memory	Share with system memory up to 1792MB
	VGA	up to 1920x1200
	LCD (TTL/LVDS/eDP)	24-bit up to 1440 x 900 at 60Hz
	DDI (HDMI/DVI/ DisplayPort)	HDMI 1.4b(3840x2160@30Hz)
	Multiple Display	VGA+LVDS, HDMI+LVDS
Expansion Interface	Triple Display	-
	Mini PCIe	1 x Half size
	SIM Socket	1
	SMBus	1
	I²C	1 (Shares with SMBus pin)
	MIOe	SMBus, 2 x USB3.0, LPC, 2 x PCIe x1, line out, DisplayPort/ HDMI*, +5 Vsb/+12 Vsb power, Power On, Reset, SATA*
Ethernet	64-pin connector A	-
	64-pin connector B	-
	Controller	GbE1: Intel i210 GbE2: Intel i210
	Speed	10/100/1000Mbps
Audio	Connector	RJ45 x 1
	Audio Interface	High Definition Audio
	CODEC	Realtek ALC888S
WatchDog Timer	Amplifier	-
	Connector	Line-in, Line-out, Mic-in
Storage	WatchDog Timer	255 levels timer interval, programmable by software
	SATA	2* SATAIII (Max. Data Transfer Rate up to 6.0 Gb/s)
	mSATA	1
	CompactFlash	-
I/O	USB3.0	2
	USB2.0	6
	GPIO	8-bit general purpose input/output
	COM Port	2 x RS-232/422/485
	Reset Button	1
	Fan	-
	Power	Power Type
Power Supply Voltage		Single 12V DC power input
Connector		ATX, AT
Power Consumption (Idle)		N3350: 0.41 @ 12V (4.89 W)
Power Consumption (Full Load)		N3350: 1.09 A @ 12 V (12.90 W)
Environment	Battery	Lithium 3 V / 210 mAh
	Operational Temperature	0 ~ 60 °C (32 ~ 140 °F) (Operational humidity: 40 °C @ 95% RH Non-Condensing)
Physical Characteristics	Dimensions (L x W x H)	100 x 72 mm (3.9" x 2.8")
	Microsoft Windows	Yes
Operating System	Linux	Yes
	SUSIAccess/ WISE-PaaS/RMM	Yes
	iManager	Yes
Certification	EMC	CE, FCC

Embedded Single Board Computers



PC/104 CPU Modules

Model Name		PCM-3365	PCM-3356
Form Factor		PC/104-Plus	PC/104
Processor System	CPU	Intel Atom E3825/E3845/N2930	AMD® G-Series™ Processor T16R /T40E
	Frequency	1.33GHz/1.91GHz/1.83GHz	615 MHz/ 1.0 GHz
	Core Number	2/4/4	1/2
	L2 Cache	1MB/2MB/2MB	512 KB
	BIOS	AMI UEFI BIOS at 64 Mb	AMI 32-Mbit
	Chipset	1 x 204-pin SODIMM	AMD A55E
Memory	Technology	DDR3L 1066MHz/1333MHz/1333MHz	DDR3L 1066 MHz
	Max. Capacity	8GB	SO-DIMM: 4GB / On-board: 1GB
	Socket	-	1 x 204-pin SODIMM
	Onboard Memory	-	Onboard 1GB (by sku)
Display	Controller	Intel Gen7 graphic engine	AMD® G-Series™ Processor T16R/T40E
	Graphics Engine	Gen 3.5 graphic core, DX9 compliant, MPEG2 Hardware Acceleration, Direct3D 11, OpenGL 3.2, OpenCL 1.1 Full HW acceleration, decode: H.264, MPEG2/4, VC-1, WMV9. Encode: H.264, MPEG2	DirectX 11 graphics with UVD 3.0, Open CL 1.1, Open GL 4.0 Hardware decode (UVD 3) for H.264, VC-1 and MPEG2
	Graphics Memory	Share with system memory up to 384 MB	Optimized shared memory architecture up to 384 MB system memory
	HDMI/DVI	DVI 1.0 (DVI-D), up to 1920x1080	-
	Multiple Displays	VGA + LVDS, VGA + HDMI/DVI, HDMI/DVI + LVDS	LVDS+VGA
Expansion Interface	Mini PCIe	1 x Full-size	1 half size
	SMBus	1 (configurable to I²C by customer's request)	1
	I²C Bus	1 (supported by request)	-
	PC/104	-	1
	PCI-104	-	-
	PC/104-Plus	1	-
Ethernet	Controller	Intel I210	GbE1: Realtek RTL8111E-VB-GR GbE2: Realtek RTL8111E-VB-GR
	Speed	10/100/1000 Mbps	10/100/1000 Mbps
	Connector	Pin Header	Box Header
Audio	Codecs	Intel High Definition audio interface (requires an audio extension module P/N: PCE-SA01-00A1E)	Realtek ALC892
WatchDog Timer		Output System Reset, Programmable counter from 1 ~ 255 sec	Output System reset, Programmable 1 ~ 255 sec
Storage	SATA	1 SATA II	1 SATA II
	mSATA	1 x Full-size (default, SATA signal shared with Onboard flash)	1 half size
	IDE	-	-
	CompactFlash	-	-
	Onboard Flash	16GB/32GB/64GB (by request)	-
	Floppy	-	-
I/O	USB2.0	6	4
	SPI Bus	-	-
	GPIO	8-bit GPIO	8-bit GPIO
	LPT	-	-
	COM Port	3 (1 x RS-232/422/485, 2 RS-232)	3 x RS-232/422/485
	PS/2 KB/Mouse	1	-
	Power Type	AT/ATX	AT/ATX
Power	Power Supply Voltage	5 V ± 5% only to boot up (12 V is optional for LCD inverter and add on card)	5 V ± 5% only to boot up (12 V is optional for LCD inverter and add on card)
	Power Consumption (Idle)	E3825: 4.474W E3845: 4.72W N2930: 4.417W	T16R: 1.17 A @ +5 V (5.85 W) T40E: 1.22 A @ +5 V (6.1 W)
	Power Consumption (Full Load)	E3825: 5.675W E3845: 8.581W N2930: 6.845W	T16R: 1.43 A @ +5 V (7.15 W) T40E: 1.77 A @ +5 V (8.85 W)
	Battery	Lithium 3 V / 210 mA	Lithium 3 V / 210 mA
Environment	Operational Temperature	0 ~ 60 °C (32 ~ 140 °F) (Operational humidity: 40 °C @ 85% RH non-condensing)	0 ~ 60 °C (32 ~ 140 °F) (Operational humidity: 40 °C @ 85% RH non-condensing)
	Non-Operational Temperature	-40 °C ~ 85 °C and 60 °C @ 95% RH non-condensing	-40 °C ~ 85 °C and 60 °C @ 95% RH non-condensing
Physical Characteristics	Dimensions (L x W x H)	96 x 90 mm (3.8" x 3.5")	96 x 115 mm (3.8" x 4.5")
	Weight	0.735kg (1.62lb) (with heat-sink)	0.590 kg (1.30 lb)
Operating System	Microsoft Windows	Yes	Yes
	Linux	Yes	Yes
	SUSIAccess	Yes	Yes
Certifications	EMC	CE, FCC	CE, FCC

IoT Gateways



UTX

Model Name		UTX-3115	UTX-3117
Processor System	CPU	Intel E3826 / E3815 processor	Intel® Apollo Lake E3900 series & N series Processor
	Core Number	Dual core / Single Core	Quad Core / Dual Core
	BIOS	AMI EFI 64 Mbit, SPI	AMI EFI 16 Mbit, SPI
	Chipset	-	-
Memory	Technology	DDR3L 1333/1600 MHz SDRAM	Dual channel DDR3L 1866 MHz SDRAM
	Max. Capacity	4 GB/update to 4GB/per DIMM	8GB/ up to 8GB per DIMM
	Socket	1 x 204-pin DDR3L SODIMM (Non-ECC)	2 x 204-pin DDR3L SODIMM (Non-ECC)
Display	Controller	Intel HD Graphics	Intel HD Graphics GEN9
	VGA	1	-
	HDMI	2	1
	Display Port	-	1
Storage	2.5" HDD bay	1 (support 2.5" HDD/SSD, max 7.5 mm height)	1(support 2.5" HDD/SSD, max 7.5mm height)
	mSATA	1, colay with F/S miniPCIE	1, colay with H/S miniPCIE
Ethernet	Interface	10/100/1000 Mbps	10/100/1000 GbE LANs.
	Controller	LAN1: Intel I210AT LAN2: Realtek 8111G	LAN1: Intel I210AT LAN2: Realtek 8111G
	Connector	2(RJ-45)	2(RJ45)
Audio	Chipset	Realtek ALC892, High Definition Audio(HD)	Realtek ALC892, High Definition Audio(HD)
	Connector	Mic in / Line out	Mic-in, Line-out combo
Internal expansion Slot	Mini-PCle	2 (1x F/S miniPCIE sto, 1x H/S miniPCIE slot)	2 (1x F/S miniPCIE slot, 1x H/S miniPCIE slot), 1 M.2(E-Key)
	SIM socket	1	1
Front Panel	USB	2 (1 x USB 3.0, 1 x USB 2.0)	2 (USB 3.0)
	Audio	Mic in / Line out	Mic-in, Line-out Combo
	LAN	2	2
	Power button	1	1
	LED Indicators	1(HDD LED)	1(HDD LED)
Rear Panel	HDMI	2 (1xHDMI, 1x Micro HDMI)	1
	VGA	1	- (change to DP1.2 port)
	USB	1(Micro USB)	-
	USB	1(USB3.0)	2 (USB3.0)
	COM	2 (1xRS-232, 1xRS-422)	2 (1RS-232 & 1RS-422/485)
	Power jack	1(DC12V)	1 (DC12~24V)
Power	Control	1 (Power Button)	1(Power button)
	Voltage	12V _{DC} ± 10%	12~24V _{DC} ± 10%
	Power Consumption	12V@0.88A	12V@0.61A
	Power Adapter	AC to DC DC12V/3A, 36W	AC to DC adapter 12/24V/3A
Environment	Operating Temperature	-20 ~ 60 °C (32 ~ 104 °F)	-20 ~ 60 °C (32 ~ 104 °F) with RF module by max system performance
	Non-operating Temperature	-40 ~ 85 °C and 95% @ 40 °C Non-Condensing	-40 ~ 85 °C and 95% @ 40 °C Non-Condensing
	Vibration	3G (with 2.5" SSD)	3G (with 2.5" SSD)
Dimensions (W x H x D)	Dimensions (W x H x D)	138.5 x 35.98 x 116.4 mm (5.5" x 1.4" x 4.6")	152 x 37.1 x 128 mm (5.6" x 1.46" x 5.04")
Weight	Weight	1.0kg	1.2KG
Certification	EMC	CE/FCC/CCC/KC/VCCI/BSMI	CE/FCC/BSMI/CCC
	Safety	UL/CB/BSMI/CCC	UL,CB,BSMI,CCC

