Product Catalog 2020-2021

Industrial IoT Systems and Devices

Driving Industrial IoT Innovation in AIoT Era

- IIoT Software Solutions
- Edge AI and SKY Servers
- Intelligent Systems
- Machine Vision Solutions
- Intelligent HMI and Monitors
- Automation Computers
- DAQ and Communication Gateways
- Industrial Communication
- Remote I/O, Wireless Sensing Modules and Converters
- Intelligent Motion Control Solutions
- EtherCAT Solutions and Automation Controllers
- Industrial I/O Solutions
- Intelligent Transportation Platforms
- Utility and Energy Solutions

ADVANTECH

Enabling an Intelligent Planet

www.advantech.com

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About Advantech

Co-Creating the Future of the IoT World

Founded in 1983, Advantech is a leading global provider of intelligent IoT systems and embedded platforms. Embracing the recent trends of IoT, big data, and artificial intelligence, Advantech develops IoT hardware and software solutions based on its WISE-PaaS industrial IoT cloud platform to assist partners and customers with integrating industry chains. Advantech also works with partners to co-create business ecosystems that facilitate intelligent industry and realize its corporate goal of "Enabling an Intelligent Planet".

Advantech's Good-to-Great 3-Circle Principle

The Advantech 3-Circle Principle is based on the book Good to Great by Jim Collins. According to the book, a company looking for long-term success should clearly address these three fundamental principles, and commit to their continuing, solid execution. Advantech is fully committed to this approach and has defined the Advantech "Good to Great 3-Circle Principle" as a means of adhering to it.

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, has for many years recognized Advantech as one of the Top 10 Taiwanese Global Brands.

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.

Corporate Sustainability Statement

Enabling an Intelligent Planet by Co-Creating the Future of Industrial IoT and Smart Cities Through Ecosystem Partnership and Academic Collaboration

Increasing urbanization, aging populations, and resource depletion have given rise to numerous environmental and social issues. Advantech is committed to addressing these global challenges by leveraging its innovations in IoT technology and integrating sustainable development initiatives into its operating strategies. Therefore, in 2018, Advantech cooperated with external consultants to redefine its four key initiatives as—establishing an innovative work environment, cultivating IoT talent, collaborating with co-creation partners and academia, and developing an open ecosystem—in order to achieve an intelligent planet.

In response to global sustainable development goals, Advantech promises to assist its employees, ecosystem partners, and industrial and academic organizations by leveraging its industrial IoT technology to build smart city and Industry 4.0 solutions, thereby creating new and sustainable value for society, the environment, and the planet.

Advantech uses its core IoT technology to enhance health service quality, energy efficiency, industrial automation, logistics/retail, carbon footprint reduction, and manufacturing efficiency around the world, in accordance with SDGs 3, 7, 9, 11, and 12. Elements of Advantech's operational strategy, such as maintaining an innovative environment, IoT education, co-creation partnerships, and open platforms, contribute to global sustainability goals, in accordance with SDGs 8, 4, and 17 regarding productivity and employment, education and collaboration.

Workplace
Building an inclusive environment and platform for Advantechers to embrace a passionate life.

Education
Promote Industrial IoT education through academia and industry collaborations.

Ecosystem
Cooperate with co-creation partners to lead the Industrial IoT value chain.

Platform
Achieve an Intelligent Planet to realize a sustainable community and environment.

Good Health and Well-Being

Affordable and Clean Energy

Industry, Innovation and Infrastructure

Sustainable Cities and Communities

Responsible Consumption and Production

Advantech Global Services

Advantech has offices in 27 countries, with over 20 regional hotlines and more than 8,000 employees dedicated to providing efficient, professional services related to customer care, product selection, technical support, and order handling. Our call centers and online stores offer worldwide customers the convenience of multi-service channels as well as accelerated turnaround times. Supported by four logistics centers located in Taiwan, China, Europe, and the United States, Advantech's global service network offers an extensive spectrum of services that includes warehousing, logistics, peripheral certification, sourcing and purchasing, RMA, value-added services, and technical support and training.

Manufacturing

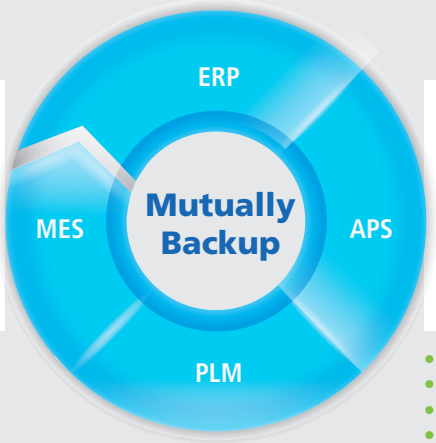
Both of Advantech's world-class manufacturing centers located in Taiwan and China maintain precise quality control and deliver comprehensive, timely, and cost-effective production. To maximize the efficiency of production operations, we have implemented a cluster manufacturing system within our segmented manufacturing service units. This unique approach enables a direct, simplified, and highly streamlined design-to-manufacturing process.

ATMC

Advantech Taiwan Manufacturing Center

High mix/New technologies

- Small-volume production
- Board and system products
- DTOS projects
- Engineering sample services
- Complex product lines
- Flexible and rapid production



AKMC

Advantech Kunshan Manufacturing Center

High volume/Mature products

- Mid-to-high-volume production
- Board and system products
- Chassis design and production
- DMS/DTOS projects
- Mature product lines
- Cost-effective production

- In-house board, chassis, and system production
- Dual world-class manufacturing centers minimize business risks
- Advanced production capabilities and customizable processes
- Rigid quality assurance system
- Comprehensive ISO standard coverage

Quality and Environmental Compliance

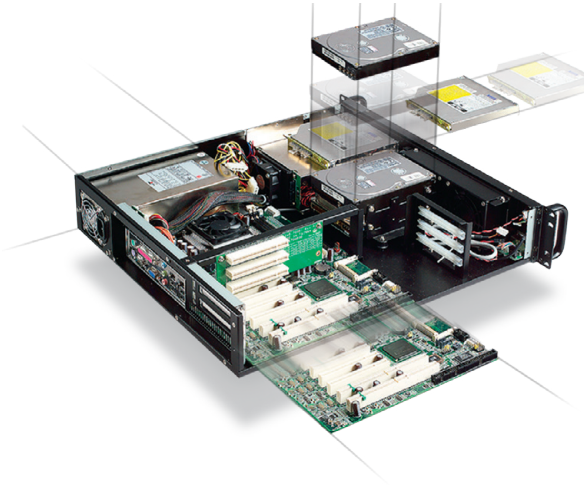
As a member of the global village, Advantech understands the importance of preserving the environment. Our environmental programs focus on reducing, reusing, and recycling materials used in our manufacturing operations. Advantech's quality and environmental compliance efforts include the following:

- ISO 9001 Certification
- ISO 14001 Certification
- ISO 13485 Certification
- OHSAS 18001 Certification
- TL9000 Certification
- ISO 17025 Certification
- RoHS Directive Compliance
- WEEE Directive Compliance
- Authorized Sony Green Partner
- REACH SVHC Directive Compliance
- RMI Conflict Minerals Declaration

Quality-Assured Peripheral Procurement Services

Advantech's global peripheral procurement network consists of local teams that leverage strong relationships with worldwide suppliers and diligent vendor and product management to provide quality-assured compatible peripherals with short lead times and competitive prices.

- Localized procurement with global network support
- Global standardization management; 100% compatible peripherals
- Trusted quality with revision control
- Short lead times and competitive prices



Configure-To-Order Services

Advantech's Configure-To-Order services (CTOS) increase the accessibility of industrial computing solutions with the provision of web-based configuration tools, complex assembly services that support high-mix low-volume box builds and customized assembly, design modification, system integration, and functional testing services.

- Web-based intelligent configuration
- Comprehensive approach to complex configuration solutions
- Local customized configuration services
- 2-year global warranty for systems and integrated peripherals

Global Logistics Services

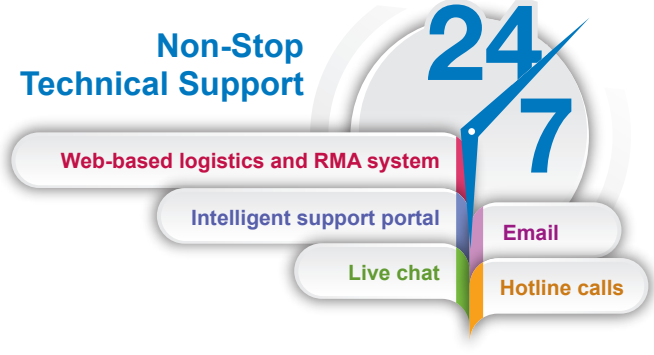
With strong integrated ERP and SAP supply chain solutions, our global logistics network offers a wide range of options for different delivery models including local and global solutions that meet your unique needs and budget requirements.

- Optimized and flexible shipping solutions
- Centralized sites for local delivery
- Integrated ERP and SAP supply chain solutions with a global distribution network

Global Customer Support Services

Advantech's global presence enables reliable, localized customer support services. We offer optimized maintenance and support plans by leveraging the full scope of our service portfolio to help you reduce costs and proactively mitigate business risks. In addition to complete technical and service support, we also offer a variety of customizable service packages. Our knowledgeable local support teams are able to deliver consistent customer support around the world and help you maintain peak performance and cost efficiency.
Moreover, to further extend Advantech's services, we launched the Buy.Advantech online store for a one-stop shopping experience. This eStore provides comprehensive product information for building systems, live expert support for troubleshooting, online configuration for easy customization, instant quotations, an extensive library of FAQs, and all the latest software and firmware downloads.

- 24/7 technical support with live online chat
- Global deployment with local full-line repair capabilities
- Easy-to-use web-based repair tracking system (eRMA)
- Wide variety of value-added after-sales service packages



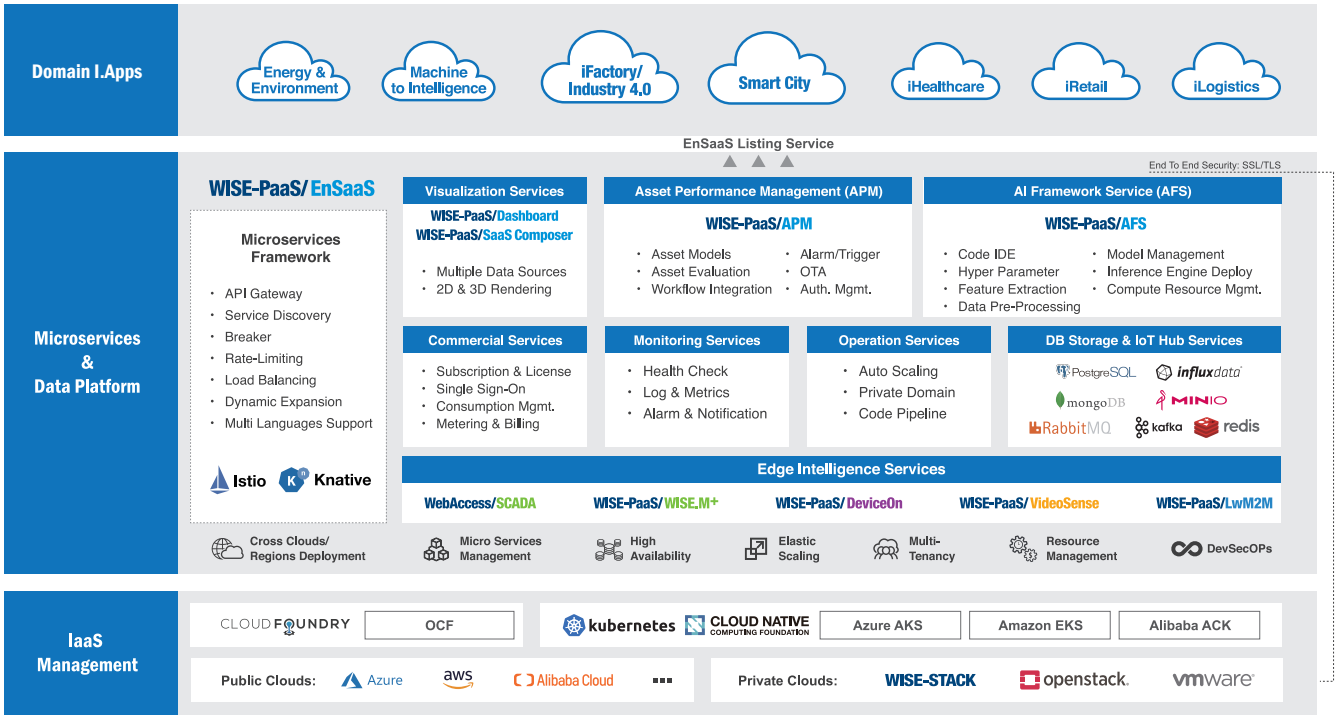
WISE-PaaS AIoT Services and Advantech Marketplace

Enabling Digital Transformation with the WISE-PaaS Industrial IoT Cloud Platform and User-Oriented Marketplace

WISE-PaaS Industrial IoT Cloud Platform

Advantech's WISE-PaaS Industrial IoT cloud platform provides edge-to-cloud software and services that assist system integrators and manufacturers by enabling IoT-powered cloud business models in various vertical markets. Leveraging Advantech's extensive hardware portfolio, WISE-PaaS integrates diverse software services, including WebAccess, WISE-PaaS/WISE.M+, WISE-PaaS/EdgeLink, WISE-PaaS/DeviceOn, and WISE-PaaS/VideoSense. Data collected for the WISE-PaaS/EnSaaS IoT cloud platform enables partners to quickly develop SaaS and domain-specific IoT solutions.

WISE-PaaS 4.0 Architecture with Microservices and I.App



WISE-PaaS Features

Cross Clouds/ Regional Deployment

Offers IaaS options to satisfy diverse market development needs

- Public cloud: Azure, aws, Alibaba Cloud
- Private cloud: WISE-STACK, openstack., vmware

Scalable

The cloud-native environment is highly scalable and provides operational benefits at any scale, accelerating solution deployment.

kubernetes CLOUD NATIVE COMPUTING FOUNDATION

Flexible

Provides a microservice development framework for component flexibility and improved development efficiency.

Edge-to-Cloud-Ready

Seamless edge-to-cloud integration from devices to the WISE-PaaS data platform maximizes data utilization and accelerates solution development.

Speed-to-Market

The configuration-driven WISE-PaaS platform facilitates rapid solution development and deployment with high resource efficiency.

WISE-PaaS Ecosystem

As the IoT landscape is fragmented into various domains, partnership is key to thriving in this new environment. Accordingly, Advantech is building a collaborative ecosystem on its WISE-PaaS industrial IoT cloud platform. The WISE-PaaS platform's decoupled and open design allows partners to develop AIoT solutions efficiently. By joining the ecosystem via the WISE-PaaS VIP Program and Advantech's co-creation model, partners will enjoy global exposure while leveraging Advantech sales channels. The WISE-PaaS ecosystem enables successful AIoT digital transformations, complete industrial IoT value chains, and expands the scale of modern industries.

WISE-PaaS Marketplace 2.0

Advantech's WISE-PaaS Marketplace is the destination for all industrial software solutions. The online marketplace provides access to software, end-to-end solutions, industrial apps, consultation services, marketing packages, as well as microservice tools that accelerate the development of industrial apps and solutions.

- Subscription
- Deployment
- Listing
- Customization

Explore Now

Innovative IIoT Edge to Cloud Technologies

Smart Camera

ICAM-7000 Series

EtherCAT I/O Controllers

EtherCAT Control IPC
AMAX-5580

EtherCAT Remote I/O
AMAX-5000/4800 Series

Domain Platforms

Oil & Gas
TPC / FPM / EKI / ADAM Series

Railway
ITA / ARS / EKI Series

Utility & Energy
ECU-4000 Series

VisionNavi

Task Flow Machine Vision APP. Software

AINavi

Deep-learning-based Image Analysis Software

HMINavi

HMI Software for Machine Visualization

ADVANTECH XNavi OPC UA

MotionNavi

SoftMotion on CODESYS Software Platform

DAQNavi

High Speed Data Acquisition & Condition Monitoring

Wireless I/O & Sensors

Wi-Fi LoRaWAN NB-IoT LTE-M

WISE-2000/ 4000 Series

ADVANTECH AIWireless
Advantech Industrial Wireless

DAQ and Remote I/O

USB / ADAM-4000/6000 Series / PCIe Cards

Edge AI Systems

NVIDIA

AI Inference System
MIC-700AI Series

AI Network Video Recorder
MIC-700IVA Series

NVIDIA Jetson TX2 | NVIDIA Jetson AGX Xavier | NVIDIA Jetson Nano

Automation Systems

UNO/MIC/HMI/IPC Series

WebAccess/SCADA

IoT Application Software Platform

WISE-PaaS/EdgeLink

Powerful Edge-to-Cloud Middleware for Intelligent Gateway Solutions

WISE-PaaS/WISE.M+

Industrial IoT Cloud-Based Monitoring & Operating Platform

- Equipment Mgmt.
- Device Could Mgmt.
- Docker Container Mgmt.

IIoT Gateways

Modbus | PROFINET | EtherNet/IP

Edge / Communication / Protocol / Data Gateways
WISE/ UNO/ ADAM-6700 Series / ECU/ EKI Series

Connectivity & TSN

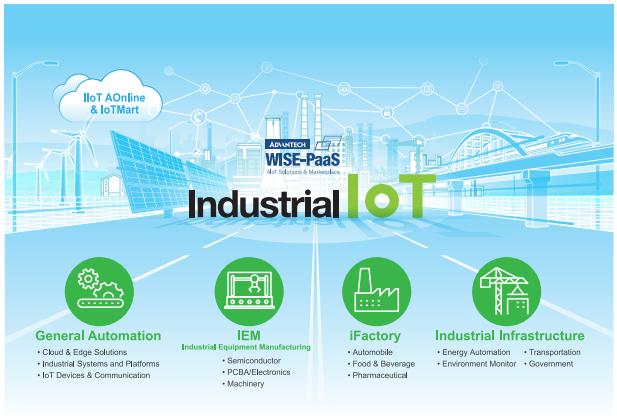
LTE 5G | 10 Gigabit Ethernet | 10/100 Ethernet | PoE 802.3at | Security Features

Cellular Router / Switch / Wireless Comm.
ICR-1000/3000/4000 Series; EKI-7000/8000 Series

The Industrial Internet of Things (IIoT)

Advancing Key Growth Areas in Industry 4.0, Industrial Equipment Manufacturing, Energy & Environment and Transportation

Driven by the convergence of information technology (IT) and operational technology (OT), the Industrial Internet of Things (IIoT) is a matrix of networks connecting equipment and devices, collecting data via sensor technology, computing and integrating data into platforms as services, and creating new business models and possibilities. IIoT is set to open up a new era of industrial applications with myriad opportunities for economic growth. To support the development of IIoT, Advantech provides comprehensive edge-to-cloud products, solution ready packages, and cloud-enabled IoT Edge Intelligence-WISE-PaaS services that build out key IIoT infrastructure. The Advantech IIoT Group is devoted to focusing on four go-to-market sectors - General Automation, iFactory, Industrial Equipment Manufacturing, Industrial Infrastructure - that fulfill customers' diverse application needs.



Enabling Industry 4.0 with Edge Intelligence Solutions

Industry 4.0 is transforming manufacturing worldwide. Factory management needs assistance as they either upgrade existing facilities, or establish new ones that take advantage of Industry 4.0 optimization. Advantech IoT solution architecture enables the development of iFactory Solution Ready Packages (SRPs) that help customers as they embrace Industry 4.0. Advantech's iFactory SRPs are quick-start tools that enable a step-wise approach to achieving Industry 4.0.

The Industry 4.0 situation room is the most important upgrade to intelligent transformation. The Industry 4.0 situation room is the factory's nerve center where data is collected, analyzed, and visualized for real-time management. The situation room is realized with the iSensing devices, edge intelligent gateways, WISE-PaaS software platforms, and iFactory SRP solutions.

iFactory solutions facilitate machine connection without replacing existing equipment, allowing for collection of equipment status data, production data, and environmental data. Data acquisition enables production monitoring, data integration with MES, and visualization on the situation room dashboard for production optimization and data-driven decision making. The WebAccess App enables push notifications of unexpected downtime, allowing immediate action to be taken. Advantech realizes the intelligent factory from a user perspective, and helps customers embrace Industry 4.0.

The best industrial equipment manufacturing solutions for equipment builders

A key step Advantech adopts to realize smart manufacturing is to connect devices, computing systems, and equipment all together to accomplish data acquisition and integration, and import services to accomplish manufacturing process integration. Advantech achieves the network connection of equipment and devices needed to improve manufacturing and transform industry.

The product offerings of Advantech's industrial IoT include Internet of Things software – WebAccess, industrial communication products, gateways, PC-based control platforms, industrial computing platforms, servers and data capture modules. Meanwhile, Advantech also provides equipment automation and intelligent factory solutions. In the vertical markets of equipment automation, Advantech works with partners to find the most suitable industrial machinery, electronic equipment, and manufacturing solutions to meet the needs coming from diverse markets.

Cloud-enabled Energy and Environment Solutions

With growing public concern over energy usage and the environment, Advantech's E&E market solutions have an industrial IoT-oriented focus on the processes of sensing, control monitoring, remote communication, and data management.

By combing these technologies with WebAccess and the WISE-PaaS IoT edge intelligence platform, both of which are reliable tools for information integration and data analysis, our industry Apps, edge intelligence, and WISE-Paas/WISE.M+ solutions can be widely utilized in a variety of E&E industries.

Advantech's solution for energy and environment management including energy management, solar power management, water treatment, environmental monitoring, and agricultural management integrate domain-specific knowledge, and the WISE-PaaS cloud platform to helping our customers achieve IoT optimization by managing their connected devices in the cloud.

Intelligent Transportation Systems

Whether it's the railway, roadway, transportation hub, or any other transportation system, Advantech is dedicated in its efforts to provide the most stable, intelligent transportation systems for cities around the world. From edge sensor devices and industrial communication products, to computing and panel platforms and the WISE-PaaS IoT cloud platform, we provide a diverse product mix for the transportation sector.

Our products are carefully designed to ensure the highest standards of reliability, flexibility, and expandability with enhanced operating longevity. All Advantech products are industry certified. With decades of experience, Advantech has developed the extensive technical know-how and domain knowledge needed to build transportation systems on the basis of individual needs and requirements. Today, we can proudly point to an extensive selection of successful case studies in the transportation field. With our comprehensive range of product offerings and considerable industry experience, we are a one-stop solution provider for building your next transportation application.

Driving Digital Transformation in Industrial IoT

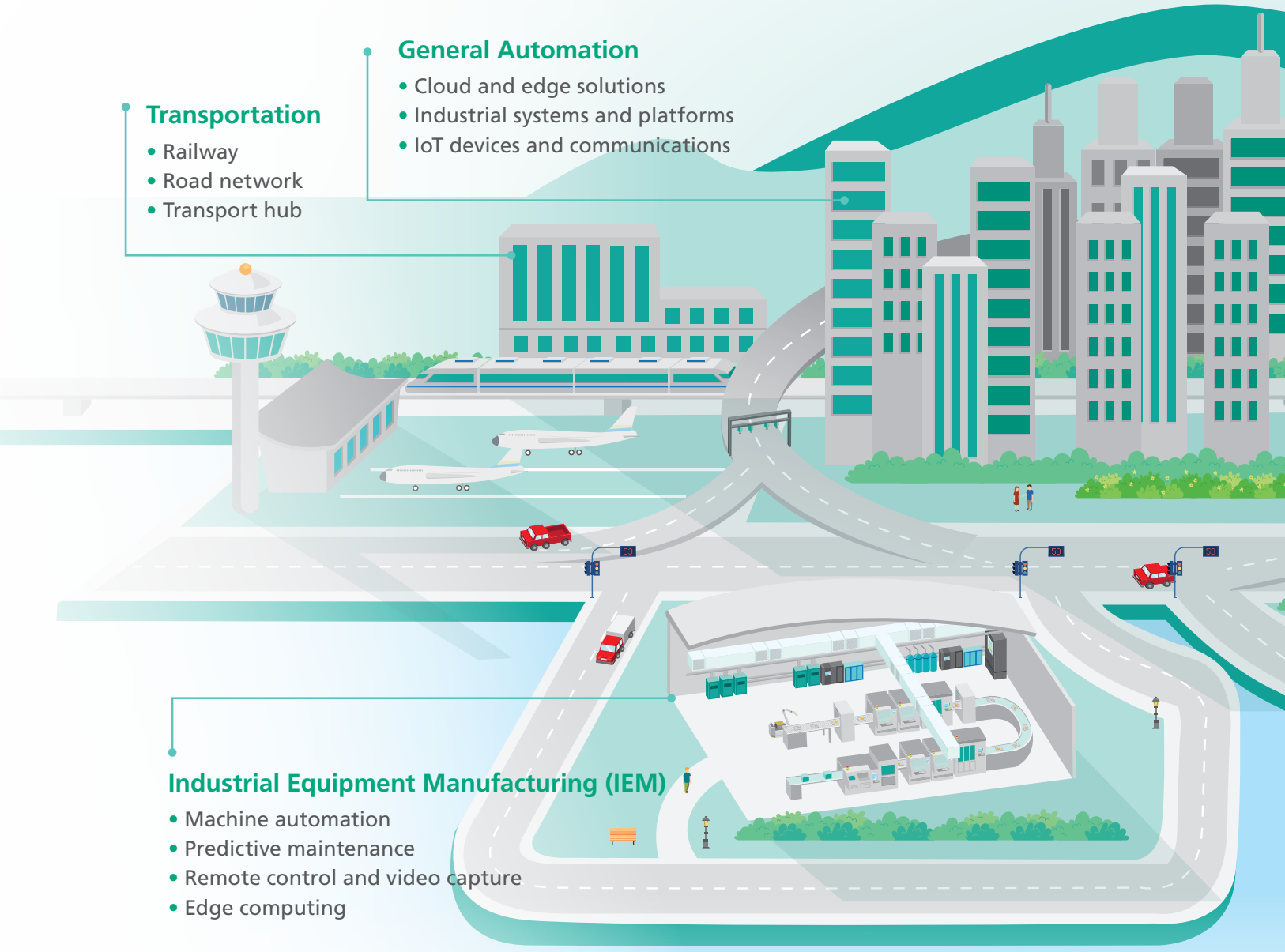
Advantech Industrial IoT Group continues to explore the latest technologies and what they bring to our industries and lives, including Industrial AI, Edge Computing, Time-Sensitive Networks (TSN) and 5G development. With over three decades of proven experience, we combine information, automation, and communication technologies with efficiency, energy conservation, minimized risk, cost effectiveness, and environmental protection to create solutions to drive digital transformation and enable an intelligent planet.

General Automation

- Cloud and edge solutions
- Industrial systems and platforms
- IoT devices and communications

Transportation

- Railway
- Road network
- Transport hub



Industrial Equipment Manufacturing (IEM)

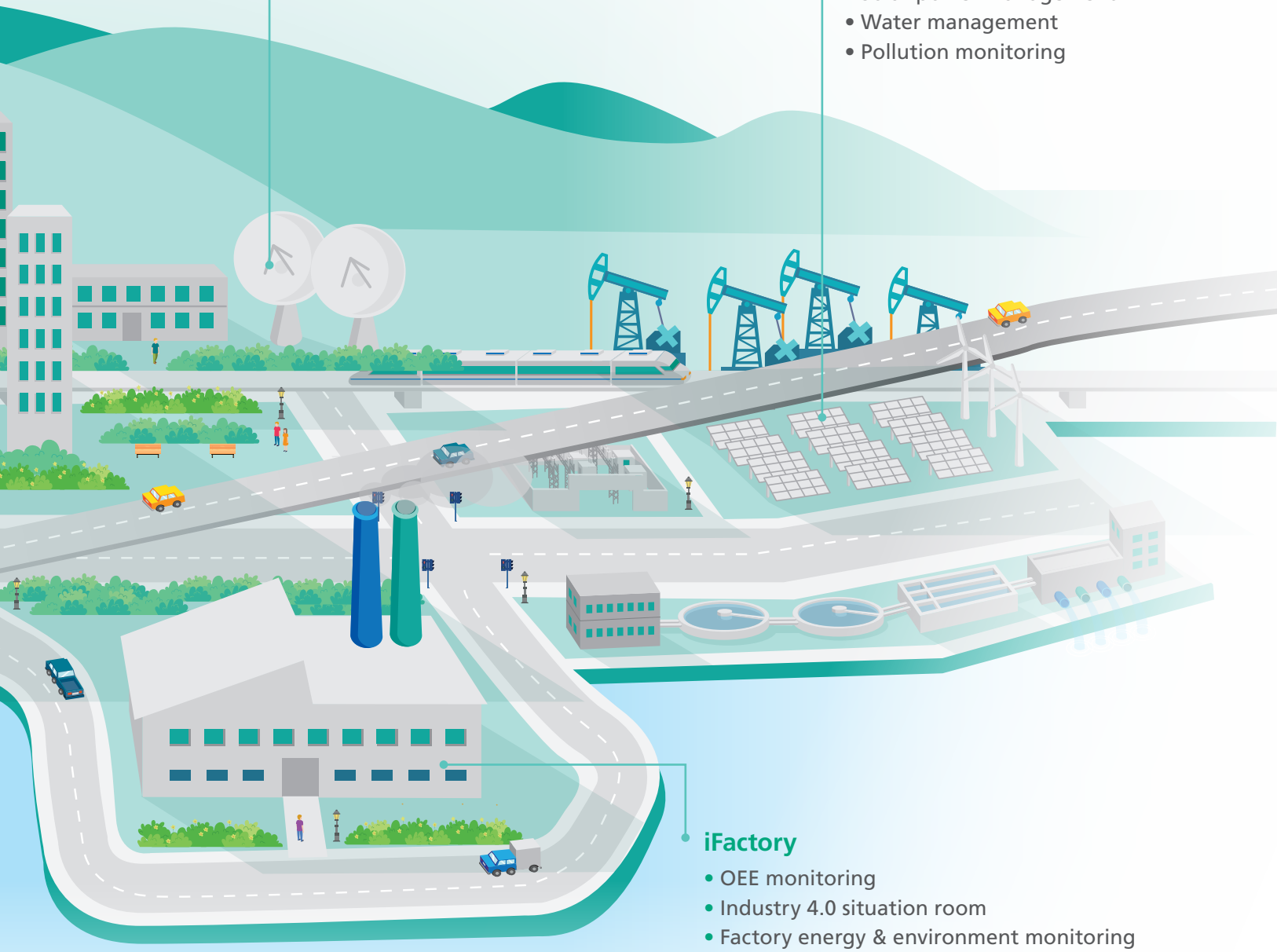
- Machine automation
- Predictive maintenance
- Remote control and video capture
- Edge computing

iConnectivity

- WebAccess/NMS
- Cellular routing solution
- Wired & wireless network infrastructure
- Protocol & interface conversion solution

Energy and Environment

- Energy management
- Solar power management
- Water management
- Pollution monitoring

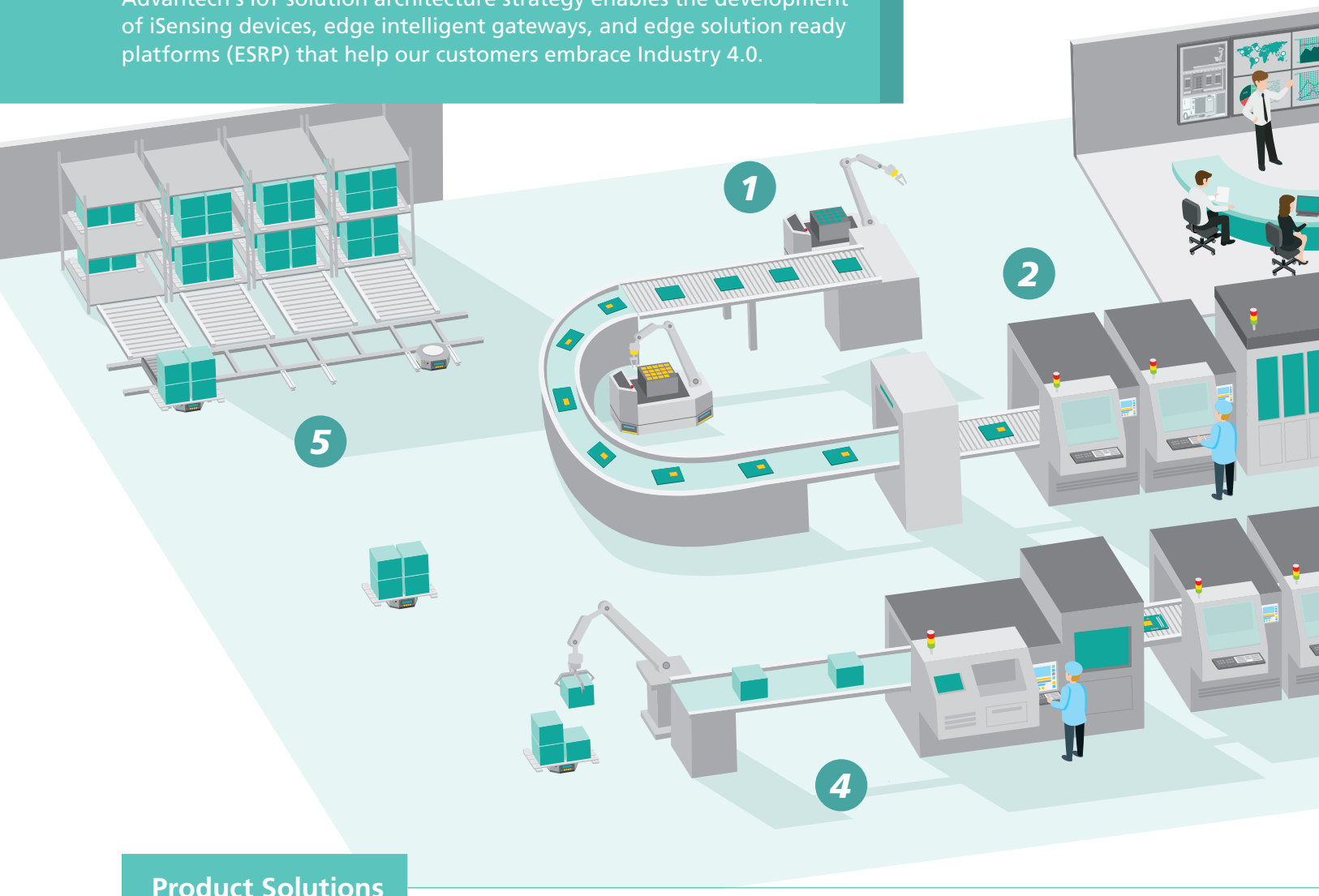


iFactory

- OEE monitoring
- Industry 4.0 situation room
- Factory energy & environment monitoring
- Warehouse management

Industry 4.0

Industry 4.0 is transforming manufacturing worldwide. Factory management needs assistance as they either upgrade existing facilities, or establish new ones that take advantage of Industry 4.0 optimization. Advantech's IoT solution architecture strategy enables the development of iSensing devices, edge intelligent gateways, and edge solution ready platforms (ESRP) that help our customers embrace Industry 4.0.



Product Solutions

WebAccess Software

Advantech WebAccess
- IIoT application software platform

Edge Solution Ready Platforms

ESRP Series
- Software-hardware integrated solutions

Wireless I/O Modules

WISE-4220/WISE-4000 Series
- IoT Wi-Fi 2.4GHz wireless I/O modules

Remote I/O Modules

ADAM-3600/4000/5000/6000/6700 Series
- RS-485/USB & Ethernet I/O
- Intelligent I/O gateway
- RS-232/422/485 converters

1 Machine to Intelligence

- Real-time monitoring for cloud-based Machine-to-Intelligence (M2I) management.
- Robot management with machine status monitoring, diagnosis, and intelligent prediction.
- CNC machine monitoring for enhanced CNC management and predictive maintenance.

Predictive Maintenance

- Access multiple data sources in real time to predict asset failures or quality issues and improve operational processes.
- Intelligent predictive analytics to prevent unexpected breakdowns, allowing maintenance to be planned before failures occur.

2 OEE Monitoring

- Data acquisition from wireless shop-floor devices in real time.
- Overall Equipment Effectiveness (OEE) monitoring for realizing equipment connectivity and effective optimization.
- Dashboard visualization with machine availability, downtime, and streamlined balance rates.

3 Industry 4.0 Situation Room

- Factory nerve center where data is collected, analyzed, and visualized for real-time management and data-driven decision making.
- Data consolidation and visualization framework easily accessible to factory managers.
- Real-time management for efficiency improvements and production optimization.

4 Factory Energy & Environment Monitoring

- Factory energy management system to enable energy supply and consumption optimization to reduce factory operating costs.
- Temperature and humidity monitoring to optimize factory operations.
- Factory safety can be monitored for dust, gas, CO2, water and other hazardous materials to ensure the factory environment is safe.

5 Warehouse Management

- Automated guided vehicles (AGV) solution to transport materials and products.
- Full warehouse inventory visibility to optimize warehouse management.
- Paperless warehouse management in real time to ensure competitive and successful distribution operations.

Industrial Communication

EKI, ICR and WISE series
- TSN/Ethernet connectivity
- Wireless connectivity

Industrial Controllers

UNO-1000/3000, AMAX-5000 & MIC-7 series
- Control IPCs

IIoT Gateways

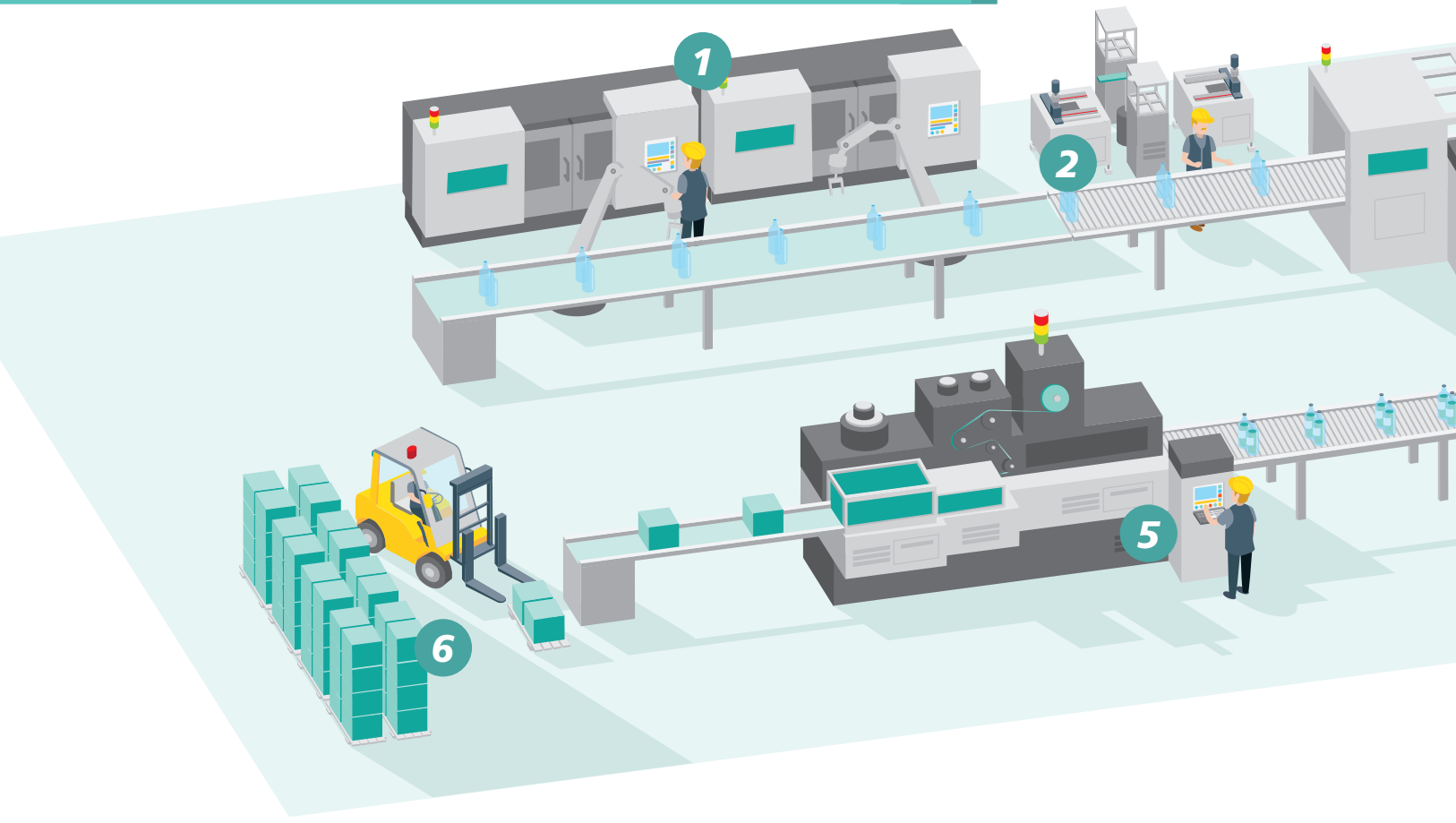
ECU-1000 & UNO-2000 Series
- Industrial IoT gateways

Intelligent HMI

TPC & PPC Series
- Industrial control panels, thin clients, operator panels, and monitors

Industrial Equipment Manufacturing Solutions

The key step Advantech adopts to realizing intelligent manufacturing and smart equipment is to connect devices, computing systems, and equipment together to accomplish data acquisition, analysis, and visualization. Cloud platform services and dashboards complete data integration and allow network connection of all equipment and data to achieve intelligent manufacturing processes and industry transformation.



Product Solutions

Motion Control

- Supports versatile EtherCAT servo/stepping motor
- Pulse train control via EtherCAT motion module

Machine Vision

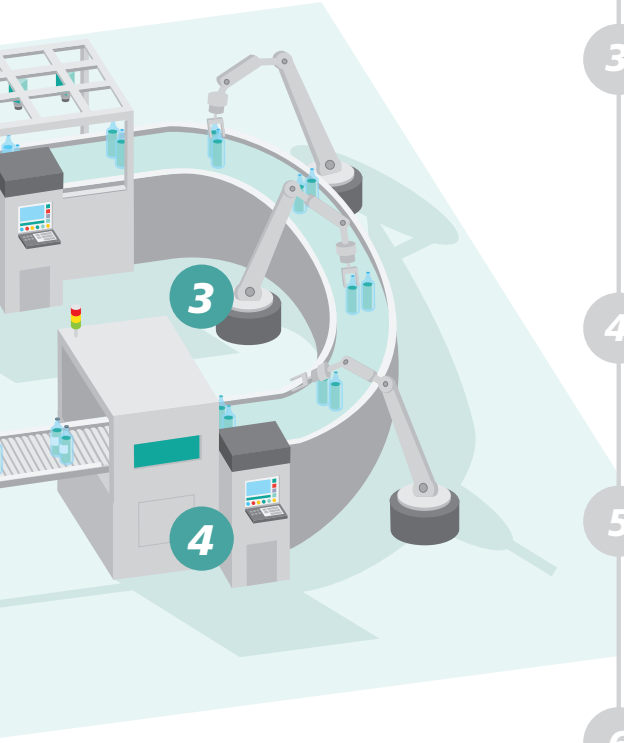
- Easy multi-task configuration without programming
- Intuitive menu-driven GUI shortens the learning curve

Industrial Ethernet Switch & Wireless Network

- Wired & wireless network infrastructure

Data Acquisition

- Provides a wide range of I/O devices with various interfaces and functions
- Reliable and accurate data acquisition hardwares and graphical software tools



1 Deep Learning

- Defect inspection in multi-product line and multi-defect application
- Can be implemented to replace manual inspection
- Reduces complexity and increases reliability on the factory floor

2 Protocol Gateway

- Supports various widely used industrial protocols such as PROFINET, EtherNET/IP and EtherCAT
- Seamless conversion between each industrial protocol
- Efficiently connect to different protocol equipment with redundancy and management features

3 Predictive Maintenance

- Wide-range of industrial data acquisition and control devices with various interfaces and functions
- Reliable, accurate, affordable, and suitable for diverse industrial automation applications
- Enables customers to seamlessly integrate data acquisition cards with the latest platforms for improved performance and reduced development time

4 Edge Computing

- Modular design for PC-based controllers, industrial PCs, and panel computers
- High system configuration flexibility to meet the needs of various applications
- Minimize lead times with global CTOS capability

5 Motion Control and Machine Vision

- Unique SoftMotion kernel and innovative GigE Vision offloads engine using FPGA, DSP and ARM as the core-computing platform
- Provides versatile solutions and optimum motion / vision performance for fulfilling the demands of OEM machine makers and system integrators

6 Industrial Connectivity

- Robust, reliable, and sophisticated connectivity from the network edge to the network core
- Transmit data over copper cables, fiber optics, and wireless connections
- Flexible access to network status via multiple industrial protocols

Compact Edge Controller

- PC-based integrated solution for easy development
- Supports real-time dual fieldbus data acquisition (PROFINET and EtherCAT)

Modular IPC

- Comprises compact modularized systems
- Diverse selection of CPUs, flexible I/O expansion, and slot expansion for various applications

Intelligent System

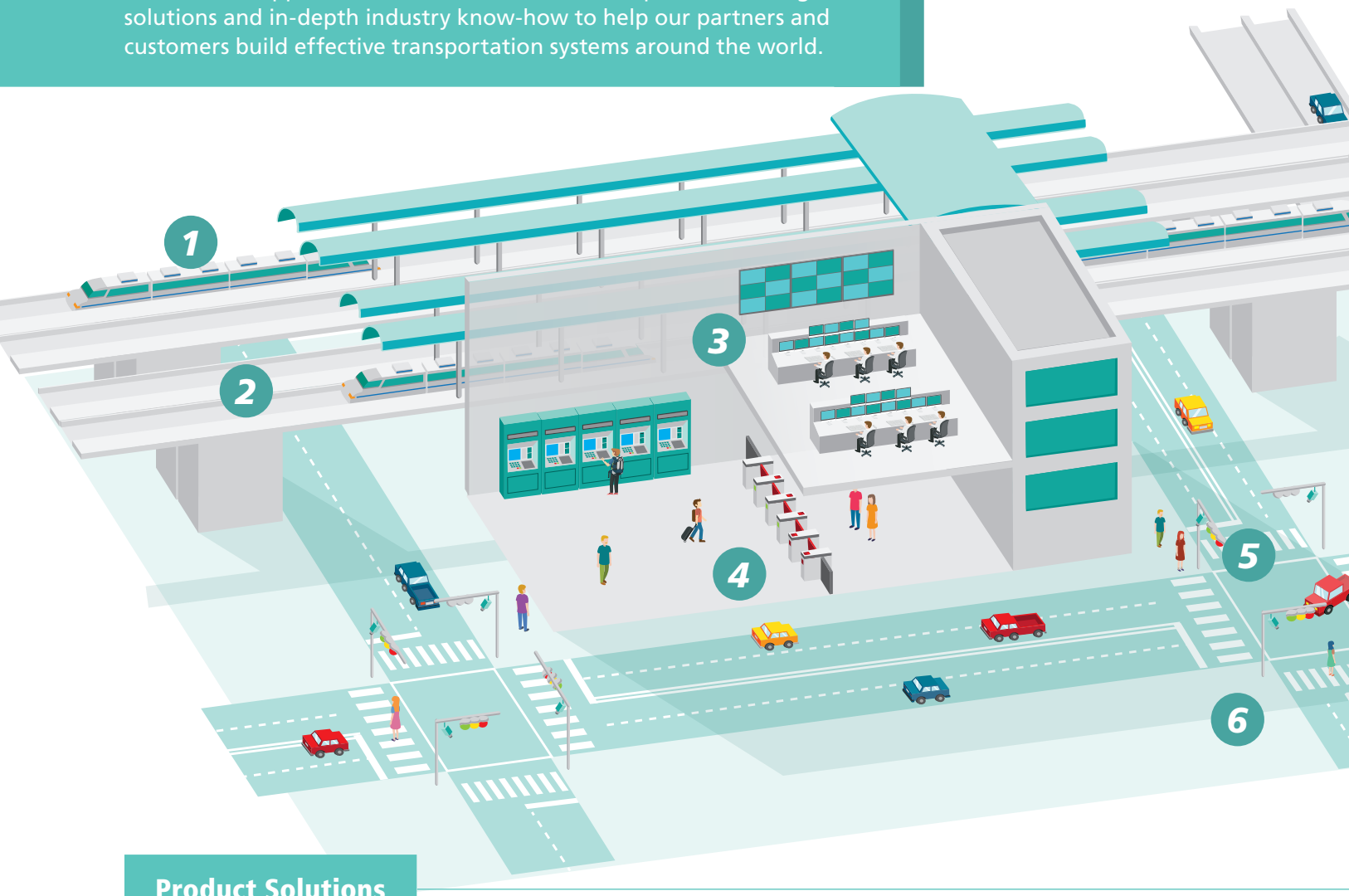
- High performance fan-based system for motion and vision application
- Diverse selection for form factors

Server and Storage

- Xeon® Scalable processor for high performance computing
- CPU/GPU hybrid technology for image analytic applications
- Supreme server DTOS for optimal customization

Intelligent Transportation Systems

From railways to roads, airports to harbors, the endless streams of vehicles, passengers, and cargo vessels create difficulties and challenges for transportation infrastructure planning by city authorities and traffic operators. With decades of experiences and an impressive portfolio of successful applications, Advantech offers a comprehensive range of solutions and in-depth industry know-how to help our partners and customers build effective transportation systems around the world.



Product Solutions

Rolling Stock Controllers

ITA-5000 Series
- EN 50155 product for railway applications

Rugged-design Platforms

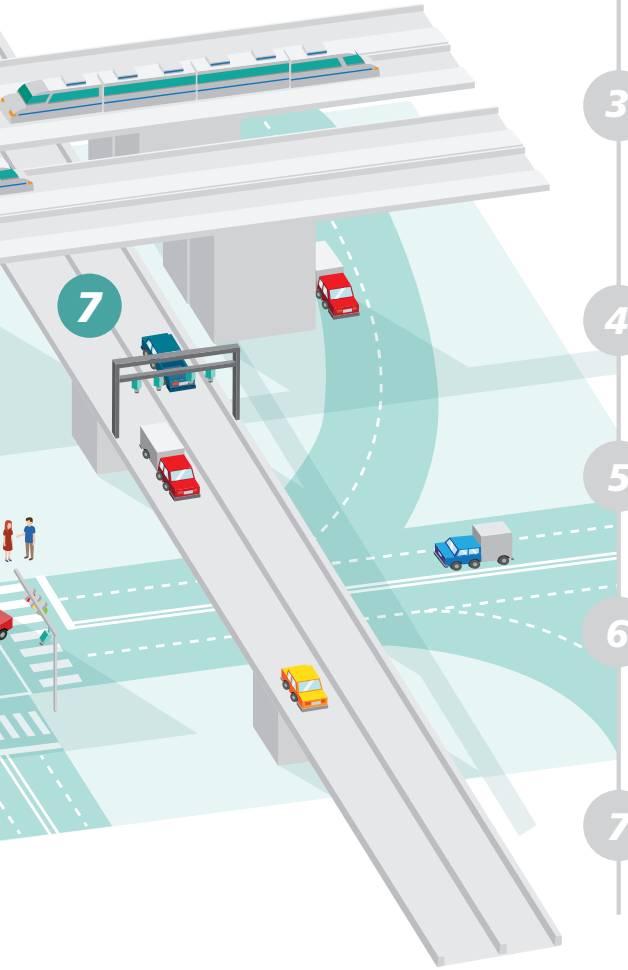
ITA-2000 Series
- Flexible configuration design for multiple COM, CAN, LAN

AFC Controllers

ITA-1000 Series
- Flexible configuration design for multiple COM, secondary display output

Rolling Stock Display Systems

ARS-P Series/ITA-7000
- EN 50155 panel PC



1 Rolling Stock Solutions

- Passenger information system
- CCTV system
- Infotainment system
- Vehicle monitoring system
- Train-to-Ground communication system

2 Wayside Control Solutions

- Wayside signaling
- Interlocking system
- Train control system

3 Integrated Supervisory Control Systems

- Building automation system
- Fire alarm system
- Passenger information system
- CCTV system

4 Automatic Fare Collection Solutions

- Automatic gate machine
- Ticket vending machine

5 Intelligent Video Analytics Solutions

- AI Traffic surveillance System
- License plate recognition system

6 Traffic Management Solutions

- Signal control management
- Road condition monitoring
- Emergency system

7 Highway Management Solutions

- Electronic toll collection system
- Bridge & tunnel monitoring
- Traffic flow control & analysis

Panel Controllers

ITA-8000 Series
- EN 50155 driver machine interface

Railway Ethernet Solutions

EKI-9500 Series
- EN 50155 switches

Roadway Ethernet Solutions

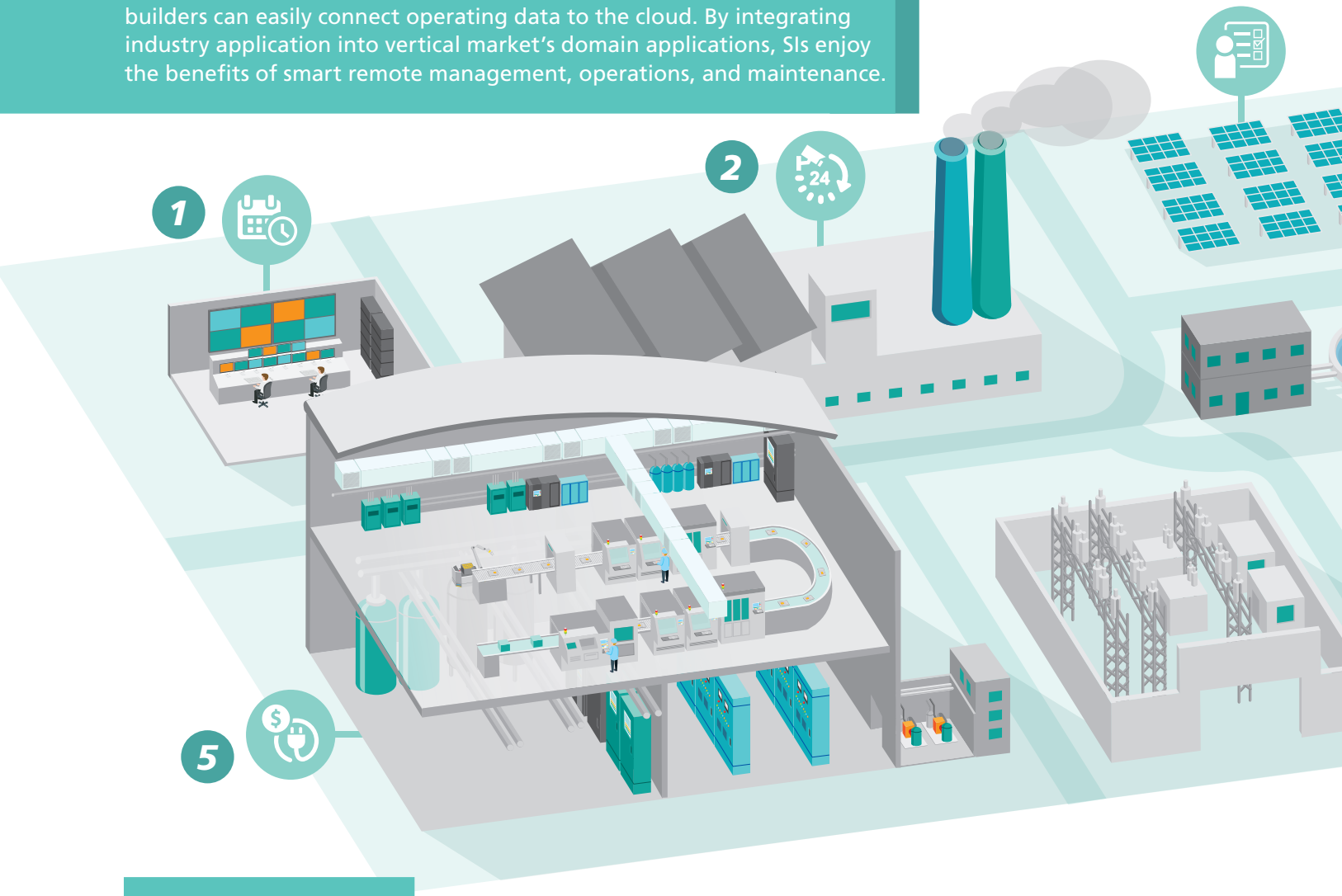
EKI-7700 & IMC Series
- Roadway Ethernet switches and media converters

Wireless Solutions

WISE/Wzzard/SmartSwarm
- Transportation wireless communications

Cloud-enabled Energy & Environment Solutions

Nowadays, energy and environment practices have evolved to remote management using cloud services. To accelerate the time-to-market, Advantech develops industrial application(I.Apps) based on our integrated solutions and domain experience. With IoT technologies, equipment builders can easily connect operating data to the cloud. By integrating industry application into vertical market's domain applications, SIs enjoy the benefits of smart remote management, operations, and maintenance.



Product Solutions

Industry Focused Apps

Field Site Solar Power Management System

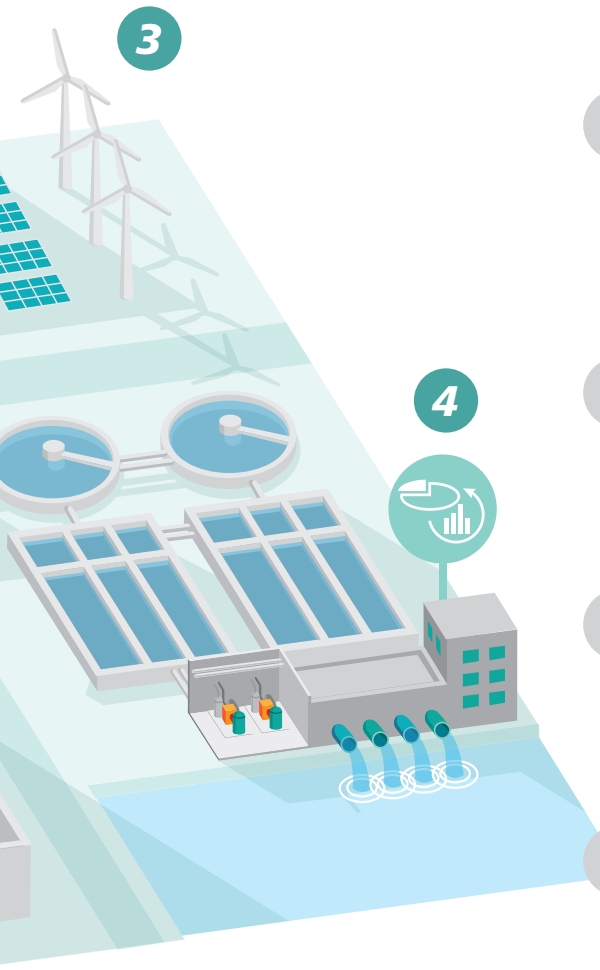
- Real-time monitoring with visualized alarm management and intelligent power generation analysis

Distributed Solar Power Operation and Maintenance Management System

- Decentralized control and centralized management for real-time monitoring of station equipment

Centralized Solar Power Operation and Maintenance Management System

- Centralized operation of unmanned remote sites to optimize power station efficiency



1

Planning and Scheduling Optimiaztion

- Optimize and increase overall equipment effectiveness (OEE)
- Make the most of equipment usage and help schedule planning

2

Real-Time Monitoring and Control

- Realize operation status monitoring and remote control
- Continuous data uploads to cloud service or government office to meet regulations
- Automatically send trends, timings and partial/standard alarms in real-time

3

Fault Detection and Predictive Maintenance

- Operation status monitoring
- Receive alarms when exceptions occur for proactive action before equipment damage

4

Asset Management

- Key equipment such as motor and pump maintenance to prevent asset from damage or lost
- Equipment life cycle management

5

Operation and Energy Management

- Reduce cost and increase capacity by monitoring power consumption of machines and production lines
- Reduce electricity bills by monitoring peak/off-peak energy consumption

Industry Focused Apps

Water Management Solution
- Cloud-enabled remote equipment management for water and wastewater

Water Blower Management
- Remote monitoring and centralized management for water blower

Distributed Equipment Management
- Remote monitoring and centralized management for distributed equipment

Smart Substation Solution
- Improving power quality and reliability with real-time monitoring and operating management

1 Software and Industry Solutions

WebAccess Software and WISE-PaaS / IIoT

Introduction

The recent emergence of the Internet of the Things (IoT) and its surround technology eco-system promises significant future business opportunities until the year 2025. With more and more investment going into developing integrated IoT applications and cloud services, software has become the crucial factor for success in the IoT era.

As one of its core IoT solutions, Advantech's WebAccess/SCADA offers not only a human-machine interface (HMI) and supervisory control and data acquisition (SCADA) software solution, but also an IoT software framework that serves as a software platform for IoT and cloud applications.

With Advantech WA/SCADA, a comprehensive browser-based IoT application software, users can easily monitor and manage projects via a web browser. For the IoT device layer, Advantech WA/SCADA supports multiple protocols and drivers for connecting up to 350 controllers and devices, making WA/SCADA a flexible and suitable software platform for all I-IoT applications and projects. Additionally, WA/SCADA provides a foundation for IoT data collection and management with its open architecture and open interfaces, which facilitate the development of various vertical applications.

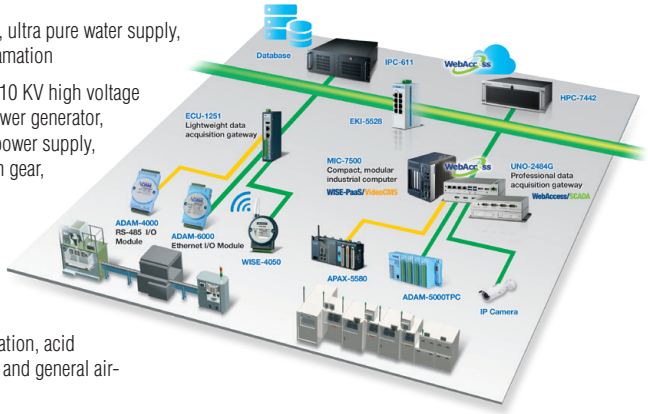
To satisfy demands for industrial IoT (IIoT) and Industry 4.0 services, a variety of cloud-specific features, such as plug-and-play device configuration, cloud-based dashboards, and big data connectivity, are included in the WA/SCADA Cloud software package in an effort to provide an easy tool for connecting IoT devices and conducting big data analysis and predictive maintenance.

Industrial IoT Application Software Platform

WebAccess/SCADA Focused Solutions

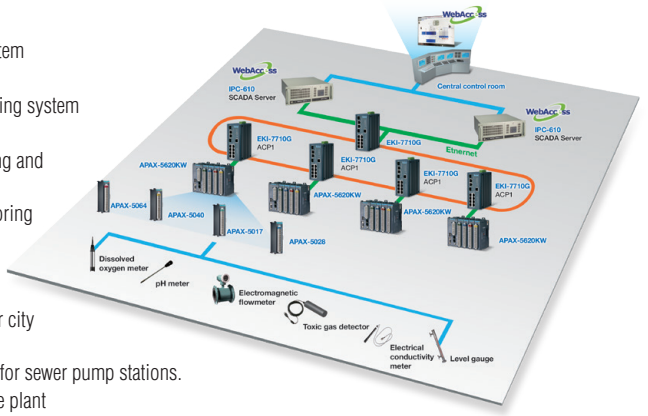
Factory automation solution

- Water system: raw water supply, ultra pure water supply, waste water treatment, and reclamation
- Electricity power system: 220/110 KV high voltage power monitoring, emergent power generator, dynamic/static uninterruptible power supply, electric bus, high voltage switch gear, and low voltage power meter
- Gas system: toxic gases detection, gas cabinet operation, valve box operation, and general gases
- HVAC system: clean room operation, acid exhaust, process cooling water, and general air-conditioning



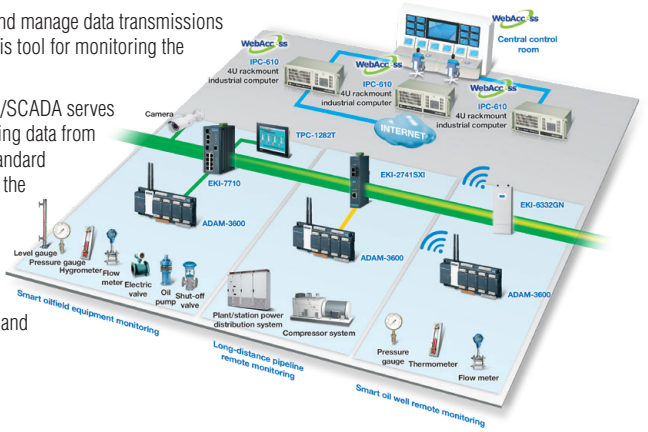
Water treatment solution

- Water resource distribution system
- Raw water distribution system
- Large-scale water supply pumping system
- SCADA system for tap water
- Booster pump station monitoring and control system
- Urban tap water pipeline monitoring control system
- City pipeline distribution optimization system
- Remote management system for city sewage pipelines
- Monitoring and control system for sewer pump stations.
- SCADA system for large sewage plant
- Performance management for large sewage plan



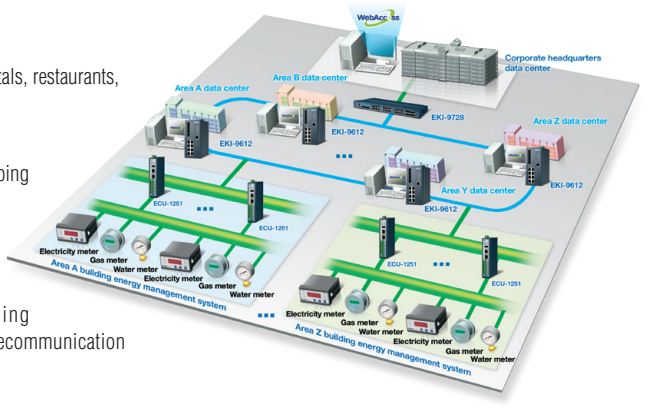
Oil & gas solution

- WA/SCADA is used to collect and manage data transmissions from RTUs to provide an analysis tool for monitoring the operating status of oil wells
- For oil pipeline monitoring, WA/SCADA serves as gateway software for converting data from each gateway device into the standard protocol before transmission to the control center
- Communicating with intelligent devices, WA/SCADA acts as remote control software for monitoring and controlling devices in the field



Building energy management solution

- Stand-alone buildings
  - Commercial buildings, hospitals, restaurants, and office buildings
- Building complexes
  - Franchised restaurants, shopping malls, furniture stores, shoe stores, supermarkets, book stores, and convenience stores
  - Financial groups, shopping centers, campuses, and telecommunication stations



Enabling IoT & Industry 4.0 with WISE-PaaS Alliance and WebAccess

Introduction

Advantech's key strategies for the next decade are to provide integrated IoT solution platforms. The Advantech WISE-PaaS Edge Intelligence Platform offers a diverse range of software that can be applied and integrated into domain-focused SRPs. This platform provides a wide range of software and cloud-based service solutions from industrial data/video acquisition, analysis, and visualization to cloud platform services and dashboard functions, thus enabling IoT at all system layers and realizing IoT-powered business models in various vertical markets. Join Advantech's WISE-PaaS VIP program and enjoy IoT success by leveraging WISE-PaaS's comprehensive solutions.

WebAccess/SCADA

WebAccess/CNC

WISE-PaaS/WISE.M+

WebAccess/SCADA

Industrial IoT application software platform

- Driver support for major PLCs, PACs, I/O modules, network switches, and computer platforms
- Redundant SCADA, ports, and devices for high availability
- Supports multiple databases for data connectivity and data fusion
- HTML5-based dashboard for cross-browser, cross-platform data visualization and data analysis
- Provides flexible open interfaces for easy development and integration of third-party applications
- Online software license authentication for cloud computing virtual machines

WebAccess/CNC

CNC machine networking solution

- Automatically generates CNC projects for WebAccess/SCADA software
- Supports CNC machine and I/O device monitoring
- Supports leading CNC network controllers
- Provides CNC machining status and PLC register monitoring
- Provides CNC availability queries and NC file transfer functionality
- Provides historical CNC alarm and operation queries
- Supports all features and full functions of WebAccess/SCADA software

WISE-PaaS/WISE.M+

Cloud management platform

- Plug and play centralized management on a unique platform
- Simple dashboard management interface as well as dashboard site templates for easy setup
- Profile based equipment configuration
- High scalability of device connections and equipment management service
- Fully cloud based and comprehensive interface for simple management

WISE-PaaS/Dashboard

WISE-PaaS/SaaS Composer

WebAccess/SCADA and WISE-PaaS/Dashboard

Data analysis and visualization software

- Efficient data visualization: provide a variety of panels and industry-specific plugins
- Supports plugin and image upload
- Dashboard and SRP-frame supports mobile devices
- Supports over 50 data sources
- Create dynamic & reusable dashboards with variables
- Notification channel supports email, webhook, LINE, slack, WeChat etc
- Annotate graphs with rich events from different data sources
- On-premise version bundled with WebAccess/SCADA with panels* compatible to WebAccess/SCADA data sources. (*Panels on WISE-PaaS/Dashboard cloud version may differ and limited by data source compatibility)

WebAccess/SCADA and WISE-PaaS/SaaS Composer

Cloud-based graphical control tool

- Reconstructs the on-site environment with 100% customization ability & simple/intuitive 3D modeling application
- Integrates WISE-PaaS platform services and data connections, also WISE-PaaS visualization tools
- Allows cross platform usage with browser-based infrastructure and supports diversified types of file import
- Updates critical data in a visually intuitive display
- On-premise version bundled with WebAccess/SCADA with based on WebAccess/SCADA data sources.

WISE-EdgeLink

Transmit Data to the Cloud with WISE-EdgeLink

With the emergence of industrial IoT, companies are seeking solutions that facilitate the use of data analytics to improve service levels, create superior products, and reduce operating costs. The first step in this process is the digitalization of all assets, which means increasing amounts of data collected from different equipment must be analyzed. Equipment manufacturers, owners, and maintenance personnel require an easy and reliable method for collecting data from field-based equipment. Advantech's WISE-EdgeLink provides a data acquisition solution that does not require frequent on-site maintenance and service trips. With this solution, users can monitor critical assets, track equipment performance, receive alarm notifications, and perform system management and configuration using handheld devices. This will substantially reduce costs and ensure field equipment and facilities are better monitored and controlled.

Optimizing efficiency with connected equipment

For industrial boilers, air compressors, chillers, power distribution cabinets, and other equipment, WISE-EdgeLink serves as a hub for data acquisition, storage, and reports, as well as alarm notifications, maximizing equipment efficiency with the provision of accurate data.

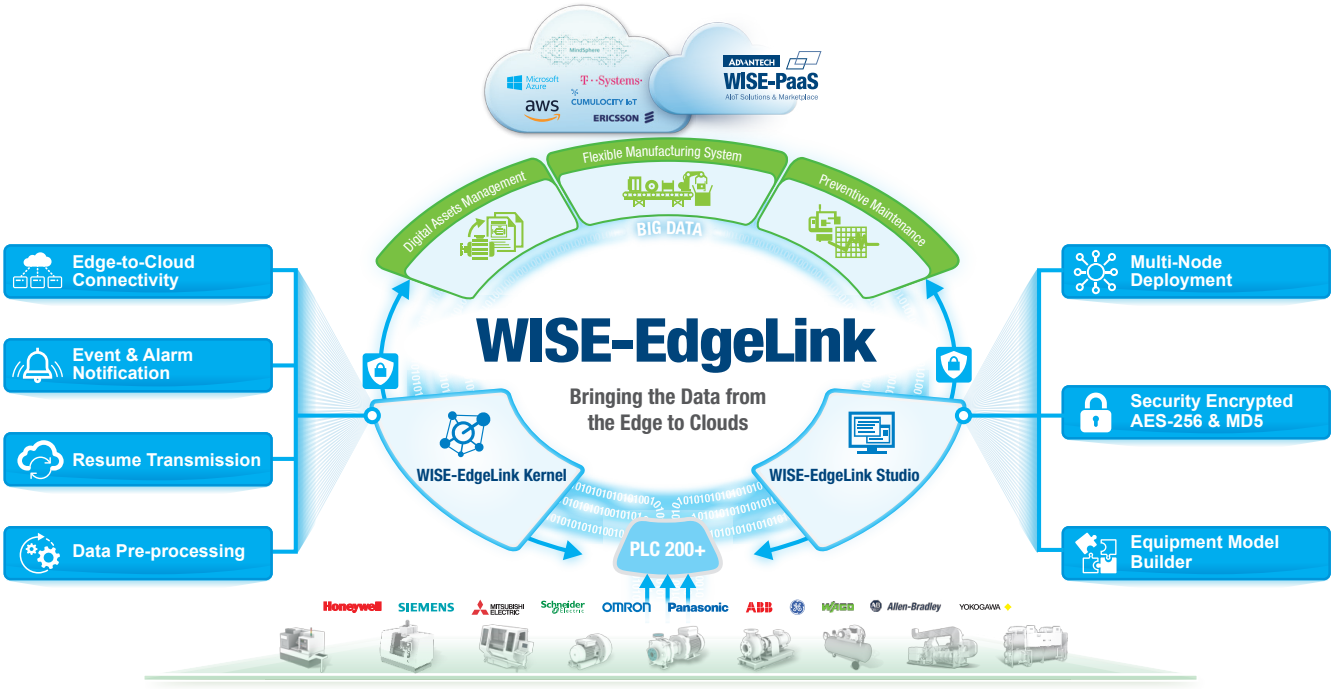
Plug-and-play cloud access for rapid deployment

Plug-and-play functionality for data transmissions to the cloud eliminates complex programming and configuration. This ensures data can be easily uploaded for analysis and visualization to provide a useful reference for operational optimization.

Secure data conversion for integrating data with third-party systems

WISE-EdgeLink supports data conversion, enabling equipment used for mass production, such as PLCs, sensors, and inverters, to be directly integrated with SCADA, MESs, and ERP systems for convenient operation and maintenance.

WISE-EdgeLink Framework



Advantech's WISE-EdgeLink is equipped with key functionalities aimed at edge applications. With downlink data acquisition capabilities integrated with uplink connectivity, security, and intelligence functions, transmitting field data to the cloud becomes an easy task.

WISE-EdgeLink Kernel

WISE-EdgeLink Kernel Architecture

Application Intelligence

MES | SCADA | Private Program | Database

WISE-PaaS | Microsoft Azure | Cloud | aws | inspur 浪潮云 | T-Systems | ERICSSON | CUMULOCITY IoT

OPC UA | Modbus | MQTT | AMQP | MQTT | LightweightM2M

Edge Computing

Linux

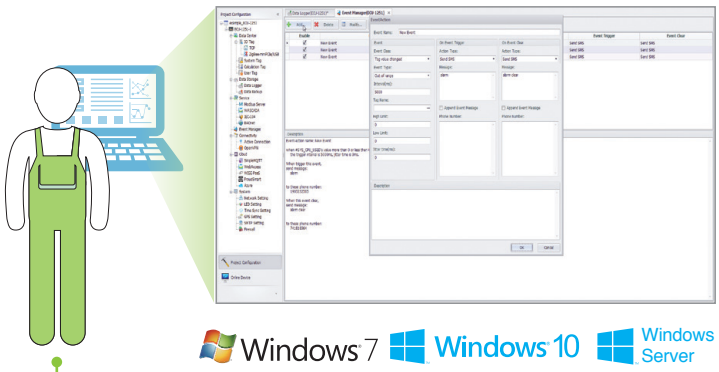
Fanless Embedded PC	Expansion I/O	Industrial Protocol Gateway	Industrial Communication Gateway	All-In-One I/O Gateway
ESRP-CSS-UNO2484 ESRP-CSS-UNO1372 ESRP-CSS-UNO2271	ESRP-PCS-ADAM3600 ESRP-SCS-W5580	ESRP-PCS-WISE710	ESRP-PCS-ECU1251 ESRP-PCS-ECU1051	ESRP-PCS-ADAM6717 ESRP-PCS-ADAM6750

Sensor & Data Networking

OPC UA | Modbus | BACnet | EtherNet/IP | dnp | IEC

Sensor | Database | Smart Meter | PLC & PACs | Machines | Industrial HMI | Remote IO | Ethernet Switches | Data Modules

WISE-EdgeLink Components



Windows 7 Windows 10 Windows Server

EdgeLink studio
(for Windows)

- Project configuration
- Online device monitoring
- Device communication setup
- Data forwarding settings
- System settings

Download projects to the platform via a network

Configuration files

EdgeLink runtime
(for Linux)

- Connect end devices to network
- Data acquisition and transmission
- Supports 200+ device drivers
- Real-time/historical data log
- Connectivity to the cloud and third-party systems

WISE-EdgeLink Enabled Product List

Model Name	Description	Hardware Spec
☞ UNO-420	PoE Powered Device Sensing Gateway	Intel® Atom™, 3 x COM, 2 x LAN (1 x PoE), 8 x GPIO, HDMI, USB3.0
☞ WISE-710	Industrial Protocol Gateway	NXP i.MX 6 Dual Core, 2GbE, 3 x COM, 4DI/4DO, 1 x Micro USB, 1 x Micro SD Slot
☞ UNO-1372	Azure IoT Edge	Intel® Celeron® J1900 4G DDR3L, 2 GbE, iso. 4 COM, 4 DI, 4 DO, 4 USB, HDMI, DP, TPM2.0
☞ UNO-2271	Azure IoT Edge	Intel® Atom™ 2 x GbE, 1 x mPCIe, HDMI, eMMC
☞ UNO-2484	Azure IoT Edge	Intel® Core™ i5-7300U (2.6 GHz) (MBP) with 4 x GbE, 1 x mPCIe, HDMI, DP
☞ UNO-2372	Azure IoT Edge	Intel Atom/Celeron, 2 GbE, 4 USB, 4 COM, 2 x mPCIe, HDMI, DP
ADAM-6700	Intelligent I/O Gateway	CPU Arm@ Cortex-A8(32-bit,1GHz) with 512MB RAM, Linux-based 2 x LAN, 2 x RS-485 ports, 2 x USB
☞ ADAM-3600	Wireless Intelligent RTU	TI Cortex-A8(600MHz) with 256MB DDR3L, Linux-based 4 x expansion slots, 1x SD slot, 2 x LAN ports, 2 x wireless comm. interface(miniPCIe), 8xDI, 8xAI, 4x isolated DO channels
☞ ECU-1051	Cloud enabled Intelligent Communication Gateway	TI Cortex A8 600MHz CPU with DDR3L 256MB RAM, 2 x LAN, 2 x COM (isolation optional), 1x MiniPCIe
☞ ECU-1251	Industrial Communication Gateway	TI Cortex A8 800MHz CPU with DDR3L 256MB RAM, 2 x LAN, 4 x COM, 1 x MiniPCIe
☞ ECU-4553	TI Cortex4 A8 Power Automation Computer	TI Cortex A8 800MHz CPU with DDR3L 1GB RAM, 4 x LAN, 16 x COM, 2 x MiniPCIe
☞ AMAX-5580	EtherCAT Enabled IoT Edge Controller	Intel Core i7-6600U (2.6 GHz) Controller IPC with EtherCAT Slice IO, 2xGbE, HDMI+VGA, 4xUSB3.0, 2xCOM and 4x Expansion slot for WISE-54XX series

XNavi Software Series

Introduction

In the future, intelligent industrial automation will need to be real-time adaptable and agile, and edge solution ready packages are designed to meet this trend. Edge Solutions are software-hardware bundled products developed for use on the network edge, and are thus situated much closer to where the processing takes place. This helps manufacturers deal with issues cropping up in their systems as and when they occur without any lag in the time taken to act upon them. Edge solutions bridge the gap between the cloud and connected devices in the factory. These include specially written application-focused software such as DAQNavi, MotionNavi, VisionNavi, HMINavi, and AINavi, for use on the edge for data collection, motion control, vision inspection, process visualization and AI analysis. This brings processing, communication, and decision making, much closer to edge devices.

Integrated Software Development Suite

Connecting Data, Motion, Vision and HMI from Edge-to-Cloud

DAQNavi

DAQNavi is software package used to enable edge intelligence for your DAQ device. It includes an SDK (Software Development Kit) used to get data from Advantech DAQ cards and modules, but also adds further data processing algorithms in order to gain a better insight from acquired data. The software has 6 parts: 1. Data Acquisition 2. Data Processing 3. Feature Extraction 4. Interpretation and Output 5. External Device/Cloud Connectivity 6. Data Visualization.

Featuring easy configuration and development support tools, the software can easily be deployed in Machine Condition Monitoring, Automated Testing Equipment and Machine Control scenarios. This makes it easier to realize an edge automated monitoring and control system.

MotionNavi

IEC 61131-3 is the third part of the open international standard IEC 61131 for programmable logic controllers (PLC), DCS, IPC, CNC and SCADA, and was first published in December 1993 by the IEC. Applying IEC 61131-3 programming standards has become mandatory in the automation control field. If the software follows the IEC 61131-3 international standard, any user can understand the programming logic because it follows all the familiar structure of the same programming languages.

PLCopen motion standard provides a way to have standard application libraries that are reusable for multiple hardware platforms. PLCopen motion serves as a basic layer for ongoing definitions in different areas.

Advantech's MotionNavi is a software based on the CODESYS Software Platform (3S), which follows the IEC-61131-3 and the PLCopen motion Part 4 standard for developing function modules. The functions include 2-axis linear interpolation, 2-axis circular interpolation, 3-axis linear interpolation, 3-axis circular interpolation, 3-axis ellipse interpolation, and 3-axis spiral interpolation.

VisionNavi

Advantech VisionNavi is a programmable machine vision software that facilitates development of menu-driven user interface and helps deploy multiple tasks. It supports a wide range of Advantech industrial PCs and cameras, provides easy system installation and project development while reducing maintenance costs. It is suitable for automated applications aimed at defect inspection and quality assurance which need different conditional branches, steps or loops to complete each task. Any programmer can easily configure each process and determine the next action depending on the results, while the results can be inherited to the next step and become the reference or parameters for that process.

HMINavi

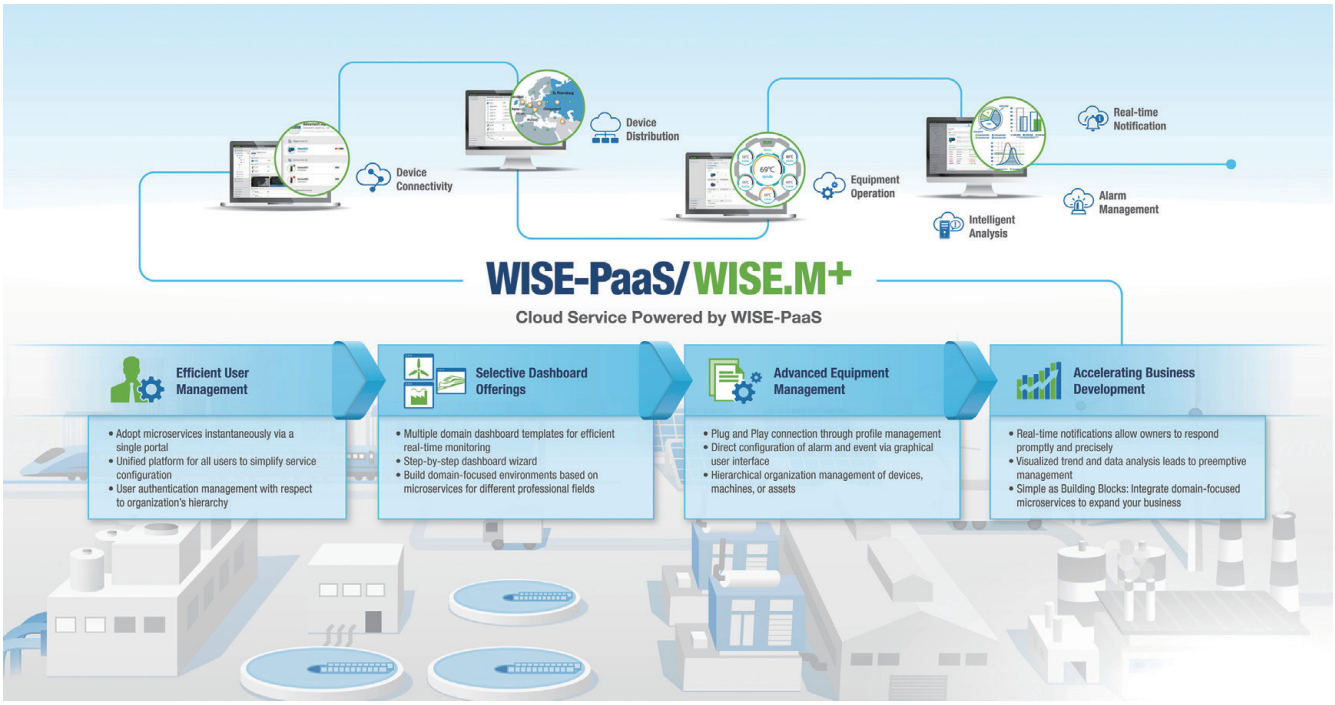
HMINavi is a powerful and intuitive software program for creating comprehensive human machine interface solutions. HMINavi is an easily integrated development tool with proven value in many application fields. Features include solution-oriented screen objects with built-in functionality, high-end vector symbols, graphics, and support for 450 PLC communication protocols. HMINavi also supports online/offline simulation and utility programs such as Data Transfer Helper (DTH), recipe editor, and text editor, ensuring easy development of all HMI applications.

AINavi

AINavi is deep-learning-based image analysis software that includes AI defect inspection tools and independent AI training software. It is designed for inspection in multi-product lines and multi-defect applications. AI defect inspection tool can be easily used in any defect inspection application. It reduces software development times and provides high-tolerance to environmental factors. It can also be implemented to replace manual inspection. The AI trainer software uses the latest neural network recognition judgment and it can train models with only a few images. AINavi lowers the threshold difficulty of applying AI algorithms in automation production lines. It provides a faster and more efficient way to deploy defect inspection tools.

WISE-PaaS / WISE.M+

WISE-PaaS/WISE.M+ is an open cloud-based industrial IoT platform on WISE-PaaS that aims for real-time monitoring and optimized operations management to provide smart equipment management that helps businesses enjoy IoT success. Acquiring data, getting devices connected to the cloud, and performing big data management and analysis are all crucial aspects to consider. To achieve this goal, Advantech developed WISE-PaaS/WISE.M+ services to facilitate deployment, configuration, and direct access to these equipment to improve overall performance and efficiency and enable seamless business digital transformation.



Industrial IoT Cloud-Based Monitoring & Operating Platform

Advantech WISE-PaaS/WISE.M+ aims to take the complexity out of implementation procedures, with a focus on strategy and planning. It is designed for managers to easily monitor connected equipment and help facilitate successful digital transformation. Engineers can also spend less time sifting through raw data and more time improving the reliability and performance of equipment or devices.

Hierarchical key performance index management

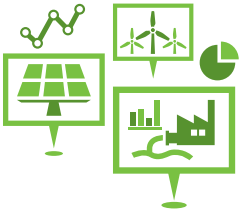
The clear roles and responsibility (R&R) defined in terms of organization structure over equipment management enhances risk assessment control with aid of stacked indexes via dashboard visualization. This provides straightforward KPI monitoring and comparison.

Comprehensive equipment management

Concise equipment effectiveness monitoring together with visualized operation status demonstrates prompt assignment monitoring where proactive decision can be made precisely.

Equipment profile management

Profile templates for equipment in terms of customer defined objects can be stored and used over and over upon site setup once equipment is connected.



Easy visualization setup

In practicee, visualization of domain focused scenarios become true plug and play. When transmitting data, the domain scenario dashboards obtain data automatically from equipment and objects will be displayed without any extra work.

Energy and Environment I.Apps

As energy and environment issues are important concerns for the public, Advantech has developed industrial applications (I.Apps) for energy and environment solutions with industrial IoT technologies focusing on the process of sensing, control monitoring, remote communication, and smart data management. By combing these technologies with WISE-PaaS/WISE.M+ cloud-based monitoring and operating platform that performs information integration and data analysis, Advantech I.Apps are designed to be widely used in a wide variety of energy and environment industries.

Data acquisition using multiple communication protocols

There are many types of electrical equipment in energy applications, such as inverters, combiner boxes, and intelligent or non-intelligent power meters, which need the support of a diverse range of communication protocols. With WISE-EdgeLink to realize device data acquisition, Advantech provides communication platforms compatible with these protocols.

Remote equipment monitoring and efficiency optimization

Each energy and environment solution is integrated with intelligent sensing, communication, and real-time analysis capabilities that allow users to obtain the operating status of any machine at any time to ensure efficient resource usage.

WebAccess/SCADA based application solution

For energy monitoring, Advantech WebAccess/SCADA software is able to implement remote management, energy consumption status overview, energy saving potential assessment, and recommend practical measures, energy monitoring and reporting analysis, etc. to effectively achieve energy savings and cost control.

Event monitoring for real-time alarm

With wireless communication technology, event alerts can be transmitted in real-time from remote sites to the control center, allowing field personnel to respond promptly to minimize accidents and losses.

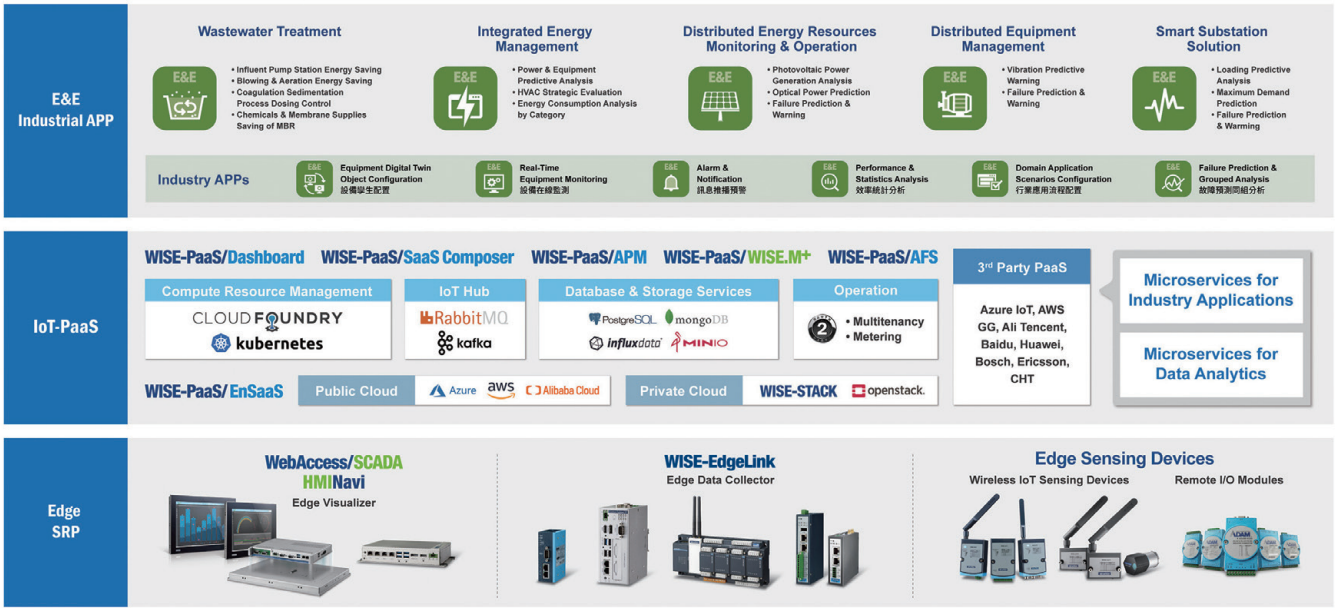
Visualized and integrated WISE-PaaS/ WISE.M+ cloud platform

Integrated data is gathered from a wide area and big data analysis and information visualization provides management level intelligence for decision-making to optimize operational efficiency.

Remote equipment diagnostics and predictive maintenance

Collates operating status data from key components, thereby increasing equipment life, while reducing maintenance costs.

Energy and Environment System Architecture



Solar Power Management Solution (SPMS)

Transforming Distributed Energy Resources to Drive the Growth of the Renewable Energy Market

Due to the ever-growing renewable energy industry, more solar power plants are planned for construction and operation worldwide. Current concerns among power plant owners and grid companies include data accuracy, operation efficiency, and asset management. Advantech's SPMS solution offers a unified monitoring management system, machine-to-intelligence technology, and a solid IoT data framework that can meet most managerial demands.

Field site solar power management system

- Real-time monitoring of string/inverter/meter and other equipment operating parameters
- Visualized alarm management and intelligent power generation analysis

Distributed solar power operation and maintenance management system

- Decentralized control and centralized management
- Qualified for local regulations for seamless real-time process monitoring of station equipment

Centralized solar power operation and maintenance management system

- Centralized operation of unmanned remote sites
- Scalable architecture that works in plants of any size
- Analyze and optimize power station efficiency

Intelligent Water Management Solution

Cloud-Enabled Remote Equipment Management for Water and Wastewater

Advantech's intelligent water management solution integrate domain-specific knowledge on water equipment and processing technologies, and the WISE-PaaS/WISE.M+ industrial IoT cloud platform to provide cloud-based remote equipment I.Apps covering water pumps, blowers, pump stations, and bio-tank applications.

Water management solution

- Real-time equipment monitoring scenario and dashboard setup
- Data visualization and analysis for water and wastewater treatment management

Turbo blower management system

- Integrated turbo blower monitoring and management for energy saving
- Failure prediction and warming for minimal equipment downtime

iFactory I.Apps

To confront the challenges in the future through digital transformation in Industry 4.0, Advantech developed an Industrial app platform to resolve this challenge. Through the utilization of WISE-PaaS platform functions, Advantech provides iFactory I.Apps that allow DFSI (Domain-Focused Solution Integrator) partners to have easy access to all the featured modules so they can collaborate with Advantech and develop complete industrial solutions. All iFactory Apps are available on WISE-Marketplace and can be easily subscribed via WISE points.

WISE-PaaS AIoT Cloud Platform

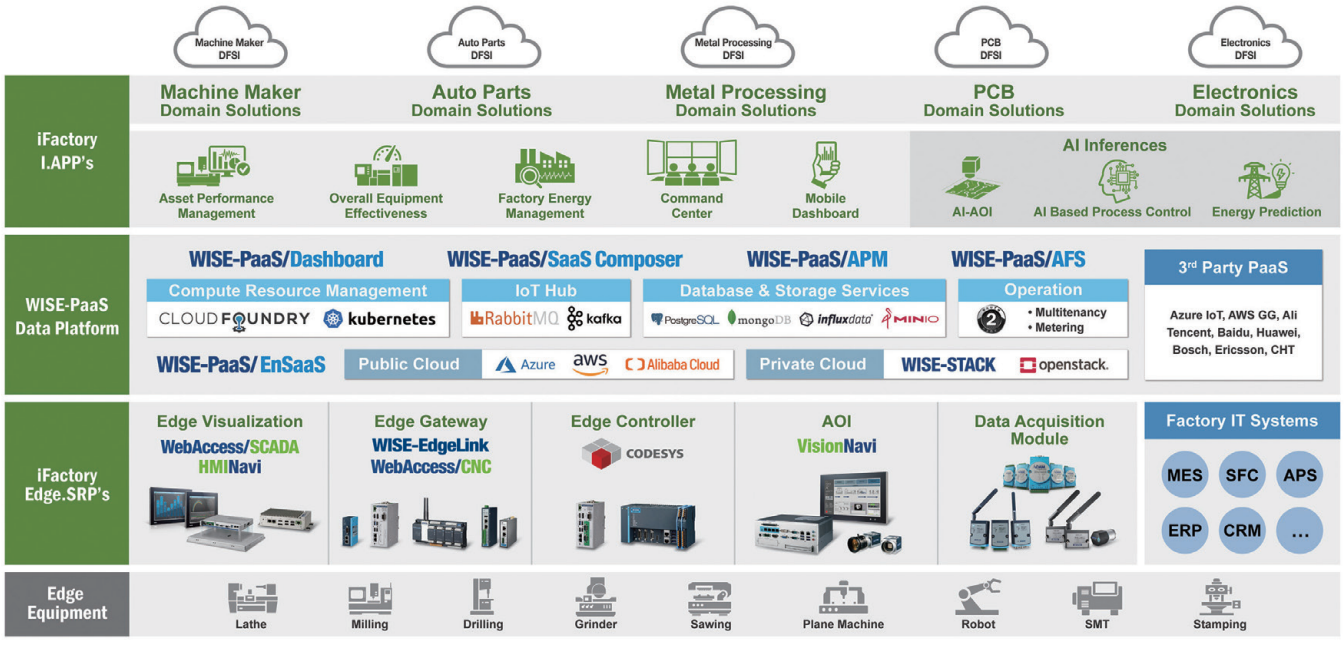
Advantech's WISE-PaaS AIoT cloud platform provides edge-to-cloud software and services to help system integrators, manufacturers, solution developers, and industrial end customers; enabling real AIoT-powered cloud business models in various vertical markets. Leveraging Advantech's extensive hardware portfolio, WISE-PaaS integrates diverse software services for edge connectivity. Data collected on hardware can be sent to the WISE-PaaS/EnSaaS industrial IoT cloud PaaS to help its ecosystem partners quickly develop SaaS and domain-specific IoT solutions based on our data-driven AIoT cloud platform, WISE-PaaS.

WISE-Marketplace

WISE-Marketplace is a trading platform for IIoT solutions that provide customers with subscription services for Industrial apps (I.Apps). The platform invites its ecosystem partners to launch their solutions via the platform. Users are able to subscribe Edge.SRP, General I.App, Domain I.App, AI modules, as well as consulting services, and training services provided by Advantech and partners on WISE-Marketplace.

iFactory I.Apps for Industry 4.0 Applications

Based on WISE-PaaS platform, Advantech has developed some significant industrial apps that can be easily integrated and customized for various industries. Moreover, Advantech invites DFSI partners to connect with WISE-PaaS platform and co-create iFactory I.Apps for Industry 4.0 applications, to help vertical industry customers implement rapid digital transformation.



Overall Equipment Effectiveness (OEE)

Real-time Machine Availability Management for Maximizing Operational Excellence

Many manufacturers find it hard to identify those specific losses that contribute to low machine productivity as they are difficult to identify, record, and analyze, so manufacturers are looking for support in making the move toward smart factory transformation. Overall Equipment Effectiveness (OEE), one of the most vital industrial apps, realizes intelligent factory through data acquisition, aggregation, and analysis of machine availability to improve productivity, reduce loss, and increase profit.

iFactory/OEE

Feature Highlights

- Complete data acquisition from heterogeneous machines for machine availability management and production information analysis
- Dashboard visualization of real-time machine status and stoppages to enable root cause analysis for maximizing machine utilization and productivity

Key Functions

- **Real-time production management.** Machine status can be monitored as machine running, error, idle, and machine stopped.
- **Machine availability management.** The runtime of each machine can be counted to calculate machine availability that reflects the percentage of planned production time the machine is available for operation.
- **Changeover efficiency management.** The average changeover time can be calculated to analyze daily efficiency.

Factory Energy Management Solution (FEMS)

Centralized Monitoring and Management for Optimizing Factory Energy Efficiency

In today's harsh economic climate, most manufacturers are seeking ways to save cost. Best-in-class manufacturers are already road mapping plant strategies to implement energy management in the factory for decreasing energy consumption per unit production. Based on real-time data obtained from smart meters, Factory Energy Management Solution (FEMS) allows users to monitor energy consumption information, accurately evaluate energy costs, and optimize energy efficiency, aiding business intelligence strategies for energy management.

iFactory/FEMS

Feature Highlights

- Intuitive dashboard management to visualize data and easily generate analysis reports
- Energy consumption statistics and analysis to identify energy wastage and reduce business energy cost

Key Functions

- **Energy consumption overview.** An overview of past energy profiles and current energy consumption data provides a systematic approach to identify problem areas and prime targets for energy reduction.
- **Energy KPI management.** KPI settings allow users to measure and review energy usage and efficiency of each department, reducing energy waste and improving energy efficiency.
- **Energy consumption and cost analysis.** Production is usually the largest energy consuming part of a factory. Energy consumption data and costs can be analyzed and compared with utility bills to help improve energy efficiency and wastage.

2 Edge AI and SKY Servers

Edge AI and SKY Servers Overview

Accelerate AI and HPC Transformation from the Edge to Cloud

Implementing AI technology is important for advancing the scope of Industrial IoT. AI technologies are highly tailored to individual tasks and each application requires specialized research and unique construction. Advantech has developed a complete AI platform, from the edge to the cloud, inference to training. Our mission is to provide extraordinary AI technology under different applications in industrial scenarios.

Edge AI Solution

Advantech MIC-Jetson series are highly integrated systems with NVIDIA Jetson platform. With strong computing power, small compact design, industrial I/O supports and remote management, MIC-Jetson series allow AI application developers to rapidly create unique AI solutions in smart city, automation manufacturing, medical imaging applications.

Main Features

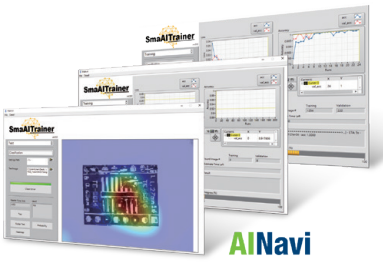
- Full NVIDIA Jetson products
- Industrial I/O support
- Remote management

Industrial Server Boards

Advantech industrial server boards based on Intel® Xeon® technology and Intelligent Platform Management Interface (IPMI) technology, which are ideal for industrial performance-demanding applications such as AOI, vision inspection, video transcoding, SCADA applications to accelerate deployment, ease management, and enhance virtualization to facilitate cloud computing.

Main Features

- Industrial-grade Design
- Interoperable and Optimized I/O
- High Network Bandwidth



AINavi

AINavi is deep-learning-based image analysis software that includes AI defect inspection tools and independent AI training software. It is designed for inspection in multiple production lines and various defect applications. AINavi can be deployed on MIC-Jetson series.

GPU Server

Advantech SKY-6000 series are high-density GPU AI training platforms designed to meet the growing trend toward big data and analysis. Powered by dual Intel® Xeon® scalable processors, each of these highly scalable GPU optimized servers support up to 10 NVIDIA® GPUs. High-density GPU design maximizes the acceleration of highly parallel applications like artificial intelligence (AI), deep learning, self-driving cars, smart cities, medical technology, big data, high performance computing (HPC), virtual reality, and more.

Main Features

- High density GPU cards
- Thermal & acoustic management
- Remote management

Industrial Server Chassis

Advantech industrial server chassis give equipment developers high performance, efficient, and redundant solutions for industrial environments and critical applications. This product line provides customers with a total solution and value-added services rather than just a regular server product.

Main Features

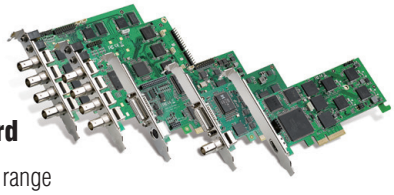
- High-availability and redundancy
- Industrial-grade design
- Product life cycle management

Storage Server and Multi-node Server

Storage servers are high capacity, cost-effective storage solutions that comprehensive fault-tolerant capabilities with H/W RAID and online expansion capability. Multi-node server delivers the highest performance and efficiency in a 2U 4-node design — creating the flexibility to deploy independent workloads on a shared chassis resources and significantly lowers the total cost of ownership.

Main Features

- Space-efficiency & high performance
- Quick maintenance
- Wide support of advanced form-factors including M.2 and U.2.



DVP Video Capture Card

Advantech offers an extensive range of video products, including video capture cards (PCIe, mini PCIe, and M.2) and industrial-grade video processing systems, to meet various market needs. From lecture recording to medical imaging, event broadcasting, live video streaming, and 24-hour surveillance, Advantech's intelligent video platforms are capable of supporting diverse video-related applications.

Main Features

- SDK for efficient development
- Various video interfaces supported
- High software and hardware compatibility

Edge AI Solution

Edge AI Computing




Model Name		MIC-710AIX	MIC-710AI	MIC-720AI	MIC-730AI
Form Factor		Fanless	Fanless	Fanless	Fanless
NVIDIA® Platform		NVIDIA Jetson Xavier NX	NVIDIA® Jetson Nano™	NVIDIA® Jetson™ TX2	NVIDIA® Jetson™ AGX Xavier
Processor System	CPU	6-core NVIDIA Carmel ARM® v8.2 64-bit CPU, 6MB L2 + 4MB L3	Quad Core ARM Cortex A57 (Max. Operating Frequency: 1.43GHz)	Dual Core Denver2.0 + Quad Core ARM Cortex A57	8-core ARM v8.2 64-bit CPU, 8MB L2 + 4MB L3
	CUDA Cores	384 Volta CUDA cores and 48 Tensor cores	128 Maxwell CUDA Cores	256 Pascal CUDA Cores	512 Volta CUDA cores and 64 Tensor cores
	Memory	8GB 128-bit LPDDR4 1600Hz	4GB 64-bit LPDDR4	8GB 128-bit LPDDR4	32GB 256-bit LPDDR4
	Flash	16GB eMMC	16GB eMMC	32GB eMMC	32GB eMMC
I/O / Expansion	LAN	2 x RJ-45	2 x RJ-45	1 x RJ-45	2 x RJ-45
	PoE	-	-	1 x PoE	-
	HDMI	1 x HDMI	1 x HDMI	1 x HDMI	1 x HDMI
	USB	External: 1 x USB2.0 1 x USB3.0 Internal: 1 x USB2.0 1 x MicroUSB	External: 1 x USB2.0 1 x USB3.0 Internal: 1 x USB2.0	External: 2 x USB 3.0 Internal: 1 x USB 2.0	External: 2 x USB2.0 2 x USB3.0 Internal: 1 x USB2.0
	DI/DO	8bit (4In/4Out)	8 bit (4In/4Out)	8 bit (4In/4Out)	16 bit (8In/8Out)
	Button	NA	Recovery, Reset (Internal)	Power Buttons (External) Recovery, Reset (Internal)	Power Buttons (External) Recovery, Reset (Internal)
	COM	1x RS232/422/485	1 x RS-232/422/485	-	2 x RS-232/422/485
	SD Card	1 x Micro SD	1 x Micro SD	-	-
	SIM card	-	-	-	1 x Nano SIM
	MiniPCIe	1 x MiniPCIe (PCIex1)	1 x MiniPCIe (PCIex1)	-	1 x MiniPCIe (PCIex1)
	iDoor	1	1	-	1
	PCIe iModule	-	-	-	MIC-75M20-00B1
Storage	Storage	1 x M.2 (SATA)	1 x M.2 (SATA)	1 x mSATA	1 x 2.5" HDD/SSD 1 x M.2 (NVME PCIex2)
Power	Power Supply	Adaptor 100-240V 65W 19V (TERMINAL BLOCK)	Adaptor 100-240V 65W 19V (TERMINAL BLOCK)	Adaptor 100-240V 65W 19V (TERMINAL BLOCK)	Adaptor 100-240V 150W 19V (TERMINAL BLOCK)
Dimension	H x W x D (mm)	147 x 118 x 52 (mm)	147 x 118 x 52 (mm)	147 x 118 x 52 (mm)	192 x 230 x 87 (mm)

AI Video Systems



Model Name		MIC-710IVA	MIC-710IVX	MIC-730IVA
Form Factor		Fan Base	Fanless	Fan Base
NVIDIA® Platform		NVIDIA® Jetson Nano™	NVIDIA Jetson Xavier NX	NVIDIA® Jetson™ AGX Xavier
Processor System	CPU	Quad Core ARM Cortex A57 (Max. Operating Frequency: 1.43GHz)	6-core NVIDIA Carmel ARM® v8.2 64-bit CPU, 6MB L2 + 4MB L3	8-core ARM v8.2 64-bit CPU, 8MB L2 + 4MB L3
	CUDA Cores	128 Maxwell CUDA Cores	384 Volta CUDA cores and 48 Tensor cores	512 Volta CUDA cores and 64 Tensor cores
	Memory	4GB 128-bit LPDDR4	8GB 128-bit LPDDR4 1600Hz	32GB 256-bit LPDDR4
	Flash	16GB eMMC	16GB eMMC	32GB eMMC
I/O / Expansion	LAN	1 x RJ-45	1 x RJ-45	1 x RJ-45
	PoE	8 x PoE (15.4w/ch)	8 x PoE (15.4w/ch)	8 x PoE (15.4w/ch)
	HDMI	1 x HDMI	1 x HDMI	1 x HDMI
	USB	External: 1 x USB 2.0 1 x USB 3.0 Internal: 1 x USB2.0	External: 1 x USB 2.0 1 x USB 3.0 Internal: 1 x USB2.0	External: 2 x USB 3.0 Internal: 1 x USB2.0
	DI/DO	8 bit (4In/4Out)	8 bit (4In/4Out)	8 bit (4In/4Out)
	Button	Power Switch (External) Recovery , Reset (Internal)	Power Switch (External) Recovery , Reset (Internal)	Power Switch (External) Recovery , Reset (Internal)
	COM	1 x RS-485	1 x RS-485	2 x RS-232/422/485
	SD Card	-	-	-
	SIM card	-	-	-
	MiniPCIe	-	-	-
	iDoor	-	-	-
	PCIe iModule	-	-	-
Storage	Storage	2 x 3.5" HDD (internal)	2 x 3.5" HDD (internal)	2 x 3.5" HDD (internal)
Power	Power Supply	AC100-240V 250W ATX	AC100-240V 250W ATX	AC100-240V 250W ATX
Dimension	H x W x D (mm)	57 x 300 x 330 (mm)	57 x 300 x 330 (mm)	57 x 300 x 330 (mm)

GPU Servers



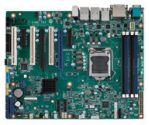

Specification	☞ SKY-6100	☞ SKY-6200	☞ SKY-6400	☞ SKY-6420
Key Applications	▪ Cloud Computing ▪ IoT Edge Computing ▪ Big Data Analytics	▪ Cloud Computing ▪ HPC / Data Analytics ▪ DataCenter Applications	▪ Cloud Computing ▪ Big Data Analytics ▪ High End Enterprise Server	▪ Cloud Computing ▪ Big Data Analytics ▪ Research lab/National Lab
Features	▪ 2 2.5" Hot-swap SAS/SATA drive bay ▪ 8 DIMM slots, Intel Optane DCPMM ▪ NVIDIA Tesla P4/T4 Optimized ▪ Unify front bezel design	▪ 8 2.5" Hot-swap SAS/SATA support ▪ 24 DIMM slots, Intel Optane DCPMM ▪ 4 double deck PCI-E cards or 8 single deck PCI-E cards ▪ Unify front bezel design	▪ 8 2.5"/3.5" hot-Swap SAS/SATA support ▪ 12 DIMM slot, Intel Optane DCPMM ▪ 205W CPU support ▪ 6 PCI-E cards support ▪ Unify front bezel design	▪ 12 2.5"/3.5" Hot-swap SAS/SATA support ▪ 24 DIMM slots ▪ Hot-Swappable system fan design ▪ 11 PCI-E cards support ▪ Peer-to-Peer support.
Processor Support	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor(Cascadelake/ Skylake) with UPI up to 10.4 GT/s, TDP up to 140W	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor (Cascadelake/ Skylake) with UPI up to 10.4 GT/s, TDP up to 140W	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor (Cascadelake/ Skylake) with UPI up to 10.4 GT/s, TDP up to 205W	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor (Cascadelake/ Skylake) with UPI up to 10.4 GT/s, TDP up to 160W
Serverboard	SKY-6100	SKY-6200	ASMB-975I	SKY-6420
Chipset	Intel® C622 chipset	Intel® C622 chipset	Intel® C621 chipset	Intel® C622 chipset
System Memory (Max.)	8 DIMM slots, Up to 512GB ECC LRDIMM, Up to 2933 MHz, Intel Optane DCPMM	24 DIMM slots, Up to 1.5TB ECC 3DS LRDIMM, Up to 2933 MHz, Intel Optane DCPMM	12 DIMM slots, Up to 768GB ECC LRDIMM, Up to 2933 MHz, Intel Optane DCPMM	24 DIMM slots, Up to 1.5TB ECC 3DS LRDIMM, Up to 2933 MHz, Intel Optane DCPMM
Expansion Slots	5 PCIE 3.0 x 16 (FH, HL)	4 PCIE 3.0 x 16 (FH, 10.5"L, double deck) or 8 PCIE 3.0 x 8 (FH, 10.5"L, single deck); 1 PCIE 3.0 x 8 (FH, HL)	4 PCIE 3.0 x 16 (FH, 10.5" L, double deck); 1 PCIE 3.0 x 8 (FH single deck); 1 PCIE 3.0 x 4 (FH, single deck)	10 PCIE 3.0 x 16 (FH, 10.5"L, double deck); 1 PCIE 3.0 x 16 (FH, single deck)
Onboard Storage Controller	Intel® C622 SATA3 (6Gb/s) controller	Intel® C622 SATA3 (6Gb/s) controller	Intel® C621 SATA3 (6Gb/s) controller	Intel® C622 SATA3 (6Gb/s) controller
Connectivity	2 Intel® X557 10GBase-T + 1 Intel® I210 Gigabit Ethernet ports; VGA ports; 3 USB 3.2 Gen1 (2 in rear, 1 internal); 2 USB 2.0 at front	2 Intel® X557 10GBase-T + 2 Intel® I210 Gigabit Ethernet ports; VGA ports; 4 USB 3.2 Gen1 ports (rear); 2 USB 2.0 at front; 1 Serial port optional	2 Intel® I210 Gigabit Ethernet ports; VGA ports; 7 USB 3.2 Gen1 ports (4 in rear, 2 at front, 1 type A);1 Serial port	2 Intel® X557 10GBase-T + 1x Realtek RTL8201EL-VC PHY (dedicated IPMI); VGA ports; 6 USB 3.2 Gen1 ports (4 in rear, 2 at front); 2 Serial port optional
Management Controller	Aspeed AST2500 BMC	Aspeed AST2500 BMC	Aspeed AST2500 BMC	Aspeed AST2500 BMC
Management	IPMI2.0; KVM with share NIC	IPMI2.0; KVM with with share NIC	IPMI2.0; KVM with share NIC LAN; SUSI API; WISE-PaaS RMM	IPMI2.0; KVM with dedicated LAN
Peripheral Bays	2 hot-swap 2.5" drive support; 2 SAS/SATA3 ports; on board 1 M.2 2242 SATA	8 hot-swap 2.5" drive support; 8 SAS/SATA3 ports; optional ODD; on board 1 M.2 2280 (SATA + PCIE x4)	8 hot-swap 2.5"/3.5" SAS/SATA3 drive support; 2 internal 2.5" drive support; on board 2 M.2 2242(SATA) for OS mirror	12 hot-swap 2.5"/3.5" SAS/SATA3 ports; on board 1 M.2 2280 (SATA + PCIE x2)
Power Supply	1200W 1+1 platinum level redundant power supply	2000W 1+1 platinum level redundant power supply	2000W 1+1 platinum level redundant power supply	4800W 3+1 platinum level redundant power supply
Cooling System	6 high speed 4056 system fan; 1 internal 4028 system fan; 1 optional 4028 external fan	6 high speed 8038 fan; 2 for CPU, 4 for riser card cage	2 CPU fan; 3 high speed 12038 internal system fan; 2 high speed external 8038 system fan	6 high speed 12038 system fan; 4 optional external 8038 fan
Form Factor	1U chassis; enclosure: 438 x 44 x 650 mm (17.2" x 1.7" x 25.6")	2U chassis; enclosure: 438 x 88 x 760 (17.24" x 3.46" x 29.92")	4U chassis; enclosure: 435 x 177 x 673 mm (17.12" x 6.96" x 26.49")	4U chassis; enclosure: 438 x 176 x 770 mm (17.24" x 6.93" x 30.31")
Operating Temperature	0 ~ 35° C (32 ~ 95° F)	0 ~ 35 °C (32 ~ 95 °F)	0 ~ 35° C (32 ~ 85° F) *0 ~ 30° C (32 ~ 85.9° F) for NVidia Tesla P100/V100	0 ~ 35° C (32 ~ 85° F) *0 ~ 30° C (32 ~ 85.9° F) for NVidia Tesla V100

Storage Servers and Multi-node Servers

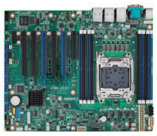
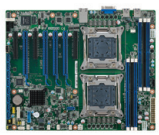
Specification	☞ SKY-4311	☞ ASR-3100	☞ SKY-5240
Key Applications	▪ Cache/Hot Data Machine ▪ 3D Rendering ▪ Broadcasting & Editing ▪ Financial Market and eCommerce OLTP	▪ Cache/Hot Data Machine ▪ 3D Rendering ▪ Broadcasting & Editing ▪ Financial Market and eCommerce OLTP	▪ High performance computing ▪ Distributed computing/storage ▪ Optimized for space efficiency & performance-per-watt
Features	▪ Up to 8 NVMe/SATAIII and optional up to 8 SAS drives ▪ Dual SATA M.2 2242 for OS mirror ▪ 2 Intel® Gb LAN	▪ Up to 16 NVMe/SATAIII and optional up to 8 SAS drives ▪ Dual SATA M.2 2242 for OS mirror ▪ 2 Intel® Gb LAN	▪ 8 2.5" Hot-swappable NVMe and 16 2.5" hot-swappable SAS3 drive bays ▪ Onboard RAID support RAID 0, 1, 5, 10 ▪ 4 Hot-swappable computing node ▪ Each Node supports: – Dual 140W CPU – 24 DDR4 DIMM sockets – 2 M.2 2280 – 2 PCIex16 (HH/HL) add-on cards ▪ Full system (4 nodes) supports: – 8 140 CPU – 96 DDR4 DIMM sockets – 8 M.2 2280 – 8 PCIex16 (HH/HL) add-on cards
Processor Support	Intel® Haswell-EP/Broadwell-EP Processor (Socket 2011)	Intel® Haswell-EP/Broadwell-EP Processor (Socket 2011)	Dual Intel® Xeon® Scalable/2nd Gen. Scalable Family Processor (Cascadelake/Skylake) with UPI up to 10.4 GT/s per node, total support 8 CPU
Serverboard	SKY-4311	ASR-3100	SKY-5240
Chipset	Intel® C612 chipset	Intel® C612 chipset	Intel® C622 chipset
System Memory (Max.)	16 DIMM DDR4 RDIMM Max. 512 GB	16 DIMM DDR4 RDIMM Max. 512 GB	96 DIMM slots, Up to 3TB ECC 3DS LRDIMM, Up to 2933 MHz
Expansion Slots	2 PCIe x 8 slots, and one slot supports FHHL card, the other one supports HHHL card	2 PCIe x 8 slots, and one slot supports FHHL card, the other one supports HHHL card	8 PCI-E 3.0 x 16, Low Profile
Onboard Storage Controller	Intel® C612 chipset	Intel® C612 chipset	Microsemi PM8222 SASIII 12Gb/s
Connectivity	2 Intel® Gb LAN	2 Intel® Gb LAN	8 10GBase-T Ethernet ports (Intel® X557); 4 VGA ports; 8 USB 3.2 Gen1 ports (Type A); 4 dedicate IPMI LAN
Management Controller	Aspeed AST2400 BMC	Aspeed AST2400 BMC	Aspeed AST2500 BMC
Management	Industry standard BMC, IPMI v2.0 compliant, with web interface, iKVM on request	Industry standard BMC, IPMI v2.0 compliant, with web interface, iKVM on request	IPMI2.0; KVM with dedicated LAN
Drive Bays	8 hot-swap 2.5" NVMe/SATA3 drive	ASR-3100PP: 8 hot-swap 2.5" NVMe drive + 8 hot-swap 2.5" NVMe/SATA3 ASR-3100PT: 8 hot-swap 2.5" NVMe drive + 8 hot-swap 2.5" /SATA3 ASR-3100SS: 16 hot-swap 2.5" SAS/SATA3 drive	24 2.5" drive bays (24 SAS drive or 8 NVMe + 16 SAS drive)
Peripheral Bays	-	-	8 M.2 2280 (4 SATA3 + 4 SATA3/PCIex4)
Power Supply	1100W 1 + 1 Redundant Power Supply	1100W 1 + 1 Redundant Power Supply	1+1 2200W platinum redundant power supply
Cooling System	5 heavy duty fans w/ Optimal Fan Speed Control	7 heavy duty fans w/ optimal fan speed control	4 hot-swappable high speed 8038 fan
Form Factor	1U Chassis; Enclosure: 430 x 44 x 626 mm (16.9" x 1.7" x 24.6")	1U Chassis; Enclosure: 430 x 44 x 806 mm (16.9" x 1.7" x 31.7")	2U chassis; 446 x 88 x 830 mm (17.56" x 3.46" x 32.68")
Operating Temperature	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~104 °F)	0 ~ 35 °C (32 ~ 95 °F)

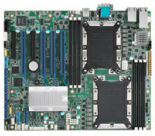
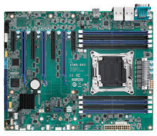
Industrial Server Boards




Model Name		ASMB-260	ASMB-585	ASMB-586	ASMB-785	ASMB-786
Form Factor		Mini-ITX	Micro ATX	MicroATX	ATX	ATX
Processor System	CPU	Intel® Atom® C3000 Series	Intel® Xeon® E3 v5/ v6 and 6th/7th Gen. Core™ i3/i5/i7 Series	Intel® Xeon® E & 8th/9th Gen. Core™ i3/i5/i7 Series	Intel® Xeon® E3 v5/ v6 and 6th/7th Gen. Core™ i3/i5/i7 Series	Intel® Xeon® E & 8th/9th Gen. Core™ i3/i5/i7 Series
	Socket	-	1 x socket LGA 1151	1 x socket LGA1151	1 x socket LGA 1151	1 x socket LGA 1151
	Max. Speed	2.2 GHz	3.9 GHz	3.7 GHz	3.9 GHz	3.7 GHz
	Front Side Bus	-	-	-	-	-
	L3 Cache	2 MB (based on CPU sku)	8 MB	13.5 MB	8 MB	13.5 MB
	Chipset	-	Intel® C236	Intel® C246	Intel® C236	Intel® C246
	BIOS	AMI 128 Mbit, SPI	AMI 128Mbit, SPI	AMI 256Mbit, SPI	AMI 128Mbit, SPI	AMI 256Mbit, SPI
Expansion Slot	PCI	-	-	-	3	-
	PCIe x16	-	1 (Gen3 x16 link)	1	1(switchable to two x 8)	1(switchable to two x 8)
	PCIe x8	-	-	-	2 (switchable to one x 16)	2 (switchable to one x 16)
	PCIe x4	1 (1 Gen3 x 4 link)	3 (2 Gen3 x 4 link, 1 Gen3 x 1 link)	2	2	2
	PCIe x1	-	-	1	-	3
	M.2	-	-	-	-	-
Memory	Technology	DDR4 Reg/unbuffered 2400/2133/1866/1600 Mhz DIMM	DDR4 ECC/ non-ECC Unbuffer 1600/1866/2133/2400 MHz	DDR4 ECC/ non-ECC Unbuffer 2133/2400/2666 MHz	DDR4 ECC/ non-ECC Unbuffer 1600/1866/2133/2400 MHz	DDR4 ECC/ non-ECC Unbuffer 2133/2400/2666 MHz
	Max. Capacity	128 GB for RDIMM/ 64GB for UDIMM	64 GB	64 GB	64 GB	64 GB
	Socket	4 x 288-pin DIMM	4 x 288-pin DIMM	4 x 288-pin DIMM	4 x 288-pin DIMM	4 x 288-pin DIMM
Graphics	Controller	AST2500	Intel® GT2-HD Graphics	Intel® GT2-HD Graphics	Intel® GT2-HD Graphics	Intel® GT2-HD Graphics
	VRAM	DDR3 64MB	1 GB maximum shared memory with 2 GB and above system memory installed	1 GB maximum shared memory with 2 GB and above system memory installed	1 GB maximum shared memory with 2 GB and above system memory installed	1 GB maximum shared memory with 2 GB and above system memory installed
Ethernet	Interface	Gigabit & 10GBase-T Ethernet	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet
	Controller	2 x Intel® I210AT 1 x Intel® X557-AT2	1 x Intel® I219LM 3 x Intel® I210AT (G4 SKU)	1 x Intel® I219LM 3 x Intel® I210AT (G4 SKU)	1 x Intel® I219LM 3 x Intel® I210AT (G4 SKU)	1 x Intel® I219LM 3 x Intel® I210AT (G4 SKU)
	Connector	RJ-45 x 3 (1 shared with IPMI)	RJ-45 x 4 (G4 SKU)	RJ-45 x 4 (G4 SKU)	RJ-45 x 4 (G4 SKU)	RJ-45 x 4 (G4 SKU)
TPM		Optional	Optional	Optional	Optional	Optional
SATA	Max. Data Transfer Rate	600MB/s	600 MB/s	600 MB/s	600 MB/s	600 MB/s
	Channel	Up to 8	7	8	6	8
SAS	Max. Data Transfer Rate	-	-	-	-	-
	Channel	-	-	-	-	-
Rear I/O	VGA/DVI/HDMI/DP	1 / - / - / -	1 / 2 / - / -	1 / 1 / 1 / -	1 / 2 / - / -	1 / 1 / 1 / -
	Ethernet	3	4 (G4 SKU)	4 (G4 SKU)	4 (G4 SKU)	4 (G4 SKU)
	USB	2 (USB3.2 Gen1)	4 (USB 3.2 Gen1)	4 (USB 3.2 Gen2)	4 (USB 3.2 Gen1)	4 (USB 3.2 Gen2)
	Audio	-	Mic-in, Line-out	Mic-in, Line-out	Mic-in, Line-out	Mic-in, Line-out
	Parallel	-	-	-	-	-
	Serial	1 (RS-232)	1 (RS-232)	1 (RS-232 via cable)	1 (RS-232)	1 (RS-232 via cable)
	PS/2	-	-	-	-	-
Onboard I/O	USB	2 (USB 3.2 Gen1)	2 (USB 3.2 Gen1) 6 (USB 2.0) 1 (USB 2.0 Type A)	2 (USB 3.2 Gen1) 6 (USB 2.0) 1 (USB 2.0 Type A)	2 (USB 3.2 Gen1) 6 (USB 2.0) 1 (USB 2.0 Type A)	2 (USB 3.2 Gen1) 6 (USB 2.0) 1 (USB 2.0 Type A)
	Audio	-	1	1	1	1
	Serial	1	6	1	6	1
	Parallel	-	-	-	1	1
	SATA	8	7	8	6	8
	SAS	-	-	-	-	-
Watchdog Timer	Output	System reset	System reset	System reset	System reset	System reset
	Interval	Programmable, 1~255 sec	Programmable, 1~255 sec/min	Programmable, 1~255 sec/min	Programmable, 1~255 sec/min	Programmable, 1~255 sec/min

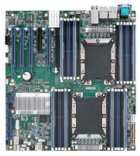
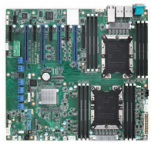



Model Name		ASMB-813	ASMB-823	ASMB-815	ASMB-825	ASMB-805
Form Factor		ATX	ATX	ATX	ATX	ATX
Processor System	CPU	Intel® Xeon® E5-1600 v3/v4 and 2600 v3/v4 Series	Intel® Xeon® E5-2600 v3/v4 Series	Intel® Xeon® Scalable/2nd Gen Scalable Series	Intel® Xeon® Scalable/2nd Gen Scalable Series	Intel® Xeon® W-2100/W-2200 Series
	Socket	1 x socket LGA 2011-R3	2 x socket LGA 2011-R3	1 x socket LGA 3647-P0	2 x socket LGA 3647-P0	1 x socket LGA 2066
	Max. Speed	3.7 GHz	3.5 GHz	3.6 GHz	3.6 GHz	4.1 GHz
	Front Side Bus	QPI 9.6GT/s	QPI 9.6GT/s	UPI 10.4 GT/s	UPI 10.4 GT/s	-
	L3 Cache	30 MB	30 MB	38.5 MB	38.5 MB	24.75 MB
	Chipset	Intel® C612	Intel® C612	Intel® C620	Intel® C620	Intel® C422
	BIOS	AMI 128 Mbit, SPI	AMI 128 Mbit, SPI	AMI 256 Mbit, SPI	AMI 256 Mbit, SPI	AMI 256 Mbit, SPI
Expansion Slot	PCI	-	-	-	-	-
	PCIe x16	2 (switchable to four x8)	4	2 (switchable to four x 8)	4	3 (switchable to four x 8 and one x16)
	PCIe x8	1	2	1	2	-
	PCIe x4	1	1 (x 8 slot with x 4 link)	1	-	2
	PCIe x1	1	-	1	-	-
	M.2	-	-	1 x M.2 2280 (PCIe/SATA)	1 x M.2 2280 (PCIe/SATA)	1 x M.2 22110/2280/2242 (PCIe)
Memory	Technology	DDR4 REG 2400/2133/1866/1600 MHz DIMM	DDR4 REG 2400/2133/1866/1600 MHz DIMM	DDR4 2933/2666/2400/2133 MHz RDIMM, Intel Optane DCPMM	DDR4 2933/2666/2400/2133 MHz RDIMM, Intel Optane DCPMM	DDR4 2666/2400/2133 MHz RDIMM
	Max. Capacity	256 GB REG DIMM	192 GB REG DIMM	384 GB REG DIMM	384 GB REG DIMM	512 GB REG DIMM
	Socket	8 x 288-pin DIMM	6 x 288-pin DIMM	6 x 288-pin DIMM	6 x 288-pin DIMM	8 x 288-pin DIMM
Graphics	Controller	AST1400/AST2400	AST1400/AST2400	AST2510/AST2500	AST2510/AST2500	AST2500
	VRAM	DDR3 64MB	DDR3 64MB	DDR3 64MB	DDR3 64MB	DDR3 64MB
	LCD	-	-	-	-	-
	TV-Out	-	-	-	-	-
	HDMI	-	-	-	-	-
	DVI	-	-	-	-	-
	Dual Display	-	-	-	-	-
Ethernet	Interface	Gigabit Ethernet	Gigabit Ethernet	Gigabit & 10GBase-T Ethernet	Gigabit & 10GBase-T Ethernet	Gigabit Ethernet
	Controller	2 x Intel® I210AT	2 x Intel® I210AT	2 x Intel® I210AT 1 x Intel® X557-AT2 1 x Realtek 8201EL	2 x Intel® I210AT 1 x Intel® X557-AT2	2 x Intel® I210AT
	Connector	RJ-45 x 3 (1 dedicated for IPMI)	RJ-45 x 3 (1 shared with IPMI)	RJ-45 x 5 (1 dedicated for IPMI)	RJ-45 x 4 (1 shared with IPMI)	RJ-45 x 3 (1 dedicated for IPMI)
TPM		Optional	Optional	Optional	Optional	Optional
SATA	Max. Data Transfer Rate	600 MB/s	600 MB/s	600 MB/s	600 MB/s	600 MB/s
	Channel	8	9	9	9	6
SAS	Max. Data Transfer Rate	-	-	-	-	-
	Channel	-	-	-	-	-
Rear I/O	VGA/DVI/HDMI/DP	1 / - / - / -	1 / - / - / -	1 / - / - / -	1 / - / - / -	1
	Ethernet	2	2	4 (T2 SKU)	4 (T2 SKU)	2
	USB	4 (USB 3.2 Gen1) 2 (USB 2.0)	4 (USB 3.2 Gen1)	4 (USB 3.2 Gen1) 2 (USB 2.0)	2 (USB 3.2 Gen1)	6 (USB 3.2 Gen1)
	Audio	-	-	-	-	-
	Parallel	-	-	-	-	-
	Serial	1 (RS-232)	-	1 (RS-232)	1 (RS-232)	1 (RS-232)
	PS/2	2	-	-	-	-
Onboard I/O	USB	2 (USB 3.2 Gen1) 2 (USB 2.0) 1 (USB 2.0 Type A)	2 (USB 3.2 Gen1) 2 (USB 2.0) 1 (USB 2.0 Type A)	2 (USB 3.2 Gen1) 4 (USB 2.0) 1 (USB 2.0 Type A)	4 (USB 3.2 Gen1) 4 (USB 2.0) 1 (USB 2.0 Type A)	2 (USB 3.2 Gen1) 4 (USB 2.0) 1 (USB 2.0 Type A)
	Audio	1	1	1	1	1
	Serial	1	1	1	1	1
	Parallel	-	-	-	-	-
	SATA	8	9	8	8	6
	SAS	-	-	-	-	-
Watchdog Timer	Output	System reset	System reset	System reset	System reset	System reset
	Interval	Programmable, 1 ~ 255 sec/min	Programmable, 1 ~ 255 sec/min	Programmable, 1 ~ 255 sec	Programmable, 1 ~ 255 sec	Programmable, 1 ~ 255 sec

Industrial Server Boards



Model Name		ASMB-913	ASMB-923	ASMB-925	ASMB-935	ASMB-975
Form Factor		EATX	EATX	EATX	EATX	Proprietary
Processor System	CPU	Intel® Xeon® E5-2600 v3/v4 Series	Intel® Xeon® E5-2600 v3/v4 Series	Intel® Xeon® Scalable/2nd Gen Scalable Series	Intel® Xeon® Scalable/2nd Gen Scalable Series	Intel® Xeon® Scalable/2nd Gen Scalable Series
	Socket	2 x socket LGA 2011-R3	2 x socket LGA 2011-R3	2 x socket LGA 3647-P0	2 x socket LGA 3647-P0	2 x socket LGA 3647-P0
	Max. Speed	3.5 GHz	3.5 GHz	3.6 GHz	3.6 GHz	3.6 GHz
	Front Side Bus	QPI 9.6GT/s	QPI 9.6GT/s	UPI 10.4 GT/s	UPI 10.4 GT/s	UPI 10.4 GT/s
	L3 Cache	30 MB	30 MB	38.5 MB	38.5 MB	38.5 MB
	Chipset	Intel® C612	Intel® C612	Intel® C620	Intel® C620	Intel® C620
	BIOS	AMI 128 Mbit, SPI	AMI 128 Mbit, SPI	AMI 256 Mbit, SPI	AMI 256 Mbit, SPI	AMI 256 Mbit, SPI
Expansion Slot	PCI	-	-	1	-	-
	PCIe x 16	4 (1 for PME)	4	5	5	4
	PCIe x 8	-	2	1	1	1
	PCIe x 4	-	1	-	-	4
	PCIe x 1	-	-	-	-	-
	M.2	-	-	-	1 x M.2 2280 (PCIe/SATA)	2 x M.2 2242 (SATA)
Memory	Technology	DDR4 REG 2400/2133/1866/ 1600/1333 MHz DIMM	DDR4 REG 2400/2133/1866/ 1600/1333 MHz DIMM	DDR4 2933/2666/2400/2133 MHz RDIMM, Intel Optane DCPMM	DDR4 2933/2666/2400/2133 MHz RDIMM, Intel Optane DCPMM	DDR4 2933/2666/2400/2133 MHz RDIMM, Intel Optane DCPMM
	Max. Capacity	512 GB REG DIMM	256 GB REG DIMM	768 GB REG DIMM	1.5 TB REG DIMM	768 GB REG DIMM
	Socket	16 x 288-pin DIMM	8 x 288-pin DIMM	12 x 288-pin DIMM	24 x 288-pin DIMM	12 x 288-pin DIMM
Graphics	Controller	AST1400/AST2400	AST1400/AST2400	AST2510/AST2500	AST2510/AST2500	AST2510/AST2500
	VRAM	DDR3 64MB	DDR3 64MB	DDR3 64MB	DDR3 64MB	DDR3 64MB
	LCD	-	-	-	-	-
	TV-Out	-	-	-	-	-
	HDMI	-	-	-	-	-
	DVI	-	-	-	-	-
	Dual Display	-	-	-	-	-
Ethernet	Interface	Gigabit Ethernet	Gigabit Ethernet	Gigabit & 10GBase-T Ethernet	Gigabit & 10GBase-T Ethernet	Gigabit & 10GBase-T Ethernet
	Controller	4 x Intel® I210AT	2 x Intel® I210AT	2 x Intel® I210AT 1 x Intel® X557-AT2	2 x Intel® I210AT 1 x Intel® X557-AT2	2 x Intel® I210AT 1 x Intel® X557-AT2
	Connector	RJ-45 x 4 (1 shared with IPMI)	RJ-45 x 3 (1 dedicated for IPMI)	RJ-45 x 4 (1 shared with IPMI)	RJ-45 x 4 (1 shared with IPMI)	RJ-45 x 4 (1 shared with IPMI)
TPM		Optional	Optional	Optional	Optional	Optional
SATA	Max. Data Transfer Rate	600 MB/s	600 MB/s	600 MB/s	600 MB/s	600 MB/s
	Channel	8	10	8	10	14
SAS	Max. Data Transfer Rate	-	-	-	-	-
	Channel	-	-	-	-	-
Rear I/O	VGA/DVI/HDMI/DP	1 / - / - / -	1 / - / - / -	1 / - / - / -	1 / - / - / -	1 / - / - / -
	Ethernet	4	2	4 (T2 SKU)	4 (T2 SKU)	4 (T2 SKU)
	USB	2 (USB 3.2 Gen1)	2 (USB 3.2 Gen1) 2 (USB 2.0)	4 (USB 3.2 Gen1)	4 (USB 3.2 Gen1)	4 (USB 3.2 Gen1)
	Audio	-	-	-	-	-
	Parallel	-	-	-	-	-
	Serial	1 (RS-232)	1 (RS-232)	1 (RS-232)	1 (RS-232)	1 (RS-232)
	PS/2	-	2	-	-	-
Onboard I/O	USB	2 (USB 3.2 Gen1) 2 (USB 2.0) 1 (USB 2.0 Type A)	2 (USB 3.2 Gen1) 2 (USB 2.0) 1 (USB 2.0 Type A)	2 (USB 3.2 Gen1) 4 (USB 2.0) 1 (USB 2.0 Type A)	2 (USB 3.2 Gen1) 4 (USB 2.0) 1 (USB 2.0 Type A)	4 (USB 3.2 Gen1) 2 (USB 2.0) 1 (USB 2.0 Type A)
	Audio	1	1	1	1	1
	Serial	1	1	1	1	1
	Parallel	-	-	-	-	-
	SATA	8	10	8	10	12
	SAS	-	-	-	-	-
Watchdog Timer	Output	System reset	System reset	System reset	System reset	System reset
	Interval	Programmable, 1 ~ 255 sec/min	Programmable, 1 ~ 255 sec/min	Programmable, 1 ~ 255 sec	Programmable, 1 ~ 255 sec	Programmable, 1 ~ 255 sec

Industrial Server Chassis

Height (1U = 1.75")		Tower		
Model Name		HPC-2040	HPC-5000	HPC-7000
Form Factor Support		Mini iTX	Micro ATX	Micro ATX, ATX, EATX
No. of slots / No. of full-height cards		1/0	4/2 (11.73" Length)	7/6
Drive Bay	Slim ODD Bay	1	1	1
	5.25" (front-accessible)	-	-	-
	3.5" (hot-swappable)	4 (3.5" / 2.5")	-	-
	3.5" (internal)	-	2 x 3.5" or 1 x 3.5" + 1 x 2.5"	3 (External)
	2.5" (hot-swappable)	-	-	-
	2.5" (internal)	1	-	-
Cooling	Chassis Fan	1 (12cm / 57.2CFM)	1 (12cm / 82CFM)	2 (12cm/150CFM)
	Air Filter	-	Yes	-
Front I/O Interface	USB 3.0	2	2	2
	USB 2.0	-	2	-
Power Supply	Single Power Supply	250W	300W/500W	500W/1200W
	Redudant Power Supply	-	-	-
Miscellaneous	LED Indicators	Power, LAN 1, LAN 2, HDD, System Information	System: Power	System: Power
	Rear Panel	One reserved DB-9 ports	Two reserved DB-9 ports	Two USB reserved ports
Environment	Operating Temperature	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)
	Non-Operating Temperature	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)
	Operating Humidity	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing
	Non-operating Humidity	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing
Physical Characteristics	Dimensions (W x H x D)	210 x 230 x 275 mm (8.3" x 9.1" x 10.8")	192 x 376.7 x 338.5 mm (7.56" x 14.83" x 13.33")	267.1 x 458 x 500 mm (10.52" x 18.03" x 19.69")

Industrial Server Chassis




Height (1U = 1.75")		1U	2U		3U/Tower
Model Name		☞ HPC-7120S	☞ HPC-7242	☞ HPC-7282	☞ HPC-7320
Form Factor Support		Micro ATX, ATX	Micro ATX, ATX	Micro ATX, ATX	Micro ATX, ATX, EATX
No. of slots / No. of full-height cards		1/0	3/3	7/0	7/6
Drive Bay	Slim ODD Bay	-	1	1	1
	5.25" (front-accessible)	-	-	-	-
	3.5" (hot-swappable)	-	4 (3.5" / 2.5")	8	2 (3.5" / 2.5")
	3.5" (internal)	-	-	2	2
	2.5" (hot-swappable)	2 (HPC-7120S-35ZXE only)	-	Optional	-
	2.5" (internal)	2	2	-	-
Cooling	Chassis Fan	3 (4 cm/23.1 CFM)	1 (8 cm/47CFM) + 2 (6 cm/28CFM)	3 (8cm / 52.6 CFM)	2 (8cm/57CFM) + 1 (6cm/27.72CFM)
	Air Filter	-	Yes	-	Yes
Front I/O Interface	USB 3.0	2	2	-	2
	USB 2.0	-	-	2	-
Power Supply	Single Power Supply	350W/850W	350W/500W	500W/850W	500W/850W
	Redudant Power Supply	-	550W	550W/800W	550W/800W
Miscellaneous	LED Indicators	System: Power, HDD, LAN1, LAN2, System Information. HDD Tray: HDD Power and Activity LED	System: Power, HDD, LAN1, LAN2, temperature, fan. HDD Tray: HDD Power and Activity LED	System: Power, HDD, LAN1, LAN2, temperature, fan. HDD Tray: HDD Power and Activity LED	System: Power, HDD, LAN1, LAN2, temperature, fan. HDD Tray: HDD Power and Activity LED
	Rear Panel	-	Two reserved DB-9 ports	-	Two reserved DB-9 ports
Environment	Operating Temperature	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)
	Non-Operating Temperature	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)
	Operating Humidity	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing	10 ~ 85% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing
	Non-operating Humidity	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing
Physical Characteristics	Dimensions (W x H x D)	438 x 43 x 381 mm (17.24" x 1.7" x 15")	426.4 x 88 x 525 mm (16.79" x 3.46" x 20.67")	437 x 88.9 x 533.4 mm (17.2" x 3.5" x 21")	426.4 x 132.2 x 480 mm (16.79" x 5.2" x 18.9")

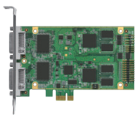
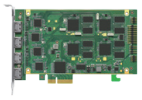


Height (1U = 1.75")		4U/Tower		
Model Name		☞ HPC-7442	☞ HPC-7483	☞ HPC-7484
Form Factor Support		Micro ATX, ATX, EATX	Micro ATX, ATX, EATX	Micro ATX, ATX, EATX
No. of slots / No. of full-height cards		7/7	10/10	7/7
Drive Bay	Slim ODD Bay	1	-	1
	5.25" (front-accessible)	-	3	-
	3.5" (hot-swappable)	4 can upgrade to 8 (3.5" / 2.5")	8 (3.5" / 2.5")	8 (3.5" / 2.5")
	3.5" (internal)	1	-	-
	2.5" (hot-swappable)	-	-	-
	2.5" (internal)	-	2	1
Cooling	Chassis Fan	1 (12cm /114 CFM) + 1 (8cm/55 CFM)	3 (12cm /226.5 CFM)	2 (12cm /150.33 CFM)
	Air Filter	Yes	-	Yes
Front I/O Interface	USB 3.0	2	2	2
	USB 2.0	-	-	-
Power Supply	Single Power Supply	500W/700W/1200W	-	700W/1200W
	Redudant Power Supply	500W	1200W/2000W	-
Miscellaneous	LED Indicators	System: Power, HDD, LAN1, LAN2, temperature, fan. HDD Tray: HDD Power and Activity LED	System: Power, HDD, LAN1, LAN2, temperature, fan. HDD Tray: HDD Power and Activity LED	System: Power, HDD, LAN1, LAN2, temperature, fan. HDD Tray: HDD Power and Activity LED
	Rear Panel	Five DB-9 ports and one 68-pin SCSI openings	Two DB-9 ports and two PS2 and two USB	Five DB-9 ports and one 68-pin SCSI openings
Environment	Operating Temperature	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)	0 ~ 40 °C (32 ~ 122 °F)
	Non-Operating Temperature	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)
	Operating Humidity	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 40 °C, non-condensing
	Non-operating Humidity	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing
Physical Characteristics	Dimensions (W x H x D)	426 x 177 x 600 mm (16.7" x 7.0" x 23.6")	435 x 177 x 658 mm (19" x 7.0" x 26.5")	426 x 177 x 630mm (16.7" x 7.0" x 24.8")

Industrial Server Chassis

Height (1U = 1.75")		1U		2U		3U	4U
Model Name		☞ HPC-8104	☞ HPC-8108	☞ HPC-8212	☞ HPC-8224	☞ HPC-8316	☞ HPC-8424
Form Factor Support		Mico ATX, ATX	ATX, EATX	Mico ATX, ATX, EATX	ATX, EATX	Mico ATX, ATX	ATX, EATX
No. of slots / No. of full-height cards		1/0	1/0	7/0, 3/3 (1 for Raid Card)	7/0, 3/3 (1 for Raid Card)	7/7 (1 for Raid Card)	7/7 (1 for Raid Card)
Drive Bay	Slim ODD Bay	1 (Ultra Slim)	1	-	-	-	-
	5.25" (front-accessible)	-	-	-	-	-	-
	3.5" (hot-swappable)	4 x SAS3 or SATA	-	12 x SAS3/SATA	-	16 x SAS3 or SATA	24 x SAS3/SATA
	3.5" (internal)	-	-	-	-	-	-
	2.5" (hot-swappable)	-	8 x SAS3 or SATA	2 (Rear) only HPC-8212SE-R6A1E	24 x SAS3/SATA	2 (Rear)	2 (Rear)
	2.5" (internal)	2 or 3(optional)	-	-	-	-	-
	NVMe Support	-	-	4 in 12 Hot-Swappable Drive Bays	4 in 24 Hot-Swappable Drive Bays	-	4 in 24 Hot-Swappable Drive Bays
Cooling	Chassis Fan	4 (4cm)	4 (4cm)	4 (8cm)	4 (8cm)	4 (8cm)	4 (8cm)
	Air Filter	-	-	-	-	-	-
Front I/O Interface	USB 3.0	2	-	-	-	2	-
	USB 2.0	-	1	2	2	-	2
Power Supply	Single Power Supply	500W	800W	-	-	-	-
	Redudant Power Supply	650W	650W	550W, 650W, 800W	800W	550W	800W
Miscellaneous	LED Indicators	LAN1, LAN2,HDD, Power and Information LED	LAN1, LAN2,HDD, Power and Information LED	LAN1, LAN2,HDD, Power and Information LED	LAN1, LAN2,HDD, Power and Information LED	LAN1, LAN2,HDD, Power and Information LED	LAN1, LAN2,HDD, Power and Information LED
	Rear Panel	-	-	-	-	-	-
Environment	Operating Temperature	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 35 °C (32 ~ 95 °F)	0 ~ 35 °C (32 ~ 95 °F)	0 ~ 35 °C (32 ~ 95 °F)	0 ~ 35 °C (32 ~ 95 °F)	0 ~ 35 °C (32 ~ 95 °F)
	Non-Operating Temperature	-40 ~ 60 °C (-40 ~ 140 °F)	-40 ~ 60 °C (-40 ~140 °F)	-40 ~ 60 °C (-40 ~140 °F)	-40 ~ 60 °C (-40 ~140 °F)	-40 ~ 60 °C (-40 ~140 °F)	-40 ~ 60 °C (-40 ~140 °F)
	Operating Humidity	10 ~ 95% @ 40 °C non-condensing	10 ~ 95% @ 35 °C non-condensing	10 ~ 95% @ 35 °C non-condensing	10 ~ 95% @ 35 °C non-condensing	10 ~ 95% @ 35 °C non-condensing	10 ~ 95% @ 35 °C non-condensing
	Non-operating Humidity	10 ~ 95% @ 60 °C non-condensing	10 ~ 95% @ 60 °C non-condensing	10 ~ 95% @ 60 °C non-condensing	10 ~ 95% @ 60 °C non-condensing	10 ~ 95% @ 60 °C non-condensing	10 ~ 95% @ 60 °C non-condensing
Physical Characteristics	Dimensions (W x H x D)	438 x 43.9 x 530mm (17.24" x 1.73" x 20.9")	438 x 43.9 x 597mm (17.24" x 1.73" x 23.5")	438 x 88.4 x 540 mm (17.24" x 3.48" x 21.26") / 438 x 88.4 x 620 mm (17.24" x 3.48" x 24.41")	438 x 88.4 x 620 mm (17.24" x 3.48" x 24.41")	435 x 132 x 540 mm (17.13 x 5.2 x 21.26")	438 x 176 x 620 mm (17.24" x 6.93" x 24.41")

DVP Video Capture Cards

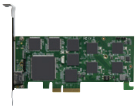


Model Name		DVP-7621HE	DVP-7637HE	DVP-7636HE	DVP-7612HE	DVP-7021HE	DVP-7031HE
Video	Compression	H/W H.264 / MPEG4	H/W H.264	H/W H.264	H/W H.264	S/W H.264	SW H.264
	Channels	2	4	4	1	2	4
	Host Interface	PCIe x1	PCIe x4	PCIe x4	Mini PCIe x1 (Gen 2)	PCIe x1 (Gen2)	PCIex4 (Gen2)
	Input Interface	2 x HDMI/DVI/VGA/ S-Video/YPbPr	-	-	HDMI/DVI/VGA	SDI/DVI/VGA/ HDMI/Composite/ YPbPr/S-video/VGA	HDMI
	Max. Display Resolution	1920 x 1080p @60/50	1920 x 1080p @60/50	1920 x 1080p @60/50	1920 x 1080p @60/50	1920 x 1080p @ 60/50	1920 x 1080 @ 60/50
	Max. Recording Resolution	1920 x 1080p @60/50	1920 x 1080p @60/50	1920 x 1080p @60/50	1920 x 1080p @60/50	1920 x 1080p @ 60/50	1920 x 1080 @ 60/50
	Max. Display Rate	60/50 fps (NTSC/ PAL)	60/50 fps (NTSC/ PAL)	60/50 fps (NTSC/ PAL)	60/50 fps	60/50 fps (NTSC/ PAL)	60/50 fps (NTSC/ PAL)
	Max. Recording Rate	60/50 fps (NTSC/ PAL)	60/50 fps (NTSC/ PAL)	60/50 fps (NTSC/ PAL)	60/50 fps	60/50 fps (NTSC/ PAL)	60/50 fps (NTSC/ PAL)
	Video Outputs	-	-	-	-	-	-
Audio	Audio Inputs	2 x HDMI/ 2 x RCA	HDMI	SDI	HDMI Embedded Audio/ Audio L/R	2 x HDMI / Audio (L/R)	4 x HDMI
	Format	STEREO/16 bits/32000 ~ 48000 Hz	STEREO/16 bits/48000 Hz	STEREO/16 bits/48000 Hz	Stereo / 16-bit / 32000 ~ 48000Hz	Stereo, 16-bit, 32 ~ 48 kHz	Stereo, 16-bit, 32 ~ 48 kHz
Watchdog		Yes	No	No	No	-	Yes
Physical Characteristic	Operating Temperature	-20 ~ 70 °C (-4 ~ 158 °F)	-40 ~ 85 °C (-40 ~ 185 °F)	-20 ~ 70 °C (-4 ~ 158 °F)	-20 ~ 70° C (-4 ~ 158° F)	-20 ~ 70 °C (-4~ 158 °F)	-20 ~ 70 °C (-4~ 158 °F)
	Storing Temperature	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 85 °C (-40 ~ 185 °F)
	Dimensions (W x H x D)	132.22 x 84.5 mm	167.65 x 101.03 mm	157 x 101.01 mm	30 x 51 mm	108 x 85 mm (4.25" x 3.34") PCIe Full Height	168 x 93 mm (6.64" x 3.66")
	Safety	CE/FCC	CE/FCC	CE/FCC	CE/FCC	CE/FCC	CE/FCC
Operating System	Operating System	Windows XP/XPe/ Vista/7/8/8.1/10; Linux 2.6.14 or higher; 32/64 bits	Windows XP/XPe/ Vista/7/8/8.1; Linux 2.6.14 or higher; 32/64 bits	Windows XP/XPe/ Vista/7/8/8.1; Linux 2.6.14 or higher; 32/64 bits	Windows XP/XPe/ Vista/7/8/8.1/10; Linux 2.6.14 or higher; 32/64 bits	Windows XP/ XPe/Vista/7/Win8/ Win8.1/Win10; Linux 2.6.14 or higher; 32/64-bit	Windows XP/ XPe/Vista/7/Win8/ Win8.1/Win10; Linux 2.6.14 or higher; 32/64-bit

DVP Video Capture Cards





Model Name		DVP-7033HE	DVP-7035HE	DVP-7635HE	DVP-7011MHE	DVP-7012MHE	DVP-7011UHE
Video	Compression	SW H.264	S/W H.264	H/W H.264	S/W H.264	S/W H.264	S/W H.264
	Channels	4	4	4	1	1	1
	Host Interface	PCIe x4 (Gen2)	PCIe x4 (Gen2)	PCIe x 4	PCIeM.2	PCIeM.2	PCIe x 4
	Input Interface	3G-SDI/HD-SDI/ SDI	TVI/CVI/AHD/ Composite (CVBS)	TVI/CVI/AHD/ Composite (CVBS)	HDMI/DVI/VGA/ YPbPr	SDI	HDMI 2.0
	Max. Display Resolution	1920 x 1080 @ 60/50	1920 x 1080p @ 30/25	1920 x 1080p @ 30/25	1920 x 1080p @ 30/25	1920 x 1080p @ 30/25	4096 x 2160p @ 60/50
	Max. Recording Resolution	1920 x 1080 @ 60/50	1920 x 1080p @ 30/25	1920 x 1080p @ 30/25	1920 x 1080p @ 30/25	1920 x 1080p @ 30/25	4096 x 2160p @ 60/50
	Max. Display Rate	60/50 fps (NTSC/PAL)	30/25 fps (NTSC/PAL)	30/25 fps (NTSC/PAL)	30/25 fps (NTSC/PAL)	30/25 fps (NTSC/PAL)	60/50 fps (NTSC/PAL)
	Max. Recording Rate	60/50 fps (NTSC/PAL)	30/25 fps (NTSC/PAL)	30/25 fps (NTSC/PAL)	30/25 fps (NTSC/PAL)	30/25 fps (NTSC/PAL)	60/50 fps (NTSC/PAL)
	Video Outputs	-	-	-	-	SDI x 1 (Loop through)	-
Audio	Audio Inputs	4 x SDI + 2 x 3.5mm Audio	2 x 3.5mm Audio	-	1 x HDMI / Audio (L/R)	1 x SDI / Audio (L/R)	HDMI/SDI/ Audio (L/R)
	Format	Stereo, 16-bit, 32 ~ 48 kHz	Stereo, 16-bit, 32 ~ 48 kHz	Stereo, 16-bit, 32 ~ 48 kHz	Stereo, 16-bit, 32 ~ 48 kHz	Stereo, 16-bit, 32 ~ 48 kHz	Stereo, 16-bit, 32 ~ 48 kHz
Watchdog		Yes	-	Yes	-	-	Yes
Physical Characteristic	Operating Temperature	-20 ~ 70 °C (-4~ 158 °F)	-20 ~ 70 °C (-4~ 158 °F)	-20 ~ 70 °C (-4~ 158 °F)	-20 ~ 70 °C (-4~ 158 °F)	-20 ~ 70 °C (-4~ 158 °F)	-20 ~ 70 °C (-4~ 158 °F)
	Storing Temperature	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 85 °C (-40 ~ 185 °F)
	Dimensions (W x H x D)	140 x 101 mm (5.51" x 3.97")	128 x 101mm (5.03" x 3.97") PCIe Full Height	150 x 101 mm (5.9" x 3.97")	22 x 60 mm (0.86" x 2.36") M.2 Type B/M	22 x 60 mm (0.86" x 2.36") M.2 Type B/M	145 x 69 mm (5.7" x 2.71") PCIe Low profile
	Safety	CE/FCC	CE/FCC	CE/FCC	CE/FCC	CE/FCC	CE/FCC
Operating System	Operating System	Windows XP/ XPe/Vista/7/Win8/ Win8.1/Win10; Linux 2.6.14 or higher; 32/64-bit	Windows XP/ XPe/Vista/7/Win8/ Win8.1/Win10; Linux 2.6.14 or higher; 32/64-bit	Windows XP/ XPe/Vista/7/Win8/ Win8.1/Win10; Linux 2.6.14 or higher; 32/64-bit	Windows XP/XPe/ Vista/7/Win8/ Win8.1/Win10; Linux 2.6.14 or higher; 32/64-bit	Windows XP/XPe/ Vista/7/Win8/ Win8.1/Win10; Linux 2.6.14 or higher; 32/64-bit	Windows XP/ XPe/Vista/7/Win8/ Win8.1/Win10; Linux 2.6.14 or higher; 32/64-bit

3 Intelligent Systems

Intelligent Systems

Full Range of Industrial Computers and Integration Services for Automation Applications

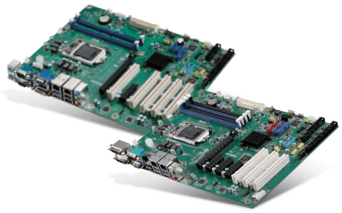
With a diverse range of innovative technologies including cloud computing (industrial and video servers), edge computing (fan-less, slim, portable devices), and high performance embedded systems, Advantech's intelligent systems are equipped with smart, secure, energy-saving features. Our intelligent systems are designed specifically for vertical markets in intelligent transportation, factory automation/machine automation, cloud infrastructure, and intelligent video application sectors.

Modular IPCs

The modular computers aim at machine automation applications such as vision inspection, AOI, packaging inspection, process automation and intelligent monitoring. Modular IPC is beneficial to service and maintenance and this compact system, with POE and latest Intel Core processor, can used in the application of edge intelligent, such as edge computing, delivers enhanced computing and graphic performance.

Industrial chassis

Advantech offers a complete selection of industrial computer chassis from 1U to 6U rackmount, to wall-mountable solutions, designed to support a variety of industrial-grade motherboard/single board computer (SBC) form factors, such as ATX, MicroATX, PICMG 1.0/1.3, and full-size/halfsize SBC. Chassis include a range of features such as redundant power supply, hot swappable accessories, storage, and cooling options. High-end models with built in intelligent system modules enable system health self diagnosis, smart fan control, and remote management with WISE-PaaS/ RMM or SNMP sub agent.



Industrial motherboards

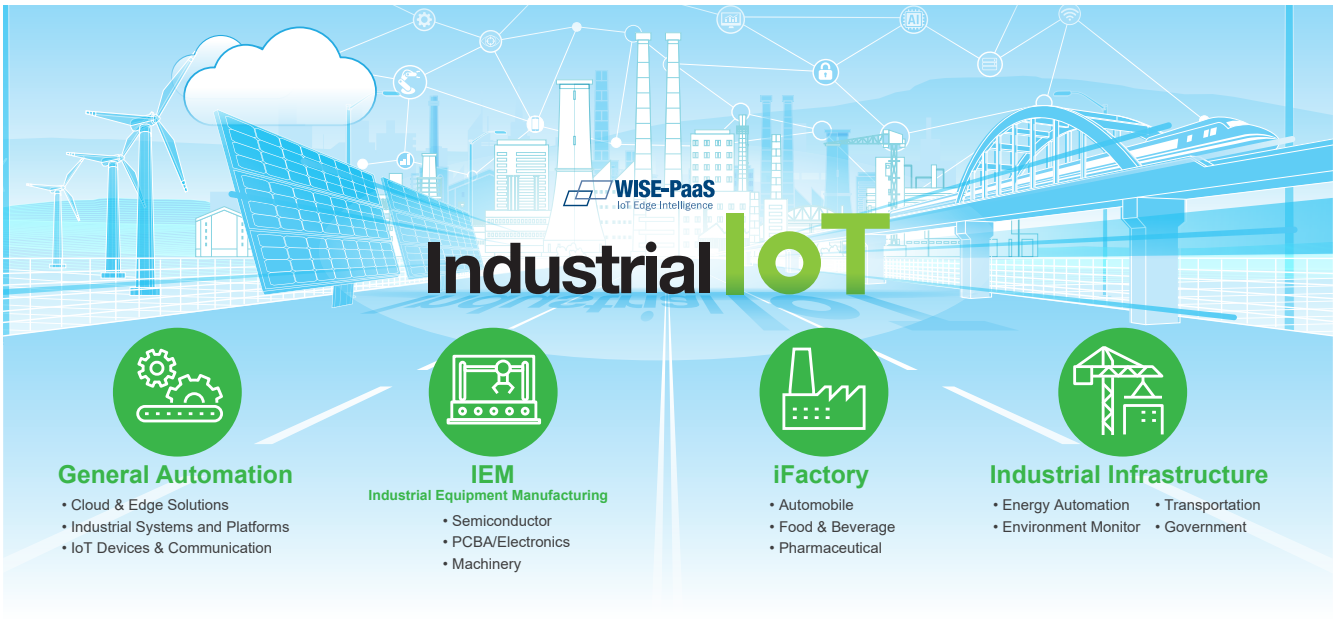
Advantech provides a complete range of industrial motherboards in various form factors, from performance-rich ATX to best price/performance MicroATX and ultra compact highly integrated Mini-ITX. These motherboards are highly integrated and deliver advanced features like multi-core processing and PCI Express technology. They are suited for demanding industrial applications that require seamless upgrades, long term support, proven reliability and strict revision control.

Slot SBCs and passive backplanes

Slot single board computers (SBC) and backplanes follows PICMG 1.0 and PICMG 1.3 standards that achieve flexibility and performance. Assembled with backplanes, slot SBCs and embedded PCs are the I/O and processing elements. We also provide customizable passive backplanes which include PCI boards, ISA boards, PICMG 1.3 full-sized, PICMG 1.0 full-sized, and half-sized single board computers.

Industrial computer peripherals

Advantech IPC peripherals can integrate with various modules including IPMI, TPM, power supplies and versatile rack mount/wall mount peripherals. They can help system integrators build easy-to-operate computer systems.



Applications

Automated Optical Inspection (AOI)

Factory Automation

Predictive Maintenance

Automatic Equipment

Imaging Processing

AI Inference

Start your Business with an IPC Expert

Tool-less thumb screws

Lockable door, flexible with-or-without key

Front-accessible fan without opening top cover

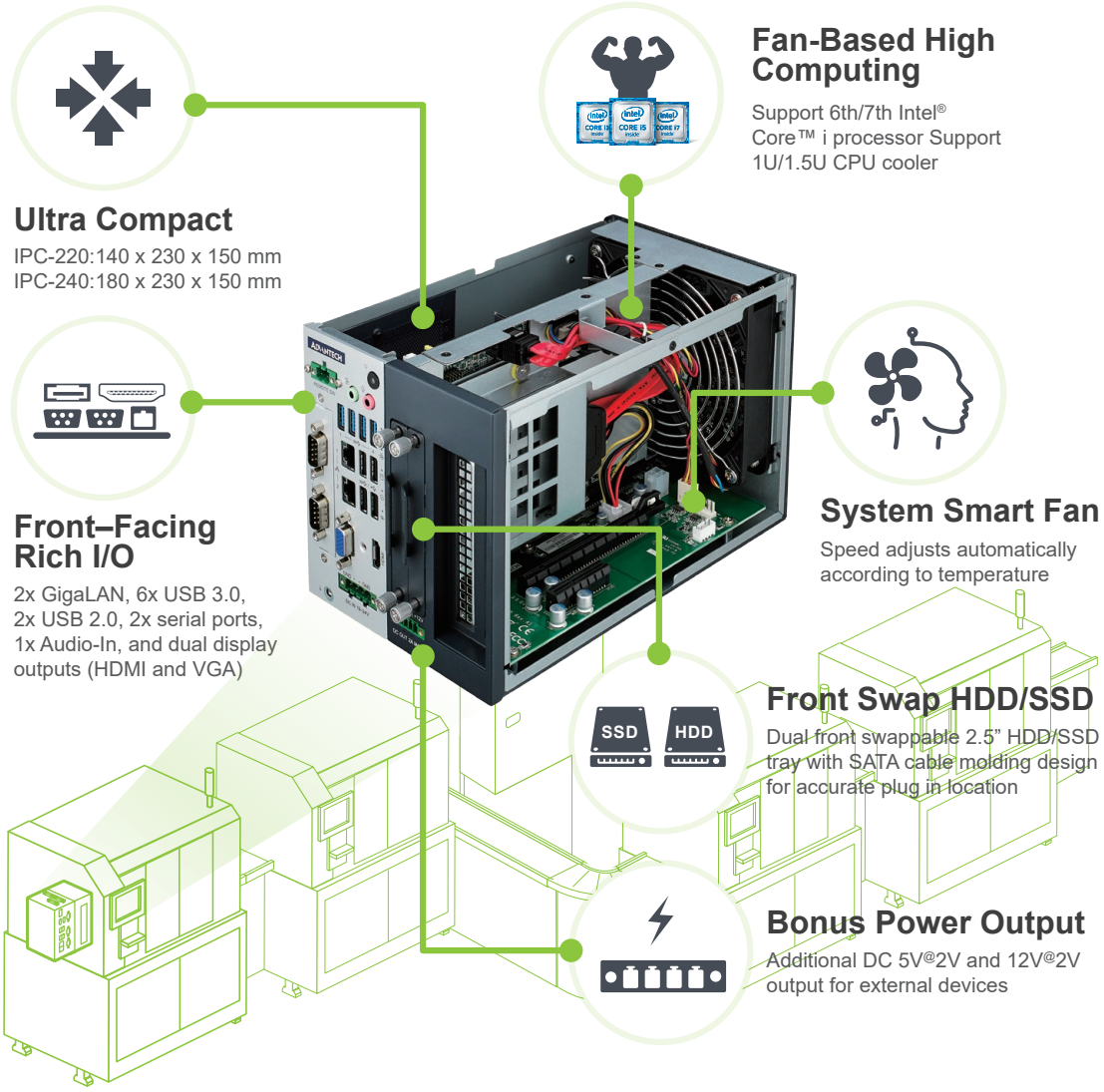
Small footprint chassis design for better work field layout arrangement

Modular IPCs

Ultra Compact IPC Introduction

Advantech industrial edge computer for intelligent manufacturing

The current industrial automation market is trending towards increasingly compact form factors and intelligent designs that offer space savings and boost efficiency. Advantech's IPC-220/240 is an ultra-compact industrial edge computer that features a wide operating temperature range, wide input power tolerance, and front-facing I/O for convenient access and easy deployment. Despite its compact size, the IPC-220/240 offers high expandability to support machine vision and motion control, making it ideal for industrial automation and equipment manufacturing applications. Moreover, with Advantech's rapid and localized configuration services, the IPC-220/240 reduces the time-to-market for machine builders and accelerates the realization of Industry 4.0.



Learn More: https://www.advantech.com/campaign/compact-ipc

Modular IPCs Selection Guide

Ultra Compact IPC




Model name		IPC-220	IPC-240	AIMC-3202	AIMC-3422
Form Factor		Compact	Compact	Compact	Compact
Processor System	Chipset	Q170/H110	Q170/H110	H110	H110
	CPU	Intel® 6th/7th Gen Core™ i CPU socket-type (LGA1151)	Intel® 6th/7th Gen Core™ i CPU socket-type (LGA1151)	Intel® 6th/7th Gen Core™ i (LGA1151)	Intel® 6th/7th Gen Core™ i (LGA1151)
	Core	Max. 4	Max. 4	Max. 4	Max. 4
	Cache	Max. 8 MB	Max. 8 MB	Max. 8 MB	Max. 8 MB
	Memory	Dual DDR4 2133/2400 MHz Max. 32 GB	Dual DDR4 2133/2400 MHz Max. 32 GB	DDR4 2133/2400 MHz (non-ECC) Max. 32 GB	DDR4 2133/2400 MHz (non-ECC) Max. 32 GB
Graphic	Graphics Controller	Intel® HD Graphics	Intel® HD Graphics	Intel® HD Graphics	Intel® HD Graphics
	VRAM	Shared system memory is subject to OS	Shared system memory is subject to OS	Shared system memory is subject to OS	Shared system memory is subject to OS
Expansion	PCIe x16	1	1	1	1
	PCIe x8	-	-	-	-
	PCIe x4	1	IPC-240-00A1: 2 IPC-240-01A1: 1	AIMC-3202-00A1E: 1	-
	PCIe x1	-	IPC-240-00A1: 1 IPC-240-01A1: 0	-	AIMC-3422-00A1E: 1
	PCI	-	IPC-240-00A1: 0 IPC-240-01A1: 2	AIMC-3202-01A1E: 1	AIMC-3422-00A1E: 2 AIMC-2422-01A1E: 3
	Mini PCIe	1	1	-	-
Storage	Storage Bay	2 x 2.5" HDD/SSD (Max 9.5mm Height)		2 x 2.5" internal HDD bay	1 x 3.5" or 2 x 2.5" internal HDD bay
	M.2	-	-	-	-
	mSATA	1	1	1	1
	CFast	-	-	-	-
	RAID	0/1/5/10 (Q170 only)	0/1/5/10 (Q170 only)	-	-
Ethernet	Ethernet Interface	2 x RJ45	2 x RJ45	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	Q170 LAN1: Intel® I219LM, LAN2: Intel® i210AT H110 LAN1: Intel® I219V, LAN2: Intel® i210AT		LAN 1: Intel® I219V LAN 2: Intel® I211AT	LAN 1: Intel® I219V LAN 2: Intel® I211AT
Front I/O	Display	VGA + HDMI		VGA+DVI-D	VGA
	LAN	2	2	2	2
	USB	Q170: 6 x USB 3.0, 2 x USB 2.0, 2 x Internal USB 2.0 H110: 4 x USB 3.0, 4 x USB 2.0, 2 x Internal USB 2.0		3 x USB 3.0	1 x USB 3.0
	COM	2 x RS-232/422/485 support auto flow control		2 x RS-232	2 x RS-232
	Audio	2 (1 x line out and 1 x mic in)		-	-
Rear I/O	Display	-	-	-	-
	LAN	-	-	-	-
	USB	-	-	-	2 x USB 2.0
	COM	-	-	-	-
	PS/2	-	-	-	-
	Audio	-	-	-	-
Watchdog Timer	Output	System reset	System reset	System reset	System reset
	Interval	Programmable 1 ~ 255 sec/ min	Programmable 1 ~ 255 sec/ min	Programmable 1 ~ 255 s/min	Programmable 1~ 255 s/min
Power Supply	System Power Consumption	150W(Without Add on Card)~220W (With Add on card	150W(Without Add on Card)~220W (With Add on card	250W	300W
	DC output range	$5V_{DC}$, 2A MAX	$5V_{DC}$, 2A MAX	-	-
	Input Range	19 ~ 24 V_{DC}, 8A ~ 6.5A	19 ~ 24 V_{DC}, 8A ~ 6.5A	100 ~ 240 V_{AC}	100 ~ 240 V_{AC}
	Remote Power Switch	✓	✓	-	-
Cooling	System Fan	1 (12cm/ 82 CFM)	1 (12 cm/82 CFM)	2 (6 cm/14.1 CFM)	1 (9 cm/44.6 CFM)
	Air Filter	Yes	Yes	Yes	Yes
Physical Characteristics	Dimensions (W x H x D)	140 x 230 x 150 mm (5.51" x 9.05" x 5.9")	180 x 230 x 150 mm (7.08" x 9.0"" x 5.9")	232 x 90 x 232 mm (9.13" x 3.54" x 9.13")	150 x 222 x 270 mm (5.9" x 8.74" x 10.62")
	Weight	3.0kg	3.2Kg	4.5 kg	5 kg

✓ : supported, - : not supported, △ : optional

Modular IPCs

Fanless Modular System Introduction

Be flexible, be invincible: Fanless edge PCs for the industrial IoT era

To enable the realization of Industry 4.0, field-based edge intelligence is important for developing new IoT applications. Advantech's MIC-7 series PCs provide high-performance computing, multiple I/O interfaces, and flexible expandability with the integration of i-Modules and iDoor, and can be widely deployed to support various industrial IoT applications. The MIC-7 series can be equipped with a wide range of processors to provide custom entry-level and high-end solutions. With the provision of multiple I/O for connecting devices, MIC-7 systems can serve as a data gateway and industrial controller. Moreover, when integrated with an intelligent i-Module, various add-on cards can be installed for machine automation applications.

Diverse selection of CPUs for customized performance

MIC-7300
- Atom/APL
- 4 Cores
- 4 Threads

MIC-7500
- 6 Gen Intel® Core™
- 4 Cores
- 8 Threads

MIC-7700
- 6/7 Gen Intel® Core™
- 4 Cores
- 8 Threads

MIC-770
- 8/9 Gen Intel® Core™
- 8 Cores
- 12 Threads

MIC-7900
- Xeon
- 12 Cores
- 24 Threads

Various expansion I/O for flexible communication

Innovative slot expansion for enhanced control

Learn More: http://select.advantech.com/edge-intelligent-modular-ipc-mic-7-series/

Modular IPCs Selection Guide

Fanless Modular System: MIC-7 Series



Model name		MIC-770	MIC-7700	MIC-7500
Form Factor		Compact	Compact	Compact
Processor System	Chipset	Q370/H310	Q170/H110	QM170
	CPU	Intel® 8th/9th Gen Core™ i socket-type (LGA1151)	Intel® 6th/7th Gen Core™ i socket-type (LGA1151)	Intel® Core™ i7-6820EQ/ i7-6822EQ/ i5-6442EQ/ i3-6102E/ Celeron® G3900E
	Core	Max. 8	Max. 4	Max. 4
	Cache	Max. 12 MB	Max. 8 MB	Max. 8 MB
	Memory	Dual DDR4 2400/2666 MHz SODIMM Max. 64 GB	Dual DDR4 2400 MHz SODIMM Max. 32 GB	Dual DDR4 2400 MHz SODIMM Max. 32 GB
Graphic	Graphics Controller	Intel® HD Graphics	Intel® HD Graphics	Intel® HD Graphics
	VRAM	Shared system memory is subject to OS	Shared system memory is subject to OS	Shared system memory is subject to OS
Expansion	PCIe x16	Supported via i-Module	Supported via i-Module	Supported via i-Module
	PCIe x8			
	PCIe x4			
	PCIe x1			
	PCI			
	Mini PCIe	2 (Q Sku) 1 (H Sku)	2 (Q Sku) 1 (H Sku)	2
Storage	Storage Bay	1 x 2.5"" internal HDD/SSD bay	1 x 2.5" internal HDD/SSD bay	1 x 2.5" internal HDD/SSD bay
	M.2	-	-	-
	mSATA	1	1	1
	CFast	-	1	1
	RAID	0/1/5/10 (Q SKU only)	0/1/5/10 (Q SKU only)	0/1/5/10
Ethernet	Ethernet Interface	2 x RJ45 10/100/1000 Mbps	2 x RJ45 10/100/1000 Mbps	2 x RJ45 10/100/1000 Mbps
	Controller	Q370 LAN1: Intel® I219LM, LAN2: Intel® I210IT H310 LAN1: Intel® I219V, LAN2: Intel® I210IT	Q170 LAN1: Intel® I219LM, LAN2 Intel I210IT H110 LAN1: Intel® I219V, LAN2: I210IT	LAN 1: Intel® I219LM LAN 2: Intel® I210IT
Front I/O	Display	VGA+HDMI	VGA+DVI-D	VGA+DVI-D
	LAN	2	2	2
	USB	Q370: 2 x USB3.1, 6 x USB3.0 and 1 x internal USB 2.0 H310: 4 x USB 3.0 and 4 x USB 2.0	Q170: 8 x USB 3.0 , 1 x internal USB 2.0 H110: 4 x USB 3.0, 4 x USB 2.0	8 x USB 3.0 1 x internal USB 2.0
	COM	2 x RS-232/422/485 supports auto flow control; 4 x RS-232 (Optional)	2 x RS-232/422/485 supports auto flow control + 4 x RS-232	2 x RS-232/422/485 supports auto flow control + 4 x RS-232
	PS/2	-	-	-
	Audio	Line out/mic in	Line out/mic in	Line out/mic in
Rear I/O	Display	-	-	-
	LAN	-	-	-
	USB	-	-	-
	COM	-	-	-
	PS/2	-	-	-
	Audio	-	-	-
Watchdog Timer	Output	System reset	System reset	System reset
	Interval	Programmable 1~ 255 s/min	Programmable 1~ 255 s/min	Programmable 1~ 255 s/min
Power Supply	Output Wattage	-	-	-
	Input Range	9 ~ 36 V_{DC}	9 ~ 36 V_{DC}	9 ~ 36 V_{DC}
	Remote Power Switch	△	△	△
Cooling	System Fan	-	-	-
	Air Filter	-	-	-
Physical Characteristics	Dimensions (W x H x D)	77 x 192 x 230 mm (3.07" x 7.55" x 9.05")	77 x 192 x 230 mm (3.07" x 7.55" x 9.05")	73 x 192 x 230 mm (2.91" x 7.55" x 9.05")
	Weight	2.9 kg	2.9 kg	2.9 kg

✓ : supported, - : not supported, △ : optional

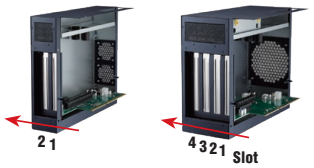
Modular IPCs Selection Guide

Fanless Modular System: MIC-7 Series



Model name		MIC-7900	MIC-7300	MIC-7420
Form Factor		Compact	Compact	19" 2U Rack Mount
Processor System	Chipset	-	-	QM170
	CPU	Intel® Xeon® D-1559/D-1539 BGA-type	Intel® Celeron® N3350/ Atom™ x7-E3950 BGA-type	Intel® Core™ i7-6822EQ/i3-6100E
	Core	Max. 12	Max. 4	Max. 4
	Cache	Max. 18 MB	2 MB	Max. 8 MB
	Memory	Dual DDR4 2400 MHz SODIMM (supports ECC) Max. 32 GB	Dual DDR3L 1867 MHz SODIMM Max. 8 GB	Dual DDR4 2400 MHz Onboard 8GB & 1 SODIMM slot Max. 24GB
Graphic	Graphics Controller	ASPEED AST1400 with 256 MB VGA memory provides basic 2D VGA function	Intel® HD Graphics	Intel® HD Graphics
	VRAM	Shared system memory is subject to OS	Shared system memory is subject to OS	Shared system memory is subject to OS
Expansion	PCIe x16	Supported via i-Module	-	-
	PCIe x8		-	-
	PCIe x4		-	2
	PCIe x1		Supported via i-Module	-
	PCI		Supported via i-Module	2
	Mini PCIe	1	1	1
Storage	Storage Bay	1 x 2.5" internal HDD/SSD bay	1 x 2.5" internal HDD/SSD bay	2 x 3.5" internal HDD bay
	M.2	22110 (2280 w/ bracket), M-Key	-	2260, M-Key
	mSATA	1	1	-
	CFast	1	-	-
	RAID	-	-	0/1
Ethernet	Ethernet Interface	2 x RJ45 10/100/1000 Mbps	2 x RJ45 10/100/1000 Mbps	10/100/1000 Mbps
	Controller	4 x Intel® i210IT	2 x Intel® i210AT	LAN 1: Intel® i219LM LAN 2: Intel® i210IT
Front I/O	Display	VGA	VGA+DVI-D	-
	LAN	4	2	-
	USB	4 x USB 3.0	2 x USB 3.0 6 x USB 2.0	2 x USB 2.0
	COM	2 x RS-232/422/485 supports auto flow control 2 x RS-232	2 x RS-232/422/485 supports auto flow control + 4 x RS-232	-
	PS/2	-	-	-
	Audio	Line out/mic in	Line out/mic in	-
Rear I/O	Display	-	-	DVI-I + DVI-D
	LAN	-	-	2
	USB	-	-	2 x USB 3.0 4 x USB 2.0
	COM	-	-	2 x RS-232/422/485 supports auto flow control
	PS/2	-	-	1
	Audio	-	-	Line out/mic in
Watchdog Timer	Output	System reset	System reset	System reset
	Interval	Programmable 1~ 255 s/min	Programmable 1~ 255 s/min	Programmable 1~ 255 s/min
Power Supply	Output Wattage	-	-	150W
	Input Range	9 ~ 36 V_{DC}	9 ~ 36 V_{DC}	100 ~ 240 V_{AC}
	Remote Power Switch	-	1	-
Cooling	System Fan	-	-	-
	Air Filter	-	-	-
Physical Characteristics	Dimensions (W x H x D)	73 x 192 x 230 mm (2.91" x 7.55" x 9.05")	73 x 192 x 230 mm (2.91" x 7.55" x 9.05")	427 x 88 x 325 mm (16.81" x 3.46" x 12.79")
	Weight	2.9 kg	2.9 kg	10 kg

✓ : supported, - : not supported, △ : optional



i-Module Expansion Slot for MIC-7 Series

i-Module	MIC-75M10	MIC-75M11	MIC-75M20	MIC-75M20-01	MIC-75M40	MIC-75M13	MIC-75S20	MIC-75G20	MIC-75G30
Slot 1	PCIe x16*	PCIe x16*	PCIe x4*	PCIe x8*	PCIe x4	PCIe x16*	PCIe x16*	PCIe x4	-
Slot 2	-	PCI	PCIe x16*	PCIe x8*	PCIe x8	PCI	PCIe x4*	-	PCIe x16 (signal PCIe x8) for GPU card
Slot 3	-	-	-	-	PCIe x4	PCI	-	PCIe x16	-
Slot 4	-	-	-	-	PCIe x4	PCI	-	-	PCIe x16 (signal PCIe x8) for GPU card
Slot 5	-	-	-	-	-	-	-	-	PCIe x4
SATA Port	-	1							1
SATA PWR	-	1							1
2.5" HDD/SSD Bay	-	1**			2		2 x Swappable + 2 x Internal	2 x Swappable	2 x 2.5" swappable
N.W. (kg)	0.64	0.87			1.16		1.60	2.99	5
G.W. (kg)	1.71	2.02			2.47		2.98	4.79	7
i-Module (W x H x D)	24 x 192 x 230	50 x 192 x 230			90 x 192 x 230			110 x 192 x 350	203 x 192 x 385
MIC-7000 + i-Module (W x H x D)	97 x 192 x 230	123 x 192 x 230			163 x 192 x 230			184 x 192 x 350	276 x 192 x 385
MIC-77X + i-Module (W x H x D)	101 x 192 x 230	127 x 192 x 230			167 x 192 x 230			187 x 192 x 350	280 x 192 x 385
System Fan	-	98R1752000E (Optional)***			98R1751300E (Optional)***			Embedded	Embedded
12VDC Conn	1								
12VDC Conn. for GPU	-							2	4
PCI/PCIe Card Max. Length (with system fan)	190.2 mm				184.75 mm			287.35 mm	331 mm
PCI/PCIe Card Max. Length (without system fan)	210.4 mm							-	-

* If installed on MIC-7300, this slot will be a PCIe x1 signal.
** Need to order 98R1752010E (2.5" HDD/SSD kit for 2-slot i-Module)
*** Suggest to add optional system fan if power consumption of add-on card is more than 45W for better thermal management.

Compatible Table

i-Modules / MIC-7 System	1-Slot	2-Slot			4-Slot		Featured		
	MIC-75M10	MIC-75M11	MIC-75M20	MIC-75M20-01	MIC-75M40	MIC-75M13	MIC-75S20	MIC-75G20	MIC-75G30
MIC-7300	✓	✓	✓	-	-	✓	✓	-	-
MIC-7500	✓	✓	✓	✓	✓	✓	✓	✓	✓
MIC-770Q/7700Q	✓	✓	✓	✓	✓	✓	✓	✓	✓
MIC-770H/7700H	✓	✓	✓	-	-	✓	✓	✓	✓
MIC-7900	✓	✓	✓	✓	✓	✓	✓	✓	✓

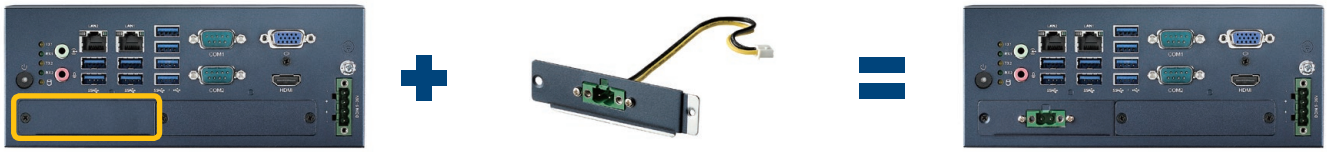
Modular IPC Selection Guide

Flex I/O Expansion Kit for MIC-7 Series

Flex I/O series modules provide flexible expansion for MIC-7 Series so customers can enjoy display, more control, and better communication via Flex I/O. All Flex I/O are attached directly from connectors reserved on the MIC-7 series main board and installed on the front panel, making it easy to fulfill machine, factory automation, and IEM deployments.