Industrial Motherboards



Mini-ITX

Model Name		AIMB-203	AIMB-216	AIMB-290
Form Factor		Mini-ITX	THIN Mini-ITX	Mini-ITX
Processor System	CPU	Intel Core i7/ i5/ i3/ Pentium/ Celeron	Intel Pentium N3710 & Celeron N3160/N3010 & Atom x5-E8000	Intel ATOM C3958/ C3558
	Socket	LGA 1150	FCBGA	FCBGA1310
	Max. Speed	3.1 / 2.9 / 2.4 GHz	QC 1.6/QC 1.6/DC 1.04/QC 1.04 GHz	2.0GHz/ 2.2GHz
	TDP	95 W / 65 W / 54 W / 45 W / 35 W	6 / 6 / 4 / 5 W	31W/ 16W
	Front Side Bus	-	-	-
	L2 Cache	-	2MB	16MB/ 8MB
	L3 Cache	8 MB / 6 MB / 4 MB / 3 MB	-	-
	Chipset	Intel H81	-	-
	BIOS	AMI EFI 64 Mbit, SPI	AMI EFI 16 Mbit, SPI	AMI EFI 128Mbit SPI
Expansion Slot	M.2	-	1 (B Key)	-
	Mini PCIe	2	1	1
	PCIe	PCIe x16, 1 slot	PCIe x1, 1 slot	PCIe x4, 1 slot
Memory	Technology	Dual channel DDR3L 1333/1600 MHz SDRAM	Dual channel DDR3L 1600/1066 MHz SDRAM	Dual Channel DDR4 2133/2400MHz Non-ECC U-DIMM
	Max. Capacity	16 GB	8GB/ up to 8GB per DIMM	32GB
	Socket	2 x 204-pin SODIMM	2 x 204-pin SODIMM	2 x 288-pin DDR4 DIMM
Graphics	Controller	Intel HD Graphics	Intel HD Graphics	
	LCD	Dual channel 48-bit LVDS	Dual channel 48-bit LVDS	ASPEED AST2500/2510 (VGA)
	HDMI	-	1	-
	DVI	1	1	-
Ethernet	Interface	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000/10GbE Mbps
	Controller	LAN1:Realtek RTL8111E LAN2: Realtek RTL8111E	LAN1:Realtek RTL8111G LAN2:Realtek RTL8111G	LAN 1/2: Marvell 88E1512 (1GbE) LAN3/LAN4: Intel X557-AT2 (10GbE) LAN 5: RTL8201 (IPMI)
	Connector	RJ-45 x 2	RJ-45 x 2	RJ-45 x 5
TPM		Optional	Optional	Optional
SATA	Max Data Transfer Rate	600 MB/s, 300MB/s	600 MB/s	600 MB/s
	Channel	2, 1	2	6
	eSATA/mSATA	-/1	-/-	-/1
Rear I/O	VGA/DVI/HDMI/DP	1/1/-/1	-/1/1/1	1/-/-/-
	Ethernet	2	2	5
	USB	4 (2 x USB 3.0; 2 x USB 2.0)	4 (USB 3.0)	4 (3x USB3.0, 1x USB2.0)
	Audio	Mic-in, Line-in, Line-out	Line-out	-
	Serial	1 (RS-232)	-	1
	PS/2	2	-	-
	DC Jack	-	1	-
Internal Connector	LVDS & Inverter	1	1	-
	DVI	-	-	-
	USB	4 (USB 2.0)	6 (USB 2.0), USB7/8/9/10 is optional	2 (USB 2.0)
	Serial	8 (7 x RS-232; 1 x RS-232/422/485)	6 (5 x RS-232; 1 x RS-232/422/485)	1 (RS-232/422/485)
	Parallel	1	-	-
	SATA	3	2	6
	CompactFlash	-	-	-/eMMC
GPIO		8-bit GPIO	8-bit GPIO	8-bit GPIO



MicroATX

Model Name		AIMB-502	AIMB-505	AIMB-585
Form Factor		Micro-ATX	Micro-ATX	Micro-ATX
Processor System	CPU	Intel Xeon/ Core i7/ i5/ i3/ Pentium/ Celeron	Intel 6th & 7th Gen Core i7/ i5/ i3 /Pentium/ Celeron	Intel Xeon/ 6th & 7th Gen Core i7/ i5/ i3/ Pentium/ Celeron
	Socket	LGA 1155	LGA1151	LGA1151
	max. speed	3.5 G/3.4 G/3.0 G/3.3 G/2.9 G/2.7G/2.5 G	3.4/3.2/2.8/2.7/2.6/2.4/2.3 GHz	3.6/3.3/2.4/3.4/3.2/2.8/2.6 GHz
	TDP	95W / 77W / 65W / 55W	65W / 51W / 35W	80W / 65W / 51W / 35W
	L2 cache	-	-	-
	L3 cache	8MB/6MB/3MB/2MB	8 MB/6 MB/4 MB/3 MB/2 MB	8 MB/6 MB/4 MB/3 MB/2 MB
	Chipset	Intel Q77/C216	Intel H110	Intel Q170/C236/H110
	BIOS	AMI EFI 64 Mbit, SPI	AMI EFI 128 Mbits, SPI	AMI EFI 128 Mbits, SPI
Expansion Slot	PCI	1	1	-
	PCIe x16	1 (QG2), 2 (WG2)	1	1
	PCIex8	-	-	1(L sku: 0)
	PCIe x4	-	-	1(L sku: 0)
	PCIe x1	1	2	1(L sku: 2)
Memory	Technology	Dual channel DDR3 1333/1600 MHz SDRAM	Dual channel DDR4 2133/2400 MHz SDRAM	Dual channel DDR4 2133/2400 MHz SDRAM
	Max. Capacity	32 GB	32GB	64GB
	Socket	4 x 240-pin DIMM	2 x 288-pin DIMM	4x288- pin DIMM
Graphics	Controller	Intel HD Graphics	Intel HD Graphics	intel HD
	VRAM	Shared system memory up to 1 GB	Shared system memory up to 1 GB	Shared system memory up to 1 GB
	VGA	1	1	1 (onboard)
	LCD	-	Dual channel 48-bit LVDS (Optional)	-
	DVI-D	1	1	1
	HDMI	1	-	1
	DP/eDP	-	1/1	1/1
	Dual Display	CRT+HDMI, CRT+DVI, HDMI+DVI	VGA + DVI, VGA + DP, VGA + eDP, DVI + DP, DVI + eDP, DP + eDP	DP++ + HDMI, DP++ + DVI-D, DP++ + eDP/ VGA, HDMI + DVI-D, HDMI + eDP/ VGA, eDP, VGA + DVI-D
	Triple Display	CRT + HDMI + DVI	-	eDP/ VGA + DP++ + HDMI, eDP/ VGA + HDMI + DVI-D, DP++ + eDP/ VGA + DVI-D, DVI-D + DP++ + HDMI
Ethernet	Interface	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	LAN1: Intel 82579LM LAN2: Intel 82574L	LAN1: Realtek RLT8111G LAN2: Realtek RLT8111G	LAN1: Intel I219LM LAN2: Intel I211AT(WG2: I210)
	Connector	RJ-45 x2	RJ-45 x2	RJ-45 x2
TPM		Optional	Optional	Optional
SATA	Max Data Transfer	300 MB/s 600 MB/s	600 MB/s	600 MB/s
	Channel	6 / 2	3	4 (SW RAID)
	eSATA/mSATA	1 / 1	-/1	-/1
EIDE	Mode	-	-	-
	Channel	-	-	-
I/O Interface	VGA	1	1	1 (on board, option)
	USB	2 (USB 2.0), 4 (USB 3.0)	6(USB 2.0),8(USB 3.0)	2 (USB 2.0), 12 (USB 3.0)
	Serial	6 (5 x RS-232, 1 x RS-485)	10 (8 x RS-232; 2 x RS-232/422/485)	6 (5 x RS-232; 1 x RS-232/422/485)
	Parellel	-	1	-
	SIM Card Holder	-	-	-
	PS/2	-	1(onboard)	1(onboard)
	Ethernet (GbE)	2	2	2
	IEEE 1394	-	-	-
	Audio	Mic-in, Line-out	Mic-in, Line-out	Mic-in, Line-out
GPIO	14 bit (6 bit non-programmable, 8 bit programmable)	8-bit	16-bit	