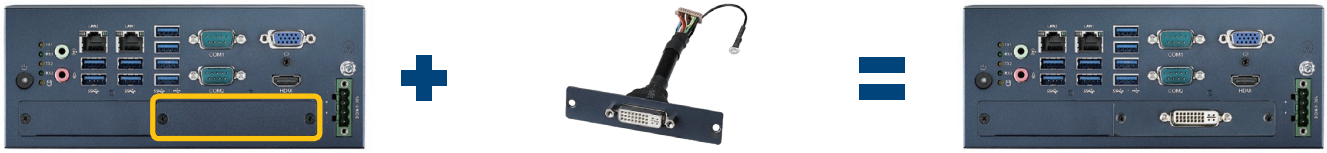
Flex I/O Assembly Example

Small Flex I/O



Default MIC-770 | Small Flex I/O Remote Switch | After Assembly

Regular Flex I/O

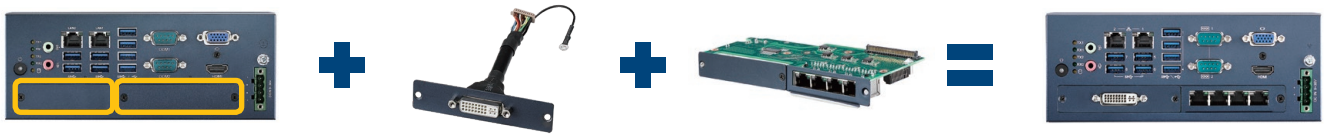


Default MIC-770 | Regular Flex I/O DVI | After Assembly

Default MIC-770 | Small Flex I/O Remote Switch | Regular Flex I/O DVI | After Assembly

Advanced Flex I/O

Default MIC-770 | Advanced Flex I/O NVME + 4x LAN | After Assembly



Default MIC-770 | Regular Flex I/O DVI | Advanced Flex I/O NVME + 4x LAN | After Assembly

Default MIC-770 | Advanced Flex I/O 4 x PoE | After Assembly

Compatible Table

Flex I/O	Function	Part Number	MIC-7300	MIC-7500	MIC-7700		MIC-770		MIC-7900
					MIC-7700Q	MIC-7700H	MIC-770Q	MIC-770H	
Small FIO									
	Remote Switch	98R1750070E	-	-	-	-	✓	✓	-
Regular FIO									
	DVI	98R1750000E	✓	✓	✓	✓	✓	✓	-
	HDMI & Remote Switch	98R1750010E	-	✓	✓	✓	✓	✓	-
	HDMI	98R1750030E	✓	✓	✓	✓	✓	✓	-
	Remote Switch	98R1750040E	-	✓	✓	✓	✓	✓	✓
	COM Port	98R1750060E	-	-	-	-	✓	✓	-
	Reset & Remote Switch & 5VDC	98R1750080E	✓	✓	✓	✓	✓	✓	✓
	8 bit GPIO	98R1750090E	-	✓	✓	✓	✓	✓	✓
	Dual LAN	9891790040E	-	-	✓	-	-	-	-
	GPIO module (32bit)	AIIS-DIO32-00A1E	-	✓	✓	✓	-	-	✓
	TPM module	PCA-TPM-00B1E	✓	✓	✓	✓	✓	✓	-
Advanced FIO									
	NVME+ 4x LAN	98910770300	-	-	-	-	✓	-	-
	NVME	98910770400	-	-	-	-	✓	-	-
	POE	98910770500	-	-	-	-	✓	-	-

Industrial Chassis Selection Guide





Model Name			IPC-6806S	IPC-6806/6806W	IPC-6606/6608	IPC-7132	IPC-5120/7120
Form Factor Support			PICMG 1.0/1.3 Half-size SBC	PICMG 1.0 Full-size SBC / PICMG 1.0/1.3 Full-size SBC	PICMG 1.0/1.3 Full-size SBC	ATX / Micro ATX	Micro ATX / ATX
Drive Bay	Slim Optical Drive		-	-	-	-	- / -
	2.5"		-	-	-	-	-
	3.5"	External	1	1 / 1	1 / 1	1	1 / 1
		Internal	1	1 / 1	1 / 1	2	1 / 1
	5.25"		-	0 / 1	1 / 2	1	1 / 1
Front I/O	USB		2	2 / 2	2 / 2	2	Front I/O chassis
	PS/2		-	- / -	- / -	-	-
Cooling	No. of Fans		1	1 / 1	1 / 1	1	1 + 1
	CFM		51.5	51.5 / 58	51.5 / 82	82	82 / 11
Power Supply	AC		250W Flex ATX	250W Flex ATX 350W Flex ATX	300W PS/2	300W PS/2 500W PS/2	250W Flex ATX 350W Flex ATX
	AC Redundant		-	-	-	-	-
	DC		-	-	-	-	-
No. of Slots for add-on cards			4	5 / 5	5 / 7	7	4 / 7
No. of Full-size Cards			-	6 / 6	6 / 8	7	-
Passive Backplane Options	PICMG 1.0		✓	✓	✓	-	-
	PICMG 1.3		✓	- / ✓	✓	✓	-
Intelligent System Module			-	-	-	-	-
Dimensions (W x H x D)	mm		191 x 178 x 290	166 x 178 x 398/ 198 x 221 x 398	173 x 254 x 396/ 173 x 315 x 410	200 x 330 x 430	320 x 164 x 316.5/ 380 x 164 x 316.5
	inch		7.5 x 7.01 x 11.42	6.54 x 7.01 x 15.67/ 7.8 x 8.7 x 15.67	6.8 x 10 x 15.6 / 6.8 x 12.4 x 16.1	7.9 x 13 x 16.9	12.6 x 6.5 x 12.5/ 15 x 6.5 x 12.5
Weight	kg		5.6	6.3 / 8	9 / 11	9.96	6.54 / 7.01
	lb		12.3	13.9 / 17.6	19.8 / 24.2	21.93	14.42 / 15.45

✓: supported, - : not supported, △: optional




Model Name			IPC-6025	IPC-5122	IPC-7130 / IPC-7130L	IPC-7220
Form Factor Support			PICMG 1.0/1.3 Full-size SBC	Micro ATX	ATX / Micro ATX	ATX / Micro ATX
Drive Bay	Slim Optical Drive		-	1	-	-
	2.5"		-	-	-	-
	3.5"	External	1	1	2 (hot-swap) / 2	1
		Internal	1	1	1 / 1	1
	5.25"		-	-	1 / 1	2
Front I/O	USB		2	2	2 / 2	2
	PS/2		-	-	-	-
Cooling	No. of Fans		1	1	1 + 1	1
	CFM		51.5	82	82 / 27.72	82
Power Supply	AC		350W Flex ATX	300W PS/2 500W PS/2	300W PS/2 500W PS/2	300W PS/2 500W PS/2
	AC Redundant		-	-	500W Mini RPS	-
	DC		-	-	-	-
No. of Slots for add-on cards			4	4	7	7
No. of Full-size Cards			5	-	7	7
Passive Backplane Options	PICMG 1.0		✓	-	-	-
	PICMG 1.3		✓	-	-	-
Intelligent System Module			✓	✓	✓/-	✓
Dimensions (W x H x D)	mm		111 x 212 x 420	157 x 360 x 340	200 x 320 x 480	200 x 320 x 480
	inch		4.4 x 8.3 x 16.5	6.2 x 14.2 x 13.4	7.9 x 12.6 x 18.9	7.9 x 12.6 x 18.9
Weight	kg		4.7	6.5	12.8	14
	lb		10.3	14.3	28.2	30.8

✓: supported, - : not supported, △: optional

Industrial Chassis Selection Guide

Model Name			1U Rackmount	2U Rackmount				4U Rackmount		
			ACP-1010	IPC-603	ACP-2000	ACP-2010/ 2320	ACP-2020	IPC-510	IPC-610-L/ IPC-611	IPC-631
Form Factor Support			ATX/MicroATX	ATX/MicroATX	PICMG 1.0/1.3 Full-Size SBC	ATX/MicroATX	ATX / MicroATX	PICMG1.0/1.3 Full size SBC ATX/Micro-ATX	PICMG1.0/1.3 Full size SBC ATX/Micro-ATX	ATX/Micro-ATX
Drive Bay	Slim Optical Drive		1	1	1	-/1	1	-	-	1
	2.5"		1 x 3.5" or 2 x 2.5"	-	-	-	2 external (optional hot-swap module) 2 internal	-	-	4 (2 external optional hot-swap)
	3.5"	Hot-swap	-	-	-	- / 2 (SATA)	-	-	-	-
		External	1	-	2	1 / -	-	1	1	-
		Internal	1 x 3.5" or 2 x 2.5"	1	-	2	-	1	-	-
	5.25"		-	-	-	1 / -	-	3	3	-
Front I/O	USB		2	Front I/O chassis	2	2	2 (USB 3.0)	2	2	Front I/O chassis
	PS/2		-		1	1	-	1	-	
Cooling	No. of Fans		2 (MB)	2	2	2 / 3	1	1	1	2
	CFM		2 x 24 (MB)	2 x 47	2 x 47	2 x 47/ 2 x 47 + 1 x 28	41	77	82	2 x 82
Power Supply	AC		250W Flex ATX 350W Flex ATX	350W Flex ATX	300W PS/2 500W PS/2	250W Flex ATX 350W Flex ATX	350W Flex ATX 850W Flex ATX	300W PS/2	300W PS/2 500W PS/2	500W PS/2 700W PS/2
	AC Redundant		-	-	-	-	500W 2U redundant	-	-	-
	DC		-	-	-	-	-	-	-	-
No. of Slots			1	3	6	3 / 3	7	14	15	7
No. of Full-size Cards[Note]			0	0	4	3 / 3	7	8	11	0
Passive Backplane Options	PICMG 1.0		✓	-	✓	-	-	✓	✓	-
	PICMG 1.3		✓	-	✓	-	-	✓	✓	-
Intelligent System Module			-	-	✓	✓	✓	-	-	-
Dimensions (W x H x D)	mm		480 x 44 x 497	482 x 88 x 308	482 x 88 x 451	482 x 88 x 480	482 x 177 x 348	482 x 177 x 446	482 x 177 x 480	482 x 177 x 348
	inch		19 x 1.7 x 19.6	19 x 3.46 x 12.1	19 x 3.5 x 17.8	19 x 3.5 x 18.9	19 x 7.0 x 13.7	19 x 7 x 17.6	19 x 7 x 18.9	19 x 7.0 x 13.7
Weight	kg		8	6.4	11.5	10.7/11.7	8	10.7	14.5	8
	lb		17.6	14.1	25.3	23.5/25.7	17.6 lb	23.5	31.9	17.6

Note: Depending on system configuration. Board component or CPU cooler mechanical interference might reduce supported full-size card number.

✓: supported, - : not supported, △: optional

Model Name			4U Rackmount							
			IPC-610-H	ACP-4020	ACP-4D00	ACP-4000	ACP-4010/ ACP-4320	ACP-4340	ACP-4360	IPC-623
Form Factor Support			PICMG1.0/1.3 Full size SBC ATX/Micro-ATX	PICMG1.3 Half-size SBC ATX/Micro-ATX	PICMG 1.3/PCI Half-size SBC	PICMG1.0/1.3 Full-size SBC ATX/Micro-ATX	PICMG1.0/1.3 Full-size SBC ATX/Micro-ATX	PICMG1.0/1.3 Full size SBC ATX/Micro-ATX	PICMG1.0/1.3 Full size SBC ATX/Micro-ATX	PICMG 1.0/1.3 Full size SBC
Drive Bay	Slim Optical Drive		-	1	-	-	-	1	1	-
	2.5"		-	1 (Internal)	-	-	-	1 (Internal)	-	-
	3.5"	Hot-swap	-	-		-	- / 2 (SATA)	4 (SATA)	6 (SATA)	-
		External	1	2	1 / each node	1	1 / -	-	1	1
		Internal	-	-	-	-	1 / -	-	-	-
	5.25"		3	-	-	3	2	-	-	2
Front I/O	USB		2	2 (USB 3.0)	2 (USB 2.0) + 2 (USB 3.0) / each node	2	4 / 2	2 (USB 3.0)	2	-
	PS/2		1	-	-	1	-	-	-	-
Cooling	No. of Fans		2	2	1 / each node	2	2 / 2	2	3	3
	CFM		2 x 82	2 x 51.5	1 x 58 per node	2 x 82	2 x 82/ 1 x 82 + 1 x 28	1 x 82 + 1 x 56	1 x 114 + 2 x 47	3 x 150
Power Supply	AC		300W PS/2 500W PS/2	300W PS/2 500W PS/2 700W PS/2	250W Flex ATX 300W Flex ATX	300W PS/2 500W PS/2 700W PS/2	300W PS/2 500W PS/2 700W PS/2	300W PS/2 500W PS/2 700W PS/2	500W PS/2 700W PS/2	500W 1200W
	AC Redundant		-	-	-	500W Mini RPS	500W Mini RPS	-	500W Mini RPS	-
	DC		-	-	-	-	-	-	-	-
No. of Slots			15	15	6 / each node	15	15 / 15	15	15	20
No. of Full-size Cards[Note]			11	0	0	11	15 / 10	11	8	20
Passive Backplane Options	PICMG 1.0		✓	-	✓ (PCI BP only)	✓	✓	✓	✓	✓
	PICMG 1.3		✓	✓	✓	✓	✓	✓	✓	✓
Intelligent System Module			-	✓	✓	✓	✓	✓	✓	-
Dimensions (W x H x D)	mm		482 x 177 x 479	482 x 177 x 348	430 x 177 x 350	482 x 177 x 479	482 x 177 x 479	482 x 177 x 478	482 x 177 x 501	482 x 177 x 657
	inch		19 x 7 x 18.9	19 x 7.0 x 13.7	19 x 7.0 x 13.8	19 x 7 x 18.9	19 x 7 x 18.9	19 x 7.0 x 18.8	19 x 7.0 x 19.8	19 x 7 x 26
Weight	kg		15	8.5	15	15.2	16.6/17.6	12.5	19	26
	lb		33	18.7	33	33.5	36.5/38.7	27.5	41.8	57

Note: Depending on system configuration. Board component or CPU cooler mechanical interference might reduce supported full-size card number.

✓: supported, - : not supported, △: optional

Industrial Motherboards Selection Guide

ATX Motherboards

Model Name		☞ AIMB-706	☞ AIMB-786
Processor System	CPU	8/9th Gen Intel Core i7/i5/i3/Pentium	
	Socket	LGA1151	
	Max. Speed	3.7 GHz	
	Cache	L3: up to 12 MB (depends on CPU)	
	Chipset	Intel® H310	Intel® Q370
	BIOS	AMI 128 Mbit SPI Flash	AMI 256 Mbit SPI flash
Expansion Slot	PCIe x16	1 (Gen3)	
	PCIe x4	1 (Gen2)	4 (Gen3)
	PCIe x1	-	-
	PCI	5	2
Memory	Technology	Dual DDR4 2400/2666 MHz	
	Max. Capacity	64 GB	128 GB
	Socket	2 x 288-pin DIMM	4 x 288-pin DIMM
Graphics	Controller	Intel HD Graphics	
	VRAM	Shared system memory is subject to OS	
Ethernet	Interface	10/100/1000 Mbps	
	Controller	GbE LAN1: Intel® I219V GbE LAN2: Intel® I211AT (for G2 version)	GbE LAN1: Intel® I219LM GbE LAN2: Intel® I211AT
SATA	Max. Date Transfer Rate	600MB/s	
	Channel	4	5 (SW RAID)
I/O Interface	VGA	1	
	DVI	1(for G2 version)	1
	DP	-	1
	USB	9 (4 x USB 3.1 Gen 1, and 5 x USB 2.0)	13 (2 x USB 3.1 Gen 2, 4 x USB 3.1 Gen 1, and 7 x USB 2.0)
	Serial	6 (for G2 version) 2 (for VG version)	6
	Parallel	1	
	PS/2	2 (1 x rear I/O and 1 x wafer box)	1 (internal wafer box)
	Ethernet (GbE)	2 for G2 version 1 for VG version	2
	Audio	Mic-in, Line-out	
Watchdog Timer	Output	System reset	
	Interval	Programmable, 1-255 Sec	

✓: supported, - : not supported, △: optional



Model Name		AIMB-784	AIMB-705	AIMB-785
Processor System	CPU	4th Gen Intel Core i7/i5/i3/Pentium	6th/7th Gen Intel Core i7/i5/i3/Pentium	6th/7th Gen Intel Core i7/i5/i3/Pentium
	Socket	LGA1150	LGA1151	LGA1151
	Max. Speed	3.7 GHz	3.9 GHz	3.9 GHz
	Cache	L3: up to 8 MB (depends on CPU)	L3: up to 8 MB (depends on CPU)	L3: up to 8 MB (depends on CPU)
	Chipset	Intel Q87	Intel H110	Intel Q170
	BIOS	AMI 128 Mbit SPI	AMI 128 Mbit SPI	AMI 128 Mbit SPI
Expansion Slot	PCIe x16	1 (Gen3)	1 (Gen3)	1 (Gen3)
	PCIe x4	1 (Gen2)	1 (Gen2)	3 (Gen3)
	PCIe x1	1 (Gen2)	-	-
	PCI	4	5	3
Memory	Technology	Dual Channel DDR3 1333/1600 MHz	Dual Channel DDR4 1866/2133 MHz	Dual Channel DDR4 1866/2133 MHz
	Max. Capacity	32 GB	32 GB	64 GB
	Socket	4 x 240-pin DIMM	2 x 288-pin DIMM	4 x 288-pin DIMM
Graphics	Controller	Intel HD Graphics	Intel HD Graphics	Intel HD Graphics
	VRAM	Shared system memory up to 1 GB	Shared system memory is subject to OS	Shared system memory is subject to OS
Ethernet	Interface	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	GbE LAN1: Intel I217LM GbE LAN2: Intel I211AT	GbE LAN1: Intel I219V GbE LAN2: Intel I211AT (for G2 version)	GbE LAN1: Intel I219LM GbE LAN2: Intel I211AT
SATA	Max. Date Transfer Rate	600 MB/s	600 MB/s	600 MB/s
	Channel	6 (SW RAID)	4	6 (4 w/ SW RAID)
I/O Interface	VGA	1	1	1
	DVI	2	1(for G2 version)	2
	USB	13 (4 USB 3.0 and 9 USB 2.0)	9 (4 USB 3.0 and 5 USB 2.0)	13 (6 USB 3.0 and 7 USB 2.0)
	Serial	6	6 (for G2 version) 2 (for VG version)	6
	Parallel	1	1	1
	PS/2	2 (1 x keyboard and 1 x mouse)	2 (1 x rear I/O and 1 x wafer box)	1 (internal wafer box)
	Ethernet (GbE)	2	2 for G2 version; 1 for VG version	2
	Audio	Mic-in, Line-out	Mic-in, Line-out	Mic-in, Line-out
Watchdog Timer	Output	System reset	System reset	System reset
	Interval	Programmable, 1 ~ 255 sec	Programmable, 1-255 Sec	Programmable, 1-255 Sec

✓: supported, - : not supported, △: optional

Slot SBCs and Passive Backplanes Selection Guide

PICMG 1.3 System Host Boards

Model Name		LGA1151 PICMG 1.3 SHB ☞ PCE-5029	LGA1151 PICMG 1.3 SHB ☞ PCE-5031	LGA1150 PICMG 1.3 SHB ☞ PCE-5128	LGA1151 PICMG 1.3 SHB ☞ PCE-5129
Processor System	CPU	Intel® Core™ i7/Core™ i5/ Core™ i3 LGA1151 Processors	Intel® Core™ i7/Core™ i5/Core™ i3 LGA1151 Processors	Intel® Core™ i7/Core™ i5/ Core™ i3 LGA1150 Processors	Intel® Core™ i7/Core™ i5/ Core™ i3 LGA1151 Processors
	Max. Speed	3.4 GHz	3.7 GHz	3.1 GHz	3.4 GHz
	Cache	Up to 8 MB (Depends on CPU)	Up to 12 MB (Depends on CPU)	Up to 8 MB (Depends on CPU)	Up to 8 MB (Depends on CPU)
	Chipset	Intel® H110	Intel H310	Intel® Q87	Intel Q170
	BIOS	AMI 128 Mbit SPI Flash	AMI 256Mbit SPI Flash	AMI 128 Mbit SPI Flash	AMI 128 Mbit SPI Flash
Backplane Bus	PCIe	PICMG1.3: One x16 & Four x1	PICMG1.3" One x16 & Four x1	PICMG1.3: One x16 & Four x1	PICMG1.3: One x16 & Four x1
	PCI (32bit/33 MHz)	4	4 x PCI master to backplane, 32-bit, 33 MHz	4	4
Memory	Technology	Dual-channels (Non-ECC) DDR4 1866/2133	Dual-channel (non-ECC) U-DIMM DDR4 2400/2666 MHz	Dual-channel (Non-ECC) DDR3 1333/1600	Dual-channels (Non-ECC) DDR4 1866/2133
	Max. Capacity	32 GB	32 GB (depends on CPU)	16 GB	32 GB
	Socket	2 x 288-pin DIMM	2 x DDR4 288-pin DIMM	240-pin DIMM x 2	2 x 288-pin DIMM
Graphics	Controller	Chipset integrated Intel® HD Graphics	Chipset integrated with Intel® HD Graphics	Chipset integrated Intel® HD Graphics	Chipset integrated Intel® HD Graphics
	VRAM	Shared system memory is subject to OS	Shared system memory is subject to OS	Shared system memory is subject to OS	Shared system memory is subject to OS
	Video Out	G2: VGA+DP/DVI (Optional DVI-D/DP cable) VG: VGA	VGA+DP/DVI-D+DP/DVI-D	VGA/DVI-D/DVI-D (Optional DVI-D cable)	VGA+DP/DVI-D+DP/DVI-D
Ethernet	Interface	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	LAN1/LAN2 Controller	LAN1: I219-V LAN2: I211-AT (G2 only)	LAN 1: Intel® I219-V LAN 2: Intel® I211-AT	Intel® I217LM/I211AT	Intel I219LM/I211
	Connector	G2: 2 VG: 1	RJ45 x 2	RJ45 X 2	RJ45 x 2
	Disable in BIOS	✓	✓	✓	✓
SATA	Max. Date Transfer Rate	600 MB/s SATA3.0	600 MB/s SATA3.0	600 MB/s SATA3.0	600 MB/s SATA3.0
	Channel	4 x SATA3.0	4 x SATA3.0	6 x SATA3.0	5 x SATA3.0
	S/W Raid	-	-	0, 1, 5, 10	0, 1, 5, 10
Rear I/O	VGA	1	1	1	1
	Ethernet	G2: 2 VG: 1	2	2	2
	USB2.0	-	0	0	0
	USB3.0	G2: 1 VG: -	1	1	1
	PS/2	1	1	1	1
	Serial	G2: - VG: 1	0		-
Internal I/O	USB 2.0	7 USB 2.0 (Pin-header x 2+USB Type A x 1+ 4 on backplane)	7 USB 2.0 (pin header*2 + USB Type A*1 + 4 on backplane)	9 USB 2.0 (Pin-Header x 4 + USB Type A x 1 + 4 on backplane)	7 USB 2.0 (Pin-header x 2+USB Type A x 1+ 4 on backplane)
	USB 3.0	2 USB3.0 (Pin header)	2 USB3.0 (Pin header)	2 USB3.0 (Pin-Header)	4 USB3.0 (Pin header)
	SATA	4	4	6	5
	M.2 (2280 Type M)	-	0	-	1 (Shared w/ SATA0 port)
	Serial	G2: 2 VG: 1	2	2 RS-232 (Pin-Header)	2 RS-232 (Pin-Header)
	Parallel	1	1	1(SPP/EPP/ECP)	1
	PS/2	1	1	1	1
	OBS(Onboard Security Hardware Monitor)	✓	✓	✓	✓
Watchdog Timer	Output	System reset	System reset	System reset	System reset
	Interval	Programable, 1~255 sec	Programable, 1~255 sec/min	Programable, 1~255 sec/min	Programable, 1~255 sec/min
Miscellaneous	Advantech Audio Module	PCA-AUDIO-HDB1E	PCA-AUDIO-HDB1E	PCA-AUDIO-HDA1E	PCA-AUDIO-HDB1E
	Advantech SNMP-1000	-	-	✓	✓
	Advantech SAB-2000	G2: ✓ VG: -	✓	✓	✓
	Advantech IPMI Module	-	-	-	-
	AMT	-	✓	✓	✓

✓: supported, - : not supported, △: optional




Model Name		LGA1151 PICMG 1.3 SHB PCE-5131	LGA1150 PICMG 1.3 SHB PCE-7128	LGA1151 PICMG 1.3 SHB PCE-7129	LGA1151 PICMG 1.3 SHB PCE-7131
Processor System	CPU	Intel® Core™ i7/Core™ i5/Core™ i3 LGA1151 Processors	Intel® Xeon® and Core™ i7/ Core™ i5/Core™ i3 LGA1150 Processors	Intel® Xeon and Core™ i7/ Core™ i5/Core™ i3 LGA1151 Processors	Intel® Xeon® E Family/Core™ i7/i5/i3 LGA1151 processor with C246 chipset
	Max. Speed	3.7 GHz	3.5 GHz	3.6 GHz	3.7 GHz
	Cache	Up to 12 MB (Depends on CPU)	Up to 8 MB (Depends on CPU)	Up to 8 MB (Depends on CPU)	Up to 16 MB (Depends on CPU)
	Chipset	Intel Q370	Intel® C226	Intel C236	Intel® C246
	BIOS	AMI 256 Mbit SPI	AMI 128 Mbit SPI Flash	AMI 128 Mbit SPI Flash	AMI® SPI Flash 256 Mbit
Backplane Bus	PCIe	One x16 & Four x1	One x16/ Two x8 & Four x1	PICMG1.3: One x16 / Two x8 & Four x1	1 x PCIe x16/2 x PCIe x8 and 1 x PCIe x4 to backplane
	PCI (32bit/33 MHz)	4 x PCI master to backplane, 32-bit, 33 MHz	4	4	4 x PCI master to backplane, 32-bit, 33 MHz
Memory	Technology	Dual-channel (non-ECC) DDR4 2400/2666	Dual-channel (ECC) DDR3 1333/1600	Dual-channels (ECC) DDR4 1600/1866/2133	Dual-channel (non-ECC) DDR4 2400/2666 (Note: Intel ECC-supported processor must be selected to enable ECC function)
	Max. Capacity	32 GB (depends on CPU)	16 GB	32 GB	32 GB (depends on CPU)
	Socket	2 x DDR4 288-pin DIMM	2 x 240-pin DIMM	2 x 288-pins DIMM	2 x DDR4 288-pin DIMM
Graphics	Controller	Chipset integrated with Intel® HD Graphics	Chipset integrated Intel® HD Graphics	Chipset integrated Intel® HD Graphics	Chipset integrated with Intel® HD Graphics
	VRAM	Shared system memory is subject to OS	Shared system memory is subject to OS	Shared system memory is subject to OS	Shared system memory is subject to OS
	Video Out	VGA+DP/DVI-D+DP/DVI-D	VGA/DVI-D/DVI-D (Optional DVI-D cable)	VGA+DP/DVI-D+DP/DVI-D	VGA+DP/DVI-D+DP/DVI-D
Ethernet	Interface	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	LAN1/LAN2 Controller	LAN 1: Intel® I219-LM LAN 2: Intel® I210-AT	Intel® I217LM/I210AT	Intel I219LM/I210AT	LAN 1: Intel® I219-LM LAN 2: Intel® I210-AT
	Connector	RJ45 x 2	RJ45 x 2	RJ45 x 2	RJ45 x 2
	Disable in BIOS	✓	✓	✓	✓
SATA	Max. Date Transfer Rate	600 MB/s SATA3.0	600 MB/s SATA3.0	600 MB/s SATA3.0	600 MB/s SATA3.0
	Channel	5 x SATA3.0	6 x SATA3.0	5 x SATA3.0	5 x SATA3.0
	S/W Raid	0, 1, 5, 10	0, 1, 5, 10	0, 1, 5, 10	0, 1, 5, 10
Rear I/O	VGA	1	1	1	1
	Ethernet	2	2	2	2
	USB2.0	0	0	0	0
	USB3.0	1	1	1	1
	PS/2	1	1	1	1
	Serial	0	-	-	0
Internal I/O	USB 2.0	7 USB 2.0 (pin header*2 + USB Type A*1 + 4 on backplane)	9 USB 2.0 (Pin-Header x 4 + USB Type A x 1 + 4 on backplane)	7 USB2.0 (Pin-header x 2+USB Type A x 1+ 4 on backplane)	7 USB 2.0 (pin header*2 + USB Type A*1 + 4 on backplane)
	USB 3.0	6	2 USB3.0 (Pin-Header)	4 USB3.0 (Pin header)	6
	SATA	5	6	5	5
	M.2 (2280 Type M)	1	-	1 (Shared w/ SATA0 port)	1
	Serial	2	2 RS-232(Pin-Header)	2 RS-232(Pin-Header)	2
	Parallel	1	1(SPP/EPP/ECP)	1	1
	PS/2	1	1	1	1
	OBS(Onboard Security Hardware Monitor)	✓	✓	✓	✓
Watchdog Timer	Output	System reset	System reset	System reset	System reset
	Interval	Programable, 1~255 sec/min	Programable, 1~255 sec/min	Programable, 1~255 sec/min	Programable, 1~255 sec/min
Miscellaneous	Advantech Audio Module	PCA-AUDIO-HDB1E	PCA-AUDIO-HDA1E	PCA-AUDIO-HDB1E	PCA-AUDIO-HDB1E
	Advantech SNMP-1000	✓	✓	✓	✓
	Advantech SAB-2000	✓	✓	✓	✓
	Advantech IPMI Module	-	✓	-	-
	AMT	✓	✓	✓	✓

✓: supported, - : not supported, △: optional

Slot SBCs and Passive Backplanes Selection Guide

PICMG 1.0 Single Board Computers

Model Name		LGA1150 PICMG 1.0 SBC
		☞ PCA-6028
Processor System	CPU	Intel Core i7/i5/i3/Pentium LGA 1150 Processors
	Max. Speed	3.2GHz
	Max. L2 Cache	Up to 8MB
	Chipset	Intel H81
	BIOS	AMI 128Mbit SPI Flash
	FSB	-
Bus	PCI	32 bit/33 MHz PCI
	ISA	HISA (ISA High Driver)
Graphics	Controller	Chipset integrated Intel HD Graphics
	VRAM	Shared system memory is subject to OS
	LCD/DVI	DVI (G2 version only)
Ethernet	Interface	10/100/1000 Mbps
	Controller	LAN 1: Intel I217V LAN 2: Intel I211 (Only in G2 Sku)
	Connector	RJ45 x 1 (VG sku); RJ45 x 2 (G2 sku)
	Disabled in BIOS	✓
Memory	Technology	Dual channel (Non-ECC) DDR3 1333/1600 MHz
	Max. Capacity	16 GB (8 GB per DIMM)
	Socket	DDR3 240-pin DIMM x 2
SATA	Max. Data Transfer Rate	600 MB/s
	Channel	4 (1x SATA2.0, 2x SATA3.0, 1x mSATA)
	RAID	-
EIDE	Mode	-
	Channel	-
I/O Interface	USB	Up to 8 x USB2.0 (6x pin header, 1x type A, 1x rear in G2 sku only) 2 x USB3.0 (Pin header)
	Serial	2 RS-232 (Pin-Header)
	Parallel	1
	FDD	-
	PS/2	1
	LAN	1 (for VG version) 2 (for G2 version)
	OBS (Hardware Monitor)	✓
Watchdog Timer	Output	System reset
	Interval	Programmable, 1~255 sec
Miscellaneous	Audio	PCA-AUDIO-HDA1E
	Advantech SNMP-1000-B	✓
	Advantech SAB-2000	✓
	Solid State Disk	mSATA

✓: supported, - : not supported, △: optional

Half-Size Single Board Computers

Specifications		PCIe Half-Size SBC	
		☞ PCE-3028	☞ PCE-4128
Processor System	CPU	Intel Core i7/i5/i3/Pentium LGA 1150 Processor	Intel Xeon E3 1200v3 series, Core i7/i5/i3 LGA1150 processors
	Speed	Up to 3.5 GHz	up to 3.5GHz
	L2 Cache	Up to 8MB	up to 8MB
	Chipset	Intel H81	Intel C226
	BIOS	AMI 128 Mbit SPI Flash	AMI 128Mbit SPI Flash
	FSB	-	-
Bus	PCIe	One PCIex16, Four PCIex1	One PCIe x16/Two PCIe x8, Four PCIe x1
	PCI	-	-
	ISA	-	-
Graphics	Controller	Chipset integrated graphics with Intel HD	GT2 P4600/GT2 4600/GT1 HD graphics
	VRAM	Shared with system memory is subject to OS	Shared system memory is subject to OS
	Video output	D-sub VGA port, DVI	VGA, DP, CRT
Ethernet	Interface	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	LAN1: Intel® I217V LAN2: Intel® I211AT	LAN1: Intel I217LM, LAN2: I210AT
	Connector	RJ-45 x2	RJ-45 x2
	Disabled in BIOS	✓	-
Memory	Technology	Dual-channel DDR3 1066/1333/1600 MHz	Dual channel DDR3 ECC 1066/1333/1600 MHz(ECC function enable depends on processor support)
	Max. Capacity	16 GB	16 GB
	Socket	204-pin SODIMM x2	DDR3 204-pin SO-DIMM x2
SATA	Max. Data Transfer Rate	600 MB/s, 300 MB/s	600 MB/sec
	Channel	4	4
	RAID	-	0,1,5,10
EIDE	Mode	-	-
	Channel	-	-
I/O Interface	USB	2 USB 3.0 + 7 USB 2.0	3 USB 3.0, 7 USB 2.0
	Serial	2 x RS-232 Optional: 4x RS-422/485 w/Auto-flow or 4 x RS-232 by COM module	2 x RS-232, Optional: RS-422/485 x4 or RS-232 x4 via module.
	Parallel	1	1
	FDD	-	0
	PS/2	1	1
	LAN	2	2
	OBS (Onboard Security Hardware Monitor)	-	-
Watchdog Timer	Output	System reset	System reset
	Interval	Programmable 1-255 sec	Programmable 1-255 sec
Miscellaneous	Audio	PCA-AUDIO-HDA1E	PCA-AUDIO-HDA1E
	Advantech SNMP-1000	-	-
	IPMI	-	-
	Solid State Disk	-	-

✓: supported, - : not supported, △: optional

Slot SBCs and Passive Backplanes Selection Guide

Half-Size Single Board Computers

Specifications		PCIe Half-Size SBC	
		☞ PCE-3029	☞ PCE-4129
Processor System	CPU	Intel Core i7/i5/i3/Pentium LGA 1151 Processor	Intel Xeon E3-1200v5 series, Core i7/i5/i3 LGA1151 processors
	Speed	Up to 3.7 GHz	Up to 3.7 GHz
	L2 Cache	Up to 8 MB	Up to 8 MB
	Chipset	Intel H110	Intel C236
	BIOS	AMI 128 Mbit SPI Flash	AMI 128 Mbit SPI Flash
	FSB	-	-
Bus	PCIe	One PCIe x16, Four PCIe x1	One PCIe x16 or Two PCIe x8, Four PCIe x1
	PCI	-	-
	ISA	-	-
Graphics	Controller	Chipset integrated graphics with Intel HD	Chipset integrated graphics with Intel HD
	VRAM	Shared with system memory is subject to OS	Shared with system memory is subject to OS
	Video output	VGA, DVI, DP	VGA, DVI, DP
Ethernet	Interface	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	LAN1: Intel® I219V LAN2: Intel® I211AT	LAN1: Intel® I219LM LAN2: Intel® I210AT
	Connector	RJ-45 x2	RJ-45 x2
	Disabled in BIOS	✓	✓
Memory	Technology	Dual-channel DDR4 1866/2133 MHz	Dual channel DDR4 ECC 1866/2133 MHz (ECC function enable depends on processor support)
	Max. Capacity	32 GB	32GB
	Socket	260-pin SODIMM x2	260-pin SO-DIMM X2
SATA	Max. Data Transfer Rate	600MB/s	600MB/s
	Channel	4	4
	RAID	-	0,1,5,10
EIDE	Mode	-	-
	Channel	-	-
I/O Interface	USB	3 USB 3.0 + 7 USB 2.0	3 USB 3.0 + 7 USB 2.0
	Serial	2 x RS-232 Optional: 4x RS-422/485 w/Auto-flow or 4 x RS-232 by COM module	2 x RS-232 Optional: 4x RS-422/485 w/auto-flow or 4 x RS232 by COM module
	Parallel	1	1
	FDD	-	-
	PS/2	1	1
	LAN	2	2
	OBS (Onboard Security Hardware Monitor)	✓	✓
Watchdog Timer	Output	System reset	System reset
	Interval	Programmable 1-255 sec	Programmable 1-255 sec
Miscellaneous	Audio	PCA-AUDIO-HDB1E	PCA-AUDIO-HDA1E
	Advantech SNMP-1000	-	-
	IPMI	-	-
	Solid State Disk	mSATA x 1	mSATA x 1

✓: supported, - : not supported, △: optional

Specifications		PCI Half-Size SBC	ISA Half-Size SBC
		☞ PCI-7032	☞ PCA-6763
Processor System	CPU	Intel Celeron J1900/N2930	AMD G-Series APU T16R/T40E
	Speed	2.00/1.83 GHz	615 MHz/1GHz
	L2 Cache	2MB/2MB	512 KB
	Chipset	Intel Celeron J1900/N2930 SOC	AMD A55E
	BIOS	AMI 64 Mbit SPI Flash	AMI 32 Mbit SPI Flash
	FSB	-	-
Bus	PCIe	One PCIe x 1 (F SKU) Only	-
	PCI	32-bit/33 MHz PCI	-
	ISA	-	16-bit ISA Bus
Graphics	Controller	Chipset integrated graphics with Intel® HD	Radeon HD 6250
	VRAM	Shared with system memory is subject to OS	Shared with system memory up to 384MB
	Video output	D-sub VGA port, 48-bit LVDS, DVI	D-sub VGA port, LVDS (48-bit for G2 SKU, 18-bit for VG SKU), DVI
Ethernet	Interface	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	LAN1: Intel® I211 LAN2: Intel® I211	LAN1: Realtek RTL8111E-VL-CG LAN2: Realtek RTL8111E-VL-CG
	Connector	RJ-45 x 2	RJ-45 x 2
	Disabled in BIOS	✓	✓
Memory	Technology	Dual-Chnnel DDR3L 1333	Onboard 1GB DDR3 1066 MHz SODIMM DDR3 1066 MHz up to 4GB
	Max. Capacity	8GB (for G2/F SKU) 4GB (for VG SKU)	5GB
	Socket	204-pin SODIMM x 2 (for G2/F SKU) 204-pin SODIMM x 1 (for VG SKU)	204-pin SODIMM x 1
SATA	Max. Data Transfer Rate	300 MB/s	300 MB/s
	Channel	2 (SATA 2 can change mSATA)	4
	RAID	-	-
EIDE	Mode	-	-
	Channel	-	-
I/O Interface	USB	1 USB 3.0 + 6 USB 2.0 (for G2/F SKU) 1 USB 3.0 + 5 USB 2.0 (for VG SKU)	7 USB 2.0 (for G2 SKU) 6 USB 2.0 (for VG SKU)
	Serial	4 x RS-232/422/485 (for G2/F SKU) 2 x RS-232/422/485 (for VG SKU) Optional: 4 x RS-422/485 w/Auto-flow or 4 RS-232 by COM module	2 x RS-232 Optional: 4 x RS-422/485 w/Auto-flow by COM module
	Parallel	1	1
	FDD	-	1
	PS/2	1	1
	LAN	2 (for G2/F SKU) 1 (for VG SKU)	2 (for G2/F SKU) 1 (for VG SKU
	OBS (Onboard Security Hardware Monitor)	✓ (G2 SKU only)	-
Watchdog Timer	Output	System reset	System reset
	Interval	Programmable, 1~255 sec/min	Programmable, 1~255 sec/min
Miscellaneous	Audio	PCA-AUDIO-HDB1E	PCA-AUDIO-HDA1E
	Advantech SNMP-1000	-	-
	IPMI	-	-
	Solid State Disk	mSATA x 1	mSATA x 1

✓: supported, - : not supported, △: optional

Slot SBCs and Passive Backplanes Selection Guide

PICMG1.3 Full-Size SHB Backplanes

Server Grade: Compatible with PCE-7000 Series CPU Boards

Category	Model Name	PCIe				PCI-X			PCI
		x16	x8	x4	x1	64/66	64/100	64/133	32/33
2U Butterfly BP	PCE-7B06V-04A1E	-	1	-	-	-	-	-	4
8 slots BP	PCE-7B08-04A1E	-	2	1	-	-	-	-	4
14 slots BP	PCE-7B09R-04A1E	-	1	3	-	-	-	-	4
	PCE-7B10-04A1E	-		5	-	-	-	-	4
	PCE-7B13-64C1E	-	2	-	-	4	2	-	4
	PCE-7B13-07A1E	-	2	3	-	-	-	-	7
	PCE-7B13D-04A1E	-	1, 2	-	-	-	-	-	4
20 slots BP	PCE-7B17-00A1E	-	5	11	-	-	-	-	-

Category	Model Name	Wallmount/Desktop Chassis			
		IPC-6025	IPC-6606	IPC-6806(W)	IPC-6608
2U Butterfly BP	PCE-7B06V-04A1E	-	-	-	-
8 slots BP	PCE-7B08-04A1E	-	-	-	✓
14 slots BP	PCE-7B09R-04A1E	-	-	-	-
	PCE-7B10-04A1E	-	-	-	-
	PCE-7B13-64C1E	-	-	-	-
	PCE-7B13-07A1E	-	-	-	-
	PCE-7B13D-04A1E	-	-	-	-
20 slots BP	PCE-7B17-00A1E	-	-	-	-

Category	Model Name	Rackmount Chassis										
		ACP-1010	ACP-2000EBP	IPC-510	IPC-610	IPC-611	ACP-4000	ACP-4010	ACP-4320	ACP-4340	ACP-4360	IPC-623
		2-slot / 1U	6-slot / 2U	15-slot / 4U								20-slot/ 4U
2U Butterfly BP	PCE-7B06V-04A1E	-	✓	-	-	-	-	-	-		-	-
8 slots BP	PCE-7B08-04A1E	-	-	-	-	-	-	-	-		-	-
14 slots BP	PCE-7B09R-04A1E	-	-	✓	✓	✓	✓	✓	✓	✓	✓	-
	PCE-7B10-04A1E	-	-	✓	✓	✓	✓	✓	✓	✓	✓	-
	PCE-7B13-64C1E	-	-	✓	✓	✓	✓	✓	✓	✓	✓	-
	PCE-7B13-07A1E	-	-	✓	✓	✓	✓	✓	✓	✓	✓	-
	PCE-7B13D-04A1E	-	-	-	-	-	-	✓	-	-	-	-
20 slots BP	PCE-7B17-00A1E	-	-	-	-	-	-	-	-	-	-	✓

Desktop: Compatible with PCE-5000 Series CPU Boards

Category	Model Name	PCIe				PCI-X			PCI
		x16	x8	x4	x1	64/66	64/100	64/133	32/33
1U Butterfly BP	PCE-5B03V-01A1E	1	-	-	-	-	-	-	1
	PCE-5B03V-00A1E	1		1	-	-	-	-	-
2U Butterfly BP	PCE-5B05V-30B1E	1	-	-	-	-	2	1	-
	PCE-5B06V-00A1E	1	-	-	4	-	-	-	-
	PCE-5B06V-04A1E	1	-	-	-	-	-	-	4
5 slot BP	PCE-5B04-20B1E	1	-	-	-	-	-	2	-
	PCE-5B05-02A1E	1	-	1	-	-	-	-	2
	PCE-5B05-03A1E	1	-	-	-	-	-	-	3
	PCE-5B05-04A1E	-	-	-	-	-	-	-	4
6 slot BP	PCE-5B06-00A1E	1	-	-	4	-	-	-	-
	PCE-5B06-03A1E	1	-	1	-	-	-	-	3
	PCE-5B06-04A1E	1	-	-	-	-	-	-	4
8 slot BP	PCE-5B07-04A1E	1	-	1	-	-	-	-	4
	PCE-5B08-02A1E	1	-	-	4	-	-	-	2
10 slot BP	PCE-5B09-04A1E	1	-	3	-	-	-	-	4
	PCE-5B09-06A1E	1	-	1	-	-	-	-	6
14 slot BP	PCE-5B10-04A1E	1	-	-	4	-	-	-	4
	PCE-5B12-07A1E	1	-	3	-	-	-	-	7
	PCE-5B12-64C1E	1	-	-	-	4	2	-	4
	PCE-5B13-08A1E	1	-	-	3	-	-	-	8
	PCE-5B12D-04A1E	1	-	-	-	-	-	-	4
20 slot BP	PCE-5B12-00A1E	10	-	1	-	-	-	-	-
	PCE-5B16Q-02A1E	1	-	-	-	-	-	-	2
	PCE-5B18-88B1E	1	-	-	-	8	-	-	8
	PCE-5B19-00A1E	17	-	1	-	-	-	-	-

Category	Model Name	Wallmount/Desktop Chassis				
		IPC-6025	IPC-6606	IPC-6806	IPC-6806W	IPC-6608
1U Butterfly BP	PCE-5B03V-01A1E	-	-	-	-	-
	PCE-5B03V-00A1E	-	-	-	-	-
2U Butterfly BP	PCE-5B05V-30B1E	-	-	-	-	-
	PCE-5B06V-00A1E	-	-	-	-	-
	PCE-5B06V-04A1E	-	-	-	-	-
5 slot BP	PCE-5B04-20B1E	✓	-	-	-	-
	PCE-5B05-02A1E	✓	-	-	-	-
	PCE-5B05-03A1E	✓	-	-	-	-
	PCE-5B05-04A1E	✓	-	-	-	-
6 slot BP	PCE-5B06-00A1E	-	✓	-	✓	-
	PCE-5B06-03A1E	-	✓	-	✓	-
	PCE-5B06-04A1E	-	✓	-	✓	-
8 slot BP	PCE-5B07-04A1E	-	-	-	-	✓
	PCE-5B08-02A1E	-	-	-	-	✓
10 slot BP	PCE-5B09-04A1E	-	-	-	-	-
	PCE-5B09-06A1E	-	-	-	-	-
14 slot BP	PCE-5B10-04A1E	-	-	-	-	-
	PCE-5B12-07A1E	-	-	-	-	-
	PCE-5B12-64C1E	-	-	-	-	-
	PCE-5B13-08A1E	-	-	-	-	-
	PCE-5B12D-04A1E	-	-	-	-	-
20 slot BP	PCE-5B12-00A1E	-	-	-	-	-
	PCE-5B16Q-02A1E	-	-	-	-	-
	PCE-5B18-88B1E	-	-	-	-	-
	PCE-5B19-00A1E	-	-	-	-	-

✓: supported, - : not supported, △: optional

PCI/ISA Backplanes

Category	Model Name	Slot per segment					Segment	AT	ATX	1U Chassis	2U Chassis	4U Chassis		
		ISA	PCI	PICMG	PICMG/ PCI	ISA/PCI				ACP-1010	ACP-2000	IPC-510	IPC-610	IPC-611
										2-slot	6-slot	15-slot	15-slot	15-slot
1U Butterfly BP	PCA-6103P2V-0A2E*	-	2	1	-	-	1	-	✓	✓	-	-	-	-
2U Butterfly BP	PCA-6105P4V-0B3E*	-	4	1	-	-	1	-	✓	-	✓	-	-	-
	PCA-6106P3V-0B2E*	1	3	2	-	-	1	✓	✓	-	✓	-	-	-
5 Slot BP	PCA-6105P3-5A1E	1	2	1	-	1	1	-	✓	-	-	-	-	-
6/8 Slot BP	PCA-6106P4-0A2E	-	4	2	-	-	1	✓	✓	-	-	-	-	-
	PCA-6106P3-0D2E	2	2	1	1	-	1	✓	✓	-	-	-	-	-
	PCA-6108P6-0C1E	1	5	1	1	-	1	✓	✓	-	-	-	-	-
	PCA-6108P4-0C2E	3	3	1	1	-	1	✓	✓	-	-	-	-	-
	PCA-6108-0B2E	8	-	-	-	-	1	✓	✓	-	-	✓	✓	✓
14/15 Slot BP	PCA-6114P12-0B3E	1	11	1	1	-	1	✓	✓	-	-	✓	✓	✓
	PCA-6114P10-0B2E	2	10	2	-	-	1	✓	✓	-	-	✓	✓	✓
	PCA-6114P7-0E1E	4	6	3	-	1	1	✓	✓	-	-	✓	✓	✓
	PCA-6114P4-0C2E	8	4	2	-	-	1	✓	✓	-	-	✓	✓	✓
	PCA-6113P4R-0C2E	7	4	2	-	-	1	✓	✓	-	-	✓	✓	✓
	PCA-6114-0B2E	14	-	-	-	-	1	✓	✓	-	-	-	-	-
	PCA-6113DP4-0A2E	1	3,4	1,2	1,0	-	2	✓	✓	-	-	-	-	-
20 Slot BP	PCA-6120P18-0A2E	1	17	1	1	-	1	✓	△	-	-	-	-	-
	PCA-6120P4-0B2E	14	4	2	-	-	1	✓	△	-	-	-	-	-
	PCA-6120P12-0A2E	7	11	1	1	-	1	✓	△	-	-	-	-	-
	PCA-6119P7-0C1E	10	7	2	-	-	1	✓	△	-	-	-	-	-
	PCA-6120Q-0B2E	5	-	-	-	-	4	✓	△	-	-	-	-	-

Category	Model Name	4U Chassis						Wallmount/Desktop Chassis				Cage
		ACP-4000	ACP-4010	ACP-4320	ACP-4340	ACP-4360	IPC-623	IPC-6608	IPC-6606	IPC-6806/ IPC-6806W	IPC-6025	IPC-6006
		15-slot	15-slot	15-slot	15-slot	15-slot	20-slot	8-slot	6-slot	6-slot	5-slot	6-slot
1U Butterfly BP	PCA-6103P2V-0A2E*	-	-	-	-	-	-	-	-	-	-	-
2U Butterfly BP	PCA-6105P4V-0B3E*	-	-	-	-	-	-	-	-	-	-	-
	PCA-6106P3V-0B2E*	-	-	-	-	-	-	-	-	-	-	-
5 Slot BP	PCA-6105P3-5A1E	-	-	-	-	-	-	-	-	-	✓	-
6/8 Slot BP	PCA-6106P4-0A2E	-	-	-	-	-	-	-	✓	✓	-	✓
	PCA-6106P3-0D2E	-	-	-	-	-	-	-	✓	✓	-	✓
	PCA-6108P6-0C1E	-	-	-	-	-	-	✓	-	-	-	-
	PCA-6108P4-0C2E	-	-	-	-	-	-	✓	-	-	-	-
14/15 Slot BP	PCA-6114P12-0B3E	✓	✓	✓	✓	✓	-	-	-	-	-	-
	PCA-6114P10-0B2E	✓	✓	✓	✓	✓	-	-	-	-	-	-
	PCA-6114P7-0E1E	✓	✓	✓	✓	✓	-	-	-	-	-	-
	PCA-6114P4-0C2E	✓	✓	✓	✓	✓	-	-	-	-	-	-
	PCA-6113P4R-0C2E	✓	✓	✓	✓	✓	-	-	-	-	-	-
	PCA-6114-0B2E	✓	✓	✓	✓	✓	-	-	-	-	-	-
	PCA-6113DP4-0A2E	-	✓	-	-	-	-	-	-	-	-	
20 Slot BP	PCA-6120P18-0A2E	-	-	-	-	-	✓	-	-	-	-	-
	PCA-6120P4-0B2E	-	-	-	-	-	✓	-	-	-	-	-
	PCA-6119P7-0C1E	-	-	-	-	-	✓	-	-	-	-	-
	PCA-6119P7-0B3E	-	-	-	-	-	✓	-	-	-	-	-
	PCA-6120Q-0B2E	-	-	-	-	-	✓	-	-	-	-	-

Remarks:
* : only compatible with Advantech's 1U/2U chassis

✓: supported, - : not supported, △: optional

Slot SBCs and Passive Backplanes Selection Guide

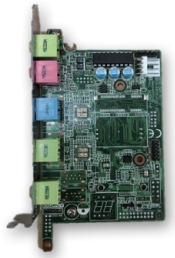
Backplanes Compatible with Half-Size SBCs

Interface	Category	Model Name	Slots per segment							Segment
			ISA	PCI	PCIe x16	PCIe x 8	PCIe x4	PCIe x1	PICMG	
Pure ISA Backplane	-	PCA-6104-0C2E	3	-	-	-	-	-	1	1
	6-slot	PCA-6106-0B2E	5	-	-	-	-	-	1	1
	-	PCA-6108-0B2E *	7	-	-	-	-	-	1	1
	8-slot	PCA-6108E-0C2E	7	-	-	-	-	-	1	1
Pure PCI Backplane	-	PCA-6104P4-0B2E	-	3	-	-	-	-	1	1
	6-slot	PCA-6105P5-0B2E	-	4	-	-	-	-	1	1
PICMG1.3 Half-Size Backplanes	6-slot	PCE-3B03-00A1E	-	-	1	-	1	-	1	1
	6-slot	PCE-3B06-00A1E	-	-	1	-	-	4	1	1
	6-slot	PCE-3B06-03A1E	-	3	1	-	-	1	1	1
	6-slot	PCE-3B06-02A1E	-	2	1	-	-	2	1	1
	3-slot	PCE-3B03A-00A1E	-	-	1	-	1	-	1	1
	3-slot	PCE-3B03-01A1E	-	1	1	-	-	-	1	1
	14-slot	PCE-3B12-08A1E	-	8	1	-	-	2	1	1
	14-slot	PCE-4B13-08A1E	-	8	-	2	-	2	1	1
	14-slot	PCE-4B12-03A1E	-	3	-	1	4	3	1	1
	14-slot	PCE-4B13-00A1E	-	-	-	1	11	-	-	-

Interface	Model Name	AT	ATX	ACP-4020	ACP-4D00	IPC-6806S*	IPC-6006S	IPC-3012
				Rackmount	Rackmount	Wallmount	Wallmount	Wallmount
				14-slot	6-slot	6-slot	6-slot	3-slot
Pure ISA Backplane	PCA-6104-0C2E	✓	✓	-	-	-	-	-
	PCA-6106-0B2E	✓	✓	-	-	✓	✓	-
	PCA-6108-0B2E	✓	✓	-	-	-	-	-
	PCA-6108E-0C2E	✓	✓	-	-	-	-	-
Pure PCI Backplane	PCA-6104P4-0B2E	✓	✓	-	-	-	-	-
	PCA-6105P5-0B2E	✓	✓	-	✓	✓	✓	-
	PCA-6108P8-0A2E	✓	✓	-	-	-	-	-
Half-Size Backplanes	PCE-3B03-00A1E	-	✓	-	✓	✓	-	-
	PCE-3B06-00A1E	-	✓	-	✓	✓	-	-
	PCE-3B06-03A1E	-	✓	-	✓	✓	-	-
	PCE-3B06-02A1E	-	✓	-	✓	✓	-	-
	PCE-3B03A-00A1E	-	✓	-	-	-	-	✓
	PCE-3B03-01A1E	-	✓	-	-	-	-	✓
	PCE-3B12-08A1E	-	✓	✓	-	-	-	-
	PCE-4B13-08A1E	-	✓	✓	-	-	-	-
	PCE-4B12-03A1E	-	✓	✓	-	-	-	-
	PCE-4B13-00A1E	-	✓	✓	-	-	-	-

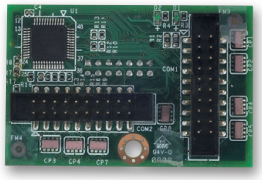
✓: supported, - : not supported, △: optional

☞ Extension Modules for Slot SBCs



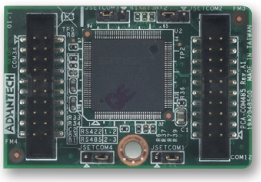
PCA-AUDIO-HDB1E

- HD Audio Extension Module
- Line-out, Mic-in, Line-in, Surround-out, Speak-out, S/PDIF
- Dimensions (L x H): 68 x 125 mm (2.67"inch x 4.92")



PCA-COM232-00A1E

- 4 RS-232 series ports extension module by LPC connector on CPU card.
- Dimensions (L x H): 31.5 x 48 mm (1.24" x 1.88")

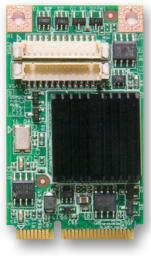


PCA-COM485-00A1E

- 4 RS-422/485 series ports extension module by LPC connector on CPU card.
- With Auto-flow control function
- Dimensions (L x H): 31.5 x 48 mm (1.24" x 1.88")

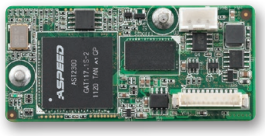
PCE-SA01-00A1E

- I/O extension stack board
- 1 DP, 2 USB 3.0, MIC-in, LINE-out
- Dimensions (L x H) : 68 x 125 mm (2.67" x 4.92")
- Supports Model: PCE-3029, PCE-4128, PCE-4129



PCA-5650-00A1E

- 2 VGA output Mini PCI Express Graphic card
- GPU: Silicon Motion SM750
- VGA output: 1920 x 1080, up to 75Hz vertical rate
- 16 Mb of embedded DDR memory



IPMI-1000-00A1E

- IPMI2.0 Server-grade remote control solution
- OS independent hardware-based solution
- Real-time and centralized management
- KVM over IP remote control function
- User friendly UI and utility
- Supports Model: PCE-5126WG2, PCE-7127, PCE-5128

PCA-TPM-00B1E

- Trusted platform module compliant with TCG 2.0 specification and TCG software stack 2.0 via LPC connector on CPU card
- Hardware based data protection solution for storage device encryption and decryption
- Dimensions (L x H) : 31.5 x 30.5 mm (1.24" x 1.2")

Industrial Computer Peripherals Selection Guide

☞ GPU Cards

Quadro RTX Series

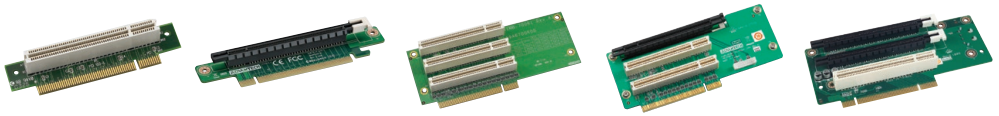
- Turing GPU Technology
- Revolutionary Realtime Ray Tracing Acceleration
- Enhanced Tensor Cores for deep learning
- H.264 and HEVC Encode/Decode Engines

Quadro P Series

- Pascal GPU Technology
- Huge Frame Buffer and Memory Bandwidth
- Pascal Dynamic Load Balancing
- H.264 and HEVC Encode/Decode Engines

Part Number	Description
SKY-QUAD-GV100	QUADRO GV100 32GB PCI-Ex16 DP*4 FS
SKY-QUAD-P1000R	QUADRO P1000 4GB PCI-Ex16 MDP*4 FS (PG178)
SKY-QUAD-P1000R-B	QUADRO P1000 4GB PCI-Ex16 MDP*4 FS BULK (PG178)
SKY-QUAD-P2200	QUADRO P2200 5GB PCI-Ex16 DP*4 FS
SKY-QUAD-P2200-BLK	QUADRO P2200 5GB PCI-Ex16 DP*4 FS BULK
SKY-QUAD-P400R	QUADRO P400 2GB PCI-Ex16 MDP*3 FS (PG178)
SKY-QUAD-P400R-B	QUADRO P400 2GB PCI-Ex16 MDP*3 FS BULK (PG178)
SKY-QUAD-P620R	QUADRO P620 2GB PCI-Ex16 MDP*4 FS (PG178)
SKY-QUAD-P620R-B	QUADRO P620 2GB PCI-Ex16 MDP*4 FS BULK (PG178)
SKY-QUAD-RTX4000	QUADRO RTX4000 8GB PCI-Ex16 DP*3 FS
SKY-QUAD-RTX5000	QUADRO RTX5000 16GB PCI-Ex16 DP*4 FS
SKY-QUAD-RTX6000	QUADRO RTX6000 24GB PCI-Ex16 DP*4 FS
SKY-QUAD-RTX8000	QUADRO RTX8000 48GB PCI-Ex16 DP*4 FS
SKY-QUAD-RTX4000-B	QUADRO RTX4000 8GB PCI-Ex16 DP*3 FS BULK
SKY-QUAD-RTX5000-B	QUADRO RTX5000 16GB PCI-Ex16 DP*4 FS BULK
SKY-QUAD-RTX6000-B	QUADRO RTX6000 24GB PCI-Ex16 DP*4 FS BULK
SKY-QUAD-RTX8000-B	QUADRO RTX8000 48GB PCI-Ex16 DP*4 FS BULK

Riser Cards



Model Name		AIMB-RP10P-01A1E	AIMB-RF10F-01A1E	AIMB-RP30P-03A1E	AIMB-RP3PF-21A1E	AIMB-RP3P8-12A1E
Interface		PCI	PCIe x 16	PCI	PCIe x16/PCI	PCIe x16/PCI
Expansion Slots		1 PCI	1 PCIe x 16	3 PCI	1 PCIe x16 + 2 PCI	2 PCIe x8 + 1 PCI
Chassis	1U	✓	✓	-	-	-
	2U	-	-	✓	✓	✓
ATX	AIMB-785	-	✓	-	-	-
	AIMB-784	-	✓	-	-	-
	AIMB-782	-	-	-	-	-
	AIMB-781	-	✓	-	-	-
	AIMB-780	✓	✓	✓	✓	✓ (WG2 Only)*
	AIMB-705	✓	-	✓	✓	-
	AIMB-701	-	✓	-	-	-
	AIMB-769	-	✓	-	-	-
	AIMB-767	✓	✓	✓	✓	-
	AIMB-766	✓	-	✓	✓	-
	AIMB-763	-	✓	-	✓	-

*Note: AIMB-RP3P8-12A1E is not compatible with ACP-2010MB/2320MB, IPC-603MB chassis unless riser card bracket is changed to P/N: 1950014302N001.

Model Name		AIMB-R4104-01A1E	AIMB-R430P-03A2E	AIMB-R4301-03A1E	AIMB-R431F-21A1E	AIMB-R43PF-21A1E
Interface		PCIe x4	PCIe x4	PCIe x4	PCIe x16/PCIe x4	PCIe x16/PCIe x4
Expansion Slots		1 PCIe x4	3 PCI	3 PCIe x1	1 PCIe x16 + 2 PCIe x1	1 PCIe x16 + 2 PCI
Chassis	1U	✓	-	-	-	-
	2U	-	✓	✓	✓	✓
ATX	AIMB-785	✓	✓	△	□	✓
	AIMB-784	-	-	-	□	✓
	AIMB-782	-	✓	-	□	✓
	AIMB-781	✓	✓	✓	✓	✓
	AIMB-780	-	-	-	-	-
	AIMB-701	✓	✓	△	-	-
	AIMB-769	✓	✓	△	-	-
	AIMB-767	-	-	-	-	-
	AIMB-766	-	-	-	-	-
	AIMB-763	-	-	-	-	-

✓: Fully compatible
□: Only the PCIe x 16 and PCIe x1 (bottom slot) connectors work.
△: Only one PCIe x1 connector works (top slot).

Industrial Computer Peripherals Selection Guide

Power Supplies

80 Plus PS/2 Single Power Supplies



Part Number	PS8-300ATX-ZBE	PS8-500ATX-BB	PS8-700ATX-BB
Form Factor	PS/2	PS/2	PS/2
Wattage	300W	500W	700W
80 Plus Grade	Bronze	Bronze	Bronze
Input Range	90 ~ 264 V_{AC}	90 ~ 264 V_{AC}	90 ~ 264 V_{AC}
Output Range	+3.3V @ 11.12 A +5 V @ 13.2 A +12 V @ 7.64 A +12 VCPU @ 8 A -12 V @ 0.1 A -5V @ 0.05 A +5 Vsb @ 1.39 A	+3.3V @ 19 A +5 V @ 16 A +12 V1 @ 17 A +12 V2 @ 17 A -12 V @ 0.3 A -5V @ 0.3 A +5 Vsb @ 2.5 A	+3.3V @ 24 A +5 V @ 30 A +12 V1 @ 16 A +12 V2 @ 16 A +12 V3 @ 16 A +12 V4 @ 16 A -12 V @ 0.5 A -5V @ 0.5 A +5 Vsb @ 4 A
MTBF(hrs)	100,000 @ 25° C	100,000 @ 25° C	100,000 @ 25° C
Dimensions (W x H x D)	150 x 86 x 140 mm (5.91" x 3.39" x 5.51")	150 x 86 x 140 mm (5.91" x 3.39" x 5.51")	150 x 86 x 140 mm (5.91" x 3.39" x 5.51")
Safety	CE, FCC, UL, CB, TUV, CCC, KC, BSMI	CE, FCC, UL, CB, TUV, CCC, KC	CE, FCC, UL, CB, TUV, CCC, KC
Compatible Chassis	ACP-2000/IPC-602, ACP-4000, ACP-4010, ACP-4020, ACP-4320, ACP-4340, ACP-4360, IPC-6606, IPC-6608, IPC-5122, IPC-7130, IPC-7130L, IPC-7132, IPC-7220, IPC-510, IPC-610-F, IPC-610-H, IPC-610-L, IPC-611, IPC-619, HPC-5000	ACP-2000/IPC-602, ACP-4000, ACP-4010, ACP-4020, ACP-4320, ACP-4340, ACP-4360, IPC-6606, IPC-6608, IPC-5122, IPC-7130, IPC-7130L, IPC-7132, IPC-7220, IPC-510, IPC-610-F, IPC-610-H, IPC-610-L, IPC-611, IPC-619, IPC-631, HPC-7442	ACP-2000/IPC-602, ACP-4000, ACP-4010, ACP-4020, ACP-4320, ACP-4340, ACP-4360, HPC-7442

Remark: Only 500W or higher wattage PSUs support 1700029268-01 and 1700024754-01 PCIe power cables for high end GPU cards. If GPU card has 2 power connectors, please use 1700029268-01 x 1 + 1700024754-01 x 1; if GPU card has 1 power connector, please use 1700029268-01 instead of 1700024754-01.

PS/2 DC Power Supplies

Model Name	96PS-D500WPS2
Wattage	500W
Input Range	93.5 ~ 253 V_{DC}
Outputs	+3.3 V @ 20 A +5 V @ 20 A +12 V1 @ 16 A +12 V2 @ 16 A +12 V3 @ 16 A -12 V @ 0.5 A -5 V @ 0.3 A +5 Vsb @ 3 A
MTBF (hrs)	100,000 @ 25° C
Dimensions (W x H x D)	150 x 86 x 140 mm (5.91" x 3.39" x 5.51")
Safety	CE, CB
Compatible Chassis	ACP-2000, ACP-4000, ACP-4010, ACP-4320,ACP-4360, IPC-6606, IPC-6608, IPC-5122, IPC-7130, IPC-7130L, IPC-7132, IPC-7220, IPC-510, IPC-610-H,IPC-610-L, IPC-611

80 Plus Flex ATX Power Supplies



Part Number	PS8-250FATX-BB	PS8-350FATX-GB	PS8-500FATX-GB
Form Factor	Flex ATX	Flex ATX	Flex ATX
Wattage	250W	350W	500W
80 Plus Grade	Bronze	Gold	Gold
Input Range	90 ~ 264 V_{AC}	90 ~ 264 V_{AC}	90 ~ 264 V_{AC}
Output Range	+3.3V @ 13 A +5 V @ 15 A +12 V1 @ 17 A +12 V2 @ 17 A -12 V @ 0.3 A +5 Vsb @ 2.5 A	+3.3V @14 A +5 V @ 16 A +12 V @ 29 A -12 V @ 0.3A +5 Vsb @ 3 A	+3.3V @14 A +5 V @ 16 A +12 V @ 41 A -12 V @ 0.3A +5 Vsb @ 3 A
MTBF(hrs)	100,000 @ 25° C	100,000 @ 25° C	100,000 @ 25° C
Dimensions (W x H x D)	81.5 x 40.5 x 150 mm (3.2" x 1.59" x 5.9")	81.5 x 40.5 x 150 mm (3.2" x 1.59" x 5.9")	81.5 x 40.5 x 150 mm (3.2" x 1.59" x 5.9")
Safety	CE, FCC, UL, CB, TUV, CCC, KC, BSMI	CE, FCC, UL, CB, TUV, CCC, KC	CE, FCC, UL, CB, TUV, CCC, KC
Compatible Chassis	ACP-1010/ACP-1320, ACP-2010/ACP-2320, ACP-4D00, IPC-3012, IPC-6806S, IPC-6806S-D, IPC-6806, IPC-5120, IPC-7120	ACP-1010/ACP-1320, ACP-2010/ACP-2320, ACP-4D00, IPC-603, IPC-3012, IPC-6806S, IPC-6806S-D, IPC-6806, IPC-5120, IPC-7120, ACP-2020	ACP-1010 , ACP-2010/ACP-2320, ACP-4D00

80 Plus Redundant Power Supplies

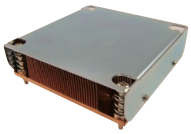


Part Number	RPS8-500ATX-GB	RPS8-750ATX-XE	RPS8-500U2-XE
Form Factor	Mini Redundant	Mini Redundant	2U Redundant
Wattage	500W 1+1	750W 1+1	500W 1+1
80 Plus Grade	Gold	Gold	Bronze
PMBus	Ver. 1.2	Ver. 1.2	-
Input Range	90 ~ 264 V_{AC}	90 ~ 264 V_{AC}	90 ~ 264 V_{AC}
Output Range	+3.3V @ 20 A +5 V @ 20 A +12 V @ 40 A -5 V @ 0.3 A -12 V@ 0.5 A +5 Vsb @3 A	+3.3V @ 24 A +5 V @ 30 A +12 V @ 60.9 A -12 V@ 0.5 A +5 Vsb @ 4 A	+3.3V @ 20 A +5 V @ 25 A +12 V @ 40.2 A -12 V@ 0.5 A +5 Vsb @3.52 A
MTBF(hrs)	100,000 @ 25° C	100,000 @ 25° C	100,000 @ 25° C
Dimensions (W x H x D)	150 x 84 x 190 mm (5.9" x 3.3" x 7.48")	150 x 84 x 200 mm (5.9" x 3.3" x 7.87")	85 x 86.6 x 217 mm (3.34" x 3.4" x 8.54")
Safety	CE , FCC, UL , CB, TUV, CCC, KC	CE , FCC, UL , CB, TUV, CCC, KC	CE , FCC, UL , CB, TUV, CCC, KC
Compatible Chassis	IPC-7130, IPC-7130L, IPC-7220, IPC-610, IPC-611,ACP-4000, ACP-4010, ACP-4320, ACP-4340, ACP-4360, IPC-622, HPC-7442, IPC-631	ACP-4000, ACP-4010, IPC-622, HPC-7442	HPC-7242, HPC-7282, HPC-7320, HPC-8316, ACP-2020
Single Module Part Number	96PSRM-A500WMING	96PSRM-A750W1U	96PSRM-A500WFX

Industrial Computer Peripherals Selection Guide

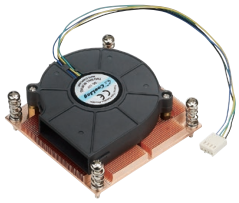
CPU Coolers

Intel® LGA1150/1151/1155/1156





Model Name	1960049408N001	1960047831N001	1960077101N001	1960052651N021	1960047669N001
Thermal Dispatch Performance	Intel LGA1156/1155/1150/1151 84W	Intel LGA1156/1155/1150/1151 95W	Intel LGA1156/1155/1150/1151 95W	Intel LGA 1156/1155/1150/1151 80W	Intel LGA1156/1155/1150/1151 95W
Fan	-	7 cm/35.5CFM 5400 ± 10% RPM	7 cm/35.5CFM 5400 ± 10% RPM	6 cm/28.77 CFM 5800 ± 10% RPM	8 cm/57.5 CFM 4500 ± 10% RPM
Heatsink Material	Copper	Copper	Aluminum & Copper heart	Aluminum	Aluminum & Copper heart
Heatsink Dimensions	85 x 85 x 26 mm (3.35" x 3.35" x 1.02")	83 x 83 x 39.26 mm (3.27" x 3.27" x 1.54")	83 x 83 x 39.26 mm (3.27" x 3.27" x 1.54")	90x 90x 68 mm (3.54" x 3.54" x 2.68")	90 x 90 x 35 mm (3.54" x 3.54"x 1.38")
Dimensions	-	83 x 83 x 55.73 mm (3.27" x 3.27" x 2.17")	83 x 83 x 55.73 mm (3.27" x 3.27" x 2.17")	90x 90x 68 mm (3.54" x 3.54" x 2.68")	120 x 120 x 77 mm (4.72" x 4.72" x 3.03")
Weight	611 g	582 g	245g	417g	500 g
Minimum Chassis Height	1U	2U	2U	2U/4U	4U
Recommended Chassis	ACP-1010/1320 HPC-7140/7180	Backplane version of chassis	Backplane version of chassis	Motherboard/ backplane version of chassis	Motherboard version of chassis
Supported Boards	AIMB-580/701/780/781/782/784; PCE-5125/5126/5127/7127/5026 ASMB-584/585/781/782/784/785	AIMB-580/581/582; PCE-5125/5126/5127/5026/7127/5128/7128	AIMB-580/581/582; PCE-5125/5126/5127/5026/7127/5128/7128	AIMB-705/785 PCE-5029/5129/7129/3029/4129 ASMB-584/585/781/782/784/785	AIMB-580/581/582/701/780/781/782/784

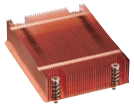



Model Name	1960053065N001	1960053207N001
Thermal Dispatch Performance	Intel LGA1155/1150/1151 55W Up to Core i3	Intel LGA1155/1150/1151 65W Up to Core i7
Fan	77 x 75 x 15.4 mm/11.83 CFM 5500 ± 10% RPM	9 cm/45.09 CFM 4400 ± 10% RPM
Heatsink Material	Copper	Aluminum & Copper
Heatsink Dimensions	84 x 84 x 13 mm (3.32" x 3.32" x 0.51")	92.9 x 92.2 x 46 mm (3.67" x 3.67" x 1.82")
Dimensions	84 x 84 x 28 mm (3.32" x 3.32" x 1.11")	92.9 x 92.2 x 46 mm (3.67" x 3.67" x 1.82")
Weight	382g	250g
Minimum Chassis Height	1U	1.5U
Recommended Chassis	IPC-3026, IPC-3012	IPC-3026, IPC-3012
Supported Boards	PCE-3026/3028/3029/4128/4129 AIMC-3200/3201/3420/3421/3202/3422	PCE-3026/3028/3029/4128/4129 AIMC-3200/3420/3201/3421/3202/3422

Intel® Xeon® LGA2011

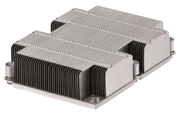






Part number	1960055362N001	1960065684N001	1960063011N001	1960063011N011	1960065593N001	1960065591N001	1960057226N001
Thermal Dispatch Performance	Up to 145W	Up to 160W	Up to 135W	Up to 120W	Up to 135W	Up to 135W	Up to 95W
Fan	6cm / 38.8CFM 6800 ± 10% RPM	9cm/108.08CFM 5000 ± 10% RPM	6cm/50.40CFM 9000± 10% RPM	6cm/50.40CFM 9000+/- 10% RPM(Puller Fan)	-	-	-
Heatsink Material	Aluminum Fins & Cu Block with 3 Heat Pipes	Aluminum Fins & Copper base with 3 Heat Pipes	Aluminum fins soldered Copper base with Heatpipe	Aluminum fins soldered Copper base with Heatpipe	Copper with vapor chamber	Copper with vapor chamber	Aluminum fins soldered Copper base with Heatpipe
Heatsink Dimensions (L x W x H)	90.0 x 90.0 x 63.9 mm (3.54" x 3.54" x 2.51")	88.2 x 88.2 x 112.15 mm (3.47" x 3.47" x 4.41")	107 x 70 x 64.0 mm (4.21" x 2.75" x 2.51")	107 x 70 x 64.0 mm (4.21" x 2.75" x 2.51")	106 x 82 x 27 mm (4.17" x 3.22" x 1.06")	106 x 82 x 27 mm (4.17" x 3.22" x 1.06")	90 x 90 x 25.5 mm (3.54" x 3.54" x 1")
Dimensions	90.0 x 90.0 x 65.6 mm (3.54" x 3.54" x 2.58")	88.2 x 88.2 x 112.15 mm (3.47" x 3.47" x 4.41")	94.0 x 70.0 x 64.0 mm (3.7" x 2.75" x 2.51")	94.0 x 70.0 x 64.0 mm (3.7" x 2.75" x 2.51")	106 x 82 x 27 mm (4.17" x 3.22" x 1.06")	106 x 82 x 27 mm (4.17" x 3.22" x 1.06")	90 x 90 x 25.5 mm (3.54" x 3.54" x 1")
Weight	413g	583g	319g	319g	405g	385g	197g
Minimum Chassis Height	2U	4U	2U	2U	1U	1U	1U
Supported Boards	ASMB-823/913/ 920/923	ASMB-823/913/ 920/923	ASMB-822/922/ 813	PCE-9228	ASMB-822/813 & 922 (For CPU1)	ASMB-922 (For CPU0)	ASMB-823/913/ 920/923
Remark	Square Type	Square Type	Narrow Type	Narrow Type	Narrow Type	Narrow Type	Square Type

Intel® Xeon® LGA3647

Part number	1960081603N001	1960081155N001
Thermal Dispatch Performance	Up to 205W	Up to 165W
Fan	6 cm/50.4 CFM 9000 ± 10% RPM	-
Heatsink Material	Aluminum Stack Fin & CU Block with heatpipe	Aluminum Stack Fin & CU Block with Heatpipe
Heatsink Dimensions (L x W x H)	108 x 78 x 64 mm (4.25" x 3.07" x 2.51")	107.75 x 78 x 25.5 mm (4.24" x 3.07" x 1")
Dimensions	108 x 78 x 64 mm (4.25" x 3.07" x 2.51")	107.75 x 78 x 25.5 mm (4.24" x 3.07" x 1")
Weight	464g	257.6g
Minimum Chassis Height	2U	1U
Supported Boards	ASMB-815/825/925/975	ASMB-815/825/925/975
Remark	Narrow Type	Narrow Type

Industrial Computer Peripherals Selection Guide

☞ Accessories

Slide Rails

For 1U rackmount chassis

- 26" P/N: 9680009153
- Maximum acceptable load: 25kg
- 1 pair included

For 2U and higher rackmount chassis

- 26" P/N: 9680006905
- Maximum acceptable load: 45kg
- 1 pair included

Industrial Disk Trays/Bays

IPC-DT-5121 / IPC-DT-5121B

Shockproof industrial hard disk drive tray with cooling fan and optional front USB and PS/2 interfaces

- Accepted Device: 1 x 3.5" HDD (only for 9.5mm thickness)
- Cooling Fan: 1 x 4 cm
- Color (Codes): Gray (414U), Black (4C2X)
- Dimensions (W x H x D): 148.5 x 42.6 x 171 mm³ (5.84" x 1.67" x 6.73")

IPC-DT-3120E

Mobile rack for converting a 3.5" drive bay to dual 2.5" SATA HDD/SSD trays

- Accepted Device: 2 x 2.5" SATA HDD/SSD (only for HDD/SSD thickness less than 9.6 mm)
- Dimensions (W x H x D): 101.6 x 25.4 x 139 mm³ (4" x 1" x 5.47")

9892200013E

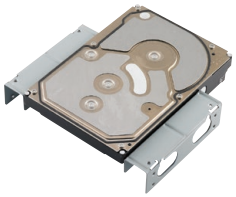
Module to convert a 5.25" drive bay to a slim ODD and a 3.5" drive bay

- Accepted Device: 3.5" device x 1, slim ODD x 1

IPC-DT-5230E

Mobile rack for converting dual 5.25" drive bays to three 3.5" SATA HDD trays

- Accepted Device: 3.5" SATA HDD x 3 or 2.5" SATA HDD/SSD x3
- Cooling Fan: 1 x 8 cm
- Dimensions (W x H x D): 146.5 x 86 x 225 mm³ (5.76" x 3.38" x 8.85")



989K008733

A frame to securely fix a 3.5" HDD in a 5.25" drive bay

- Accepted Device: 3.5" HDD x 1

989K008734

A frame to securely fix two 2.5" HDDs/SSDs in a 3.5" drive bay

- Accepted Device: 2.5" SATA HDD/SSD x 2 (only for HDD thickness less than 9.6 mm)

96RACK-5SS-CAGE-CR

Mobile rack for converting one 5.25" drive bay to four 2.5" SAS/SATA HDD/SSD trays

- Accepted Device: 2.5" SAS/SATA HDD/SSD x 4
- Dimension (W x H x D): 146 x 41 x 170 mm³ (5.74" x 1.61" x 6.69")

96RACK-5-SS-CR-B2

Mobile rack for converting one 5.25" drive bay to one slim ODD and two 2.5" SAS/SATA HSS/SSD trays

- Accepted Device : slim ODD x 1 , 2.5" SAS/SATA HDD/SSD x 2
- Dimension (W x H x D): 146 x 41.3 x 170 mm³ (5.74" x 1.62" x 6.69")

Add-on Card Hold Down Kits

98RKBTOS09E

Add-on card hold down kit (short)

- Bracket Q'ty of each kit : 5 pcs
- For PCI add-on card with height 72.3mm ~ 87.3mm and PCIe add-on card with height 81.7mm ~ 91.8mm

98RKBTOS10E

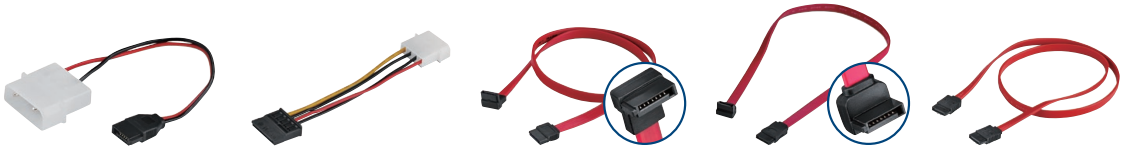
Add-on card hold down kit (long)

- Bracket Q'ty of each kit : 5 pcs
- For PCI add-on card with height 54.8mm ~ 75.7mm and PCIe add-on card with height 59.3mm ~ 80.2mm

USB Cables

Part Number	1700008461	1700003195	1700002204	1700014398	1700020277-01
Description	USB 2.0 cable with 4 ports	USB 2.0 cable with 2 ports	USB 2.0 cable with 2 ports	USB 2.0 cable with 4 ports	USB 3.0 cable with 2 ports
Cable Length	30.5 cm (12.01")	17.5 cm (6.89")	27 cm (11.92")	30.5 cm (12.01")	30 cm (11.81")
Remark	For ATX/Micro-ATX MB, full-sized SBC			For half-sized SBC	For ATX/Micro-ATX MB, full/half-sized SBC

SATA Cables



Part Number	96CB-SATAPOWER-6P2	1700022749-11	1700019381	1700007351	1700003194
Description	SATA power cable for slim ODD	SATA power cable for HDD/SSD	SATA data cable (right angle)	SATA data cable (right angle)	SATA data cable
Cable Length	10 cm (3.94")	10 cm (3.94")	55 cm (21.65")	40 cm (15.75")	60 cm (23.62")
Remark	Big 4 P to SATA power cable for Slim ODD	Big 4 P to SATA power cable for HDD/SSD	SATA data cable with 1 right angle and 1 vertical connectors	SATA data cable with 1 right angle and 1 vertical connectors	SATA data cable with vertical connectors with locks

COM and Printer Ports Cables

Part Number	1701092300	1701090401	1700020294-01	1700008762
Description	COM cable with 2 ports	COM cable with 1 port	Printer (Parallel) port cable	COM cable with 2 ports
Cable Length	28.5 cm (11.22")	40 cm (15.75")	42.0 cm (16.54")	22.5 cm (8.86")
Remark	For ATX/Micro-ATX MB, full-sized SBC		For ATX/Micro-ATX MB, full-sized SBC	For half-sized SBC

Industrial Computer Peripherals Selection Guide

☞ Accessories

Video Cables



Part Number	PCE-DP10-00A1E	1700021831-01	1700008822-11
Description	Display port cable	DP to DVI port cable	DVI to DVI port cable
Cable Length	25 cm (9.84")	30 cm (11.81")	30 cm (11.81")
Remark	Video cable for converting on board DP connector to external DP port supporting DP 1.1a/1.2 signaling	Video cable for converting on board DP connector to external DVI-D port	Video cable for converting on board DVI connector to external DVI-D port

Other Cables




Part Number	1700006915	1700006916	1700029268-01	1700024754-01
Description	Cable for ACP-4000MB front LED board	Cable for IPC-610MB-H front LED board	Power cable for GPU card (Primary) (Two 4-pin 12V connectors to one 6+2 pins PCIe power connector)	Power cable for GPU card (Secondary) (Two B4P Molex connectors to one 6+2 pins PCIe power connector)
Cable Length	60 cm (23.62")	60 cm (23.62")	10 cm (3.93")	10 cm (3.93")
Remark	For those Advantech motherboards with VOLT1 connector too far away from the chassis LED board		If GPU card has 2 power connectors, please use 1700029268-01 x 1 + 1700024754-01 x 1; if GPU card has 1 power connector, please use 1700029268-01 instead of 1700024754-01 Only 500W or higher wattage PSUs support 1700029268-01 and 1700024754-01 for high end GPU cards All product	

4 Machine Vision Solutions

Machine Vision Introduction

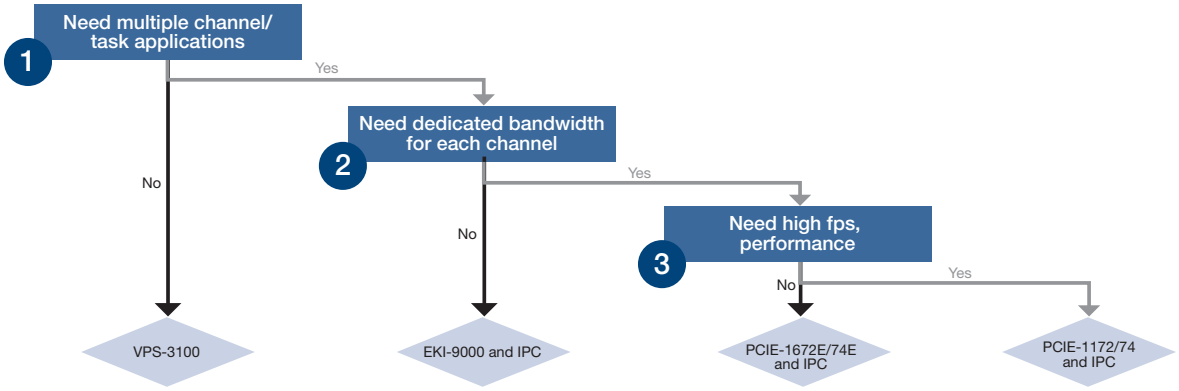
Introduction

Machine vision is used in all kinds of manufacturing, from food beverage, pharmaceuticals, automotive, semiconductor, to general manufacturing. Human inspection is too slow and unreliable for today's demanding manufacturing processes, so replacing human inspection with machine vision can go a long way to automating factory operations. Major applications are quality assurance, production automation, and identification.

The scope of the factory will change dramatically, not only in its the ability to produce, but the ability to produce with the most flexibility and efficiency. Machine vision plays an important role in achieving 100% quality control in manufacturing, reducing costs, increase flexibility, and ensuring high levels of customer satisfaction.

A move from analog to digital is necessary, and GigE Vision has become the most used interface in this market. Advantech provides high performance GigE Vision solutions, an open PC-based architecture that includes industrial cameras, computing platforms, and frame grabbers for the traceability, alignment, identification and inspection to fulfill all the requirements for versatile machine vision applications.

Selection Guide



Application Stories

Backend semiconductor packaging inspection machines

The semiconductor industry has some of the most demanding applications, requiring a combination of extreme accuracy and precision combined with high throughput. Fast progress towards greater densities and finer dimensions are pushing the limits of optical vision systems for product packaging machines. Advantech offers an intelligent GigE Vision frame grabber, DSP-based multi-axis motion control card, and compact modularized system for direct integration in space limited machines to accomplish high-precision, high productivity IC packaging inspection. The solution uses Advantech's PCIE-1174, a 4-port PCI Express Intelligent GigE Vision Frame Grabber industrial grade computer. PCIE-1174 includes a dedicated FPGA (Field Programmable Gate Array) chip to reconstruct images before transmitting them in real time to the host PC via DMA (Direct Memory Access). This frees up the host PC's processor and ensures there are no frame or packet losses during image acquisition.

Improving fabric quality in textile industry

Textile manufacturing is a very complex process. Weaving is the most basic process which involves interlacing a set of vertical threads (called the warp) with a set of horizontal threads (called the weft). This new optical web inspection system could detect warp and weft thread breaks in than less one second. Advantech provided UNO-3283G, an Intel i7 Fanless Automation Computer with 2 x GbE, 2 x mPCIe, HDMI, and DVI-I. We also provided PCIE-1172, a two channel intelligent GigE Vision frame grabber which included a dedicated FPGA (Field Programmable Gate Array) to reconstruct images before transmitting them in real time to the host PC via DMA (Direct Memory Access). To further aid installation and maintenance, the series included PoE (Power over Ethernet) and the Ad Hoc protocol which, like DHCP, doesn't require a specific IP address and enables System Integrators (SI) to simply plug their cameras in and start recording.

Implementing product traceability in food & beverage

As the market demand for food safety increases, traceability is getting more attention, as well as product packaging. One of the world's leading providers of beverage containers wanted to identify the bar codes, characters, and numbers on the ink-jet printing labels at a 7 unit per second run rate. Advantech provided multiple cameras linked to a PC-based automated optical identification system that could identify the bar code, data code, and characters on the beverage container. The system consisted of: AIIS-1240, a 4-ch PoE compact vision system with Intel® Core™ i7 CPU; Inspector Express, a graphical user interface machine vision application software specifically designed to simplify the design and deployment of automated inspection on the factory floor; and QCAM-GM0640-120CE, 0.3 Megapixel industrial camera with the PoE (Power over Ethernet) to simplify installation and maintenance.

Vision system and robotics ensure finished product quality in automotive industry

In the automotive industry, quality control is an extremely important issue. Most of time, there are engineers to verify vehicle interiors and exteriors, including dashboards, doors, seats, engines, and paint finishes. In one of the largest global automotive groups, there are over 100 items in the finished product check list and this client was looking for a quality checking system that could perform automatic inspection. To automate quality checks on different parts in different vehicles, a flexible and extensible system had to be created.

System integrators designed an AOI (Automated Optics Inspection) system with multiple-cameras and robots for high flexibility and efficiency. For this project, Advantech offered PCIE-1674E, a four channel GigE Vision frame grabber and QCAM-GM2500-014CE, a 5.0 Megapixel industrial camera including PoE (Power over Ethernet) function to simply installation and maintenance. Besides these, there were other products to help provide the client with their desired functionality: UNO-3283G, which is an Intel i7 Fanless Automation Computer with 2 x GbE, 2 x mPCIe, HDMI, DVI-I; and PC- 1756, a 64-ch Isolated Digital I/O PCI Card.

Vision at the Edge

One-Stop Solution Simplifies Your Vision System Deployment

Even though machine vision is superior in terms of accuracy, reliability, and efficiency when compared to a manual approach, some manufacturers still hesitate to adopt these kind of applications. There are several reasons for this: long system development times; compatibility issues integrating hardware components; and issues with maintenance and inspection that cannot be customized to specific needs. So companies are reluctant to make a move due to these concerns—causing them to miss out on opportunities.

Advantech's solution uses an intelligent inspection system which integrates an industrial camera, processing unit, and application software. This total solution integrates the entire process—from image sensing, image acquisition to application software—to simplify the project development process and allow for the rapid completion of machine vision inspection, without any coding, via an easy-to-use program. This significantly reduces system implementation time and subsequent maintenance costs. In doing so, Advantech helps users effectively realize the automated inspection of production lines.

Advantech Machine Vision Edge Solution Architecture

Applications

Traceability	Efficiency	Flexibility	Accuracy	Quality
Trace & Trace	Guidance	Gauge	Inspection	Identification

Application Software

VisionNavi

Algorithm	Script	Image Preprocessing
• Alignment • Code reading • OCR & OCV • Recognition • Measuring • Comparison • Inspection	• Conditional operator • Arithmetic • Logical operator • Conditional operator • Comparison operation • String operation	• Filtering • Color extraction • Color conversion • Mirroring, rotation • Scaling • Calibration • Shape correction

G.U.I	Communication	Database & Storage Services	Image Aca.
• Graphical, flow chat • Development & run-time	• Ethernet • PLC	• CSV • Image archive	• GigE vision • USB vision

Edge Computing

HMI	Industrial PC			Automation Controller
				
TPC-B500 / PPC-6151C	MIC-770	AIIS-3410	UNO-2484G	AMAX-5580

Sensing

			
QCAM, 2.0MP, Mono	QCAM, 5.0MP, Mono	QCAM, 2.0MP, Color	QCAM, 5.0MP, Color

☞ VisionNavi

Advantech VisionNavi is a programmable machine vision software that facilitates development of menu-driven user interface and helps deploy multiple tasks. It supports a wide range of Advantech industrial PCs and cameras, provides easy system installation and project development while reducing maintenance costs. It is suitable for automated applications aimed at defect inspection and quality assurance which need different conditional branches, steps or loops to complete each task. Any programmer can easily configure each process and determine the next action depending on the results, while the results can be inherited to the next step and become the reference or parameters for that process.