RISC Computing Solutions



Model Name		RSB-4220	RSB-4411
Form Factor		3.5" SBC	3.5" SBC
Processor System	CPU	TI Sitara AM3352 Cortex A8 1 GHz	NXP ARM Cortex-A9 i.MX6 1 GHz
	Technology	DDR3 800 MHz	DDR3 1066 MHz
Memory	Capacity	On-board DDR3 512 MB	On-board DDR3 1 GB
	Flash	4 GB eMMC NAND Flash for O.S. and 4 MB SPI NOR Flash for Advantech boot loader	4 GB eMMC NAND Flash for O.S. and 4 MB SPI NOR Flash for Advantech boot loader
	LVDS	1 18-bit LVDS, 1366 x 768	1 18/24-bit LVDS, 1366 x 768 for 1ch; 1920 x 1080 for 2ch at 60Hz
Graphics	HDMI	-	1920 x 1080 at 60Hz
	VGA	-	1920 x 1080 at 60Hz
	Graphics Engine	Direct3D Mobile, OGL-ES 1.1 and 2.0, OpenVG 1.0, and OpenMax	2 IPUs. OpenGL ES 2.0 for 3D, BitBlit for 2D and OpenVG 1.1
	H/W Video Codec	-	Decoder: MPEG-4 ASP, H.264 HP, H.263, MPEG-2 MP, MJPEG BP Encoder: MPEG-4 SP, H.264 BP, H.263, MJPEG BP
	Chipset	TI AM3352 integrated RGMII	NXP i.MX6 integrated RGMII
Ethernet	Speed	2 x 10/100/1000 Mbps	1 x 10/100/1000 Mbps
WatchDog Timer		1~6553s, default 60s, power on/off 4s	1~6553s, default 60s, power on/off 1s
I/O	SATA	-	1
	SATA Power	-	1
	USB	1 x USB 2.0 Host/OTG (Jumper selection)	1 x USB OTG, 2 x USB Type A and 3 x USB pin header
	Audio	-	1 x Line-out, 1 x Mic-in via pin header
	SPDIF	-	-
	SDIO	1 x SD slot	1 SD Slot
	Serial Port	1 x 4-wire RS-232/422/485 and 5 x 2-wire RS-232 w/ESD protection	2 x 2 wires RS-232 pin header 1 x 4 wires RSB-232/422/485, DB9
	SPI	-	1
	CAN	1	2
	GPIO	8 GPIO w/Isolation	20 GPIO w/o Isolation
	I2C	1	2
	System Bus	-	-
	Touch	-	-
	Keypad	-	-
	Button	1 x Reset button	-
Indicator	LED	1 Power LED 1 Programmable LED	1 Power LED
	Mini PCIe	1 x mini PCIe slot	1 x mini PCIe slot
Expansion	M.2	-	1 x M.2 2230 Key E slot
	SD Socket	1 x SD slot	1 x SD slot
	SIM	1 x SIM slot	1 x SIM slot
	Power Supply Voltage	12 V , 19 V , 24 V	12 V , 19 V , 24 V
Power	Power Type	2-pole lockable DC-in	DC-in
	Power Consumption	4W (Max)	5.6W (Max)
	Operational Temperature	0 ~ 60 °C/ -40 ~ 85 °C	0 ~ 60°C / -40 ~ 85°C
Environment	Operating Humidity	5 ~ 95% relative humidity, non-condensing	5 ~ 95% Relative Humidity, noncondensing
	Dimensions (W x D x H)	146 x 102 x 16 mm	146 x 102 x 20 mm
Mechanical			
Operating System		Linux	Linux Android
Certifications		CE/FCC Class B	CE/FCC Class B

Fanless Embedded Computers



Model Name		ARK-2230L	ARK-2250L
Processor System	CPU	Intel J1900	Intel i7-6600U Intel i5-6300U Intel i3-6100U
	Frequency	2.0GHz	2.6/2.4/2.3GHz
	Core Number	4	2/2/2
	BIOS	AMI EFI 64Mbit	AMI UEFI 128 Mbit
	Chipset	-	-
Memory	Technology	DDR3L 1333MHz	DDR3L 1600MHz
	Max. Capacity	8GB	16GB
	Socket	1 x 204-pin SODIMM	1 x 204-pin SODIMM
Display	Graphic Engine	DirectX 11.1, OCL 1.2 and OGL 3.2	DirectX 11.3, OpenGL 4.4, and OpenCL 2.1
	VGA	Up to 2048 x 1152	Up to 1920 x 1200
	DDI (HDMI/DVI/DisplayPort)	HDMI 1.4a for HD video playback, 1080P at 60Hz	HDMI 1.4a for HD video playback, 4096 x 2160 @ 24Hz
	Multiple Display	Dual	VGA+HDMI (Option triple display)
Expansion Interface	Mini PCIe	1 x Full-size Mini PCIe	2 x Full-size Mini PCIe
	SIM Socket	1	1
	ARK Plus	AMO-2000 series	AMO-2000 series
	i Door	Yes	Yes
Ethernet	Controller	GbE1: Intel I-210IT GbE2: Intel I-210IT	GbE1: Intel I219-LM GbE2: Intel I-210IT
	Speed	10/100/1000 Mbps	10/100/1000 Mbps
Audio	Audio Interface	HD Audio	HD Audio
	CODEC	Realtek ALC888	Realtek ALC888
	Connector	3 (Line-in, Line out, Mic-in)	2 (Line-out, Mic-in)
WatchDog Timer		Yes	Yes
Storage	SATA	1 x 2.5" SATA HDD bay	1 x 2.5" SATA HDD bay
	mSATA	1	1x Full size mSATA
	CompactFlash/Cfast/SD card	-	-
I/O	USB3.0	1	4
	USB2.0	4	2
	GPIO	1 x 8 bit DIO	1 x 8 bit DIO
	COM Port	4 (2 x RS232, 2 x RS232/422/485)	4 (4 x RS232/ 422/ 485)
Power	Power Type	AT/ATX	AT/ATX
	Power Supply Voltage	12 V _{DC} (Option 9-36 V _{DC})	12 V _{DC} (Option 9-36 V _{DC})
	Connector	Lockable DC Jack	Lockable DC Jack
	Power Consumption (Idle)	7.3W	7.96W/ 7.8W/ 6.92W
	Power Consumption (Full Load)	13.3W	43.28W/ 42.8W/ 41.72W
	Power Adaptor	AC to DC, DC12V/5A, 60W (Optional)	AC to DC, DC12V/5A, 60W (Option)
Environment	Operating Temperature (air flow 0.7 m/sec)	-20 ~ 60 °C	-20 ~ 60 °C
	Non-operating Temperature	-40~ 85 °C and 95% @ 40 °C Non-Condensing	-40~ 85 °C and 95% @ 40 °C Non-Condensing
	Vibration Resistance	With SSD: 3 Grms	With SSD: 3 Grms
	Shock Protection	With SSD: 30 G	With SSD: 30 G
Physical Characteristics	Dimensions (W x H x D)	260 x 44 x 140.2 mm	260 x 54 x 140.2 mm
	Weight	2.3 kg (5.07lb)	2.3 kg (5.07lb)
	Mounting	Desk/ Wall/ VESA/ DIN-Rail mounting	Desk/ Wall/ VESA/ DIN-Rail mounting
Operating System	Microsoft Windows	Yes (Windows 10, WES8, Windows 8, WES7, Windows 7)	Yes (Windows 10, Windows 8.1, WES7, Windows 7)
	Linux	Yes (by Project)	Yes (by Project)
APIs	WISE-Paas/RMM	Yes	Yes
	SUSI API	Yes	Yes
	Other	McAfee, Acronis	McAfee, Acronis
Certification	EMC	CE/FCC Class B, CCC, BSMI	CE/FCC Class B, CCC, BSMI
	Safety Certifications	UL, CCC, BSMI, KC	UL, CCC, BSMI

Embedded PCs



Model Name		EPC-T1217	EPC-T1227	EPC-T2285
Barebone system	Description	Fanless barebone, w/ adapter, w/o SSD, memory	Fan-base barebone, w/ adapter, w/o HDD, memory	Fan-base barebone, w/ adapter, w/o HDD, memory
Processor System	Compatible Motherboard	AIMB-217D-S6A1E	AIMB-227MG2-01A1E	AIMB-285G2-00A1E
	Thermal Solution	Fanless	1x chassis fan (4cm/23.8CFM)/ Fanless	2x chassis fan (4cm/23.8CFM)
	CPU	Intel Pentium N4200 (on board)	AMD R-sweies Dual Core RX-216GD (onboard)	Intel® 6th Gen Core™ i processor (LGA1151)
	BIOS	AMI 128 Mbit SPI	AMI 16 Mbit SPI	AMI EFI 128 Mbit, SPI
Memory	Socket	2 x 204-pin SO-DIMM (Non-ECC)	2 x 260-pin DDR4 SO-DIMM (Non-ECC)	260 PIN DDR4 SO-DIMM (Non-ECC)
	Technology	Dual channel DDR3L 1866 MHz SDRAM	Dual Channel DDR4 2133 MHz SDRAM	Dual Channel DDR4 2133 MHz SDRAM
	Max. Capacity	8 GB/8 GB per SO-DIMM	16 GB/8 GB per SO-DIMM	32 GB/up to 16 GB per SODIMM
Graphics	Chipset Integrated	Intel Gen 9 Graphics Engines and media encode/decode engine	AMD Radeon 3rd Generation GCN	Intel® HD Graphics, Supports OpenGL 5.x, DirectX12, OpenCL 2.X
Storage	2.5" HDD Bay	1 (supports 2.5" SSD, max 9.5 mm height)	1 (supports 2.5" HDD/SSD, max 9.5 mm height)	1 (supports 2.5" HDD/SSD, max 9.5 mm height)
	mSATA Slot	1 (share w/ full size Mini-PCIe slot)	1, F/S x 1 supports mSATA with SIM card holder	1+1 (Full-size, Half-size)
Ethernet	Interface	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	LAN1: Realtek 8111G LAN2: Realtek 8111G	LAN1: Realtek RTL8111G LAN2: Realtek RTL8111G	LAN1: Realtek RTL8111G LAN2: Realtek RTL8111G
	Connector	2 (RJ-45)	2 (RJ-45)	2 (RJ-45)
Audio	Codec	Realtek ALC888S, High Definition Audio (HD)	Realtek ALC892, High Definition Audio (HD)	Realtek ALC892, High Definition Audio (HD)
Internal expansion Slot	Mini-PCIe	1 (Full-size)	1 (Full-size)	1+1 (Full-size, Half-size)
	M.2	1 x M.2 Key E slot (2230)	1 x M.2 Key E slot (2230)	-
	SIM slot	1	1	1
Front Panel	SD slot	-	-	-
	DP++	-	-	-
	DP/HDMI	-	-	-
	VGA	-	-	-
	DVI	-	-	-
	COM	5 (4 x RS-232, 1 x RS232/422/485, 1 support 5V/12V)	5 (4 x RS-232, 1 x RS-232/422/485)	2 (1x RS-232/422/485, 1 x RS-232/422/485 with 5V/12V)
	Lan	-	-	-
	USB	4 (USB2.0; optional)	2 (USB2.0)	4 (USB2.0)
	Audio Jack	2 (Line-Out, Mic-In)	2 (Line-Out, Mic-In)	2 (Line-Out, Mic-In)
	Antenna (optional)	up to 2	up to 2	up to 2
Rear Panel	DP++	-	1	1
	DP/HDMI	1/1	1 (HDMI 1.4)	1 (HDMI 1.4)
	VGA	1	-	-
	DVI	-	1 (DVI-D)	-
	COM	1 (RS232)	1	-
	Lan	2 (RJ-45)	2 (RJ-45)	2 (RJ-45)
	USB	4 (USB3.0)	2 (USB3.0); 2 (USB2.0)	4 (USB3.0)
	Audio Jack	1 (line out)	1 (Line-Out)	2 (Line-Out, Mic-in)
	GPIO	8 bit	8 bit	8 bit
	Antenna (optional)	up to 2	up to 2	up to 2
Miscellaneous	LED Indicators	2 (Power LED, HDD LED)	2 (Power LED, HDD LED)	2 (Power LED, HDD LED)
	Switch	1 (Power Switch); 1 (Reset Switch)	1 (Power Switch); 1 (Reset Switch)	1 (Power Switch); 1 (Reset Switch)
	Circular Cutouts	-	-	1 (Reserved for LVDS cable)
Mounting	Wall mount, VESA mount, Rack mount, DIN rail	Wall mount, VESA mount, Rack mount, DIN rail	Wall mount, VESA mount, Rack mount, DIN rail	
Power Requirements	Power Voltage	12V DC-in	12V DC-in	12V DC-in
	Power Input Type (Inlet)	2.5Ø DC jack	2.5Ø DC jack	2.5Ø DC jack
	Consumption	TBD	TBD	TBD
Environment	Operating Temperature	Fanless: 0~45 °C	0 ~ 50 °C (32 ~ 122 °F)	HDD: 0 ~ 45 °C (32 ~ 113 °F) SSD: 0 ~ 50 °C (32 ~ 122 °F)
	Non-operating Temperature	-40 ~ 85 °C (-40 ~ 185 °F)	-20 ~ 60 °C (-4 ~ 140 °F)	-40 ~ 85 °C (-40 ~ 185 °F)
	Humidity	10~95% @ 40°C, non-condensing	10~95% @ 40°C, non-condensing	10~95% @ 40°C, non-condensing
	Vibration (5 ~ 500Hz)	3 Grms (SSD x 1)	1 Grms (HDD x 1); 3 Grms (SSD x 1)	1 Grms (HDD x 1); 3 Grms (SSD x 1)
	Shock	-	-	-
Certification	CE, FCC	CE, FCC	CE/FCC/CCC	
Physical Characteristics	Dimensions (W x H x D)	250 x 43 x 210 mm (9.84" x 1.69" x 8.27")	250 x 43 x 210 mm (9.84" x 1.69" x 8.27")	250 x 44.2 x 225 mm (9.84" x 1.74" x 8.85")
	Weight	3.1kg	3.1kg	3.68kg

Digital Signage Solutions



Model Name		DS-081	DS-780	DS-280
Processor System	CPU	Intel Core i5-6300U Intel Core i5-6200U Intel Core i3-6100U	Intel Core i7-6600U Intel Core i5-6300U Intel Core i3-6100U Intel Celeron-3955U	Intel Core i7-6822EQ Intel Core i5-7442EQ Intel Core i5-6442EQ Intel Core i3-7102EQ Intel Core i3-6102EQ
	BIOS	AMI uEFI 128 Mbit	AMI uEFI 128 Mbit	AMI uEFI 128 Mbit
	Chipset	Integrated in CPU	Integrated in CPU	Intel QM170
Memory	Technology	DDR4 2133MHz	DDR4 2133MHz	DDR4 2133MHz
	Max. Capacity	32GB (16GB per SO-DIMM)	32GB (16GB per SODIMM)	32GB (16GB per SODIMM)
	Socket	2 x 260-pin SODIMM	2 x 260-pin SODIMM	2 x 260-pin SODIMM
Display	Controller	CPU Integrated	CPU Integrated	CPU Integrated
	Graphic Engine	Intel HD Graphics 520	Intel HD Graphics 520/510	Intel HD Graphics 630/530
	Graphic Memory	Shared system memory	Shared System Memory	Shared system memory
	Multiple Display	Dual	Triple	Triple
	Interface	HDMI 1.4 x 2	HDMI 2.0 x 1, HDMI 1.4 x 2	IAE TX25 80-pin x 1, HDMI 2.0 x1, DP x1
	Max. Resolution	4096 x 2304 @ 24Hz	4096 x 2160 @ 60Hz	4096 x 2304 @ 60Hz
Expansion Interface	M.2	-	1 (2230/1630 E-Key)	-
	Mini PCIe	1	1	1
	PCIe x16	-	-	-
Ethernet	Connector	RJ-45 x 2	RJ-45 x 2	RJ-45 x 2
Audio	Connector	1 (SPDIF/ Line-out/ Mic-in), supports Jack Sense	1 (SPDIF/ Line-out/ Mic-in), supports Jack Sense	1 (Line-out), supports Jack Sense
WatchDog Timer		Yes	Yes	Yes
Storage	SATA	1 x 2.5" SATA III HDD/SSD	1 x 2.5" SATA III HDD/SSD	1 x 2.5" SATA III HDD/SSD
	mSATA	Yes, colay Mini PCIe	Yes, colay Mini PCIe	Yes, colay Mini PCIe
I/O	USB3.0	4	4	3
	USB2.0	-	-	-
	COM Port	1 x RS-232	1 (RS-232)	-
Power	Power Supply	DC 19V input	DC 19V input	DC 12V-19V input (via OPS connector)
Environment	Operational Temperature	0 ~ 40°C (32 ~ 104°F) (w / HDD) with 0.7m/s air flow	0 ~ 40°C (32 ~ 104 °F) with 0.7m/s air flow	0 ~ 40°C (32 ~104°F) (w/ HDD); 0 ~ 50°C (32 ~122°F) (w/ SSD)
Physical Characteristics	Dimensions (L x W x H)	180 x 190 x 19 mm	235 x 175 x 35 mm	200 x 119 x 30 mm
Operating System		Microsoft Windows, Linux (Option)	Microsoft Windows, Linux (Option)	Microsoft Windows, Linux (Option)
Certifications	EMC	CE, FCC Class B, CCC, BSMI	CE, FCC Class B, CCC, BSMI	CE, FCC Class B, CCC, BSMI
	Safety	UL, CB, CCC, BSMI	UL, CB, CCC, BSMI	UL, CB, CCC

In-vehicle & Railway Systems



Application		Outdoor NVR		Rolling Stock	
Model Name		ARK-2121S	ARK-2151S	ARK-2231R	ARK-2250R
Processor System	CPU	Intel Atom E3845	4th Gen Intel® Core i5 4300U	Intel Atom E3845	6th Gen Intel Core i5-6442EQ/i7-6822EQ
	Frequency	1.91 GHz	1.9 GHz	1.91GHz	1.9GHz/2.0GHz
	Core Number	4	2	4	4
	BIOS	AMI EFI 64 Mbit	AMI EFI 128 Mbit	AMI EFI 64bit	AMI UEFI 128Mbit
	Chipset	Intel Atom QC E3845	4th Gen Intel® Core i5 4300U	Intel Atom E3845	QM170
Memory	Technology	DDR3L 1333 MHz	DDR3L 1600 MHz	DDR3L 1333	DDR4 2133MHz
	Max. Capacity	8 GB	8 GB	8G	32G
	Socket	1 x 204-pin SO-DIMM	1 x 204-pin SO-DIMM	1 x 204-pin SODIMM	2 x 260-pin SODIMM
Display	VGA	1 (up to 1600 x 1200)	1 (up to 1920 x 1200)	1 (up to 2560 x 1600)	1 (up to 1920 x 1200)
	LCD (TTL/LVDS/eDP)	LVDS optional	LVDS optional	-	-
	DDI (HDMI/DVI/DisplayPort)	1 x lockable HDMI, up to 1080P	1 x lockable HDMI, up to 4K at 24 Hz	1 x lockable HDMI, up to 1080P	1 x lockable HDMI, up to 1080P
	Multiple Display	Dual	Dual	Dual	Dual
Expansion Interface	Mini PCIe	1 x Full-size Mini PCIe 1 x Full-size Mini PCIe 2 x Full-size Mini PCIe w/SIM holders	1 x Half-size Mini PCIe 1 x Full-size Mini PCIe 2 x Full-size Mini PCIe w/SIM holders	1 x Full-size Mini PCIe 1 x Full-size Mini PCIe 1 x Full-size Mini PCIe w/SIM holder	1x M.2 (2230 E Key) 2 x Full-size Mini PCIe w/SIM holders
	SIM socket	2	2	1 (accessible)	2 (accessible)
Other	GPS	-	-	Support GPS, GLONASS, GALILEO, BeiDou and QZSS signals	Support GPS, GLONASS, GALILEO, BeiDou and QZSS signals
	G-Sensor	-	-	Yes	Yes
	PoE	4 x 10/100 Mbps PoE	4 x 10/100 Mbps PoE	Optional in 2nd stack: 4/8 x GbE PoE+ (M12 D/X-coded)	Optional in 2nd stack: 4/8 x GbE PoE+ (M12 D/X-coded)
	CANBus	-	-	optional	optional
Ethernet	Controller	GbE 1 : Intel I210-IT GbE 2 : Intel I210-IT	GbE 1 : Intel I218 GbE 2 : Intel I210-IT	GbE 1 : Intel I210-IT GbE 2 : Intel I210-IT	GbE 1 : Intel I210-IT GbE 2 : Intel I219
Audio	Audio Interface	HD Audio	HD Audio	HD Audio	HD Audio
	Connector	3 (Line-in, Line-out, Mic-in)	3 (Line-in, Line-out, Mic-in)	3 (Line-in, Line-out, Mic-in)	3 (Line-in, Line-out, Mic-in)
WatchDog Timer		Yes	Yes	Yes	Yes
Storage	SATA	1 x 2.5" removable drive bay	1 x 2.5" removable drive bay	1 x 2.5" removable drive bay Optional 2nd 2.5" drive bay in 2nd stack	1 x 2.5" removable drive bay Optional 2nd 2.5" drive bay in 2nd stack
	mSATA	1 x Full-size mSATA	1 x Full-size mSATA	1 x Full-size mSATA	1 x Full-size mSATA
I/O	USB 3.0	1	2	1	1
	USB2.0	3	2	2	2
	GPIO	6 x DI & 2 x DO with isolation	6 x DI & 2 x DO with isolation	1 x 8bit DIO	1 x 8bit DIO
	COM Port	2 x (RS-232/422/485)	2 x (RS-232/422/485)	2 x RS-232/422/485	2 x RS-232/422/485
	LAN	2 x RJ45	2 x RJ45	2 x M12 X-code	2 x M12 X-code
Power	Power Supply Voltage	9 ~ 36 V _{DC} w/ isolation	9 ~ 36 V _{DC} w/ isolation	24 V _{DC} (48 V _{DC} , 72 V _{DC} , 110 V _{DC} optional)	24 V _{DC} (48 V _{DC} , 72 V _{DC} , 110 V _{DC} optional)
	Connector	3-pin Phoenix	3-pin Phoenix	M12 A-coded	M12 A-coded
	Power Adaptor	AC to DC, 19 V _{DC} , 120W	AC to DC, 19 V _{DC} , 120W	AC to DC, 24Vdc, 150W	AC to DC, 24Vdc, 150W
	Regulation	-	-	EN50155 S2&C1	EN50155 S2&C1
Environment	Operating Temperature (air flow 0.7 m/sec)	-30~60 °C	-20 ~ 60 °C	-40~70 °C (EN50155 Tx)	-40~70 °C (EN50155 Tx)
	Vibration Resistance	3 Grms	3 Grms	IEC61373 Category1, Class B	IEC61373 Category1, Class B
	Shock Protection	30 G	30 G	IEC61373 Category1, Class B	IEC61373 Category1, Class B
Physical Characteristics	Dimensions (W x H x D)	264.5 x 69.2 x 133.0 mm	264.5 x 75.1 x 133.0 mm	260 x 57 x 160 mm (260 x 83.6 x 160 mm with 2nd stack)	260 x 67 x 160 mm (260 x 93.6 x 160 mm with 2nd stack)
Operating System	Microsoft Windows	Yes (Win7, 8, 10)	Yes (Win7, 8, 10)	Yes (Win7, 8, 10)	Yes (Win7, 8, 10)
	Linux	Yes (by Project)	Yes (by Project)	Yes (By project)	Yes (By project)
APIs	SUSIAccess	Yes	Yes	Yes	Yes
Certification	EMC	CE/FCC Class A, CCC, BSMI	CE/FCC Class A, CCC, BSMI	CE/FCC, CCC, BSMI, EN50155	CE/FCC, CCC, BSMI, EN50155
	Safety Certifications	CB, UL, CCC, BSMI	CB, UL, CCC, BSMI	UL, CCC, BSMI, CB, EN50155	UL, CCC, BSMI, CB, EN50155