Machine Vision Solutions Selection Guide

Intelligent Inspection Systems



Model Name		AIIS-1200P	AIIS-1200U	AIIS-5410P
Form Factor		Compact	Compact	Compact
Processor System	Chipset	-	-	QM170
	CPU	Intel Braswell N3160/N3710 SoC	Intel Braswell N3160/N3710 SoC	Intel Core i7-6822EQ/i5-6442EQ
	Core	4	4	4
	Cache	2 MB	2 MB	8MB
	Memory	DDR3L 1600 Onboard 8 GB	DDR3L 1600 Onboard 8 GB	Dual Channel DDR4 1866/2133 MHz SODIMM (non-ECC) Max. 32 GB
Graphics	Graphics controller	Integrated Intel HD Graphics	Integrated Intel HD Graphics	Integrated Intel HD Graphics
	VRAM	Shared system memory is subject to OS	Shared system memory is subject to OS	Shared system memory is subject to OS
Expansion	PCIe x16	-	-	-
	PCIe x8	-	-	1
	PCIe x4	-	-	-
	PCIe x1	-	-	-
	PCI*	-	-	1 x riser card
	mini PCIe	1	1	1
Storage	HDD Bay	1 x internal 2.5" HDD bay	1 x internal 2.5" HDD bay	2 x internal 2.5" HDD bay
	mSATA	1	1	1
	CFast	-	-	1
	RAID	-	-	RAID 0/1
Ethernet	Ethernat interface	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	1 x Intel I210	1 x Intel I210	2 x Intel I210
Machine Vision Connector	Interface	2-ch PoE	2-ch USB 3.0	4-ch PoE
	Controller	Intel I210	Renesas uPD720202	Intel I210
Front I/O	Display	VGA	VGA	VGA + DVI-D
	LAN	1	1	2
	USB	2 x USB 3.0	2 x USB 3.0	8 x USB 3.0
	COM	1 x RS-232/422/485 1 x RS-232	1 x RS-232/422/485 1 x RS-232	-
	PS/2	-	-	-
	Audio	-	-	Line out/mic in
Rear I/O	Display	1 x DP	1 x DP	-
	LAN	-	-	-
	USB	2 x USB 3.0	2 x USB 3.0	-
	COM	-	-	2 x RS-232/422/485
	PS/2	-	-	-
	Audio	Line out/mic in	Line out/mic in	-
	Digital I/O	8 channels (isolated)	8 channels (isolated)	8 channels
Watchdog Timer Output	Output	System reset	System reset	System reset
	Interval	Programmable 1 ~ 255 s/min	Programmable 1 ~ 255 s/min	Programmable 1 ~ 255 s/min
Power Supply	Output Wattage	-	-	-
	Input Range	9 ~ 36 V_{DC}	9 ~ 36 V_{DC}	9 ~ 36 V_{DC}
	Remote Power Switch	1	1	1
Cooling	System Fan	-	-	-
	Air Filter	-	-	-
Physical Characteristics	Dimensions (W x H x D)	137 x 58 x 118 mm (5.39" x 2.28" x 4.65")	137 x 58 x 118 mm (5.39" x 2.28" x 4.65")	235 x 88 x 188 mm (9.25" x 3.46" x 7.4")
	Weight	1.1 kg	1.1 kg	2.9 kg

✓ : supported, - : not supported, △ : optional




Model Name		AIIS-3400P	AIIS-3400U	AIIS-3410P	AIIS-3410U
Form Factor		Compact	Compact	Compact	Compact
Processor System	Chipset	H110	H110	H110	H110
	CPU	Intel 6th/7th generation Core i CPU (LGA1151)	Intel 6th/7th generation Core i CPU (LGA1151)	Intel 6th/7th generation Core i CPU (LGA1151)	Intel 6th/7th generation Core i CPU (LGA1151)
	Core	Max.4	Max.4	Max.4	Max.4
	Cache	Max. 8 MB	Max. 8 MB	Max. 8 MB	Max. 8 MB
	Memory	Dual channel DDR4 1866/2133 MHz (non-ECC) SODIMM Max. 32 GB	Dual channel DDR4 1866/2133 MHz (non-ECC) SODIMM Max. 32 GB	Dual channel DDR4 1866/2133 MHz (non-ECC) SODIMM Max. 32 GB	Dual channel DDR4 1866/2133 MHz (non-ECC) SODIMM Max. 32 GB
Graphics	Graphics controller	Integrated Intel HD Graphics	Integrated Intel HD Graphics	Integrated Intel HD Graphics	Integrated Intel HD Graphics
	VRAM	Shared system memory is subject to OS	Shared system memory is subject to OS	Shared system memory is subject to OS	Shared system memory is subject to OS
Expansion	PCIe x16	-	-	-	-
	PCIe x8	-	-	1	1
	PCIe x4	-	-	-	-
	PCIe x1	-	-	-	-
	PCI*	-	-	1 x riser card (optional)	1 x riser card (optional)
	mini PCIe	-	-	1	1
Storage	HDD Bay	1 x internal 2.5" HDD bay	1 x internal 2.5" HDD bay	1 x internal 2.5" HDD bay	1 x internal 2.5" HDD bay
	mSATA	-	-	-	-
	CFast	1	1	1	1
	RAID	-	-	-	-
Ethernet	Ethernat interface	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	LAN1: Intel i219LM LAN2: Intel i210	LAN1: Intel i219LM LAN2: Intel i210	LAN1: Intel i219LM LAN2: Intel i210	LAN1: Intel i219LM LAN2: Intel i210
Machine Vision Connector	Interface	4-ch PoE	4-ch USB	4-ch PoE	4-ch USB
	Controller	Intel I210	Renesas µPD720202	Intel I210	Renesas µPD720202
Front I/O	Display	VGA + DVI-D	VGA + DVI-D	VGA + DVI-D	VGA + DVI-D
	LAN	2	2	2	2
	USB	4 x USB 3.0	4 x USB 3.0	4 x USB 3.0	4 x USB 3.0
	COM	2 x RS-232/422/485	2 x RS-232/422/485	2 x RS-232/422/485	2 x RS-232/422/485
	PS/2	-	-	-	-
	Audio	Line in/line out/mic in	Line in/line out/mic in	Line in/line out/mic in	Line in/line out/mic in
	Digital I/O	8 Channels (isolated)	8 Channels (isolated)	8 Channels (isolated)	8 Channels (isolated)
Rear I/O	Remote switch	Yes	Yes	Yes	Yes
Watchdog Timer Output	Output	System reset	System reset	System reset	System reset
	Interval	Programmable 1 ~ 255 s/min	Programmable 1 ~ 255 s/min	Programmable 1 ~ 255 s/min	Programmable 1 ~ 255 s/min
Power Supply	Output Wattage	-	-	-	-
	Input Range	19 ~ 24 V_{DC}	19 ~ 24 V_{DC}	19 ~ 24 V_{DC}	19 ~ 24 V_{DC}
	Remote Power Switch	1	1	1	1
Cooling	System Fan	1 (6cm / 27.7 CFM)	1 (6cm / 27.7 CFM)	1 (8cm / 57 CFM)	1 (8cm / 57 CFM)
	Air Filter	-	-	-	-
Physical Characteristics	Dimensions (W x H x D)	230 x 70 x 175 mm (9.06" x 2.76" x 6.89")	230 x 70 x 175 mm (9.06" x 2.76" x 6.89")	240 x 97 x 190 mm (9.45" x 3.82" x 7.48")	240 x 97 x 190 mm (9.45" x 3.82" x 7.48")
	Weight	1.8 kg	1.8 kg	2.4 kg	2.4 kg

✓ : supported, - : not supported, △ : optional

Machine Vision Solutions Selection Guide

Frame Grabber Cards




Model Name		PCIE-1174	PCIE-1672E	PCIE-1674E	PCIE-1182
Power Requirements	Input Voltage	12 V_{DC} direct from PCIe slot, total Max. 18W or AT/ATX system power input			12 V_{DC} direct from PCIe slot, with optional 12 V_{DC} AT/ATX
	Overload Current Protection	Present			
	Connection	AT/ATX Power Jack			
	Output PoE Power	48 VDC PoE Power output, total Max. 18W (total Max. 60W with AT/ATX system power input)			2 port
Environment	Operating Temperature	0 ~ 50°C (32 ~ 122°F)			0 ~ 60°C (32 ~ 140°F)
	Storage Temperature	-20 ~ 80°C (-4 ~ 176°F)			
	Operating Humidity	V_{DC}			
Mechanics	Dimensions (W x D)	185 x 110 mm (7.3" x 3.9")			167 x 68.9 mm, PCIe low profile
GigE Vision	Compatibility	IEEE802.3af			FCC CE Class A
	Speed	1000 Mbps	10/100/1000 Mbps		10,000/5,000/1,000 Mbps
	No. of Ports	4	2	4	2, 10GBASE-T MAC and PHY
	Port Connector	8-pin RJ45			8-pin RJ45 Copper
	Bus Interface	PCI Express® x 4			PCI Express x4 compliant
	Jumbo Frame	9KB			
	GigE Vision Offload Engine	✓	–	–	–
Safety	ESD	8KV (air), 4KV (contact)			8KV (air), 4KV(contact)
	EFT	2 KV			
	Surge Protection	1 KV			
	Isolation Protection	2.5 KV			
Digital Input/ Output	No. of Channels	4 input and output	–	–	–
	Input/Output range	0-30V opto-isolated	–	–	–
	Max. frequency	1KHz	–	–	–
	Digital input interrupt	Falling and rising edge, normal and invert	–	–	–

☞ Smart Cameras

Model Number	ICAM-7000
Sensor	▪ 1.2MP@54fps , Global shutter, C-mount, Monochrone/Color ▪ 2.0MP@60fps or above, Global shutter, C-mount, Monochrone/Color ▪ 5.0MP@14fps, Global Rolling shutter, C-mount, Monochrone/Color
Processor	INTEL E3930, Cyclone V5CGTD5
RAM/Storage	4GB LPDDR4/3264GeMMC
Display	DP (USB Type C connector)
LAN, Serial Port	1 x 1000BASE-T (M12 connector)
USB	USB 2.0 (USB Type C connector)
Digital I/O	2 x isolated inputs, 2 x isolated outputs (M12 connector)
Lighting control	PWMx1 (M12 connector)
Power input	12-24V_{DC} (M12 connector)
Dimensions (W x H x D)	95 x 63 x 40.5 mm
Environment & certification	0-50 °C, 5Grms, CE/FCC class A /KCC, IP67
Software	OS: Windows 10 IoT

☞ Industrial Cameras (GigE)




Model Number		QCAM-GM0640-121CE	QCAM-GM0720-290CE	QCAM-GM1300-030CE	QCAM-GM1300-060DE
Resolution		659 x 494	720 x 540	1294 x 966	1280 x 1024
Frame rate		134	291	30	60
Pixel size (μm)		5.6 x 5.6	6.9 x 6.9	3.75 x 3.75	5.3 x 5.3
Mono/ color		Mono	Mono	Mono	Mono
Sensor	Company	SONY	SONY	SONY	e2v
	Model	ICX618 replacement	IMX287	ICX445	EV76C560
	Shutter	Global	Global	Global	Global
	Size	1/4"	1/2.9"	1/3"	1/1.8"
	Type	CMOS			
Input		1			
Output		1			
Power Requirements		PoE or 12 V_{DC}			
Power consumption		2.7 W	2.9 W	2.2 W	2 W
Lens mount		C			
Size(L x W x H)		42.0 x 29.0 x 29.0 mm			
Weight		90 g			
Operating temp.		0°~50°C			




Model Number		QCAM-GM1600-060DE	QCAM-GM2500-014DE	QCAM-GM3800-010CE	QCAM-GM5400-005CE
Resolution		1600 x 1200	2590 x 1942	3840 x 2748	5472 x 3648
Frame rate		60	14	10	5
Pixel size (μm)		4.5 x 4.5	2.2 x 2.2	1.67 x 1.67	2.4 x 2.4
Mono/ color		Mono	Mono	Mono	Mono
Sensor	Company	e2v	Onsemi	Onsemi	SONY
	Model	EV76C570	MT9P031	MT9J003	IMX183
	Shutter	Global	rolling	rolling	rolling
	Size	1/1.8"	1/2.5"	1/2.3"	1"
	Type	CMOS			
Input		1			
Output		1			
Power Requirements		PoE or 12 V_{DC}			
Power consumption		2.1 W	2.2 W	3.3 W	2.6 W
Lens mount		C			
Size(L x W x H)		42.0 x 29.0 x 29.0 mm			
Weight		90 g			
Operating temp.		0°~50°C			

Machine Vision Solutions Selection Guide

☞ Industrial Cameras (USB)




Model Number		QCAM-UC0640-750CE	QCAM-UM0640-750CE	QCAM-UM0720-520CE	QCAM-UC1300-200CE
Resolution		640 x 480	640 x 480	720 x 540	1280 x 1024
Frame rate		751	751	525	203
Pixel size (μm)		4.8	4.8	6.9	3.75
Mono/ color		Color	Mono	Mono	Color
Sensor	Company	Onsemi	Onsemi	SONY	Onsemi
	Model	PYTHON300	PYTHON300	IMX287	PYTHON1300
	Shutter	Global	Global	Global	Global
	Size	1/4"	1/4"	1/2.9"	1/2"
	Type	CMOS			
Input		1			
Output		1			
Power Requirements		Via USB3.0 interface			
Power consumption		2.8 W	2.8 W	3 W	3 W
Lens mount		C			
Size (L x W x H)		29.3 x 29.0 x 29.0 mm			
Weight		80 g			
Operating temp.		0°~50°C			

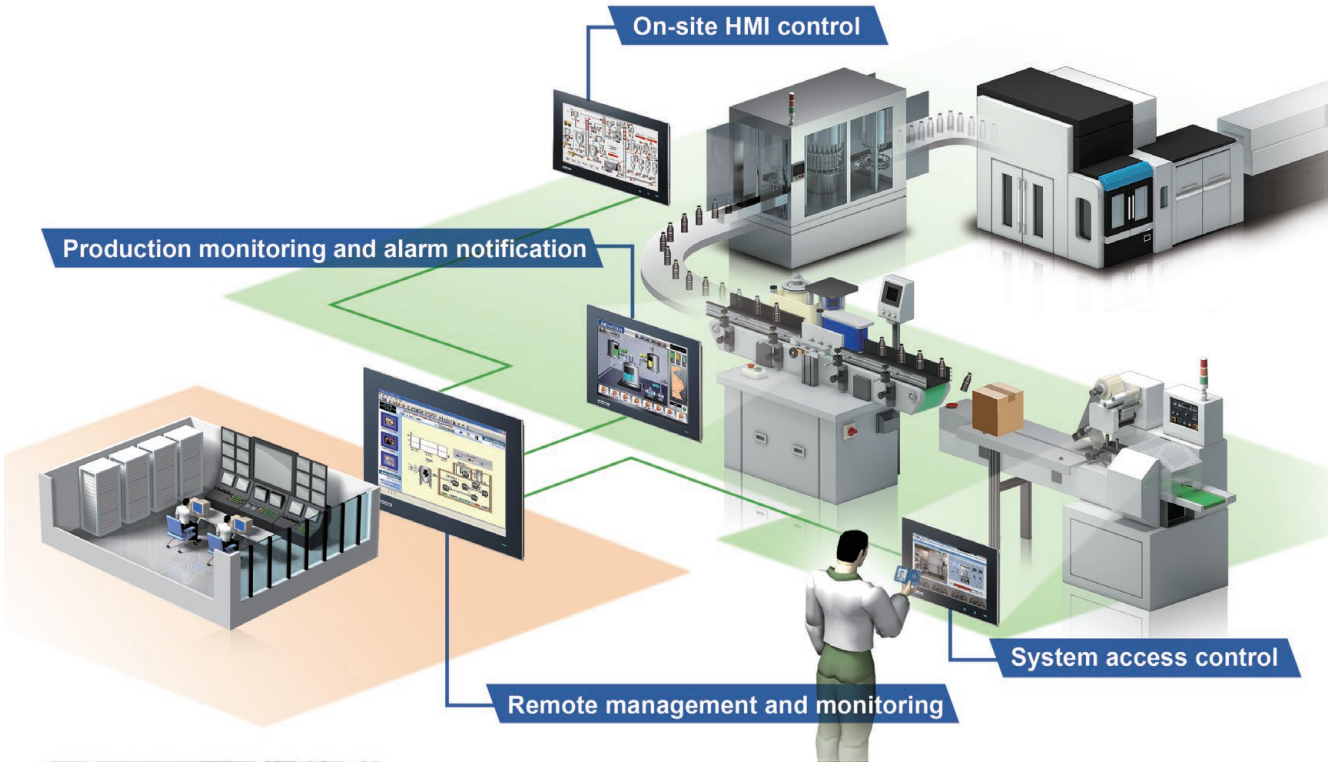



Model Number		QCAM-UM1440-220CE	QCAM-UM2440-035CE	QCAM-UM4000-029CE	QCAM-UM5400-017CE
Resolution		1440 x 1080	2488 x 2048	4024 x 3036	5472 x 3648
Frame rate		227	35	31	17
Pixel size (μm)		3.45	3.45	1.85	2.4
Mono/ color		Mono	Mono	Mono	Mono
Sensor	Company	SONY	SONY	SONY	SONY
	Model	IMX273	IMX 264	IMX226	IMX183
	Shutter	Global	Global	rolling	rolling
	Size	1/2.9"	2/3"	1/1.7"	1"
	Type	CMOS			
Input		1			
Output		1			
Power Requirements		Via USB3.0 interface			
Power consumption		3.3 W	2.5 W	3 W	2.9 W
Lens mount		C			
Size (L x W x H)		29.3 x 29.0 x 29.0 mm			
Weight		80 g			
Operating temp.		0°~50°C			

5 Intelligent HMI and Monitors

Introduction

Advantech offers a diverse range of general as well as domain focused HMI products of varying size (from 3.5" to 23.8") and screen ratio (4:3 and 16:9). Our HMI product category includes high performance control panels, low-power industrial thin clients, web browser terminals, domain focused HMI, and industrial monitors. In response to Industry 4.0, Advantech has developed a new generation of modular solutions for a diverse range of configurations to meet specific usage requirements, offering customers a quick time to market and high level of expandability. All Advantech HMI products are equipped with relevant software (HMINavi, WebAcess/SCADA or WISE-PaaS/DeviceOn) as well as Advantech's iDOOR technology, making them suitable for various applications.



Product Categories

Modular Series

In response to ongoing advances in Industry 4.0, Advantech has created its new series of modular panel PC solutions based on three performance-segmented modules — a control panel, industrial thin-client, and industrial monitor. The modular design of our solutions allows the computing box modules to be interchangeably combined with our display modules to provide comprehensive platform solutions for specific field applications. This modularization offers many advantages, including flexible configuration, rapid integration and deployment, reduced system downtime and maintenance costs, and support for future expansion.

Control Panels

Advantech's control panel series of PC-based open control platforms feature a high-performance, fanless design and can be integrated with a wide variety of machines in diverse environments to support complex machine control tasks and data visualization applications. The optimized design includes three Gigabit LANs that support multiple fieldbus communication protocols, an IP66-rated front panel that protects against dust and water ingress, and support for flexible iDOOR and PCIe expansion, making these platforms particularly ideal for industrial automation control operations.

Thin-Client Terminals

Advantech's thin client modules feature a compact, fanless, and low-power design that supports multiple aspect ratios (4:3 and 16:9) and allows the modules to be equipped with a range of display sizes (5.7" to 23.8"). These thin client modules are primarily deployed as manufacturing execution systems (MESs) or for work flow monitoring and production process visualization. Under the Industry 4.0 trend, thin clients are widely utilized in distributed control architectures because of their easy deployment and suitability for the centralized management of devices and information. This architecture allows the OS to be quickly dispatched from server to client following a hardware replacement while still ensuring data security.

Operator Panels

Advantech's WebOP series of operator panels feature a range of display sizes (7" to 12") and supports multiple communication interfaces (e.g., RS-232/422/485, Ethernet, and USB). Bundled with WebAccess/HMI software, Advantech's WebOP series supports over 450 PLC communication protocols, ensuring convenient integration with equipment made by a comprehensive range of manufacturers.

Domain Focused HMI

In addition to standard products, Advantech provides domain-focused systems with customizable features designed to satisfy specific requirements across various vertical markets. Verified with ATEX/ UL Class 1 Division 2, IEC 61131-2/61010, and EN1672/ FDA certification, Advantech's domain-focused rugged HMIs are sufficiently robust for operation in extreme environments typical of the locomotive, food and beverage, oil and gas, and machine tool manufacturing industries. Ensuring system flexibility and compatibility are also major focus points for Advantech when designing domain-focused HMI products.

Industrial Monitors

Independent controllers and industrial PCs embedded in machines require an interface for data processing and visualization, for which Advantech produces industrial monitors in a range of sizes (6", 12.1", 15", 17", 18.5", to 23.8"). Featuring an industrial-grade LED LCD with a backlight lifetime of 50,000 hours, high IP-rated bezel, and wide temperature support, our industrial monitors are equipped to withstand operation in harsh environments. Versatile mounting options (panel, wall, desktop, rack, and VESA arm) are also supported to ensure easy installation for various usage scenarios.

Modular Panel PCs

Panel Modules

P/N	FPM-D12T-BE	FPM-D15T-BE	FPM-D15W-FBE	FPM-D17T-BE	FPM-D18W-BE	FPM-D21W-BE	FPM-D24W-BE
Panel Size	12"	15"	15.6"	17"	18.5"	21.5"	23.8"
Resolution	1024 x 768	1024 x 768	1920 x 1080	1280 x 1024	1366 x 768	1920 x 1080	1920 x 1080
Touch	5-wire resistive touch	Projected capacitive touch	Projected capacitive touch	Projected capacitive touch	Projected capacitive touch	Projected capacitive touch	Projected capacitive touch
Wi-Fi Antenna	-	△	△	△	△	△	△
NFC Reader	-	△	△	△	△	△	△
IP Rating	IP66-rated front panel	IP66-rated front panel	IP66-rated front panel	IP66-rated front panel	IP66-rated front panel	IP66-rated front panel	IP66-rated front panel

△: Please contact your local Advantech sales for optional Wi-Fi Antenna and NFC reader

Computing Box Modules

P/N	TPC-B200-E12AE	TPC-B200-J12AE	TPC-B500-6C2AE	TPC-B500-633AE	TPC-B500-653AE	TPC-B500-673AE
CPU	Intel® Atom® E3940 Processor	Intel® Celeron® J3455 Processor	Intel® Celeron® 3955U	Intel® Core™ i3-6100U	Intel® Core™ i5-6300U	Intel® Core™ i7-6600U
Memory	4 GB DDR3L 1600 MHz SO-DIMM	4 GB DDR3L 1600 MHz SO-DIMM	4 GB DDR4 2133 MHz SO-DIMM	8 GB DDR4 2133 MHz SO-DIMM	8 GB DDR4 2133 MHz SO-DIMM	8 GB DDR4 2133 MHz SO-DIMM
I/O	2 x RS-232/422/485, 2 x USB 3.0, 2 x USB 2.0, 2 x GbE, 1 x Line Out, 1 x DP	2 x RS-232/422/485, 2 x USB 3.0, 2 x USB 2.0, 2 x GbE, 1 x Line Out, 1 x DP	1 x RS-232, 1 x RS-232/422/485, 2 x USB 3.0, 2 x USB 2.0, 3 x GbE, 1 x Line Out, 1 x DP	1 x RS-232, 1 x RS-232/422/485, 2 x USB 3.0, 2 x USB 2.0, 3 x GbE, 1 x Line Out, 1 x DP	1 x RS-232, 1 x RS-232/422/485, 2 x USB 3.0, 2 x USB 2.0, 3 x GbE, 1 x Line Out, 1 x DP	1 x RS-232, 1 x RS-232/422/485, 2 x USB 3.0, 2 x USB 2.0, 3 x GbE, 1 x Line Out, 1 x DP
Expansion	1 x Full-size mini PCIe	1 x Full-size mini PCIe	1 x Half-size PCIe, 2 x Full-size mini PCIe	1 x Half-size PCIe, 2 x Full-size mini PCIe	1 x Half-size PCIe, 2 x Full-size mini PCIe	1 x Half-size PCIe, 2 x Full-size mini PCIe
Power Input	24 V_{DC} ± 20%	24 V_{DC} ± 20%	24 V_{DC} ± 20%	24 V_{DC} ± 20%	24 V_{DC} ± 20%	24 V_{DC} ± 20%
Operating System	Microsoft® Windows 10 IoT Enterprise LTSB	Microsoft® Windows 10 IoT Enterprise LTSB	Microsoft® Windows WES7 (32/64-bit), Windows 7 (32/64-bit), Ubuntu 16.04, Windows 10 IoT Enterprise LTSB	Microsoft® Windows WES7 (32/64-bit), Windows 7 (32/64-bit), Ubuntu 16.04, Windows 10 IoT Enterprise LTSB	Microsoft® Windows WES7 (32/64-bit), Windows 7 (32/64-bit), Ubuntu 16.04, Windows 10 IoT Enterprise LTSB	Microsoft® Windows WES7 (32/64-bit), Windows 7 (32/64-bit), Ubuntu 16.04, Windows 10 IoT Enterprise LTSB
Mount Options	Panel, stand, and VESA mount (with optional mounting kit)	Panel, stand, and VESA mount (with optional mounting kit)	Panel, stand, and VESA mount (with optional mounting kit)	Panel, stand, and VESA mount (with optional mounting kit)	Panel, stand, and VESA mount (with optional mounting kit)	Panel, stand, and VESA mount (with optional mounting kit)

Monitor Box Module

P/N	FPM-B700-AE
Video Interface Available	HDMI, DP, DVI, VGA, iLink
Power Input	24 V_{DC} ± 20%
Mount Options	Panel, stand, and VESA mount
iLINK Technology	Supported

*FPM-M700 I/O module is essential for Monitor Box Module to have Video Interfaces and iLink technology.

High-Performance Control Panels

Model		☞ TPC-1881WP	☞ TPC-1581WP
CPU		4th Gen. Intel® Core™ i7/i3 Processor	4th Gen. Intel® Core™ i3 Processor
Memory		4 GB DDR3L 1600 MHz SO-DIMM SDRAM	4 GB DDR3L 1600 MHz SO-DIMM SDRAM
Display	Display Type	TFT LED LCD	TFT LED LCD
	Display Size	18.5"	15.6"
	Max. Resolution	1366 x 768	1366 x 768
	Max. Colors	16.7M	16.7M
	Luminance cd/m²	300 nits	300 nits
	VieWINg Angle (H/V°)	170/160	170/160
	Backlight MTBF	50,000 hr	50,000 hr
	Touchscreen	Projected capacitive touch	Projected capacitive touch
Network (LAN)		10/100/1000BASE-T x 2	10/100/1000BASE-T x 2
I/O Ports		RS-232/422/485 x 1 USB 3.0 x 2, HDMI 1.4 x 1 Audio line out x 1, USB 2.0 x 1 (optional) Audio MIC x 1 (optional)	RS-232/422/485 x 1 USB 3.0 x 2, HDMI 1.4 x 1 Audio line out x 1, USB 2.0 x 1 (optional) Audio MIC x 1 (optional)
HDD (Optional)		2.5" SATA HDD	2.5" SATA HDD
Intelligent Keys		Quick access through built-in front bezel function and home key button	Quick access through built-in front bezel function and home key button
CompactFlash Slots		CFast slot x 1	CFast slot x 1
Expansion Slots		Full-size mini PICe	Full-size mini PICe
Digital Input/Output		-	-
Ingress Protection		Front panel: IP66	Front panel: IP66
DC Power Input (Voltage)		24 VDC ± 20%	24 VDC ± 20%
Enclosure		Front bezel: Die cast aluminum alloy Back housing: PC/ABS resin	Front bezel: Die cast aluminum alloy Back housing: PC/ABS resin
Mounting		Panel mount	Panel mount
Weight		6 kg (13.22 lb)	7 kg (15.44 lb)
Operating Temperature		0 ~ 55°C (32 ~ 131°F)	0 ~ 55°C (32 ~ 131°F)
Dimensions		488.1 x 309.1 x 56.7 mm (19.2" x 12.2" x 2.2")	419.7 x 269 x 56.7 mm (16.52" x 10.59" x 2.23")
Certification		BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL
Operating System		Windows 7, WES7, WEC7, Linux, Windows 10 Enterprise LTSB	Windows 7, WES7, WEC7, Linux, Windows 10 Enterprise LTSB

High-Performance Control Panels



Model		TPC-1782H	TPC-1582H	TPC-1282T
CPU		4th Gen. Intel® Core™ i7/i3 Processor	4th Gen. Intel® Core™ i3 Processor	5th Gen. Intel® Core™ i3 Processor
Memory		4 GB DDR3L 1600 MHz SO-DIMM SDRAM	4 GB DDR3L 1600 MHz SO-DIMM SDRAM	4 GB DDR3L 1600 MHz SO-DIMM SDRAM
Display	Display Type	TFT LED LCD	TFT LED LCD	TFT LED LCD
	Display Size	17"	15"	12.1"
	Max. Resolution	1280 x 1024	1024 x 768	1024 x 768
	Max. Colors	16.7M	16.2M	16.2M
	Luminance cd/m²	350 nits	400 nits	600 nits
	VieWINg Angle (H/V°)	170/160	160/140	160/140
	Backlight MTBF	50,000 hr	50,000 hr	50,000 hr
	Touchscreen	Resistive	Resistive	Resistive
Network (LAN)		10/100/1000BASE-T x 2	10/100/1000BASE-T x 2	10/100/1000BASE-T x 2
I/O Ports		RS-232/422/485 x 1 USB 3.0 x 2, HDMI 1.4 x 1 Audio line out x 1, USB 2.0 x 1 (△) Audio MIC x 1 (△)	RS-232/422/485 x 1 USB 3.0 x 2, HDMI 1.4 x 1 Audio line out x 1, USB 2.0 x 1 (△) Audio MIC x 1 (△)	RS-232/422/485 x 1 USB 3.0 x 2, HDMI 1.4 x 1 Audio line out x 1, USB 2.0 x 1 (△) Audio MIC x 1 (△)
HDD (Optional)		2.5" SATA HDD	2.5" SATA HDD	2.5" SATA HDD
Intelligent Keys		-	-	-
CompactFlash Slots		CFast slot x 1	CFast slot x 1	CFast slot x 1
Expansion Slots		Full-size mini PICe/half-size PCIe	Full-size mini PICe/half-size PCIe	Full-size mini PICe/half-size PCIe
Digital Input/Output		-	-	-
Ingress Protection		Front panel: IP65	Front panel: IP65	Front panel: IP66
DC Power Input (Voltage)		24 V_{DC} ± 20%	24 V_{DC} ± 20%	24 V_{DC} ± 20%
Enclosure		Front bezel: Die cast aluminum alloy Back housing: PC/ABS resin	Front bezel: Die cast aluminum alloy Back housing: PC/ABS resin	Front bezel: Die cast aluminum alloy Back housing: PC/ABS resin
Mounting		Desktop, Wall or Panel Mount	Desktop, Wall or Panel Mount	Desktop, Wall or Panel Mount
Weight		6 kg (13.23 lb)	5.5 kg (12.13 lb)	3.2 kg (7.02 lb)
Operating Temperature		0 ~ 55°C (32 ~ 131°F)	0 ~ 55°C (32 ~ 131°F)	0 ~ 55°C (32 ~ 131°F)
Dimensions		414 x 347.5 x 84 mm (16.3" x 13.68" x 3.31")	383 x 307 x 78.5 mm (15.08" x 12.09" x 3.09")	311.8 x 238 x 77.2 mm (12.28" x 9.38" x 3.04")
Certification		BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL
Operating System		Windows 7, WES7, WEC7, Linux, Windows 10 Enterprise LTSB	Windows 7, WES7, WEC7, Linux, Windows 10 Enterprise LTSB	Windows 7, WES7, WEC7, Linux, Windows 10 Enterprise LTSB

Industrial Thin-Client Terminals

Model		☞ TPC-1751T (B)	☞ TPC-1551WP
CPU		Intel® Atom™ E3845 1.91 GHz Processor	Intel® Atom™ E3827 1.75 GHz Processor
Memory		4 GB (Optional 8 GB) DDR3L 1600 MHz SO-DIMM SDRAM	4 GB (Optional 8 GB) DDR3L 1600 MHz SO-DIMM SDRAM
Display	Display Type	SXGA TFT LED LCD	WXGA TFT LED LCD
	Display Size	17"	15.6"
	Max. Resolution	1280 x 1024	1366 x 768
	Max. Colors	16.7M	16.7M
	Luminance cd/m2	350 nits	400 nits
	VieWINg Angle (H/V°)	160/140	170/160
	Backlight MTBF	50,000 hr	50,000 hr
Touchscreen		Resistive	Projected capacitive
HDD (Optional)		via iDoor	via optional kit
Network (LAN)		10/100/1000BASE-T x 2	10/100/1000BASE-T x 2
I/O Ports		RS-232 x 1, RS-232/422/485 x 1 USB 3.0 x 1 USB 2.0 x 1 3	RS-232 x 1, RS-232/422/485 x 1 USB 3.0 x 1 USB 2.0 x 1
CompactFlash Slots / iDoor Slot		iDoor slot x 1	CFast slot x 1
Expansion Slots		Full-size mini PCIe	Full-size mini PCIe
DC Power Input (Voltage)		24 V_{DC} ± 20%	24 V_{DC} ± 20%
Dimensions		410.4 x 343.4 x 56.9 mm (16.16" x 13.52" x 2.24")	419.7 x 269 x 61.9 mm (16.52" x 10.59" x 2.44")
Weight		5.1 kg	5 kg
Front cover		Front bezel: Die cast aluminum alloy	Front bezel: Die cast aluminum alloy
Operating Temperature		-20 ~ 60°C (-4 ~ 140°F)	0 ~ 55°C (32 ~ 131°F)
Ingress Protection (Front Panel)		IP66	IP66
Certification		BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL
Operating System		Windows 7, WES7, Windows 10 Enterprise LTSC, WEC 7, Linux, Android	Windows 7, WES7, WEC7, Linux, Windows 10 Enterprise LTSB

Industrial Thin-Client Terminals




Model		TPC-1551T (B)	TPC-1251T (B)	TPC-1051WP	TPC-651T
CPU		Intel® Atom™ E3845 1.91 GHz quad core Processor	Intel® Atom™ E3845 1.91 GHz quad core Processor	Intel® Atom™ E3827 1.75 GHz Processor	Intel® Atom™ E3827 1.75 GHz Processor
Memory		4 GB (Optional 8 GB) DDR3L 1600 MHz SO-DIMM SDRAM	4 GB (Optional 8 GB) DDR3L 1600 MHz SO-DIMM SDRAM	4 GB (Optional 8 GB) DDR3L 1600 MHz SO-DIMM SDRAM	4 GB (Optional 8 GB) DDR3L 1600 MHz SO-DIMM SDRAM
Display	Display Type	XGA TFT LED LCD	XGA TFT LED LCD	WXGA TFT LED LCD	VGA TFT LED LCD
	Display Size	15"	12"	10.1"	5.7"/6.5"
	Max. Resolution	1024 x 768	1024 x 768	1280 x 800	640 x 480
	Max. Colors	16.2M	16.2M	262K	262K
	Luminance cd/m2	300 nits	600 nits	300 nits	550/800 nits
	VieWINg Angle (H/V°)	176/176	178/178	170/170	160/140
	Backlight MTBF	70,000 hr	50,000 hr	25,000 hr	50,000 hr
Touchscreen		Resistive	Resistive	Projected capacitive	Resistive
HDD (Optional)		2.5" SATA x 1	2.5" SATA x 1	2.5" SATA x 1	2.5" SATA x 1
Network (LAN)		10/100/1000BASE-T x 2	10/100/1000BASE-T x 2	10/100/1000BASE-T x 2	10/100/1000BASE-T x 2
I/O Ports		RS-232 x 1, RS-232/422/485 x 1 USB 3.0 x 1 USB 2.0 x 3	RS-232 x 1, RS-232/422/485 x 1 USB 3.0 x 1 USB 2.0 x 3	RS-232 x 1, RS-232/422/485 x 1 USB 3.0 x 1 USB 2.0 x 1	RS-232 x 1, RS-232/422/485 x 1 USB 3.0 x 1 USB 2.0 x 1
CompactFlash Slots / iDoor Slot		iDoor slot x 1	iDoor slot x 1	CFast slot x 1	CFast slot x 1
Expansion Slots		Full-size mini PCIe	Full-size mini PCIe	Full-size mini PCIe	Full-size mini PCIe
DC Power Input (Voltage)		24 VDC ± 20%	24 VDC ± 20%	24 VDC ± 20%	24 V_{DC} ± 20%
Dimensions		383.20 x 307.30 x 55.9 mm (15.09" x 12.10" x 2.2")	311.80 x 238 x 55.4 mm (12.28" x 9.37" x2.18")	283.1 x 202.3 x 61.4 mm (11.15" x 7.96" x 2.42)	199 x 152 x 58.9 mm (7.83" x 5.98" x 2.32")
Weight		4.4 kg	3.12 kg	2.6 kg	1.5 kg
Front cover		Front bezel: Die cast aluminum alloy	Front bezel: Die cast aluminum alloy	Front bezel: Die cast aluminum alloy	Front bezel: Die cast aluminum alloy
Operating Temperature		-20 ~ 60°C (-4 ~ 140°F)	-20 ~ 60°C (-4 ~ 140°F)	-20 ~ 55°C (-4 ~ 131°F)	-20 ~ 60°C (-4 ~ 140°F)
Ingress Protection (Front Panel)		IP66	IP66	IP66	IP66
Certification		BSMI, CCC, CE FCC Class A, UL	BSMI, CCC, CE FCC Class A, UL, KCC	BSMI, CCC, CE FCC Class A, UL	BSMI, CCC, CE FCC Class A, UL
Operating System		Windows 7, WES7, Windows 10 Enterprise LTSC, WEC 7, Linux, Android	Windows 7, WES7, Windows 10 Enterprise LTSC, WEC 7, Linux, Android	Windows 7, WES7, WEC7, Linux, Windows 10 Enterprise LTSB	Windows 7, WES7, WEC7, Linux, Windows 10 Enterprise LTSC

Domain-Focused HMI






Model		SPC-221	IPPC-5211WS	SPC-515	FPM-8151H	SPC-821	SPC-815
CPU		Intel® 6th. Core™ i7/ i5 /i3 Processor	Intel Celeron J1900	Intel® 6th. Core™ i3 Processor	-	Intel® 6th. Core™ i7/ i5 /i3 Processor	Intel® 6th. Core™ i7/ i5 /i3 Processor
Memory		8 GB DDR3L SDRAM	4 GB DDR3L SDRAM	8 GB DDR3L SDRAM	-	8 GB DDR3L SDRAM	8 GB DDR3L SDRAM
Display	Display Type	TFT LED LCD	TFT LED LCD	TFT LED LCD	TFT LED LCD	TFT LED LCD	TFT LED LCD
	Display Size	21.5"	21.5"	15"	15"	21.5"	15.6"
	Max. Resolution	1920 x 1080	1920 x 1080	1024 x 768	1024 x 768	1920 x 1080	1280 x 720
	Max. Colors	16.7M	16.7M	16.7M	16.2M	16.7M	16.7M
	Luminance cd/m²	300 nits	300 nits	300 nits	350 nits	300 nits	400 nits
	VieWINg Angle (H/V°)	178/178	178/178	176 / 176	160/140	178/178	170/160
	Backlight MTBF	50,000 hr	50,000 hr	70,000 hr	50,000 hr	50,000 hr	50,000 hr
	Touchscreen	Projected capacitive touch	Projected capacitive touch	Projected capacitive touch	Resistive	Projected capacitive touch	Projected capacitive touch
Network (LAN)		10/100/1000BASE-T x 2	10/100/1000BASE-T x 2	10/100/1000BASE-T x 2	-	10/100/1000BASE-T x 2	10/100/1000BASE-T x 2
I/O Ports		RS-232 x1 (connection:M12 A-coded, 8-pin male) USB 2.0 x1 (connection:M12 A-coded, 8-pin female) 24 V_{DC} power input (connection:M12 A-coded, 5-pin male)	RS-232/422/485 x 1 RS-232 x 1 USB 3.0 x 1 USB 2.0 x1	RS-232 x1 (connection:M12 A-coded, 8-pin male) USB 2.0 x2 (connection:M12 A-coded, 8-pin female) 24 V_{DC} power input (connection:M12 A-coded, 5-pin male)	VGA DVI-D	USB 3.0 x 2 USB 2.0 x1 (Front)	USB 3.0 x 2 USB 2.0 x1 (Front)
HDD (Optional)		2.5" SATA HDD	2.5" SATA HDD	2.5" SATA HDD / Default 64G SSD	-	2.5" SATA HDD	2.5" SATA HDD
Expansion Slots		Full-size mini PCIe x1	Full-size mini PCIe x1	Full-size mini PCIe x1	-	Full-size mini PCIe x1	Full-size mini PCIe x1
Digital		-	-	-	-	-	-
Input/Output		-	-	-	-	-	-
Ingress Protection		All-Around IP66	All-Around IP69k	All-Around IP69k	Front IP66	All-Around IP66	All-Around IP66
DC Power Input (Voltage)		24 V_{DC} ± 20%	24 V_{DC} ± 20%	24 V_{DC} ± 20%	24 V_{DC} ± 20% / 12 V_{DC} / 4.75A	24 V_{DC} ± 20%	24 V_{DC} ± 20%
Enclosure		Front bezel: Die cast aluminum alloy Back housing: Die cast aluminum alloy	Front bezel: Stainless steel Back housing: Aluminum/stainless steel	Front bezel: 304L Stainless Steel Back housing: 304L Stainless Stee	Front bezel: 316L stainless steel Back housing: Stainless steel	Front bezel: Die cast aluminum alloy Back housing: Die cast aluminum alloy	Front bezel: Die cast aluminum alloy Back housing: Die cast aluminum alloy
Mounting		VESA	VESA and flange adapter for arm and foot mount	VESA	VESA / Panel Mount	Pole Mount / VESA (optional)	Pole Mount / VESA (optional)
Weight		9 kg	16 kg	8.5 kg	8.5 kg	11.6 kg	8.8 kg
Operating Temperature		0 ~ 55°C (32 ~ 131°F)	0 ~ 50°C (32 ~ 122°F)	0 ~ 50°C (32 ~ 122°F)	-20 ~60°C (-4 ~ 140°F)	0 ~ 55°C (32 ~ 131°F)	0 ~ 55°C (32 ~ 131°F)
Dimensions		558.4 x 349.8 x 65 mm	555 x 346.5 x 81 mm	389x 313 x 56 mm	414 x 347.5 x 84 mm	546.69 x 420.34 x 67 mm (w/o Flange for arm mount) 546.69 x 420.34 x 160 mm (w/ Flange for arm mount) 402.19 x 333.19 x 160 mm (w/ Flange for arm mount)	402.19 x 333.19 x 67 mm (w/o Flange for arm mount) 402.19 x 333.19 x 160 mm (w/ Flange for arm mount)
Certification		BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL
Operating System		Windows 10 Enterprise LTSB	Windows 7/8, WES7, WEC7, Linux, Windows 10 Enterprise LTSB	Windows 10 Enterprise LTSB, Linux	Windows 7/8, WES7, WEC7, Linux, Windows 10 Enterprise LTSB	Windows 10 Enterprise LTSB	Windows 10 Enterprise LTSB

Industrial Operator Panels

NEW

Model		☞ TPC-71W				☞ WOP-3070T	☞ WOP-3120T
Ordering Information		TPC-71W-N10PA	TPC-71W-N21PA	TPC-71W-N21WA	TPC-71W-N21AA	WOP-3070T-C4BE	WOP-3120T-C4AE
CPU		NXP® ARM® Cortex™-A9 i.MX6 dual-core processor	NXP® ARM® Cortex™-A9 i.MX6 quad-core processor	NXP® ARM® Cortex™-A9 i.MX6 quad-core processor	NXP® ARM® Cortex™-A9 i.MX6 quad-core processor	RISC 32 bits, 600 MHz (ARM® Cortex™-A8)	ARM Cortex A8 600Mhz
Backup Memory		1Mbit	1Mbit	1Mbit	1Mbit	128 KB	FRAM 1M bit (=128K Byte, 64 word)
Working Memory		1 GB on board	2 GB on board	2 GB on board	2 GB on board	DDR2 256M Bytes	DDR2 256 MB on board
Storage		8 GB eMMC on board	8 GB eMMC on board	8 GB eMMC on board	8 GB eMMC on board	512MB on board SLC type	512MB on board SLC type
						-	-
Operating System		Linux Ubuntu 16.04	Linux Ubuntu 16.04	Windows Embedded Compact 7	Android 6.0	Microsoft® Windows CE 6.0	Microsoft® Windows CE 6.0
Display	Type	WSVGA (16:9) TFT LCD	WSVGA (16:9) TFT LCD	WSVGA (16:9) TFT LCD	WSVGA (16:9) TFT LCD	WVGA (16:9) TFT LCD	XGA (16:9) TFT LCD
	Size	7"	7"	7"	7"	7"	12"
	Max. Resolution	1024 x 600	1024 x 600	1024 x 600	1024 x 600	800 x 480	1024 x 768
	Max. Colors	16.7M	16.7M	16.7M	16.7M	65,536 colors	64K
	Luminance (cd/m²)	400	400	400	400	500	500 nits
	Viewing Angle (H/V°)	170/170	170/170	170/170	170/170	140/120	160/140
	Backlight Life (hr)	50,000	50,000	50,000	50,000	50,000	50,000
	Dimming	Adjustable by touch panel	Adjustable by touch panel	Adjustable by touch panel	Adjustable by touch panel	Adjustable	-
Touchscreen		PCAP	PCAP	PCAP	PCAP	5 wire Analog Resistive	5 wires Analog resistive
Power-On LED		✓	✓	✓	✓	✓	✓
Communication	COM1	RS-232/422/485/ CAN 2.0 B (DB9)	RS-232/422/485/ CAN 2.0 B (DB9)	RS-232/422/485/ CAN 2.0 B (DB9)	RS-232/422/485/ CAN 2.0 B (DB9)	RS-232/422485 (DB9)	RS-232/RS-422,RS-485 (DB9), 300~115.2 kbps
Interface	COM2	-	-	-	-	RS-422/485 (Terminal 4pin+Ground)	RS-422/RS-485 (Terminal 4 pin+Ground), 300~115.2 kbps
	COM3	-	-	-	-	RS-485 (Termianl 2pin)	RS-485 (Terminal 2 pin), 300~115.2 kbps
	CAN	✓	✓	✓	✓	Termianl 2pin	Terminal Plug 2-Pin
	Ethernet (RJ45)	10/100/1000-BaseT	10/100/1000-BaseT	10/100/1000-BaseT	10/100/1000-BaseT	10/100-BaseT	10/100-BaseT
I/Os	USB Client	USB 2.0 Type-B Client x1	USB 2.0 Type-B Client x1	USB 2.0 Type-B Client x1	USB 2.0 Type-B Client x1	USB 2.0 Client x 1	USB 2.0 Client x 1
	USB Host	USB 2.0 Type-A Host x2	USB 2.0 Type-A Host x2	USB 2.0 Type-A Host x2	USB 2.0 Type-A Host x2	USB 2.0 Host x 1 (Top)	USB 2.0 Host x 1 (Top)
	Micro-SD Slot	✓	✓	✓	✓	✓	✓
	SD Slot	-	-	-	-	-	-
	Audio	optional	optional	optional	optional	1 Lin out / 1 Mic in	1 Line-out / 1 Mic-in
	Power Isolation	-	-	-	-	✓	✓
	I/O Isolation	-	-	-	-	✓	✓
Power Supply Voltage		24 VDC ± 10%	24 VDC ± 10%	24 VDC ± 10%	24 VDC ± 10%	24 VDC ± 10%	24 VDC ± 10%
Power Consumption		9W Typical	9W Typical	9W Typical	9W Typical	7W Typical	20 W
Dimensions W x H x D (mm)		205 x 146.92 x 46 mm (8.07 x 5.78 x 1.81 in)	205 x 146.92 x 46 mm (8.07 x 5.78 x 1.81 in)	205 x 146.92 x 46 mm (8.07 x 5.78 x 1.81 in)	205 x 146.92 x 46 mm (8.07 x 5.78 x 1.81 in)	203.4 x 150 x 43.7 mm (8.01" x 5.91" x 1.72")	311.8 x 238 x 54.5 mm (12.28" x 9.37" x 2.15")
Cut-out Dimensions W x H (mm)		192 x 138.5 mm (7.56 x 5.45 in)	192 x 138.5 mm (7.56 x 5.45 in)	192 x 138.5 mm (7.56 x 5.45 in)	192 x 138.5 mm (7.56 x 5.45 in)	192 x 138.5 mm (7.56" x 5.45")	302.5 x 228.5 mm (12.1" x 9.14")
Enclosure		Die-cast aluminum alloy front bezel PC + ABS rear housing	Die-cast aluminum alloy front bezel PC + ABS rear housing	Die-cast aluminum alloy front bezel PC + ABS rear housing	Die-cast aluminum alloy front bezel PC + ABS rear housing	Die-cast aluminum alloy front bezel	PC + ABS
Net Weight		1.2 kg (2.65 lbs)	1.2 kg (2.65 lbs)	1.2 kg (2.65 lbs)	1.2 kg (2.65 lbs)	1 kg (2.20 lbs)	2.5 kg (5.51 lb)
Operating Temperature		-20 ~ 60°C (-4 ~ 140°F)	-20 ~ 60°C (-4 ~ 140°F)	-20 ~ 60°C (-4 ~ 140°F)	-20 ~ 60°C (-4 ~ 140°F)	-20 ~ 60°C (-4 ~ 140°F)	-20 ~ 60°C (-4 ~ 140°F)
Storage Temperature		-30 ~ 70°C (-22 ~ 158°F)	-30 ~ 70°C (-22 ~ 158°F)	-30 ~ 70°C (-22 ~ 158°F)	-30 ~ 70°C (-22 ~ 158°F)	-30 ~ 70°C (-22 ~ 158°F)	-30 ~ 70°C (-22 ~ 158°F)
Humidity		10% ~ 90% RH @ 40°C, non-condensing	10% ~ 90% RH @ 40°C, non-condensing	10% ~ 90% RH @ 40°C, non-condensing	10% ~ 90% RH @ 40°C, non-condensing	10% ~ 90% RH @ 40°C, non-condensing	10 ~ 90% RH @ 40°C, non-condensing
Ingress Protection		IP66	IP66	IP66	IP66	IP66	Front panel: IP66
Certification		CE, FCC, CB, UL, BSMI, CCC	CE, FCC, CB, UL, BSMI, CCC	CE, FCC, CB, UL, BSMI, CCC	CE, FCC, CB, UL, BSMI, CCC	CE, FCC, CB, UL, BSMI, CCC	CE, FCC, CB, UL, BSMI, CCC



Model		WOP-2040T		WOP-2070T		WOP-2100T	
Ordering Information		WOP-2040T-S1AE	WOP-2040T-N1AE	WOP-2070T-S2AE	WOP-2070T-N2AE	WOP-2100T-S2AE	WOP-2100T-N2AE
CPU		RISC (32-bit, 200 MHz)		RISC (32-bit, 200 MHz)			
Backup Memory		128 KB		128 KB			
Working Memory		32 MB SDRAM		64 MB SDRAM		64 MB SDRAM	
Storage		8MB NOR Flash		8 MB NOR Flash			
		-	128M NAND Flash	-	128M NAND Flash	-	128M NAND Flash
Operating System		HMI RTOS, WebAccess/HMI V2.1		HMI RTOS, WebAccess/HMI V2.1			
Display	Type	WQVGA (16:9) TFT LCD		WVGA (16:9) TFT LCD		WSVGA (16:9) TFT LCD	
	Size	4.3"		7"		10.1"	
	Max. Resolution	480 x 272		800 x 480		1024 x 600	
	Max. Colors	65,536		65,536		65,536	
	Luminance (cd/m²)	400		300		250	
	Viewing Angle (H/V°)	100/95		140/130		140/110	
	Backlight Life (hr)	LED, 20,000		LED, 20,000		LED, 20,000	
	Dimming	-		-		-	
Touchscreen		4-wire analog resistive		4-wire analog resistive		4-wire analog resistive	
Power-On LED		✓		✓		✓	
Communication	COM1	RS-232/422/485 (DB9)		RS-232/422/485 (DB9)		RS-232/422/485 (DB9)	
Interface	COM2	RS-422/485 (5-pin terminal)		RS-422/485 (5-pin terminal)		RS-422/485 (5-pin terminal)	
	COM3	RS-232 (COM1: 5/7/8-pin)		RS-232 (COM1: 5/7/8-pin)		RS-232 (COM1: 5/7/8-pin)	
	CAN	-		-		-	
	Ethernet (RJ45)	-	10/100 BASE-T	-	10/100 BASE-T	-	10/100 BASE-T
I/Os	USB Client	✓		✓		✓	
	USB Host	✓		✓		✓	
	Micro-SD Slot	-	✓	-	✓	-	✓
	SD Slot	-		-		-	
	Audio	-		-		-	
	Power Isolation	-		-		-	
	I/O Isolation	-		-		-	
Power Supply Voltage		24 V_{DC} ± 10%		24 V_{DC} ± 10%		24 V_{DC} ± 10%	
Power Consumption		5 W		10 W		10 W	
Dimensions W x H x D (mm)		130 x 106.2 x 36.4 mm (5.11" x 4.18" x 1.43")		188 x 143.3 x 30 mm (7.4" x 5.64" x 1.18")		269.8 x 212 x 37.4 mm (10.62" x 8.35" x1.47")	
Cut-out Dimensions W x H (mm)		118.5 x 92.5 mm (4.66" x 3.64")		175 x 132.5 mm (6.89" x 5.21")		259.5 x 201.5 mm (10.22" x 7.93")	
Enclosure		PC + ABS		PC + ABS		PC + ABS	
Net Weight		0.3 kg (0.66 lb)		0.6 kg (1.32 lb)		1.2 kg (2.64 lb)	
Operating Temperature		0 ~ 50°C (32 ~ 122°F)		0 ~ 50°C (32 ~ 122°F)		0 ~ 50°C (32 ~ 122°F)	
Storage Temperature		-20 ~ 60°C (-4 ~ 140°F)		-20 ~ 60°C (-4 ~ 140°F)		-20 ~ 60°C (-4 ~ 140°F)	
Humidity		10 ~ 90% RH @ 40°C, non-condensing		10 ~ 90% RH @ 40°C, non-condensing		10 ~ 90% RH @ 40°C, non-condensing	
Ingress Protection		Front panel: IP66		Front panel: IP66		Front panel: IP66	
Certification		CE, FCC, BSMI, CCC, UL		CE, FCC, BSMI, CCC, UL		CE, FCC, BSMI, CCC, UL	

Industrial Monitors






Model		☞ FPM-7211W	☞ FPM-7181W	☞ FPM-7151W	☞ FPM-7151T	☞ FPM-7121T	☞ FPM-7061T
Display	Display Type	Full HD	WXGA	WXGA	XGA	XGA	VGA
	Display Size	21.5"	18.5"	15.6"	15"	12.1"	6.5"
	Max. Resolution	1920 x 1080	1366 x 768	1366 x 768	1024 x 768	1024 x 768	640 x 480
	Max.Colors	16.7M	16.7M	16.7M	16.7M	16.2M	16.2M
	Luminance cd/m²	300	300	300	400	600	800
	Viewing Angle (H/V°)	178/178	170/160	170/160	160/140	160/140	160/140
	Backlight MTBF	50,000 hr	50,000 hr	50,000 hr	50,000 hr	50,000 hr	50,000 hr
Video Port		VGA/DVI-D	VGA/DVI-D	VGA/DVI-D	VGA/DP	VGA/DP	VGA/DP
Touchscreen		Combo	Combo	Combo	Combo	Combo	USB
OSD (onscreen display)		Rear panel control buttons, lockable	Rear panel control buttons, lockable	Rear panel control buttons, lockable	Rear panel control buttons, lockable	Rear panel control buttons, lockable	Rear panel control buttons, lockable
Power Input Voltage		100 ~ 240 V (Optional adapter)	100 ~ 240 V (Optional adapter)	100 ~ 240 V (Optional adapter)	100 ~ 240 V (Optional adapter)	100 ~ 240 V (Optional adapter)	100 ~ 240 V (Optional adapter)
DC Power Input(voltage)		24 V	24 V	24 V	24 V	24 V	24 V
Operating Temperature		0 ~ 55°C	0 ~ 55°C	0 ~ 55°C	-20 ~ 60°C	-20 ~ 60°C	-20 ~ 60°C
Storage Temperature		-20 ~ 60°C	-20 ~ 60°C	-20 ~ 60°C	-30 ~ 70°C	-30 ~ 70°C	-30 ~ 70°C
Dimensions		558.4 x 349.8 x 47.7 mm	488 x 309 x 47.7 mm	419.7 x 269 x 47.7 mm	383.2 x 307.3 x 48.2 mm	311.8 x 238 x 44.5 mm	199 x 152 x 46.1 mm
Cut-out Dimensions		550.3 x 341.8 mm	479.3 x 300.3 mm	412.4 x 261.7 mm	374.5 x 298.5 mm	303 x 229 mm	189.1 x 142.1 mm
Weight		8 kg	6 kg	5 kg	4.2 kg	2.6 kg	1.2 kg
Certifications		BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL
Operating System		Windows XP/ Vista/7/8/10/XPE, Linux	Windows XP/ Vista/7/8/10/XPE, Linux	Windows XP/ Vista/7/8/10/XPE, Linux	Windows XP/ Vista/7/8/10/XPE, Linux	Windows XP/ Vista/7/8/10/XPE, Linux	Windows XP/ Vista/7/8/10/XPE, Linux






Model		FPM-5191G	FPM-5171G	FPM-5151G	FPM-2170G	FPM-2150G	FPM-2120G
Display	Display Type	SXGA	SXGA	XGA	SXGA	XGA	SVGA
	Display Size	19"	17"	15"	17"	15"	12"
	Max. Resolution	1280 x 1024	1280 x 1024	1024 x 768	1280 x 1024	1024 x 768	800 x 600
	Max.Colors	16.7M	16.7M	16.2M	16.7M	16.2M	16.2M
	Luminance cd/m²	350	350	400	350	400	450
	Viewing Angle (H/V°)	170/160	160/140	160/140	160/140	160/140	160/140
	Backlight MTBF	50,000 hr	50,000 hr	50,000 hr	50,000 hr	50,000 hr	50,000 hr
Video Port		VGA/DVI	VGA/DVI	VGA/DVI	VGA	VGA	VGA
Touchscreen		Combo	Combo	Combo	Combo	Combo	Combo
OSD (onscreen display)		Rear panel control buttons, lockable	Rear panel control buttons, lockable	Rear panel control buttons, lockable	Rear panel control buttons, lockable	Rear panel control buttons, lockable	Rear panel control buttons, lockable
Power Input Voltage		100 ~ 240 V (Optional adapter)	100 ~ 240 V (Optional adapter)	100 ~ 240 V (Optional adapter)	100 ~ 240 V (Adapter)	100 ~ 240 V (Adapter)	100 ~ 240 V (Adapter)
DC Power Input		10 ~ 30 V	10 ~ 30 V	10 ~ 30 V	12 V	12 V	12 V
Operating Temperature		0 ~ 50°C	0 ~ 50°C	0 ~ 50°C	0 ~ 50°C	0 ~ 50°C	0 ~ 50°C
Storage Temperature		-20 ~ 60°C	-20 ~ 60°C	-20 ~ 60°C	-20 ~ 60°C	-20 ~ 60°C	-20 ~ 60°C
Dimensions		481.93 x 384.6 x 59 mm	481.9 x 355.9 x 55 mm	449.92 x 315.63 x 50.5 mm	413.72 x 347.22 x 52.13 mm	383 x 307 x 48.13 mm	311 x 237 x 40.63 mm
Cut-out Dimensions		454 x 338 mm	454 x 338 mm	424 x 293 mm	400.92 x 334.42 mm	374.5 x 298.5 mm	303 x 229 mm
Weight		8.5 kg	7 kg	6 kg	5.6 kg	4.5 kg	4 kg
Certifications		BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC, UL	BSMI, CCC, CE, FCC, UL	BSMI, CCC, CE, FCC, UL
Operating System		Windows XP/ Vista/7/8/10/XPE, Linux	Windows XP/ Vista/7/8/10/XPE, Linux	Windows XP/ Vista/7/8/10/XPE, Linux	Windows XP/ Vista/7/8/10/XPE, Linux	Windows XP/ Vista/7/8/10/XPE, Linux	Windows XP/ Vista/7/8/10/XPE, Linux

Industrial Monitors




Model		FPM-3191G	FPM-3171G	FPM-3151G	FPM-3121G
Display	Display Type	SXGA	SXGA	XGA	XGA
	Display Size	19"	17"	15"	12.1"
	Max. Resolution	1280 x 1024	1280 x 1024	1024 x 768	1024 x 768
	Max.Colors	16.7M	16.7M	16.2M	16.2M
	Luminance cd/m²	350	350	350	600
	Viewing Angle (H/V°)	170/160	160/140	160/140	160/140
	Backlight MTBF	50,000 hr	50,000 hr	50,000 hr	50,000 hr
Video Port		VGA/DVI	VGA/DVI	VGA/DVI	VGA/DVI
Touchscreen		Combo	Combo	Combo	Combo
OSD (onscreen display)		Front panel control buttons	Front panel control buttons	Front panel control buttons	Front panel control buttons
Power Input Voltage		100 ~ 240 V (Optional adapter)	100 ~ 240 V (Optional adapter)	100 ~ 240 V (Optional adapter)	100 ~ 240 V (Optional adapter)
DC Power Input		10 ~ 30 V	10 ~ 30 V	10 ~ 30 V	10 ~ 30 V
Operating Temperature		-20 ~ 60°C	-20 ~ 60°C	-20 ~ 60°C	-20 ~ 60°C
Storage Temperature		-30 ~ 80°C	-30 ~ 80°C	-30 ~ 80°C	-30 ~ 80°C
Dimensions		482 x 399.2 x 67 mm	482 x 354.8 x 63.5 mm	312 x 224 x 60 mm	312 x 224 x 60 mm
Cut-out Dimensions		441 x 376.4 mm	447.2 x 329.2 mm	303.5 x 229.5 mm	303.5 x 229.5 mm
Weight		10.65 kg	9.25 kg	7.73 kg	4.07 kg
Certifications		CE, FCC Class A, BSMI, CCC, UL	CE, FCC Class A, BSMI, CCC, UL	CE, FCC Class A, BSMI, CCC, UL	CE, FCC Class A, BSMI, CCC, UL
Operating System		Windows XP/Vista/7/8/10/XPE, Linux	Windows XP/Vista/7/8/10/XPE, Linux	Windows XP/Vista/7/8/10/XPE, Linux	Windows XP/Vista/7/8/10/XPE, Linux

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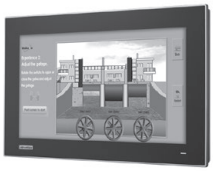




Model		FPM-221W	FPM-215W	FPM-1150G	FPM-817S	FPM-815S
Display	Display Type	Full HD	WXGA	XGA	SXGA	XGA
	Display Size	21.5"	15.6"	15"	17"	15"
	Max. Resolution	1920 x 1080	1366 x 768	1024 x 768	1280 x 1024	1024 x 768
	Max.Colors	16.7M	16.7M	16.2M	16.7M	16.7M
	Luminance cd/m²	250	300	300	350	500
	Viewing Angle (H/V°)	178/178	160/160	160/140	160/140	176/176
	Backlight MTBF	50,000 hr	50,000 hr	70,000 hr	50,000 hr	70,000 hr
Video Port		HDMI or VGA	HDMI or VGA	HDMI or VGA	VGA/DP	VGA/DP
Touchscreen		USB	USB	USB	USB	USB
OSD (onscreen display)		-	-	Front panel control buttons	Rear panel control buttons, lockable	Rear panel control buttons, lockable
Power Input Voltage		100 ~ 240 V (Adapter)	100 ~ 240 V (Adapter)	100 ~ 240 V (Adapter)	100 ~ 240 V	100 ~ 240 V
DC Power Input (voltage)		12 V	12 V	12 V	24 V	24 V
Operating Temperature		0 ~ 50°C	0 ~ 50°C	0 ~ 50°C	-20 ~ 60°C	-20 ~ 60°C
Storage Temperature		-20 ~ 60°C	-20 ~ 60°C	-20 ~ 60°C	-30 ~ 70°C	-30 ~ 70°C
Dimensions		558.4 x 349.8 x 56.2 mm	419.7 x 269 x 56.2 mm	392.3 x 313.6 x 51.2 mm	432.5 x 365.5 x 59.3 mm	405.3 x 329.4 x 59.3 mm
Cut-out Dimensions		550.30 x 341.8 mm	412.40 x 261.70 mm	381.4 x 302.5 mm	382 x 320 mm	350 x 277 mm
Weight		8 kg	4 kg	4 kg	7 kg	4 kg
Certifications		BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL
Operating System		Windows XP/Vista/7/8/10/ XPE, Linux	Windows XP/Vista/7/8/10/ XPE, Linux	Windows XP/Vista/7/8/10/ XPE, Linux	Windows XP/Vista/7/8/10/ XPE, Linux	Windows XP/Vista/7/8/10/ XPE, Linux

General Panel PCs

NEW

New Generation




Model	☞ PPC-3060S	☞ PPC-3100S ☞ PPC-3120S ☞ PPC-3150S			☞ PPC-3150SW ☞ PPC-3180SW ☞ PPC-3210SW PPC-324W-PN4				☞ PPC-3100 ☞ PPC-3120	
CPU	Intel® Celeron® 1.58 GHz Processor (Dual Core)	Intel® Celeron® 1.83 GHz Processor (Quad Core)			Intel® Pentium® 1.1 GHz Processor (Quad Core)		Intel® Celeron® 1.83 GHz Processor (Quad Core)	Intel® Pentium® 1.1 GHz Processor (Quad Core)	Intel® Atom™ 1.6GHz Processor (Quad Core)	
Memory	1 x SO-DIMM DDR3L 1333 MHz (max. 4 GB)	1 x SO-DIMM DDR3L 1333 MHz (max. 8 GB)			1 x SO-DIMM DDR3L 1333 MHz (max. 8 GB)		1 x SO-DIMM DDR3L 1333 MHz (max. 8 GB)	1 x SO-DIMM DDR3L 1333 MHz (max. 8 GB)	1 x SODIMM DDR3L 1600/1866 MHz (max. 8 GB)	
Display Type	TFT LED LCD	TFT LED LCD	TFT LED LCD	TFT LED LCD	TFT LED LCD	TFT LED LCD	TFT LED LCD	TFT LED LCD	TFT LED LCD	
Display Size	6.5	10.4	12.1	15	15.6	18.5	21.5	23.8	10.4	12.1
Screen Ratio	4:3	4:3			16:9		16:9	16:9	4:3	
Max. Resolution	640 x 480	800 x 600 / 1024 x 768	1024 x 768	1024 x 768	1366 x 768	1366 x 768	1920 x 1080	1920 x 1080	800 x 600	1024 x 768
Luminance cd/m²	800	400 / 350	500	400	400	300	300	350	400	600
Viewing Angle (H/V°)	160,140	160,140 / 176,176	178,178	176,176	170,160	170,160	178,178	178,178	160,140	178,178
Backlight MTBF	50,000 hr	30,000 hr	30,000 hr	50,000 hr	50,000 hr	50,000 hr	50,000 hr	50,000 hr	30,000 hr	50,000 hr
Touchscreen	5-wire resistive	Projected capacitive multi-touch/5-wire resistive			Projected capacitive multi-touch/5-wire resistive				5-wire resistive	
Network (LAN)	2 x GbE (Intel I211-AT)	2 x GbE (Intel I211-AT)			2 x GbE (Intel I211-AT,Intel I219LM)		2 x GbE (Intel I211-AT)	2 x GbE (Intel I211-AT,Intel I219LM)	2 x GbE (Intel I210-IT)	
IO Ports	2 x serial ports: 1 x RS-232, 1 x RS-232/422/485 (adjustable via BIOS) 2 x USB 2.0, 1 x USB 3.0	2 x serial ports: 1 x RS-232, 1x RS-232/422/485 (adjustable via BIOS) 2 x USB 2.0, 1 x USB 3.0 (for PPC-3100S-RAE) 1 x USB 2.0, 1 x USB 3.0 (for PPC-3100S-PBE)			2 x serial ports: 1 x RS-232, 1 x RS-232/422/485 (adjustable via BIOS) 2 x USB 2.0, 2 x USB 3.0 1 x line out		2 x serial ports: 1 x RS-232, 1 x RS-232/422/485 (adjustable via BIOS) 1 x USB 2.0, 1 x USB 3.0	2 x serial ports: 1 x RS-232, 1 x RS-232/422/485 (adjustable via BIOS) 1 x USB 2.0, 2 x USB 3.0 1 x USB 3.0	5 x serial ports: 4 x RS-232, 1 x isolated RS-422/485 (adjustable via BIOS) 4 x USB 3.0 1 x DB15 VGA 1 x HDMI 1 x GPIO (8 channels, TTL level, internal) 1 x line out, 1 x mic in	
Storage	1 x 2.5" SATA bay 1 x mSATA bay	1 x 2.5" SATA bay 1 x mSATA bay			1 x 2.5" SATA bay 1 x mSATA bay		1 x 2.5" SATA bay 1 x mSATA bay	1 x 2.5" SATA bay 1 x mSATA bay	1 x 2.5" SATA bay 1 x mSATA bay	
Expansion	1 x full-size mini PCIe	1 x full-size mini PCIe			1 x full-size mini PCIe		1 x full-size mini PCIe	1 x full-size mini PCIe	1 x PCIe x1; 1 x PCI (only PPC-3120) 1 x full-size mini PCIe	
Power Input (Voltage)	12 ~ 24 V_{DC}	12 ~ 24 V_{DC}			12 ~ 24 V_{DC}		12 ~ 24 V_{DC}	12 ~ 24 V_{DC}	9 ~ 32 V_{DC}	
Enclosure	Front: Aluminum alloy Back: SECC	Aluminum alloy			Aluminum alloy		Aluminum alloy	Aluminum alloy	Front: Aluminum alloy Back: Plastic + SECC	
Ingress Protection	Front panel: IP65	Front panel: IP65			Front panel: IP65		Front panel: IP65	Front panel: IP65	Front panel: IP65	
Mounting	Panel, VESA 75, wall, stand, ARM	Panel, VESA 75, wall, stand, ARM			Panel, VESA 75, wall, stand, ARM		Panel, VESA 75, wall, stand, ARM	Panel, VESA 75, wall, stand, ARM	Panel, VESA 75, wall, stand, ARM	
Operating Temperature	0 ~ 50°C (32 ~ 122°F) with SSD 0 ~ 40°C (32 ~ 104°F) with HDD	0 ~ 50°C (32 ~ 122°F) with SSD 0 ~ 40°C (32 ~ 104°F) with HDD			0 ~ 50°C (32 ~ 122°F) with SSD 0 ~ 40°C (32 ~ 104°F) with HDD		0 ~ 50°C (32 ~ 122°F) with SSD 0 ~ 40°C (32 ~ 104°F) with HDD	0 ~ 50°C (32 ~ 122°F) with SSD 0 ~ 40°C (32 ~ 104°F) with HDD	0 ~ 50°C (32 ~ 122°F) with 2.5" SATA SSD -20 ~ 60°C (-4 ~ 140°F) with -40 ~ 85°C mSATA or 2.5" SATA SSD	
Storage Temperature	-30 ~ 60°C (-22 ~ 140°F)	-40 ~ 60°C (-40 ~ 140°F)			-20 ~ 60°C (-4 ~ 140°F)		-20 ~ 60°C (-4 ~ 140°F)	-20 ~ 60°C (-4 ~ 140°F)	-40 ~ 60°C (-40 ~ 140°F)	
Dimensions	197.6 x 150.6 x 41 mm (7.8" x 5.9" x 1.6")	272 x 217 x 46 mm (10.7" x 8.5" x 1.8")	317 x 246 x 49 mm (12.5" x 9.7" x 1.9")	391.3 x 312.4 x 51.5 mm (15.4" x 12.3" x 2.0")	419.7 x 269 x 58.6 mm (16.52" x 10.59" x 2.3")	488 x 309 x 58.5 mm (19.21" x 12.17" x 2.3")	558.4 x 349.8 x 56.2 mm (22" x 13.8" x 2.2")	595.9 x 374.1 x 58.4 mm (23.5" x 14.7" x 2.3"	271.8 x 216.8 x 57.5 mm (10.7" x 8.53" x 2.26")	317 x 246 x 60.5 mm (12.5" x 9.7" x 2.4")
Weight	1.5 kg	1.9 kg	2.1 kg	4 kg	4.7 kg	5.4 kg	7.5 kg	TBD	2.8 kg	3.4 kg
Certification	BSMI, CCC, CB, UL, CE, FCC Class B	BSMI, CCC, CB, UL, CE, FCC Class B			BSMI, CCC, CB, UL, CE, FCC Class B		BSMI, CCC, CB, UL, CE, FCC Class B	BSMI, CCC, CB, UL, CE, FCC Class B	BSMI, CCC, CB, UL, CE, FCC Class B	
Operating System	Windows 7(32/64-bit)/ 10(64-bit), WES7P, WEC7, Windows 10 IOT LTSC, Linux, Android 6.0	Windows 7(32/64-bit)/10(64-bit), WES7P, WEC7, Windows 10 IOT LTSC, Linux, Android 6.0			Windows 10(64-bit), Windows 10 IOT LTSC, Linux, Android 8.1		Windows 7(32/64-bit)/ 10(64-bit), WES7P, WEC7, Windows 10 IOT LTSC, Linux, Android 6.0	Windows 10(64-bit), Windows 10 IOT LTSC, Linux, Android 8.1	Windows 10 (64-bit), Win 10 LTSC, Linux, Android 8.1	

NEW



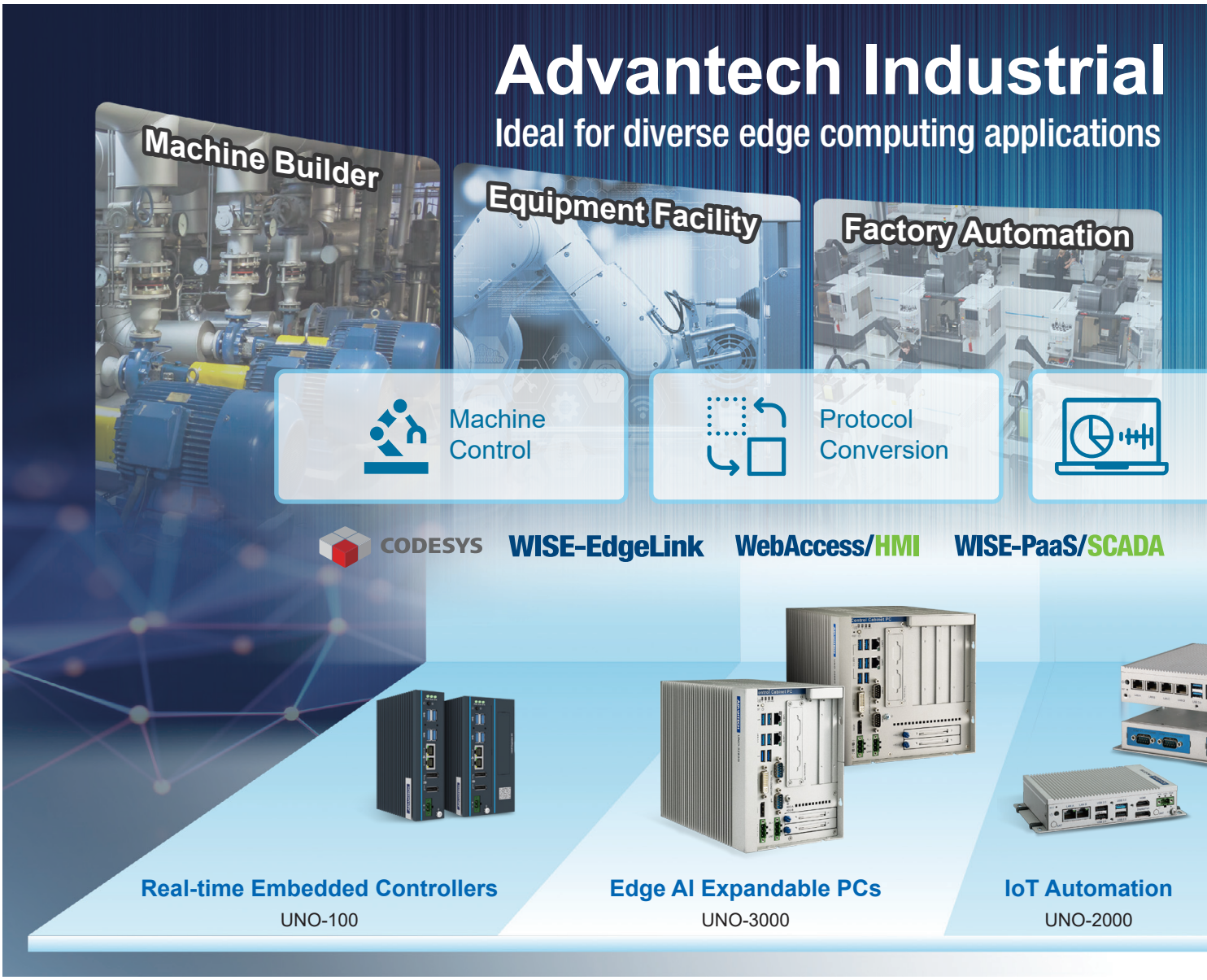


Model	☞ PPC-3150 ☞ PPC-3170 ☞ PPC-3190			PPC-412	☞ PPC-3151	☞ PPC-3151W ☞ PPC-3211W		☞ PPC-3151SW ☞ PPC-3181SW ☞ PPC-3211SW ☞ PPC-324W-P7			
CPU	Intel® Atom™ 1.91 GHz Processor (Quad Core)			6th Gen Intel® Core™ i5 processor (Dual Core)	6th Gen Intel® Core™ i5 processor (Dual Core)	7th Gen. Intel® Core™ i5 Processor (Dual Core)		6th Gen Intel® Core™ i3/i5 processor (Dual Core)			7th Gen Intel® Core™ i3/ i5 processor (Dual Core)
Memory	1 x SO-DIMM DDR3L 1333 MHz (max. 8 GB)			1 x SO-DIMM DDR4 1866/2133 MHz (max. 16 GB) (1.2 V)	1 x SO-DIMM DDR4 1866/2133 MHz (max. 16 GB) (1.2 V)	1 x SO-DIMM DDR4 1866/2133 MHz (max. 16 GB)		1 x SO-DIMM DDR4 1866/2133 MHz (max. 16 GB)			
Display Type	TFT LED LCD	TFT LED LCD	TFT LED LCD	TFT LED LCD	TFT LED LCD	TFT LED LCD		TFT LED LCD			
Display Size	15	17	19	12.1	15	15.6	21.5	15.6	18.5	21.5	23.8
Screen Ratio	4:3			4:3	4:3	16:9		16:9			
Max. Resolution	1024 x 768	1280 x 1024	1280 x 1024	1024 x 768	1024 x 768	1920 x 1080		1366 x 768		1920 x 1080	
Luminance cd/m²	500	350	350	600	500	450	300	400	300	300	350
Viewing Angle (H/V°)	176,176	160,140	170,160	178,178	176,176	170,170	178,178	170,170	170,160	178,178	
Backlight MTBF	70,000 hr	50,000 hr	50,000 hr	50,000 hr	70,000 hr	50,000 hr	50,000 hr	50,000 hr		50,000 hr	
Touchscreen	5-wire resistive			5-wire resistive	Projected capacitive multi-touch	Projected capacitive multi-touch		Projected capacitive multi-touch			
Network (LAN)	2 x GbE (Intel I210)			2 x GbE (Intel® I211-AT, I219LM)	2 x GbE (Intel® I211-AT, I219LM)	2 x GbE (Intel I211-AT,Intel I219LM)		2 x GbE (Intel I211-AT,Intel I219LM)			
IO Ports	5 x serial ports: 4 x RS-232 (2 x external and 2 x via internal pin header, requires optional module), 1 x isolated RS-422/485 (terminal block) 1 x USB 3.0, 3 x USB 2.0 1 x VGA, 1 x DP1.1a 1 x GPIO (8 channels, TTL level) via internal pin header (requires optional module) 1 x line out, 1 x mic in			5 x serial ports: 4 x RS-232, 1 x isolated RS-422/485, 4 x USB 3.0 1 x VGA 1 x DP1.2 1 x GPIO (8 channels, TTL level) via internal pin header 1 x line out, 1 x mic in	5 x serial ports: 4 x RS-232 (2 x via internal pin header, requires additional optional module), 1 x isolated RS-422/485, 4 x USB 3.0, 1 x VGA 1 x DP1.2 1 x GPIO (8 channels, TTL level) via internal pin header 1 x line out, 1 x mic in	2 x RS-232, 1 x RS-422/485 with 1K VDC isolation Either 2 x RS-232 or 1 x RS-232 + 1 x GPIO(TTL, 8 pin programmable) on right side (optional module) 4 x USB 3.0 (rear), 1 x line out, 1 x mic in 1 x DB15 VGA 1 x Display Port (1.2) 1 x TPM 2.0 internal(optional)		2 x serial ports: 1 x RS-232, 1 x RS-232/422/485 (adjustable via BIOS) 2 x USB 3.0, 2 x USB 2.0 (right side) 1 x HDMI 1 x TPM2.0 (optional, internal)		
Storage	1 x 2.5" SATA bay 1 x mSATA bay			1 x 2.5" SATA bay 1 x M.2 bay (22 x 42 mm)	1 x 2.5" SATA bay 1 x M.2 bay (22 x 42 mm)	1 x 2.5" SATA bay	2 x 2.5" SATA bay (supports Intel RAID)	1 x 2.5" SATA bay 1 x mSATA bay			
Expansion	1 x PCI (standard); 1 x PCIe x1 (in the accessory box) 1 x Full-size mini PCIe Optional: 1 x Cfast; 1 x CF card (PPC-3150/3170 only); 1 x Internal USB dongle; 2 x RS-232 or 1 x RS-232 + 1 x GPIO			1 x Full-size mini PCIe	1 x PCIe x4 (standard); 1 x PCI (in the accessory box) 1 x Full-size mini PCIe Optional: 1 x CFast; 1 x CF card; 1 x Internal USB dongle; 2 x RS-232 or 1 x RS-232 + 1 x GPIO	1 x PCIe x4 (standard); 1 x PCI (in the accessory box) 1 x Full-size mini PCIe		1 x Full-size mini PCIe			
Power Input (Voltage)	9 ~ 32 V_{DC}			9 ~ 32 V_{DC}	9 ~ 32 V_{DC}	9 ~ 32 V_{DC}		12 ~ 24 V_{DC}			
Enclosure	Front: Aluminum alloy Back: Plastic			Front: Aluminum alloy Back: Plastic	Front: Aluminum alloy Back: Plastic	Front: Aluminum alloy Back: Plastic		Aluminum alloy			
Ingress Protection	Front panel: IP65			Front panel: IP65	Front panel: IP65	Front panel: IP65		Front panel: IP65			
Mounting	Panel, VESA 75, wall, stand, ARM			Panel, VESA 75, wall, stand, ARM	Panel, VESA 75, wall, stand, ARM	Panel, VESA 100, wall, stand, ARM		Panel, VESA 100, wall, stand, ARM			
Operating Temperature	0 ~ 50°C (32 ~ 122°F) with 2.5 SATA SSD -20 ~ 60°C (-4 ~ 140°F) with -40 ~ 85°C mSATA or 2.5 SATA SSD			0 ~ 50°C (32 ~ 122°F) with SSD 0 ~ 40°C (32 ~ 104°F) with HDD	0 ~ 50°C (32 ~ 122°F) with SSD 0 ~ 45°C (32 ~ 113°F) with HDD	0 ~ 50°C (32 ~ 122°F) with SSD 0 ~ 40°C (32 ~ 104°F) with HDD	0 ~ 50°C (32 ~ 122°F)	0 ~ 50°C (32 ~ 122°F) with SSD 0 ~ 45°C (32 ~ 113°F) with HDD			
Storage Temperature	-40 ~ 60°C (-40 ~ 140°F)	-30 ~ 60°C (-22 ~ 140°F)		-40 ~ 60°C (-40 ~ 140°F)	-40 ~ 60°C (-40 ~ 140°F)	-20 ~ 60°C (-4 ~ 140°F)		-20 ~ 60°C (-4 ~ 140°F)			
Dimensions	392.2 x 313.5 x 55.1 mm (15.4" x 12.3" x 2.1")	437 x 357 x 56.5 mm (17.2" x 14.0" x 2.22")	454.0 x 379.8 x 62.1 mm (17.8" x 14.9" x 2.4")	317 x 246 x 60.5 mm (12.5" x 9.7" x 2.4")	391.4 x 312.5 x 55.35 mm (15.41" x 12.3" x 2.18")	419.7 x 269 x 59 mm (16.5" x 10.6" x 2.3")	558.4 x 349.8 x 63.6 mm (22" x 13.8" x 2.5")	419.7 x 269.0 x 62.1 mm (16.5" x 10.6" x 2.4")	488 x 309 x 61 mm (19.21" x 12.17" x 2.4")	558.4 x 349.8 x 62.3 mm (22" x 13.8" x 2.45")	595.9 x 374.1 x 61.5 mm(23.5" x 14.7" x 2.4")
Weight	5.3 kg	6.3 kg	7.0 kg	3.4 kg	5.4 kg	5.4 kg	7.8 kg	4.8 kg	7.6 kg	8.1 kg	8.7 kg
Certification	BSMI, CCC, CB, UL, CE, FCC Class A			BSMI, CCC, CB, UL, CE, FCC Class B	BSMI, CCC, CB, UL, CE, FCC Class B	BSMI, CCC, CB, UL, CE, FCC Class B		BSMI, CCC, CB, UL, CE, FCC Class B			
Operating System	Windows 7(32/64-bit)/10(64-bit), WES7P, WEC7, Win10 LTSC, Linux, Android 6.0			Windows 10 (64-bit), Win10 LTSC, Linux	Windows 7(32/64-bit)/ 10(64-bit), WES7P(64-bit),Win10 IOT LTSB, Linux	Windows 10 (64-bit), Win 10 LTSC, Linux		Windows 7(32/64-bit)/10(64-bit), WES7P, Windows 10 IOT LTSC, Linux			Windows 10(64-bit), Windows 10 IOT LTSC, Linux

General Panel PCs

Model	☞ PPC-6151C ☞ PPC-6171C ☞ PPC-6191C-RTAE PPC-MB-8260AE PPC-MB-7760A			☞ PPC-6151C ☞ PPC-6171C ☞ PPC-6191C-RMAE Support certified mini-ITX motherboards			☞ PPC-6121
CPU	6th/7th/8th/9th Gen. Intel® Core™ i3/i5/i7/Celeron® Processor			Processor support up to 45W TDP depending on the Mini-ITX motherboard			8th/9th generation Intel® Core™ i/Celeron® processors
Memory	1 x SO-DIMM DDR4 2133 MHz (max. 16 GB)			Subject to mini-ITX motherboard specifications			2 x 260-pin SO-DIMM DDR4 2666 MHz (max. 32 GB)
Display Type	TFT LED LCD			TFT LED LCD			TFT LED LCD
Display Size	15	17	19	15	17	19	12.1
Screen Ratio	4:3			4:3			4:3
Max. Resolution	1024 x 768	1280 x 1024	1280 x 1024	1024 x 768	1280 x 1024	1280 x 1024	1024 x 768
Luminance cd/m²	500	350	350	500	350	350	600
Viewing Angle (H/V°)	160,140	160,140	170,160	160,140	160,140	170,160	178,178
Backlight MTBF	50,000 hr			50,000 hr			50,000 hr
Touchscreen	Projected capacitive multi-touch/5-wire resistive			Projected capacitive multi-touch/5-wire resistive			5-wire resistive
Network (LAN)	2 x GbE (Intel I211)			Subject to mini-ITX motherboard specifications			2 x GbE (Intel I211, Intel I219LM)
IO Ports	5 x serial ports: 3 x RS-232 (by cabling), 1 x RS-232/422/485, 1 x RS-232, 4 x USB3.0 (ext.), 2 x USB2.0 (int. pin head) 1 x DP 1.2, 1 x VGA 1 x line out, 1 x mic in 1 x GPIO (8-bit) (by cabling)			4 x Reserved ports Subject to mini-ITX motherboard specifications			4 x RS-232, 1 x RS-422/485 with 1K VDC isolation, 4 x USB3.1 1 x DB15 VGA, 1 x HDMI 1.4 1 x Mic in, 1 x Line out 1 x GPIO(TTL, 8 pin programmable) 1 x TPM2.0 (optional)
Storage	1 x 2.5" SATA bay 1 x mSATA bay			2 x 2.5" SATA bay			1 x 2.5" SATA bay 1 x mSATA bay
Expansion	1 x PCIe x4 (standard); 2 x PCI (in the accessory box) Optional: 2 x PCIe x1 1 x PCIe x1 + 1 x PCI 1 x Full-size mini PCIe or 1 x mSATA Bay			Subject to mini-ITX motherboard specifications			1 x M.2 2230(E key) 1 x PCIe x4 or 1 x PCI (optional)
Power Input (Voltage)	100 ~ 240 V_{AC}			100 ~ 240 V_{AC}			12 ~ 30 V_{DC}
Enclosure	Front: Aluminum alloy Back: Plastic			Front: Aluminum alloy Back: Plastic			Front: Aluminum alloy Back: Plastic
Ingress Protection	Front panel: IP65			Front panel: IP65			Front panel: IP65
Mounting	Panel, VESA 75/100, wall, stand, ARM			Panel, VESA 75/100, wall, stand, ARM			Panel, VESA 75, wall, stand, ARM
Operating Temperature	0 ~ 50°C (32 ~ 122°F)			0 ~ 50°C (32 ~ 122°F)			0 ~ 50°C (32 ~ 122°F)
Storage Temperature	-30 ~ 60°C (-22 ~ 140°F)			-30 ~ 60°C (-22 ~ 140°F)			-40 ~ 60°C (-40 ~ 140°F)
Dimensions	391.4 x 312.5 x 103.6 mm (15.4" x 12.3" x 4.08")	437 x 357 x 107.6 mm (17.2" x 14.06" x 4.2")	454 x 379.8 x 107.5 mm (17.9" x 15" x 4.2")	391.4 x 312.5 x 103.6 mm (15.4" x 12.3" x 4.08")	437 x 357 x 107.6 mm (17.2" x 14.06" x 4.2")	454 x 379.8 x 107.5 mm (17.9" x 15" x 4.2")	317 x 246 x 73 mm (12.48" x 9.69" x 2.87")
Weight	5.03 kg	5.4 kg	5.8 kg	5.03 kg	5.4 kg	5.8 kg	3.8 kg
Certification	BSMI, CCC, CB, UL, CE, FCC Class A			CB, UL, CE, FCC classA			BSMI, CCC, CB, UL, CE, FCC Class A
Operating System	Windows 7/8.1/10, Linux			Subject to mini-ITX motherboard specifications			Windows 10 64bit, Linux

6 Automation Computers



Real-Time Embedded Controllers

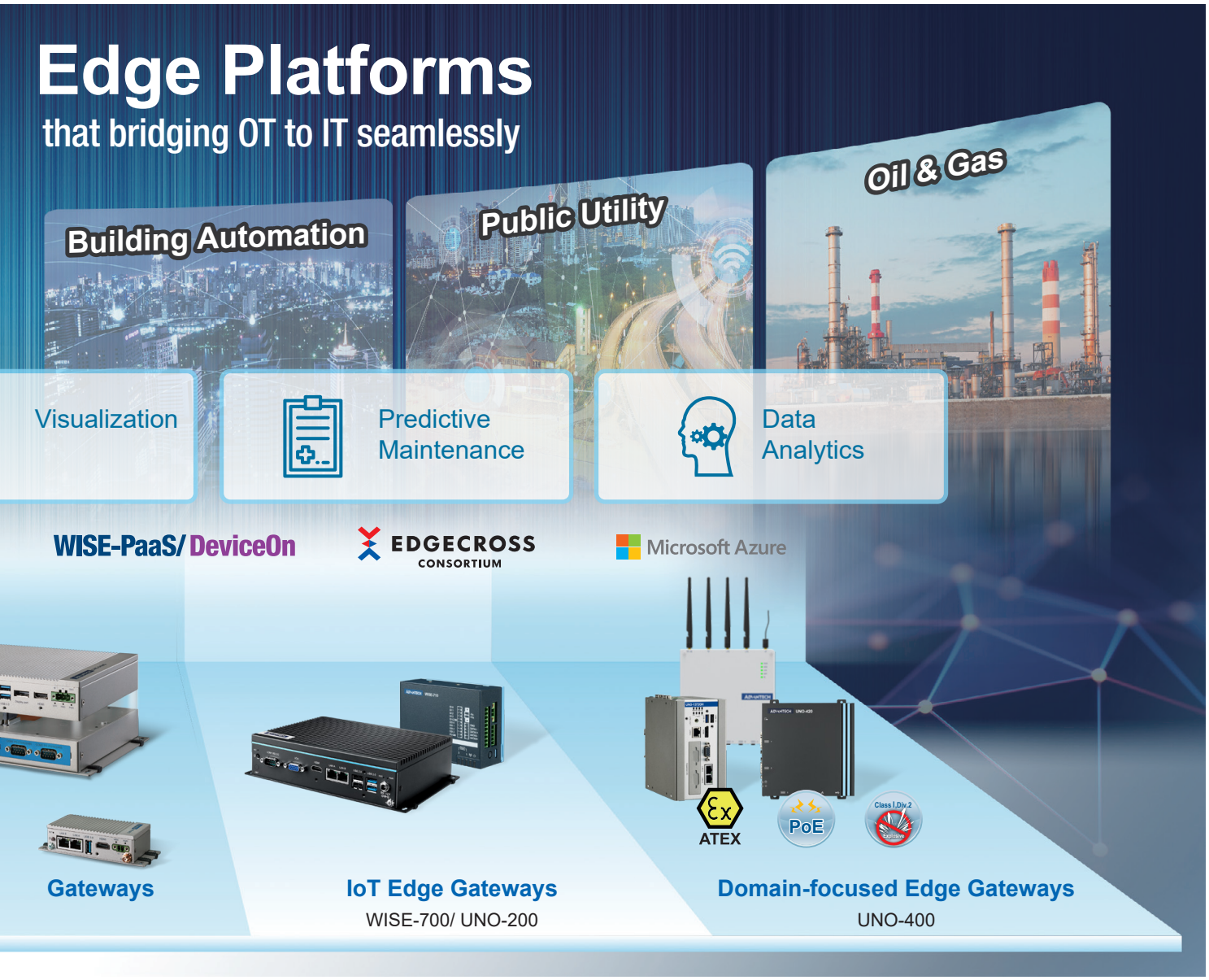
Advantech's UNO-100 are real-time embedded controllers with compact, ruggedized, and fanless features. New modular design provides configuration flexibility for customers to optimize their applications in a more cost-efficient way. UNO-100 offers application-oriented expansion including iDoor technology or PCIe cards, Fieldbus communication, Wi-Fi/LTE, Digital I/O, and PoE. It supports versatile mounting options via DIN-rail, wall, enclosure, and panel mounts to ensure easy installation in all kinds of applications.

Edge AI Expandable PCs

Advantech's UNO-3000 all-in-one design with removable top cover ensures easy maintenance. Equipped with diverse and flexible expansion: mPCIe(Fieldbus), PCIe (High density I/O), and PCI (Motion card) it is perfectly suitable as a high performance Edge AI PC. With iDoor technology, UNO-3000 also supports automation feature extensions such as Fieldbus communication, Wi-Fi/4G, Digital I/O, and PoE, and its dual hot-swappable storage design ensures high data security.

IoT Automation Gateways

Advantech's IoT automation gateways offer flexible and expandable features based on new modular designs. Integrated with iDoor expandability and stackable modular design, the UNO-2000 is adapted for different kinds of embedded automation applications. The units can be easily integrated with Advantech WISE-PaaS software which helps bridge the gap between IT and OT. UNO-2000 is suitable for individual design requirements that enable flexible and manageable configurations.



IoT Edge Gateways

Advantech's WISE-7 and UNO-2 series are the bridge for data from edge devices to the cloud and play a central role in IoT Edge Gateway applications. Thanks to their digital and analog I/O, this series offers the capability of fast connectivity to edge devices. All collected data can be delivered to the cloud by Giga Lan and high speed RF technologies. With UNO-2 series installed, your system will benefit from the video output features that will allow you to visualize information on a dashboard and monitors.

Domain-focused Edge Gateways

Advantech's UNO-400 offers domain-focused edge gateways which satisfy diverse industry requirements. For smart infrastructure and industrial manufacturing, UNO-420 PoE powered Sensing Gateway ensures less cabling and easy installation in awkward or remote locations that may be difficult to reach with a power cable. Besides, flexible programmable GPIO supports both 8-channel ADC and DAC for data acquisition. UNO-410 supports C1D2+IEC ATEX (opentype) certification and wide temperature ranges from -40~70°C degree which are perfect for control cabinet usage. The new UNO-430 IP66 ruggedized outdoor gateways offer perfect support with C1D2 + ATEX (standalone) certification which are suitable for outdoor usage with waterproof and dustproof features along with wide temperature range -40~70°C support.

Real-time Embedded Controllers

NEW




Model Name	☞ UNO-1372G-J	UNO-1372G-E	☞ UNO-1483G	UNO-137
Certification	CE, FCC, UL, CCC, BSMI	CE, FCC, UL, CCC, BSMI	CE, FCC, UL, CCC, BSMI	CE, FCC, UL, CCC, BSMI
CPU	Intel® Celeron J1900 2.0 GHz	Intel Atom E3845	Intel® Core i3-4010U	Intel Atom E3940
Onboard RAM	Built-in 4 GB DDR3L	Built-in 4GB DDR3L	Built-in 8GB DDR3L	Built-in 8GB DDR3L
Battery-Backup RAM	-	-	-	-
Display	HDMI, DP	VGA, HDMI	VGA,DP	2 x DP
I/O	4 x iso. RS232/422/485, 2 x LAN, 4 x USB, 4 x DI, 4 x DO	1 x RS232, 1 x RS422/485, 3 xLAN, 3 x USB, 4 x DI, 4 x DO, Line out	1 x RS232, 2 x RS422/485, 4 x LAN, 4 x USB, 4 x DI, 4 x DO, Line out	2 x RS232/422/485, 2 x LAN, 4 x USB, 8x DI, 8 x DO
PCIe/PCI Expansion	2 x mPCIe	2 x mPCIe	1 x full size mPCIe 1 x half size mPCIe (with PCIe signal only) 1 x PCIex1	1 x full size mPCIe
CompactFlash Slots	-	-	-	-
Storage	1 x mSATA (shared with mPCIe slot) 1 x 2.5" HDD bay	1 x mSATA,1 x 2.5" HDD bay	1 x mSATA,1 x 2.5" HDD bay	1 x 2.5" HDD/SDD bay, 1 x M.2 2242 SSD Slot
SIM Card slot	1 x (micro)	2 x (1 Standard, 1 supported by project)	1 x (supported by project)	1 x (nano)
Default OS	-	-	-	-
Operating Systems	Win10, WES7P, WEC7, AdvLinuxTU	Win10, WES7P, WEC7, AdvLinux	Win10, WES7P, AdvLinux	Win10, Win10 LTSC, AdvLinux
TPM	TPM 2.0 onboard	TPM 1.2 by iDoor	TPM 1.2 by iDoor	TPM 2.0 onboard
Mounting	DIN rail	DIN rail, Wallmount	DIN rail, Wallmount	DIN rail
Power Input Range	10~36 V_{DC}	9~36 V_{DC}	12V/24V_{DC} ± 20%	10~36 V_{DC}
Operating Temperature	-20 ~ 60°C	-20 ~ 60°C	-20 ~ 60°C	-40 ~ 70°C
Power Consumption Typical	19 W	24 W	40 W	35 W
Dimensions (W x D x H)	65 x 105 x 150mm (2.6" x 4.1" x 5.9")	85 x 139 x 152 mm (3.3" x 5.5" x 6.0")	106 x 139 x 198 mm (4.2" x 5.8" x 7.8")	35 x 105 x 150 mm (1.4" x 4.2" x 5.8")
Weight	1 kg	1.6 kg	2.4 kg	1 kg

Expension Kit	2nd stack expansion module to support 1 x iDOOR on UNO-137-E13BA
P/N	UNO-137-ID1EA
Ports	1 x iDOOR (Chassis only)
Dimensions	35 x 105 x 150 mm
Description	UNO-137 2nd stack expansion module for iDoor

IoT Automation Gateways

Model Name	UNO-2271G	UNO-2372G	UNO-2484G
CPU	Intel® Atom™ E3815, 1.33 GHz Intel® Atom™ E3815,1.46 GHz	Intel® Atom™ E3845 1.91 GHz Intel® Celeron® J1900, 2 GHz Intel® Celeron® J3455 1.5GHz	Intel® Core i7-6600U, 2.6 GHz /i7-7600U, 2.8 GHz Intel® Core i5-6300U, 2.4 GHz/ i5-7300U, 2.6 GHz Intel® Core i3-6100U, 2.3 GHz/ i3-7100U, 2.4 GHz Intel® Celeron® 3955U, 2.0 GHz
Onboard RAM	4 GB DDR3L	4 GB DDR3L	8 GB DDR4
Battery-Backup RAM	-	-	-
Display	1 x HDMI	1 x DP, 1 x HDMI	1 x DP, 1 x HDMI
Audio	-	Line out	Line out
I/O	1 x USB3.0 2 x GbE (2x RJ45) (Optional 2 x COM: UNO-2271G-E23/E023 series; 3 x USB: UNO-2271G-E22/E022 series)	1 x USB3.0 3 x USB2.0 2 x GbE (2x RJ45) 1 x HDMI (lockable) 4 x RS-232/422/485	4 x USB3.0 4 x GbE (4x RJ45) 4 x RS-232/422/485
Hardware Security	Optional (support by project)	TPM2.0	TPM2.0
mPCIe Expansion	1 x Full-size mPCIe slot	2 x Full-size mPCIe slots	Single stack version: 1 x Full-size mPCIe slots Double stack version: 4 x Full-size mPCIe slots
PCIe/PCI Expansion	-	-	-
Onboard Storage	32 GB eMMC	-	-
Storage Expansion	1 x mSATA shared with mPCIe slot 1 x 2.5" HDD/SDD bay		1 x mSATA shared with mPCIe slot 1 x 2.5" HDD/SDD bay
Operating Systems	Windows 7/10, AdvLinux	Windows 7/10, AdvLinux	Windows 7/10, AdvLinux
Mounting	Stand, wallmount, VESA, DIN rail, pole	Stand, wallmount, VESA, DIN rail	Stand, wallmount, VESA , DIN rail
Operating Temperature	0 ~ 50°C (32 ~ 122°F)	-20 ~ 60°C (-4 ~ 140°F)	-20 ~ 60°C (-4 ~ 140°F)
Power Consumption Typical	12 W	30 W	55 W
Power Input Range	10 ~ 30V_{DC}	10 ~ 36V_{DC}	10 ~ 36V_{DC}
Dimensions (W x D x H)	100 x 70 x 30 mm (3.9" x 2.8" x 1.2"), UNO-2271G-E22BE/ E23BE/ E022AE/ E023AE: 100 x 70 x 60 mm (3.9" x 2.8" x 2.6")	Single stack version: 150 x 105 x 35 mm (5.8" x 4.2" x 1.4") Double stack version: 150 x 105 x 65 mm (5.8" x 4.2" x 2.6")	Single stack version: 200 x 140 x 40 mm (7.8" x 5.6" x 1.6") Double stack version: 200 x 140 x 70 mm (7.8" x 5.6" x 2.8")
Weight	UNO-2271G-E21BE/ E021AE: 0.5 kg 2271G-E22BE/ E23BE/ E022AE/ E023AE: 0.6 kg	Single stack: 0.8 kg Double stack: 1.0 kg	Single stack: 1.4 kg Double stack: 1.8 kg

Front view

Side View

Expension Kit	2nd stack expansion module for support 1 x iDOOR on UNO-2271G-E21BE/ UNO-2271G-E021AE	2nd stack expansion module for support 3 USB2.0 ports on UNO-2271G-E21BE/ UNO-2271G-E021AE	2nd stack expansion module for support 2 RS-232/422/485 ports on UNO-2271G-E21BE/ UNO-2271G-E021AE	2nd stack expansion module for support 2 x iDOOR on UNO-2372G-xx21AE	2nd stack expansion module for support 4 x iDOOR (3 mPCIe slot) on UNO-2484G-xx31AE	2nd stack expansion module for support 2 external swappable HDD/ SSD Storage on UNO-2484G-xx31AE	2nd stack expansion module for support 1 PCIex4 card
P/N	UNO-2271G-EKBE	UNO-2271G-U3BE	UNO-2271G-R2BE	UNO-2372G-EKBE	UNO-2484G-EKBE	UNO-2484G-S2AE	UNO-2484G-PCIEAE
Ports	1 x iDOOR (Chassis only)	3 x USB2.0 ports	2 x RS-232/422/485 ports	2 x iDOOR (Chassis only)	4 x iDOOR (3 x mPCIe only)	2 x external swappable HDD/ SSD Storage	1 xPCIex4 slot for half-length PCIe card (W167 x H111 mm)
Dimensions	100 x 70 x 30 mm	100 x 70 x 30 mm	100 x 70 x 30 mm	150 x 155 x 35 mm	200 x 140 x 40 mm	200 x 140 x 40 mm	200 x 140 x 40 mm
Description	UNO-2271G 2nd stack extension kit for iDoor	UNO-2271G 2nd stack with 3 USB2.0 ports	UNO-2271G 2nd stack with 2 COM ports	UNO-2372G 2nd stack expansion module	UNO-2484G 2nd stack expansion module for 4 iDoor	UNO-2484G external swappable HDD extension kitU	NO-2484G second stack PCIex4 expansion module

Edge AI Expandable PCs




Model Name	☞ UNO-3272G	☞ UNO-3285C	☞ UNO-3283G	☞ UNO-3285G
Certification	CE, FCC, UL, CCC, BSMI	CE, FCC, UL, CCC, BSMI	CE, FCC, UL, CCC, BSMI	CE, FCC, UL, CCC
CPU	Intel® Celeron J1900, 2.0GHz Quad Core	Intel® Core™ i7-6822EQ, 2.0GHz Quad Core Intel® Celeron G3902E, 1.6GHz Dual Core	Intel® Core™ i7-6822EQ, 2.0GHz Quad Core Intel® Core™ i5-6442EQ, 1.9GHz Quad Core Intel® Core™ i5-6440EQ, 2.7GHz Quad Core Intel® Core™ i3-6102E, 1.9GHz Dual Core	Intel® Core™ i7-6822EQ, 2.0GHz Quad Core Intel® Core™ i5-6442EQ, 1.9GHz Quad Core Intel® Core™ i5-6440EQ, 2.7GHz Quad Core Intel® Core™ i3-6102E, 1.9GHz Dual Core
Onboard RAM	Built-in 4GB DDR3L 1333 MHz, two sockets support up to 8GB	Built-in 8GB DDR4 2133 MHz, two socket support up to 32GB Built-in 4GB DDR4 2133 MHz, two socket support up to 32GB	Built-in 8GB DDR4 2133 MHz, two socket support up to 32GB	Built-in 8GB DDR4 2133 MHz, two socket support up to 32GB
Battery-Backup RAM	-	-	-	-
Hardware Security	onboard TPM 2.0	TPM 2.0 (optional)	TPM 2.0 (optional)	TPM 2.0 (optional)
Display	1 x VGA, 1 x HDMI	1 x DVI, 1 x HDMI	1 x DVI, 1 x HDMI	1 x DVI, 1 x HDMI
Audio	Line-Out	-	Mic-in, Line-In, Line-Out (Pin Header)	Mic-in, Line-In, Line-Out (Pin Header)
I/O	2 x RS-232/422/485 2 x RS-232 1 x USB 3.0 3 x USB 2.0 2 x RJ45, 10/100/1000 Mbps	2 x RS-232/422/485 6 x USB 3.0 2 x RJ45, 10/100/1000 Mbps	2 x RS-232/422/485 2 x RS-232 (Pin header) 6 x USB 3.0 2 x RJ45, 10/100/1000 Mbps	2 x RS-232/422/485 2 x RS-232 (Pin header) 6 x USB 3.0 2 x RJ45, 10/100/1000 Mbps
PCIe/PCI Expansion	2 x PCIe x1 1 x Full-size mPCIe (optional 2 x PCI)	2 x PCIex8 2 x PCI 2 x Full-size mPCIe (optional 4 x PCI)	1 x PCIex16 1 x PCI 2 x Full-size mPCIe (optional 2 x PCI/ 2 x PCIex8/ 4 x PCI)	2 x PCIex8 2 x PCI 2 x Full-size mPCIe (optional 2 x PCI/ 2 x PCIex8/ 4 x PCI)
CFast Slot	-	1	1	1
Storage	1 x M.2 B-key (2242) up to 512GB 1 x 2.5" HDD/SSD bay (internal)	1 x mSATA 2 x 2.5" HDD/SSD bay (internal)	1 x mSATA 2 x 2.5" HDD/SSD bay (Hot-swappable)	1 x mSATA 2 x 2.5" HDD/SSD bay (Hot-swappable)
Dual Power Input	Supported	Supported	Supported	Supported
Operating Systems	WIN7/8, WES7, Win10 Ent., Linux	WIN7/8, WES7, Win10 Ent., AdvLinux	WIN7/8, WES7, Win10 Ent., AdvLinux	WIN7/8, WES7, Win10 Ent., AdvLinux
Mounting	Wall/ Stand mount	Stand mount	Wall/ Stand/ Enclosure mount	Wall/ Stand/ Enclosure mount
Power Input Range	10-36V_{DC}	10-36V_{DC}	10-36V_{DC}	10-36V_{DC}
Operating Temperature	-20 ~ 60°C (-4 ~ 140°F)	-20 ~ 60°C (-4 ~ 140°F)	-20 ~ 60°C (-4 ~ 140°F)	-20 ~ 60°C (-4 ~ 140°F)
Power Consumption	24W(typical), 60W(Max)	90W(typical), 133W(Max)	90W(typical), 133W(Max)	90W(typical), 133W(Max)
Dimensions (W x D x H)	145 x 177 x 238 mm	196.6 x 238 x 177 mm	142 x 238 x 177mm	182 x 238 x 177mm
Weight	2.9 kg	4.7kg	4.0 kg	4.5 kg

IoT Edge Gateways

WISE-EdgeLink

NEW

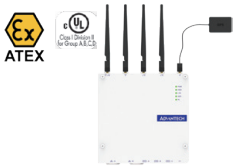
RaspberryPi

NEW

WISE-PaaS/ DeviceOn

Model Name	☞ WISE-710	UNO-220	☞ UNO-247
CPU	i.Mx6 ARM Cortex-A9 1GHz Dual Core	-	Intel® Celeron® J3455 1.5GHz
Onboard RAM	1GB DDR3	-	-
Display	-	-	1 x HDMI 1 x VGA
I/O	Serial: COM1 1 x RS232/485, DB9 COM2 1 x RS485/CANBus (by switch), 5pin COM3 1 x RS485, 2pin LAN: 2 x 10/100/1000 Base-T RJ-45 ports USB: 1 x Micro USB Host (Support flash storage)	4 x GPIO 1 x RS232/RS485	2 x USB2.0 2 x USB3.0 4 x RS-232 2 x RS485 2 x GbE (RJ45)
PCIe/PCI Expansion	1 x Full size mPCIe for Wifi or LTE	-	-
Storage	8GB eMMC; 1 x Micro SD slot	8GB Micro SD card	-
SIM Card slot	-	-	1 SIM card slot
Operating Systems	Linux Ubuntu 16.04 (Default) and Linux Yocto 2.1	Linux (Raspbian)	Win10 2019 LTSC, AdvLinux
TPM	-	Supported by project	Supported by project
Mounting	Wallmount, DIN rail	Wallmount	Stand mount, Din rail (Optional)
Power Input Range	24VDC ± 20%, 0.5A	5 VDC Min 3A (USB Type C)	12VDC (Adapter inside)
Operating Temperature	-20 ~ 55°C (-4 ~ 131°F)	0 ~ 50°C (32~122°F)	0 ~ 50°C (32~122°F)
Power Consumption Typical	5W @ $24V_{DC}$	15W	17W
Dimensions (W x D x H)	115.58 x 73 x 36 mm	100 x 70 x 32 mm	200 x 140 x 50 mm
Weight	0.17 kg	0.5 kg	1.0kg

Domain-focused Edge Gateways



WISE-EdgeLink

Model Name	UNO-410	UNO-430	☞ UNO-1372GH	☞ UNO-420
Certification	C1D2, ATEX (opentype), CE, FCC, UL, CCC, BSMI	C1D2, ATEX (standalone), CE, FCC, UL, CCC, BSMI	C1D2, CE, FCC, UL, CCC, BSMI	CE, FCC, UL, CCC, BSMI
Protection	IP40	IP66	IP40	IP40
CPU	Intel Atom® X5-E3940, 1.8 GHz Quad Core	Intel Atom® X7-E3950, 2.0 GHz Quad Core	Intel Atom® E3845, 1.91 GHz Quad Core	Intel Atom® E3815, 1.46 GHz Single Core
Onboard RAM	Built-in 8GB DDR3L 1333 MHz, support up to 8GB	Built-in 8GB DDR3L 1333 MHz, support up to 8GB	Built-in 4GB DDR3L 1333 MHz, support up to 8GB	Onboard 2GB DDR3L 1066 MHz
Battery-Backup RAM	-	-	-	-
Onboard Storage	-	-	-	32GB eMMC
Hardware Security	Onboard TPM 2.0	Onboard TPM 2.0	TPM 2.0 (optional)	Onboard TPM 2.0
Display	2 x DP	-	1 x VGA, 1 x HDMI	1 x HDMI
I/O	2 x RS-232/422/485 (Terminal Block) 4 x USB3.1 Isolated 8DI/ 8DO 2 X RJ45, 10/100/1000Mbps	2 x isolated RS-422/485 1 x RS-232 (console) 2 X RJ45, 10/100/1000Mbps	1 x RS232 1 x RS422/485 1 x USB 3.0 3 x USB 2.0 Isolated 4DI/ 4DO 3 X RJ45, 10/100/1000Mbps 1 x Line-Out	2 x RS-232/422/485 1 x RS-485 (Terminal Block) 2 x RJ45, 10/100/1000Mbps (1 x PoE-IN)
PCIe/PCI Expansion	1 x Full-size mPCIe	1 x M.2 B key 3042 for LTE module 1 x M.2 E key 2230 for Wifi module	2 x Full-size mPCIe	1 x Full-size mPCIe slot 1 x Half-size mPCIe slot
Storage	1 x M.2 B key (Both for 3042 LTE Module and 2242 SSD) 1 x 2.5" SSD bay	1 x M.2 B-key (2242)	1 x mSATA 1 x 2.5" HDD bay	1 x M.2 B-key (2242)
SIM Card Slot	1 (nano)	1 (standard)	-	1 (micro)
Operating Systems	Win10, Win10 LTSC, AdvLinux	Win10, Win10 LTSC, AdvLinux	WIN7/8, WES7, Win10 Ent., AdvLinux	Win10, Win10 LTSC, AdvLinux
Mounting	Din rail	Wallmount	Din rail, wallmount	Wallmount
Power Input Range	10-36V_{DC}	10-36V_{DC}	10-36V_{DC}	10-30V_{DC}
Operating Temperature	-40 ~ 70°C (-40 ~ 158°F)	-40 ~ 70°C (-40 ~ 158°F)	-20 ~ 60°C (-4 ~ 140°F)	-20 ~ 60°C (-4 ~ 140°F)
Power Consumption	35W (Typical), 55W (Max)	15W (Typical), 30W (Max)	24W(typical), 50W(Max)	12W(typical), 20W(Max)
Dimensions (W x D x H)	35 x 105 x 150 mm	200 x 68 x 200 mm	85 x 139 x 152 mm	125 x 125 x 50 mm
Weight	1kg	3 kg	1.6 kg	1.5kg

iDoor Technology Modules

iDoor CORE





Model Name	PCM-2300MR	PCM-23C1CF	PCM-23U1DG	PCM-24U2U3	PCM-27J3AU
Description	MR4A16B, MRAM, 2 MB, mPCIe	1 CFast Slot with cover protection	USB slot w/ lock for USB dongle, half-size mPCIe	2-port USB 3.0, mPCIe, USB-A type	3-port audio stereo, mPCIe, 3.5-mm jack

iDoor Wired/ Wireless Communication





Model Name	PCM-24S2WF	PCM-24S33G	PCM-24S34G	PCM-24BXWF	PCM-24BX4G
Description	Wi-Fi 802.11 a/b/g/n 2T2R w/Bluetooth 4.0, half-size mPCIe, antennas	3.75G HSPA/GPS, full-size mPCIe, front-accessible dual SIM card slots, 3G/ GPS antennas	LTE/HSPA+/GPRS and GPS, full-size mPCIe, 4G/ GPS antennas	Wi-Fi 802.11 a/b/g/n 2T2R w/Bluetooth 4.0, idoor box, antennas	4G Cat.6,LTE-A/UMTS/ HSPA+, idoor box, 4G/ GPS antennas

iDoor Industrial Fieldbus Communication

Model Name	PCM-26D2CA	PCM-26D1DB	PCM-26R2PN	PCM-26R2EC	PCM-26R2EI	PCM-26R2S3	PCM-26R2PL
Description	2-port isolated CANBus mPCIe, CANopen, DB9	1-port Hilscher netX100 FieldBus mPCIe, PROFIBUS, DB9	2-port Hilscher netX100 FieldBus mPCIe, PROFINET, RJ45	2-port Hilscher netX100 FieldBus mPCIe, EtherCAT, RJ45	2-port Hilscher netX100 FieldBus mPCIe, EtherNet/ IP, RJ45	2-port Hilscher netX100 FieldBus mPCIe, Sercos III, RJ45	2-port Hilscher netX100 FieldBus mPCIe, POWERLINK, RJ45

iDoor Smart Digital/ Analog I/O

Model Name	PCM-24D2R4	PCM-24D2R2	PCM-24D4R4	PCM-24D4R2	PCM-24R1TP	PCM-24R1TP-BE	PCM-24R2PE	PCM-24R2GL	PCM-27D24DI
Description	2-port Isolated RS-422/485, mPCIe, DB9	2-port Isolated RS-232, mPCIe, DB9	4-port non-isolated RS-422/485 mPCIe, DB37 cable	4-port non-isolated RS-232 mPCIe, DB37 cable	1-port Gigabit Ethernet, Intel® 82574L, mPCIe, RJ45	1-port Gigabit Ethernet, Intel® i225 TSN, mPCIe, RJ45	2-port Gigabit Ethernet, IEEE 802.3af (PoE)-compliant, mPCIe, RJ45	2-port Gigabit Ethernet, Intel® i350, mPCIe, RJ45	24-ch isolated digital I/O with counter mPCIe, DB37

iDoor Accessories


Model Name	PCM-28P1AD	PCM-28P1BK
Description	PCIe to mPCIe, 2-slot mPCIe, iDoor I/O plate expansion	iDoor PCIe I/O plate

iDoor Industrial Domain Application

Model Name	PCM-29R1TX
Description	1-Port iLink(TX), Long Distant Display Out, RJ45

iDoor Support Table

Model/Platform	Function	UNO-1372G-E	UNO-1372G-J	UNO-2271G-E2	UNO-2272G-N2	UNO-2272G-J2	UNO-2362G
PCM-2300TM	TPM	*	-	-	-	-	-
PCM-2300MR	MRAM	✓	✓	✓	✓	✓	✓
PCM-23C1CF	CFast	✓	-	-	-	-	✓
PCM-23U1DG	USB dongle w/mPCIe	✓	✓	✓	✓	✓	✓
PCM-24U2U3	USB 3.0	✓	✓	-	✓	✓	-
PCM-24D2R2	Iso. RS-232	✓	✓	✓	✓	✓	✓
PCM-24D2R4	Iso. RS-422/485	✓	✓	✓	✓	✓	✓
PCM-24D4R2	Non-iso. RS-232	✓	✓	✓	✓	✓	✓
PCM-24D4R4	Non-iso. RS-422/485	✓	✓	✓	✓	✓	✓
PCM-24R1TP	GigaLAN IEEE1588/ TSN i225	✓	✓	✓	✓	✓	✓
PCM-24R2GL	2-port GigaLAN	✓	✓	✓	✓	✓	✓
PCM-24R2PE	PoE	✓	✓	✓	✓	✓	✓
PCM-24S2WF	M.2 Wi-Fi	✓	✓	✓	✓	✓	✓
PCM-24S23G	3G/GPS w/SMA BKT	✓	✓	✓	✓	✓	✓
PCM-24S33G	3G/GPD w/dual SIM	✓	✓	✓	✓	✓	✓
PCM-24S34G	LTE	✓	✓	✓	✓	✓	✓
PCM-24BXWF	Wifi iDoor Box	-	✓	**	**	-	-
PCM-24BX4G	LTE iDoor Box	-	✓	**	**	-	-
PCM-26D2CA	CANOpen	✓	✓	✓	✓	✓	✓
PCM-26D1DB	PROFIBUS	✓	✓	✓	✓	✓	✓
PCM-26R2PN	PROFINET	✓	✓	✓	-	-	-
PCM-26R2EC	EtherCAT	✓	✓	✓	✓	✓	✓
PCM-26R2EI	EtherNet/IP	✓	✓	✓	-	-	-
PCM-26R2S3	Sercos 3	✓	✓	✓	✓	✓	✓
PCM-26R2PL	POWERLINK	✓	✓	✓	-	-	-
PCM-27D24DI	Iso. digital I/O	✓	✓	✓	✓	✓	✓
PCM-27J3AU	Audio	✓	✓	✓	✓	-	✓
PCM-28P1AD	iDoor PCIe adpater card	✓	✓	✓	✓	-	-
PCM-28P1BK	iDoor PCIe I/O plate	-	-	-	-	-	-
PCM-29R1TX	iLink	✓	✓	-	-	✓	-

Model/Platform	Function	UNO-2372G-E022AE	UNO-2473G-E3	UNO-2473G-J3	UNO-2483G	UNO-2484G-67x1AE	UNO-2484G-67x2AE	UNO-3283G
PCM-2300TM	TPM	-	✓	-	✓	-	-	✓
PCM-2300MR	MRAM	✓	✓	✓	✓	✓	✓	✓
PCM-23C1CF	CFast	✓	✓	✓	✓	-	**	-
PCM-23U1DG	USB dongle w/mPCIe	✓	✓	✓	✓	-	✓	✓
PCM-24U2U3	USB 3.0	✓	✓	✓	*	-	✓	✓
PCM-24D2R2	Iso. RS-232	✓	✓	✓	✓	-	✓	✓
PCM-24D2R4	Iso. RS-422/485	✓	✓	✓	✓	-	✓	✓
PCM-24D4R2	Non-iso. RS-232	✓	✓	✓	✓	-	✓	✓
PCM-24D4R4	Non-iso. RS-422/485	✓	✓	✓	✓	-	✓	✓
PCM-24R1TP	GigaLAN IEEE1588/ TSN i225	✓	✓	✓	✓	-	✓	✓
PCM-24R2GL	2-port GigaLAN	✓	✓	✓	✓	-	✓	✓
PCM-24R2PE	PoE	✓	✓	✓	✓	-	✓	✓
PCM-24S2WF	M.2 Wi-Fi	✓	✓	✓	✓	✓	✓	✓
PCM-24S23G	3G/GPS w/SMA BKT	✓	✓	✓	✓	✓	✓	✓
PCM-24S33G	3G/GPD w/dual SIM	✓	✓	✓	✓	-	✓	✓
PCM-24S34G	LTE	✓	✓	✓	✓	✓	✓	✓
PCM-24BXWF	Wifi iDoor Box	✓	-	-	-	-	✓	**
PCM-24BX4G	LTE iDoor Box	✓	-	-	-	-	✓	**
PCM-26D2CA	CANOpen	✓	✓	✓	✓	-	✓	✓
PCM-26D1DB	PROFIBUS	✓	✓	✓	✓	-	✓	✓
PCM-26R2PN	PROFINET	✓	✓	✓	✓	-	✓	✓
PCM-26R2EC	EtherCAT	✓	✓	✓	✓	-	✓	✓
PCM-26R2EI	EtherNet/IP	✓	✓	✓	✓	-	✓	✓
PCM-26R2S3	Sercos 3	✓	✓	✓	✓	-	✓	✓
PCM-26R2PL	POWERLINK	✓	✓	✓	✓	-	✓	✓
PCM-27D24DI	Iso. digital I/O	✓	✓	✓	✓	-	✓	✓
PCM-27J3AU	Audio	✓	-	✓	-	-	✓	✓
PCM-28P1AD	iDoor PCIe adpater card	-	-	-	-	-	-	✓
PCM-28P1BK	iDoor PCIe I/O plate	-	-	-	-	-	-	✓
PCM-29R1TX	iLink	✓	✓	✓	✓	-	✓	*

* Contact Advantech for further information
**Need extra accessory

7 DAQ and Communication Gateways

Intelligent Edge DAQ Devices

Introduction

In the Industrial IoT era, companies and government are seeking solutions that can help them to utilize data analytics to raise service levels, create better products, and reduce operational costs. Ideally, the first step is the digitalization of assets such as factory equipment and infrastructure facilities. This means that increasingly more data needs to be acquired and analyzed, and both the volume and diversity of such data from different assets are also increasing. Equipment manufacturers, owners, and maintainers require an easy and reliable way to collect and monitor data from all kinds of field sites.

Advantech's edge data acquisition solutions WISE-EdgeLink, Node-RED and Python are designed to simplify remote monitoring. These solutions can improve service quality by facilitating product care, enabling equipment operation monitoring, and allow for efficiency and energy consumption analysis. This allows manufacturers, rental services, and end users to obtain insights on usage behaviors by deriving intelligence through the analysis of big data.

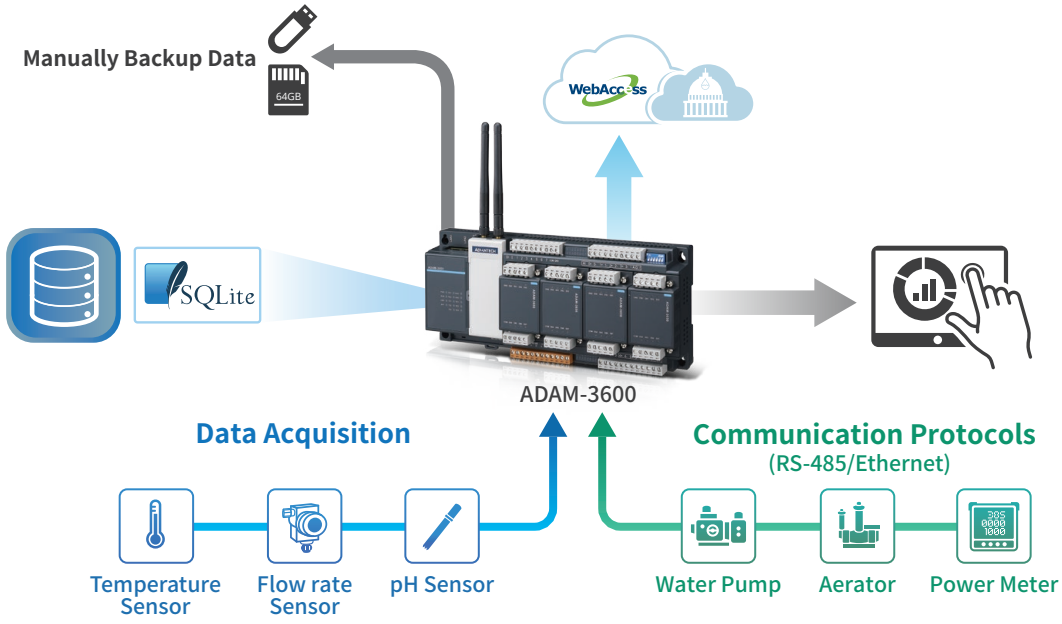
Edge DAQ Solutions

Advantech provides different types of edge data acquisition devices with various data monitoring software to meet your needs for data management.

ADAM-3600/ ECU-1155

Modular edge DAQ gateways

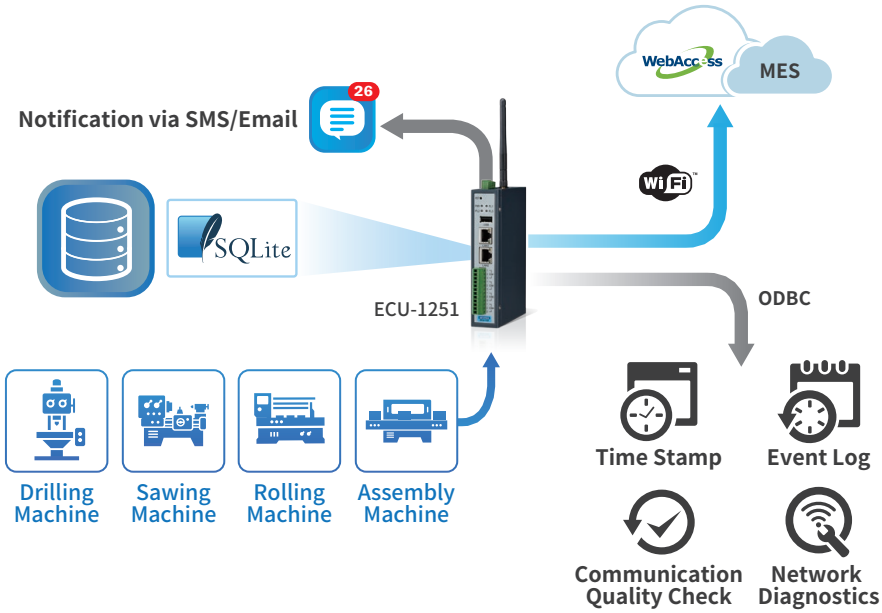
ADAM-3600 and ECU-1155 are intelligent Remote Terminal Units with multiple wireless function capability, multiple I/O selection, wide temperature range and support flexible communication protocols for oil, gas and water applications.



ECU-1000 Series

Intelligent communication gateways

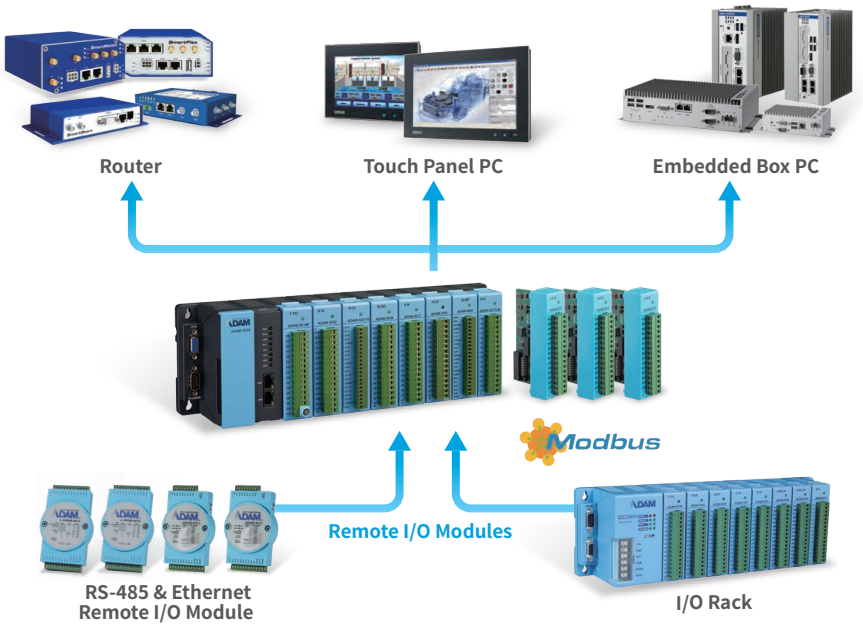
ECU-1000 series is a RISC-based gateway with robust platform design, wireless and Ethernet communication, multiple protocol support and WISE-EdgeLink integration. It is especially designed for energy management and equipment monitoring applications related to building, smart manufacturing, and substations.



ADAM-5630

Edge intelligent DAQ I/O racks

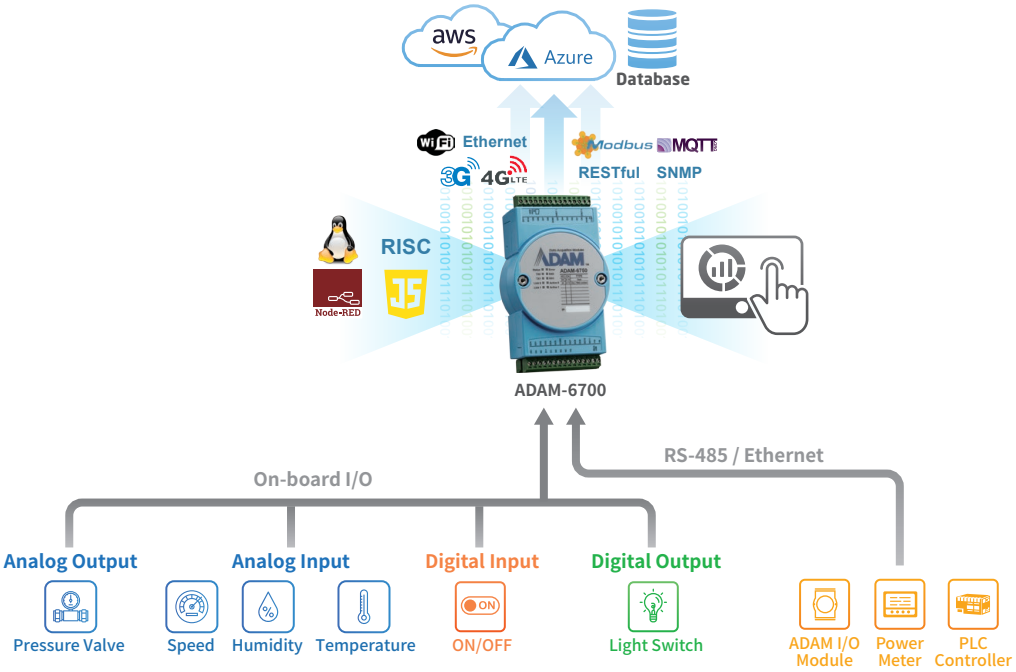
ADAM-5630 series is an edge intelligent I/O rack, featuring high performance open platform and able to develop various application programs. It also provides high expansion capability by supporting SNMP, Modbus/RTU and Modbus/TCP functions.



ADAM-6700

Intelligent I/O gateways

ADAM-6700 is the All-in-One intelligent I/O gateway offers an integrated solution in the form of a Linux-based gateway capable of performing multiple tasks at the edge. ADAM-6700 is equipped with a range of I/O for comprehensive data acquisition functionality.



Modular Edge DAQ Gateways

NEW

Model Name		ADAM-3600	ECU-1155
Description		Intelligent RTU	Container-Based Edge Intelligent Gateway
System	CPU	Cortex A8	Cortex-A9 DualLite 1GHz
	Operating system	Linux RT 3.12	Linux V4.19
	Programming interface	C (Linux), IEC-61131-3	C (Linux), IEC-61131-3
	Communication protocols	Modbus/RTU, Modbus/TCP, DNP3, IEC-60970-104, OPCUA	Modbus/RTU, Modbus/TCP, TCP/IP, DHCP, IEC104, MQTT, OPCUA
	Wireless communication	Cellular, Wi-Fi, Zigbee	Zigbee, Wi-Fi, Cellular
Serial Port	Number of ports	3	2
	Type	1 x RS-232/485, 2 x RS-485	2 x RS232/485, 2 x CAN
Network Port	Number of channels	2	2
	Number of independent IP addresses	2	2
	Speed	10/100 Mbps	10/100/1000 Mbps
	IP specifications	IPv4/IPv6	IPv4/IPv6
I/O	Onboard I/O	8 analog inputs, 8 digital inputs, 4 digital outputs	-
	Expansion slots	4	2
USB	USB2.0	1	1
Display Interface	VGA	1	-
	LED	System, serial, Ethernet, digital I/O, programmable	System, serial, Ethernet, digital I/O, programmable
Storage Interface	SD	1 x SD slot	1 x SD slot
Operating Temperature		-40~70 °C	-20~70 °C
Certification		CE/FCC	CE/FCC
Part Number		ADAM-3600-C2GL1A1E	ECU-1155

Expansion Modules

Model	Category	Channel	Part Number
ADAM-3617	Analog input module	4	ADAM-3617-AE
ADAM-3618	Analog input module	4, thermocouple	ADAM-3618-AE
ADAM-3624	Analog output module	4	ADAM-3624-AE
ADAM-3651	Digital input module	8	ADAM-3651-AE
ADAM-3656	Digital output module	8	ADAM-3656-AE
ADAM-3613	Analog input module	4, RTD	ADAM-3613-AE
ADAM-3668	Relay Module	4	ADAM-3668-AE

Analog Input	
Signal Input	Differential
Sampling Rate	10 Hz
Voltage Input	+/- 10 V, +/- 2.5 V
Input Current	0~20 mA, 4~20 mA
Sensor Input	Thermocouple (type J, K, T, E, R, S, B) RTD (Pt100, Pt1000, Balco 500, Ni 518)
Resolution	16-bit

Analog Output	
Output Voltage	0~10 V
Output Current	0~20 mA, 4~20 mA
Resolution	12-bit

Digital Input	
Input Type	Sink
Rated Voltage	12/24 V_{DC}
Logic “0” Voltage	0~5 V_{DC}
Logic “1” Voltage	11~30 V_{DC}

Digital Output	
Output Type	Open collect
Output Voltage	8~30 V_{DC} @ max 200 mA

Wireless Expansion Modules

96PD-RYUW131

Full/Half-sized mini card, supports 802.11bgn

1750006043 SMA(M) cable, 15 cm

1750000318 2-dBi antenna, 11 cm

96PD-EC25EFA

LTE CAT.4 Module with GNSS (Quectel EC25 series)

1750006264 SMA(F) cable, 15 cm

1750005865 Dipole antenna, 11 cm

Intelligent Communication Gateways




Model Name		ECU-1152TL	ECU-1251TL	ECU-1051TL	ECU-1050TL
Description		Industrial communication gateway	Industrial communication gateway	Industrial communication gateway	Industrial communication gateway
System	CPU	Cortex A8	Cortex A8	Cortex A8	Cortex A8
	Operating system	Linux RT 3.12	Linux RT 3.12	Linux RT 3.12	Linux RT 3.12
	Programming interface	C (Linux)	C (Linux)	C (Linux)	C (Linux)
	Wireless communication protocols	Modbus/RTU, Modbus/TCP, IEC-60870-101/104	Modbus/RTU, Modbus/TCP, IEC-60870-101/104	Modbus/RTU, Modbus/TCP, IEC-60870-101/104	Modbus/RTU, Modbus/TCP, IEC-60870-101/104
	Wireless communication	GRPS, 3G, LTE, Wi-Fi	GRPS, 3G, LTE, Wi-Fi	GRPS, 3G, LTE, Wi-Fi	GRPS, 3G, LTE, Wi-Fi
	Special functions	Monitoring, data identification, breakpoint transmission, initiative reporting	Monitoring, data identification, breakpoint transmission, initiative reporting	Monitoring, data identification, breakpoint transmission, initiative reporting	Monitoring, data identification, breakpoint transmission, initiative reporting
Serial Port	Number of ports	6	4	2	-
	Type	RS-232/485	RS-232/485	RS-232/485	-
Network Port	Number of channels	2	2	2	1
	Independent IP number	2	2	2	1
	Speed	10/100 Mbps	10/100 Mbps	10/100 Mbps	10/100 Mbps
	IP specifications	IPv4/IPv6	IPv4/IPv6	IPV4/IPV6	IPV4/IPV6
I/O	SIM card slot	1	1	2	2
	Expansion slots	1 x mini-pcie	1 x mini-pcie	1 x mini-pcie	2 x mini-pcie
USB	USB2.0	1	1	-	-
Display Interface	LED	PWR/Serial/Prog/LAN	PWR/Serial/Prog/LAN	PWR/Prog/LAN	PWR/Prog
Storage Interface	SD	1 x micro SD slot	1 x micro SD slot	1 x micro SD slot	1 x micro SD slot
Industry communication protocol		Modbus/ IEC-60870-104/BACnet IP/DNP3			
Programmable logic controller support		Siemens/Allen-Bradley/Schneider/Mitsubishi/Omron/Honeywell/Yokogawa/Delta/Panasonic			
Data logger		Realtime data logger			
Programing Support		Linux C, Web service API			
Operating Temperature		-40 ~ 70 °C	-40 ~ 70 °C	-40 ~70 °C	-40 ~70 °C
Certification		CE/FCC	CE/FCC	CE/FCC	CE/FCC
Part Number		ECU-1152TL-R11ABE	ECU-1251TL-R10AAE	ECU-1051TL-R10AAE	ECU-1050TL-R10AAE

Wireless Expansion Modules

96PD-RYUW131

Full/Half-sized mini card, supports 802.11bgn

1750006043 SMA(M) cable, 15 cm

1750000318 2-dBi antenna, 11 cm

96PD-EC25EFA

LTE CAT.4 Module with GNSS (Quectel EC25 series)

1750006264 SMA(F) cable, 15 cm

1750005865 Dipole antenna, 11 cm

Intelligent I/O Racks



System		☞ ADAM-5630	☞ ADAM-5630E	ADAM-5560
CPU		Cortex A8 600 MHz	Cortex A8 600 MHz	Intel Atom Z510P 1.1 GHz
RAM		512 MB DDR3L	512 MB DDR3L	1 GB DDR2 SDRAM
Flash ROM		-	-	-
Flash Memory		-	-	-
Flash Disk		1 GB	1 GB	-
OS		RT-Linux	RT-Linux	WinCE5.0/XP embedded
Control Software		Linux C SDK KW Softlogic	Linux C SDK KW Softlogic	ADAM-5560CE: C/C++ and .NET ADAM-5560KW: KW SoftLogic
Real-time Clock		✓	✓	✓
Watchdog Timer		✓	✓	✓
COM1		RS-232/485	RS-232/485	RS-232/485
COM2		RS-485	RS-485	RS-485
COM3		RS-485	RS-485	RS-232/485
COM4		RS-232/485	RS-232/485	RS-232/485
I/O Slots		4	8	7
Power Consumption		8W (for 5630 series only)		17 W
Isolation	Communication	2500 V_{DC} (COM1~COM3) (for 5630 series only)		2,500 V_{DC} (COM2 RS-485) 1,500 V_{DC} (COM1, COM3, COM4 RS-485)
	Communication Power	3,000 V_{DC}		
	I/O Module	3,000 V_{DC}		
Diagnosis	Status Display	Power, RUN, Error, BAT, user define (for 5630 series only)		Power, User Define
	Self Test	Yes, while ON		
	Software Diagnosis	✓		
Communication	Interface	RS-232/485		Ethernet (2 x RJ-45)
	Speeds	300 bps ~ 115.2 kbps		10/100 Mbps
	Max. Distance	4,000 feet (1.2 km)		100 m
	Max. Nodes	32	32	256 for Ethernet, 32 for RS-485
	Protocol	User Defined, Modbus/RTU Modbus/TCP, SNMP	User Defined, Modbus/RTU Modbus/TCP, SNMP	Modbus/RTU, Modbus/TCP
	Remote I/O	Modbus Device		
	Power Requirements	10 ~ +30 V_{DC}		
Environment	Operating Temperature	-20 ~ 70°C		0 ~ 55°C (32 ~ 131°F)
	Storage Temperature	-25 ~ 85°C (-13 ~ 185°F)		
	Humidity	5 ~ 95%		
Dimensions (mm)		231 x 110 x 75	355 x 110 x 75	355 x 110 x 75

Intelligent I/O Racks




System		☞ ADAM-5000/485	☞ ADAM-5000E	☞ ADAM-5000L/TCP	☞ ADAM-5000/TCP
CPU		80188	80188	RISC CPU	
RAM		-	-	4 MB	
Flash ROM (User AP)		-	-	512 KB	
Flash Memory (Data Storage)		-	-	-	
Flash Disk		-	-	-	
OS		-	-	Real-time OS	
Timer BIOS		-	-	-	
Real-time Clock		-	-	-	
Watchdog Timer		Yes			
I/O Slots		4	8	4	8
Power Consumption		3 W		4.0 W	5.0 W
Isolation	Communication	2,500 V_{DC}	3,000 V_{DC}	RS-485: 1,500 V_{DC}	
	Communication Power	3,000 V_{DC}			
	I/O Module	3,000 V_{DC}			
Diagnosis	Status Display	Power, CPU, Communication		Power, CPU, Error Diagnostic, Communication	
	Self Test	Yes, while ON			
	Software Diagnosis	✓			
Communication	Interface	RS-232/485 (2-wire)	RS-232/485 (2-wire)	Ethernet	
	Speeds (bps)	1,200, 2,400, 4,800, 9,600, 19.2 K, 38.4 K, 57.6 K, 115.2 K	1,200, 2,400, 4,800, 9,600, 19.2 K, 38.4 K, 57.6 K, 115.2 K	10 M, 100 M	
	Max. Distance	4,000 feet (1.2 km)	4,000 feet (1.2 km)	100 m without repeater	
	Data Format	Advantech protocol: N, 8, 1 Modbus protocol: N, 8, 1 N, 8, 2 E, 8, 1 O, 8, 1	Advantech protocol: N, 8, 1 Modbus protocol: N, 8, 1 N, 8, 2 E, 8, 1	TCP/IP	
	Max. Nodes	128	128	Depend on IP address	
	Protocols	ADAM ASCII/Modbus Protocol	ADAM ASCII/Modbus Protocol	Modbus/TCP	
	Remote I/O	-	-	20 nodes Modbus devices	
	Power Requirements	+10 ~ +30 V_{DC}			
Environment	Operating Temperature	-10 ~ 70°C (14 ~ 158°F)			
	Storage Temperature	-25 ~ 85°C (-13 ~ 185°F)			
	Humidity	5 ~ 95%			
Dimensions (mm)		231 x 110 x 75	355 x 110 x 75	231 x 110 x 75	355 x 110 x 75

Analog Input/Output Modules





Module		ADAM-5013	ADAM-5017	ADAM-5017P	ADAM-5017UH	ADAM-5018
Analog Input	Resolution	16 bit	16 bit	16 bit	12 bit	16 bit
	Input Channel	3	8	8	8	7
	Sampling Rate	10 (total*)	10 (total*)	10 (total*)	200K**	10 (total*)
	Voltage Input	-	±150 mV, ±500 mV ±1 V, ±5 V, ±10 V	±150 mV, ±500 mV ±15V, ±10V, ±5 V, ±1 V 0 ~ 150mV, 0 ~ 500mV 0 ~ 1V, 0 ~ 5V, 0 ~ 10V 0 ~ 15V	±10 V, 0 ~ 10 V	±15 mV, ±50 mV ±100 mV, ±500 mV ±1 V, ±2.5 V
	Current Input	-	±20 mA	±20 mA, 4 ~ 20mA	0 ~ 20 mA, 4 ~ 20 mA	±20 mA
	Direct Sensor Input	Pt or Ni RTD	-	-	-	J, K, T, E, R, S, B
Isolation		3,000 V_{DC}	3,000 V_{DC}	3,000 V_{DC}	3,000 V_{DC}	3,000 V_{DC}

*Sampling rate value depends on used channel number.
Example: Using 5 channels on ADAM-5017, sampling rate for each used channel will be 10/5 = 2 samples/second.
**The sampling rate varies with the controller.






Module		ADAM-5018P	ADAM-5024	ADAM-5050	ADAM-5051 ADAM-5051D ADAM-5051S	ADAM-5052	ADAM-5053S
Analog Input	Resolution	16 bit	-	-	-	-	-
	Input Channel	7	-	-	-	-	-
	Sampling Rate	10 (total*)	-	-	-	-	-
	Voltage Input	±15 mV, ±50 mV ±100 mV, ±500 mV ±1 V, ±2.5 V	-	-	-	-	-
	Current Input	4 ~ 20 mA	-	-	-	-	-
	Direct Sensor Input	J, K, T, E, R, S, B	-	-	-	-	-
Analog Output	Output Channels	-	4	-	-	-	-
	Resolution	-	12 bit	-	-	-	-
	Voltage Output	-	0 ~ 10 V	-	-	-	-
	Current Output	-	0 ~ 20 mA 4 ~ 20 mA	-	-	-	-
Digital Input and Digital Output	Digital Input Channels	-	-	16 DI/O (bit-wise selectable)	16 (ADAM-5051) 16w/LED (5051D/5051S)	8	32
	Digital Output Channels	-	-		-	-	-
Isolation		3,000 V_{DC}	3,000 V_{DC}	-	2,500 V_{DC} (5051S)	5,000 V_{RMS}	2,500 V_{DC}

*Sampling rate value depends on used channel number.
Example: Using 6 channels on ADAM-5017, sampling rate for each used channel will be 12/6 = 2 samples/second.

Intelligent I/O Racks

Digital Input/Output Modules





Module		ADAM-5055S	ADAM-5056 ADAM-5056D	ADAM-5056S ADAM-5056SO	ADAM-5057S	ADAM-5060
Digital Input and Digital Output	Digital Input Channels	8 w/LED	-	-	-	-
	Digital Output Channels	8 w/LED	16 (ADAM-5056) 16 w/LED (ADAM-5056D)	16 w/LED	32	6 relay (2 form A/4 form C)
Isolation		2,500 V_{DC}	-	2,500 V_{DC}	2,500 V_{DC}	-






Module		ADAM-5069	ADAM-5080	ADAM-5081	ADAM-5090 ADAM-5091	ADAM-5191	ADAM-5192
Digital Input and Digital Output	Digital Input Channels	-	-	-	-	-	-
	Digital Output Channels	8 power relay (form A)	-	-	-	-	-
Counter (32-bit)	Channels	-	4	4/8	-	-	-
	Input Frequency	-	0.3 ~ 1000 Hz max. (frequency mode) 5000 Hz max. (counter mode)	5 Hz ~ 1 MHz max. (frequency mode) 1 MHz max. (counter mode)	-	-	-
	Mode	-	Frequency, Up/ Down Counter, Bi-direction Counter	Frequency, Counter (Up/Down, Bi-direction, Up, A/B Phase)	-	-	-
Communication	Channels	-	-	-	4	4 (ADAM-5630 only)	2
	Type	-	-	-	RS-232/422/485	RS-232/422/485	LAN (ADAM-5630 only)
Isolation		-	1,000 V_{RMS}	2,500 V_{DC}	-	1,000 V_{DC}	

Intelligent I/O Gateways



		ADAM-6750	ADAM-6717	ADAM-6760D
CPU		ARM Cortex-A8 32-Bit 1GHz		
Memory		NAND flash 512MB		
RAM		DDR3L 512MB		
External storage		microSD (Optional)		
OS		Real-time Linux V3.12		
Programming		Node-Red(Graphic programming environment based on javascript),Linux C		
Operation Temperature		-40 ~ 70°C		
Interface	RS-485	2	2	2
	LAN	2	2	2
	USB	1 x USB type A, 1 x Micro USB		
Digital input	Channel	12	5	14
	Type	Dry contact logic 0 close to ground logic 1 Open Wet contact logic 0: 0 ~ 3 V_{DC} logic 1: 10 ~ 30 V_{DC}	Dry contact logic 0 close to ground logic 1 Open Wet contact logic 0: 0 ~ 3 V_{DC} logic 1: 10 ~ 30 V_{DC}	Dry contact logic 0 close to ground logic 1 Open Wet contact logic 0: 0 ~ 3 V_{DC} logic 1: 10 ~ 30 V_{DC}
	Counter input	3kHZ	-	-
Digital Output	Channel	12	4	6
	Voltage	Sink 30 V_{DC}, 0.1A max. per channel	Sink 30 V_{DC}, 0.1A max. per channel	Sink 30 V_{DC}, 0.1A max. per channel
	Pulse output	3kHz	-	-
Analog input	Channel	-	8	-
	Sampling rate	100kHZ (total)		
Relay output	Channel	-	-	8
	Contact rating (Resistive Load)	-	-	60 V_{DC} @ 0.6 A
Dimensions (W x L x H)		70 x 122 x 38 mm		

Intelligent I/O Gateways



		ADAM-6715	ADAM-6718	ADAM-6724
CPU		ARM Cortex-A8 32-Bit 1GHz		
Memory		NAND flash 512MB		
RAM		DDR3L 512MB		
External storage		microSD (Optional)		
OS		Real-time Linux V3.12		
Programming		Node-Red(Graphic programming environment based on javascript),Linux C		
Operation Temperature		-40 ~ 70°C		
Interface	RS-485	2	2	2
	LAN	2	2	2
	USB	1 x USB type A, 1 x Micro USB		
Digital input	Channel	4	4	5
	Type	Dry contact logic 0 close to ground logic 1 Open Wet contact logic 0: 0 ~ 3 V_{DC} logic 1: 10 ~ 30 V_{DC}	Dry contact logic 0 close to ground logic 1 Open Wet contact logic 0: 0 ~ 3 V_{DC} logic 1: 10 ~ 30 V_{DC}	Dry contact logic 0 close to ground logic 1 Open Wet contact logic 0: 0 ~ 3 V_{DC} logic 1: 10 ~ 30 V_{DC}
Digital Output	Channel	4	7	6
	Voltage	Sink 30 V_{DC}, 0.1A max. per channel	Sink 30 V_{DC}, 0.1A max. per channel	Sink 30 V_{DC}, 0.1A max. per channel
	Pulse output	3kHz	-	-
RTD	Channel	6	-	-
	Type	Pt100,Pt1000	-	-
Thermocouple	Channel	-	7	-
	Type	-	J, K, T, E, R, S, B type	-
Analog Output	Channel	-	-	3
	Type	-	-	Voltage,Current
Analog Input	Channel	-	-	3
	Type	-	-	Voltage,Current
Dimensions (W x L x H)		70 x 122 x 38 mm		

8 Industrial Communication

Industrial Communication in the IoT Era

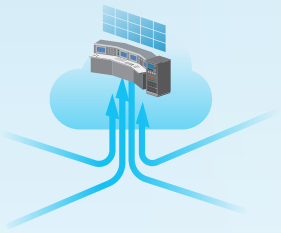
Providing Interconnected Solutions for Advantech's Mission of Enabling an Intelligent Planet

In the age of Internet of Things (IoT), the trend in industrial communication is for all devices, equipment, and machines to be able to connect and communicate with each other to increase productivity, efficiency, and scalability. The core mission of Advantech's iConnectivity Group is to offer the best-in-class industrial communication solutions including both wired and wireless technologies that can truly help users leverage the full potential of IoT in the most efficient and productive way.

Advantech 2017 World Ranking
- No.7 for Industrial Ethernet Infrastructure Market
- No. 3 for Router Market

(2017 IHS Markit)

Our Technologies



Intelligent Connectivity Software

Advantech intelligent connectivity software platform provides provisioning and management software, aiming at serving users a tailored management solution based on different user scenarios.

- WebAccess/DMP for provisioning and managing status of each routing device and application
- WebAccess/NMS for monitoring the interconnectivity status of the whole network system
- WebAccess/VPN for remote asset control and management

Network Edge

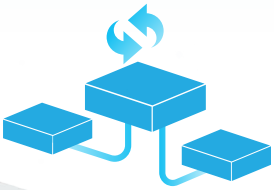
Advantech's cellular routing solutions open up endless IoT possibilities. Advantech's cellular routers support direct communication between MQTT-enabled devices and the cloud. Built-in Node-RED technology enables smart data processing for fast dashboard development and monitoring using Advantech's WISE/PaaS management software cloud solution.

- Support for inter-operation with global 5G/LTE/3G coverage
- Cyber security protection by firewall, NAT, and VPN
- Intelligent gateway support for LoRaWAN, or Mesh networks for Industrial IoT
- Intelligent ODB cellular gateway supports G5 CatM1

Wired and Wireless Network Infrastructure

Advantech provides a comprehensive product portfolio to help users build a robust, secure and scalable wired or wireless networking infrastructure.

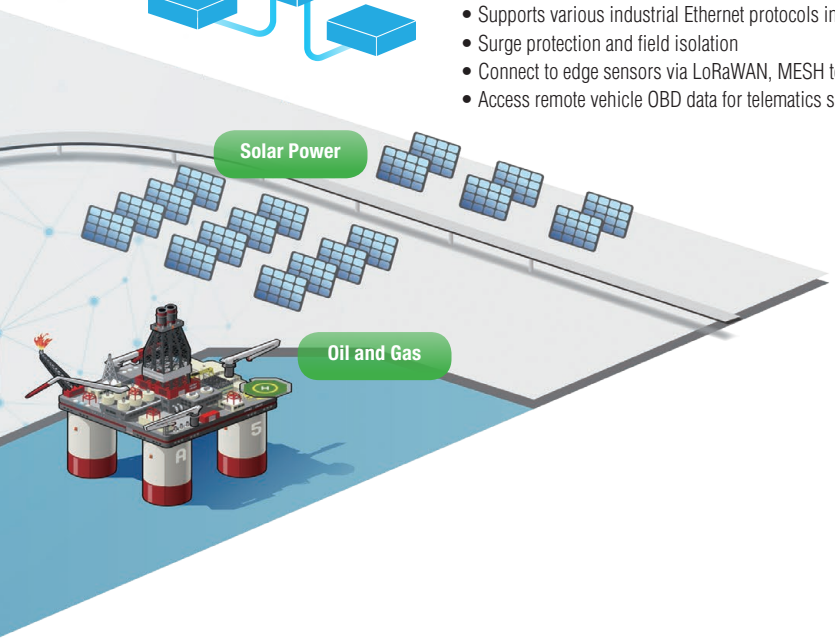
- Support various industrial Ethernet protocols, such as TCP/IP, Ethernet/IP, PROFINET, CC-link, ODVA, etc.
- Compliant with C1D2, ATEX, IECEx certifications for hazardous environments
- Cyber security protection within the network
- Layer 3 Routing Protocols: RIP, OSPF, and VRRP
- Advantech's patented IXM technology for rapid deployment, saving up to 90% of engineering time and resources
- Advantech security gateway with firewall and Ethernet switch with security pack protects against internal and external cyber attacks



Protocol and Interface Conversion Solutions

Advantech offers numerous wired and wireless products to convert different industrial protocols and interfaces to modern networking systems to avoid a complete overhaul of existing equipment & devices, saving cost and avoiding software programming errors.

- Supports various industrial Ethernet protocols including TCP/IP, Ethernet/IP, PROFINET, BACnet, OPC UA and more
- Surge protection and field isolation
- Connect to edge sensors via LoRaWAN, MESH technologies
- Access remote vehicle OBD data for telematics services providers (TSP) and fleet management applications



Industrial Ethernet Solutions

EN50155 Ethernet Switches

Model Name		☞ EKI-9512E-4GETB ☞ EKI-9512G-4GETB	☞ EKI-9528E-12GMPW ☞ EKI-9528E-12GMPX	☞ EKI-9528E-8GMPW ☞ EKI-9528E-8GMPX	☞ EKI-9528G-4GMPW ☞ EKI-9528G-4GMPX	☞ EKI-9528E-12GMW ☞ EKI-9528E-12GMX	☞ EKI-9528E-8GMW ☞ EKI-9528E-8GMX	☞ EKI-9528G-4GMW ☞ EKI-9528G-4GMX
Description		EN50155 12-Port Ethernet Train Backbone Router	EN50155 28-Port L2 Managed PoE Switch	EN50155 28-Port L2 Managed PoE Switch	EN50155 28-Port L2 Managed PoE Switch	EN50155 28-Port L2 Managed Switch	EN50155 28-Port L2 Managed Switch	EN50155 28-Port L2 Managed Switch
Interface	Ports Number	12	28	28	28	28	28	28
	10/100Base-TX	8 (EKI-9512E-4GETB)	-	-	-	16	20	-
	100BaseFX	-	-	-	-	-	-	-
	10/100/1000Base-TX	8 (EKI-9512G-4GETB)	4(EKI-9528E-12GMPX)	4(EKI-9528E-8GMPX)	4(EKI-9528E-8GMPX)	8(EKI-9528E-12GMW) 12(EKI-9528E-12GMX)	4(EKI-9528E-8GMW) 8(EKI-9528E-8GMX)	24(EKI-9528G-4GMW) 28(EKI-9528G-4GMX)
	10/100/1000Base-TX with Bypass function	4	4(EKI-9528E-12GMPW)	4(EKI-9528E-8GMPW)	4(EKI-9528E-8GMPW)	4(EKI-9528E-12GMW)	4(EKI-9528E-8GMW)	4(EKI-9528G-4GMW)
	PoE(10/100Mbps)	-	16	20	-	-	-	-
	PoE(10/100/1000Mbps)	-	8	4	24	-	-	-
	DI/DO	-	-	-	-	-	-	-
	Console	✓	✓	✓	✓	✓	✓	✓
Network Management	Redundancy	✓	✓	✓	✓	✓	✓	✓
	Diagnostics	✓	✓	✓	✓	✓	✓	✓
	VLAN	✓	✓	✓	✓	✓	✓	✓
	Configuration	✓	✓	✓	✓	✓	✓	✓
	SNMP	✓	✓	✓	✓	✓	✓	✓
	Security	✓	✓	✓	✓	✓	✓	✓
	Traffic Control	✓	✓	✓	✓	✓	✓	✓
Power	24-48V_{DC}	-	-	-	-	-	-	-
	72-110V_{DC}	-	-	-	-	-	-	-
	24-110V_{DC}	✓	✓	✓	✓	✓	✓	✓
	IP level	IP67	IP54	IP54	IP54	IP54	IP54	IP54
Rolling Stock Application	Ethernet Train Backbone (IEC61375-2-3 & -2-5)	✓	-	-	-	-	-	-
	EN50155	✓	✓	✓	✓	✓	✓	✓
	EN61373	✓	✓	✓	✓	✓	✓	✓

✓ : supported, - : not supported, △ : optional

EN50155 Ethernet Switches

	Model Name	☞ EKI-9516E-4GMPW ☞ EKI-9516E-4GMPX	☞ EKI-9516G-4GMPW ☞ EKI-9516G-4GMPX	☞ EKI-9516E-8GMPW ☞ EKI-9516E-8GMPX	☞ EKI-9516E-4GMW ☞ EKI-9516E-4GMX	☞ EKI-9516G-4GMW ☞ EKI-9516G-4GMX	☞ EKI-9512E-4GMPW ☞ EKI-9512E-4GMPX	☞ EKI-9512G-4GMPW ☞ EKI-9512G-4GMPX
	Description	EN50155 16-Port L2 Managed PoE Switch	EN50155 16-Port L2 Managed PoE Switch	EN50155 16-Port L2 Managed PoE Switch	EN50155 16-Port L2 Managed Switch	EN50155 16-Port L2 Managed Switch	EN50155 16-Port L2 Managed PoE Switch	EN50155 16-Port L2 Managed PoE Switch
Interface	Ports Number	16	16	16	16	16	16	16
	10/100Base-TX	-	-	-	12	-	-	-
	100BaseFX	-	-	-	-	-	-	-
	10/100/1000Base-TX	4(EKI-9516E-4GMPX)	4(EKI-9516G-4GMPX)	4(EKI-9516G-4GMPX)	4(EKI-9516E-4GMPX)	12(EKI-9516G-4GMPW) 16(EKI-9516G-4GMPX)	4(EKI-9512E-4GMPX)	4(EKI-9512G-4GMPX)
	10/100/1000Base-TX with Bypass function	4(EKI-9516E-4GMPW)	4(EKI-9516G-4GMPW)	4(EKI-9516G-4GMPW)	4(EKI-9516E-4GMPW)	4(EKI-9516G-4GMPW)	4(EKI-9512E-4GMPW)	4(EKI-9512G-4GMPW)
	PoE(10/100Mbps)	12	-	8	-	-	8	-
	PoE(10/100/1000Mbps)	-	12	4	-	-	-	8
	DI/DO	-	-	-	-	-	-	-
	Console	✓	✓	✓	✓	✓	✓	✓
Network Management	Redundancy	✓	✓	✓	✓	✓	✓	✓
	Diagnostics	✓	✓	✓	✓	✓	✓	✓
	VLAN	✓	✓	✓	✓	✓	✓	✓
	Configuration	✓	✓	✓	✓	✓	✓	✓
	SNMP	✓	✓	✓	✓	✓	✓	✓
	Security	✓	✓	✓	✓	✓	✓	✓
	Traffic Control	✓	✓	✓	✓	✓	✓	✓
Power	24-48V_{DC}	-	-	-	-	-	-	-
	72-110V_{DC}	-	-	-	-	-	-	-
	24-110V_{DC}	✓	✓	✓	✓	✓	✓	✓
	IP level	IP67	IP67	IP67	IP67	IP67	IP67	IP67
Rolling Stock Application	Ethernet Train Backbone (IEC61375-2-3 & -2-5)	-	-	-	-	-	-	-
	EN50155	✓	✓	✓	✓	✓	✓	✓
	EN61373	✓	✓	✓	✓	✓	✓	✓

✓ : supported, - : not supported, △ : optional

Industrial Ethernet Solutions

EN50155 Ethernet Switches






Model Name		☞ EKI-9512E-4GMW ☞ EKI-9512E-4GMX	☞ EKI-9512G-4GMW ☞ EKI-9512G-4GMX	☞ EKI-9508E series	☞ EKI-9508G series	☞ EKI-9510E series	☞ EKI-9510G series
Description		EN50155 16-Port L2 Managed Switch	EN50155 16-Port L2 Managed Switch	EN50155 8-Port L2 Ethernet Switch	EN50155 8-Port L2 Ethernet Switch	EN50155 10-Port L2 Ethernet Switch	EN50155 10-Port L2 Ethernet Switch
Interface	Ports Number	16	16	8	8	8	8
	10/100Base-TX	8	-	△8	-	△8	-
	100BaseFX	-	-	-	-	-	-
	10/100/1000Base-TX	4(EKI-9512E-4GMPX)	8(EKI-9512G-4GMPW) 12(EKI-9512G-4GMPX)	-	△8	-	△8
	10/100/1000Base-TX with Bypass function	4(EKI-9512E-4GMPW)	4(EKI-9512G-4GMPW)	-	-	2	2
	PoE(10/100Mbps)	-	-	△8	-	△8	-
	PoE(10/100/1000Mbps)	-	-	-	△8	-	△8
	DI/DO	-	-	-	-	-	-
	Console	✓	✓	△	△	△	△
Network Management	Redundancy	✓	✓	△	△	△	△
	Diagnostics	✓	✓	△	△	△	△
	VLAN	✓	✓	△	△	△	△
	Configuration	✓	✓	△	△	△	△
	SNMP	✓	✓	△	△	△	△
	Security	✓	✓	△	△	△	△
	Traffic Control	✓	✓	△	△	△	△
Power	24-48V_{DC}	-	-	△	△	△	△
	72-110V_{DC}	-	-	△	△	△	△
	24-110V_{DC}	✓	✓	-	-	-	-
	IP level	IP67	IP67	IP40	IP40	IP40	IP40
Rolling Stock Application	Ethernet Train Backbone (IEC61375-2-3 & -2-5)	-	-	-	-	-	-
	EN50155	✓	✓	✓	✓	✓	✓
	EN61373	✓	✓	✓	✓	✓	✓

✓ : supported, - : not supported, △ : optional

L3 Managed Switches

Model Name		EKI-9728G-4X8CI	EKI-9628G-4CI	EKI-9612G-4FI
Description		L3 28-port Managed Switch	L3 28-port Managed Switch	L3 12-port Managed Switch
Interface	Ports Number	28	28	12
	10/100Base-T (X)	-	-	-
	100BaseFX	-	-	-
	10/100/1000Base-T (X)	16+8 (combo)	24+4 (combo)	8
	1000Base-SX/LX/ LHX/XD/ZX/EZX	8 (combo) + 4 x SFP+ (10G)	4 (combo)	4 x SFP
	PoE (10/100 Mbps)	-	-	-
	PoE (10/100/1000 Mbps)	-	-	-
	HSR/PRP	4	-	-
	Console	✓	✓	✓
Network Management	Redundancy	✓	✓	✓
	Diagnostics	✓	✓	✓
	VLAN	✓	✓	✓
	Configuration	✓	✓	✓
	SNMP	✓	✓	✓
	Security	✓	✓	✓
	Traffic Control	✓	✓	✓
Power	12 ~ 48 V DC	-	✓	✓
	24 ~ 110 V DC	-	-	-
	100 ~ 240 V AC	90~264 VAC	-	-
	Relay Output	-	-	-
Mechanism	DIN-rail Mount	-	-	✓
	Wall Mount	-	-	-
	Rack Mount	✓	✓	-
	IP Level	IP30	IP30	IP30
Protection	ESD (Ethernet)	✓	✓	✓
	Surge (EFT for power)	✓	✓	✓
	Power Reverse	✓	✓	✓
Operating Temperature	-10 ~ 60°C (14 ~ 140°F)	-	-	-
	-40 ~ 75°C (-40 ~ 167°F)	✓	✓	✓
	-40 ~ 85°C (-40 ~ 185°F)	-	-	-
Certifications	CE	✓	✓	✓
	FCC	✓	✓	✓
	UL/cUL 60950-1	-	-	-
	Class 1, Division 2	-	-	-
	UL 508	-	✓	✓
Others		-	-	-

✓ : supported, - : not supported, △ : optional

IEC 61850-3 Managed Industrial Ethernet Switches

Model Name		EKI-9228G-8COI EKI-9228G-8CMI	EKI-9226G-20FOI EKI-9226G-20FMI
Description		28-port Full Giga Managed Switch	26-port Full Giga Managed Switch
Interface	Ports Number	28	26
	10/100Base-T (X)	-	-
	100BaseFX	-	-
	10/100/1000Base-T (X)	24 + 8 (combo)	6
	1000Base-SX/LX/ LHX/XD/ZX/EZX	8 x SFP (combo)	20 x SFP
	PoE (10/100 Mbps)	-	-
	PoE (10/100/1000 Mbps)	-	-
	HSR/PRP	-	-
	Console	✓	✓
Network Management	Redundancy	✓	✓
	Diagnostics	✓	✓
	VLAN	✓	✓
	Configuration	✓	✓
	SNMP	✓	✓
	Security	✓	✓
	Traffic Control	✓	✓
Power	12 ~ 48 V DC	EKI-9228G-20FMI (48 VDC)	EKI-9226G-20FMI (48 VDC)
	24 ~ 110 V DC	-	-
	100 ~ 240 V AC	EKI-9228G-20FMI (90 ~ 264 VAC)	EKI-9226G-20FOI (90 ~ 264 VAC)
	Relay Output	✓	✓
Mechanism	DIN-rail Mount	-	-
	Wall Mount	-	-
	Rack Mount	✓	✓
	IP Level	IP30	IP30
Protection	ESD (Ethernet)	✓	✓
	Surge (EFT for power)	✓	✓
	Power Reverse	✓	✓
Operating Temperature	-10 ~ 60°C (14 ~ 140°F)	-	-
	-40 ~ 75°C (-40 ~ 167°F)	-	-
	-40 ~ 85°C (-40 ~ 185°F)	✓	✓
Certifications	CE	✓	✓
	FCC	✓	✓
	UL/cUL 60950-1	-	✓
	Class 1, Division 2	-	-
	UL 508	-	-
Others		ICE 61850-3	ICE 61850-3

Industrial Ethernet Solutions

Managed Ethernet Switches

Model Name		EKI-7428G-4X	EKI-7412G-4XP	EKI-7428G-4CA	EKI-7706E-2F/I	EKI-7706G-2F/I	EKI-7708E-4F/I	EKI-7708G-4F/I	EKI-7708G-2FVI
Description		24Giga+4SFP 10G ports Managed Switch w/ AC Input	8 Giga + 4 SFP 10G ports, PoE 10/100/1000 Managed Switch w/ AC Input	8Giga+20SFP Giga ports Managed Redundant Switch w/ AC Input	4FE+2SFP Giga ports Managed Redundant Industrial Switch	4GE+2SFP Giga ports Managed Redundant Industrial Switch	4FE+4SFP Giga ports Managed Redundant Industrial Switch	4GE+4SFP Giga ports Managed Redundant Industrial Switch	4Giga + 2VDSL+2SFP Giga ports Managed Redundant Industrial Switch
Interface	Ports Number	28	12	28	6	6	8	8	8
	10/100Base-T (X)	-	--	-	4	-	4	-	4
	100BaseFX	-	--	-					-
	10/100/1000Base-T (X)	24	--	24 + 4 (combo)	-	4	-	4	-
	1000Base-SX/LX/LHX/XD/ZX/EZX	4 x SFP+ (10G)	4 x SFP+ (10G)	4 (combo)	2	2	4	4	4 (2SFP+ 2VDSL)
	PoE (10/100 Mbps)	-	--	-	-	-	-	-	-
	PoE (10/100/1000 Mbps)	-	8	-	-	-	-	-	-
	HSR/PRP	-	--	-	-	-	-	-	-
	Console	✓	✓	✓	✓	✓	✓	✓	✓
Network Management	Redundancy	-	-	✓	✓	✓	✓	✓	✓
	Diagnostics	✓	✓	✓	✓	✓	✓	✓	✓
	VLAN	✓	✓	✓	✓	✓	✓	✓	✓
	Configuration	✓	✓	✓	✓	✓	✓	✓	✓
	SNMP	✓	✓	✓	✓	✓	✓	✓	✓
	Security	✓	✓	✓	✓	✓	✓	✓	✓
	Traffic Control	✓	✓	✓	✓	✓	✓	✓	✓
Power	12 ~ 48 V DC	-	-	-	✓	✓	✓	✓	✓
	24 ~ 110 V DC	-	-	-	-	-	-	-	-
	100 ~ 240 V AC	✓	✓	✓	-	-	-	-	-
	Relay Output	-	-	-	-	-	-	-	✓
Mechanism	DIN-rail Mount	-	-	-	✓	✓	✓	✓	✓
	Wall Mount	-	-	-	✓	✓	✓	✓	✓
	Rack Mount	✓	✓	✓	-	-	-	-	-
	IP Level	-	-	-	-	-	-	-	IP30
Protection	ESD (Ethernet)	✓	✓	✓	✓	✓	✓	✓	✓
	Surge (EFT for power)	✓	✓	✓	✓	✓	✓	✓	✓
	Power Reverse	✓	✓	✓	✓	✓	✓	✓	✓
Operating Temperature	-10 ~ 60°C (14 ~ 140°F)	0 ~ 60°C (32 - 140°F)	0 ~ 60°C (32 - 140°F)	-10 ~ 55°C (14 - 131°F)	EKI-7706E-2F	EKI-7706G-2F	EKI-7708E-4F	EKI-7708G-4F	-
	-40 ~ 75°C (-40 ~ 167°F)	-	-	-	EKI-7706E-2FI	EKI-7706G-2FI	EKI-7708E-4FI	EKI-7708G-4FI	✓
	-40 ~ 85°C (-40 ~ 185°F)	-	-	✓	-	-	-	-	-
Certifications	CE	✓	-	✓	✓	✓	✓	✓	✓
	FCC	✓	✓	✓	✓	✓	✓	✓	✓
	UL/cUL 60950-1	✓	✓	✓	-	-	-	-	-
	Class 1, Division 2	-	-	-	-	-	-	-	-
	UL 508	-	-	-	-	-	-	-	-
Others		LVD 62368-1	LVD 62368-1	-	UL 61010	UL 61010	UL 61010	UL 61010	UL 61010

✓ : supported, - : not supported, △ : optional

Managed Ethernet Switches

Model Name		EKI-7710E-2C EKI-7710E-2CI	EKI-7710G-2C EKI-7710G-2CI	EKI-7712E-4F EKI-7712E-4FI	EKI-7712G-2FVI	EKI-7712G-4F EKI-7712G-4FI	EKI-7716E-4F/I	EKI-7716G-4F/I	EKI-7720E-4F EKI-7720E-4FI	EKI-7720G-4F EKI-7720G-4FI
Description		8FE+2G Port Gigabit Managed Redundant Industrial Switch	8G+2G Port Gigabit Managed Redundant Industrial Switch/ with Wide Temperature	8FE+4G SFP Port Gigabit Managed Redundant Industrial Switch/ with Wide Temperature	8Giga + 2VDSL+2SFP Giga ports Managed Redundant Industrial Switch	8G+4G SFP Port Gigabit Managed Redundant Industrial Switch/ with Wide Temperature	8FE+4SFP+4G Combo port Managed Redundant Industrial Switch	8GE+4SFP + 4G Combo port Managed Redundant Industrial Switch	16FE+4G SFP Port Gigabit Managed Redundant Industrial Switch with Wide Temperature	16GE+4G SFP Port Gigabit Managed Redundant Industrial Switch/ with Wide Temperature
Interface	Ports Number	10	10	12	12	12	16	16	20	20
	10/100Base-T (X)	8	-	-	-	-	8 + 4 (Combo)	-	-	-
	100BaseFX	-	-	-	-	-			-	-
	10/100/1000Base-T (X)	8 + 2 (combo)	8 + 2 (combo)	8	8	8	-	8 + 4 (Combo)	16	16
	1000Base-SX/LX/ LHX/XD/ZX/EZX	2 (combo)	2 (combo)	4	4 (2SFP+ 2VDSL)	4	4 + 4 (Combo)	4 + 4 (Combo)	4	4
	PoE (10/100 Mbps)	-	-	-	-	-	-	-	-	-
	PoE (10/100/1000 Mbps)	-	-	-	-	-	-	-	-	-
	DI/DO	-	-	-	-	-	-	-	-	-
	Console	✓	✓	✓	✓	✓	✓	✓	✓	✓
Network Management	Redundancy	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Diagnostics	✓	✓	✓	✓	✓	✓	✓	✓	✓
	VLAN	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Configuration	✓	✓	✓	✓	✓	✓	✓	✓	✓
	SNMP	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Security	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Traffic Control	✓	✓	✓	✓	✓	✓	✓	✓	✓
Power	12 ~ 48 V DC	✓	✓	✓	✓	✓	✓	✓	✓	✓
	24 ~ 110 V DC	-	-	-	-	-	-	-	-	-
	100 ~ 240 V AC	-	-	-	-	-	-	-	-	-
	Relay Output	-	-	-	✓	-	-	-	-	-
Mechanism	DIN-rail Mount	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Wall Mount	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Rack Mount	-	-	-	-	-	-	-	-	-
	IP Level	IP30	IP30	IP30	IP30	IP30	-	-	IP30	IP30
Protection	ESD (Ethernet)	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Surge (EFT for power)	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Power Reverse	✓	✓	✓	✓	✓	✓	✓	✓	✓
Operating Temperature	-10 ~ 60°C (14 ~ 140°F)	✓	✓	✓	-	✓	EKI-7716E-4F	EKI-7716G-4F	✓	✓
	-40 ~ 75°C (-40 ~ 167°F)	✓	✓	✓	✓	✓	EKI-7716E-4FI	EKI-7716G-4FI	✓	✓
	-40 ~ 85°C (-40 ~ 185°F)	-	-	-	-	-	-	-	-	-
Certifications	CE	✓	✓	✓	✓	✓	✓	✓	✓	✓
	FCC	✓	✓	✓	✓	✓	✓	✓	✓	✓
	UL/cUL 60950-1	-	-	-	-	-	-	-	-	-
	Class 1, Division 2	-	-	-	-	-	-	-	-	-
	UL 508	✓	✓	✓	-	✓	-	-	✓	✓
	Others	NEMA TS2 EN50121-4	NEMA TS2 EN50121-4	NEMA TS2 EN50121-4	MENA TS2 EN50121-4	NEMA TS2 EN50121-4	UL 61010	UL 61010	NEMA TS2 EN50121-4	NEMA TS2 EN50121-4

✓ : supported, - : not supported, △ : optional

Industrial Ethernet Solutions

Managed Protocol Switches






Model Name		☞ EKI-5526I-EI ☞ EKI-5528I-EI	☞ EKI-5526I-PN ☞ EKI-5528I-PN	☞ EKI-5526I-MB ☞ EKI-5528I-MB	☞ EKI-5626CI-EI ☞ EKI-5629CI-EI	☞ EKI-5626CI-PN ☞ EKI-5629CI-PN	☞ EKI-5626CI-MB ☞ EKI-5629CI-MB
Description		16/8 port Entry-Level Managed Switch Supporting EtherNet/IP	16/8 port Entry-Level Managed Switch Supporting PROFINET	16/8 port Entry-Level Managed Switch Supporting Modbus	18/10 port Entry-Level Managed Switch Supporting EtherNet/IP	18/10 port Entry-Level Managed Switch Supporting PROFINET	18/10 port Entry-Level Managed Switch Supporting Modbus
Interface	Ports Number	16/8	16/8	16/8	18/10	18/10	18/10
	10/100Base-T (X)	16/8	16/8	16/8	16/8	16/8	16/8
	100BaseFX	-	-	-	-	-	-
	10/100/1000Base-T (X)	-	-	-	2/2 (combo)	2/2 (combo)	2/2 (combo)
	1000Base-SX/LX/ LHX/XD/ZX/EZX	-	-	-	2/2 (combo)	2/2 (combo)	2/2 (combo)
	PoE (10/100 Mbps)	-	-	-	-	-	-
	PoE (10/100/1000 Mbps)	-	-	-	-	-	-
	DI/DO	-	-	-	-	-	-
	Console	-	-	-	-	-	-
Network Management	Redundancy	✓	✓	✓	✓	✓	✓
	Diagnostics	✓	✓	✓	✓	✓	✓
	VLAN	✓	✓	✓	✓	✓	✓
	Configuration	✓	✓	✓	✓	✓	✓
	SNMP	✓	✓	✓	✓	✓	✓
	Security	✓	✓	✓	✓	✓	✓
	Traffic Control	✓	✓	✓	✓	✓	✓
Power	12 ~ 48 V DC	✓	✓	✓	✓	✓	✓
	24 ~ 110 V DC	-	-	-	-	-	-
	100 ~ 240 V AC	-	-	-	-	-	-
	Relay Output	✓	✓	✓	✓	✓	✓
Mechanism	DIN-rail Mount	✓	✓	✓	✓	✓	✓
	Wall Mount	✓	✓	✓	✓	✓	✓
	Rack Mount	-	-	-	-	-	-
	IP Level	IP30	IP30	IP30	IP30	IP30	IP30
Protection	ESD (Ethernet)	✓	✓	✓	✓	✓	✓
	Surge (EFT for power)	✓	✓	✓	✓	✓	✓
	Power Reverse	✓	✓	✓	✓	✓	✓
Operating Temperature	-10 ~ 60°C (14 ~ 140°F)	✓	✓	✓	✓	✓	✓
	-40 ~ 75°C (-40 ~ 167°F)	✓	✓	✓	✓	✓	✓
	-40 ~ 85°C (-40 ~ 185°F)	-	-	-	-	-	-
Certifications	CE	✓	✓	✓	✓	✓	✓
	FCC	✓	✓	✓	✓	✓	✓
	UL/cUL 60950-1	-	-	-	-	-	-
	Class 1, Division 2	✓	✓	✓	✓	✓	✓
	UL 508	✓	✓	✓	✓	✓	✓
	Others	-	-	-	-	-	-

✓ : supported, - : not supported, △ : optional

Unmanaged Ethernet Switches

	Model Name	EKI-5524SI/ MMI Series	EKI-5525SI/ MI Series	EKI-5528I / EKI-5525I	EKI-5626CI	EKI-5629CI	EKI-5725I / EKI-5728I	EKI-5726I
	Description	4-port + 2x100FX port (Single/ Multimode, SC/ST type), Fast Ethernet Switch	4-port +1x100FX port (Single/Multi-mode, SC/ST type), Fast Ethernet Switch	8/5-port Fast Ethernet Switch	16FE + 2GE Combo Ethernet Switch	8FE + 2GE Combo Ethernet Switch	5/8-port Gigabit Ethernet Switch	16-port Gigabit Ethernet Switch
Interface	Ports Number	6	4	8/5	18	10	5/8	16
	10/100Base-T (X)	4	4	8/5	16	8	-	-
	100BaseFX	2	1	-	-	-	-	-
	10/100/1000Base-T (X)	-	-	-	2 (combo)	2 (combo)	5/8	16
	1000Base-SX/LX/ LHX/XD/ZX/EZX	-	-	-	2 (combo)	2 (combo)	-	-
	PoE (10/100 Mbps)	-	-	-	-	-	-	-
	PoE (10/100/1000 Mbps)	-	-	-	-	-	-	-
	DI/DO	-	-	-	-	-	-	-
	Console	-	-	-	-	-	-	-
Network Management	Redundancy	-	-	-	-	-	-	-
	Diagnostics	-	-	-	-	-	-	-
	VLAN	-	-	-	-	-	-	-
	Configuration	-	-	-	-	-	-	✓
	SNMP	-	-	-	-	-	✓	✓
	Security	-	-	-	-	-	-	-
	Traffic Control	-	-	-	-	-	-	-
Power	12 ~ 48 V DC	✓	✓	✓	✓	✓	✓	✓
	24 ~ 110 V DC	-	-	-	-	-	-	-
	100 ~ 240 V AC	-	-	-	-	-	-	-
	Relay Output	✓	✓	✓	✓	✓	✓	✓
Mechanism	DIN-rail Mount	✓	✓	✓	✓	✓	✓	✓
	Wall Mount	✓	✓	✓	✓	✓	✓	✓
	Rack Mount	-	-	-	-	-	-	-
	IP Level	IP30	IP30	IP30	IP30	IP30	IP30	IP30
Protection	ESD (Ethernet)	✓	✓	✓	✓	✓	✓	✓
	Surge (EFT for power)	✓	✓	✓	✓	✓	✓	✓
	Power Reverse	✓	✓	✓	✓	✓	✓	✓
Operating Temperature	-10 ~ 60°C (14 ~ 140°F)	-	-	-	-	-	-	-
	-40 ~ 75°C (-40 ~ 167°F)	✓	✓	✓	✓	✓	✓	✓
	-40 ~ 85°C (-40 ~ 185°F)	-	-	-	-	-	-	-
Certifications	CE	✓	✓	✓	✓	✓	✓	✓
	FCC	✓	✓	✓	✓	✓	✓	✓
	UL/cUL 60950-1	-	-	-	-	-	-	-
	Class 1, Division 2	✓	✓	✓	✓	✓	✓	✓
	UL 508	✓	✓	✓	✓	✓	✓	✓
	Others	-	-	-	-	-	-	-

✓ : supported, - : not supported, △ : optional

Industrial Ethernet Solutions

Unmanaged Ethernet Switches





Model Name		☞ EKI-5726FI	☞ EKI-5729FI	☞ EKI-2428G-4CA	☞ EKI-2525MI/SI-ST	☞ EKI-2525MI/SI
Description		16-port+2 SFP Gigabit Ethernet Switch	8-Port+2 SFP Gigabit Ethernet Switch	24GFE+4SFP Giga ports Unmanaged Switch w/ AC Input	4+1 100FX Port Multi-mode/ Single-mode ST connector type Unmanaged Industrial Ethernet Switch	4+1 100FX Port Multi-mode/ Single-mode Unmanaged Industrial Ethernet Switch
Interface	Ports Number	16	8	28	5	5
	10/100Base-T (X)	-	-	-	4	4
	100BaseFX	✓	✓	-	1	1
	10/100/1000Base-T (X)	16	8	24 + 4 (combo)	-	-
	1000Base-SX/LX/ LHX/XD/ZX/EZX	✓	✓	4 (combo)	-	-
	PoE (10/100 Mbps)	-	-	-	-	-
	PoE (10/100/1000 Mbps)	-	-	-	-	-
	DI/DO	-	-	-	-	-
	Console	✓	✓	-	-	-
Network Management	Redundancy	-	-	-	-	-
	Diagnostics	-	-	-	-	-
	VLAN	-	-	-	-	-
	Configuration	✓	✓	-	-	-
	SNMP	✓	✓	-	-	-
	Security	-	-	-	-	-
	Traffic Control	-	-	-	-	-
Power	12 ~ 48 V DC	✓	✓	-	✓	✓
	24 ~ 110 V DC	-	-	-	-	-
	100 ~ 240 V AC	-	-	✓	-	-
	Relay Output	✓	✓	-	✓	✓
Mechanism	DIN-rail Mount	✓	✓	-	✓	✓
	Wall Mount	✓	✓	-	✓	✓
	Rack Mount	-	-	✓	-	-
	IP Level	IP30	IP30	20	IP30	IP30
Protection	ESD (Ethernet)	✓	✓	✓	✓	✓
	Surge (EFT for power)	✓	✓	✓	✓	✓
	Power Reverse	✓	✓	-	✓	✓
Operating Temperature	-10 ~ 60°C (14 ~ 140°F)	-	-	-10 ~ 55°C (14 - 131°F)	✓	✓
	-40 ~ 75°C (-40 ~ 167°F)	✓	✓	-	-	-
	-40 ~ 85°C (-40 ~ 185°F)	-	-	-	-	-
Certifications	CE	✓	✓	✓	✓	✓
	FCC	✓	✓	✓	✓	✓
	UL/cUL 60950-1	-	-	-	✓	✓
	Class 1, Division 2	✓	✓	-	-	-
	UL 508	✓	✓	-	-	-
	Others	-	-	-	-	-

✓ : supported, - : not supported, △ : optional

Unmanaged Ethernet Switches






Model Name		EKI-2525LI-AE	EKI-2526M/S	EKI-2725/I	EKI-2728/I	EKI-2728S/ 2728SI	EKI-2728M/MI
Description		5 x Fast Ethernet ports Slim Type Unmanaged Switch	4+2 100FX Port Multi-mode/ Single-mode Industrial Ethernet Switch	5-port Gigabit Unmanaged Industrial Ethernet Switch	8-port Gigabit Unmanaged Industrial Ethernet Switch	6GE+2G Single-Mode Fiber Port Unmanaged Ethernet Switch	6G+2G Multi-Mode Unmanaged Ethernet Switch
Interface	Ports Number	5	6	5	8	8	8
	10/100Base-T (X)	5	4	-	-	-	-
	100BaseFX	-	2	-	-	-	-
	10/100/1000Base-T (X)	-	-	5	8	6	6
	1000Base-SX/LX/ LHX/XD/ZX/EZX	-	-	-	-	2 x SC Single Mode	2
	PoE (10/100 Mbps)	-	-	-	-	-	-
	PoE (10/100/1000 Mbps)	-	-	-	-	-	-
	DI/DO	-	-	-	-	-	-
	Console	-	-	-	-	-	-
Network Management	Redundancy	-	-	-	-	-	-
	Diagnostics	-	-	-	-	-	-
	VLAN	-	-	-	-	-	-
	Configuration	-	-	-	-	-	-
	SNMP	-	-	-	-	-	-
	Security	-	-	-	-	-	-
	Traffic Control	-	-	-	-	-	-
Power	12 ~ 48 V DC	✓	✓	✓	✓	✓	✓
	24 ~ 110 V DC	-	-	-	-	-	-
	100 ~ 240 V AC	-	-	-	-	-	-
	Relay Output	-	✓	✓	✓	✓	✓
Mechanism	DIN-rail Mount	✓	✓	✓	✓	✓	✓
	Wall Mount	✓	✓	✓	✓	✓	✓
	Rack Mount	-	-	-	-	-	-
	IP Level	40	IP30	IP30	IP30	IP30	IP30
Protection	ESD (Ethernet)	✓	✓	✓	✓	✓	✓
	Surge (EFT for power)	✓	✓	✓	✓	✓	✓
	Power Reverse	✓	✓	✓	✓	✓	✓
Operating Temperature	-10 ~ 60°C (14 ~ 140°F)	-	✓	EKI-2725	EKI-2728	EKI-2728S	EKI-2728M
	-40 ~ 75°C (-40 ~ 167°F)	✓	-	EKI-2725I	EKI-2728I	EKI-2728SI	EKI-2728MI
	-40 ~ 85°C (-40 ~ 185°F)	-	-	-	-	-	-
Certifications	CE	✓	✓	✓	✓	✓	✓
	FCC	✓	✓	✓	✓	✓	✓
	UL/cUL 60950-1	✓	✓	✓	✓	✓	-
	Class 1, Division 2	-	-	-	-	-	✓
	UL 508	-	-	-	-	-	✓
	Others	-	-	-	-	-	-

✓ : supported, - : not supported, △ : optional

Industrial Ethernet Solutions

Industrial PoE Switches & Solutions

	Model Name	EKI-7708E-4FP/I	EKI-7708G-4FP/I	EKI-7708G-2FVPI	EKI-7710E-2CP EKI-7710E-2CPI	EKI-7710G-2CPI EKI-7710G-2CP	EKI-7712G-4FP EKI-7712G-4FPI	EKI-7712G-4FMPI	EKI-7712G-2FVPI
	Description	4FE+4SFP Giga ports Managed Redundant Industrial PoE Switch	4Giga+4SFP Giga ports Managed Redundant Industrial PoE Switch	4Giga+2VDSL+ 2SFP Giga ports Managed Redundant Industrial PoE Switch	8FE+2G Port Gigabit Managed Redundant Industrial PoE Switch	8G+2G Port Gigabit Managed Redundant Industrial PoE Switch	8G+4G Port Gigabit Managed Redundant Industrial PoE Switch	8G+4G Port Gigabit Managed Redundant Industrial PoE Switch	8Giga+2VDSL + 2SFP Giga ports Managed Redundant Industrial PoE Switch
Interface	Ports Number	8	8	8	10	10	12	12	12
	10/100Base-T (X)	-	-	4	-	-	-	-	-
	100BaseFX	-	-	-	-	-	-	-	-
	10/100/1000Base-T (X)	-	-	-	8 + 2 (combo)	8 + 2 (combo)	8	-	8
	1000Base-SX/LX/ LHX/XD/ZX/EZX	4	4	4 (2SFP+2VDSL)	2 (combo)	2 (combo)	4	4	4 (2SFP+2VDSL)
	PoE (10/100 Mbps)	4	-	-	8	-	-	-	-
	PoE (10/100/1000 Mbps)	-	4	-	-	8	8	8	-
	DI/DO	-	-	-	-	-	-	-	-
	Console	✓	✓	✓	✓	✓	✓	✓	✓
Network Management	Redundancy	✓	✓	✓	✓	✓	✓	✓	✓
	Diagnostics	✓	✓	✓	✓	✓	✓	✓	✓
	VLAN	✓	✓	✓	✓	✓	✓	✓	✓
	Configuration	✓	✓	✓	✓	✓	✓	✓	✓
	SNMP	✓	✓	✓	✓	✓	✓	✓	✓
	Security	✓	✓	✓	✓	✓	✓	✓	✓
	Traffic Control	✓	✓	✓	✓	✓	✓	✓	✓
Power	12 ~ 48 V DC	48 VDC	48 VDC	48 VDC	✓	✓	48 VDC	53 ~ 57 VDC	48 VDC
	24 ~ 110 V DC	-	-	-	-	-	-	-	-
	100 ~ 240 V AC	-	-	-	-	-	-	-	-
	Relay Output	✓	✓	✓	-	-	✓	✓	✓
Mechanism	DIN-rail Mount	✓	✓	✓	✓	✓	✓	✓	✓
	Wall Mount	✓	✓	✓	✓	✓	✓	✓	✓
	Rack Mount	-	-	-	-	-	-	-	-
	IP Level	-	-	IP30	IP30	IP30	IP30	IP30	IP30
Protection	ESD (Ethernet)	✓	✓	✓	✓	✓	✓	✓	✓
	Surge (EFT for power)	✓	✓	✓	✓	✓	✓	✓	✓
	Power Reverse	✓	✓	✓	✓	✓	✓	✓	✓
Operating Temperature	-10 ~ 60°C (14 ~ 140°F)	EKI-7708E-4FP	EKI-7708G-4FP	-	7710E-2CP	7710G-2CP	7712G-4FP	-	-
	-40 ~ 75°C (-40 ~ 167°F)	EKI-7708E-4FPI	EKI-7708G-4FPI	✓	7710E-2CPI	7710G-2CPI	7712G-4FPI	✓	✓
	-40 ~ 85°C (-40 ~ 185°F)	-	-	-	-	-	-	-	-
Certifications	CE	✓	✓	✓	✓	✓	✓	✓	✓
	FCC	✓	✓	✓	✓	✓	✓	✓	✓
	UL/cUL 60950-1	-	-	-	-	-	-	-	-
	Class 1, Division 2	-	-	-	-	-	-	-	-
	UL 508	-	-	-	✓	✓	✓	-	-
	Others	UL 61010	UL 61010	UL 61010	UL 508	UL 508	-	-	UL 61010

✓ : supported, - : not supported, △ : optional

Power Over Ethernet (PoE) Switches







Model Name		EKI-2525P	EKI-2525PA	EKI-2526PI	EKI-2528PAI	EKI-2726FHPI	EKI-5624P/5624PI	EKI-5729P/5729PI
Description		5-port Industrial PoE Switch	5-port Industrial PoE Switch with 24/48 V DC Power Input	6-port Industrial PoE Switch with Wide Temperature	8-port Industrial PoE Switch with 24/48V_{DC} Power Input and Wide Temperature	4G+2 SFP W/ 4 IEEE 802.3 High Power PoE Industrial Wide Temperature Switch	4FE PoE+2G Unmanaged Ethernet Switch, IEEE802.3af/at, E-Mark, 12V~24V_{DC}	8GE PoE+2G Unmanaged Ethernet Switch, IEEE802.3af/at, E-Mark, 12V~24V_{DC}
Interface	Ports Number	5	5	6	8	6	6	8
	10/100Base-T (X)	1	1	2	4	-	4	-
	100BaseFX	-	-	-	-	-	-	-
	10/100/1000Base-T (X)	-	-	-	-	4	2	-
	1000Base-SX/LX/LHX/XD/ZX/EZX	-	-	-	-	2	-	-
	PoE (10/100 Mbps)	4	4	4	4	4 (PoE+, 30W)	-	-
	PoE (10/100/1000 Mbps)	-	-	-	-	-	-	8
	DI/DO	-	-	-	-	-	-	-
	Console	-	-	-	-	-	-	-
Network Management	Redundancy	-	-	-	-	-	-	-
	Diagnostics	-	-	-	-	-	-	-
	VLAN	-	-	-	-	-	-	-
	Configuration	-	-	-	-	-	-	-
	SNMP	-	-	-	-	-	-	-
	Security	-	-	-	-	-	-	-
	Traffic Control	-	-	-	-	-	-	-
Power	12 ~ 48 V DC	48 V_{DC}	24/48 V_{DC}	48 V_{DC}	24/48 V_{DC}	48 V_{DC}	12 ~ 24 V_{DC}	-
	24 ~ 110 V DC	-	-	-	-	-	-	-
	100 ~ 240 V AC	-	-	-	-	-	-	-
	Relay Output	✓	✓	✓	✓	✓	✓	✓
Mechanism	DIN-rail Mount	✓	✓	✓	✓	✓	✓	✓
	Wall Mount	✓	✓	✓	✓	✓	✓	✓
	Rack Mount	-	-	-	-	-	-	-
	IP Level	IP30	IP30	IP30	IP30	IP30	IP30	IP30
Protection	ESD (Ethernet)	✓	✓	✓	✓	✓	✓	✓
	Surge (EFT for power)	✓	✓	✓	✓	✓	✓	✓
	Power Reverse	✓	✓	✓	✓	✓	✓	✓
Operating Temperature	-10 ~ 60°C (14 ~ 140°F)	✓	✓	-	-	-	✓	✓
	-40 ~ 75°C (-40 ~ 167°F)	-	-	✓	✓	✓	✓	✓
	-40 ~ 85°C (-40 ~ 185°F)	-	-	-	-	-	-	-
Certifications	CE	✓	✓	✓	✓	✓	✓	✓
	FCC	✓	✓	✓	✓	✓	✓	✓
	UL/cUL 60950-1	✓	-	✓	-	-	✓	✓
	Class 1, Division 2	-	-	-	-	-	-	-
	UL 508	-	✓	-	✓	✓	-	-
	Others	-	-	-	-	-	✓	✓

✓ : supported, - : not supported, △ : optional

Industrial Wireless and Protocol Gateway Solutions

Wireless Access Points/Clients

Model Name		EKI-6333AC-2G	EKI-6333AC-4GP	EKI-6333AC-M12
Description		Industrial IEEE 802.11 Ind. 802.11 a/b/g/n/ac Wi-Fi AP/Client	Industrial IEEE 802.11 a/b/g/n/ac Wi-Fi AP with PoE PSE	EN50155 IEEE 802.11 a/b/g/n/ac Wi-Fi AP/ Client
Connectivity	10/100/ 1000Based-T, Fixed	-	-	-
	10/100Base-TX, Fixed	2	4	2 (M12 Connector)
	RS-232 only	-	-	-
	RS-232/422/485	-	1x RS-232/RS-485	-
	Serial connector type	-	Terminal Block Male	-
Operating Mode	Mobility/Roaming	-	-	-
	Multi-Hopping	-	-	-
	AP/CPE	✓	✓	✓
Enclosure & Mount kit	Enclosure	IP55	-	Metal shell with solid mounting kits
	DIN-rail	-	✓	-
	Wall	✓	-	✓
	VESA Mount	-	-	-
	Pole Mount	✓	-	-
Power	Power Input (VDC)	Passive 24V	24 ~ 56 V_{DC}	24-48V_{DC} (LV model), 72/96/110V_{DC} (HV model)
	Power input (PoE)	-	PoE 802.3at PSE	-
	Power connector	RJ45, Passive 24V PoE	Terminal block	M12 A-Code male (5-pin)
Environment	Operating Temp.	-20 ~ 70 °C (-4~158°F)	-30 ~ 70 °C	40 ~ 75 °C (-40 ~ 166 °F)
	Operating Humidity	10 ~ 95%	10 ~ 95%	10 ~ 95%
	Input Reverse Protection	-	-	-
Software	Netwrok Protocol	-	-	-
	Firewall	-	-	-
	Router	-	-	-
	Configuration Options	Web-base	Web-base	Web-base
	Authentication	Username/Password	Username/Password	Username/Password
	Standard Operation Mode	Access Point, Client, Repeater mode	Access Point/Bridge mode	Access Point/Bridge/ Client mode
WLAN	IEEE Standard	a/b/g/n/ac	a/b/g/n/ac	a/b/g/n/ac
	Radio Number	2	-	2
	Security	WEP, WPA/WPA2-Perso-l, WPA/WPA2-Enterprise	-	Open System , Shared Key, Lagacy 8021X, WPA/WPA2, WPA-PSK (TKIP), WPA2-PSK(AES)
RF	Frequency	2.4G/5GHz	-	2.4G/5GHz
	MIMO	2T2R	-	2T2R
	UL60950-1	-	-	-
Certification	EN60950-1	-	-	-
	CE	✓	-	✓
	FCC	✓	-	✓
	EN50155	-	-	✓

* Note: Transmit Output Power & Receive Sensitivity are specified on data sheet.