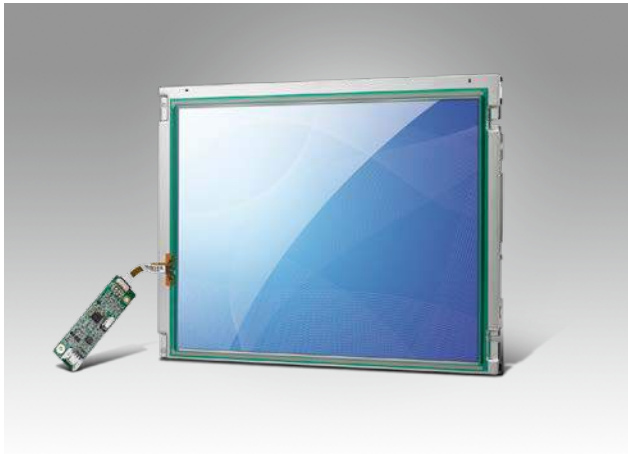


Application		In-Vehicle		
Model Name		ARK-2121V	ARK-2151V	ARK-2250V
Processor System	CPU	Intel Atom E3825/E3845	4th Gen Intel Celeron 2980U/Core i5-4300U	6th Gen Intel Core i5-6442EQ/i7-6822EQ
	Frequency	1.33 GHz / 1.91 GHz	1.6 GHz / 1.9 GHz	1.9GHz/2.0GHz
	Core Number	2/4	2	4
	BIOS	AMI EFI 64 Mbit	AMI EFI 128 Mbit	AMI UEFI 128Mbit
	Chipset	Intel Atom E3825/E3845	4th Gen Intel Celeron 2980U/Core i5-4300U	QM170
Memory	Technology	DDR3L 1066/1333 MHz	DDR3L 1333/1600 MHz	DDR4 2133MHz
	Max. Capacity	8 GB	8 GB	32G
	Socket	1 x 204-pin SODIMM	1 x 204-pin SODIMM	2 x 260-pin SODIMM
Display	VGA	1 (up to 1600 x 1200)	1 (up to 1920 x 1200)	1 (up to 1920 x 1200)
	LCD (TTL/LVDS/eDP)	LVDS optional	LVDS optional	-
	DDI (HDMI/DVI/DisplayPort)	1 x lockable HDMI, up to 1080P	1 x lockable HDMI, up to 4K at 24 Hz	1 x lockable HDMI, up to 1080P
	Multiple Display	Dual	Dual	Dual
Expansion Interface	Mini PCIe	1 x Full-size Mini PCIe 1 x Full-size Mini PCIe 2 x Full-size Mini PCIe w/SIM holders	1 x Half-size Mini PCIe 1 x Full-size Mini PCIe 2 x Full-size Mini PCIe w/SIM holders	1x M.2 (2230 E Key) 2 x Full-size Mini PCIe w/SIM holders
	SIM socket	2	2	2 (accessible)
Other	GPS	Support GPS, GLONASS, GALILEO and OZSS signals	Support GPS, GLONASS, GALILEO and OZSS signals	Support GPS, GLONASS, GALILEO, BeiDou and QZSS signals
	G-Sensor	Yes	Yes	Yes
	PoE	4 x 10/100 Mbps PoE (E3845)	4 x 10/100 Mbps PoE (4300U)	Optional in 2nd stack: 4/8 x GbE PoE+
	CANBus	optional	optional	optional
Ethernet	Controller	GbE 1 : Intel I210-IT GbE 2 : Intel I210-IT	GbE 1 : Intel I218 GbE 2 : Intel I210-IT	GbE 1 : Intel I210-IT GbE 2 : Intel I219
Audio	Audio Interface	HD Audio	HD Audio	HD Audio
	Connector	3 (Line-in, Line-out, Mic-in)	3 (Line-in, Line-out, Mic-in)	3 (Line-in, Line-out, Mic-in)
	3G Voice	1 x Line-out, 1 x Mic-in	1 x Line-out, 1 x Mic-in	-
WatchDog Timer	Yes	Yes	Yes	
Storage	SATA	1 x 2.5" removable drive bay	1 x 2.5" removable drive bay	1 x 2.5" removable drive bay Optional 2nd 2.5" drive bay in 2nd stack
	mSATA	1 x Full-size mSATA	1 x Full-size mSATA	1 x Full-size mSATA
I/O	USB 3.0	1	2	3
	USB2.0	3	2	-
	GPIO	6 x DI & 2 x DO with isolation	6 x DI & 2 x DO with isolation	4x DI & 4x DO with isolation
	COM Port	2 x RS-232/422/485 + 2 x isolated RS-232/422/485 (E3825)	2 x RS-232/422/485 + 2 x isolated RS-232/422/485 (2980U)	3 x RS-232/422/485
	LAN	2 x RJ45	2 x RJ45	2 x RJ45
	Power	Power Supply Voltage	9 ~ 36 V _{DC} w/power ignition management	9 ~ 36 V _{DC} w/power ignition management
Power System	Connector	3-pin Phoenix	3-pin Phoenix	5-pin Phoenix
	Power Adaptor	AC to DC, 19 V _{DC} , 120W	AC to DC, 19 V _{DC} , 120W	AC to DC, 24Vdc, 150W
	Regulation	ISO 7637-2 lev.4	ISO 7637-2 lev.4	ISO 7637-2 Lev.4
	Environment	Operating Temperature (air flow 0.7 m/sec)	-30~70 °C / -30~60 °C	-20~60 °C
Physical Characteristics	Vibration Resistance	IEC 60721-3-5 Class 5M3	IEC 60721-3-5 Class 5M3	IEC 60721-3-5 Class 5M3, MIL-STD 810G
	Shock Protection	IEC 60721-3-5 Class 5M3	IEC 60721-3-5 Class 5M3	IEC 60721-3-5 Class 5M3, MIL-STD 810G
	Dimensions (W x H x D)	264.5 x 69.2 x 133.0 mm	264.5 x 75.1 x 133.0 mm	260 x 67 x 160 mm (260 x 93.6 x 160 mm with 2nd stack)
Operating System	Microsoft Windows	Yes (Win7, 8, 10)	Yes (Win7, 8, 10)	Yes (Win7, 8, 10)
	Linux	Yes (by Project)	Yes (by Project)	Yes (by Project)
APIs	SUSIAccess	Yes	Yes	Yes
Certification	EMC	CE/FCC Class A, CCC, BSMI	CE/FCC Class A, CCC, BSMI	CE/FCC Class B, CCC, BSMI
	Safety Certifications	UL, CCC, BSMI, CB, E-Mark	UL, CCC, BSMI, CB, E-Mark	CB, UL, CCC, BSMI, E-Mark

Industrial Display Systems

IDK-1000

Industrial Touch LCD Kits



Features

- 5.7"~28" industrial grade LCD kits with LED backlight
- Suitable for indoor applications
- LVDS signal interface
- Resistive/Projected Capacitive touchscreen support
- Touch controller included with USB cable
- Full compatibility with embedded boards