✓ : supported, - : not supported, △ : optional

EN50155 Wireless Devices

Model Name		EKI-9502G
Description		EN50155 Train-To-Ground Wi-Fi/Cellular Router
Connectivity	10/100Base-TX, Fixed	-
	10/100/1000 Based-T, Fixed	✓
	RS-232 only	-
	RS-232/422/485	2
	Serial connector type	Terminal Block Male
Operating Mode	Mobility/ Roaming	-
	Multi-Hopping	-
	AP/CPE	✓
Enclosure & Mount kit	Enclosure	Metal shell with solid mounting kits
	DIN-rail	-
	Wall	✓
	VESA Mount	-
	Pole Mount	-
Power	Power Input (VDC)	24-110 V_{DC}
	Power input (PoE)	-
	Power connector	M12 A-coded with (4-pin)
Environment	Operating Temp.	-40 ~ 70°C (-40 ~ 158°F)
	Operating Humidity	10 ~ 95%
	Input Reverse Protection	-
Software	Netwrok Protocol	IPv4, TCP/IP, UDP, ARP
	Firewall	✓
	Router	NAT/PAT, Firewall, QoS, Static Route, Port Forwarding, DMZ, IPSec/PPTP/L2TP passthrough, OpenVPN Server/Client, GRE
	Protocol	DHCP Server, DHCP Client, DNS Proxy
	Management	HTTP, Telnet, SSH, System Log, E-mail, SMS, SNTP
	Configuration Options	Web-base
	Authentication	Authentication (X.509 certificate, Pre-shared key, PW)
	Standard Operation Mode	Access Point/Client mode
WLAN	IEEE Standard	802.11 a/b/g/n/ac
	Radio Number	up to 2 (module type design)
	Security	Open System, Shared Key, Lagacy 802.1X
RF	Frequency	2.4G/5G
	MIMO	3T3R
WAN	LTE	Cat 4/6/12 (base on LTE module type)
	Radio Number	Up to 4 (Module type design)
	SIM Card Slot	8
Certification	UL60950-1	-
	EN60950-1	-
	CE	✓
	FCC	✓
	EN50155	✓

Fieldbus Gateways






Model Name		EKI-1242EIMS/IEIMS	EKI-1242PNMS/IPNMS	EKI-1242ECMS/IECMS	EKI-1242BNMS/IBNMS	EKI-1242NR/INR	EKI-1242OUMS/IOUMS
Description		Modbus RTU/TCP to EtherNet/IP Fieldbus gateway	ModbusRTU/TCP to PROFINET Fieldbus gateway	ModbusRTU/TCP to EtherCAT Fieldbus gateway	ModbusRTU/TCP to BACnet Fieldbus gateway	Node-RED Fieldbus Gateway	Modbus TCP/RTU to OPC UA Fieldbus Gateway
Connectivity	10/100Base-TX, Fixed	4	4	4	4	4	4
	10/100/1000Based-T, Fixed	-	-	-	-	-	-
	RS-232 only	-	-	-	-	-	-
	RS-232/422/485	2	2	2	2	2	2
	Serial Connector Type	DB9 male	DB9 male	DB9 male	DB9 male	DB9 male	DB9 male
Operating Mode	Mobility/Roaming	-	-	-	-	-	-
	Multi-Hopping	-	-	-	-	-	-
	AP/CPE	-	-	-	-	-	-
Enclosure & Mount kit	Enclosure	IP30	IP30	IP30	IP30	IP30	IP30
	DIN-rail	✓	✓	✓	✓	✓	✓
	Wall	✓	✓	✓	✓	✓	✓
	VESA Mount	-	-	-	-	-	-
	Pole Mount	-	-	-	-	-	-
Power	Power Input (V_{DC})	(12~48V)	(12~48V)	(12~48V)	(12~48V)	12~48V	12~48V
	Power input (PoE)	-	-	-	-	--	--
	Power connector	Terminal block	Terminal block	Terminal block	Terminal block	Terminal block	Terminal block
	Power Consumption (12/24/48VDC) Watts	5.2W	5.2W	5.2W	5.2W	5.2W	5.2W
Environment	Operating Temp.	-10~60°C	-10~60°C	-10~60°C	-10~60°C	-10~60°C	-10~60°C
	Operating Humidity	10~95%	10~95%	10~95%	10~95%	10~95%	10~95%
	Input Reverse Protection	✓	✓	✓	✓	✓	✓
Software	Netwrok Protocol	Modbus RTU/TCP EtherNet/IP	Modbus RTU/TCP PROFINET	Modbus RTU/TCP EtherCAT	Modbus RTU/TCP BACnet	Node-RED	Modbus RTU/TCP, OPC UA
	Firewall	-	-	-	-	-	-
	Router	-	-	-	-	-	-
	Configuration Options	Web-based	Web-based	Web-based	Web-based	Web-base	Web-base
	Authentication	Username/Password	Username/Password	Username/Password	Username/Password	Username/ password	Username/ password
	Standard Operation mode	ModbusRTU/TCP Master Ethernet/IP Adapter	ModbusRTU/TCP Master PROFINET Slave	ModbusRTU/TCP Master EtherCAT Slave	ModbusRTU/TCP Master BACNet Slave	-	-
WLAN	IEEE Standard	-	-	-	-	-	-
	Radio Number	-	-	-	-	-	-
	Security	-	-	-	-	-	-
RF	MIMO	-	-	-	-	-	-
	Maximum Transmit Output Power	-	-	-	-	-	-
	Receive Sensitivity	-	-	-	-	-	-
	Antenna Connector	-	-	-	-	-	-
Cellular	Standard	-	-	-	-	-	-
	Five-band Options UMTS	-	-	-	-	-	-
	Quad-band Options EDGE/GSM	-	-	-	-	-	-
	Certification (GCF, PTCRB)	-	-	-	-	-	-
Certification	UL60950-1	✓	✓	✓	✓	✓	✓
	EN60950-1	-	-	-	-	-	-
	CE (EN55022 class A, EN55024)	✓	✓	✓	✓	✓	✓
	FCC (part 15 subpart B class A)	✓	✓	✓	✓	✓	✓
	Hazardous Location (Class I, Division 2)	-	-	-	-	-	-
	Radio (EN 301 489-1/-4, EN 301 511)	-	-	-	-	-	-
	Radio (FCC part 22H, part 24E)	-	-	-	-	-	-
	EN 50155	-	-	-	-	-	-

✓ : supported, - : not supported, △ : optional

Industrial Wireless and Protocol Gateway Solutions

Modbus Gateways Modbus Routers

Model Name		EKI-1221/CI/I/R EKI-1222/CI/I/R EKI-1224/CI/I/R
Description		1/2/4-Port Modbus Gateway
Connectivity	10/100Base-TX, Fixed	2
	10/100/1000Based-T, Fixed	-
	RS-232 only	-
	RS-232/422/485	1/2/4 (CI version: RS-422/485)
	Serial Connector Type	DB9 Male
Operating Mode	Mobility/Roaming	-
	Multi-Hopping	-
	AP/CPE	-
Enclosure & Mount kit	Enclosure	IP30
	DIN-rail	✓
	Wall	✓
	VESA Mount	-
	Pole Mount	-
Power	Power Input (V_{DC})	2* (12~48V)
	Power Input (PoE)	-
	Power Connector	Terminal block
	Power Consumption (12/24/48V_{DC}) Watts	5.2W (EKI-1221/1222) 6.3W (EKI-1224)
Environment	Operating Temp.	EKI-1221/EKI-1222/ EKI-1224: -10 ~ 60°C 'CI & I' models: -40 ~ 70°C
	Operating Humidity	5 ~ 95%
	Input Reverse Protection	-
Software	Netwrok Protocol	Modbus RTU, Modbus TCP, Modbus ASCII
	Firewall	-
	Router	-
	Configuration Options	Windows Utility, Web Browser
	Authentication	-
	Standard Operating Mode	Modbus RTU Master/ Slave mode Modbus ASCII Master/ Slave mode
WLAN	IEEE Standard	-
	Radio Number	-
	Security	-
RF	MIMO	-
	Maximum Transmit Output Power	-
	Receive Sensitivity	-
	Antenna Connector	-
Cellular	Standard	-
	Five-band Options UMTS	-
	Quad-band Options EDGE/GSM	-
	Certification (GCF, PTCRB)	-
Certification	UL60950-1	✓
	EN60950-1	-
	CE (EN55022 class A, EN55024)	✓
	FCC (part 15 subpart B class A)	✓
	Hazardous Location (Class I, Division 2)	✓
	Radio (EN 301 489-1/-4, EN 301 511)	-
	Radio (FCC part 22H, part 24E)	-
	EN 50155	-

✓ : supported, - : not supported, △ : optional

Serial Device Servers





Model Name		EKI-1511L	EKI-1521/CI/I EKI-1522/CI/I EKI-1524/CI/I	EKI-1528I-DR EKI-1528CI-DR	EKI-1528/I/TI EKI-1526/I/TI	ADAM-4571/L ADAM-4570/L
Description		1 port RS-232 Serial Device Server	1/2/4-port RS-232/422/485 Serial Device Server	8-port RS-232/422/485 Device Server 8-port RS-422/485 Device Server	8/16-port RS-232/422/485 Serial Device Server	1/2-port RS-232/422/485 Serial Device Server
Connectivity	10/100Base-TX, Fixed	1	2	2	-	1
	10/100/1000Based-T, Fixed	-	-	-	2	-
	RS-232 only	✓	-	-	-	ADAM-4571L/4570L: 1/2
	RS-232/422/485	-	1/2/4 (EKI-1524: RS-422/485)	8	8/16	ADAM-4571/4570: 1/2
	Serial Connector Type	DB9 Male	DB9 Male	DB9 Male	DB9 male	ADAM-4571/L: DB9 Male ADAM-4570/L: 10-pin RJ48
Enclosure & Mount kit	Enclosure	IP30	IP30	IP30	SECC chassis	ABS+PC with solid mounting hardware
	DIN-rail	✓	✓	✓	Rackmount	✓
	Wall	✓	✓	✓	-	✓
	VESA Mount	-	-	-	-	-
	Pole Mount	-	-	-	-	-
Power	Power Input (V_{DC})	9~36V	2* (12~48V)	2* (12~48V)	EKI-1528(I)/ EKI-1526(I): 100 ~ 240 V_{AC}, 50 ~ 60 Hz EKI-1528T(I)/ EKI-1526T(I): 12 ~ 48 V_{DC}, Terminal Block	(10~30V)
	Power Input (PoE)	--	-	-	-	-
	Power Connector	Terminal block	Terminal block	Terminal block	6-pin removable screw terminal	Terminal block
	Power Consumption (12/24/48V_{DC}) Watts	1W	5.2 W (EKI-1521/ EKI-1522) 6.3 W (EKI-1524)	5 W (EKI-1528I) 6 W (EKI-1528CI)	5.6 W	2.5 W
Environment	Operating Temp.	-10 ~ 60°C	EKI-1521/ EKI-1522/ EKI-1524: -10 ~ 60°C 'CI & I' models: -40 ~ 80°C	-40 ~ 70°C	-10 ~ 60°C (14 ~ 140°F) "I" Model: -40 ~ 75°C (-40 ~ 167°F)	-10 ~ 60°C
	Operating Humidity	10~95%	10 ~ 95%	10 ~ 95%	10 ~ 95%	5 ~ 95%
	Input Reverse Protection	-	-	-	-	-
Software	Network Protocol	ARP, ICMP, IPv4, TCP, UDP, BOOTP, DHCP Client, Auto IP, Telnet, SNMP, HTTP, DNS, SMTP	ARP, ICMP, IPv4, TCP, UDP, BOOTP, DHCP Client, Auto IP, Telnet, SNMP, HTTP, DNS, SMTP, NTP	ARP, ICMP, IPv4, TCP, UDP, BOOTP, DHCP Client, Auto IP, Telnet, SNMP, HTTP, DNS, SMTP, NTP	ARP, ICMP, IPv4, TCP, UDP, BOOTP, DHCP Client, Auto IP, Telnet, SNMP, HTTP, DNS, SMTP, NTP	ARP, ICMP, IPv4, TCP, UDP, BOOTP, DHCP Client, Auto IP, Telnet, SNMP, HTTP, DNS, SMTP
	Firewall	-	-	-	-	-
	Router	-	-	-	-	-
	Configuration Options	Windows utility, Telnet console, Web Browser	Windows utility, Telnet console, Web Browser	Windows utility, Telnet console, Web Browser	Windows utility, Telnet console, Web Browser, serial console	Windows utility, Telnet console, Web Browser
	Authentication	--	-	-	-	-
	Standard Operating Mode	COM Port redirection (Virtual COM) TCP/UDP Server (Polling) Mode TCP/UDP Client (event handling) Mode Pair Connection (P2P) Mode	COM Port redirection (Virtual COM) TCP/UDP Server (Polling) Mode TCP/UDP Client (event handling) Mode Pair Connection (P2P) Mode RFC-2217 Mode	COM Port redirection (Virtual COM) TCP/UDP Server (Polling) Mode TCP/UDP Client (event handling) Mode Pair Connection (P2P) Mode RFC-2217 Mode	COM Port redirection (Virtual COM) TCP/UDP Server (Polling) Mode TCP/UDP Client (event handling) Mode Pair Connection (P2P) Mode RFC-2217 Mode	COM Port redirection (Virtual COM) TCP/UDP Server (Polling) Mode TCP/UDP Client (event handling) Mode Pair Connection (P2P) Mode
Certification	UL60950-1	-	✓	✓	-	-
	EN60950-1	-	-	-	-	-
	CE(EN55022 class A, EN55024)	✓	✓	✓	✓	✓
	FCC (part 15 subpart B class A)	✓	✓	✓	✓	✓
	Hazardous Location (Class I, Division 2)	-	✓	-	-	-
	Radio (EN 301 489-1/-4, EN 301 511)	-	-	-	-	-
	Radio (FCC part 22H, part 24E)	-	-	-	-	-
	EN 50155	-	-	-	-	-

Wireless Devices



Model Name		EKI-1361 EKI-1362	EKI-1361-MB EKI-1362-MB	EKI-6333AC
Description		1/2-port RS-232/422/485 to 802.11b/g/n WLAN Serial Device Server	1/2-port RS-232/422/485 to 802.11b/g/n WLAN Modbus Gateway	IEEE 802.11 a/b/g/n Wi-Fi AP
Connectivity	10/100Base-TX, Fixed	✓	✓	-
	10/100/1000Based-T, Fixed	-	-	✓
	RS-232 only	-	-	-
	RS-232/422/485	✓	✓	-
	Serial connector type	DB9 Male	DB9 Male	-
Operating Mode	Mobility/Roaming	✓	✓	-
	Multi-Hopping	-	-	-
	AP/CPE	-	-	✓
Enclosure & Mount kit	Enclosure	IP30	IP30	IP30
	DIN-rail	✓	✓	✓
	Wall	✓	✓	✓
	VESA Mount	-	-	-
	Pole Mount	-	-	-
Power	Power Input (VDC)	12~48V	12~48V	12~48V
	Power input (PoE)	-	-	-
	Power connector	Terminal block	Terminal block	Terminal block
	Power Consumption (12/24/48VDC) Watts	8W (EKI-1361) 9W (EKI-1362)	8W (EKI-1361-MB) 9W (EKI-1362-MB)	8W
Environment	Operating Temp.	-40 ~ 75°C	-40 ~ 75°C	-40 ~ 75°C
	Operating Humidity	10 ~ 95%	10 ~ 95%	10 ~ 95%
	Input Reverse Protection	✓	✓	✓
Software	Netwrok Protocol	-	Modbus TCP, Modbus RTU/ASCII	-
	Firewall	-	-	-
	Router	-	-	-
	Configuration Options	Web-base, windows utility	Web-base, windows utility	Web-base
	Authentication	Username/Password	Username/Password	Username/Password
	Standard Operation Mode	VCOM, USDG mode (TCP/UDP server, TCP/UDP client), Pair connection/Access Point Mode	Pair connection/Access Point Mode/ Modbus RTU Master/Slave, Modbus ASCII Master/Slave	Access Point
WLAN	IEEE Standard	a/b/g/n	a/b/g/n	a/b/g/n
	Radio Number	1	1	1
	Security	WEP, WPA/WPA2-Personal, WPA/WPA2-Enterprise	WEP, WPA/WPA2-Personal, WPA/WPA2-Enterprise	WEP, WAP/WAP2-Persona, WAP/WAP2-Enterprise
RF	MIMO	2T2R	2T2R	2T2R
	Maximum Transmit Output Power	19dBm (11n)	19dBm (11n)	19dBm (11n)
	Receive Sensitivity	-93dBm (11g Rx0+Rx1)	-93dBm (11g Rx0+Rx1)	-93dBm (11g Rx0+Rx1)
	Antenna Connector	R-SMA	R-SMA	R-SMA
Cellular	Standard	-	-	-
	Five-band option in UMTS	-	-	-
	Quad-band optin in EDGE/GSM	-	-	-
	Certification (GCF, PTCRB)	-	-	-
Certification	UL60950-1	-	-	-
	EN60950-1	-	-	-
	CE (EN55022 class A, EN55024)	✓	✓	✓
	FCC (part 15 subpart B class A)	✓	✓	✓
	Hazardous Location (Class I, Division 2)	-	-	-
	Radio (EN 301 489-1/-4, EN 301 511)	-	-	-
	Radio (FCC part 22H, part 24E)	-	-	-
	EN 50155	-	-	-

Wireless Sensing Network



Model Name		BB-WSW	WISE-6610-XX00	WISE-6610-XX00C
Description		Industrial LoRaWAN Node	LoRaWAN Gateway support up to 100/500 nodes with 868/915/923MHz	LoRaWAN Gateway support up to 100/500 nodes with 868/915/923MHz
Specifications	Mobile Wireless	LoRaWAN	LoRaWAN	LoRaWAN/LTE
	Communication Interface	BB-WSW2C00015: Modbus RS-485 BB-WSW2C42100: AI/DI/DO	LoRaWAN	LoRaWAN
	Temp	-40~75 °C	-40~75 °C	-40~75 °C
	Power Input	9~36 VDC	9~36 VDC	9~36 VDC
	Dimensions (W x Hx D)	95 x 116 x 65 mm	150 x 37.5 x 83 mm	150 x 37.5 x 83 mm
	Weight	340g	500g	500g

✓ : supported, - : not supported, △ : optional

Industrial Cellular Routers and Gateways

		LR77 v2 Libratum	UR5i v2 Libratum	LR77 v2	UR5i v2	XR5i v2E	XR5i v2F
Region	EMEA	✓	✓	✓	✓	✓	✓
	NAM	-	-	-	-	-	ERT31x
	ASIA & LATAM	-	✓		✓	✓	✓
	AUS & NZ	-	✓	-	-	-	-
Mobile Wireless Network Technology	GPRS/EDGE	✓	✓	✓	✓	-	-
	UMTS/HSPA+	✓	✓	✓	✓	-	-
	LTE	Cat.3	-	Cat.3	-	-	-
	LTE 450	-	-	-	-	-	-
	WAN ETHERNET	✓	✓	optional	optional	✓	✓
	Two VF modules	-	-	-	-	-	-
Communication Interfaces and Expansions	Ethernet 10/100	2x	2x	1x - 3x	1x - 3x	2x	1x - 3x
	PoE PSE / PoE PD	-	-	-	-	-	-
	SD Card Holder	-	-	optional	optional	-	optional
	Wi-Fi (IEEE 802.11 b, g, n)	optional	optional	optional	optional	optional	optional
	USB Host	-	-	✓	✓	-	✓
	RS232/RS422/RS485	-	-	optional	optional	-	optional
	MBUS, Wireless MBUS	-	-	optional	optional	-	optional
	I/O CNT (4x bin. IN, 2x analog IN, 1x output)	-	-	optional	optional	-	optional
	I/O (1xIN/1xOUT)	-	-	✓	✓	-	✓
	GPS Receiver	-	-	optional	optional	-	
CPU, Ram, Consuption, Sim, Design, Environmental, Dimensions	CPU Power (MHz)	333	333	333	333	333	333
	Flash RAM / RAM / M-RAM (MB / MB / kB)	16 / 64 / 128	16 / 64 / 128	16 / 64 / 128	16 / 64 / 128	16 / 64 / 128	16 / 64 / 128
	Consumption - Idle / Average / Peak / Sleep Mode	2,3 / 3,5 / 5,5W / -	2,3 / 3,5 / 5,5W / -	2,3 / 4 / 6W / -	2,3 / 4 / 6W / -	2,3 / 4 / 6W / -	2 / 2,5 / 3W / -
	2xSIM Card	✓	✓	optional	optional	-	-
	Power Supply (V DC)	9 - 36	9 - 36	9 - 36	9 - 36	9 - 36	9 - 36
	Op. Temperature (°C)	-40 to +75	-40 to +75	-40 to +75	-40 to +75	-40 to +75	-40 to +75
	Plastic Casing (mm)	51x87x116	51x87x116	51x87x116	51x87x116	51x87x116	51x87x116
	Metal Casing (mm)	42x87x113	42x87x113	42x87x113	42x87x113	42x87x113	42x87x113
	DIN holder TS35/TS32	✓	✓	✓	✓	✓	✓
Functions	Linux	✓	✓	✓	✓	✓	✓
	IPSec, OpenVPN, PPTP, L2TP, GRE, Easy VPN	✓	✓	✓	✓	✓	✓
	Authentication (X.509 certificate, Pre-shared key, PW)	✓	✓	✓	✓	✓	✓
	Firewall, NAT/PAT	✓	✓	✓	✓	✓	✓
	DHCP Server, Client, Relay	✓	✓	✓	✓	✓	✓
	HTTP/HTTPS Server, Telnet/ SSH, NTP Server, NTP Client	✓	✓	✓	✓	✓	✓
	DynDNS	✓	✓	✓	✓	✓	✓
	FTP Server	✓	✓	✓	✓	✓	✓
	SNMP, VRRP, PPPoE Bridge	✓	✓	✓	✓	✓	✓
	SMTP, E-mail, SMS Functions	✓	✓	✓	✓	✓	✓
	VLAN 802.1Q	✓	✓	✓	✓	✓	✓
	QoS, IGMP, BGP, OSPF, RIP	optional	optional	optional	optional	optional	optional
	IPv6 Dual Stack	✓	✓	✓	✓	✓	✓
	COM Port TCP/UDP server/ client	-	-	✓	✓	-	✓
	MODBUS RTU/TCP Gateway	-	-	optional	optional	-	optional
	4 Configuration Profiles	✓	✓	✓	✓	✓	✓
	Automatic Configuration and FW Update	✓	✓	✓	✓	✓	✓
Additional Software Support	Supports Software User Modules (free space for UM)	2 MB	2 MB	2 MB	2 MB	2 MB	2 MB
	WebAccess/DMP	✓	✓	✓	✓	✓	✓
	R-SeeNet	✓	✓	✓	✓	✓	✓
	WebAccess/VPN	✓	✓	✓	✓	✓	✓
	Python, Node-RED						




		☞ SmartFlex LAN	☞ SmartFlex	☞ SmartMotion	☞ SmartStart
Region	EMEA	BB-SR300	BB-SR303, BB-SR304, BB-SR307	BB-ST352, BB-ST355	BB-SL304
	NAM	BB-SR300	BB-SR305	-	BB-SL302
	ASIA & LATAM	BB-SR300	BB-SR304	-	BB-SL306, BB-SL304
	AUS & NZ	BB-SR300	BB-SR308	-	-
Mobile Wireless Network Technology	GPRS/EDGE	-	✓	✓	✓
	UMTS/HSPA+	-	✓	✓	✓
	LTE	-	Cat.3/Cat.4	Cat.3	Cat.1/Cat.4
	LTE 450	-	SR307	ST355	-
	WAN ETHERNET	✓	✓	✓	-
	Two VF modules	-	-	✓	-
Communication Interfaces and Expansions	Ethernet 10/100	5x	2x - 5x	2x	1x
	PoE PSE / PoE PD	optional	optional	optional	-
	SD Card Holder	✓	✓	✓	-
	Wi-Fi (IEEE 802.11 b, g, n)	optional	optional	optional	optional
	USB Host	✓	✓	✓	
	RS232/RS422/RS485	-	optional	-	RS232
	MBUS, Wireless MBUS	-	-	-	-
	I/O CNT (4x bin. IN, 2x analog IN, 1x output)	-	-	-	-
	I/O (1xIN/1xOUT)	2xIN / 1xOUT	2xIN / 1xOUT	2xIN / 1xOUT	✓
	GPS Receiver	-	by module	✓	-
CPU, Ram, Consuption, Sim, Design, Environmental, Dimensions	CPU Power (MHz)	1000	1000	1000	1000
	Flash RAM / RAM / M-RAM (MB / MB / kB)	256 / 512 / 128	256 / 512 / 128	256 / 512 / 128	256 / 512 / 128
	Consumption - Idle / Average / Peak / Sleep Mode	2,5 / 4 / 11 W / 10mW	2,5 / 4 / 11 W / 10mW	2,5 / 4 / 11 W / 10mW	2,7 / 5.5 / 11 W / 40mW
	2xSIM Card	-	✓	4x	a
	Power Supply (V DC)	10 - 60	10 - 60	10 - 60	9 - 36
	Op. Temperature (°C)	-40 to +75	-40 to +75 (-40 to +70 LTE450)	-40 to +75 (-40 to +70 LTE450)	-40 to +75
	Plastic Casing (mm)	55x97x125	55x97x125		30x87x127
	Metal Casing (mm)	55x97x125	55x97x125	55x97x125	
	DIN holder TS35/TS32	✓	✓	✓	Wall / DIN
Functions	Linux	✓	✓	✓	✓
	IPSec, OpenVPN, PPTP, L2TP, GRE, Easy VPN	✓	✓	✓	✓
	Authentication (X.509 certificate, Pre-shared key, PW)	✓	✓	✓	✓
	Firewall, NAT/PAT	✓	✓	✓	✓
	DHCP Server, Client, Relay	✓	✓	✓	✓
	HTTP/HTTPS Server, Telnet/ SSH, NTP Server, NTP Client	✓	✓	✓	✓
	DynDNS	✓	✓	✓	✓
	FTP Server	✓	✓	✓	✓
	SNMP, VRRP, PPPoE Bridge	✓	✓	✓	✓
	SMTP, E-mail, SMS Functions	✓	✓	✓	✓
	VLAN 802.1Q	✓	✓	✓	✓
	QoS, IGMP, BGP, OSPF, RIP	optional	optional	optional	optional
	IPv6 Dual Stack	✓	✓	✓	✓
	COM Port TCP/UDP server/ client	-	✓	✓	✓
	MODBUS RTU/TCP Gateway	-	optional	optional	optional
	4 Configuration Profiles	✓	✓	✓	✓
	Automatic Configuration and FW Update	✓	✓	✓	✓
Additional Software Support	Supports Software User Modules (free space for UM)	128 MB	128 MB	128 MB	128 MB
	WebAccess/DMP	✓	✓	✓	✓
	R-SeeNet	✓	✓	✓	✓
	WebAccess/VPN	✓	✓	✓	✓
	Python, Node-RED	✓	✓	✓	✓

Industrial Cellular Routers and Gateways



		ICR-3200	ICR-3201	ICR-3831
Region	EMEA	ICR-3231	ICR-3201	ICR-3831
	NAM	ICR-3241, ICR-3211	ICR-3201	-
	ASIA & LATAM	-	ICR-3201	-
	AUS & NZ	ICR-3232	ICR-3201	-
Mobile Wireless Network Technology	GPRS/EDGE	✓	-	✓
	UMTS/HSPA+	✓	-	✓
	LTE	Cat.4/Cat M1	-	Cat.4
	LTE 450	-	-	-
	WAN ETHERNET	✓	✓	✓
	Two VF modules	-	-	-
Communication Interfaces and Expansions	Ethernet 10/100	2x	2x	2x (M12 connector)
	PoE PSE / PoE PD	-	-	PoE PD
	SD Card Holder	-	-	✓
	Wi-Fi (IEEE 802.11 b, g, n)	optional	optional	-
	USB Host	-	-	✓ (M12 connector)
	RS232/RS422/RS485	RS232/RS485	RS232/RS485	RS232 (M12 connector)
	MBUS, Wireless MBUS	-	-	-
	I/O CNT (4x bin. IN, 2x analog IN, 1x output)	-	-	-
	I/O (1xIN/1xOUT)	✓	✓	2xIN / 2xOUT (M12 connector)
	GPS Receiver	optional	optional	✓
CPU, Ram, Consuption, Sim, Design, Environmental, Dimensions	CPU Power (MHz)	1000	1000	1000
	Flash RAM / RAM / M-RAM (MB / MB / kB)	2x 256 MB – FW 512 MB – User data storage 838 MB – Space for User Modules	2x 256 MB – FW 512 MB – User data storage 838 MB – Space for User Modules	256 / 512 / 128
	Consumption - Idle / Average / Peak / Sleep Mode	2.5 / 4 W / 11 W / 10 mW	2.5 / 4 W / 11 W / 10 mW	2,5 / 4 / 11 W / 10mW
	2xSIM Card	a/ eSIM	-	✓
	Power Supply (V DC)	9 - 36	9 - 36	12 - 48
	Op. Temperature (°C)	-40 to +75	-40 to +75	-40 to +70
	Plastic Casing (mm)			
	Metal Casing (mm)	55 x 97 x 125	55 x 97 x 125	59 x 113 x 203
	DIN holder TS35/TS32	Wall / DIN	Wall / DIN	Wall
Functions	Linux	✓	✓	✓
	IPSec, OpenVPN, PPTP, L2TP, GRE, Easy VPN	✓	✓	✓
	Authentication (X.509 certificate, Pre-shared key, PW)	✓	✓	✓
	Firewall, NAT/PAT	✓	✓	✓
	DHCP Server, Client, Relay	✓	✓	✓
	HTTP/HTTPS Server, Telnet/ SSH, NTP Server, NTP Client	✓	✓	✓
	DynDNS	✓	✓	✓
	FTP Server	✓	✓	✓
	SNMP, VRRP, PPPoE Bridge	✓	✓	✓
	SMTP, E-mail, SMS Functions	✓	✓	✓
	VLAN 802.1Q	✓	✓	✓
	QoS, IGMP, BGP, OSPF, RIP	optional	optional	optional
	IPv6 Dual Stack	✓	✓	✓
	COM Port TCP/UDP server/ client	✓	✓	✓
	MODBUS RTU/TCP Gateway	optional	optional	optional
	4 Configuration Profiles	✓	✓	✓
	Automatic Configuration and FW Update	✓	✓	✓
Additional Software Support	Supports Software User Modules (free space for UM)	838 MB	838 MB	128 MB
	WebAccess/DMP	✓	✓	✓
	R-SeeNet	✓	✓	✓
	WebAccess/VPN	✓	✓	✓
	Python, Node-RED	✓	✓	✓

Industrial Network Infrastructure

IMC-700

Intelligent Modular Media Converters

The centralized powered chassis design along with SNMP management increases installation flexibility for high-end deployment.

- Supports iView² with capacity of more than 400 devices
- High-port density modules for Ethernet to fiber applications
- Comes with AC or DC power inputs for redundancy
- Supports Network management via iView² and SNMP for remote management
- Wide speed ranges up to 10GE transmission

Intelligent Modular Chassis

Part Number	Slot	Power Input
IMC-711	1	AC / DC
IMC-712	2	AC / DC
IMC-713*	3	Dual AC/DC
IMC-716*	6	Dual AC/DC
IMC-719*	20	Dual AC/DC

*** Needs to work with a centralized SNMP module IMC-710 for network management.**
IMC-710: 2 x 10/100Mbps RJ-45 Slide-In SNMP Management Module

Unmanageable Slide-in Modules

Part Number	Optical Speed	Optical Mode	Wavelength	Distance	Optical Connector	Wide Temp.
IMC-790-2XFP	10Gbps	Various	Various	Various	2 x XFP	No
IMC-790-2SFP	10Gbps	Various	Various	Various	2 x SFP+	No
IMC-771-MM	1000Mbps	Multi-Mode	850 nm	550 m	1 x SC	No
IMC-771-SM	1000Mbps	Single-Mode	1310 nm	10 km	1 x SC	No
IMC-771-SE	1000Mbps	Single-Mode	1310 nm	40 km	1 x SC	No
IMC-771-SXL	1000Mbps	Single-Mode	1550 nm	100 km	1 x SC	No
IMC-771-SST	1000Mbps	Single-Strand	1310T/1550R	10 km	1 x SC	No
IMC-771-SSR	1000Mbps	Single-Strand	1550T/1310R	10 km	1 x SC	No
IMC-771-SSET	1000Mbps	Single-Strand	1310T/1550R	40 km	1 x SC	No
IMC-771-SSER	1000Mbps	Single-Strand	1550T/1310R	40 km	1 x SC	No
IMC-771-SS4T	1000Mbps	Single-Strand	1490T/1550R	70 km	1 x SC	No
IMC-771-SS4R	1000Mbps	Single-Strand	1550T/1490R	70 km	1 x SC	No
IMC-771I-SFP	1000Mbps	Various	Various	Various	1 x SFP	Yes
IMC-770-MM	10/100/1000Mbps	Multi-Mode	850 nm	550 m	1 x SC	No
IMC-770-SM	10/100/1000Mbps	Single-Mode	1310 nm	10 km	1 x SC	No
IMC-770-SSR	10/100/1000Mbps	Single-Strand	1550T/1310R	10 km	1 x SC	No
IMC-770-SFP	10/100/1000Mbps	Various	Various	Various	1 x SFP	No
IMC-770I-2SFP	10/100/1000Mbps	Various	Various	Various	2 x SFP	Yes
IMC-751-SST	100Mbps	Single-Strand	1310T/1550R	20 km	1 x SC	No
IMC-751-SSR	100Mbps	Single-Strand	1550T/1310R	20 km	1 x SC	No
IMC-751-SSET	100Mbps	Single-Strand	1310T/1550R	40 km	1 x SC	No
IMC-751-SSER	100Mbps	Single-Strand	1550T/1310R	40 km	1 x SC	No
IMC-751-SE	100Mbps	Single-Mode	1310nm	40 km	1 x SC	No
IMC-751I-2SFP	100Mbps	Various	Various	Various	2 x SFP	Yes
IMC-750-SST	10/100Mbps	Single-Strand	1310T/1550R	20 km	1 x SC	No
IMC-750-SSR	10/100Mbps	Single-Strand	1550T/1310R	20 km	1 x SC	No
IMC-750-SSET	10/100Mbps	Single-Strand	1310T/1550R	40 km	1 x SC	No
IMC-750-SSER	10/100Mbps	Single-Strand	1550T/1310R	40 km	1 x SC	No
IMC-750I-SFP	10/100Mbps	Various	Various	Various	1 x SFP	Yes

Manageable Slide-in Modules

Part Number	Optical Speed	Optical Mode	Wavelength	Distance	Optical Connector	Wide Temp.
IMC-784I-SFP	10/100/1000 Mbps	Various	Various	Various	2 x SFP	Yes
IMC-782-SFP	10/100/1000 Mbps	Various	Various	Various	1 x SFP	No
IMC-762-SST	10/100 Mbps	Single-Strand	1310T/1550R	20 km	1 x SC	No
IMC-762-SSR	10/100 Mbps	Single-Strand	1550T/1310R	20 km	1 x SC	No
IMC-762-SSET	10/100 Mbps	Single-Strand	1310T/1550R	40 km	1 x SC	No
IMC-762-SSER	10/100 Mbps	Single-Strand	1550T/1310R	40 km	1 x SC	No
IMC-762-SFP	10/100 Mbps	Various	-	Various	1 x SFP	No
IMC-721I-MMST	DS1	Multi-Mode	1310nm	40 km	1 x ST	Yes
IMC-721I-MM	DS1	Multi-Mode	1310nm	40 km	1 x SC	Yes
IMC-721I-SEST	DS1	Single-Mode	1300nm	5 km	1 x ST	Yes
IMC-721I-SE	DS1	Single-Mode	1300nm	5 km	1 x SC	Yes
IMC-721I-SL	DS1	Single-Mode	1310nm	80 km	1 x SC	Yes
IMC-721I-SST	DS1	Single-Strand	1310T/1550R	20 km	1 x SC	Yes
IMC-721I-SSR	DS1	Single-Strand	1550T/1310R	20 km	1 x SC	Yes
IMC-721I-SSET	DS1	Single-Strand	1310T/1550R	40 km	1 x SC	Yes
IMC-721I-SSER	DS1	Single-Strand	1550T/1310R	40 km	1 x SC	Yes
IMC-721I-SFP	DS1	Various	Various	Various	1 x SFP	Yes
IMC-721I-T1MUX	DS1	Various	Various	Various	2 x SFP	Yes
IMC-721I-E1MUX	DS1	Various	Various	Various	2 x SFP	Yes

Industrial Network Infrastructure

IMC-300

Miniature Media Converters

Featuring ultra-small design, the miniature media converters fit almost every corner of your application. Using them with a centralized powered chassis will highly increase space and power usage efficiency.

- Measuring only 3.5 x 2 inches
- Supports Link Fault Pass Through (LFPT)
- The centralized powered chassis allows for multiple Advantech miniature media converters sharing a central power source in one chassis

IMC-400

Compact Media Converters

The compact media converters is built with embedded power supply(s) and can free users from purchasing extra power sourcing devices, saving cost, and reducing wiring complexity.

- Supports internal AC power supply
- Supports automatic link restoration
- Provides rate conversion, distance extension, multiple types of fixed fiber connectors or open slots for Small Form-Factor Pluggable (SFP) connections

Compact Media Converter Series

Part Number	Ethernet Speed	Optical Mode	Wavelength	Distance	Optical Connector
IMC-450-MM	10/100 Mbps	Multi-Mode	1300 nm	5 km	SC / ST
IMC-450-SE	10/100 Mbps	Single-Mode	1310 nm	40 km	SC / ST
IMC-450-SL	10/100 Mbps	Single-Mode	1310 nm	80 km	SC / ST
IMC-470-MM	10/100/1000 Mbps	Multi-Mode	850 nm	550 m	SC
IMC-470-M1	10/100/1000 Mbps	Multi-Mode	1300 nm	2 km	SC
IMC-470-SM	10/100/1000 Mbps	Single-Mode	1310 nm	10 km	SC
IMC-470-SE	10/100/1000 Mbps	Single-Mode	1310 nm	40 km	SC
IMC-470-SFP	10/100/1000 Mbps	Various	Various	Various	SFP

10/100Mbps Miniature Media Converters

Part Number	Optical Mode	Wavelength	Distance	Optical Connector
IMC-350-M8ST-PS-A	Multi-Mode	850 nm	2 km	ST
IMC-350-M8ST-A	Multi-Mode	850 nm	2 km	ST
IMC-350-M8-PS-A	Multi-Mode	850 nm	2 km	SC
IMC-350-M8-A	Multi-Mode	850 nm	2 km	SC
IMC-350-USB-A	Multi-Mode	850 nm	2 km	SC
IMC-350-MMST-PS-A	Multi-Mode	1300 nm	5 km	ST
IMC-350-MMST-A	Multi-Mode	1300 nm	5 km	ST
IMC-350-MM-PS-A	Multi-Mode	1300 nm	5 km	SC
IMC-350-MM-A	Multi-Mode	1300 nm	5 km	SC
IMC-350-SEST-PS-A	Single-Mode	1310 nm	40 km	ST
IMC-350-SEST-A	Single-Mode	1310 nm	40 km	ST
IMC-350-SE-PS-A	Single-Mode	1310 nm	40 km	SC
IMC-350-SE-A	Single-Mode	1310 nm	40 km	SC
IMC-350-SL-PS-A	Single-Mode	1310 nm	80 km	SC
IMC-350-SL-A	Single-Mode	1310 nm	80 km	SC
IMC-350-SSMT-PS-A	Single-Strand	1310T/1550R	2 km	SC
IMC-350-SSMR-PS-A	Single-Strand	1550T/1310R	2 km	SC
IMC-350-SST-PS-A	Single-Strand	1310T/1550R	20 km	SC
IMC-350-SSR-PS-A	Single-Strand	1550T/1310R	20 km	SC
IMC-350-SFP-PS-A	Various	Various	Various	SFP
IMC-350-SFP-A	Various	Various	Various	SFP

Industrial Grade 10/100Mbps Miniature Media Converters with PoE-PD

Part Number	Optical Mode	Wavelength	Distance	Optical Connector
IMC-350I-M8ST-PS-A	Multi-Mode	850 nm	2 km	ST
IMC-350I-M8ST-A	Multi-Mode	850 nm	2 km	ST
IMC-350I-M8-PS-A	Multi-Mode	850 nm	2 km	SC
IMC-350I-M8-A	Multi-Mode	850 nm	2 km	SC
IMC-350I-MMST-PS-A	Multi-Mode	1300 nm	5 km	ST
IMC-350I-MMST-A	Multi-Mode	1300 nm	5 km	ST
IMC-350I-MM-PS-A	Multi-Mode	1300 nm	5 km	SC
IMC-350I-MM-A	Multi-Mode	1300 nm	5 km	SC
IMC-350I-SEST-PS-A	Single-Mode	1310 nm	40 km	ST
IMC-350I-SEST-A	Single-Mode	1310 nm	40 km	ST
IMC-350I-SE-PS-A	Single-Mode	1310 nm	40 km	SC
IMC-350I-SE-A	Single-Mode	1310 nm	40 km	SC
IMC-350I-SL-PS-A	Single-Mode	1310 nm	80 km	SC
IMC-350I-SST-PS-A	Single-Strand	1310T/1550R	20 km	SC
IMC-350I-SST-A	Single-Strand	1310T/1550R	20 km	SC
IMC-350I-SSR-PS-A	Single-Strand	1550T/1310R	20 km	SC
IMC-350I-SSR-A	Single-Strand	1550T/1310R	20 km	SC
IMC-350I-SFP-PS-A	Various	Various	Various	SFP

10/100/1000Mbps Miniature Media Converters

Part Number	Optical Mode	Wavelength	Distance	Optical Connector
IMC-370-MM-PS-A	Multi-Mode	850 nm	550 m	SC
IMC-370-MMST-PS-A	Multi-Mode	850 nm	550 m	ST
IMC-370-SM-PS-A	Single-Mode	1310 nm	10 km	SC
IMC-370-SE-PS-A	Single-Mode	1310 nm	40 km	SC
IMC-370-SL-PS-A	Single-Mode	1550 nm	80 km	SC
IMC-370-SST-PS-A	Single-Strand	1310T/1550R	15 km	SC
IMC-370-SSR-PS-A	Single-Strand	1550T/1310R	15 km	SC
IMC-370-SFP-PS-A	Various	Various	Various	SFP

Industrial Grade 10/100/1000Mbps Miniature Media Converters

Part Number	Optical Mode	Wavelength	Distance	Optical Connector
IMC-370I-MM-A	Multi-Mode	850 nm	550 m	SC
IMC-370I-MM-PS-A	Multi-Mode	850 nm	15 km	SC
IMC-370I-SM-A	Single-Mode	1310 nm	15 km	SC
IMC-370I-SM-PS-A	Single-Mode	1310 nm	15 km	SC
IMC-370I-SE-PS-A	Single-Mode	1310 nm	30 km	SC
IMC-370I-SST-PS-A	Single-Strand	1310T/1550R	15 km	SC
IMC-370I-SSR-PS-A	Single-Strand	1550T/1310R	15 km	SC
IMC-370I-SFP-A	Various	Various	Various	SFP
IMC-370I-SFP-PS-A	Various	Various	Various	SFP

For IMC-350 and IMC-370 series, "-PS-A" means a universal power adapter with US/EU/UK/AU/JP plugs are included

Industrial Network Infrastructure

PoE+/ PoE Media Converters

1 Gbps PoE & PoE+ Media Converters w/ 2 x RJ-45

Part Number	PSE	Optical Mode	Wavelength	Distance	Optical Connector	Internal Power
IMC-380-SFP	1 x PoE	Various	Various	Various	SFP	No
IMC-390-MM	2 x PoE+	Multi-Mode	850 nm	550 m	SC	No
IMC-390-M1	2 x PoE+	Multi-Mode	1310 nm	2 km	SC	No
IMC-390-SM	2 x PoE+	Single-Mode	1310 nm	15 km	SC	No
IMC-390-SFP	2 x PoE+	Various	Various	Various	SFP	No
IMC-480-M8	1 x PoE	Multi-Mode	850 nm	2 km	SC	Yes
IMC-480-M8ST	1 x PoE	Multi-Mode	850 nm	2 km	ST	Yes
IMC-480-MM	1 x PoE	Multi-Mode	1300 nm	5 km	SC	Yes
IMC-480-MMST	1 x PoE	Multi-Mode	1300 nm	5 km	ST	Yes
IMC-480-SE	1 x PoE	Single-Mode	1310 nm	40 km	SC	Yes
IMC-480-SEST	1 x PoE	Single-Mode	1310 nm	40 km	ST	Yes
IMC-490-MM	1 x PoE+	Multi-Mode	850 nm	550 m	SC	Yes
IMC-490-M1	1 x PoE+	Multi-Mode	1300 nm	2 km	SC	Yes
IMC-490-SM	1 x PoE+	Single-Mode	1310 nm	10 km	SC	Yes
IMC-490-SFP	1 x PoE+	Various	Various	Various	SFP	Yes

Industrial Long-Reach Ethernet Extenders

Injecting data and power together, the IMC-150LPI and IMC-150LI are brand new leading products which break the 100-meter limitation to extend Ethernet transmission distance. The extender is flexible and freely extends existing Ethernet networks to reach remote IP devices. Compliant with IEEE 802.3at PoE+ standard, it delivers power over cable without the distance limitations of traditional copper wires. DIP switches for various LAN rates strike the perfect balance of rates and distances for each device.

Part Number	Ethernet Speed	PoE+	UTP	Coaxial
IMC-150LPI	10/100 Mbps	PSE/PD	2 x RJ-45	-
IMC-150LI	10/100 Mbps	-	2 x RJ-45	1 x BNC

Media Converters



Model name	☞ EKI-2741SL/ML	☞ EKI-2741FL	☞ EKI-2541SL/ML
Standard	IEEE 802.3, 802.3u, 802.3ab, 802.3x, 802.3z	IEEE 802.3, 802.3u, 802.3ab, 802.3x, 802.3z	IEEE 802.3, 802.3u, 802.3x
RJ45 Port Interface	1 x 10/100/1000Base-T(X)	1 x 10/100/1000Base-T(X)	1 x 10/100Base-T(X)
RJ45 Transmission Distance	1000 m	1000 m	100 m
Fiber Port Interface	SL: Singel Mode ML: Multi Mode	SFP	SL: Singel Mode ML: Multi Mode
Fiber Port Connector	1	1	1
Fiber Transmission Distance	SL: Up to 10km ML: Up to 550m	-	SL: Up to 30km ML: Up to 2km
Switch Fabric Speed	1.25Gbps	1.25Gbps	125Mbps
Jumbo Frame	9216 bytes	9216 bytes	-
Dimensions (W x H x D) mm	22 x 101 x 75 mm	23 x 60 x 75 mm	22 x 101 x 75 mm
Dimensions (W x H x D) mm	75 x 22.6 x 101.2 mm	60.88 x 23 x 75.58 mm	75 x 22.6 x 101.2 mm
Dimensions (W x H x D) inch	2.95" x 0.89" x 3.98"	2.4" x 0.91" x 2.98"	2.95" x 0.89" x 3.98"
IP Grade	IP30	IP30	IP30
Enclosure	Metal	Metal	Metal
Weight	226 g	158 g	213 g
Operating Temperature	0~50°C	0~50°C	0~50°C
Storage Temperature	-40~70°C	-40~70°C	-40~70°C
Relative Humidity (Non-condensing)	5% ~ 90% RH (non-condensing)	5% ~ 90% RH (non-condensing)	5% ~ 90% RH (non-condensing)
Time (25 degree C)	1269493 hours	1031686 hours	1776203 hours
Method	Telcordia(Relax), GB	Telcordia(Relax), GB	Telcordia(Relax), GB
Operating Voltage	90-264 V_{AC}	90-264 V_{AC}	90-264 V_{AC}
Operating Current (DC 5V)	SL: 0.61 A ML: 0.6 A	0.52 A	SL: 0.31 A ML: 0.3 A
Power Consumption (DC 5V)	SL: 3.1 W ML: 3.0W	2.6 W	SL: 1.6 W ML: 1.5 W
Reverse Polarity	Present	Present	Present
Safety	LVD EN60950	LVD EN60950	LVD EN60950
EMC	CE, FCC	CE, FCC	CE, FCC
EMI	EN55024/EN 55032 Class A, FCC Part 15 Subpart B Class A		
EMS	EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN61000-4-11		
Freefall	IEC 60068-2-32		
Vibration	IEC 60068-2-6		
Warranty Period	2 years		

VDSL Solutions



Model name	☞ EKI-1751	☞ EKI-1751I	☞ EKI-1751PI-M/R
Standard	IEEE 802.3, 802.3u, 802.3x	IEEE 802.3, 802.3u, 802.3x	M: IEEE 802.3, 802.3u, 802.3x R: IEEE 802.3, 802.3u, 802.3x, 802.3af/at
RJ45 Port Interface	1 * 10/100BaseT(X) + 1 * VDSL	2 * RJ45 Etherent port + 1 * M12 Ethernet port	4* RJ45 PoE Port
RJ45 Transmission Distance	100 m	100 m	100 m
RJ45 w/ PoE Quantity	-	-	4
MAC Table Size	1024	2K	-
Packet Buffer Size	1024 byte	1M bit	1M bit
Switch Fabric Speed	100Mbps	100Mbps	100Mbps
Jumbo Frame	-	-	-
Dimensions (W x H x D)	72.5x 22.8 x 96.2 mm	62 x 135 x 106.5 mm	62 x 135 x 106.5 mm
IP Grade	IP30	IP30	IP30
Enclosure	Metal	Metal	Metal
Weight	0.22kg	0.67kg	M: 0.7kg R: 0.75kg
Mounting	Din Rail	Din Rail or Wall Mount	Din Rail or Wall Mount
Operating Temperature	0~45°C (32~113°F)	-40~75°C (-40~167°F)	-40~75°C (-40~167°F)
Storage Temperature	-40~70°C (-40~158°F)	-40~85°C (-40~185°F)	-40~85°C (-40~185°F)
Relative Humidity (Non-condensing)	0 ~ 95%	5 ~ 95%	5 ~ 95%
Time	901,329	225,664	M: 175496 R: 159617
Method	MIL-HDBK-217 FN2	MIL-HDBK-217 FN2	MIL-HDBK-217 FN2
Operating Voltage	12 V_{DC}	12- 48 V_{DC}	48 - 57V_{DC}
Operating Current	400mA	0.5A	2A
Power Consumption	4.2 W (system)	5 W (system)	M: 65 W (system) R: 125 W (system)
Connectors	DC Jack (power)	6-pin removable screw terminal (power & relay)	
Reverse Polarity	N/A	Present	Present
Safety	UL 60950	UL 60950	UL 60950
EMC	CE, FCC	CE, FCC	CE, FCC
EMI	EN 55032 EN 61000-6-4, FCC Part 15 Subpart B EN 61000-6-4, FCC Part 15 Subpart B	EN 55011/ EN 55032 EN 61000-6-4, FCC Part 15 Subpart B	
EMS	EN 61000-4-2 , EN 61000-4-3 , EN 61000-4-4 , EN 61000-4-5 , EN 61000-4-6 , EN 61000-4-8		
Shock	-	IEC 60068-2-27	IEC 60068-2-27
Freefall	-	IEC 60068-2-32	IEC 60068-2-32
Vibration	-	IEC 60068-2-6	IEC 60068-2-6
Warranty Period	5 years	5 years	5 years

Industrial Network Infrastructure

Media Converters and Injectors






Description		EKI-2741FPI	EKI-2742FPI	EKI-2741FHPI	EKI-2711HPI	EKI-2701HPI	EKI-2701PSI
Connectivity	10/100/1000Based-Tx,fixed	-	-	-	-	1	1
	10/100/1000Base-T PoE, Fixed	1	2	1	2	1	1
	Open SFP slot (GbE)	1	1	1	-	-	-
	Performance	-	-	-	-	-	-
	Auto MDI/MDI-X	✓	✓	✓	✓	-	-
	Auto Negotiation	✓	✓	✓	✓	-	-
	Store-and-Forward Switching	✓	✓	✓	✓	-	-
	Link Fault Pass-Through (LFP)	✓	-	✓	-	-	-
	MTBF	743,594Hrs	717,339Hrs	730,083Hrs	730,337Hrs	1419817Hrs	440,132Hrs
Traffic Control	Jumbo frame size	10Kbytes	10Kbytes	10Kbytes	10Kbytes	-	-
	IEEE 802.3x flow control	✓	✓	✓	✓	-	-
Physical	Housing Dimensions (W x H x D) mm	36.7 x 108.4 x 103.5 mm	36.7 x 108.4 x 103.5 mm	36.7 x 108.4 x 103.5 mm	36.7 x 108.4 x 103.5 mm	37x140x95 mm	37x140x95 mm
	Mounting way	DIN-Rail/Wall mount	DIN-Rail/Wall mount	DIN-Rail/Wall mount	DIN-Rail/Wall mount	DIN-Rail/Wall mount	DIN-Rail/Wall mount
	IP rating	IP31	IP31	IP31	IP31	IP30	IP30
Power	Power Input voltage	48V_{DC}	48V_{DC}	48V_{DC}	48V_{DC}	24/48V_{DC}	44~57V_{DC}
	Power Consumption	34W	63.5W	63.5W	63.5W	33.36W	17.76W
	Reverse protection	✓	✓	✓	✓	✓	✓
Certification	UL60950-1	-	-	-	-	-	✓
	UL508	✓	✓	✓	✓	✓	-
	UL-C1D2	✓	✓	✓	✓	-	-
	FCC	✓	✓	✓	✓	✓	✓
	CE	✓	✓	✓	✓	✓	✓

SFP Modules

The SFP (small form-factor pluggable) is a hot-swappable optical module transceiver in a compact size with a variety of transmitter and receiver specifications for data communications. When a user needs a transmission service between destinations further than 100 meters and beyond where traditional copper cables can reach, SFP modules easily overcome these problems.

Industrial Grade 1.25 Gbps SFP Modules w/ DDM

Part Number	Wavelength	Optical Mode	Distance	Optical Connector	Sensitivity (dB)
SFP-GMM-550	850 nm	Multi-Mode	550 m	LC	-17
SFP-GMM-2K	1310 nm	Multi-Mode	2 km	LC	-19
SFP-GSM-20K	1310 nm	Single-Mode	20 km	LC	-23
SFP-GSM-30K	1310 nm	Single-Mode	30 km	LC	-24
SFP-GSM-40K	1550 nm	Single-Mode	40 km	LC	-24
SFP-GSS-40KTX-LC	1310T/1550R	Single-Strand	40 km	LC	-23
SFP-GSS-40KRX-LC	1550T/1310R	Single-Strand	40 km	LC	-23
SFP-GS4-70KTX-LC	1490T/1550R	Single-Strand	70 km	LC	-24
SFP-GS4-70KRX-LC	1550T/1490R	Single-Strand	70 km	LC	-24
SFP-GSS-20KTX	1310T/1550R	Single-Strand	20 km	SC	-23
SFP-GSS-20KRX	1550T/1310R	Single-Strand	20 km	SC	-23
SFP-GSS-40KTX	1310T/1550R	Single-Strand	40 km	SC	-23
SFP-GSS-40KRX	1550T/1310R	Single-Strand	40 km	SC	-23
SFP-GS4-70KTX	1490T/1550R	Single-Strand	70 km	SC	-24
SFP-GS4-70KRX	1550T/1490R	Single-Strand	70 km	SC	-24

Industrial Grade 1.25 Gbps SFP Modules

Part Number	Wavelength	Optical Mode	Distance	Optical Connector	Sensitivity (dB)
SFP-GSX/LCI-AE	850 nm	Multi-Mode	550 m	LC	-17
SFP-GLX/LCI-10E	1310 nm	Single-Mode	10 km	LC	-20
SFP-GLX/LCI-20E	1310 nm	Single-Mode	20 km	LC	-23
SFP-GLX/LCI-40E	1310 nm	Single-Mode	40 km	LC	-23

1.25 Gbps SFP Modules

Part Number	Wavelength	Optical Mode	Distance	Optical Connector	Sensitivity (dB)
SFP-GSX/LC-AE	850 nm	Multi-Mode	550 m	LC	-17
SFP-GLX/LC-10E	1310 nm	Single-Mode	10 km	LC	-20
SFP-GLX/LC-20E	1310 nm	Single-Mode	20 km	LC	-23
SFP-GLX/LC-40E	1310 nm	Single-Mode	40 km	LC	-23

Industrial Grade 100-155 Mbps SFP Modules w/ DDM

Part Number	Wavelength	Optical Mode	Distance	Optical Connector	Sensitivity (dB)
SFP-FMM850-2K	850 nm	Multi-Mode	2 km	LC	-26
SFP-FMM-2K	1300 nm	Multi-Mode	2 km	LC	-32
SFP-FSM-20K	1310 nm	Single-Mode	20 km	LC	-35
SFP-FSM-40K	1310 nm	Single-Mode	40 km	LC	-36
SFP-FSM-80K	1310 nm	Single-Mode	80 km	LC	-36
SFP-FSS-20KTX	1310T/1550R	Single-Strand	20 km	SC	-32
SFP-FSS-20KRX	1550T/1310R	Single-Strand	20 km	SC	-32
SFP-FSS-40KTX	1310T/1550R	Single-Strand	40 km	SC	-34
SFP-FSS-40KRX	1550T/1310R	Single-Strand	40 km	SC	-34

SFP Modules

Industrial Grade 100-155 Mbps SFP Modules

Part Number	Wavelength	Optical Mode	Distance	Optical Connector	Sensitivity (dB)
☞ SFP-FXM/LCI-AE	1310 nm	Multi-Mode	2 km	LC	-32
☞ SFP-FXS/LCI-30E	1310 nm	Single-Mode	30km	LC	-34

Industrial Grade 10 Gbps SFP+ & XFP Modules w/ DDM

Part Number	Wavelength	Optical Mode	Distance	Connector	Sensitivity (dB)
☞ SFP-XMM-33-XFP	850 nm	Multi-Mode	33 m	LC	-9.9
☞ SFP-XSM-10K-XFP	1310 nm	Single-mode	10 km	LC	-14.4
☞ SFP-XSM-40K-XFP	1550 nm	Single-mode	40 km	LC	-16
☞ SFP-XSM-80K-XFP	1550 nm	Single-mode	80 km	LC	-23
☞ SFP-XMM-33	850 nm	Multi-Mode	33 m	LC	-9.9
☞ SFP-XSM-10K	1310 nm	Single-mode	10 km	LC	-14.4
☞ SFP-XMM-LC-400	850nm	Multi-mode	400 m	LC	-11.1
☞ SFP-XMM-LCI-400	850nm	Multi-mode	400 m	LC	-11.1
☞ SFP-XSM-LC-10K	1310nm	Single-mode	10 km	LC	-12.6
☞ SFP-XSM-LCI-10K	1310nm	Single-mode	10 km	LC	-12.6
☞ SFP-XSM-LC-20K	1310nm	Single-mode	20 km	LC	-12.6
☞ SFP-XSM-LCI-20K	1310nm	Single-mode	20 km	LC	-12.6
☞ SFP-XSM-LC-40K	1310nm	Single-mode	40 km	LC	-12.6
☞ SFP-XSM-LCI-40K	1310nm	Single-mode	40 km	LC	-12.6

Copper SFP Modules

Part Number	Speed	Distance	Wide Temp.
☞ SFP-GTX	10/100/1000 Mbps	100 m	-
☞ SFP-GTXB	1000 Mbps	100 m	-
☞ SFP-GTX/RJ45I-AE	1000 Mbps	100 m	Yes

Intelligent OBD Cellular Gateways

Advantech Model WISE-4773 series, Intelligent OBD Cellular Data Interface, collects data from GPS, Bluetooth beacons, and your vehicle's OBD port. The plug-and-play, self-installing device wirelessly transmits the data over the new G5 CAT M1 cellular network to your fleet management or analytics systems. Transport Layer Security (TLS) allows secure data connections to a configurable IP address via JSON over HTTPS and/or Cloud Management Platform for device management. All data in and out of the device is secure and encrypted.

WISE-4773-S52U - Additional Features

- European vehicle support
- Bluetooth Beacon forwarding
- WiFi Access Point supporting up to 8 devices on a WLAN
- One BT serial connection profile
- One smart peripheral on either WiFi or Bluetooth communicating on an API
- Configure which peripheral port is smart
- Digital input report on change
- Digital output set from cellular connection
- User API

WISE-4773-S51U and WISE-4773-S52U

Vehicle Protocols	J1939, J1708/J1587, OBDII (NATAM)
Cellular	LTE, Category-M1, LTE CATM bands (USA), AT&T
Accelerometer	Digital, 3-axis, self-orientating (acceleration, braking, cornering)
Bluetooth	BT 4.1 (BTLE)
GPS/GLONASS/AGPS	At least 2.5 M CEP location accuracy
Wi-Fi	802.11 b/g/n/e/i, AP or Client
Internal Antennas	GPS, Cellular, Bluetooth, Wi-Fi
Data Rate	Up to 15 Mbps
Transmit Power	1MB: 12.5dBm; 54MB: 12.25dBm; 65MB: 9.25dBm
Receive Sensitivity	1MB: -91dBm; 54MB: -75dBm; 65MB: -71dBm
Port Connector	(4) Terminal Block (digital I/O) (1) J1962 (OBD) / ISO 15031 Type A
LEDs	Green = cellular network connection Red = vehicle network connection
Buzzer Indicator	Hard braking, acceleration, cornering
Security	TLS cellular connection. Tamper alert. Automatic Ignition detection.
Configuration	Over cellular or CLI.
Data Transmission	Automatic cellular transmission. Configurable interval. Store-&-forwarding if cellular connection not available.

Common Features

Digital Outputs	Output Voltage Range	0 - 30 V DC
	Output Type	Open drain
	Output Current	Not to be less than 100 mA
	Protection	Current limit protection
	isolation	None
Digital Inputs	Input Voltage Range	0 - 48 V DC
	VIL	0.4 V, maximum
	VIH	2.5 V, minimum
	Pull-up Current	65 uA
	Type	Sinking (NPN) Input
	Isolation	None
	Power Source	Direct power via OBD J1962P port Battery backup Low-power states.
	Operating Voltage	9 to 36 V DC
	Power Consumption	<5 mA @ 12V DC deep sleep <15 mA @ 12V DC network sleep <150 mA @ 12V DC active
	Operating Temperature	-30 to +75 °C (-22 to +167 °F)
	Enclosure Dimensions	68.6x48.3x25.4 mm (1.7x1.9x1.0 in) approx.

OBD Vehicle Converters

These Intelligent OBD vehicle data converters connect your PC, driver terminal, Java-enabled phone, or other on-board computing device to the OBD diagnostic bus of light-duty or heavy-duty vehicles. They enable the retrieval of the most commonly used parameters in telematics service provider (TSP) and fleet management system applications. With proprietary vehicle detection algorithm and embedded database, these converters provide a simple, operational protocol to communicate with the OBD bus on any compliant vehicle.

	☞ BB-LD3IC-S	BB-LD3-1939P1D	☞ BB-HD3-A3
Vehicle Interfaces	ISO 15765, LSGMLAN, Ford Secondary CAN	ISO 15765 (CAN), LSGMLAN, Ford Secondary CAN	J1939 & J1708/J1587
OBD Data Support	2008 light-duty vehicles	2008 light-duty vehicles	1996 heavy-duty vehicles
Host Connection	RS-232: DB9 female, DCE	J1939: DB9 female	RS-232: DB9 female, DCE
Ignition On / Signal Output	RS-232 CTS/DB9 Pin 6	-	-
Power Consumption	0.20W in Operating Mode 0.15W in Automatic Sleep Mode (Key Off)	0.2W in Operating Mode 0.1W in Automatic Sleep Mode (Key Off)	0.6W typical, 1.6W maximum (Key On)
Operating Voltage	8 to 30 VDC	8 to 30 VDC	10 to 42 VDC
Operating Temperature	-40 to +85 °C (-40 to +185 °F)	-40 to +85 °C (-40 to +185 °F)	-40 to +85 °C (-40 to +185 °F)
Enclosure Dimensions	68.6 x 48.3 x 25.4 mm (2.7 x 1.9 x 1.0 in)	104.1 x 43.2 x 20.3 mm (4.1 x 1.7 x 0.8 in)	104.1 x 43.2 x 20.3 mm (4.1 x 1.7 x 0.8 in)
Y-Cable	Integrated J1962/ISO 15031 Type B	Available J1962/ISO 15031 Type B	Available Deutsch 6, Deutsch 9, Deutsch 9 Type2
Available Form Factors	Device; embedded software	-	-
Regulatory & Testing	SAE J1113/41 - radiated RF interference SAE J1113/11 - load dump and transient protection SAE J1113/13 - ESD immunity IEC-60068-2-6 - vibration IEC-60068-2-27 - shock IEC-60068-2-32 - drop	SAE J1113/41 - radiated RF interference SAE J1113/11 - load dump and transient protection SAE J1113/13 - ESD immunity IEC-60068-2-6 - vibration IEC-60068-2-27 - shock IEC-60068-2-32 - drop	SAE J1113/41 - radiated RF interference SAE J1113/11 - load dump and transient protection SAE J1113/13 - ESD immunity IEC-60068-2-6 - vibration IEC-60068-2-27 - shock IEC-60068-2-32 - drop

9 Remote I/O, Wireless Sensing Modules and Converters

Wireless IoT Sensing Devices

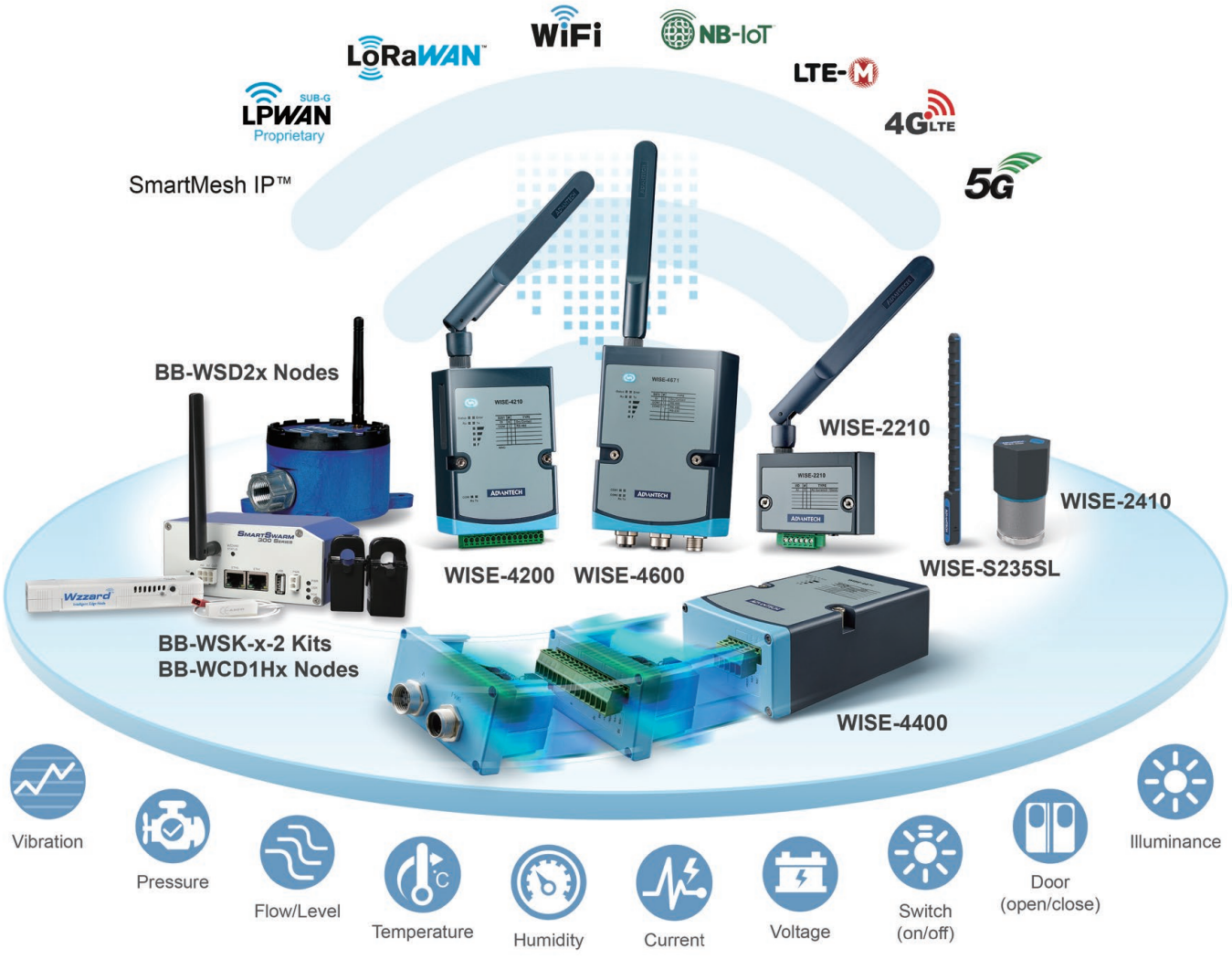
Overview

Designed to be a complete IoT sensing solution, the WISE-4000 series goes beyond merely providing wireless communication for sensors—it also provides cloud connectivity for additional user applications. With support for IoT protocols such as MQTT, the WISE-4000 series can communicate with cloud services or other web services via secure web sockets. For wide area communication, WISE-4000 I/O modules and sensor nodes have been designed with LPWAN, LoRa, NB-IoT/LTE-M, 4G/LTE, and IP65-rated features, making them highly suitable for many kinds of industrial application. WISE-2000 sensor devices are all-in-one devices designed for specific applications and domain focused scenarios.

IoT wireless I/O module and sensor node with modularized high adaptability design

Low Power Wide Area Networks (LPWAN) are created for Machine-to-Machine (M2M) and Internet of Things (IoT) networks. They are not a single technology, but rather a variety of low-power, wide area network technologies. Compared with a traditional mobile network, LPWANs are known for offering low power efficiency and longer range transmission. To shorten the gap between field site data and the cloud, WISE-4000 series provides wireless I/O and sensor modules that can get and pass data directly to the cloud by utilizing a variety wireless communication technologies.

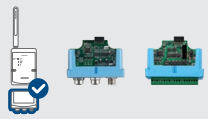
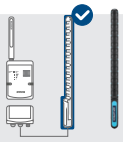
For more domain focussed applications, WISE-2000 series offers a wireless and sensing all-in-one solution to simplify and accelerate the implementation of IoT applications. Industrial BB-WSx wireless edge sensor starter kits and nodes create a low power, dynamic and scalable mesh network that does not disrupt existing networks. Starter kits provide Node-RED dashboards and Advantech WISE-PaaS cloud connectivity.



Wireless IoT Sensing Devices: Sensor Nodes

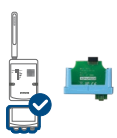
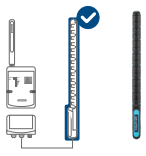
WISE-4610 Series

LoRaWAN

	Industrial LoRa/LoRaWAN Wireless Module				Industrial LoRa/LoRaWAN Wireless Module			
Model Name	WISE-4610-NA	WISE-4610-EA	WISE-4610-JA	WISE4610JA 2001-T	WISE-4610-NA	WISE-4610-EA	WISE-4610-JA	WISE4610 JA2001-T
Frequency Range	US 902~923 MHz	EU 863~870 MHz	AS 923~923.5 MHz	AS923-923.MHz	US 902~923 MHz	EU 863~870 MHz	AS 923~923.5 MHz	AS923-923.MHz
Function	Wireless Board				Wireless Board			
Positioning	GPS/Galileo/BeiDou/GLONASS				-			
Power Input	4100 mAh Lithium Rechargeable Battery				-			
	10~50VDC External Power				10~50VDC External Power			
	17~21VDC Solar Panel				17~21VDC Solar Panel			
Configuration Interface	Micro-B USB				Micro-B USB			
I/O Module								
Model Name	WISE-S614-A	WISE-S614T-A	WISE-S615-A	WISE-S615T-A	WISE-S617-A	WISE-S617T-A	WISE-S672-A	WISE- S600 / WISE- S600T	WISE-S235SL-A
Spec	4AI&4DI (M12)	4AI&4DI (Terminal Block)	4RTD (M12)	4RTD (Terminal Block)	2AI,2DI, 1DO&1RS-485 with 12V power output (M12)	2AI,2DI, 1DO&1RS-485 with 12V power output (Terminal Block)	6DI,1RS- 485 & 1RS- 485/ 232	Upon Custom-ization Request *MOQ required	Stack Light Monitoring Sensor
WISE-4610 Optional	1654011516-01 M12, A-code, 8 Pin, Male 1655005903-01 M12, A-code, 4 Pin, Female 1700028162-01 M12, A-code, 4 pin, Female with 1M cable 1700028163-01 M12, A-code, 8 Pin, Male with 1M cable								

WISE-4220 Series

Wi-Fi

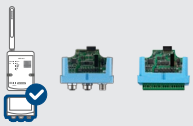
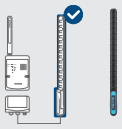
	WiFi 2.4G Wireless Module					Built-in Temperature & Humidity Sensor*
Model Name	WISE-4220-A					WISE-4220-S231A
Standard	802.11 b/g/n					
Frequency	2.4G					
Function	Wireless Board					
Power Input	10~50VDC External Power					
Configuration Interface	Micro-B USB					
Outdoor Range (LOS)	100m					
I/O Module						
Model Name	WISE-S214-A	WISE-S250-A	WISE-S251-A	WISE-S200-A	WISE-S235SL-A	
Spec	4AI&4DI	6DI, 2DO&1RS-485	6DI &1RS-485	Stack Light Monitoring Sensor	Upon Customization Request *MOQ required	

*Modularization doesn't effect on WISE-4220-S231 series

Wireless IoT Sensing Devices: Sensor Nodes

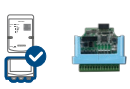
WISE-4671 Series

NB-IoT LTE-M

Advanced Industrial Cat.NB1/Cat.M1 Wireless Module									
Model Name	WISE-4671-UA								
Standard	3GPP Release13								
Band	B2,3,4,8,12,13,20,28								
SIM Type	Nano SIM/4FF								
Function	Wireless Board								
Positioning	GPS/Galileo/BeiDou/GLONASS								
Power Input	4100 mAh Lithium Rechargeable Battery 10~50V_{DC} External Power 17~21 V_{DC} Solar Panel								
Configuration Interface	Micro-B USB								
I/O Module									
Model Name	WISE-S614-A	WISE-S614T-A	WISE-S615-A	WISE-S615T-A	WISE-S617-A	WISE-S617T-A	WISE-S672-A	WISE-S600/ WISE-S600T	WISE-S235SL-A
Spec	4AI & 4DI (M12)	4AI & 4DI (Terminal Block)	4RTD (M12)	4RTD (Terminal Block)	2AI,2DI, 1DO & 1RS-485 (M12)	2AI,2DI, 1DO & 1RS-485 (Terminal Block)	6DI,1RS-485 & 1RS-485/232	Upon Customization Request *MOQ required	Stack Light Monitoring Sensor
WISE-4671 Optional	1654011516-01 M12, A-code, 8 Pin, Male 1655005903-01 M12, A-code, 4 Pin, Female 1700028162-01 M12, A-code, 4 pin, Female with 1M cable 1700028163-01 M12, A-code, 8 Pin, Male with 1M cable								

WISE-4471 Series

NB-IoT LTE-M

Industrial Cat.NB1/Cat.M1 Wireless Module						
Model Name	WISE-4471-UA					
Standard	3GPP Release 13					
Band	B2,3,4,5,8,12,13,20,28					
SIM Type	Micro SIM/3FF					
Function	Wireless Board					
Power Input	10~50V_{DC} External Power					
Configuration Interface	Micro-B USB					
I/O Module						
Model Name	WISE-S214-A	WISE-S250-A	WISE-S251-A	WISE-S472-A	WISE-S200-A	WISE-S235SL-A
Spec	4AI & 4DI	6DI, 2DO & 1RS-485	6DI &1RS-485	1DI, 1RS-485 & 1RS-485 or 1RS-232	Upon Customization Request *MOQ required	Stack Light Monitoring Sensor

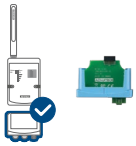
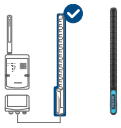
Wireless IoT Sensing Devices: Sensor Nodes

WISE-4210/WISE-221x Series

SUB-G LPWAN Proprietary




	Proprietary LPWAN(SUB-G) Wireless Module				Proprietary LPWAN(SUB-G) Built-in Temperature & Humidity Sensor*		Propriety LPWAN (SUB-G) Wireless CT Node	Propriety LPWAN (SUB-G) Wireless Analog Input Modules
Function	AP		Node/Wireless Board		Sensor Node		Self-Powered Node	
Model Name	☞ WISE-4210AP-NA	☞ WISE-4210AP-UA	☞ WISE-4210-NA	☞ WISE-4210-UA	☞ WISE-4210-S231NA	☞ WISE-4210-S231UA	☞ WISE-2210-NA	☞ WISE-2211-NA
Frequency	868MHz/ 923MHz	433MHz	868MHz/ 923MHz	433MHz	868MHz/ 923MHz	433MHz	868MHz/ 923MHz	868MHz/ 923MHz
Standard	IEEE 802.15.4g FSK/GFSK Modulation							
Data Rate	625 bps, 2.5k bps, 5k bps, 50k bps		625 bps, 50k bps				625 bps, 2.5k bps, 5k bps, 50k bps	
Power Input	10~50V_{DC} External Power						Self Powered	
Configuration Interface	Micro-B USB							
Network Capacity	64 Clients							
Outdoor Range (LOS)	5KM@625bps							

I/O Module					
Model Name	WISE-S214-A	WISE-S250-A	WISE-S251-A	WISE-S200-A	WISE-S235SL-A
Spec	4AI&4DI	6DI, 2DO & 1RS-485	6DI &1RS-485	Upon Customization Request *MOQ required	Stack Light Monitoring Sensor

*Modularization doesn't effect WISE-4210-S231 and WISE-221x series

** WISE-S250 does not support power saving mode

Accessories:

Antenna for WISE-4210/WISE-221X	
1750008836-01	863-870MHz Dipole Antenna
1750008837-01	902-928MHz Dipole Antenna
Battery for WISE-4210	
1760002647-01	Bat.Cylindrical 3.6V/2500mAh AA Li/SOCl2
CT for WISE-221X	
96PD-CT241-60A	3~60A, 10.0+/-0.2mm, -20~65°C
96PD-CT248-100A	5~100A, 15.7+/-0.3mm, -40~65°C
96PD-CT24F-200A	10~200A, 20.5+/-0.3mm, -40~85°C

Wireless IoT Sensing Devices: Sensor Nodes

LoRaWAN Smart Vibration Sensor

Model Name		WISE-2410-NA WISE-2410-EA WISE2410JA1901-T WISE2410TA2001-T
Wireless Communication	Topology	Star (LoRaWAN)
	Frequency Band	US 902-928 (MHz); EU 863-870 (MHz); TW 920-925 (MHz); JP 920-928 (MHz)
	Spreading Factor	7~12
	Transmit Power	Up to +18dBm
	Data Rate	50 kbps at FSK mode EU868;21.9 kbps at SF7 mode US915;5.47 kbps at SF7 mode JP923
Vibration Sensor	Axis	X-Y-Z
	Frequency Range	10~1000Hz
	Amplitude Range	±2/4/8/16g
	Output Data Rate	3200Hz
	Resolution	10 bit (all g range)
	Sensitivity (TYP.)	31.2mg/LSB
	Noise (MAX. TA = 25°C. 0g)	±150mg
	Nonlinearity	±0.5 %
	Cross-Axis Sensitivity	±1 %
	Sensitivity Change Due to Temperaure	±0.02 %/°C
Temperature Sensor	Operating Range	-20°C ~ 85°C (USB powered); -20°C ~ 50°C (Battery powered)
	Resolution	12 bit
	Accuracy	±2.0°C (±35.6°F) (vertical installation)
Mechanical	Enclosure	IP66
	Mounting	Mounting Stud; Curved Surface Magnet; Adhesives
	Dimension (L x W x H)	42mm x 40.2mm x 84.7mm
General	Power Input	3.6V AA Battery *2pcs (Not included)
	Configuration Interface	Micro-B USB
	Temperature (Operating)	-20°C ~ 85°C (USB powered); -20°C ~ 50°C (Battery powered)
	Temperature (Storage)	-25°C ~ 90°C
	Humidity (Operating)	10% ~ 95% RH
	Humidity (Storage)	5% ~ 95% RH

Intelligent RFID Gateway

Model Name		WISE-2834-CA
Wireless Communication	RFID Standard	EPC Global Class 1 Gen. 2 (ISO18000-6C)
	Frequency Band	US 902.75MHz - 927.25MHz; EU 865.7MHz - 867.5MHz; TW 922.25MHz - 927.75MHz
	Transmit Power	Available to adjust from +10dBm ~ +31.5dBm
	Receiver Sensitivity	-82dBm
	Antenna Connector	4 RP-TNC
General	Chipset	ARM Cotex-A8, 300MHz for system; ARM Cortex-M0 32-Bit 32MHz for I/O
	Memory	512MB DDR3L
	Storage	NAND Flash 512MB
	OS Support	Linux 3.12
	LED Indicators	Status, Serial (Tx, Rx),Wi-Fi communication, RFID Channel on/off, Wi-Fi Signal Strength
	Power Input	10V ~ 30V DC; Power Consumption: 3W (TYP.), 15W (Max.)
	Slot	1 x Micro SD card
	USB	1 x USB2.0 High Speed (Up to 480Mbps)
	Communication Speed	1 x 10/100 Based-T RJ-45; 1 x RS-485: 50 ~ 115.2 kbps
	Digital Input	4 Dry/Wet Contact
	Digital Output	4 Sink Type
	Configuration Tool	WISE Studio
	Dimensions (L x W x H)	190mm x 120mm x 30.2mm
Mechanical	Mounting	DIN 35 rail, Wall, Pole
Operating System	Temperature (Operating)	-25°C ~ 50°C
	Temperature (Storage)	20% ~ 95% RH
	Humidity (Operating)	-40°C ~ 85°C
	Humidity (Storage)	0% ~ 95% RH

Wireless IoT Sensing Devices: Wzzard™ Mesh Sensor Nodes – for Industrial Application Sensors

BB-WSD2x industrial series

Model Number	☞ BB-WSD2C21150	☞ BB-WSD2C06010	☞ BB-WSD2C31010	☞ BB-WSD2M06010	☞ BB-WSD2M31010	☞ BB-WSD2M3101P2K	☞ BB-WSD2M3101R100
Description	Industrial Cooler, HVAC Node	Industrial Digital Input Node	Industrial Power Monitor Node	Industrial Digital Input Node	Industrial Power Monitor Node	Industrial Power Monitor Node	Industrial Power Monitor Node
Wireless Technology	Low power 802.15.4e, SmartMesh IP (to SmartSwarn 342 gateway) via MQTT protocol						
Connector	Conduit (UL Type 3 outdoor approved) 12.7mm (0.5 in)	Conduit (UL Type 3 outdoor approved) 12.7mm (0.5 in)	Conduit (UL Type 3 outdoor approved) 12.7mm (0.5 in)	M12	M12	M12	M12
Includes	2 AI, 1 DI, 1 DO, 2 Thermocouples, 2 Thermistors, Internal Temperature, antenna, cable	6 DI, Internal Temperature, antenna, cable	3 AI, 1 DI, Internal Temperature, antenna, cable	6 DI, Internal Temperature, antenna, cable	3 AI, 1 DI, Internal Temperature, antenna, cable	2 AI, Vbat measurement, 1 DI, Internal Temperature, Switched Vbat Power Out (2 sec.), antenna, cable	12 AI, Vref measurement, 1 DI, Internal Temperature, Switched 3.3V Power Out (100 ms), antenna, cable
External Antenna (included)	RP-SMA, Omni-directional, 3.8 dBi, 2.4 GHz						
Power	Internal Power: (2) 3.6V 2400 mAH Lithium Thionyl Chloride AA Batteries Battery Life: >5 years – based on 1 min. sensor sampling and reporting Optional External Input Voltage: 10-30 VDC @ 40mA peak						
Sensor Power Out	Switched Vbat: Battery Power – Turned on at time of measurement (20 mA max.) Switched Vref: 3.3V (+/- 0.1%) – Turned on at time of measurement (20 mA max.)						
Sensors	Analog Input (0 -10 VDC, 0 - 20 mA, 4 - 20 mA) Digital Input (0 - 48 VDC) Digital Input Frequency 1-1K Hz (accuracy +/- 1 Hz) Digital Input Counter Integrated Temperature Thermocouple (J, K, N, R, S, T, B, E) Digital Output, Sinking, up to 100mA @ 30VDC						
Wireless Security	Device authentication, 128-bit, AES-based wncryption with multiple keys, Message Integrity Check (MIC), Synchronized key changeovers, Customized key rotation						
Temperature	-40 to +80 °C (operating)						
Enclosure	IP67 rated fiber reinforced polyester PBT						
Mounting Option	(4) Mounting Ears, M5 (#10) screws (UL approved option)						
Mounting Option	Magnetic Mounting (via internal enclosure magnet) Pull Force 2.13 kg (4.7 lb) Note: Magnetic mounting models not rated for UL installations.						
Certifications	UL C1/D2, CE, FCC, EN62479 (lower power), Shock, Vibration	UL C1/D2, CE, FCC, EN62479 (lower power), Shock, Vibration	UL C1/D2, CE, FCC, EN62479 (lower power), Shock, Vibration	CE, FCC, EN62479 (lower power), Shock, Vibration	CE, FCC, EN62479 (lower power), Shock, Vibration	CE, FCC, EN62479 (lower power), Shock, Vibration	CE, FCC, EN62479 (lower power), Shock, Vibration
UL Listed C1/D2 Conditions	Yes. Indoor / Outdoor, w/ mounting ear installation	(pending)	Yes. Indoor / Outdoor, w/ mounting ear installation	No (M12 connector not UL)	No (M12 connector not UL)	No (M12 connector not UL)	No (M12 connector not UL)
	WIDE	WIDE	WIDE	WIDE	WIDE	WIDE	WIDE

Wireless IoT Sensing Devices: Wzzard™ Mesh Starter Kits – for Industrial & Commercial Applications

BB-WSK-xxx-2 kit series



Model Number	☞ BB-WSK-CBM-2	☞ BB-WSK-HAC-2	☞ BB-WSK-REF-2	☞ BB-WSK-NRG-2
Description	Condition-based Monitoring Starter Kit	Energy Starter Kit	Refrigeration Monitoring Starter Kit	HVAC/Compressor / Fan Monitoring Starter Kit
Product Sensor & Format	Industrial Low-Power Wireless Sensing – temperature, vibration	Industrial Low-Power Wireless Sensing – current, differential temperature	Commercial Low-Power Wireless Sensing – temperature, humidity, current, door	Industrial Low-Power Wireless Sensing – current
Contents - Bundled Kits Include:	Wzzard Node, sensors & cables, gateway with cloud license and Node-RED starter flow with web server			

NOTE: Starter kits include everything to get started.

Wireless IoT Sensing Devices: Wzzard™ Mesh Sensor Nodes – for Commercial Application Sensors

BB-BB-WCD1Hx commercial series

Model Number	☞ BB-WCD1H2102H	☞ BB-WCD1H3001HP100
Description	HVAC/cooler node for temperature & humidity sensing	AI, vBAT Out temperatue & humidity sensing node
Wireless Technology	Low power 802.15.4e, 2.4GHz SmartMesh IP (to SmartSwarn 342 gateway) via MQTT protocol	
Physical Connector	Molex 6-pin MicroClasp	
Sensors (industry standard type)	(2) Analog Inputs (1) DI (1) Thermistor	(3) AI
Integrated Sensors (within node)	(1) Temperature (1) Humidity	(1) Temperature (1) Humidity
Antenna	Internal, included.	
Power	Internal: 3.6V 1650 mAH Lithium Thionyl Chloride 2/3 AA battery. Battery Life: 5-year battery life, based on 1 minute sensor sampling interval	
Power Backup	-	vBat Out operating mode
LED Indication	Network Connectivity, Node Status	
Wireless Security	Device authentication, 128-bit, AES-based wncryption with multiple keys, Message Integrity Check (MIC), Synchronized key changeovers, Customized key rotation	
Installation	Indoor	
Operating Temperature	-20 to +70 °C (-4 to +158 °F)	
Mounting	Mounting bracket (included) VHB adhesive strip (included) Zip tie (ties not included)	
Certifications	UL C1/D2, CE, FCC, Industry Canada (RSS210), Shock, Vibration, Drop	
UL Listed C1/D2 Conditions	UL C1/D2 rating is voided when using non UL-specified batteries. Do not mix old and new batteries	

Serial and USB Converters for the Industrial World

Robust Features & Reliable Performance for Rugged Applications

Bridging the connectivity gap

In the hazardous industrial world, existing equipment investments often rely on standard serial interfaces to communicate. Advantech connectivity solutions are designed with features that allow them to operate successfully in challenging environments. These devices help industrial equipment communicate reliably while protecting from damaging and costly power spikes, surges and transients.

Advantech serial and USB protocol devices have been supporting data communications and protecting mission critical applications for more than 30 years. Advantech's USB devices allow many USB conveniences to be reliably implemented on the factory floor with features such as high data transfer rates, isolation, Ethernet conversion, high retention USB ports and more.

ADAM-4500 modules suitable for establishing cost-effective industrial networks. Converter and repeater modules are available to convert RS-232 signals to RS-422 or RS-485 signals and extend the range of these signals.

Isolation protection – Isolate data lines from electrical noise

Surge protection – Suppress and dissipate power line surges

ESD protection – Safeguard against ESD transients

Wide operating temperature – Performance in extreme environments

Port powering – No separate power supply needed

High retention USB ports – Secure USB cables in high vibration uses

Modbus support – Widely used industrial device protocol

Approvals, directives, standards – Tested to global compliance standards

Serial and USB Converters: USB Converters




MODEL		BB-USOPTL4	BB-USOPTL4DR-2	BB-USO9ML2	BB-485USB9F-2W
INTERFACE 1	Interface	USB	USB	USB	USB
	Connector	Type B (Type B to Type A, cable included)	Type B (Type B to Type A, cable included)	Type B (Type B to Type A, cable included)	Type B (Type B to Type A, cable included)
	Port/s	1	1	1	1
	High Retention	Yes	Yes	Yes	Yes
INTERFACE 2	Interface	RS-422/485	RS-422/485	RS-232	RS-485
	Connector	Terminal block	Terminal block	DB9 male	DB9 male
	Port/s	1	2	1	1
Operating Temperature		0 to +70 °C	0 to +70 °C	0 to +70 °C	0 to +70 °C
Protection		Isolation: 2kV ESD: 15kV	Isolation: 3kV ESD: 15kV	Isolation: 2kV ESD: 4kV Contact and 8kV Air	-
Power Input		USB 5 VDC	USB 5 VDC	USB 5 VDC	USB 5 VDC
Mounting		Inline installation	DIN Rail	Inline installation	Inline installation
Certificates		CE, FCC	CE, FCC	CE, FCC, UL508	CE, FCC

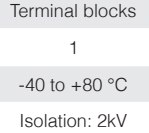


MODEL		BB-485USBTB-2W-A	BB-USO9ML2-4P	BB-USO9ML4-4P
INTERFACE 1	Interface	USB	USB	USB
	Connector	Type B (Type B to Type A, cable included)	Type B, cable included	Type B, cable included
	Port/s	1	1	1
	High Retention	-	Yes	Yes
INTERFACE 2	Interface	RS-485	RS-232	RS-232
	Connector	Terminal block	DB9 male	DB9 male
	Port/s	1	2	4
Operating Temperature		0 to +70 °C	0 to +70 °C	0 to +70 °C
Protection		-	Isolation: 2kV ESD: 15kV	Isolation: 2kV ESD: 15kV
Power Input		USB 5 VDC	USB 5 VDC (or 10-30 VDC external)	USB 5 VDC (or 10-30 VDC external)
Mounting		Inline installation	Desk or panel	Desk or panel
Certificates		CE, FCC	FCC, UL508	FCC, UL508

Serial and USB Converters: Serial Converters




MODEL		BB-422PP9TB	BB-422PP9R	BB-485SD9TB	BB-485SD9R
INTERFACE 1	Interface	RS-232	RS-232	RS-232	RS-232
	Connector	DB9 female	DB9 female	DB9 female	DB9 female
	Port/s	1	1	1	1
INTERFACE 2	Interface	RS-422	RS-422	RS-485	RS-485
	Connector	Terminal block	DB9 female	Terminal block	DB9 female
	Port/s	1	1	1	1
Operating Temperature		0 to +70 °C	0 to +70 °C	0 to +70 °C	0 to +70 °C
Protection		-	-	-	-
Power Input		Port-powered from RS-232 (Optional external 12-16 V_{DC} power supply)	Port-powered from RS-232	Port-powered from RS-232 (Optional external 12-16 V_{DC} power supply)	Port-powered from RS-232
Mounting		Inline installation	Inline installation	Inline installation	Inline installation
Certificates		CE, FCC	CE, FCC	CE, FCC	CE, FCC




MODEL		BB-485LDRC9	BB-485DRCI	BB-232CLDR	BB-FOSTCDRi
INTERFACE 1	Interface	RS-232	RS-232	RS-232	RS-232, RS-422/485
	Connector	DB9 female & Terminal block	DB9 female	Terminal block	Terminal block
	Port/s	1	1	1	1
INTERFACE 2	Interface	RS-422/485	RS-422/485	Current Loop	Fiber Optic
	Connector	Terminal blocks	Terminal block	Terminal Block	MM, ST
	Port/s	1	1	1	1
Operating Temperature		-40 to +80 °C	-40 to +80 °C	-40 to +80 °C	-40 to +80 °C
Protection		Isolation: 2kV	Isolation: 2kV	Isolation: 2kV	Isolation: 2kV
Power Input		10-30 V_{DC}	10-48 V_{DC}	10-30 V_{DC}	10-48 V_{DC}
Mounting		DIN Rail	DIN Rail	DIN Rail	DIN Rail
Certificates		CE, FCC, cULus, UL508	CE, FCC, KCC, UL C1/D2, UL508	CE, FCC, UL508, CULus	CE, FCC, UL C1/D2

Serial and USB Converters: Serial Repeaters




MODEL	BB-485OPDR	BB-485OPDRI	BB-232OPDR	BB-232OPDRI
Interface	RS-422/485	RS-422/485	RS-232	RS-232
Type	Terminal block	(2) Terminal block	Terminal block	DB9 female, DB9 male
Operating Temperature	-40 to +80 °C	-40 to +80 °C	-40 to +80 °C	-40 to +80 °C
Protection	Isolation: 2kV Surge: 6.5 bi-directional avalanche breakdown device 500W peak power dissipation	Isolation: 2kV on input/output/ power Surge: 600W peak power dissipation	Isolation: 2kV	Isolation: 2kV on input/output/ power Surge: 6.5 bi-directional avalanche breakdown device 500W peak power dissipation
Power Input	10-30 VDC	10-48 VDC	10-30 VDC	10-48 VDC
Enclosure	IP20, plastic	IP20, plastic	IP30, plastc	IP30, plastic
Mounting	DIN rail	DIN rail	DIN rail	DIN rail
Certificates	CE, FCC, KCC, cULus Listed, UL508, UL Recognized	CE, FCC, KCC, UL C1/D2	CE, FCC, cULus Listed, UL508	CE, FCC, KCC, UL C1/D2, UL508
	ISOLATION SURGE WIDE MODBUS	ISOLATION SURGE WIDE	ISOLATION WIDE	ISOLATION WIDE

Serial and USB Converters: USB Hubs




MODEL		BB-UHR204	BB-UHR304	BB-UHR307	BB-UH104
USB Type		USB 2.0	USB 2.0	USB 2.0	USB 2.0
Downstream	Interface	4	4	7	4
	Type	Type A female	Type A female	Type A female	Type A female
	High Retention	Yes	Yes	Yes	Yes
Operating Temperature		-40 to +80 °C	-40 to +80 °C	-40 to +80 °C	-40 to +80 °C
Protection		ESD: 15 kV air, 8kV contact	Isolation: 4kV ESD: 15 kV air, 8kV contact	Isolation: 4kV ESD: 15 kV air, 8kV contact	ESD: 15 kV air, 8kV contact
Power Input		10-30 V_{DC}	10-30 V_{DC}	10-30 V_{DC}	USB 5V
Enclosure		IP30, metal	IP30, metal	IP30, metal	IP30, plastic
Mounting		DIN Rail, Desk, Panel	DIN Rail, Desk, Panel	DIN Rail, Desk, Panel	Panel
Certificates		CE, FCC, KCC	CE, FCC, KCC, UL C1/D2	CE, FCC, KCC, UL C1/D2	CE, FCC



MODEL		BB-UH401	BB-USH204	BB-USH207
USB Type		USB 2.0	USB 3.0	USB 3.0
Downstream	Interface	1	4	7
	Type	Type A female	Type A female	Type A female
	High Retention	Yes	-	-
Operating Temperature		-40 to +80 °C	0 to +40 °C	0 to +40 °C
Protection		Isolation: 4kV ESD: 15 kV air, 8kV contact	ESD: 8kV contact	ESD: 8kV contact
Power Input		USB 5V	9-24 V_{DC}	9-24 V_{DC}
Enclosure		IP30, plastic	Metal	Metal
Mounting		Inline	DIN rail	DIN rail
Certificates		CE, FCC	CE, FCC, KCC	CE, FCC, KCC

Serial and USB Converters: Ethernet to Serial Conversion

Virtual COM Software

Modbus Protocol Support

MODEL/ORDER #		☞ BB-VESP211 ☞ BB-VESP211-232 ☞ BB-VESP211-485	☞ BB-VESR901 ☞ BB-VESR902D	☞ BB-MESR901 ☞ BB-MESR902T
Product Series		BB-VESP211x	BB-VESR9xx	BB-MESR9xx
Ethernet	Copper Ports	1	1, 2	1
	WiFi Ports	-	-	-
Serial	Port Count	1	1, 2	1, 2
	DB9	232, 232/422/485	232/422/485	232/422/485
	Terminal Block	422/485	232/422/485	232/422/485
	Isolation	-	-	-
Specifications	Temperature	0 to +80 °C (w/ PS) -40 to +80°C (no PS)	-40 to +80 °C	-40 to +80 °C
	Power DC	10 to 30V_{DC}	10 to 48V_{DC}	10 to 48V_{DC}
	Power Supply Included	Yes, universal	-	-
	Dual Power Inputs	-	TB, External	-
	Mounting	Panel, (DIN option)	DIN (Panel option)	DIN (Panel option)
	UL, UL Class 1/Division 2	-	UL Listed, UL C1/D2	UL Listed, UL C1/D2
	Certificates	FCC, CE	FCC, CE	FCC, CE

Serial and USB Converters: USB Isolator

MODEL #		☞ BB-UHR402
Product Series:		2-port, 4kV, 12 Mbps Ruggedized
Usb Ports	Number of Ports	2
	High Retention USB	Yes
	Upstream Port	1 Type B
	Downstream Port	2 Type A
	Downstream Power	500 mA
	Speed	Smart-selectable: 12 Mbps (full speed) or 1.5 Mbps (low speed)
	USB Protocol	1.1, 2.0
Protection	Isolation	4kV
	ESD Protection (Level 4)	8 kV Contact, 15 kV Air
Specifications	Temperature	0 to +50 °C
	Power Input	10 to 30 VDC, external
	DIN Rail Mount	Yes (w/ optional DIN adapter clips)
	Panel Mount	Yes
	Shock/Vibration/Drop	Yes
	Certifications	FCC, CE, KCC

Serial and USB Converters: 3-Stage Serial Surge Protector

MODEL #		☞ BB-HESP4DR
Serial Technology	Interface	RS-422/485
	Lines Protected	(5) RS-422/485
	Connectors, line	5-position terminal blocks
	Connectors, Equipment	5-position terminal blocks
	Grounding	Dedicated chassis ground lug
	Connections	Protected signal ground connection Rugged terminal block connections
	Power Input	No power required
Surge Suppression	Clamping Voltage - stage 1: Gas Discharge Tube	72 VDC, minimum 108 VDC, maximum
	Series Resistance - stage 2: Series Resistor	2.7 Ohms
	Clamping Voltage - stage 3: Transient Voltage Suppressor	6.45 VDC, minimum 7.14 VDC, maximum
	Clamping Time	Less than 5 x10-9 seconds
	Operating Temperature	-40 to 80 °C (-40 to 176 °F)
	Mounting	DIN Rail
	Certifications	CE

Serial and USB Converters: Converters and Repeater Modules

Repeaters

Model	ADAM-4510 ADAM-4510S	ADAM-4510I
Network	RS-422 RS-485	RS-422/485
Comm. Speed (bps)	Serial: From 1,200 to 115.2K	From 1,200 to 115.2k
Comm. Distance	Serial: 1.2 km	Serial: 1.2 km
Interface Connectors	RS-422/485: plug-in screw terminal	RS-422/485: plug-in screw terminal
LED Indicators	Communication and power	Communication and Power
Data Flow Control	-	✓
Isolation Voltage	ADAM-4510: - ADAM-4510S: 3,000 V_{DC}	3,000 V_{DC}
Power Requirements	10 ~ 30 V_{DC}	10 ~ 48 V_{DC}
Operating Temperature	-10 ~ 70°C (14 ~ 158°F)	-40 ~ 85°C (-40 ~ 185°F)
Operating Humidity	5 ~ 95% RH	
Power Consumption	1.4 W @ 24 V_{DC}	
Certification	UL,CE,FCC	C1D2, UL, CE, FCC

Converters

Model	ADAM-4520	ADAM-4520I	ADAM-4521	ADAM-4541 ADAM-4542+	ADAM-4561 ADAM-4562
Network	RS-232 to RS-422/485			Fiber optic to RS-232/422/485	USB to RS-232/485/422
Comm. Speed (bps)	Serial: From 1,200 to 115.2K				
Comm. Distance	Serial: 1.2 km	Serial: 1.2 km	Serial: 1.2 km	ADAM-4541: 2.5 km ADAM-4542+: 15 km	Serial: 1.2 km
Interface Connectors	RS-232: female DB9 RS-422/485: plug-in screw terminal	RS-232: female DB9 RS-422/485: plug-in screw terminal	RS-232: female DB9 RS-422/485: plug-in screw terminal	RS-232/422/485: plug-in screw terminal Fiber: ADAM-4541: ST connector ADAM-4542+: SC connector	USB: type A client connector Serial: ADAM-4561: plug-in screw terminal (RS-232/422/485) ADAM-4562: DB9 (RS-232)
LED Indicators	Communication and power				
Data Flow Control	-	✓	✓	-	✓
Watchdog Timer	-	-	✓	-	✓
Isolation Voltage	3,000 V_{DC}	3,000 V_{DC}	1,000 V_{DC}	-	ADAM-4561: 3,000 V_{DC} ADAM-4562: 2,500 V_{DC}
Power Requirements	10 ~ 30 V_{DC}	10 ~ 48 V_{DC}	10 ~ 30 V_{DC}	10 ~ 30 V_{DC}	10 ~ 30 V_{DC}
Operating Temperature	-10 ~ 70°C (14 ~ 158°F)	-40 ~ 85°C (-40 ~ 185°F)	-10 ~ 70°C (14 ~ 158°F)	-10 ~ 70°C (14 ~ 158°F)	-10 ~ 70°C (14 ~ 158°F)
Operating Humidity	5 ~ 95% RH				
Power Consumption	1.2 W @ 24 V_{DC}	1.2 W @ 24 V_{DC}	1 W @ 24 V_{DC}	ADAM-4541: 1.5 W @ 24 V_{DC} ADAM-4542+: 3 W @ 24 V_{DC}	ADAM-4561: 1.5 W @ 5 V_{DC} ADAM-4562: 1.1 W @ 5 V_{DC}
Certification	UL,CE,FCC	C1D2, UL, CE, FCC	UL,CE,FCC	ADAM-4541: UL,CE,FCC ADAM-4542+: CE,FCC	CE,FCC

Ethernet I/O Modules

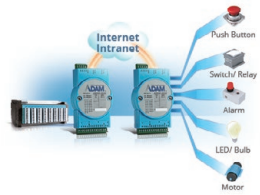
Introduction

Advantech's Ethernet I/O Modules, ADAM-6000 series are easily integrated through the latest Internet technology, so they can remotely monitor device status more flexibly.

Feature Highlights

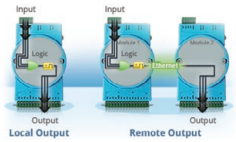
Simple and intuitive logic control

Advantech's ADAM-6000/6200 Peer-to-Peer (P2P) and Graphic Condition Logic (GCL) modules can perform as standalone products for measurement, control, and automation.



Peer-to-Peer(P2P) connection

- Easy channel mapping from different I/O modules without extra programming effort or additional controllers.
- Utilizes Peer-to-Peer modules, just configure settings through ADAM.NET utility.

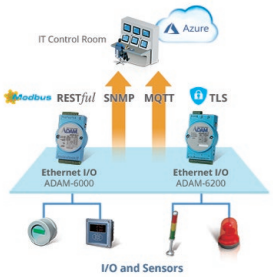


Graphic Condition Logic (GCL)

- GCL function is built-in ADAM-6000 and ADAM-6200 modules for users to easily set up logic rules in any application
- User defined logic rules through graphical configuration environment in ADAM.NET Utility
- No additional controllers or programming is needed.

Communication with IoT protocols

The ADAM-6000/6200 series supports multiple protocols for IoT applications: MQTT, SNMP, Restful, Modbus, which are very flexible and can be easily integrated with Microsoft Azure, Database, Network and SCADA systems.



Cloud

- Supports Azure IoT Hub

MQTT

- Actively publish MQTT message with user defined interval
- Shortens downtime with alarm event notification
- Privacy assured with the TLS (Transport Layer Security)
- User defined topic to integrate existing systems

SNMP

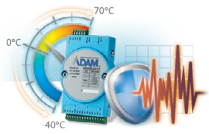
- Simple way to monitor I/O data on NMS (Network Management System)
- SNMP trap to notify alarm event
- Reduces implementation cost with ADAM MIB (Management Information Base) file

Communication interface

Flexible deployment with daisy chain networking and auto-bypass protection

ADAM-6200 series supports daisy chain connectivity that offers flexible cabling and space saving capabilities. With Ethernet auto-bypass function supported to prevent accidental power failures if one of the modules unexpectedly shuts down.

Industrial design / isolation & wide-operating temp.



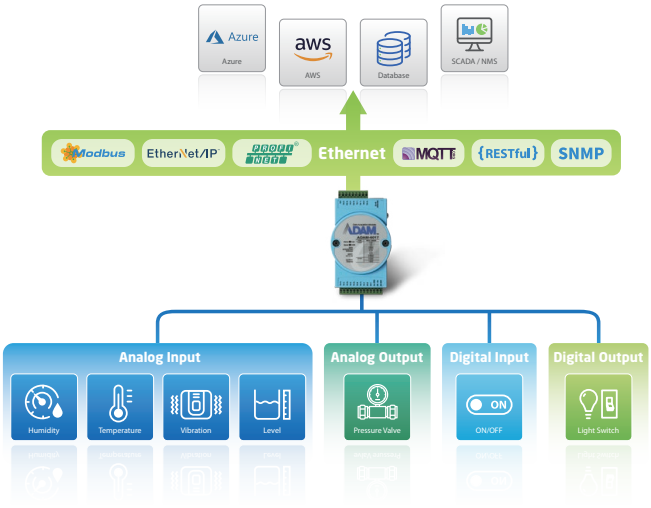
The ADAM-6000/6200 series has a rugged design.

- Supports isolation protection to avoid system damage from high-energy noise.
- Supports operating temperatures of between -40 ~70°C and can perform in most harsh environments.

ADAM-6000/6100/6200 Series Comparison

		ADAM-6000 Series	ADAM-6100 Series	ADAM-6200 Series
Daisy-chain Connectivity		-	✓	✓
Protocols	MQTT	✓	-	✓
	SNMP	✓	-	✓
	Modbus	✓	-	✓
	RESTful	✓	-	✓
	PROFINET	-	ADAM-6100PN support	-
	Ethernet I/P	-	ADAM-6100EI support	-

Application Structure



Ethernet I/O Modules





Spec. \ Model	ADAM-6015	ADAM-6017	ADAM-6018+	ADAM-6022	ADAM-6024
Interface	1x RJ-45 LAN port, 10/100 Mbps Ethernet				
Peer-to-Peer[1]		✓		-	Receiver Only[2]
GCL[1]		✓		-	Receiver Only[2]
Resolution		16 bit		16-bit for analog inputs 12-bit for analog outputs	16-bit for analog inputs 12-bit for analog outputs
Analog Input – Channels	7	8	8	6	6
Analog Input – Sampling Rate	10 Hz	10/100 Hz	10 Hz	10 Hz	10 Hz
Analog Input – Voltage Input	-	±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, 0 ~ 150 mV, 0 ~ 500 mV, 0 ~ 1 V, 0 ~ 5 V, 0 ~ 10 V	-	±10 V	±10 V
Analog Input – Current Input	-	0 ~ 20, 4 ~ 20, ±20 mA	-	0 ~ 20, 4 ~ 20 mA	0 ~ 20, 4 ~ 20 mA
Analog Input – Direct Sensor Input	Pt, Balco, and Ni RTD	-	J, K, T, E, R, S, B thermocouple	-	-
Analog Input – Burnout Detection	✓	✓ (4 ~ 20mA only)	✓	-	-
Analog Input – Math. Functions	Max. Min. Avg.	Max. Min. Avg.	Max. Min. Avg.	-	-
Analog Output – Channels	-	-	-	2	2
Analog Output – Current Output	-	-	-	0 ~ 20, 4 ~ 20 mA @ 15 V_{DC}	0 ~ 20, 4 ~ 20 mA @ 15 V_{DC}
Analog Output – Voltage Output	- -	-	-	0 ~ 10 V_{DC} @ 30 mA	0 ~ 10 V_{DC} @ 30 mA
Digital I/O – Input Channels	-	-	-	2	2
Digital I/O – Output Channels	-	2 (sink)	8 (sink)	2 (sink)	2 (sink)
Digital I/O – High/Low Alarm Settings	✓	✓	✓	-	-
Isolation Protection		2,000 V_{DC}		2,000 V_{DC}[3]	2,000 V_{DC}[3]
Remark	-	-	-	Built-in dual loop PID control algorithm	-
Protocols	D version :Modbus TCP, RESTful, MQTT, SNMP,ASCII			Modbus TCP	D version: Modbus TCP,RESTful, MQTT, SNMP,ASCII
Certificate	C1D2,UL,CE,FCC	C1D2,UL,CE,FCC	C1D2,UL,CE,FCC	CE,FCC	C1D2,UL,CE,FCC





Spec. \ Model	ADAM-6050	ADAM-6051	ADAM-6052	ADAM-6060	ADAM-6066
Interface	1x RJ-45 LAN port, 10/100 Mbps Ethernet				
Peer-to-Peer[1]	✓	✓	✓	✓	✓
GCL[1]	✓	✓	✓	✓	✓
Digital I/O – Input Channels	12	12	8	6	6
Digital I/O – Output Channels	6 (sink)	2 (sink)	8 (source)	6-ch relay	6-ch power relay
Digital I/O – Extra Counter Channels	-	2	-	-	-
Digital I/O – Counter Input	3 kHz	4.5 kHz	3 kHz	3 kHz	3 kHz
Digital I/O – Frequency Input	3 kHz	4.5 kHz	3 kHz	3 kHz	3 kHz
Digital I/O – Pulse Output	✓	✓	✓	✓	✓
Digital I/O – High/Low Alarm Settings	-	-	-	-	-
Isolation Protection	2,000 V_{DC}				
Protocols	D version: Modbus TCP,RESTful, MQTT, SNMP,ASCII				
Certificate	C1D2,UL,CE,FCC	C1D2,UL,CE,FCC	C1D2,UL,CE,FCC	UL,CE,FCC	UL,CE,FCC

Ethernet I/O Modules

Model		ADAM-6217	ADAM-6224	ADAM-6250	ADAM-6251	ADAM-6256	ADAM-6260	ADAM-6266
Interface		2x RJ-45 LAN port (Daisy-chain), 10/100 Mbps Ethernet						
Peer-to-Peer[1]		✓	Receiver Only[2]	✓	✓	✓	✓	✓
GCL[1]		✓	✓	✓	✓	✓	✓	✓
Analog Input	Channels	8	-	-	-	-	-	-
	Input Impedance	>10MΩ (voltage) 120Ω (current)	-	-	-	-	-	-
	Voltage Input	±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V	-	-	-	-	-	-
	Current Input	0 ~ 20, 4 ~ 20, ±20 mA	-	-	-	-	-	-
	Sampling Rate	10 Hz	-	-	-	-	-	-
	Burnout Detection	✓ (4 ~ 20 mA)	-	-	-	-	-	-
	Resolution	16-bit	-	-	-	-	-	-
	Accuracy	±0.1% of FSR (voltage) @ 25°C ±0.2% of FSR (current) @ 25°C	-	-	-	-	-	-
Analog Output	Channels	-	4	-	-	-	-	-
	Voltage Output	-	0 ~ 5, 0 ~ 10, ±5, ±10 V	-	-	-	-	-
	Current Output	-	0 ~ 20, 4 ~ 20 mA	-	-	-	-	-
	Resolution	-	12-bit	-	-	-	-	-
Digital I/O	Input Channels	-	4 (dry contact only)	8	16	-	-	4
	Output Channels	-	-	7 (sink)	-	16 (sink)	-	-
	Relay Output	-	-	-	-	-	6 (5 Form C + 1 Form A)	4 (Form C)
	Contact Rating	-	-	-	-	-	250 V_{AC} @ 5A 30 V_{DC} @ 5A	
	Counter Input	-	-	3 kHz	3 kHz	-	-	3 kHz
	Frequency Input	-	-	3 kHz	3 kHz	-	-	3 kHz
	Pulse Output	-	-	5 kHz	-	5 kHz	5 kHz	5 kHz
	LED Indicator	-	-	8 digital outputs, 7 digital inputs	16 digital inputs	16 digital outputs	6 relay	4 digital inputs, 4 relay
Power Consumption		3.5 W	6 W	3 W	2.7 W	3.2 W	4.5 W	4.2 W
Isolation Voltage		2,500 V_{DC}						
Watchdog Timer		System (1.6 s) Communication (programmable)						
Communication Protocol		Modbus TCP,RESTful, MQTT, SNMP, ASCII						
Power Requirements		10 ~ 30 V_{DC} (24 V_{DC} standard)						
Operating Temperature		-40 ~ 70°C (-40 ~ 158°F)						
Storage Temperature		-40 ~ 85°C (-40 ~ 185°F)						
Operating Humidity		20 ~ 95% RH (non-condensing)						
Storage Humidity		0 ~ 95% RH (non-condensing)						
Certification		CE,FCC	CE,FCC	CE,FCC	CE,FCC	CE,FCC	CE,FCC	CE,FCC

Note 1: Peer-to-peer and GCL cannot be run simultaneously; only one feature can be enabled at a time.
Note 2: The ADAM-6224 can only act as a receiver and generate analog output when peer-to-peer or GCL mode is used.

Ethernet I/O Modules





Model		ADAM-6117	ADAM-6150	ADAM-6151	ADAM-6156	ADAM-6160
Interface		10/100 Mbps Ethernet				
Support Protocol		ADAM-6100EI: EtherNet/IP ADAM-6100PN: Profinet				
Analog Input	Resolution	16-bit	-	-	-	-
	Channels	8	-	-	-	-
	Sampling Rate	10 Hz	-	-	-	-
	Voltage Input	±150 mV ±500 mV ±1 V ±5 V ±10 V	-	-	-	-
	Current Input	0 ~ 20, 4 ~ 20, ±20 mA	-	-	-	-
	Direct Sensor Input	-	-	-	-	-
Analog Output	Resolution	-	-	-	-	-
	Channels	-	-	-	-	-
	Current Output	-	-	-	-	-
	Voltage Output	-	-	-	-	-
Digital I/O	Input Channels	-	8	16	-	-
	Output Channels	-	7	-	16	6-ch power relay
Isolation Protection		2,500 V_{DC}	2,500 V_{DC}	2,500 V_{DC}	2,500 V_{DC}	2,500 V_{DC}
Connectors		2 x RJ-45 LAN (daisy chain) Plug-in screw terminal block (I/O and power)				
Certification		CE,FCC	CE,FCC	CE,FCC	CE,FCC	CE,FCC

RS-485 I/O Modules

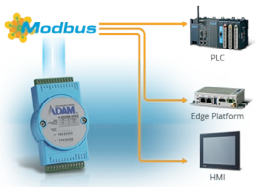
Introduction

The ADAM-4000/ 4100 series feature rugged industrial-grade cases which are specially designed for reliable operation in harsh environments. Built-in microprocessors independently provide intelligent signal conditioning, analog I/O, digital I/O, data display, and RS-485 communication through Modbus protocols.

Feature Highlights

The most used protocol for industrial automation development

The new ADAM-4000/ 4100 modules feature Modbus/RTU remote data transmission protocol.



Standardized protocol

- One of the most widely used standard communication protocols for eAutomation development

Centralized control

- Universal remote I/O modules to operate the system via Modbus

Easy integration

- Provides the sample code and command for users to program

Non-stop monitoring with watchdog timer and protection

For stable and constant performance, ADAM-4000/ 4100 features a Watchdog Timer and maximum protection to ensure the highest level of system reliability.

Noise protection

- Data accuracy assured by enhanced ESD / EFT / Surge Protection

Module stability ensured

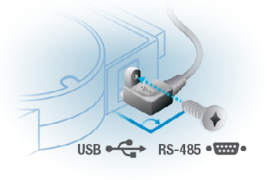
- Once a problem is detected, the Watchdog Timer automatically recovers the system

Save on maintenance costs

- The Watchdog Timer enhances system stability and reduces maintenance costs

Various interfaces to meet your needs

Integration with embedded systems or PLC systems via USB or RS-485



Friendly L-shaped cable design*

- Users can optionally order the 90 degree micro USB to a Type-A USB cable with a locking mechanism to provide a stable connection.

Micro USB interface*

- The new ADAM-4100 series can be powered and transmit data via micro USB interface

* Only featured on the B version of ADAM-4100 series selected models.

Efficient management

Now, you can access ADAM-4100 modules (B version) by passive RFID for more efficient management.

Quickly obtain module status

- Quickly retrieve module information (I/O value, alarm event, and etc.) via the RFID interface.

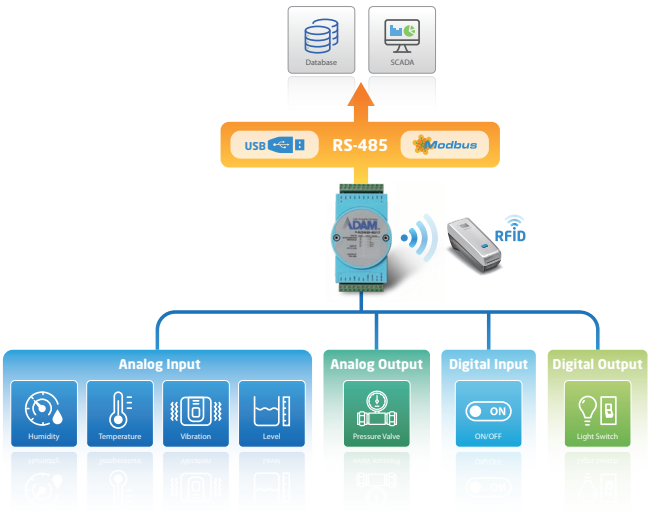
Easy maintenance

- Recorded RFID tag information (model name, serial number, user defined information, etc.) makes module field maintenance easy.

ADAM-4000/4100 Series Comparison

		ADAM-4000 Series	ADAM-4100 Series
Operation Temperature		-10 ~ 70°C	-40 ~ 85°C
Power Input		10 ~ 30V$_{DC}$	10 ~ 48V$_{DC}$
ESD		8KV Air, 4KV contact	8KV Air, 6KV contact
EFT		2KV	4KV
Surge		0.5KV	4KV
communication Interface	RS-485	✓	✓
	USB	-	✓
	Passive RFID	-	✓

Application Structure



RS-485 I/O Modules

Analog Input




Model		ADAM-4015	ADAM-4017+	ADAM-4018+	ADAM-4019+
Resolution				16 bit	
Analog Input	Channels	6 differential	8 differential	8 differential	8 differential
	Sampling Rate	10 Hz		10 Hz	10 Hz
	Voltage Input	-	±150 mV ±500 mV ±1 V ±5 V ±10 V	-	± 100 mV ± 500 mV ± 1 V ± 2.5 V ± 5 V ± 10 V
	Current Input	-	4 ~ 20, ±20 mA	4 ~ 20, ±20 mA	4 ~ 20, ±20 mA
	Direct Sensor Input	RTD	-	J, K, T, E, R, S, B thermocouple	J, K, T, E, R, S, B thermocouple
	Burnout Detection	✓	-	✓	✓ (4 ~ 20 mA and all T/C)
	Channel Independent Configuration	✓	✓	✓	✓
Isolation Voltage		3,000 V_{DC}		3,000 V_{DC}	3,000 V_{DC}
Watchdog Timer		✓ (system and comm.)	✓ (system and comm.)	✓ (system and comm.)	✓ (system and comm.)
Modbus Support *		✓	✓	✓	✓
Certification		C1D2, UL, CE, FCC	C1D2, UL, CE, FCC	C1D2, UL, CE, FCC	C1D2, UL, CE, FCC

*All ADAM-4000 I/O modules support ASCII commands

Analog Output


Model		ADAM-4021	ADAM-4024
Resolution		12 bit	12 bit
Analog Output	Channels	1	4
	Voltage Output	0 ~ 10 V	±10 V
	Current Output	0 ~ 20, 4 ~ 20 mA	0 ~ 20, 4 ~ 20 mA
Digital I/O	Input Channels	-	4
	Output Channels	-	-
	Alarm Settings	-	✓
Isolation Voltage		3,000 V_{DC}	3,000 V_{DC}
Digital LED Indicator		-	-
Watchdog Timer		✓ (system)	✓ (system and comm.)
Safety Setting		-	✓
Modbus Support *		-	✓
Certification		CE, FCC	C1D2, UL, CE, FCC

Digital Input/Output



ADAM-4050	ADAM-4051	ADAM-4052
-	-	-
-	-	-
-	-	-
-	-	-
7	16	8
8	-	-
-	-	-
-	2,500 V_{DC}	5,000 V_{RMS}
-	Yes	-
✓ (system)	✓ (system and comm.)	✓ (system)
-	-	-
-	✓	-
UL, CE, FCC	C1D2, UL, CE, FCC	UL, CE, FCC

*All ADAM-4000 I/O modules support ASCII commands

Digital Input/Output

Relay Output

Counter







Model		ADAM-4053	ADAM-4055	ADAM-4056S ADAM-4056SO	ADAM-4060	ADAM-4068	ADAM-4069	ADAM-4080
Resolution		-	-	-	-	-	-	-
Analog Input	Channels	-	-	-	-	-	-	-
	Sampling Rate	-	-	-	-	-	-	-
	Voltage Input	-	-	-	-	-	-	-
	Current Input	-	-	-	-	-	-	-
	Direct Sensor Input	-	-	-	-	-	-	-
	Burnout Detection	-	-	-	-	-	-	-
	Channel Independent Configuration	-	-	-	-	-	-	-
Analog Output	Channels	-	-	-	-	-	-	-
	Voltage Output	-	-	-	-	-	-	-
	Current Output	-	-	-	-	-	-	-
Digital I/O	Input Channels	16	8	-	-	-	-	-
	Output Channels	-	8	12	4-ch relay	8-ch relay	8-ch power relay	2
	Alarm Settings	-	-	-	-	-	-	Yes
Counter (32-bit)	Channels	-	-	-	-	-	-	2
	Input Frequency	-	-	-	-	-	-	50 kHz
Isolation Voltage		-	2,500 V_{DC}	5,000 V_{DC}	-	-	-	2,500 V_{RMS}
Digital LED Indicator		-	✓	✓	-	✓	-	-
Watchdog Timer		✓ (system)	✓ (system and comm.)	✓ (system and comm.)	✓ (system)	✓ (system and comm.)	✓ (system and comm.)	✓ (system)
Safety Setting		-	✓	-	✓	✓	✓	-
Modbus Support *		-	✓	✓	-	✓	✓	supported in E version
Certification		UL, CE, FCC	CE, FCC	ADAM-4056SO: C1D2, UL, CE, FCC ADAM-4056S: CE, FCC	CE, FCC	CE, FCC	UL, CE, FCC	CE, FCC

*All ADAM-4000 I/O modules support ASCII commands

RS-485 I/O Modules





Model		ADAM-4115	ADAM-4117	ADAM-4118	ADAM-4150	ADAM-4168
Resolution		16 bits	16 bits		-	-
Analog Input	Channels	6	8 differential		-	-
	Sampling Rate	10/100 Hz (Total)	10/100 Hz (total)		-	-
	Voltage Input	-	0 ~ 150 mV, 0 ~ 500 mV, 0 ~ 1 V, 0 ~ 5 V, 0 ~ 10 V, 0 ~ 15 V, ±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, ±15V	±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5V	-	-
	Current Input		0 ~ 20, 4 ~ 20, ±20 mA	4 ~ 20, ±20 mA	-	-
	Direct Sensor Input	Pt100,Pt1000,Ni 50, Ni 508	-	J, K, T, E, R, S, B Thermocouple	-	-
	Burnout Detection	-	✓ (mA)	✓ (mA and All T/C)	-	-
	Channel Independent Configuration	✓	✓	✓	-	-
Digital I/O	Input Channels		-	-	7	-
	Output Channels		-	-	8	8-ch relay
Counter	Channels	-	-	-	7	-
	Input Frequency	-	-	-	3 kHz	-
Isolation Voltage		3,000 V_{DC}				
Digital LED Indicator		Communication and Power				
Watchdog Timer		Yes (System & Communication)				
Safety Setting		✓	-	-	✓	✓
Communication Protocol		ASCII Command/Modbus				
Power Requirements		10 ~ 48 V_{DC}				
Operating Temperature		-40 ~ 85°C (-40 ~ 185°F)				
Storage Temperature		-40 ~ 85°C (-40 ~ 185°F)				
Operating Humidity		5 ~ 95% RH				
Power Consumption		1.2 W @ 24 V_{DC}	1.2 W @ 24 V_{DC}	0.5 W @ 24 V_{DC}	0.7 W @ 24 V_{DC}	1.8 W @ 24 V_{DC}
Communication Interface		RS-485, Micro USB				
Certification		CE, FCC	C1D2, UL, CE, FCC	C1D2, UL, CE, FCC	C1D2, UL, CE, FCC	UL, CE, FCC

10 Intelligent Motion Control Solutions

Motion Control Overview

Motion Control Solutions

Advantech intelligent motion control product division provides solutions to OEM machine makers and system integrators. The core technologies are based on state-of-art DSP/FPGA/SoC processors, Advantech's own softmotion kernel for trajectory and control, EtherCAT motion bus, and configuration utilities. With our softmotion kernel, users can leverage the new, high performance computing hardware and latest application functions supported in the kernel, to enhance machine features and performance. With the support of EtherCAT open standard protocol, users can leverage high speed cycle times for high performance synchronous motion control, and the Ethernet cable connection saves wiring costs.

Motion Control Technology

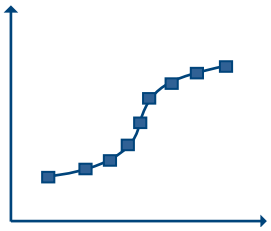
There are three basic types of motion control system: point-to-point, contouring, and synchronization.

Point-to-Point (PTP) motion

Point-to-point (PTP) movement is the most basic form of motion control. The principle function of the PTP is to position the tool from one point to another within the coordinate system. It is used when precise start and stop position is important, but the path is irrelevant. Velocity, time, and acceleration can be defined for point-to-point moves, allowing the controller to construct either a T or an S-curve move profile.

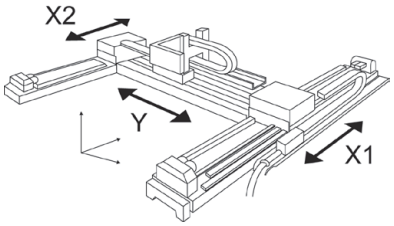
Contouring (continuous trajectory)

To achieve contoured motion, a series of points is provided during programming, and the motion controller extrapolates a smooth line or curve from these points. Unlike point-to-point motion, contouring guarantees that the system passes through each point, using either linear or circular interpolation. Between the points, linear or circular interpolation is performed, leading to a contour described by a succession of linear segments. In a contoured move, a time to complete the move is specified, but the actual move profile is determined by the motion controller.



Synchronization

All synchronization controllers follow the master/slave principle. Where the master can freely move with any motion profile under control of any speed curve and one or several slaves exactly follow the master motion in terms of position and speed. The control is based on incremental position feedback by means of encoders on both sides. Many applications just use a measuring wheel with encoder instead of a master drive. It is possible to preset every speed or gear ratio by means of adjustable impulse scaling factors.

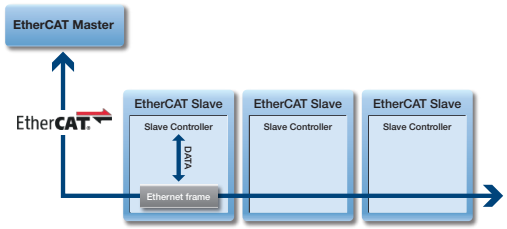


EtherCAT

EtherCAT (Ethernet Control Automation Technology) is a high-performance, Ethernet-based fieldbus industrial network system. The protocol is standardized in IEC 61158 and applies to automation applications that need faster and more efficient communications. Short data update times with precise synchronization make EtherCAT suitable for real-time requirements in automation technology.

Functional principle

In EtherCAT network, the Master sends Ethernet frames through all of the slave nodes. The Standard Ethernet packet or frame is no longer received, interpreted, and copied as process data at every node. Instead, slave devices read the data addressed to them and input data are also inserted in the same time while the telegram passes through the device, processing data "on the fly". Typically the entire network can be addressed with just one frame.



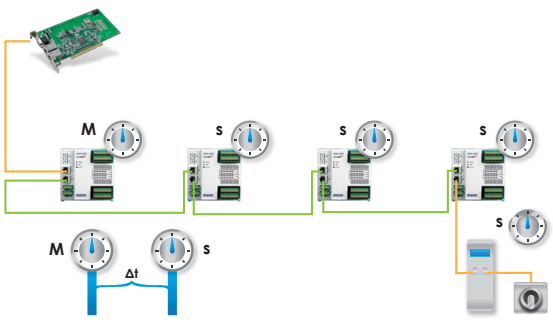
Data exchanges are cyclically updated between EtherCAT Masters and Slaves.

Topology

EtherCAT supports a variety of network topologies, including line, tree, ring, and star. Inexpensive industrial Ethernet cable can be used between two nodes up to 100m apart in 100BASE-TX mode. EtherCAT makes a pure bus or line topology with hundreds of nodes possible without limitations. Up to 65,535 devices can be connected to EtherCAT.

Synchronization

Distributed clocks (DC) mechanism provides highly precise time synchronization between slaves in an EtherCAT network, which is equivalent to the IEEE 1588 Precision Time Protocol standard. By using distributed clocks, EtherCAT is able to synchronize the time in all local bus devices within a very narrow tolerance range. All EtherCAT slaves are provided with an internal clock (system time/local time). One EtherCAT slave is used as a reference clock, distributes its clock cyclically and synchronize between slaves in DC mode by internal clocks in hardware. Therefore, EtherCAT can guarantee the time jitter is less than 1us.



PC-based Motion Controllers

The MAS controller which is a PC-based programmable motion controller provides a variety of tools to shorten development times such as MotionNavi software environment, flowchat-based programing and .Net HMI. For centralized motion control, MAS solutions provide a 4/8-axis controller and offer PTP, interpolation, and trajectory motion functions. MAS controller also supports EtherCAT distributed solutions which can connect up to 32 EtherCAT motors and 1024 byte I/O processing to reduce wiring time and maintenance cost. Furthermore, MAS controller has a built-in powerful Softmotion kernel which is dedicated to motion control and allows customers to focus on their own machine development.

Open platform multi-axis controller

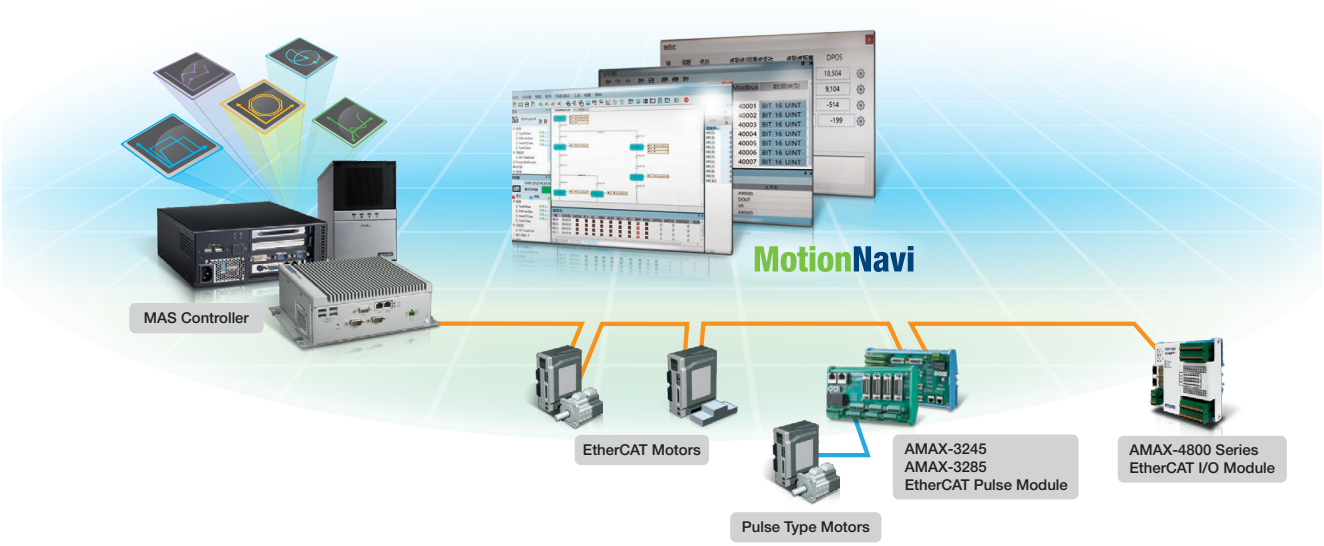
- Seamlessly integrated motion control, machine vision, I/O
- Open standard interface for communication, database

One programming tool - MotionNavi

- Easy to program with BASIC language to shorten learning curve
- Extensive debugging tools for machine control applications
- Faster to learn, program and service

Real-time SoftMotion kernel

- Max 6 axes interpolation, trjectory planning and tracking
- Rich motion functionalities for XYZ tables, SCADA control



Standalone Motion Controllers

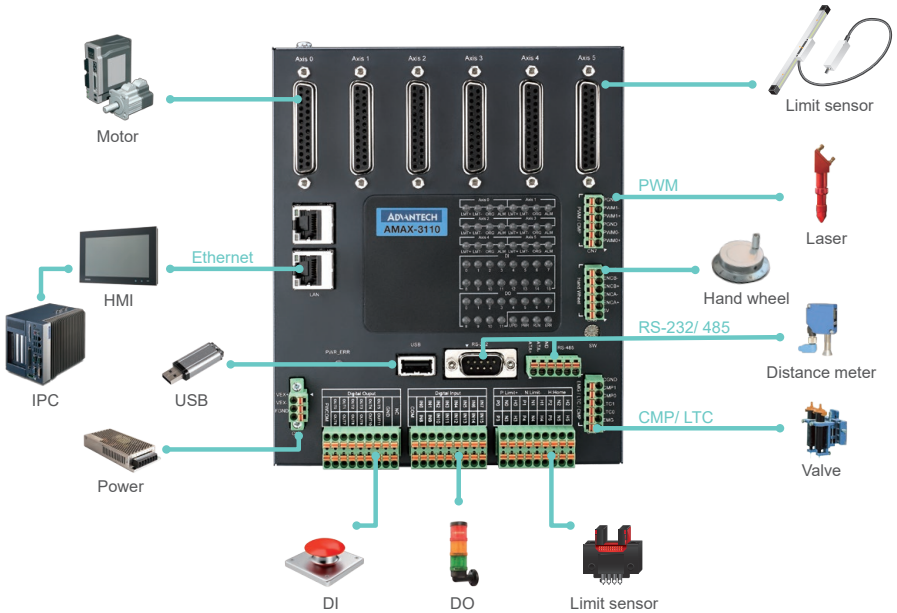
The AMAX-3110 is a 6 axes pulse train standalone motion controller with compact design to save panel space. It is based on ARM processor that makes it ideal for real time motion and I/O control and has built-in Softmotion kernel which provides 2-6 linear interpolation, 3D circular interpolation and various application focus motion functions such as position compare trigger and latch in. The AMAX-3110 solutions also provides ARES developer software which supports ARES BASIC programing to shorten the development time.

Real-time Control
- ARM Processor
- Linux OS

Standalone Controller
- Compact Design
- Interation with Motion and I/O
- Easy-to-Wire

Softmotion Kernel
- Various Motion Functions
- Application Focus Functions
- High-precision Trajectory

ARES Developer
- Rapid Developer
- BASIC Programing
- Multi-thread Processing



SoftMotion Introduction

Advantech's SoftMotion Introduction

SoftMotion is Advantech's important core technology in the equipment automation field. Compared to ASIC motion control solutions, Advantech's Machine Automation Team independently developed its own SoftMotion control technology and uses the FPGA (Field Programmable Gate Array) and DSP (Digital Signal Processing) as the core-computing hardware platform. Because of SoftMotion excludes the inherent limitations of ASIC specifications, Advantech is able to offer the expertise of professional motion control for our customers and provides custom firmware to optimize device control as well as to minimize the need for additional programming. Through SoftMotion technology enhancements, Advantech offers critical technologies in EMA (Electronic Machine Automation) and TMA (Traditional Machine Automation) fields. Meanwhile, based on the three motion control architectures (centralized, distributed and embedded), Advantech's comprehensive product offering helps our customers to continuously progress their technologies to create win-win opportunities.

SoftMotion Function Table

Item		Description	PCI-1240U	PCI-1245L	PCI-1245E PCI-1285E	PCI-1245V PCI-1285V	PCI-1245 PCI-1265 PCI-1285	PCI-1203 (6/10/16/32 axis)	PCIE-1203-64AE (64axis)	PCIE-1203L-64AE (64axis)
Motion Control Function	Single-Axis Motion	JOG Move	✓	✓	✓	✓	✓	✓	✓	✓
		MPG	✓	✓	✓	✓	✓	-	✓	-
		T&S-curve speed profile	✓	✓	✓	✓	✓	✓	✓	✓
		Programmable acc. and dec.	✓	✓	✓	✓	✓	✓	✓	✓
		Point to point motion	✓	✓	✓	✓	✓	✓	✓	✓
		Position / Speed Override	✓	✓	✓	✓	✓	✓	✓	✓
		Velocity motion	✓	✓	✓	✓	✓	✓	✓	✓
		Backlash compensation	-	✓	✓	✓	✓	✓	✓	✓
		Superimposed move	-	-	-	-	✓	✓	✓	-
		Stop	✓	✓	✓	✓	✓	✓	✓	✓
	Multi-Axis Motion (Group)	up to 4 groups	1 Group	1 Group	2 / 4 Group	2 / 4 Group	2 / 3 / 4 Group	6 Group	6 Group	6 Group
		Line	2/3 axis	2 axis	2 axis	2/3 axis	2/3 axis	2/3 axis	2/3 axis	2/3 axis
		2-axes Circular	✓	-	-	✓	✓	✓	✓	-
		Speed Override	-	-	-	✓	✓	✓	✓	-
		Helical	-	-	-	-	✓	✓	✓	-
		Pause & Resume	-	-	✓	✓	✓	✓	✓	-
	Home	16 home mode	✓	✓	✓	✓	✓	✓	✓	✓
	Motion Trajectory Planning	Table	✓	-	3 tables (10K poins)/ 4 tables (7K poins)	3 tables (10K poins)/ 4 tables (7K poins)	3 tables (10K poins)/ 3 tables (10K poins)/ 4 tables (7K poins)	6 tables, size: 7k points	6 tables, size: 7k points	-
		Start / End motion list	✓	-	✓	✓	✓	✓	✓	-
		line trajectory: up to 8 axes	2/3-axis Line	-	2-axis Line/Direct	2/3-axisLine, 2~8 axis Direct	2/3-axis Line, 2~8 axis Direct	2/3-axis Line, 1~8 axis Direct	2/3-axis Line, 1~8 axis Direct	-
		Add arc trajectory (2/3-axis)	✓	-	-	✓	✓	✓	✓	-
		Add Dwell	-	-	✓	✓	✓	✓	✓	-
		Start/Sop/Repeat	✓	-	✓	✓	✓	✓	✓	-
		Auto Blending	-	-	-	-	✓	✓	✓	-
Application Function	Gantry	Master & Slave Synchronized motion	-	-	-	-	✓	✓	✓	-
	Speed Forward	Master & Slave Synchronized motion	-	-	-	-	✓	✓	✓	-
	Tangential Following		-	-	-	-	✓	✓	✓	-
	E-Gear		-	-	✓	✓	✓	✓	✓	-
	E-CAM		-	-	-	-	✓	✓	✓	-
	Error check	Error status, Watchdog	✓	✓	✓	✓	✓	✓	✓	✓
	Position Window trigger	Position window output	-	-	-	-	✓	✓	✓	-
	Position Latch	Position Latch Information	-	-	-	✓	✓	✓	✓	-
	Multi-axis Simultaneous Start / Stop	Simultaneously Start/Stop	-	✓	-	-	✓	✓	✓	✓
	PT/PVT	Position/Velocity/ Time Planning	-	-	-	-	-	✓	✓	-
	Torque Limit	Position/Torque Limit	-	-	-	-	-	✓	✓	-
Interrupt	Axis Interrupt	Axis Stop	✓	✓	✓	✓	✓	✓	✓	✓
		Axis Compare	✓	-	-	-	✓	-	-	-
		Axis Error	-	✓	✓	✓	✓	✓	✓	✓
		Axis Latch	-	-	-	-	✓	✓	✓	-
		Axis VH Start	-	✓	✓	✓	✓	✓	✓	✓
		Axis VH Stop	-	✓	✓	✓	✓	✓	✓	✓
	Group Interrupt	Group Stop	✓	✓	✓	✓	✓	✓	✓	✓
		Group VH Start	-	✓	✓	✓	✓	✓	✓	✓
		Group VH Stop	-	✓	✓	✓	✓	✓	✓	✓
Trigger Function	Single Compare	Up to 8 channels	✓ (2 Channel)	-	-	4 / 8 Channel	4 / 6 / 8 Channel	-	2 Channel	-
	Table Compare	Up to 2 channels	✓	-	-	✓	✓	-	✓	-
	Linear Compare	(Table size: 100K points)	✓	-	-	✓	✓	-	✓	-
Device DIO	DAQ	DIO	-	-	-	-	8DI, 8DO (PCI-1265)	8DI, 4DO	4DI, 2DO	-
Device AI	DAQ	AI	-	-	-	-	2 AI (PCI-1265)	-	-	-

PCI/PCIE Motion Cards

Centralized Motion Control Solutions





Category		Motion Control				
Bus		PCI				
Model		PCI-1240U	PCI-1245L	PCI-1245E PCI-1285E	PCI-1245V PCI-1285V	PCI-1245 PCI-1265 PCI-1285
Axis	Number of Axis	4	4	4/8	4/8	4/6/8
	Linear Interpolation	✓	✓	✓	✓	✓
	2/3-axis Circle Interpolation	✓	-	-	✓	✓
Advanced Functions	Encoder Channels	4	4	4/8	4/8	4/6/8
	Limit Switch Input Channels	8	8	8/16	8/16	8/12/16
	Home Input Channels	4	4	4/8	4/8	4/6/8
	Emergency Stop Input Channels	1	1	1	1	1
	Slow Down Limit Switches	8	8	8/16	8/16	8/12/16
	General Purpose DI Channels	12	16	16/32	16/32	16/32/32
	Servo On Output Channels	4	4	4/8	4/8	4/6/8
	General Purpose DO Channels	16	16	16/32	16/32	16/32/32
	Analog Input Channels	-	-	-	-	2 (PCI-1265 only)
	BoardID Switch	✓	✓	✓	✓	✓
	Position Compare	✓	-	-	✓	✓
	Position Latch	-	-	-	✓	✓
Dimensions (mm)		175 x 100	175 x 100	175 x 100	175 x 100	175 x 100




Category		Latch & Trigger		Encoder	
Bus		PCI			ISA
Model		PCI-1274-12AE	PCI-1274-16AE	PCI-1784U	PCL-833
Axis	Number of Axis	4	1	-	-
	Linear Interpolation	✓	-	-	-
	2/3-axis Circle Interpolation	-	-	-	-
Advanced Functions	Encoder Channels	4	1	4	3
	Limit Switch Input Channels	8	8	-	-
	Home Input Channels	4	4	-	-
	Emergency Stop Input Channels	1	1	-	-
	Slow Down Limit Switches	8	8	-	-
	General Purpose DI Channels	4	-	4	2
	Servo On Output Channels	4	-	-	-
	General Purpose DO Channels	4	-	4	-
	Analog Input Channels	-	-	-	-
	BoardID Switch	✓	✓	✓	-
	Position Compare	12	16	-	-
	Position Latch	12	16	-	-
Dimensions (mm)		175 x 100	175 x 100	185 x 100	185 x 100

PCI/PCIE Motion Cards

EtherCAT Master Control Card



Model		PCI-1203	PCIE-1203L	PCIE-1203
Axis		6/10/16/32	64	64
Advanced Functions	General Purpose DI Channels	8	-	4
	General Purpose DO Channels	4	-	2
	Encoder In	-	-	2
	MPG	-	-	1
	Compare Trigger	-	-	2
	Position Latch	-	-	2
	Remote Motion	32 Servo Drive Max.	64 Servo Drive Max.	64 Servo Drive Max.
	Remote I/O	1024-CH DI and 1024-CH DO 128-CH AI and 128-CH AO	1024-CH DI and 1024-CH DO 128-CH AI and 128-CH AO	1024-CH DI and 1024-CH DO 128-CH AI and 128-CH AO
Dimensions (L x H)			175 x 100 mm	
Connectors		2 x RJ45, D-sub 15	2 x RJ45	2 x RJ45, D-sub 26

Motion Controllers

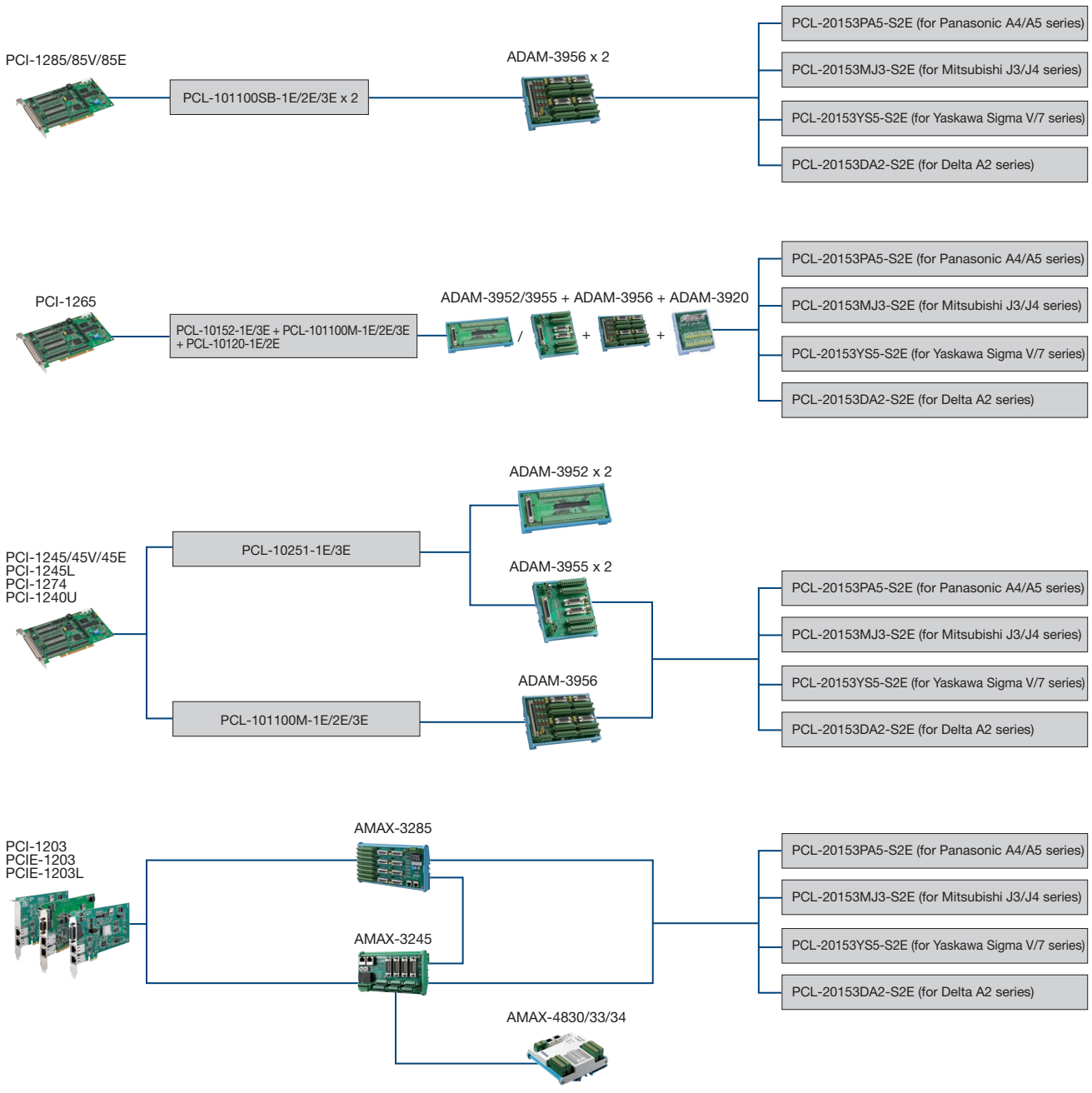
Embedded Machine Automation Solution


Model Name		MVP-3245	AMAX-3110
Hardware	CPU	Intel Celeron J1900 @ 1.99 GHz	ARM-based
	Memory	4GB DDR3	4G DDR3
	Storage	mSATA 32GB	eMMC 8GB
Communication	Ethernet	2	1
	USB	4 x USB 2.0, 1 x USB 3.0	1
	Serial	2 x RS-232/422/485	1 x RS-232, 1 x RS-485
Motion	Axes	4	6
	Pulse Input	CW/CCW, AB Phase	CW/CCW, AB Phase
	Pulse Output	CW/CCW, Pulse/Dir	CW/CCW, Pulse/Dir, AB Phase
	Hand Wheel	1	1
	PWM	-	2
	Compare Trigger	4	2
	Position Latch	4	2
General I/O	Digital DI	16	16
	Digital DO	16	12
Other	Input Voltage	DC 24V	DC 24V
	Library	Visual.Net, BCB, LabVIEW	ARES Command
	Dimensions (W x H x D)	250 x 160 x 85 mm	148 x 180 x 22 mm

Terminal Boards and Cables

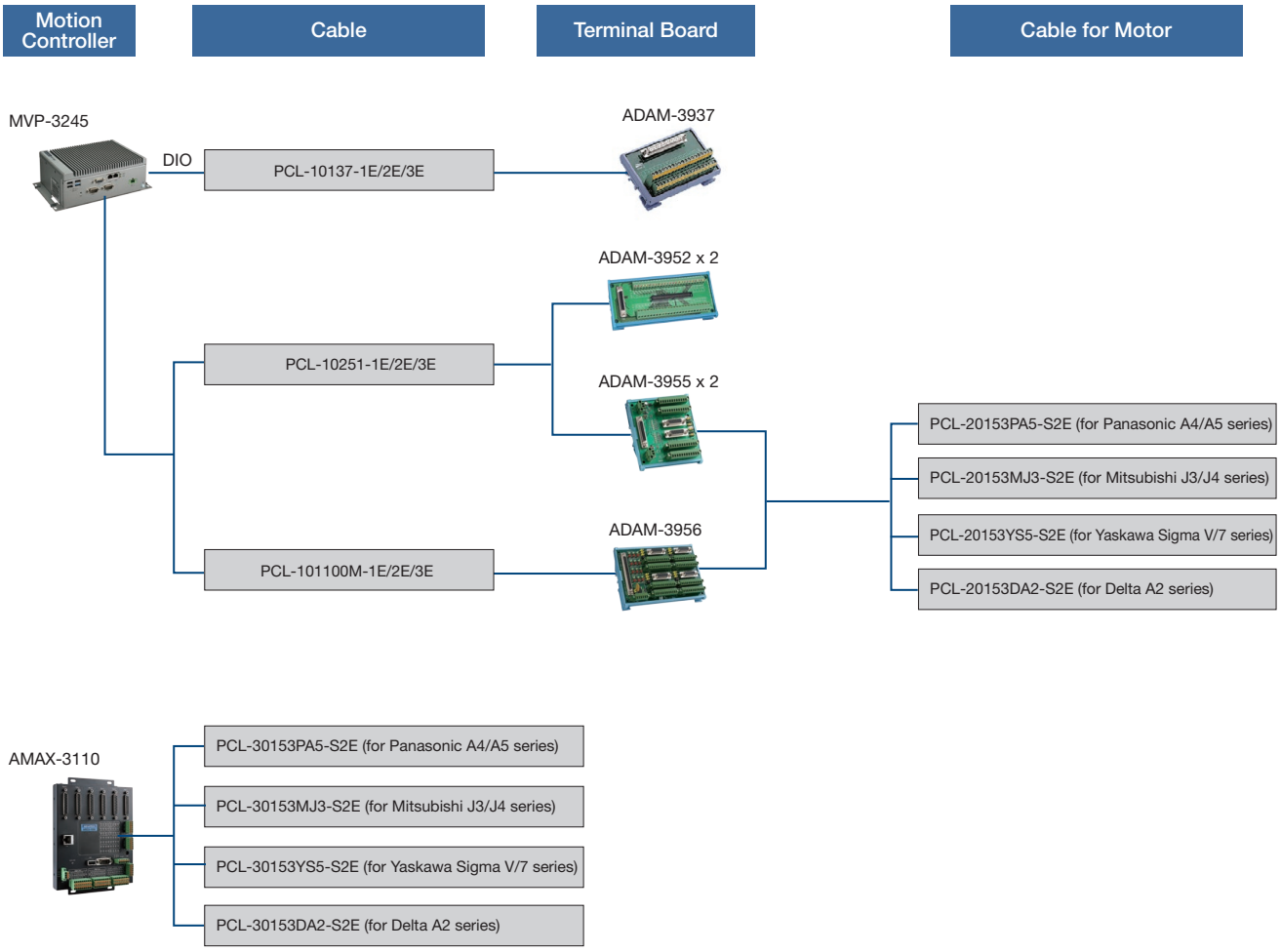
Motion Card

Motion Controller	Cable	Terminal Board	Cable for Motor



Terminal Boards and Cables

Motion Controller



11 EtherCAT Solutions and Automation Controllers

EtherCAT I/O Solution and Automation Controller Overview

Introduction

EtherCAT is a high-performance field network able to connect drive devices, intelligent sensors and I/O devices using Ethernet technologies, and is now a popular fieldbus in automation. Advantech, to fulfill real-time I/O demands for smart factories and equipment manufacturers, launched EtherCAT I/O product series, AMAX-4800 and AMAX-5000. They each have different form factors, but use the same Advantech mature I/O technology and standard EtherCAT for each single IO module.

Real-time I/O for Industrial 4.0

Industrial 4.0 will create a big demand for integrating IT and OT (Operation Technology: traditional automation technology). To bridge IT and OT, data needs to be aggregated from the field site. Following current trends, the data type and data volume from the field will go through exponential growth, therefore traditional SCADA systems with standard I/O will become overwhelmed trying to handle complex and time sensitive tasks. In the meantime, Ethernet-based Real-time I/O solutions have became price-acceptable in the market.

Controllers with time-deterministic responses and low cycle-times not only provide a very good solution for the executing device, but they also reduce the huge effort required for integrators to handle all data communication.

APAX-5000 with EtherIO

APAX-5000 is the first generation of real-time I/O systems in Advantech. It has hot swappable and high density I/O features, and is a competitive solution for facility and factory monitoring applications. APAX-5000 I/O system can be attached to general embedded systems, and can easily enable an embedded system to deliver 1ms real-time capability for maximum 768 I/O points.

AMAX-4800/AMAX-5000 with EtherCAT

AMAX-4800 series is a pioneer of EtherCAT I/O in Advantech. It features high volume I/O with good C/P ratio and user friendly designs. If a customer faces the challenge of limited space, AMAX-5000 series offers flexibility for future I/O expansion. It has an EtherCAT modularized slice I/O architecture in a very compact and slim form factor. And the easy slide-in design reserves space for extra expansion capability for future customer demands.

AMAX-5580, Controller IPC with EtherCAT Slice I/O Expansion

The trend in IPC is for smaller and more powerful applications. AMAX-5580 is an IPC designed for automation users. Its fanless design provides high reliability and its compact size facilitates installation in space limited cabinets. Its front-accessible design provides easy for installation and maintenance. AMAX-5580 is not only reliable and user friendly, but it also enhances I/O scalability. It offers I/O expansion through its EtherCAT slice I/O interface on the right hand side. One the other side, it can be expanded for GigE / PoE / USB 3.0 / Serial / CAN / Wireless interfaces. Its high flexibility makes it a perfect embedded automation platform that can fulfill most of requirements for smart factory solutions.

Advantech CODESYS

CODESYS is a well-known control software based on the international standard IEC-61131-3 softlogic. Through the embedded CODESYS RTE, Advantech IPC have the capability to handle EtherCAT real-time I/O, provide PLC-like logic control, and offer HMI in the factory or remote site. Advantech supports all kinds of CODESYS runtimes, including RTE, SoftMotion, and CNC/Robotics, which are based on the Windows Embedded 7/10 OS. To bridge IT and OT, Advantech has also developed many plugin packages, including the WISE-EdgeLink support, ODBC Database Direct Connection, MQTT, and Data Connect for 3rd party integration or customer interface development.

These functions help establish upstream communication and assist easy Industry 4.0 application deployment.

AMAX-5580 Controller IPC

- Intel 6th Generation CORE i CPU, i7/ i5/ Celeron
- DDR4 4G/8G Memory (Max capability 32G)
- Internal expansion slot for PCIe-mini card / M.2 / USB 2.0
- HDMI + VGA Dual Display
- 4 x USB3.0, 2 x GbE, 2 x RS-232/422/485
- Windows Embedded 7/10 Support
- Dual Power Input and Hardware monitoring
- CE/FCC/UL Certification

Advantech CODESYS Softlogic

- Follows IEC-61131-3 / PLCopen International Standard
- Supports RTE / Softmotion and CNC/Robotics
- CNC G-Code & M-Code Support
- Target Visualization and Web Visualization for HMI on near site and remote site
- ODBC Database Direct Connection
- Fieldbus Support : EtherCAT Master, CANopen, Ethenet/IP Master, Profinet Master
- Upstream Communication : Modbus / OPC DA / OPC UA / MQTT
- API/SDK for Development : Data Connect

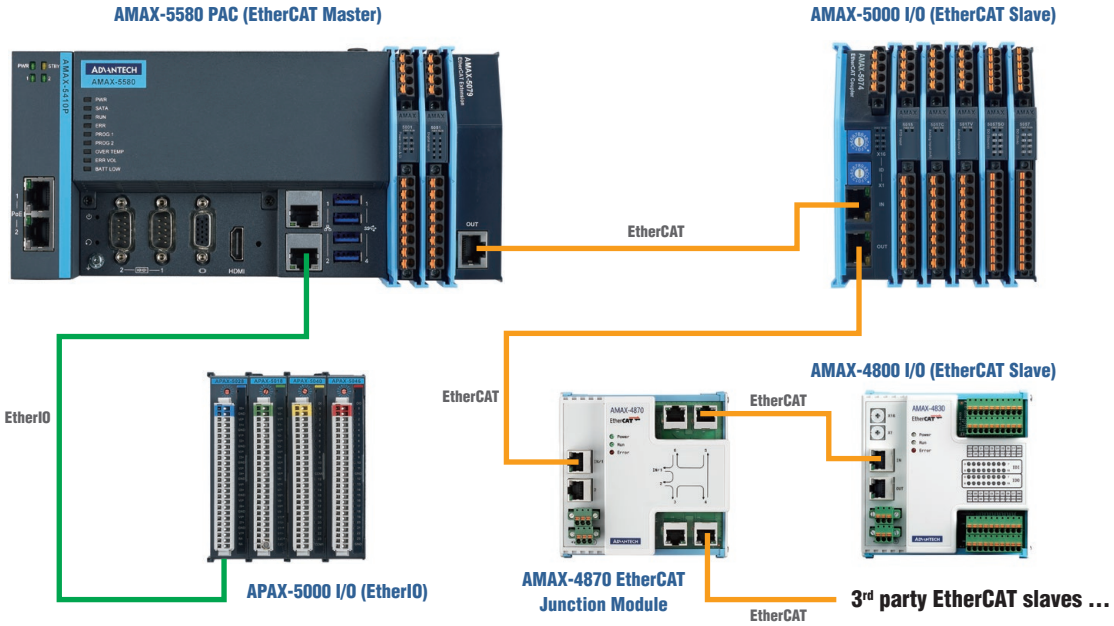
AMAX-5400 PCIe Expansion Module

- Supports Max 4 slots, and support PCIex4 for first slot
- Auto Board ID configuration for software identification
- Full-bandwidth USB3.0 for vision application
- Multiple interface : USB3.0, PoE /GigE, RS-232/422/485, CAN, Wireless
- AMAX-5400E with PCI-mini +SIM card slot for cellular Networking

AMAX-5000 EtherCAT Slice I/O Module

- Standard EtherCAT slave
- Compact design and easy for slide-in
- Removable push-in terminal
- Supports centralized and decentralized I/O topology
- Supports multi-range for one module
- Sample rate 100S/s per channel for Analogue Input
- LED indicator for status check
- Wide operation temperature from -25~60 °C

APAX-5000 System



AMAX-5580 series:

EtherCAT Master Controller

- **AMAX-5580** Intel® Core™ i7/i5/Celeron® Control IPC (Selectable CODESYS ready solution)

AMAX-5000 series:

EtherCAT Slave I/O

- **AMAX-5001** EtherCAT power module
- **AMAX-501X** EtherCAT AI module
- **AMAX-502X** EtherCAT AO module
- **AMAX-505X** EtherCAT DIO module
- **AMAX-508X** EtherCAT counter /encoder module

- **AMAX-5074** EtherCAT coupler module
- **AMAX-5079** EtherCAT extension module

AMAX-5400 series:

PCIe Expansion module for AMAX-5580 controller

- **AMAX-5400E** PCIe mini card expansion module

- **AMAX-5410** GigE vision frame grabber module
- **AMAX-5410P** PoE vision frame grabber module

- **AMAX-5424V** USB3.0 module

- **AMAX-5490** RS-232/422/485 communication module
- **AMAX-5495** CAN Port Module

AMAX-4800 series:

EtherCAT Slave I/O

- **AMAX-4870** EtherCAT junction module
- **AMAX-486X** EtherCAT relay output module
- **AMAX-481x** EtherCAT AI module
- **AMAX-482x** EtherCAT AO module
- **AMAX-483x** **AMAX-485x** EtherCAT DIO module

APAX-5000 series:

I/O Backplane

- **APAX-5001** 1-slot backplane module
- **APAX-5002** 2-slot backplane module

Analog I/O Modules

- **APAX-501X** Analog input modules
- **APAX-502X** Analog output modules

Digital I/O Modules

- **APAX-504X** Digital IO modules
- **APAX-5060** Relay output modules
- **APAX-5080** Counter modules

Remote Serial Modules

- **APAX-5090** 4-port RS-232/422/485 virtual COM with APAX bus (EtherIO)

EtherCAT Edge Controllers

AMAX-5580 Controller

APAX-5580 Controller

Model		AMAX-5580	APAX-5580
Description (English)		Intel® Core™ i7/i5/Celeron® Control IPC With EtherCAT Slice IO Expansion	Intel® Core™ i7/i5/Celeron® Control IPC With EtherIO Expansion
General	Certification	CE, FCC, UL	CE, FCC, UL
	Dimensions (W x H x D)	139 x 100 x 80 mm	128 x 106 x 110 mm
	Form Factor	Passive Cooling and Front Accessible	Passive Cooling and Front Accessible
	Power Requirement	24 V_{DC} ± 20%, Dual Power Input with Alarm output	24 V_{DC} ± 20%, Dual Power Input with Alarm output
	Power Consumption	15 W (Typical), 42 W (Max)	28 W (Typical), 72 W (Max)
	OS Support	Microsoft Windows 7 32/64 bit Microsoft Windows 10 64 bit	Microsoft Windows 7 32/64 bit Microsoft Windows 10 64 bit Linux Kernel 3.X
Sysem Hardware	BIOS	AMI EFI 128Mbit Flash BIOS	AMI EFI 128Mbit Flash BIOS
	Processor	Intel® Core™ i7-6600U 2.6GHz Skylake Dual Core, 4MB L2 Intel® Core™ i5-6300U 2.4GHz Skylake Dual Core, 3MB L2 Intel® Celeron 3955U 2.0GHz Skylake Dual Core, 2MB L2	Intel® Core™ i7-4650U ULT 1.7GHz Haswell Dual Core, 4 MB L2 ntel® Core™ i3-4010U ULT 1.7GHz Haswell Dual Core, 3 MB L2 Intel® Celeron 2980U ULT 1.6GHz Haswell Dual Core, 2 MB L2
	Memory	Build in 4G for Celeron, 8G for Core i5/i7	Build in 4 GB for Celeron/i3, 8GB for i7
	Retentive Memory	2M MRAM (Option)	2M MRAM (Option)
	Ethernet	Intel® i210-IT GbE, 802.1Qav, IEEE1588/802.1AS, 802.3az	Intel® i210-IT GbE, 802.1Qav, IEEE1588/802.1AS, 802.3az
	Storage	1x M.2, 2280 M-Key	1 x mSATA, 1 x SD, 1 x SD (for OS backup)
	Expansion	AMAX-5400 (PCIe, left side), AMAX-5000 (EtherCAT, right side)	APAX-5402L + APAX-5002 X n, 2x APAX-5400 (PCIe) + APAX-5000 x 32 (max)
I/O Interfaces	Serial Ports	2 x RS-232/422/485, DB9, 50 ~ 115.2kbps	1 x RS-232/422/485, DB9, 50 ~ 115.2 kbps
	LAN Ports	2 x RJ45, 10/100/1000 Mbps IEEE 802.3u 1000BASE-T Fast Ethernet	2 x RJ45, 10/100/1000 Mbps IEEE 802.3u 1000BASE-T Fast Ethernet
	USB Ports	4 x USB ports (4 x USB 3.0 compliant) 1 x internal USB	4 x USB ports (2 x USB 2.0, 2 x USB 3.0 compliant), 1 x internal USB
	Display	1 x VGA, support up to 1920 x 1200 @ 60 Hz 24 bpp 1 x HDMI, support up to 4096 x 2160 @ 24Hz 24bpp	1 x VGA, supports 1920 X 1080 @ 60 Hz 24 bpp
	Grounding Protection	Chassis grounding	Chassis grounding
Environment	Operating Temperature	-10 ~ 60°C (14 ~ 140°F) @ 5 ~ 85% RH with 0.7m/s airflow	-10 ~ 60°C (14 ~ 140°F) @ 5 ~ 85% RH with 0.7m/s airflow
	Storage Temperature	-40 ~ 85°C (-40 ~ 185°F)	-40 ~ 85°C (-40 ~ 185°F)
	Relative Humidity	10 ~ 95% RH @ 40°C, non-condensing	10 ~ 95% RH @ 40°C, non-condensing
	Shock Protection	Operating, IEC 60068-2-27, 10G, half sine, 11 ms	Operating, IEC 60068-2-27, 50g, half sine, 11 ms
	Vibration Protection	Operating, IEC 60068-2-64, 1 Grms, random, 5 ~ 500 Hz, 1hr/axis (M.2)	Operating, IEC 60068-2-64, 2grms, random, 5 ~ 500 Hz, 1 hr/axis (mSATA)
CODESYS Softlogic	Runtime Support	Pure Logic Control (RTE), P2P Motion (RTE + Softmotion) Advanced Motion (RTE + Softmotion + CNC/Robotics)	
	Visualization (HMI) Option	Target Visualization (VGA or HDMI) Web Visualization (Web Browser)	
	Fieldbus Support	EtherCAT Master MODBUS/RTU Master (Client) MODBUS/TCP Master (Client) and Slave PROFINET Master ETHERNET/IP Master CANopen	
	Advantech Value-added Function	Advantech Direct Database connection (FBD) OPC/DA & OPC/UA Server (supported after SP13) PLCHandle Driver for WebAccess Advantech MQTT Agent Advantech Data Connect (API)	

EtherCAT Edge Controllers- PCIe Expansion Modules

PCIe Module



Model	☞ AMAX-5400E	☞ AMAX-5410	☞ AMAX-5410P
Description (English)	PCIe mini card expansion module	2-port GigE vision frame grabber module	2-port PoE vision frame grabber module
Communication	**PCI mini card** **Interface:** Full size mini PCI express 2.0 **SIM card slot:** Nano SIM card **Antenna:** 1x SMA hole on the top	**Ethernet** **Compatibility:** IEEE 802.3, IEEE 802.3u, IEEE802.3ab, IEEE802.3x, IEEE802.3af **Speed:** 10/100/1000 Mbps **No. of Ports:** 2 Gigabit Ethernet Media Access Control (MAC) and physical layer (PHY) ports. **Input Voltage:** 24 V_{DC} direct from AMAX-5000 controller	**Ethernet** **Compatibility:** IEEE 802.3, IEEE 802.3u, IEEE802.3ab, IEEE802.3x, IEEE802.3af **Speed:** 10/100/1000 Mbps **No. of Ports:** 2 Gigabit Ethernet Media Access Control (MAC) and physical layer (PHY) ports. **Input Voltage:** 24 V_{DC} direct from AMAX-5000 controller **Output PoE:** Power 48 V_{DC} PoE Power output, 15.4W per port, total Max. 20W
LED Indicator	PWR, Standby		
Enclosure	Aluminum housing		
Interface	PCIe x1		
Power Consumption	0.5W@24V_{DC}	2.5W@24V_{DC}	
Isolation Voltage	2,500 V_{DC}		
Operation/Storage Temperature	-25 ~ 60°C (-14~140°F) / -40 ~ 85°C (-40~185°F)		
Operating/Storage Humidity	5 ~ 95% RH (non-condensing)		
Certification	CE, FCC class A		

Preliminary



Model	☞ AMAX-5424V	☞ AMAX-5490	AMAX-5495
Description (English)	4-port USB3.0 vision frame grabber module	2-port Isolated RS-232/422/485 communication module	2-port CAN module
Communication	**USB 3.0** **Host Bus:** 4-lane Gen 2.0 PCIe interface, compliant with PCI Express Base Specification, Revision 2.0 **Controller:** Host Controller – Fresco FL1100 Compliant with USB 3.0 Specification and Intel® xHCI Specification, Revision 1.0 **Max. current:** 1500 mA maximum per port **Data Transfer Rate:** SuperSpeed (5.0 Gbps); High Speed (480.0 Mbps); Full Speed (12.0 Mbps); Low Speed (1.5 Mbps)	**Serial Communication** **Data Bits:** 5, 6, 7, 8 **Stop Bits:** 1, 1.5, 2 **Parity:** None, even, odd **Baud Rate:** 50 bps ~ 230.4 kbps **Data Signals:** RS-232: TxD, RxD, GND RS-422: Tx+, Tx-, Rx+, RX RS-485: Data+, Data- **FIFO:** 256 bytes **Flow Control:** Xon/Xoff	**CAN** **Protocol:** CAN2.0 AB **Max. Speed:** 1Mbit/s **Signal Support:** CAN_H, CAN_L
LED Indicator	PWR, Standby	PWR, STBY, TX1, RX1, TX2, RX2	
Enclosure	Aluminum housing		
Interface	PCIe x4 (1st. slot on the left side of AMAX-5580)	PCIe x1	
Power Consumption	2.5W@24V_{DC}	2W@24V_{DC}	3W@24V_{DC}
Isolation Voltage	2,500 V_{DC}		
Operation/Storage Temperature	-25 ~ 60°C (-14~140°F) / -40 ~ 85°C (-40~185°F)		
Operating/Storage Humidity	5 ~ 95% RH (non-condensing)		
Certification	CE, FCC class A		

EtherCAT Slice I/O Modules

Digital I/O






Model		AMAX-5051	AMAX-5052	AMAX-5056	AMAX-5057	AMAX-5056SO	AMAX-5057SO
Description (English)		8-ch DI module	16-ch DI module	8-ch sink type DO module	16-ch sink type DO module	8-ch source type DO module	16-ch source type DO module
Digital Input/ Output	Input Channels	8-ch.	16-ch.	-	-	-	-
	Output Channels	-	-	8-ch.	16-ch.	8-ch.	16-ch.
	Rating	**Dry Contact** Logic level 1: close to Iso.GND Logic level 0: open **Wet Contact** Rated voltage: 24V_{DC} Logic level 1: 10~30 V_{DC} and -10~-30 V_{DC} Logic level 0: -3~3 V_{DC}		**Rated Voltage** 10~30 V_{DC} **Rated Current Output** Logic level 1: 0.3 A per channel Logic level 0: 25 μA per channel (leakage current)		**Rated Voltage** 10~30 V_{DC} **Rated Current Output** Logic level 1: 0.5 A per channel Logic level 0: 10 μA per channel (leakage current)	
	Input / Output Delay	From logic level 0 to 1: 4ms From logic level 1 to 0: 4ms		From logic level 0 to 1: 10us From logic level 1 to 0: 100us		From logic level 0 to 1: 150us From logic level 1 to 0: 2ms	
	Digital Filter	3ms		-		-	
LED Indicator		Pwr, Run, Error, DIO status					
Interface		100Mbps EtherCAT					
Power Consumption		2W@24V_{DC}			2.5W@24V_{DC}	2W@24V_{DC}	2.5W@24V_{DC}
Isolation Voltage		2,000 V_{DC}					
Watchdog Timer		System (1.6 seconds)					
Operation/Storage Temperature		-25 ~ 60°C (-14~140°F) / -40 ~ 85°C (-40~185°F)					
Operating/Storage Humidity		5 ~ 95% RH (non-condensing)					
Certification		CE, FCC class A					

Digital I/O w/ Timestamp

Preliminary

Preliminary

Model		AMAX-5051T		AMAX-5056T
Description (English)		8-ch DI module (2-ch w/ timestamp, 6-ch w/o timestamp)		2-ch sink type DO module w/ timestamp
Digital Input/ Output	Input Channels	2-ch. w/ timestamp	6-ch. w/o timestamp	-
	Output Channels	-	-	2-ch. w/ timestamp
	Rating	**Wet Contact:** Logic level 1: 11~30 V_{DC} Logic level 0: -3~5 V_{DC} (similar to EN 61131-2, type 3)	**Dry Contact:** Logic level 1: Close GND Logic level 0: Open **Wet Contact:** Logic level 1: 11~30 V_{DC} Logic level 0: -3~5 V_{DC} (similar to EN 61131-2, type 3)	**Rated Voltage** 10~30 V_{DC} **Rated Current Output:** Logic level 1: 0.3A per channel Logic level 0: 25 μA per channel (leakage current)
	Input / Output Delay	< 0.5us	< 10us	<0.5us
	Resolution Timestamp	1ns	N/A	1ns
	DI Latch / DO Sync	First Edge & Last Edge DI Latch	N/A	DO Sync.
LED Indicator		Pwr, Run, Error, DI status		Pwr, Run, DO status
Interface		100Mbps EtherCAT		
Power Consumption		2W@24V_{DC}		
Isolation Voltage		2,000 V_{DC}		
Watchdog Timer		System (1.6 seconds)		
Operation/Storage Temperature		-25 ~ 60°C (-14~140°F) / -40 ~ 85°C (-40~185°F)		
Operating/Storage Humidity		20 ~ 95 % RH (non-condensing) / 5 ~ 95% RH (non-condensing)		
Certification		CE, FCC class A		