Specifications

	IDK-1105	IDK-065	IDK-1107			IDK-1108	IDK-1110W		IDK-1110		IDK-1112	IDK-1115		IDK-1119	IDK-1121		IDK-1128	
LCD Display	Size	5.7"	6.5"	7"			8.4"	10.1"		10.4"		12.1"	15"		19"	21.5"		28"
	Resolution	640 x 480 (VGA)	640 x 480 (VGA)	800 x 480 (WVGA)	1024 x 600 (WSVGA)	1024 x 600 (WSVGA)	800 x 600 (SVGA)	1024 x 600 (WSVGA)	1280 x 800 (WXGA)	800 x 600 (SVGA)	1024 x 768 (XGA)	800 x 600 (SVGA)	1024 x 768 (XGA)	1024 x 768 (XGA)	1280 x 1024 (SXGA)	1920 x 1080 (FHD)	1920 x 1080 (FHD)	1920 x 358 (FHD)
	Brightness (cd/m ²)	500	800	400	400	500	450	550	500	400	500	450	400	400	350	300	250	700
	Colors	262K	262K / 16.2M	262K / 16.2M	262K / 16.2M	262K / 16.2M	262K / 16.2M	262K	262K / 16.2M	262K / 16.2M	16.2M	262K / 16.2M	262K / 16.2M	262K / 16.2M	16.7M	16.7M	16.7M	16.7M
	Viewing Angle (H/V°)	140/100	160/140	160/160	150/145	140/120	160/140	120/140	170/170	160/130	176/176	160/140	160/140	160/140	170/160	178/178	178/178	178/178
	Contrast Ratio	250:1	600:1	750:1	700:1	600:1	600:1	500:1	800:1	700:1	1000:1	700:1	700:1	700:1	1000:1	5000:1	1000:1	3000:1
	Response Time (ms)	50	25	30	25	16	30	25	25	20	25	35	16	16	5	25	14	6.5
	Touchscreen	4-Wire Resistive	4-Wire Resistive	4-Wire Resistive	4-Wire Resistive	P-cap	4-Wire Resistive	4-Wire Resistive	P-cap	4-Wire Resistive	P-cap	5-Wire Resistive	5-Wire Resistive	P-cap	5-Wire Resistive	5-Wire Resistive	P-cap	N/A
	Signal Interface	LVDS	LVDS	LVDS	LVDS	LVDS	LVDS	LVDS	LVDS	LVDS	LVDS	LVDS	LVDS	LVDS	2 Channel LVDS	2 Channel LVDS	2 Channel LVDS	2 Channel LVDS
	Backlight Type	LED	LED	LED	LED	LED	LED	LED	LED	LED	LED	LED	LED	LED	LED	LED	LED	LED
	Backlight Life (hrs)	30,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	30,000	50,000
	Power Consumption (W)	1.8	3.86	3.7	4.7	3.56	2.94	7.99	6.18	4.8	7.9	6.7	10.6	10.6	20.55	19.82	11.05	38.76
	Dimensions (mm)	127 x 98 x 8	153 x 118 x 11	170 x 111 x 8	166 x 104 x 7	165 x 104 x 10	203 x 143 x 8	235 x 146 x 8	231 x 153 x 7	243 x 184 x 7	223 x 176 x 9	279 x 209 x 9	327 x 254 x 12	327 x 254 x 12	396 x 324 x 18	497 x 292 x 13	498 x 292 x 11	734 x 185 x 18
	Weight (g)	200	170	165	139	160	250	320	360	365	430	580	1084	1084	1670	2300	1685	1800
Touchscreen	Durability (touches)	1 million	1 million	1 million	1 million	50 million ~	1 million	1 million	50 million ~	1 million	50 million ~	10 million	10 million	50 million ~	10 million	10 million	50 million ~	N/A
	Surface Hardness	3H	3H	3H	3H	Mohs 5H	3H	3H	Mohs 5H	3H	Mohs 5H	3H	3H	Mohs 5H	3H	3H	Mohs 5H	N/A
	Transparency	80%	82.50%	82.50%	82.50%	90%	82.50%	82.50%	91%	82.50%	90%	80%	80%	91%	80%	80%	91%	N/A
Environment	Operating Temperature (°C)	-20 ~ 70	-10 ~ 60	-5 ~ 60	-20 ~ 70	-20 ~ 70	-10 ~ 60	-5 ~ 60	-20 ~ 65	-10 ~ 60	-20 ~ 70	-20 ~ 70	-20 ~ 70	0 ~ 50	0 ~ 60	0 ~ 50	-10 ~ 60	

IDS-3100

Open Frame Monitors



Features

- 6.5" ~ 21.5" industrial grade LCD panel with LED backlight
- Slim open frame design with integrated bracket
- Dual VGA/DVI interface
- P-cap/resistive/non-touch options
- Rear/VESA mount
- Optional high brightness solution
- Easy integration with embedded box PCs



Specifications

Model	IDS-3106	IDS-3110E	IDS-3110		IDS-3112E	IDS-3112		IDS-3115E	IDS-3115	IDS-3115P	IDS-3117E	IDS-3117	IDS-3118W	IDS-3119	IDS-3121W	
LCD (IPS/CC)	Screen Size	6.5"	10.4"	10.4"	10.4"	12.1"	12.1"	15"	15"	15"	17"	17"	18.5"	19"	21.5"	
	Resolution	640 x 480 (VGA)	800 x 600 (SVGA)	800 x 600 (SVGA)	1024 x 768 (XGA)	800 x 600 (SVGA)	800 x 600 (SVGA)	1024 x 768 (XGA)	1024 x 768 (XGA)	1024 x 768 (XGA)	1280 x 1024 (SXGA)	1280 x 1024 (SXGA)	1366 x 768 (HD)	1280 x 1024 (SXGA)	1920 x 1080 (FHD)	
	Colors	16.2M	16.2M	16.2M	16.2M	16.2M	16.2M	16.2M	16.2M	16.2M	16.2M	16.7M	16.7M	16.7M	16.7M	
	Viewing Angle (H/V°)	160/140	160/130	160/140	176/176	160/140	160/140	160/140	160/140	160/140	160/140	170/160	170/160	170/160	170/160	
	Contrast Ratio	600:1	500:1	700:1	1000:1	700:1	700:1	700:1	700:1	700:1	700:1	1000:1	800:1	1000:1	1000:1	
	Response Time (ms)	25	35	30	25	35	35	16	16	25	25	5	30	5	5	
	Brightness (cd/m²)	800	230	400	500	450	450	600	250	400	500/1200	250	350	300	350	
	Backlight Type	LED	LED	LED	LED	LED	LED	LED	LED	LED	LED	LED	LED	LED	LED	
	Backlight Life	50,000	30,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	40,000	50,000	50,000	50,000	
	Dimensions (mm) (without touch)	215 x 160 x 32.1	279.4 x 220 x 30	279.4 x 220 x 30	279.4x220x30	320.2 x 252 x 30.7	320.2 x 252 x 30.7	320.2 x 252 x 30.7	362 x 288 x 32.8	362 x 288 x 32.8	362 x 288 x 32.8	400 x 344.7 x 33.4	400 x 344.7 x 33.4	478 x 303 x 33	438 x 369.7 x 34.3	546.6 x 299.2 x 45.5
Weight (kg) (without touch)	0.8	0.95	1	1	1.6	1.6	1.6	3.8	3.8	3.8	4.1	3.45	5	5.2	6	
Environment	Operating Temperature (°C)	0-50	0-45	-20-60	-20-60	0-45	-20-60	-20-60	0-45	-20-60	-20-60	0-45	-20-60	0-55	0-45	
	Storage Temperature (°C)	-20-60	-20-60	-30-70	-30-70	-20-60	-30-70	-30-70	-20-60	-30-70	-30-70	-20-60	-30-70	-20-60	-20-60	
	Humidity (non-condensing)	5-95% @ 40°C	5-95% @ 40°C	5-95% @ 40°C	5-95% @ 40°C	5-95% @ 40°C	5-95% @ 40°C	5-95% @ 40°C	5-95% @ 40°C	5-95% @ 40°C	5-95% @ 40°C	5-95% @ 40°C	5-95% @ 40°C	90% @ 40°C	5-95% @ 40°C	
Touchscreen (optional)	Type	4-Wire Resistive	5-Wire Resistive	5-Wire Resistive	5-Wire Resistive / P-cap	5-Wire Resistive	5-Wire Resistive	5-Wire Resistive	5-Wire Resistive	5-Wire Resistive	P-cap	5-Wire Resistive	5-Wire Resistive	5-Wire Resistive / P-cap	5-Wire Resistive / P-cap	
	Transparency	80%	81%	81%	81%	90%	80%	80%	80%	80%	89%	80%	80%	80%	86%	
	Surface Hardness	3H	3H	3H	3H	5H	3H	3H	3H	3H	3H	5H	3H	3H	3H	
System	I/O Ports	VGA x 1; DVI x 1; 12 V _{DC} Jack x 1; USB x 1 (USB is reserved for the connection to enable touch usage only)	VGA x 1; DVI x 1; 12 V _{DC} Jack x 1; USB x 1; RS-232 x 1 (USB & RS-232 are reserved for the connection to enable touch usage only)						VGA x 1; DVI x 1; 12 V _{DC} Jack x 1; USB x 1 (USB is reserved for the connection to enable touch usage only)		VGA x 1; DVI x 1; 12 V _{DC} Jack x 1; USB x 1; RS-232 x 1 (USB & RS-232 are reserved for the connection to enable touch usage only)					
	OSD	Keys: Power on/off, Menu/Enter, Left/Up, Right/Down, Exit/Auto, Source Menu Functions: Brightness, Contrast, Screen Setting, Color Temp, OSD Language, VGA/DVI, Reset, Auto Adjust														
	Power	36W power adapter, with AC 100 - 240V input and DC +12V @ 3A output								60W power adapter, with AC 100 - 240V input and DC +12V @ 5A output						

Industrial Display Systems

IDP31 Series



Proflat 100% Flat Touch Monitors

Features

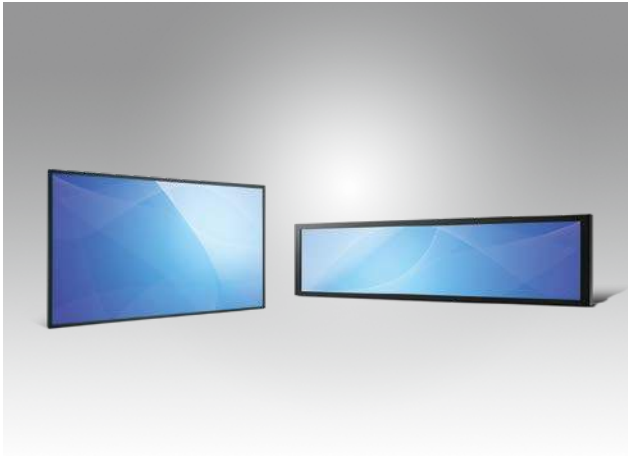
- 10.4", 15", 21.5" industrial grade LCD panel with LED backlight
- 100% flat glass front for easy maintenance
- Elegant rounded edge design, no need for additional enclosures
- HDMI/VGA/DVI interface
- Projected capacitive multi-touch design
- Stand/wall mount
- Portrait & landscape modes support

Specifications

Model	IDP31-104	IDP31-150	IDP31-215W	
LCD Display	Screen Size	10.4"	15"	21.5"
	Resolution	800 x 600 (SVGA)	1024 x 768 (XGA)	1920 x 1080 (FHD)
	Colors	16.2M	16.2M	16.7M
	Viewing Angle (H/V°)	160/140	160/140	178/178
	Contrast Ratio	700:1	700:1	1000:1
	Response Time (ms)	30	25	5
	Brightness (cd/m ²)	400	500	250
	Backlight Type	LED	LED	LED
	Backlight Life	50,000	50,000	30,000
	Dimensions (mm) (without touch)	259.4 x 205.4 x 42.5	TBD	520.98 x 314.99 x 42.6
Environment	Operating Temperature (°C)	-20~60	-20~60	0~45
	Storage Temperature (°C)	-30~70	-30~70	-20~60
	Humidity (non-condensing)	5~95% @ 40°C	5~95% @ 40°C	5~95% @ 40°C
Touchscreen (Optional)	Type	P-cap	P-cap	P-cap
	Transparency	86%	86%	86%
	Surface Hardness	6H	6H	6H
System	I/O Ports	VGA x 1; DVI x 1; 12 V _{DC} Jack x 1; USB x 1; (USB is reserved for the connection to enable touch usage only)	HDMI x 1, VGA x 1; DVI x 1; 12 V _{DC} Jack x 1; USB x 1 (USB is reserved for the connection to enable touch usage only)	
	OSD	Keys: Power on/off, Menu/Enter, Left/Up, Right/Down, Exit/Auto, Source Menu Functions: Brightness, Contrast, Screen Setting, Color Temp, OSD Language, VGA/DVI, Reset, Auto Adjust		
	Power	36W power adapter, with AC 100 ~ 240V input and DC +12V @ 3A outp	60W power adapter, with AC 100 ~ 240V input and DC +12V @ 5A output	

DSD-3000/DSD-5000 Series

Digital Signage Displays



Features

- 28" ~ 55" size options
- Wide viewing angle
- Fanless design
- HDMI/VGA/DVI/DP interface
- Optional optical touch support
- Stand/wall mount
- Portrait & landscape modes support



Specifications

		DSD- 3032	DSD- 3055	DSD- 5028	DSD- 5038
LCD Display	Size	32"	55"	28"	38"
	Resolution	1920 x 1080	1920 x 1080	1920 x 358	1920 x 538
	Colors	16.7 M	1073M	16.7M	16.7M
	Viewing Angle (H/V°)	178/178	178/178	178/178	176/176
	Contrast Ratio	3000:1	4000:1	3000:1	4000:1
	Response Time (ms)	8	6.5	6.5	9.5
	Brightness	500	450	700	800
	Backlight Type	LED	LED	LED	LED
	Backlight Life (hrs)	50,000	50,000	50,000	50,000
	Dimensions (mm)	743.6 x 438.11 x 73	1238.6 x 709.4 x 72.5	736.6x 167.3 x 44.35	980.9 x 303.2 x 44.35
Weight (kg)	14	31	3	6.4	
Touchscreen (Optional)	Type	Optical Touch	Optical Touch	N/A	N/A
	Durability	10 million touches	10 million touches	N/A	N/A
	Surface Hardness	7H	7H	N/A	N/A
	Transparency	92%	92%	N/A	N/A
Environment	Temperature (Operating)	5 ~ 45 °C	5 ~ 45 °C	0 ~ 45 °C	0 ~ 45 °C
	Temperature (Storage)	-20 ~ 55 °C	-20 ~ 55 °C	-10 ~ 60 °C	-10 ~ 60 °C
	Humidity	20 ~ 80 % RH	20 ~ 80 % RH	20 ~ 80 % RH	20 ~ 80 % RH
System	I/O Ports	HDMI/VGA/DisplayPort	HDMI/VGA/DisplayPort	VGA/DVI	VGA/DVI
	OSD control	RS-232/RS-485/Remote	RS-232/RS-485/Remote	RS-232	RS-232
	Power Consumption (W)	80	145	40	76

Industrial Flash and Memory Solutions

SQFlash Industrial Storage Modules

SATA SSD

Advantech SQFlash industrial storage modules support SATA interface SSD with multiple form factors including with 2.5" SSD, mSATA, M.2, DOM, CFast, Half-Slim, etc. with wide temperature support. Our storage solutions also include complete power failure protection.

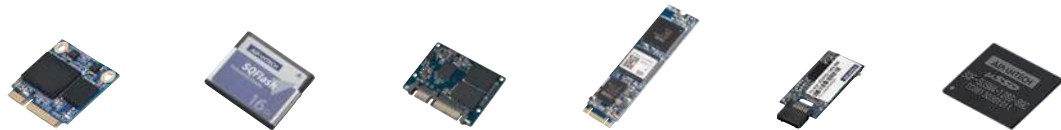
Extreme Performance

Embedded



Model Name	SQF-S25, 830 series	SQF-SMS, 830 series	SQF-SM8, 830 series	SQF-S25, 640 series	SQF-SM8, 640 series	SQF-SM4, 640 series	SQF-SMS, 640 series
Form Factor	2.5" SATA SSD	mSATA SSD (MO-300A)	M.2 2280 SATA SSD (NGFF)	2.5" SATA SSD	M.2 2280 SATA SSD (NGFF)	M.2 2242 SATA SSD (NGFF)	mSATA SSD (MO-300A)
Transfer Protocol	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s
Connector	7 + 15 pin SATA	Mini PCIe with SATA pin-out	M.2 with B+M key SATA pin-out	7 + 15 pin SATA	M.2 with B+M key SATA pin-out	M.2 with B+M key SATA pin-out	Mini PCIe with SATA pin-out
Flash Type	SLC / Ultra MLC / MLC / 3D V-NAND	SLC / Ultra MLC / MLC / 3D V-NAND	SLC / Ultra MLC / MLC / 3D V-NAND	SLC / Ultra MLC / MLC / 3D V-NAND	SLC / Ultra MLC / MLC / 3D V-NAND	SLC / Ultra MLC / MLC / 3D V-NAND	SLC / Ultra MLC / MLC / 3D V-NAND
Maximum Power Consumption	1,000 mA	1,000 mA	1,000 mA	530 mA	750 mA	500 mA	750 mA
Capacity	64GB ~ 2TB	32GB ~ 1TB	32GB ~ 1TB	16GB ~ 512GB	16GB ~ 1TB	16GB ~ 512GB	16GB ~ 1TB
Maximum Read / Write Performance (MB/s)	Sequential: 550 / 530 Random IOPS@4K: 100K / 100K	Sequential: 540 / 480 Random IOPS@4K: 88K / 91K	Sequential: 540 / 480 Random IOPS@4K: 88K / 91K	Sequential: 560 / 490 Random IOPS@4K: 86K / 91K	Sequential: 560 / 490 Random IOPS@4K: 86K / 91K	Sequential: 560 / 500 Random IOPS@4K: 86K / 91K	Sequential: 560 / 490 Random IOPS@4K: 86K / 91K
Op. Temperature	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C	0 ~ 70 °C	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C
SQFlash Utility	Supported	Supported	Supported	Supported	Supported	Supported	Supported
Shock	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms
Vibration	20G, Peak / 80 ~2,000 Hz	20G, Peak / 80 ~2,000 Hz	20G, Peak / 80 ~2,000 Hz	20G, Peak / 80 ~2,000 Hz	20G, Peak / 80 ~2,000 Hz	20G, Peak / 80 ~2,000 Hz	20G, Peak / 80 ~2,000 Hz

Embedded



Model Name	SQF-SHM, 640 series	SQF-S10, 640 series	SQF-SLM, 640 series	SQF-SM6, 630 series	SQF-SDM, 630 series	SQF-SUS, 630 series
Form Factor	H/S mSATA SSD (MO-300B)	CFast	Half-Slim SSD	M.2 2260 SATA SSD (NGFF)	SATA DOM	Micro SSD
Transfer Protocol	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s
Connector	Mini PCIe with SATA pin-out	CFast Type-I	7 + 15 pin SATA	M.2 with B+M key SATA pin-out	7-pin Female	Onboard
Flash Type	SLC / Ultra MLC / MLC / 3D V-NAND	SLC / Ultra MLC / MLC / 3D V-NAND	SLC / Ultra MLC / MLC / 3D V-NAND	SLC / Ultra MLC / MLC	SLC / Ultra MLC / MLC	Ultra MLC / MLC
Maximum Power Consumption	500 mA	500 mA	500 mA	500 mA	480 mA	500 mA
Capacity	16GB ~ 256GB	16GB ~ 128GB	16GB ~ 512GB	8GB ~ 256GB	1GB ~ 128GB	2GB ~ 64GB
Maximum Read / Write Performance (MB/s)	Sequential: 560 / 490 Random IOPS@4K: 86K / 91K	Sequential: 560 / 470 Random IOPS@4K: 82K / 82K	Sequential: 560 / 490 Random IOPS@4K: 86K / 91K	SLC: 500 / 150 Ultra MLC: 520 / 170 MLC: 490 / 170	SLC: 500 / 150 Ultra MLC: 520 / 195 MLC: 520 / 200	Ultra MLC: 490/190 MLC: 480/190
Op. Temperature	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C
SQFlash Utility	Supported	Supported	Supported	Supported	Supported	Supported
Shock	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms
Vibration	20G, Peak / 80 ~2,000 Hz	20G, Peak / 80 ~2,000 Hz	20G, Peak / 80 ~2,000 Hz	20G, Peak / 80 ~2,000 Hz	20G, Peak / 80 ~2,000 Hz	20G, Peak / 80 ~2,000 Hz

NVMe SSD

Advantech SQFlash industrial storage modules support the latest PCIe / NVMe interface SSDs such as U.2 and M.2 for enterprise class applications. For the general embedded market, Advantech's unique but widely compatible Mini PCIe / M.2 2230 form factors are also available for higher flexibility of system integration.

Enterprise



Embedded



Model Name	SQF-C25, 920 series	SQF-CM8, 920 series	SQF-CMS, 710 series	SQF-CM8, 710 series	SQF-CM3, 710 series
Form factor	2.5" U.2 NVMe SSD	M.2 2280 NVMe SSD (NGFF)	Full-size Mini PCIe SSD	M.2 2280 NVMe SSD (NGFF)	M.2 2230 NVMe SSD (NGFF)
Transfer Protocol	PCIe Gen3 x4	PCIe Gen3 x4	PCIe Gen3 x2	PCIe Gen3 x2	PCIe Gen3 x2
Connector	U.2 NVMe Interface (SFF 8639)	M.2 M-key with PCIe pin-out	Mini PCIe with PCIe pin-out	M.2 B+M key with PCIe pin-out	M.2 A+E key with PCIe pin-out
Flash Type	3D V-NAND	3D V-NAND	3D V-NAND	3D V-NAND	3D V-NAND
Maximum Power Consumption	TBD	TBD	TBD	TBD	TBD
Capacity	200GB ~ 8TB	200GB ~ 4TB	60GB ~ 1.8TB	60GB ~ 1.8TB	30GB ~ 240GB
Maximum Read / Write Performance (MB/s)	Read: up to 2,700 Write: up to 2,300	Read: up to 2,700 Write: up to 2,300	Read: up to 1,600 Write: up to 1,100	Read: up to 1,600 Write: up to 1,100	Read: up to 1,600 Write: up to 1,100
Op. Temperature	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C
SQFlash Utility	Supported	Supported	Supported	Supported	Supported
Shock	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms
Vibration	20G, Peak / 80 ~ 2,000 Hz	20G, Peak / 80 ~ 2,000 Hz	20G, Peak / 80 ~ 2,000 Hz	20G, Peak / 80 ~ 2,000 Hz	20G, Peak / 80 ~ 2,000 Hz

PATA Storage and SD Card

Advantech SQFlash industrial storage modules support PATA/IDE interface SSDs with multiple form factors such as 2.5" SSD, DOM and CF, optional for PIO transfer mode. And, SD interface products such as SD/SDXC and Micron SD, USB DOMs and eMMC products are also available with wide temperature support to fit industrial applications.



Model Name	SQF-P10 P8/P9	SQF-PDM	SQF-P25 P9	SQF-ISD	SQF-MSD	SQF-MMC	SQF-UPD
Form factor	CF card	PATA DOM	2.5" PATA SSD	Industrial SD card	Industrial Micro SD card	Industrial eMMC	USB Pen Drive
Interface	IDE / PCMCIA	IDE	IDE	SD	SD	eMMC	USB
Transfer Protocol	UDMA 2 / UDMA 4 / UDMA 5	UDMA2 / UDMA 4	UDMA 4	SDIO	SDIO	MMC	USB 3.1/2.0/1.1
Connector	CF Type-I	44-pin Female / 40-pin Female	44-pin Male	SD 9-pin	SD 9-pin	onboard	USB type
Flash Type	SLC / Ultra MLC / MLC	SLC	SLC / Ultra MLC / MLC	SLC / Ultra MLC / MLC	SLC / Ultra MLC / MLC	MLC / 3D V-NAND	MLC
Maximum Power Consumption	160 mA	160 mA	210 mA	100 mA	100 mA	100 mA	190 mA
Capacity	256MB ~ 512 MB 1GB ~ 64GB	1GB ~ 16GB	4GB ~ 256GB	1GB ~ 128GB	1GB ~ 128GB	1GB ~ 128GB	4GB ~ 128GB
Maximum Read / Write Performance (MB/s)	4 channel: 83/87 2 channel: 43/40 1 channel: 22/15	2 channel: 40/29	SLC: 65/55 MLC: 63/28	SLC: 25/15 MLC: 22/10	SLC: 25/15 MLC: 22/10	SLC: 25/15 MLC: 22/10	MLC: TBD
Op. Temperature	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C / -40 ~ 85 °C	0 ~ 70 °C
SQFlash Utility	Supported	Supported	Supported	Not Supported	Not Supported	Not Supported	Not Supported
Shock	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms	1,500G, Peak / 0.5 ms
Vibration	20G, Peak / 80 ~ 2,000 Hz	20G, Peak / 80 ~ 2,000 Hz	20G, Peak / 80 ~ 2,000 Hz	5G, Peak / 10 ~ 2,000 Hz	5G, Peak / 10 ~ 2,000 Hz	5G, Peak / 10 ~ 2,000 Hz	15G, Peak / 10 ~ 2,000 Hz

Embedded Software Distribution



Windows OS				
Product	Windows 10 IoT Enterprise	Windows Embedded Standard	Windows Embedded Enterprise	Windows Embedded Industry and POSReady
Overview	Windows 10 IoT is a family of Windows 10 editions with advanced lockdown capabilities that power a range of industry devices across retail and manufacturing.	This is a componentized OS to let you create custom operating system images to deliver precise functionality to devices.	Windows Embedded Enterprise powers dedicated embedded devices that require compatibility and the flexibility to deploy a custom user interface.	Windows Embedded POSReady is a flexible OS designed to seamlessly connectpoint-of-service solutions with peripherals, servers, and services.
Benefits	<ul style="list-style-type: none"> One app platform - universal ppp (UAP) Supports unified POS implementation Build-in Embedded lockdown capabilities Full-spectrum interconnectivity 	<ul style="list-style-type: none"> Componentized operating system lets you choose the features that you want Custom branding lets you provide a unique, custom experience from start to finish Lockdown features help ensure predictable customer experience 	<ul style="list-style-type: none"> Take advantage of full Windows to provide a high degree of cross-platform application compatibility Deliver an immersive, natural user experience with multi-touch and Kinect for Windows Easily implement retail peripherals with built-in plug and play capabilities 	<ul style="list-style-type: none"> Take advantage of full Windows 8.1 to provide a high degree of cross-platform application compatibility Easily implement retail peripherals with built-in plug and play capabilities Build and deploy industrial devices with streamlined OS installation
Min. Hardware Requirement	<ul style="list-style-type: none"> x86 or AMD64 processor 1GB CPU or higher 1GB of system memory (2GB recommended for 64-bit) 16G free space on hard disk drive 	<ul style="list-style-type: none"> x86 or AMD64 processor 900mhz CPU or higher 512 MB of system memory (1GB recommended for AMD64) 1 GB free space on hard disk drive (HDD) or flash-based Solid State Drive (SSD) (4 GB recommended) 	<ul style="list-style-type: none"> x86 or AMD64 processor 1GB CPU or higher 1GB of system memory (2GB recommended for 64-bit) 16GB free space on hard disk drive (HDD) 	<ul style="list-style-type: none"> x86 or AMD64 processors 900mhz CPU or higher 512 MB of system memory (1GB recommended for AMD64) 1 GB free space on hard disk drive (HDD) or flash-based Solid State Drive (SSD) (4 GB recommended)
Product	<ul style="list-style-type: none"> Windows 10 IoT Enterprise LTSB Windows 10 IoT Enterprise CBB 	<ul style="list-style-type: none"> Windows Embedded Standard 8 Windows Embedded Standard 7 	<ul style="list-style-type: none"> Windows Embedded 8.1 Industry Pro Windows 8.1 pro for embedded system Windows 7 pro/ultimate for embedded system 	<ul style="list-style-type: none"> Windows 8.1 Industry pro retail POSReady 7 POSReady2009

Windows OS			
Product	Windows Embedded Compact	Windows Embedded Server	Microsoft SQL Server for Embedded Systems
Overview	Windows Embedded Compact is a componentized, real-time, small-footprint OS for powering some of the industry's smallest devices.	Windows Server has built-in security, reliability, and availability features intended for application in embedded solutions.	Microsoft SQL Server is intended for application in embedded solutions or purpose-built HW running Windows Embedded Server OS.
Benefits	<ul style="list-style-type: none"> OS for specialized, small-footprint devices that need real-time performance and compatibility with ARM and x86 architectures Platform for sensors-to-cloud intelligent systems applications Focussed on industrial automation, retail and medical devices 	<ul style="list-style-type: none"> Offers a dynamic infrastructure that can scale up, increase hardware ROI, and reduce total cost of ownership Platform features diverse storage choices that can help achieve high-performance, availability and resource efficiency through virtualization and optimization Delivers centralized access and audit policies, leverages built-in security capabilities, and helps lock down your appliances 	<ul style="list-style-type: none"> Breakthrough performance Enterprise scalability across computers, networking, and storage Consistent data platform on-premises to the cloud
Min. Hardware Requirement	<ul style="list-style-type: none"> 1.6 GHz CPU, 384 MB RAM, 1024x768 display 100 GB of free hard disk space 	<ul style="list-style-type: none"> 1.4 GHz 64-bit processor or higher Minimum: 512 MB system memory Minimum: 32 GB free space 	<ul style="list-style-type: none"> x86 or AMD64 processor 1.4 GHz or higher 1GB of system memory
Product	<ul style="list-style-type: none"> Windows Embedded Compact 2013 Windows Embedded Compact 7 Windows Embedded CE 6.0 	<ul style="list-style-type: none"> Server 2016 for embedded system Server 2012 for embedded system Server 2008 for embedded system 	<ul style="list-style-type: none"> SQL Server 2017 for embedded system SQL server 2016 for embedded system SQL server 2014 for embedded system

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