Analog I/O

Preliminary

Model		AMAX-5017C	AMAX-5017V	AMAX-5017H	AMAX-5024
Description (English)		6-Ch Current AI Module	6-Ch Voltage AI, multi-gain, 16-bit	4-Ch High speed AI module	4-Ch AO multi-gain, 16-bit
Analog Input	Channels	6-ch.	6-ch.	4-ch.	4-ch.
	Input Type	mA	V, mV	V, mA	V, mV, mA
	Input Impedance	120Ω	>10M Ω	Differential 800 kΩ, Common-mode 200 kΩ for voltage input Differential 500 Ω, Common-mode 200 kΩ for current input	-
	Input / Output Range	±20 mA, 0 ~ 20 mA, 4 ~ 20 mA	±150 mV, ±500 mV, ±1V, ±5 V, ±10 V	±10 V, 0~20mA	0~5V, 0~10V, ±5V, ±10V, 4~20mA, 0~20mA
	Resolution	16-bit with ±0.2% FSR accuracy @25°C	16-bit with ±0.1% FSR accuracy @25°C	16-bit with ±0.1% FSR accuracy @25°C	16-bit with ±0.01% FSR accuracy @25°C
	Sample Rate	100 sample/s (per channel)		10k sample/s (per channel)	-
	Burn-out detection	✓	-	-	-
	Slew Rate	-	-	-	Configurable
	Drift	-	-	-	± 50 ppm/°C
	Current Load Resistor	-	-	-	Max. 500 Ω
	Voltage Load Resistor	-	-	-	Min. 1KΩ
LED Indicator		Pwr, Run, Error			
Interface		100Mbps EtherCAT			
Power Consumption		2W@24V_{DC}		2.5W@24V_{DC}	3.5W@24V_{DC}
Isolation Voltage		2,000 V_{DC}			
Watchdog Timer		System (1.6 seconds)			
Operation/Storage Temperature		-25 ~ 60°C (-14~140°F) / -40 ~ 85°C (-40~185°F)			
Operating/Storage Humidity		5 ~ 95% RH (non-condensing)			
Certification		CE, FCC class A			

Temperature Module

Model		AMAX-5015	AMAX-5018
Description (English)		4-Ch RTD (2/3 wire)	6-Ch Thermocouple (Open detect)
Analog Input	Channels	4-ch.	6-ch.
	Input Type	RTD: 2 or 3 wire	mV, V, T/C: J, K, T, E, R, S, B
	Input Impedance	-	>2MΩ
	Voltage Range	-	±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V
	Temperature Range	**Pt 100 RTD:** Pt -50°C to 150°C Pt 0°C to 100°C Pt 0°C to 200°C Pt 0°C to 400°C Pt -200°C to 200°C IEC RTD 100 ohms (a = 0.00385) JIS RTD 100 ohms (a = 0.00392) **Pt 1000 RTD** -40°C to 160°C **Balco 500 RTD** -30°C to 120°C **Ni 518 RTD** -80°C to 100°C 0°C to 100°C	Type J (-210 ~ 1200° C) Type K (-270 ~ 1372° C) Type T (-270 ~ 400° C) Type E (-270 ~ 1000° C) Type R (0 ~ 1768° C) Type S (0 ~ 1768° C) Type B (300 ~ 1820° C)
	Resolution	16 bit with ±0.1% FSR accuracy	
	Sample Rate	100 sample/s (per channel)	
	Burn-out detection	Yes	-
LED Indicator		Pwr, Run, Error	
Interface		100Mbps EtherCAT	
Power Consumption		2W@24V_{DC}	
Isolation Voltage		2,000 V_{DC}	
Watchdog Timer		System (1.6 seconds), Communication (Programmable)	
Operation/Storage Temperature		-25 ~ 60°C (-14~140°F) / -40 ~ 85°C (-40~185°F)	
Operating/Storage Humidity		5 ~ 95% RH (non-condensing)	
Certification		CE, FCC class A	

EtherCAT Slice I/O Modules

Encoder / Counder Module

Preliminary

Model		AMAX-5080	AMAX-5081
Description (English)		2-Ch Counter/Encoder 32-bit	1-Ch TTL/RS-422 Encoder/Counter
Encoder / Counder Input	Channels	2-ch.	1-ch.
	Counting Range	32-bits	32-bits
	Counter Mode	- up/down - bi-direction - up - A/B phase - Quadrature mode - Frequency measurement	- Event counting - Frequency measurement - Pulse width measurement - PWM output - PSO (Position Synchronized Output) - Quadrature mode
	Signal Input	Logic level 0: 0~5V_{DC} Logic level 1: 11~30V	Single-ended 5V RS-422 differential
	Sample Rate	1 MHz * 4	10MHz *4
	Preload FIFO Size	-	1024 (Absolute count or relative count)
LED Indicator		Pwr, Run, Error, A+, A-, B+, B-, Z+, Z-, L+, L-	
Interface		100Mbps EtherCAT	
Power Consumption		2W@24V_{DC}	
Isolation Voltage		2,000 V_{DC}	
Watchdog Timer		System (1.6 seconds), Communication (Programmable)	
Operation/Storage Temperature		-25 ~ 60°C (-14~140°F) / -40 ~ 85°C (-40~185°F)	
Operating/Storage Humidity		5 ~ 95% RH (non-condensing)	
Certification		CE, FCC class A	

Infrastructure

Model		AMAX-5001	AMAX-5074	AMAX-5079
Description (English)		Power input modue w/ 4-ch. DI	EtherCAT coupler w/ power input	EtherCAT extension module
Power Input	Rated Voltage	24V_{DC} (± 20%)		-
	Dual Power Input	Supported		-
	Max Current on Bus	2A		-
	Diagnosis Function	Over/under voltage for input 1&2 Over current output on bus		-
Digital Input	Input Channels	4-ch.	-	-
	Rating	Wet Contact Rated voltage: 24V_{DC} Logic level 1: 10~30 V_{DC} and -10~-30 V_{DC} Logic level 0: -3~3 V_{DC}	-	-
	Input Delay	From logic level 0 to 1: 4ms From logic level 1 to 0: 4ms	-	-
	Digital Filter	3ms	-	-
EtherCAT Coupler / Extention	Function	-	Coupling EtherCAT IO modules to 100BASETX EtherCAT network	
	Cable	-	Ethernet/EtherCAT cable (min. Cat. 5), shielded	
	Distance Between Stations	-	Max. 100 m (100BASETX)	
	Bus Interface		2 x RJ45 (1 x Input, 1 x Output)	1 x RJ45
LED Indicator		Pwr, Run, Error, Power Diagnosis LED		-
Interface		100Mbps EtherCAT		
Power Consumption		2W@24VDC	2.5W@24V_{DC}	No power from bus
Isolation Voltage		2,000 V_{DC}		
Watchdog Timer		System (1.6 seconds)		
Operation/Storage Temperature		-25 ~ 60°C (-14~140°F) / -40 ~ 85°C (-40~185°F)		
Operating/Storage Humidity		5 ~ 95% RH (non-condensing)		
Certification		CE, FCC class A		

EtherCAT I/O Modules

Digital I/O





Model		AMAX-4830-AE	AMAX-4830SO-AE	AMAX-4833-AE	AMAX-4834-AE	AMAX-4856-AE
Description		16-ch DI / 16-ch DO module (Sink)	16-ch DI / 16-ch DO module (Source)	32-ch DI module	32-ch DO module (Sink)	32-ch DI / 32-ch DO module (Sink)
Digital Input/ Output	Input Channels	16-ch.		32-ch.	-	32-ch.
	Output Channels	16-ch.		-	32-ch.	32-ch.
	Digital Input	**Input Voltage:** Logic 0: 3VDC max. Logic 1: 10~30 VDC		**Input Voltage:** Logic 0: 3VDC max. Logic 1: 10~30 VDC	-	**Input Voltage:** Logic 0: 3VDC max. Logic 1: 10~30 VDC
	Digital Output	**Load voltage:** 5 ~ 40 VDC **Load current:** 350mA/ch (sink) @ 25°C 250mA/ch (sink) @ 60°C **Opto-isolator** **Response Time:** 100us	**Load voltage:** 5 ~ 40 VDC **Load current:** 250mA/ch (sink) @ 25°C 200mA/ch (sink) @ 60°C **Opto-isolator** **Response Time:** 100us	-	**Load voltage:** 5 ~ 40 VDC **Load current:** 350mA/ch (sink) @ 25°C 250mA/ch (sink) @ 60°C **Opto-isolator** **Response Time:** 100us	**Load voltage:** 5 ~ 40 VDC **Load current:** 350mA/ch (sink) @ 25°C 250mA/ch (sink) @ 60°C **Opto-isolator** **Response Time:** 100us
LED Indicator		Pwr, Run, Error				
Interface		100Mbps EtherCAT				
Power Consumption		Typical 85mA @24V Max. 110mA @24V				Typical 85mA @24V Max. 130mA @24V
Isolation Voltage		2,500 VDC (IO)				
Operation/Storage Temperature		-20 ~ 60°C (32~140°F) / -40 ~ 70°C (-40~158°F)				
Operating/Storage Humidity		5 ~ 95% RH (non-condensing)				
Certification		CE, FCC class A				

Analog I/O


Model		AMAX-4817-AE	AMAX-4820-AE
Description		8-ch, 16-bit AI module	4-ch, 16-bit AO module
Analog Input	Channels	8-ch.	4-ch.
	Input Type	V	V, mA
	Input Impedance	120Ω	-
	Input / Output Range	0~10 V, ±10 V	**Voltage:** 0~5 V, 0~10 V, ±5 V, ±10 V **Current:** 0~20 mA, 4~20 mA
	Common-Mode Voltage Range	±275 V	-
	Resolution	16-bit with ±0.1% FSR accuracy @25°C	16-bit with ±0.1% FSR accuracy @25°C
	Sample Rate	10k sample/s (per channel)	
	Current Load Resistor	-	< 625 Ω
	Voltage Load Resistor	-	> 1 kΩ
LED Indicator		Pwr, Run, Error	
Interface		100Mbps EtherCAT	
Power Consumption		Typical 160 mA @24 V; Max.190 mA @24 V	
Isolation Voltage		2,500 VDC (IO)	
Operation/Storage Temperature		-20 ~ 60°C (32~140°F) / -40 ~ 70°C (-40~158°F)	
Operating/Storage Humidity		5 ~ 95% RH (non-condensing)	
Certification		CE, FCC class A	

EtherCAT I/O Modules

Digital Input + Relay Output




Model		☞ AMAX-4850-AE	☞ AMAX-4860-AE	☞ AMAX-4855-AE	☞ AMAX-4862-AE
Description		16-ch DI / 8-ch PhotoMOS module	8-ch DI & 8-ch Relay module	32-ch DI / 16-ch PhotoMOS module	16-ch DI / 16-ch Relay module
Digital Input/ Relay Output	Input Channels	16-ch.	8-ch.	32-ch.	16-ch.
	PhotoMOS Relay Channels	8-ch.	-	16-ch.	-
	Relay Channels	-	8-ch.	-	16-ch.
	Digital Input	**Input Voltage:** Logic 0: 3V_{DC} max. Logic 1: 10~30 V_{DC}	**Input Voltage:** Logic 0: 3V_{DC} max. Logic 1: 10~30 V_{DC}	**Input Voltage:** Logic 0: 3V_{DC} max. Logic 1: 10~30 V_{DC}	**Input Voltage:** Logic 0: 3V_{DC} max. Logic 1: 10~30 V_{DC}
	Relay Output	**Relay type:** PhotoMOS SPST(Form A) **Load Voltage:** 60V (AC peak or DC) **Load current:** 1.2A **Peak load current:** 4A @100ms(1 pulse) **Isolation protection:** 1,500 V_{DC} **Turn-on time:** 1 ms typical **Turn-off time:** 0.6 ms typical	**Relay type:** Form A **Contact Rating (resistive):** 2A@250V_{AC}, 2A@30V_{DC} **Max. Switching Power:** 500VA, 60W **Max. Switching Voltage:** 270V_{AC}, 125V_{DC} **Resistance:** 30mΩ max. **Operating Time:** Max. 10ms **Releasing Time:** Max. 5ms **Life Expectancy:** Mechanical 2 x 107 ops. at no load. Electrical 3 x 104 ops. @2A/250V_{AC}	**Relay type:** PhotoMOS SPST(Form A) **Load Voltage:** 60V (AC peak or DC) **Load current:** 1.2A **Peak load current:** 4A @100ms(1 pulse) **Isolation protection:** 1,500 V_{DC} **Turn-on time:** 1 ms typical **Turn-off time:** 0.6 ms typical	**Relay type:** Form A **Contact Rating (resistive):** 2A@250V_{AC}, 2A@30V_{DC} **Max. Switching Power:** 500VA, 60W **Max. Switching Voltage:** 270V_{AC}, 125V_{DC} **Resistance:** 30mΩ max. **Operating Time:** Max. 10ms **Releasing Time:** Max. 5ms **Life Expectancy:** Mechanical 2 x 107 ops. at no load. Electrical 3 x 104 ops. @2A/250V_{AC}
LED Indicator		Pwr, Run, Error			
Interface		100Mbps EtherCAT			
Power Consumption		Typical 85mA @24V Max. 110mA @24V		Typical 85mA @24V Max. 130mA @24V	
Isolation Voltage		1,500 V_{DC} (PhotoMOS Relay) / 2,500 V_{DC} (IO)			
Operation/Storage Temperature		-20 ~ 60°C (32~140°F) / -40 ~ 70°C (-40~158°F)			
Operating/Storage Humidity		5 ~ 95% RH (non-condensing)			
Certification		CE, FCC class A			

Infrastructure

Model		☞ AMAX-4870-AE
Description		6-port EtherCAT junction module
EtherCAT Junction	Ports	In: 1 port Out: 5 ports
	Cable	Ethernet CAT 5E
LED Indicator		Pwr, Run, Error
Interface		100Mbps EtherCAT
Power Consumption		Typical 140 mA @24 V; Max.190 mA @24 V
Operation/Storage Temperature		-20 ~ 60°C (32~140°F) / -40 ~ 70°C (-40~158°F)
Operating/Storage Humidity		5 ~ 95% RH (non-condensing)
Certification		CE, FCC class A

EtherIO I/O Modules

APAX Communication Module

Model		APAX-5070
Description		Modbus/TCP communication coupler
General	Dimensions (W x H x D)	30 x 139 x 100 mm
	Power Consumption	2 W @ 5 V_{DC} (typical)
	Connectors	2 x RJ-45 (2-ch switch, shared IP address)
Communications	Protocols	Modbus/TCP
	Data Transfer Rates	10/100 Mbps
	Connected I/O Modules	32 (max.)*
	Digital Signals	768 (max.)
	Analog Signals	192 (max.)
Environment	Operating Temperature	-10 ~ 60°C (mounted vertically)
	Storage Temperature	-40 ~ 85°C
	Relative Humidity	5 ~ 95% (non-condensing)

Model		APAX-5090
Description		4-port RS-232/422/485 virtual COM
General	Dimensions (W x H x D)	30 x 139 x 100 mm
	Power Consumption	2 W @ 24 V_{DC} (typical)
	Connectors	1 x 26-pin clamp-type terminal
	Interface	COM 1, COM 2: RS-232/422/485 COM 3, COM 4: RS-232/422/485 (change mode via switch)
Environment	Operating Temperature	-10 ~ 60°C (mounted vertically)
	Storage Temperature	-40 ~ 70°C
	Relative Humidity	5 ~ 95% (non-condensing)

*APAX digital I/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

APAX Analog I/O Module

Model		APAX-5013	APAX-5017	APAX-5017H	APAX-5018	APAX-5028
Description		8-ch RTD module	12-ch analog input module	12-ch high-speed analog input module	12-ch thermocouple module	8-ch analog output module
General	Dimensions (W x H x D)	30 x 139 x 100 mm				
	Power Consumption	2.5 W @ 24 V_{DC} (typical)	4 W @ 24 V_{DC} (typical)	3.5 W @ 24 V_{DC} (typical)	3.5 W @ 24 V_{DC} (typical)	3.5 W @ 24 V_{DC} (typical)
Analog Input	Channels	8 (differential)	12 (differential)	12 (differential)	12 (differential)	-
	Input Type*	RTD (2-wire or 3-wire)	V, mV, mA	V, mV, mA	V, mV, mA, thermocouple	-
	Sampling Rates	10 sample/second (total)**	12 sample/second (total)**	1,000 sample/second (per channel)	12 sample/second (total)**	-
	Resolution	16-bit (accuracy: ±0.1% of scale range)	16-bit (accuracy: ±0.1% of scale range for voltage; ±0.2% of scale range for current)	16-bit (accuracy: ±0.1% of scale range for voltage; ±0.2% of scale range for current)	16-bit (accuracy: ±0.1% of scale range for voltage; ±0.2% of scale range for current)	-
	Input Impedance	>10 MΩ	>10 MΩ (voltage), 120 Ω (current)	2 MΩ (voltage), 120 Ω (current)	>1 MΩ (voltage), 120 Ω (current)	-
	Wire Burnout Detection	✓	✓ (4 ~ 20 mA only)	✓ (4 ~ 20 mA only)	✓ (4 ~ 20 mA and thermocouple)	-
Analog Output	Resolution	-	-	-	-	14-bit (accuracy: ±0.1% of scale range)
	Channels	-	-	-	-	8
	Output Type*	-	-	-	-	V, mA
	Slew Rate	-	-	-	-	0.7 V_{DC}/μs (per channel)
Environment	Operating Temperature	-10 ~ 60°C (when mounted vertically)				
	Storage Temperature	-40 ~ 70°C				
	Relative Humidity	5 ~ 95% (non-condensing)				

* Each channel can be configured with different type and range

** Sampling rate depends on used channel number.

Example: Using 6 channels on APAX-5017, sampling rate for each used channel will be 12/6 = 2 samples/second.

EtherIO I/O Modules

APAX Digital I/O Module





Model		☞ APAX-5040	☞ APAX-5045	☞ APAX-5046 ☞ APAX-5046SO	☞ APAX-5060	☞ APAX-5080
Description		24-ch digital input module	24-ch digital I/O module	24-ch/20-ch digital output module	12-ch relay module	4/8-ch counter module
General	Dimensions (W x H x D)	30 x 139 x 100 mm				
	Power Consumption	2 W @ 24 V_{DC} (typical)	2.5 W @ 24 V_{DC} (typical)	2.5 W @ 24 V_{DC} (typical)	2 W @ 24 V_{DC} (typical)	2.5 W @ 24 V_{DC} (typical)
	Status Display	LED per channel On: Logic level 1 Off: Logic level 0				
Digital Input	Channels	24	12	-	-	4 (sink)
	Input Voltage	Rated Value: 24 V_{DC}, For "0" signal: -5 ~ 5 V_{DC}, For "1" signal: 15 ~ 30 V_{DC} and -15 ~ 30 V_{DC}	Rated Value: 24 V_{DC}, For "0" signal: -5 ~ 5 V_{DC}, For "1" signal: 15 ~ 30 V_{DC} and -15 ~ 30 V_{DC}	-	-	For "0" signal: 0 ~ 3 V_{DC}, For "1" signal: 10 ~ 30 V_{DC}
	Type	Sink or source load	Sink or source load	-	-	-
Digital Output	Channels	-	12 (sink)	24 (sink)	-	4 (sink)
	Voltage Range	-	8 ~ 35 V_{DC}	8 ~ 35 V_{DC}	-	8 ~ 35 V_{DC}
	Rated Current Output	-	0.5 A (per channel, at signal "1")	0.5 A (per channel, at signal "1")	-	0.5 A (per channel)
Relay Output	Channels	-	-	-	12	-
Counter/ Frequency Input	Channels and Mode	-	-	-	-	8 (up and frequency mode), 4 (pulse/ direction, up/down, A/B phase mode)
	Counting Range	-	-	-	-	32-bit + 1-bit overflow
	Minimum Pulse Width	-	-	-	-	1 μs for high-freq. mode and other modes
	Counter Frequency	-	-	-	-	10 hz ~ 1 MHz for high-freq. mode and other modes
	Input Voltage	-	-	-	-	For "0" signal: 0 ~ 3 V_{DC}, for "1" signal: 10 ~ 30 V_{DC}
Environment	Operating Temperature	-10 ~ 60°C (when mounted vertically)				
	Storage Temperature	-40 ~ 70°C				
	Relative Humidity	5 ~ 95% (non-condensing)				

12 Industrial I/O Solutions

Advantech Data Acquisition and Control Solutions

As a leading supplier of data acquisition products worldwide, Advantech offers a wide range of I/O devices with various interfaces and functions based on PC technology, from legacy ISA to modern USB and from signal-conditioning to graphical software tools. Advantech's industrial I/O products are reliable, accurate, affordable, and suitable for many industrial automation applications (e.g., testing and measurement) and laboratory applications (e.g., monitoring, control, machine automation, and product testing).

Signal Sensing

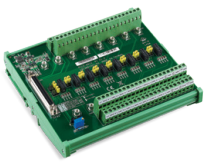
Equipment Sensor

Physical Phenomenon

Signal Conditioning

Signal Conditioners

Advantech's signal conditioners provide sensor and signal conditioning on a per-module basis for various types of sensors or signals.



I/O Wiring Terminal Boards

I/O wiring terminal boards offer convenient and reliable signal wiring for a wide range of Advantech products.

Analog Signal

Data Acquisition

Embedded Computers

MIC-1800 series units are standalone embedded computers with integrated data acquisition modules and signal conditioning to provide digital I/O, analog I/O, and counter functions. The palm-sized design with built-in terminals is suitable for space-limited applications.

SuperSpeed USB 3.0 I/O Modules

SuperSpeed USB 3.0 I/O modules can be leveraged for a diverse range of industrial control applications.

Conditioned Signal

and Control

Data Acquisition and Communication Cards

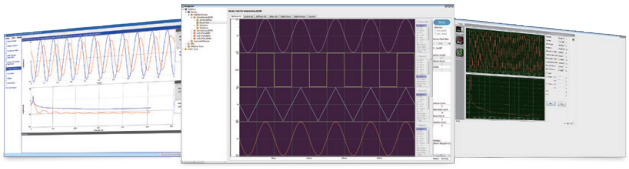
Advantech offers dedicated products for USB, PCI, PCI Express, CompactPCI, PC/104, and PCI-104 interfaces. Thus, regardless of whether the platform is an IPC, embedded PC, desktop computer, or laptop, your project requirements are covered.

USB Data Acquisition Modules

Advantech's USB data acquisition modules are renowned for their user-friendly design and ability to replace traditional serial and parallel devices by eliminating the need for external power and allowing for hot-swapping.

Conditioned Signal

DAQNavi



DAQNavi

DAQNavi is a software package to enable edge intelligence of your DAQ device and joining the IoT world. It provides not only SDK (Software Development Kit) to get data from Advantech DAQ cards and modules, but also further data processing algorithms for customers to gain and integrate user's insight from measured data.

DAQNavi/SDK

Software development package for developers to design and realize the application with programming languages. It provides comprehensive testing tools, video tutorials, and manuals for developers to follow.

DAQNavi/MCM

A machine condition monitoring software that provides an easy procedure below for customers to realize condition monitoring systems:

1. Data Acquisition
2. Time/Frequency Domain data Pre-processing
3. Feature extraction
4. Interpretation and Output
5. External Device/Cloud Connectivity
6. Data Visualization

Digital Data

DAQ-Embedded Computer

Category			Multifunction Platform				
CPU			Intel Celeron 3955U	Intel Core™ i3-6100U	Intel Celeron 3955U	Intel Core™ i3-6100U	ARM Cortex™-A9 i.MX6
Memory			DDR3 4GB				DDR3 2GB
Part Number			☞ MIC-1810-U0A1E	☞ MIC-1810-U3A1E	☞ MIC-1816-U0A1E	☞ MIC-1816-U3A1E	☞ MIC-1816R-AE
Analog Input	Resolution		12-bit	12-bit	16-bit	16-bit	16-bit
	Channels		16 SE/8 diff.	16 SE/8 diff.	16 SE/8 diff.	16 SE/8 diff.	4-ch IEPE and 8-ch general AI (Voltage/ Current)
	Onboard FIFO		4,096 samples	4,096 samples	4,096 samples	4,096 samples	4,096 samples
	Sampling Rate		500 kS/s	500 kS/s	1MSPS	1MSPS	1MSPS
	Input Ranges	Unipolar Inputs	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V, 4~20mA
		Bipolar Inputs	±10, ±5, 2.5, 1.25, 0.625 V	±10, ±5, 2.5, 1.25, 0.625 V	±10, ±5, 2.5, 1.25, 0.625 V	±10, ±5, 2.5, 1.25, 0.625 V	±10, ±5, 2.5, 1.25, 0.625 V
		Configurable Per Channel	✓	✓	✓	✓	✓
	Trigger Modes	Pacer/ Software/ External Pulse	✓	✓	✓	✓	✓
		Analog Slope	✓	✓	✓	✓	✓
		Advanced Trigger	Start/Stop/Delayed Start/Delayed Stop	Start/Stop/Delayed Start/Delayed Stop	Start/Stop/Delayed Start/Delayed Stop	Start/Stop/Delayed Start/Delayed Stop	Start/Stop/Delayed Start/Delayed Stop
	Data Transfer Modes	Software	✓	✓	✓	✓	✓
		DMA	Bus mastering	Bus mastering	Bus mastering	Bus mastering	Bus mastering
Analog Output	Resolution		12-bit	12-bit	16-bit	16-bit	16-bit
	Channels		2 (waveform output)	2 (waveform output)	2 (waveform output)	2 (waveform output)	2 (waveform output)
	Onboard FIFO		4,096 samples	4,096 samples	4,096 samples	4,096 samples	4,096 samples
	Output Range		0 ~ 5, 0 ~ 10, ±5, ±10 V	0 ~ 5, 0 ~ 10, ±5, ±10 V	0 ~ 5, 0 ~ 10, ±5, ±10 V	0 ~ 5, 0 ~ 10, ±5, ±10 V	0 ~ 5, 0 ~ 10, ±5, ±10 V, 4~20mA
	Output Rate		500 kHz	500 kHz	3 MHz	3 MHz	3 MHz (V), 20KHz (A)
	DMA Transfer		Bus mastering	Bus mastering	Bus mastering	Bus mastering	Bus mastering
Digital I/O	Input Channels		8 (Isolated)	8 (Isolated)	8 (Isolated)	8 (Isolated)	8 (Isolated)
	Output Channels		8 (Isolated)	8 (Isolated)	8 (Isolated)	8 (Isolated)	8 (Isolated)
Timer/ Counter	Channels		2	2	2	2	2
	Resolution		32-bit	32-bit	32-bit	32-bit	32-bit
	Max. Input Frequency		10 MHz	10 MHz	10 MHz	10 MHz	10 MHz
Isolation Voltage			-	-	-	-	-
Auto Calibration			✓	✓	✓	✓	✓
Dimensions (L x H)			200 x 156 x 58 mm (7.87" x 6.14" x 2.28")	200 x 156 x 58 mm (7.87" x 6.14" x 2.28")	200 x 156 x 58 mm (7.87" x 6.14" x 2.28")	200 x 156 x 58 mm (7.87" x 6.14" x 2.28")	165 x 65 x 130 mm (6.49" x 2.56" x 5.11")
Legacy Driver	Windows XP/2000		-	-	-	-	-
	WinCE		-	-	-	-	-
	Linux		-	-	-	-	-
DAQNavi Driver	Windows 7/8/10		✓	✓	✓	✓	-
	WinCE		-	-	-	-	-
	Linux		-	-	-	-	✓
LabVIEW Driver			✓	✓	✓	✓	-

* 80 kHz on Pentium® 4-based (or higher) systems.
** SS: Single DMA channel, single A/D channel scan.
✓: supported, - : not supported, △ : optional

Analog I/O and Multifunction Cards

Category			Multifunction & Analog Input						
Sampling / Updating			Multiplexer						
Part Number			PCI-1710U/ 1710UL	PCI-1710HGU	PCI-1711U/ 1711UL	PCI-1712/ 1712L	PCI-1718HDU	PCI-1713U	PCI-1715U
Analog Input	Resolution		12-bit	12-bit	12-bit	12-bit	12-bit	12-bit	12-bit
	Channels		16 SE/8 diff.	16 SE/8 diff.	16 SE	16 SE/8 diff.	16 SE/8 diff.	32 SE/16 diff.	32 SE/16 diff.
	Onboard FIFO		4,096 samples	4,096 samples	1,024 samples	1,024 samples	1,024 samples	4,096 samples	1,024 samples
	Sampling Rate		100 kS/s	100 kS/s	100 kS/s	1 MS/s	100 kS/s	100 kS/s	500 kS/s
	Input Ranges	Unipolar Inputs	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	0 ~ 10, 0 ~ 1, 0 ~ 0.1, 0 ~ 0.01 V	-	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V
		Bipolar Inputs	±10, 5, 2.5, 1.25, 0.625 V	±10, 5, 1, 0.5, 0.1, 0.05, 0.01, 0.005 V	±10, 5, 2.5, 1.25, 0.625 V	±10, 5, 2.5, 1.25, 0.625 V	±10, 5, 2.5, 1.25, 0.625 V	±10, 5, 2.5, 1.25, 0.625 V	±10, 5, 2.5, 1.25, 0.625 V
		Configurable Per Channel	✓	✓	✓	✓	✓	✓	✓
	Trigger Modes	Pacer/Software/ External Pulse	✓	✓	✓	✓	✓	✓	✓
		Analog Slope	-	-	-	✓	-	-	-
		Advanced Trigger	-	-	-	✓	-	-	-
	Data Transfer Modes	Software	✓	✓	✓	✓	✓	✓	✓
		DMA	-	-	-	Bus mastering	-	-	Bus mastering
Analog Output	Resolution		12-bit	12-bit	12-bit	12-bit	12-bit	-	-
	Channels		2 (PCI-1710U only)	2	2 (PCI-1711U only)	2 (PCI-1712 only)	1	-	-
	Onboard FIFO		-	-	-	32,768 samples	-	-	-
	Output Range		0 ~ 5, 0 ~ 10 V	0 ~ 5, 0 ~ 10 V	0 ~ 5, 0 ~ 10 V	0 ~ 5, 0 ~ 10, ±5, ±10 V	0 ~ 5, 0 ~ 10 V	-	-
	Output Rate		Static update	Static update	Static update	1 MHz	Static update	-	-
	DMA Transfer		-	-	-	✓	-	-	-
Digital I/O	Input Channels		16	16	16	16 (shared)	16	-	-
	Output Channels		16	16	16		16	-	-
Timer/ Counter	Channels		1	1	1	3	1	-	-
	Resolution		16-bit	16-bit	16-bit	16-bit	16-bit	-	-
	Max. Input Frequency		10 MHz	10 MHz	10 MHz	10 MHz	10 MHz	-	-
Isolation Voltage			-	-	-	-	-	2,500 VDC	2,500 VDC
Auto Calibration			-	-	-	✓	-	-	-
Board ID Switch			✓	✓	✓	-	✓	-	✓
Dimensions (L x H)			175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")
Connector			68-pin SCSI	68-pin SCSI	68-pin SCSI	68-pin SCSI	DB37	DB37	DB37
DAQNavi Driver	Windows 7/8/10		✓	✓	✓	✓	✓	✓	✓
	Linux		-	-	✓	-	-	✓	✓
LabVIEW Driver			✓	✓	✓	✓	✓	✓	✓

* All channels should be set to the same range.

✓: supported, - : not supported, △ : optional

Analog I/O and Multifunction Cards

Category			Multifunction & Analog Input					
Sampling / Updating			Multiplexer				Simultaneous Sampling	
Part Number			☞ PCI-1716/1716L	☞ PCI-1718HDU	☞ PCI-1742U	☞ PCI-1747U	☞ PCI-1714U/1714UL	☞ PCI-1706U
Analog Input	Resolution		16-bit	12-bit	16-bit	16-bit	12-bit	16-bit
	Channels		16 SE/8 diff.	16 SE/8 diff.	16 SE/8 diff.	64 SE/32 diff.	4 SE	8 diff.
	Onboard FIFO		1,024 samples	1,024 samples	1,024 samples	1,024 samples	32,768/8,192 samples	8,192 samples
	Sampling Rate		250 kS/s	100 kS/s	1 MS/s	250 kS/s	30/10 MS/s	250 kS/s
	Input Ranges	Unipolar Inputs	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	-	-
		Bipolar Inputs	±10, 5, 2.5, 1.25, 0.625 V	±10, 5, 2.5, 1.25, 0.625 V	±10, 5, 2.5, 1.25, 0.625 V	±10, 5, 2.5, 1.25, 0.625 V	±5, 2.5, 1, 0.5 V	±10, 5, 2.5, 1.25 V
		Configurable Per Channel	✓	✓	✓	✓	✓	✓
	Trigger Modes	Pacer/Software/External Pulse	✓	✓	✓	Pacer/software	✓	✓
		Analog Slope	-	-	-	-	✓	✓
		Advanced Trigger	-	-	-	-	✓	✓
	Data Transfer Modes	Software	✓	✓	✓	✓	✓	✓
		DMA	Bus mastering	-	Bus mastering	Bus mastering	Bus mastering	✓
Analog Output	Resolution		16-bit	12-bit	16-bit	-	-	12-bit
	Channels		2 (PCI-1716 only)	1	2	-	-	2
	Onboard FIFO		-	-	-	-	-	-
	Output Range		0 ~ 5, 0 ~ 10, ±5, ±10 V	0 ~ 5, 0 ~ 10, ±5, ±10 V	0 ~ 5, 0 ~ 10, ±5, ±10 V	-	-	0 ~ 5, 0 ~ 10, ±5, ±10, 0 ~ 20, 0 ~ 24, 4 ~ 20 mA
	Output Rate		Static update	Static update	Static update	-	-	Static update
	DMA Transfer		-	-	-	-	-	-
Digital I/O	Input Channels		16	16	16	-	-	16 (shared)
	Output Channels		16	16	16	-	-	
Timer/Counter	Channels		1	1	1	-	-	2
	Resolution		16-bit	16-bit	16-bit	-	-	32-bit
	Max. Input Frequency		10 MHz	10 MHz	10 MHz	-	-	10 MHz
Isolation Voltage			-	-	-	-	-	-
Auto Calibration			✓	-	✓	✓	✓	✓
Board ID Switch			✓	✓	✓	✓	✓	✓
Dimensions (L x H)			175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")
Connector			68-pin SCSI	DB37	68-pin SCSI	68-pin SCSI	4 x BNC	68-pin SCSI
DAQNavi Driver	Windows 7/8/10		✓	✓	✓	✓	✓	✓
	Linux		✓	-	-	✓	✓	✓
LabVIEW Driver			✓	✓	✓	✓	✓	✓

* All channels should be set to the same range.

✓: supported, - : not supported, △ : optional

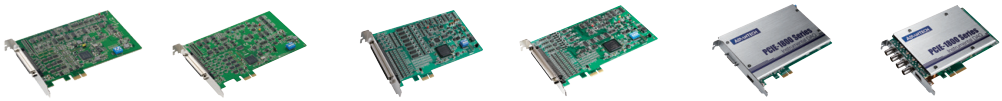




Category			Multifunction & Analog Output				
Sampling / Updating			Static Update				Dynamic Update
Part Number			☞ PCI-1720U	☞ PCI-1727U	☞ PCI-1724U	☞ PCI-1723	☞ PCI-1721
Analog Input	Resolution		-	-	-	-	-
	Channels		-	-	-	-	-
	Onboard FIFO		-	-	-	-	-
	Sampling Rate		-	-	-	-	-
	Input Ranges	Unipolar Inputs	-	-	-	-	-
		Bipolar Inputs	-	-	-	-	-
		Configurable Per Channel	-	-	-	-	-
	Trigger Modes	Pacer/ Software/ External Pulse	-	-	-	-	-
		Analog Slope	-	-	-	-	-
		Advanced Trigger	-	-	-	-	-
	Data Transfer Modes	Software	-	-		-	-
		DMA	-	-	-	-	-
Analog Output	Resolution		12-bit	14-bit	14-bit	16-bit	16-bit
	Channels		4	12	32	8	4 (waveform output)
	Onboard FIFO		-	-	-	-	1,024 samples
	Output Range		0 ~ 5, 0 ~ 10, ±5, ±10, 0 ~ 20, 4 ~ 20 mA	±10, 0 ~ 20 mA	±10, 0 ~ 20 mA	±10, 0 ~ 20, 4 ~ 20 mA	0 ~ 5, 0 ~ 10, ±5, ±10, 0 ~ 20, 4 ~ 20 mA
	Output Rate		Static update	Static update	Static update	Static update	10 MHz
	DMA Transfer		-	-	-	-	Bus mastering
Digital I/O	Input Channels		-	16	-	16 (shared)	16 (shared)
	Output Channels		-	16	-		
Timer/ Counter	Channels		-	-	-	-	1
	Resolution		-	-	-	-	16-bit
	Max. Input Frequency		-	-	-	-	10 MHz
Isolation Voltage			2,500 V_{DC}	-	1,500 V_{DC}	-	-
Auto Calibration			-	-	-	✓	✓
Board ID Switch			✓	✓	✓	✓	✓
Dimensions (L x H)			175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")
Connector			DB37	2 x 2-pin DB37	DB62	68-pin SCSI	68-pin SCSI
DAQNavi Driver	Windows 7/8/10		✓	✓	✓	✓	✓
	Linux		✓	✓	✓	-	✓
LabVIEW Driver			✓	✓	✓	✓	✓

* 80 kHz on Pentium® 4-based (or higher) systems.
** SS: Single DMA channel, single A/D channel scan.
✓: supported, - : not supported, △ : optional

Analog I/O and Multifunction Cards



Category			Multifunction & Analog Input					
Sampling / Updating			Multiplexer		Simultaneous Sampling			
Part Number			PCIE-1810	PCIE-1816/H	PCIE-1812	PCIE-1813	PCIE-1802/1802L	PCIE-1840/1840L
Analog Input	Resolution		12-bit	16-bit	16-bit	26-bit	24-bit	16-bit
	Channels		16 SE/8 diff.	16 SE/8 diff.	8 diff.	4 diff.	8 diff./ 4 diff.	4 SE
	Onboard FIFO		4,096 samples	4,096 samples	4,096 samples	4,096 samples	4,096 samples	1 G samples
	Sampling Rate		500 kS/s	500 KSPS/ 1MSPS	250 kS/s	38.4 kS/s	216 kS/s	125/80 MSPS
	Input Ranges	Unipolar Inputs	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	±31.25 mV/V, ±62.5 mV/V, ±125 mV/V, ±250 mV/V, ±500 mV/V, and ±1 V/V (bridge inputs)	-	-
		Bipolar Inputs	±10, ±5, 2.5, 1.25, 0.625 V	±10, ±5, 2.5, 1.25, 0.625 V	±10, ±5, 2.5, 1.25, 0.625 V	±10 V, ±5 V, ±2.5 V, ±1.25 V, ±625 mV, ±312.5 mV	±0.2, ±0.5, ±1, ±2, ±5, ±10 V	0.2, 0.4, 1, 2, 4, 10, 20 Vpp
		Configurable Per Channel	✓	✓	✓	✓	✓	✓
	Trigger Modes	Pacer/ Software/ External Pulse	✓	✓	✓	✓	✓	✓
		Analog Slope	✓	✓	✓	✓	✓	✓
		Advanced Trigger	Start/Stop/Delayed Start/Delayed Stop	Start/Stop/Delayed Start/Delayed Stop	Start/Stop/Delayed Start/Delayed Stop	Start/Stop/Delayed Start/Delayed Stop	Start/Stop/Delayed Start/Delayed Stop	Start/Stop/Delayed Start/Delayed Stop
	Data Transfer Modes	Software	✓	✓	✓	✓	✓	✓
		DMA	Bus mastering	Bus mastering	Bus mastering	Bus mastering	Bus mastering	Bus mastering
Analog Output	Resolution		12-bit	16-bit	16-bit	16-bit	-	-
	Channels		2 (waveform output)	2 (waveform output)	2 (waveform output)	2 (waveform output)	-	-
	Onboard FIFO		4,096 samples	4,096 samples	4,096 samples	4,096 samples	-	-
	Output Range		0 ~ 5, 0 ~ 10, ±5, ±10 V	0 ~ 5, 0 ~ 10, ±5, ±10 V	0 ~ 5, 0 ~ 10, ±5, ±10 V	0 ~ 5, 0 ~ 10, ±5, ±10 V	-	-
	Output Rate		500 kS/s	3 MHz	3 MHz	3 MHz	-	-
	DMA Transfer		Bus mastering	Bus mastering	Bus mastering	Bus mastering	-	-
Digital I/O	Input Channels		24 (shared)	24 (shared)	32 (shared)	32 (shared)	1	-
	Output Channels						2	
Timer/ Counter	Channels		2	2	4 (encoder included)	4 (encoder included)	-	-
	Resolution		32-bit	32-bit	32-bit	32-bit	-	-
	Max. Input Frequency		10 MHz	10 MHz	10 MHz	10 MHz	-	-
Isolation Voltage			-	-	-	-	-	-
Auto Calibration			✓	✓	✓	✓	✓	✓
Board ID Switch			✓	✓	✓	✓	✓	✓
Dimensions (L x H)			175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")
Connector			68-pin SCSI	68-pin SCSI	100-pin SCSI (female)	100-pin SCSI (female)	1 x 19-pin MINI SCSI (for AI) 1 x HDMI (for Ext. clock and trigger)	4 x BNC (for AI) 1 x HDMI (for Ext. clock and trigger)
DAQNavi Driver	Windows 7/8/10		✓	✓	✓	✓	-	-
	Linux		✓	✓	-	-	✓	-
LabVIEW Driver			✓	✓	✓	✓	✓	✓

* 80 kHz on Pentium® 4-based (or higher) systems.
** SS: Single DMA channel, single A/D channel scan.
✓: supported, - : not supported, △ : optional

Digital I/O and Multifunction Cards






Category			Non-Isolated Digital I/O					
Bus			PCI					
Part Number			PCI-1735U	PCI-1737U	PCI-1739U	PCI-1751	PCI-1753	PCI-1757UP
TTL DI/O	Input Channels		32	24 (shared)	48 (shared)	48 (shared)	96 (shared)	24 (shared)
	Output Channels		32					
	Output Channel	Sink Current	24 mA @ 0.5 V	24 mA @ 0.4 V	24 mA @ 0.4 V	24 mA @ 0.4 V	24 mA @ 0.44 V	24 mA @ 0.5 V
		Source Current	15 mA @ 2.0 V	15 mA @ 2.4 V	15 mA @ 2.4 V	15 mA @ 2.4 V	24 mA @ 3.76 V	24 mA @ 3.7 V
Isolated Digital I/O	Input	Channels	-	-	-	-	-	-
		Isolation Voltage	-	-	-	-	-	-
		Input Range	-	-	-	-	-	-
	Output	Channels	-	-	-	-	-	-
		Isolation Voltage	-	-	-	-	-	-
		Output Range	-	-	-	-	-	-
		Max. Sink Current	-	-	-	-	-	-
Timer/ Counter	Channels		3	-	-	3	-	-
	Resolution		16-bit	-	-	16-bit	-	-
	Max. Input Frequency		10 MHz	-	-	10 MHz	-	-
Advanced Function	Pattern Match		-	-	-	-	✓	-
	Change of State		-	-	-	-	✓	-
	Board ID Switch		✓	✓	✓	✓	✓	✓
	Channel-Freeze Function		-	-	-	-	-	-
	Output Status Read Back		✓	✓	✓	✓	✓	✓
	Dry/Wet Contact*		-	✓	✓	✓	✓	✓
Dimensions (L x H)			175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	120 x 65 mm (4.7" x 2.5")
Connector			5 x 20-pin	1 x 50-pin	2 x 50-pin	68-pin SCSI	100-pin SCSI	1 x DB25
DAQNavi Driver	Windows 7/8/10		✓	✓	✓	✓	✓	✓
	Linux		-	✓	✓	✓	✓	✓
LabVIEW Driver			✓	✓	✓	✓	✓	✓

* Simultaneous dry/wet contact within a group is acceptable.

✓: supported, - : not supported, △ : optional

Digital I/O and Multifunction Cards

Category			Isolated Digital I/O						
Bus			PCI Express						
Part Number			☞ PCIE-1730/1730H	☞ PCIE-1752	☞ PCIE-1754	☞ PCIE-1756/1756H	☞ PCIE-1758UDI	☞ PCIE-1758UDO	☞ PCIE-1758UDIO
TTL DI/O	Input Channels		16	-	-	-	-	-	-
	Output Channels		16	-	-	-	-	-	-
	Output Channel	Sink Current	24 mA @ 0.5 V	-	-	-	-	-	-
		Source Current	15 mA @ 2.4 V	-	-	-	-	-	-
Isolated Digital I/O	Input	Channels	16	-	64	32	128	-	64
		Isolation Voltage	2,500 V_{DC}	-	2,500 V_{DC}	2,500 V_{DC}	2,500 V_{DC}	-	2,500 V_{DC}
		Input Range	10 ~ 30 V_{DC}	-	10 ~ 30 V_{DC}	10 ~ 30 V_{DC}	10 ~ 30 V_{DC}	-	10 ~ 30 V_{DC}
	Output	Channels	16 (sink)	64 (sink)	-	32 (sink)	-	128	64
		Isolation Voltage	2,500 V_{DC}	2,500 V_{DC}	-	2,500 V_{DC}	-	2,500 V_{DC}	2,500 V_{DC}
		Output Range	5 ~ 40 V_{DC}	5 ~ 40 V_{DC}	-	5 ~ 40 V_{DC}	-	5 ~ 40 V_{DC}	5 ~ 40 V_{DC}
		Max. Sink Current	500 mA	500 mA	-	500 mA	-	90 mA	90 mA
Timer/Counter	Channels		-	-	-	-	-	-	-
	Resolution		-	-	-	-	-	-	-
	Max. Input Frequency		-	-	-	-	-	-	-
Advanced Function	Pattern Match		-	-	-	-	-	-	-
	Change of State		-	-	-	-	-	-	-
	Board ID Switch		✓	✓	✓	✓	✓	✓	✓
	Channel-Freeze Function		✓	✓	-	✓	-	-	-
	Output Status Read Back		✓	✓	-	✓	-	✓	✓
	Dry/Wet Contact*		✓	-	-	-	-	-	-
Dimensions (L x H)			175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")
Connector			1 x DB37 4 x 20-pin	100-pin SCSI	100-pin SCSI	100-pin SCSI	Dual 100-pin mini SCSI	Dual 100-pin mini SCSI	Dual 100-pin mini SCSI
DAQNavi Driver	Windows 7/8/10		✓	✓	✓	✓	✓	✓	✓
	Linux		✓	✓	-	✓	-	-	-
LabVIEW Driver			✓	✓	✓	✓	✓	✓	✓

* Simultaneous dry/wet contact within a group is acceptable.

✓: supported, - : not supported, △ : optional






Category			Relay Output				Non-Isolated Digital I/O	
Bus			PCI Express					
Part Number			☞ PCIE-1760	☞ PCIE-1761H	☞ PCIE-1762H	☞ PCIE-1765	☞ PCIE-1751	☞ PCIE-1753
TTL DI/O	Input Channels		-	-	-	-	48 (shared)	96 (shared)
	Output Channels		-	-	-	-		
	Output Channel	Sink Current	-	-	-	-	15 mA @ 0.8 V	15 mA @ 0.8 V
		Source Current	-	-	-	-	15 mA @ 2.0 V	15 mA @ 2.0 V
Isolated Digital I/O	Input	Channels	8	8	16	-	-	-
		Isolation Voltage	2,500 V_{DC}	2,500 V_{DC}	2,500 V_{DC}	-	-	-
		Input Range	4.5 ~ 12 V_{DC}	4.5 ~ 12 V_{DC}	10 ~ 50 V_{DC}	-	-	-
	Output	Channels	6 x Form A 2 x Form C	6 x Form A 2 x Form C	16**	12 Form C	-	-
		Isolation Voltage	2,500 V_{DC}	2,500 V_{DC}	2,500 V_{DC}	2,500 V_{DC}	-	-
		Output Range	0.5 A @ 125 V_{AC}	2 A @ 250 V_{AC}	0.25 A @ 250 V_{AC}	2 A @ 250 V_{AC}	-	-
		Max. Sink Current	1 A @ 30 V_{DC}	2 A @ 30 V_{DC}	0.5 A @ 30 V_{DC}	2A @ 30 V_{DC}	-	-
Timer/Counter	Channels		8 x UP CTR 2 x PWM	8 x CTR 2 x PWM	-	-	3	-
	Resolution		16-bit	16-bit (2,500 isolation)	-	-	32-bit	-
	Max. Input Frequency		500 Hz	500 Hz for CTR	-	-	10 MHz	-
Advanced Function	Pattern Match		✓	✓	-	-	✓	✓
	Change of State		✓	✓	-	-	✓	✓
	Board ID Switch		✓	✓	✓	-	✓	✓
	Channel-Freeze Function		-	-	✓	-	-	-
	Output Status Read Back		✓	✓	✓	-	✓	✓
	Dry/Wet Contact*		-	-	-	-	✓	✓
Dimensions (L x H)			175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	168 x 100 mm (6.6" x 3.9")	168 x 100 mm (6.6" x 3.9")
Connector			1 x DB37	1 x DB37	1 x DB62	1 x DB37	68-pin SCSI	68-pin SCSI
DAQNavi Driver	Windows 7/8/10		✓	✓	✓	✓	✓	✓
	WinCE		-	-	-	-	-	-
	Linux		✓	-	✓	-	-	-
LabVIEW Driver			✓	✓	✓	✓	✓	✓

* Simultaneous dry/wet contact within a group is acceptable.
** Jumper selectable Form A / Form B type relay output
✓: supported, - : not supported, △ : optional

Digital I/O and Multifunction Cards

Category			Isolated Digital I/O					
Bus			PCI					
Part Number			PCI-1730U	PCI-1733	PCI-1734	PCI-1750/ 1750SO	PCI-1752U/ 1752USO	PCI-1754
TTL DI/O	Input Channels		16	-	-	-	-	-
	Output Channels		16	-	-	-	-	-
	Output Channel	Sink Current	24 mA @ 0.5 V	-	-	-	-	-
		Source Current	15 mA @ 2.4 V	-	-	-	-	-
Isolated Digital I/O	Input	Channels	16	32	-	16	-	64
		Isolation Voltage	2,500 V_{DC}	2,500 V_{DC}	-	2,500 V_{DC}	-	2,500 V_{DC}
		Input Range	5 ~ 30 V_{DC}	5 ~ 30 V_{DC}	-	5 ~ 50 V_{DC}	-	10 ~ 50 V_{DC}
	Output	Channels	16 (sink)	-	32 (sink)	16 (sink/source)	64 (sink/source)	-
		Isolation Voltage	2,500 V_{DC}	-	2,500 V_{DC}	2,500 V_{DC}	2,500 V_{DC}	-
		Output Range	5 ~ 40 V_{DC}	-	5 ~ 40 V_{DC}	5 ~ 40 V_{DC}	5 ~ 40 V_{DC}	-
		Max. Current	300 mA	-	200 mA	200 mA	200 mA	-
Timer/ Counter	Channels		-	-	-	1	-	-
	Resolution		-	-	-	16-bit	-	-
	Max. Input Frequency		-	-	-	1 MHz	-	-
Advanced Function	Pattern Match		-	-	-	-	-	-
	Change of State		-	-	-	-	-	-
	Board ID Switch		✓	✓	✓	-	✓	✓
	Channel-Freeze Function		✓	-	-	-	✓	-
	Output Status Read Back		✓	-	✓	-	✓	-
	Dry/Wet Contact*		✓	✓	-	✓	-	-
Dimensions (L x H)			175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")
Connector			1 x DB37 4 x 20-pin	1 x DB37	1 x DB37	1 x DB37	100-pin SCSI	100-pin SCSI
DAQNavi Driver	Windows 7/8/10		✓	✓	✓	✓	✓	✓
	Linux		✓	✓	✓	✓	✓	✓
LabVIEW Driver			✓	✓	✓	✓	✓	✓

* Simultaneous dry/wet contact within a group is acceptable.

✓: supported, - : not supported, △ : optional

Category			Isolated Digital I/O						
Bus			PCI						
Part Number			PCI-1756	PCI-1758UDI	PCI-1758UDO	PCI-1758UDIO	PCI-1760U	PCI-1761	PCI-1762
TTL DI/O	Input Channels		-	-	-	-	-	-	-
	Output Channels		-	-	-	-	-	-	-
	Output Channel	Sink Current	-	-	-	-	-	-	-
		Source Current	-	-	-	-	-	-	-
Isolated Digital I/O	Input	Channels	32	128	-	64	8	8	16**
		Isolation Voltage	2,500 V_{DC}	2,500 V_{RMS}	-	2,500 V_{DC}	2,500 V_{DC}	3,750 V_{DC}	2,500 V_{DC}
		Input Range	10 ~ 50 V_{DC}	5 ~ 25 V_{DC}	-	5 ~ 25 V_{DC}	4.5 ~ 12 V_{DC}	5 ~ 50 V_{DC}	10 ~ 50 V_{DC}
	Output	Channels	32 (Sink)	-	128	64	6 x Form A 2 x Form C	4 x Form A 4 x Form C	16
		Isolation Voltage	2,500 V_{DC}	-	2,500 V_{RMS}	2,500 V_{DC}	2,500 V_{DC}	2,500 V_{DC}	2,500 V_{DC}
		Output Range	5 ~ 40 V_{DC}	-	5 ~ 40 V_{DC}	5 ~ 40 V_{DC}	0.5 A @ 125 V_{AC} 1 A @ 30 V_{DC}	2 A @ 250 V_{AC} 2 A @ 30 V_{DC}	0.5 A @ 250 V_{AC} 0.5 A @ 30 V_{DC}
		Max. Sink Current	200 mA	-	90 mA	90 mA			
Timer/Counter	Channels		-	-	-	-	8 x CTR 2 x PWM	-	-
	Resolution		-	-	-	-	16-bit (2,500 isolation)	-	-
	Max. Input Frequency		-	-	-	-	500 Hz for CTR	-	-
Advanced Function	Pattern Match		-	-	-	-	✓	-	-
	Change of State		-	-	-	-	✓	-	-
	Board ID Switch		✓	✓	✓	✓	✓	✓	✓
	Channel-Freeze Function		✓	-	-	-	-	-	✓
	Output Status Read Back		✓	-	✓	✓	✓	✓	✓
	Dry/Wet Contact*		-	-	-	-	-	-	-
Dimensions (L x H)			175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")
Connector			100-pin SCSI	Dual 100-pin mini SCSI	Dual 100-pin mini SCSI	Dual 100-pin mini SCSI	1 x DB37	1 x DB37	1 x DB62
DAQNavi Driver	Windows 7/8/10		✓	✓	✓	✓	✓	✓	✓
	Linux		✓	✓	✓	✓	-	✓	✓
LabVIEW Driver			✓	✓	✓	✓	✓	✓	✓

* Simultaneous dry/wet contact within a group is acceptable.
** Jumper selectable Form A / Form B type relay output
✓: supported, - : not supported, △ : optional

Digital I/O and Multifunction Cards






Category			Isolated Digital I/O		Counter		Encoder	
Bus			PCI-104		PCI	PC/104	PCI	PCIE
Part Number			PCM-3730I	PCM-3761I	PCI-1780U	PCM-3780	PCI-1784U	PCIE-1884U
TTL DI/O	Input Channels		-	-	8	24 (shared)	-	-
	Output Channels		-	-	8		-	-
	Output Channel	Sink Current	-	-	24 mA @ 0.5 V	24 mA @ 0.5 V	-	-
		Source Current	-	-	15 mA @ 2.4 V	15 mA @ 2.0 V	-	-
Isolated Digital I/O	Input	Channels	16	8	-	-	4	4
		Isolation Voltage	2,500 V_{DC}	2,500 V_{DC}	-	-	2,500 V_{DC}	2,500 V_{DC}
		Input Range	5 ~ 30 V_{DC}	5 ~ 30 V_{DC}	-	-	10 ~ 30 V_{DC}	5 ~ 50 V_{DC}
	Output	Channels	16	8 x Form C	-	-	4	4
		Isolation Voltage	2,500 V_{DC}	2,000 V_{DC}	-	-	2,500 V_{DC}	2,500 V_{DC}
		Output Range	5 ~ 30 V_{DC}	0.25 A @ 250 V_{AC} 2 A @ 30 V_{DC}	-	-	TTL level	TTL level
		Max. Sink Current	300 mA		-	-	50mA	24mA
Timer/ Counter	Channels		-	-	8 x CTR	2	4	4
	Resolution		-	-	16-bit	16-bit	32-bit	32-bit
	Max. Input Frequency		-	-	20 MHz	20 MHz	2 MHz (8 MHz for quadrature X4)	10 MHz (40 MHz for quadrature X4)
Advanced Function	Pattern Match		-	-	-	-	-	-
	Change of State		-	-	-	-	-	-
	Board ID Switch		-	✓	✓	-	✓	✓
	Channel-Freeze Function		-	-	-	-	-	-
	Output Status Read Back		-	✓	-	-	-	-
	Dry/Wet Contact*		-	-	-	-	-	-
Dimensions (L x H)			96 x 90 mm (3.8" x 3.5")	96 x 90 mm (3.8" x 3.5")	175 x 100 mm (6.9" x 3.9")	96 x 90 mm (3.8" x 3.5")	175 x 100 mm (6.9" x 3.9")	175 x 100 mm (6.9" x 3.9")
Connector			2 x 20-pin	1 x 20-pin 1 x 50-pin	68-pin SCSI	1 x 50-pin 1 x 20-pin	1 x DB37	1 x DB37
DAQNavi Driver	Windows 7/8/10		✓	✓	✓	✓	✓	✓
	Linux		-	✓	✓	-	✓	-
LabVIEW I/O Driver			✓	✓	✓	✓	✓	✓

* Simultaneous dry/wet contact within a group is acceptable.
** Jumper-selectable Form A/B-type relay output.
✓: supported, - : not supported, △ : optional

USB I/O Modules and USB Hubs

Category			USB 3.0 Isolated Digital I/O					
Model			☞ USB-5830-AE	☞ USB-5856-AE	☞ USB-5850-AE	☞ USB-5855-AE	☞ USB-5860-AE	☞ USB-5862-AE
Isolated Digital I/O	Input	Channels	16	32	16	32	8	16
		Input Range	Logic 0: 3 V max. Logic 1: 10 V min. (30 V max.)	Logic 0: 3 V max. Logic 1: 10 V min. (30 V max.)	Logic 0: 3 V max. Logic 1: 10 V min. (30 V max.)	Logic 0: 3 V max. Logic 1: 10 V min. (30 V max.)	Logic 0: 3 V max. Logic 1: 10 V min. (30 V max.)	Logic 0: 3 V max. Logic 1: 10 V min. (30 V max.)
		Isolation Protection	2,500 V_{DC}	2,500 V_{DC}	2,500 V_{DC}	2,500 V_{DC}	2,500 V_{DC}	2,500 V_{DC}
	Output	Channels	16	32	-	-	-	-
		Load Voltage	5 ~ 40 V_{DC}	5 ~ 40 V_{DC}	-	-	-	-
		Load Current	350mA/ch (sink) @ 25°C 250mA/ch (sink) @ 60°C	350mA/ch (sink) @ 25°C 250mA/ch (sink) @ 60°C	-	-	-	-
		Isolation Protection	2,500 V_{DC}	2,500 V_{DC}	-	-	-	-
		Opto-Isolator Response Time	100 µs	100 µs	-	-	-	-
Relay Output	PhotoMOS SPST (Form A)	Channels	-	-	8	16	-	-
		Load Voltage	-	-	60V (AC peak or DC)	60V (AC peak or DC)	-	-
		Load Current	-	-	1.2A/ch	1.2A/ch	-	-
		Isolation Protection	-	-	1,500 V_{DC}	1,500 V_{DC}	-	-
		Response Time	-	-	Turn-on: 1 ms (typical) Turn-off: 0.6 ms (typical)	Turn-on: 1 ms (typical) Turn-off: 0.6 ms (typical)	-	-
	Relay Output Form A	Channels	-	-	-	-	8	16
		Contact Rating (resistive)	-	-	-	-	2A @ 250 V_{AC}, 2A @ 30 V_{DC}	2A @ 250 V_{AC}, 2A @ 30 V_{DC}
		Max. Switching Power	-	-	-	-	500 VA, 60 W	500 VA, 60 W
		Max. Switching Voltage	-	-	-	-	270 V_{AC}, 125 V_{DC}	270 V_{AC}, 125 V_{DC}
		Response Time	-	-	-	-	Operating time: 10 ms (max.) Release time: 5 ms (max.)	Operating time: 10 ms (max.) Release time: 5 ms (max.)
Dimensions			120 x 120 x 40 mm (4.72" x 4.72" x 1.57")	168 x 120 x 40 mm (6.61" x 4.72" x 1.57")	120 x 120 x 40 mm (4.72" x 4.72" x 1.57")	168 x 120 x 40 mm (6.61" x 4.72" x 1.57")	120 x 120 x 40 mm (4.72" x 4.72" x 1.57")	168 x 120 x 40 mm (6.61" x 4.72" x 1.57")
Board ID Switch			✓	✓	✓	✓	✓	✓
Operating Temperature			0 ~ 60 °C (32 ~ 140 °F)					
Supported Operating Systems			Windows XP/7/8/10 and Linux					

✓: supported, - : not supported, △ : optional

USB I/O Modules and USB Hubs



Category			USB 3.0 Analog Input Modules		
Model			☞ USB-5801	☞ USB-5817	☞ USB-5820
Analog Input	Resolution		24	16	-
	Channels		4 diff./pseudo-diff.	8 diff.	-
	Sampling Rate		192KS/s, Simultaneous	200kS/s, Multiplexed	-
	IEPE		2mA	-	-
	Value Range	Unipolar	-	-	-
		Bipolar	±1 V, ±10 V	0- 20mA, ±10V	-
		Configurable Per Channel	✓	✓	-
	Trigger Modes	Pacer/ Software	✓	✓	-
		External Pulse	✓	✓	-
Analog Output	Resolution		24	-	16
	Channels		2	-	4
	Updating Rate		192KS/s, Simultaneous	-	200kS/s, Multiplexed
	Output Range		±1 V, ±10 V	-	0-5V, 0-10V, ±5V, ±10V, 0-20mA, 4-20 mA
Tachometer	Channels		2	-	-
	Input Range		Logic 0: 3 V max. Logic 1: 10 V min. (30 V max.)	-	-
	Input Frequency		5kHz	-	-
Isolated Digital I/O	Input Channels		4	-	-
	Output Channels		4	-	-
	Opto-Isolator Response Time		100us	-	-
	Isolation Protection		2,500 V_{DC}	-	-
Dimensions			168 x 120 x 40 mm (6.61" x 4.72" x 1.57")	120 x 120 x 40 mm (4.72" x 4.72" x 1.57")	120 x 120 x 40 mm (4.72" x 4.72" x 1.57")
Board ID Switch			✓	✓	✓
Operating Temperature			0 ~ 60 °C (32 ~ 140 °F)		
Supported Operating Systems			Windows XP/7/8/10 and Linux		

✓: supported, - : not supported, △ : optional

Category			USB 2.0 Multifunction				
Part Number			USB-4702-AE	USB-4704-AE	USB-4711A-AE	USB-4716-AE	USB-4718
Analog Input	Resolution		12-bit	14-bit	12-bit	16-bit	16-bit
	Channels		8 SE/4 diff.	8 SE/4 diff.	16 SE/8 diff.	16 SE/8 diff.	8 diff.
	Onboard FIFO		512 samples	512 samples	1,024 samples	1,024 samples	-
	Sampling Rate		10 kS/s	48 kS/s	150 kS/s	200 kS/s	10 S/s
	Input Ranges	Unipolar Inputs	-	-	-	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25 V	0 ~ 20, 4 ~ 20 mA Thermocouple J, K , T, E, R, S, B 0 ~ 1, 0 ~ 2.5, 0 ~ 0.015, 0 ~ 0.05, 0 ~ 0.1, 0 ~ 0.5 V
		Bipolar Inputs	±10, 5, 4, 2.5, 1.25, 1 V	±10, 5, 4, 2.5, 1.25, 1 V	±10, 5, 2.5, 1.25 V 0.625 V	±10, 5, 2.5, 1.25 V 0.625 V	-
		Configurable Per Channel	✓	✓	✓	✓	✓
	Trigger Modes	Pacer/Software	✓	✓	✓	✓	✓
		External Pulse	✓	✓	✓	✓	✓
	Data Transfer	Software	✓	✓	✓	✓	✓
Analog Output	Resolution		12-bit	12-bit	12-bit	16-bit	-
	Channels		2	2	2	2	-
	Output Range		0 ~ 5 V	0 ~ 5, 0 ~ 10 V	0 ~ 5, 0 ~ 10, ±5, ±10 V	0 ~ 5, 0 ~ 10, ±5, ±10 V	-
	Output Rate		Static update	Static update	Static update	Static update	-
Digital I/O	Input Channels		8	8	8	8	8 (isolated)
	Output Channels		8	8	8	8	8 (isolated)
Timer/ Counter	Channels		1	1	1	1	-
	Resolution		32-bit	16-bit	16-bit	16-bit	-
	Max. Input Frequency		5 MHz	10 MHz	1 KHz	1 KHz	-
Auto Calibration			✓	✓	✓	✓	-
Dimensions (L x H)			70 x 70 mm (2.76" x 2.76")	132 x 80 x 32 mm (5.2" x 3.15" x 1.26")	132 x 80 x 32 mm (5.2" x 3.15" x 1.26")	132 x 80 x 32 mm (5.2" x 3.15" x 1.26")	132 x 80 x 32 mm (5.2" x 3.15" x 1.26")
Connector			DB37	Onboard screw terminal	Onboard screw terminal	Onboard screw terminal	Onboard screw terminal
Supported Operating Systems			Windows XP/7/8/10 and Linux				
LabVIEW Driver			✓	✓	✓	✓	✓

Category		Industrial USB Hub		
Model		USB-4620-AE	USB-4622-BE	USB-4630-AE
Connectivity	Ports	1 x Upstream (Type B) 5 x Downstream (Type A)	1 x Upstream (Type B) 5 x Downstream (Type A)	1 x Upstream (Type B) 4 x Downstream (Type A)
	Compatibility	USB 2.0 Full Speed	USB 2.0 High Speed	USB 3.0 SuperSpeed
	Transfer Speed	12 Mbps	480 Mbps	5 Gbps shared by all downstream ports
	Supply Current	500 mA max. per port	500 mA max. per port	External power: 900 mA max. per port USB bus power: 700 mA max. shared by all ports
Isolation Protection		3,000 V_{DC}	-	2,500 V_{DC}
General	Dimensions	132 x 80 x 32 mm (5.2" x 3.15" x 1.26")		
	DC Input	10 ~ 30 V_{DC}		
	Operating Temperature	0 ~ 60°C (32 ~ 140°F)	0 ~ 60°C (32 ~ 140°F)	0 ~ 70°C (32 ~ 158°F)

✓: supported, - : not supported, △ : optional

Signal Conditioners and Terminal Boards

Signal Conditioners



Model		ADAM-3011	ADAM-3013	ADAM-3014
Signal Type		Thermocouple	RTD	DC input
Channel		1	1	1
Input Type	Voltage	-	-	±10 mV, ±50 mV, ±100 mV, ±0.5 V, ±1 V, ±5 V, ±10 V, 0 ~ 10 mV, 0 ~ 50 mV, 0 ~ 100 mV, 0 ~ 0.5 V, 0 ~ 1 V, 0 ~ 5 V, 0 ~ 10 V
	Current	-	-	0 ~ 20, ±20 mA
	Others	J, K, T, E, S, R, B Type	Pt or Ni	-
Output	Voltage	0 ~ 10 V	0 ~ 5, 0 ~ 10 V	0 ~ 10, ±5, ±10 V
	Current	-	0 ~ 20 mA	-




Model		ADAM-3016	ADAM-3017	ADAM-3112	ADAM-3114
Signal Type		Strain Gauge	IEPE input	AC/DC input	Current input
Channel		1	1	1	1
Input Type	Voltage	±10, ±20, ±30, ±100 mV (electrical voltage)	4 ~ 24 V (IEPE sensor with up to 10 mA current source)	AC: 0 ~ 120, 0 ~ 250, 0 ~ 400 V DC: 0 ~ 120, 0 ~ 250, 0 ~ 400 V	-
	Current	-	-	-	AC: 0 ~ 5 A_{rms} DC: 0 ~ 5 A
	Others	-	-	-	-
Output	Voltage	0 ~ 10, ±5, ±10 V	DC Couple: 4~24 V AC Couple: ±11 V	0 ~ 5 V_{DC}	0 ~ 5 V_{DC}
	Current	-	-	-	-

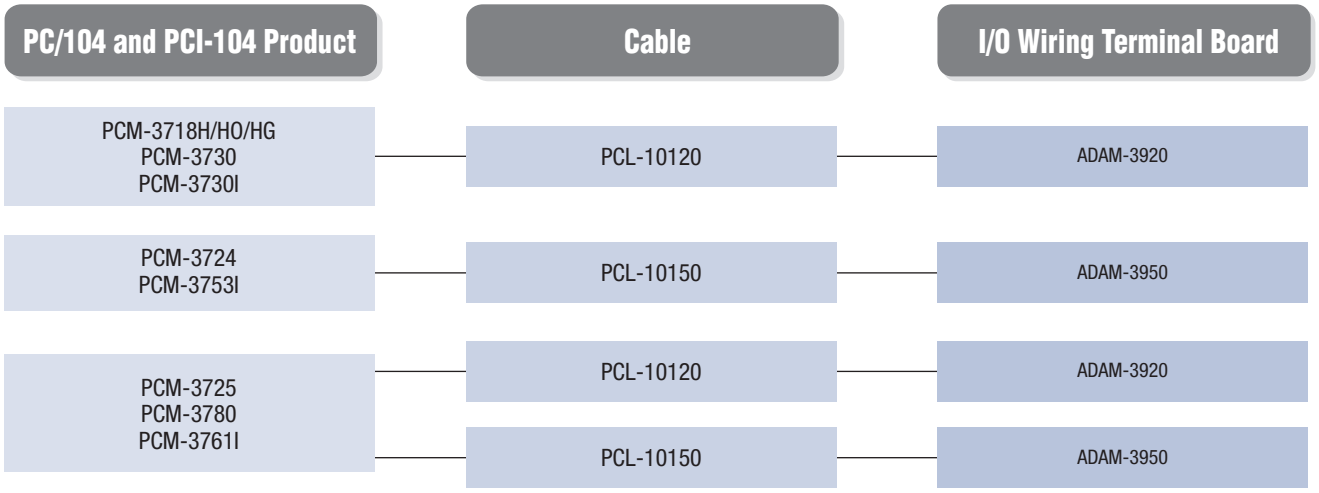
Signal Conditioners and Terminal Boards

Recommended Cables, I/O Wiring Terminal Boards, and Isolated Digital I/O Terminals for Connecting to PC/104 and PCI-104 DAQ Products

PCI and USB Product	Cable	I/O Wiring Terminal Board
PCI-1710U/1710UL/1710HGU PCI-1711U/1711UL PCI-1716/1716L PCI-1706U/ PCI-1742U PCIE-1810/ PCIE-1816/ PCIE-1816H PCI-1712/PCI-1712L	PCL-10168 PCL-10168H	PCLD-8710/ 8810I/ 8810E ADAM-3968
PCI-1718HDU	PCL-10137	ADAM-3937
PCI-1727U PCI-1730U PCIE-1730	PCL-10120	ADAM-3920
PCI-1751/ PCIE-1751 PCI-1747U/PCI-1721 PCI-1723/PCI-1780U	PCL-10168	ADAM-3968
PCI-1753/ PCIE-1753	PCL-10268	
PCI-1720U, PCI-1733, PCI-1734 PCI-1750, PCIE-1760, PCI-1760U, PCI-1761, USB-4702, PCI-1713U/PCI-1715U	PCL-10137	ADAM-3937
PCI-1784U	PCI-10137H	
PCI-1752U, PCI-1754, PCI-1756 PCIE-1752, PCIE-1754, PCIE-1756	PCL-10250	ADAM-3951
	PCL-101100M	ADAM-39100
PCIE-1812, PCIE-1813	PCL-101100R	
PCI-1758UDI/1758UDO/1758UDIO	PCL-101100S	
PCI-1724U, PCI-1762	PCL-10162	ADAM-3962
PCI-1737U PCI-1739U USB-4751/L	PCL-10150	ADAM-3950
PCI-1714U/1714UL	PCL-10901	ADAM-3909
	PCL-1010B	
PCI-1757UP	PCL-10125	ADAM-3925
PCI-1735U	PCL-10120	ADAM-3920
PCI-1671UP, USB-4671	PCL-10488	

Signal Conditioners and Terminal Boards

Recommended Cables, I/O Wiring Terminal Boards, and Isolated Digital I/O Terminals for Connecting to PC/104 and PCI-104 DAQ Products



Functional Wiring Board Accessories

Part Number	Description
PCLD-780-BE	Screw Terminal Board with Flat Cables
PCLD-782B-AE	16/24-ch Opto-isolated DI Board
PCLD-782-BE	Opto-Isolated D/I Board
PCLD-785-AE	16-ch Relay Output wiring board
PCLD-785B-AE	24-ch Relay Output wiring board
PCLD-8762-AE	48-ch Relay Output wiring board
PCLD-788-AE	Relay Scanner/multiplexer Board
PCLD-789D-AE	Amplifier and Multiplexer Board
PCLD-8115-AE	Industrial Wiring Terminal Board with CJC Circuit
PCLD-8710-AE	DIN-rail Wiring Terminal Board with CJC Circuit
PCLD-8712-AE	DIN-rail Wiring Terminal for PCI-1712/L
PCLD-8751-AE	48-ch Opto-isolated DI Board
PCLD-8761-AE	24/24-ch Relay Output/Isolated DI Board
PCLD-880-AE	Wiring Terminal Board with Flat Cables and Adapter
PCLD-8810E-AE	Screw terminal board with CJC for PCIE-18 Series
PCLD-8810I-AE	Screw terminal board with CJC for PCI-17 Series
PCLD-8811	Low-Pass Active Filter Board
PCLD-8813-AE	Advanced Signal Conditioning Board for PCIE-1812/PCIE-1813
PCLD-881B-AE	Wiring Terminal Board for PCI-1713 & PCL-813L
PCLD-8840-AE	20-pin DIN-rail HDMI Cable Wiring Board
PCLD-885-AE	16-ch Power Relay Output wiring board

Part Number	Description
PCL-10137H-3E	DB37 high-speed cable, 3 m
PCL-10141-0.2E	40-pin to DB37(f) flat cable, 0.2 m
PCL-10150-1.2E	50-pin flat cable, 1.2 m
PCL-10162-1E	DB62 cable, 1 m
PCL-10162-3E	DB62 cable, 3 m
PCL-10168-1E	68-pin SCSI shielded cable, 1 m
PCL-10168-2E	68-pin SCSI shielded cable, 2 m
PCL-10168H-1E	68-pin SCSI shielded cable with noise rejection, 1 m
PCL-10168H-2E	68-pin SCSI shielded cable with noise rejection, 2 m
PCL-10250-1E	100-pin SCSI to 2 x 50-pin SCSI cable, 1 m
PCL-10250-2E	100-pin SCSI to 2 x 50-pin SCSI cable, 2 m
PCL-10268-1E	100-pin SCSI to 2 x 68-pin SCSI cable, 1 m
PCL-10268-2E	100-pin SCSI to 2 x 68-pin SCSI cable, 2 m
PCL-10488-2	IEEE-488 cable, 2 m
PCL-10502-AE	Dual 20-pin to PC slot plate extender
PCL-10503-AE	Dual 20-pin to DB37 adapter
PCL-10901-3E	DB9 to PS/2 cable, 3 m

Serial Communication Cards

Serial Communication Cards

Bus		PCI Express								
Part Number		PCI-1602	PCI-1602UP	PCI-1604	PCI-1604L	PCI-1610	PCI-1612	PCI-1620	PCI-1622	PCI-1680U
I/O Ports		2	2	2	2	4	4	8	8	2
Communication Interfaces	RS-232	✓	✓	✓	✓	✓	✓	✓	✓	-
	RS-422	✓	✓	-	-	-	✓	-	✓	-
	RS-485	✓	✓	-	-	-	✓	-	✓	-
	CAN	-	-	-	-	-	-	-	-	✓
Drivers		Windows XP/7/8/10 and Linux								
Protection	ESD	15 kV (air), 8 kV (contact)								8 kV (air), 4 kV (contact)
	Isolation	3,000 V_{DC}	2,500 V_{DC}	3,000 V_{DC}	-	3,000 V_{DC}	3,000 V_{DC}	-	3,000 V_{DC}	1,000 V_{DC}

Bus		PCI Express						
Part Number		PCIE-1602	PCIE-1604	PCIE-1610	PCIE-1612	PCIE-1620	PCIE-1622	PCIE-1680
I/O Ports		2	2	4	4	8	8	2
Communication Interfaces	RS-232	✓	✓	✓	✓	✓	✓	-
	RS-422	✓	-	-	✓	-	✓	-
	RS-485	✓	-	-	✓	-	✓	-
	CAN	-	-	-	-	-	-	✓
Drivers		Windows XP/7/8/10 and Linux						
Protection	ESD	15 kV (air), 8 kV (contact)						
	Isolation	3,000 V_{DC}	3,000 V_{DC}	-	3,000 V_{DC}	-	3,000 V_{DC}	2,500 V_{DC}

✓: supported, - : not supported, △ : optional

Serial Communication Cards

PC/104 Communication Modules

Bus		PC/104						
Part Number		PCM-3680	PCM-3660	PCM-3610	PCM-3612	PCM-3614	PCM-3618	PCM-3641
I/O Ports		2	2	2	2	4	8	4
Communication Interfaces	Ethernet	-	✓	-	-	-	-	-
	RS-232	-	-	✓	-	-	-	✓
	RS-422	-	-	✓	✓	✓	✓	-
	RS-485	-	-	✓	✓	✓	✓	-
	CAN	✓	-	-	-	-	-	-
Protection	ESD	8 kV (air), 4 kV (contact)						
	Isolation	2,500 V_{DC}	-	2,500 V_{DC}	-	-	-	-

PCI-104 Communication Modules

Bus		PCI-104	
Part Number		PCM-3680I	PCM-3612I
I/O Ports		2	4
Communication Interfaces	Current Loop	-	-
	RS-232	-	✓
	RS-422	-	✓
	RS-485	-	✓
	CAN	✓	-
Protection	ESD	8 kV (air), 4 kV (contact)	15 kV (air), 8 kV (contact)
	Isolation	2,500 V_{DC}	-

Bus	MIOe PCI Express
Part Number	MIOe-3680-AE
Protocol	CAN 2.0 A/B
Ports	2
Protection	8 kV (air), 4 kV (contact) Isolation 2,500 V_{DC}

Accessories

Part Number		1700018791	OPT4A	OPT8C	OPT8H	OPT8J	OPT1-DB9E
Length		30 cm	30 cm	1 m	1 m	1 m	-
Communication Interfaces	Connector Type	DB37 Male	DB37 Male	DB62 Male	DB62 Male	DB78	DB9
	Qty	1	1	1	1	1	1
	Connector Type	DB25 Male	DB9 Male	DB25 Male	DB9 Male	DB9 Male	10pin Terminal
	Qty	4	4	8	8	8	1
Applications		PCI-1610B, PCI-1610C, PCI-1612B, PCI-1612C, PCIE-1610B, PCIE-1612B, PCIE-1612C	PCI-1610B, PCI-1610C, PCI-1612B, PCI-1612C, PCIE-1610B, PCIE-1612B, PCIE-1612C	PCI-1620A, PCI-1620B, PCIE-1620A, PCIE-1622B	PCI-1620A, PCI-1620B, PCIE-1620A, PCIE-1622B	PCI-1622C, PCIE-1622C	PCI-1610B, PCI-1610C, PCI-1612B, PCI-1612C, PCIE-1610B, PCIE-1612B, PCIE-1612C, PCI-1620A, PCI-1620B, PCIE-1620A, PCIE-1622B, PCI-1680, PCIE-1680, MIOE-3680

✓: supported, - : not supported, △ : optional

13 Intelligent Transportation Platforms

Intelligent Transportation Platforms

Comprehensive Solutions for Modernizing Infrastructure

Advantech is dedicated to developing systems that fulfill our vision of building intelligent cities worldwide. With over a decade of successful experience, we have considerable expertise designing and developing products in the urban transportation sector. Advantech offers a full product range for rail and roadway applications, such as railway automatic fare collection, wayside control, rolling stock, urban traffic management, highway management, and transportation hub management.

Product Offerings

AFC and ETC Controllers

ITA-1000 series

AFC controller series features fanless design and rich I/O to support various applications such as automatic gate machines, ticket vending machines, automatic fare collection systems, and more. It also supports self-service equipment and kiosk applications due to its compact and lightweight design.

Rolling Stock Controllers

ITA-5000/ARS-2600 series

Rolling stock controller caters for rolling stock applications including CCTV, Infotainment, passenger information system, vehicle monitoring system and more. Advantech in-train products are complied with EN 50155 and EN 50121-3-2, which enable them to withstand high levels of vibration to enhance their longevity.

Traffic Management

ITA-3000 series

ITA-3000 series works as edge computing platform, providing flexible configuration for local in-time analysis of video images to shorten the time in analyzing real-time and historical traffic data, enabling incident detection, law enforcement and traffic counting in traffic management application.

Passenger Information Display Systems

ARS-P series/ITA-7220

Advantech ARS-P Series and ITA-7220 are fanless Passenger Information Display, EN 50155 compliant specially for rolling stock applications. It features a stretched LCD panel, with high brightness to ensure easy readability even in light-insufficient environments. It serves as a reliable platform to provide passenger information on a wide range of vehicles.

Signaling and FEP Controllers

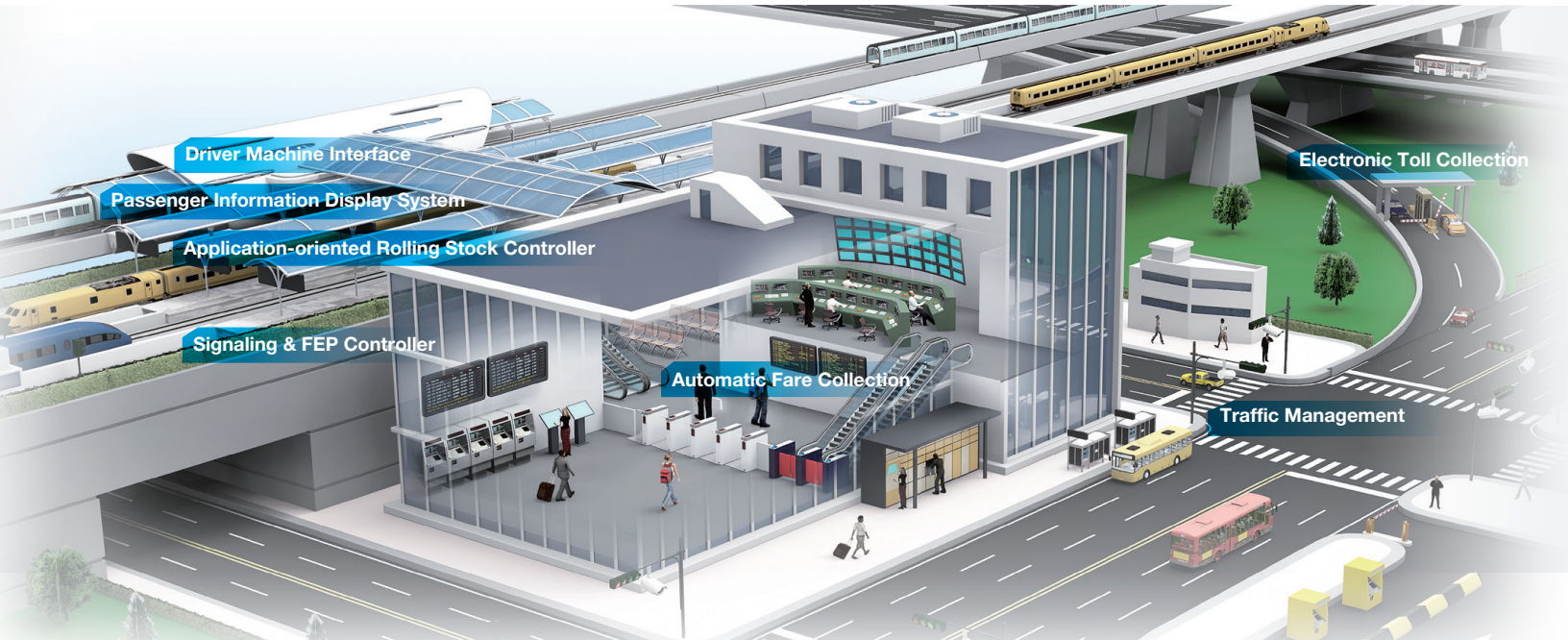
ITA-2000 series

Wayside controller series provide various applications such as communication-based train control, wayside signaling, and train control system. Our wayside controller system includes CTC and ATC systems that provide a secure monitoring and operating environment.

Driver Machine Interface

ITA-8000 series

ITA-8000 series is a fanless touch panel PC with projective capacitive touchscreen, auto dimming and UIC 612-01 keypads for human machine interface. The panel's small, ultra-flat design offers space savings for installation in driver cabins, while the configuration flexibly allows it to be adjusted for specific applications and different train models.



AFC and ETC Controllers




Model Name		☞ ITA-1501	☞ ITA-1611	☞ ITA-1711	☞ ITA-1711N
Processor System	CPU	i.MX6 Quad Cortex-A9	Intel® Celeron™ J1900	Intel® Celeron™ J1900	Intel® Celeron™ J1900
	Processor Base Frequency	1.0 GHz	2.0 GHz	2.0 GHz	2.0 GHz
	Cache	1 MB	2 MB	2 MB	2 MB
		-	AMI SPI 64Mbit	AMI SPI 64Mbit	AMI SPI 64Mbit
	Core Number	4	4	4	4
	TDP	5W	10W	10W	10W
	Operating Temperature	0 ~ 60 °C (With SSD) 0 ~ 40 °C (With HDD)	-25 ~ 60 °C (With SSD) 0 ~ 40 °C (With HDD)	-25 ~ 60 °C (With SSD) 0 ~ 40 °C (With HDD)	-25 ~ 60 °C (With SSD) 0 ~ 40 °C (With HDD)
Memory	Technology	Single channel DDR3 1066	Dual channel DDR3 1333	Dual channel DDR3 1333	Dual channel DDR3 1333
	Capacity	2 GB	4 GB	4 GB	8 GB
Graphics	Chipset	-	Intel® HD Graphics for Intel Atom® Processor Z3700 Series	Intel® HD Graphics for Intel Atom® Processor Z3700 Series	Intel® HD Graphics for Intel Atom® Processor Z3700 Series
	Multiple Display	Dual	Dual	Dual	Dual
	Display Interface	VGA +HDMI or 2 x VGA Single channel: @ 60 Hz Dual channel: 60 Hz 1920 x 1080 @ 60Hz	2 x VGA or VGA + DVI-D or VGA + LVDS Single channel maximum: 1920 x 1080 @ 60 Hz Dual channel maximum: 1920 x 1080 @ 60 Hz	2 x VGA or VGA + DVI-D or VGA + LVDS Single channel maximum: 1920 x 1080 @ 60 Hz Dual channel maximum: 1920 x 1080 @ 60 Hz	2 x VGA or VGA + DVI-D or VGA + LVDS Single channel maximum: 1920 x 1080 @ 60 Hz Dual channel maximum: 1920 x 1080 @ 60 Hz
	LVDS (optional)	-	Supports 18/24-bit dual channel, up to 1920 x 1080 @ 60 Hz	Supports 18/24-bit dual channel, up to 1920 x 1080 @ 60 Hz	Supports 18/24-bit dual channel, up to 1920 x 1080 @ 60 Hz
Ethernet	Inteface	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	1 x RTL8211E	2 x Intel® I211	2 x Intel® I211	4 x Intel® I211
	Connector	1 x RJ-45	2 x RJ-45	2 x RJ-45	4 x RJ-45
Storage	Internal	1 x SD	1 x mSATA	1 x mSATA	1 x mSATA
	External	1 x 2.5" SSD	1 x 2.5" HDD/SSD	1 x 2.5" HDD/SSD	1 x 2.5" HDD/SSD
I/O	Main Display	VGA	VGA	VGA	VGA
	Second Display	HDMI	LVDS/VGA/DVI	LVDS/VGA/DVI	LVDS/VGA/DVI
	SATA	1 x SATA	2 x SATA	2 x SATA	2 x SATA
	USB 2.0	6	5	5	7
	USB 3.0	-	1	1	1
	LAN	1 x RJ-45	2 x RJ-45	2 x RJ-45	4 x RJ-45
	Serial Port	6	6	14	14
	Audio	1 x Speaker-out with 2 x 4W amplifier, 1 x Mic-in	1 x Speaker-out with 2 x 4W amplifier, 1 x Mic-in	1 x Speaker-out with 2 x 4W amplifier, 1 x Mic-in	1 x Speaker-out with 2 x 4W amplifier, 1 x Mic-in
	Digital I/O	-	8 GPIO	Up to 24 DI and 24 DO	48 programmable GPIO
Expansion Slot	Mini PCIe	1	1	1	2
Power	Input Voltage	12 V_{DC}	9~36 V_{DC}	9~36 V_{DC}	9~36 V_{DC}
Watchdog Timer	Output	System reset	System reset	System reset	System reset
	Interval	Programmable 1~255 sec/min	Programmable 1~255 sec/min	Programmable 1~255 sec/min	Programmable 1~255 sec/min
Mechanical Features	Dimension (W x H x D)	188 x 66 x 129 mm (7.28" x 2.59" x 5.11")	200 x 70 x 190 mm (7.87" x 2.75" x 7.48")	200 x100 x 190 mm (7.87" x3.93" x 7.48")	220 x 80 x 190 mm (8.67"" x 3.15"" x 7.48"")
Certification	EMC	CE/FCC, CCC	CE/FCC, CCC, BSMI	CE/FCC, CCC, BSMI	CE/FCC, CCC, BSMI
	Safety	CB, UL, CCC	CB, UL, CCC, BSMI	CB, UL, CCC, BSMI	CB, UL, CCC, BSMI

AFC and ETC Controllers

Traffic Management Controller




Model Name		☞ ITA-3650N		☞ ITA-3650E		☞ ITA-3650G		☞ ITA-3650T	
Processor System	CPU	G3900TE	G4400TE	i3-6100TE	i5-6500TE	i7-6700TE	i3-6100	i5-6500	i7-6700
	Processor Base Frequency	2.30 GHz	2.40 GHz	2.70 GHz	2.30 GHz	2.40 GHz	3.70 GHz	3.20 GHz	3.40 GHz
	L2 Cache	2 MB	3 MB	4 MB	6 MB	8 MB	3 MB	6 MB	8 MB
	Core Number	2	2	2	4	4	2	4	4
	TDP	35W	35W	35W	35W	35W	51W	65W	65W
	Chipset	H110		H110		C236		C236	
	Operating Temperature	35W: -25 ~ 60 °C (with Industry SSD) -25 ~ 40 °C (with MXM GPU support) -25 ~ 50 °C (with M.2/miniPCIe GPU support)				51W/65W: -25 ~ 50 °C (with Industry SSD) -25 ~ 40 °C (with MXM GPU support) -25 ~ 50 °C (with M.2/miniPCIe GPU support)			
Processor System	CPU	G3930TE	i3-7101TE	i5-7500T	i7-7700T	i3-7101E	i5-7500	i7-7700	-
	Processor Base Frequency	2.70 GHz	3.40 GHz	2.70 GHz	2.9 GHz	3.90 GHz	3.40 GHz	3.60 GHz	-
	L2 Cache	2 MB	3 MB	6 MB	8 MB	3 MB	6 MB	8 MB	-
	Core Number	2	2	4	4	2	4	4	-
	TDP	35W	35W	35W	35W	54W	65W	65W	-
	Chipset	H110		H110		C236		C236	-
	Operating Temperature	35W: -25 ~ 50 °C (with Industry SSD) -25 ~ 40 °C (with MXM GPU support) -25 ~ 50 °C (with M.2/miniPCIe GPU support)				54W/65W: -25 ~ 50 °C (with Industry SSD) -25 ~ 40 °C (with MXM GPU support) -25 ~ 50 °C (with M.2/miniPCIe GPU support)			-
Memory	Technology	Dual-channel DDR4 2133 MHz (without ECC)							
	Capacity	8 GB on board (Max. 32 GB with SO-DIMM)		8 GB on board (Max. 32 GB with SO-DIMM)		16 GB on board (Max. 32 GB with SO-DIMM)		16 GB on board (Max. 32 GB with SO-DIMM)	
Graphics	Controller	Intel® HD Graphics 630/610/530/510							
	VGA	1 x DB15, max resolution up to 1920x1080@60Hz							
	HDMI	1 x HDMI, support HDMI1.4 standard, max to 3840x2160@30Hz							
	DP	Box Header on board		Box Header on board		4 x DP, max resolution up to 4096 x 2160 @ 60Hz		Box Header on board	
	Display Option	HDMI+VGA		HDMI+VGA		HDMI+VGA+4DP		HDMI+VGA	
Ethernet	Inteface	10/100/1000 Mbps							
	Controller	1 x Intel® I210; 1 x IWGI219LM;4 x Intel® I211		1 x Intel® I210; 1 x IWGI219LM;2 x Intel® I211		1 x Intel® I210; 1 x IWGI219LM;4 x Intel® I211		1 x Intel® I210;1 x IWGI219LM	
	Connector	6 x RJ-45		4 x RJ-45		6 x RJ-45		2 x RJ-45	
Storage	Internal	1 x mSATA							
	External	2 x 2.5" storage bay							
I/O	Main Display	HDMI							
	Second Display	VGA							
	SATA	2 x SATA							
	USB	4 x USB3.0 & 2 x USB2.0		4 x USB3.0 & 2 x USB2.0		6 x USB3.0		6 x USB3.0	
	LAN	6 x RJ-45		4 x RJ-45		6 x RJ-45		2 x RJ-45	
	Serial Port	8 x DB9 (RS232/422/485 with automatic flow control)		8 x DB9 (RS232/422/485 with automatic flow control)		2 x DB9 (RS232/422/485 with automatic flow control)		2 x DB9 (RS232/422/485 with automatic flow control)	
	Audio	1 x Speaker out with 8W amplifier, 1 x Mic-in							
	Digital I/O	1 x DB25 (12 DI and 12 DO)		1 x DB25 (12 DI and 12 DO)		-		-	
Expansion Slot	Mini PCIe / M.2	1 x Mini PCIe & SIM slot		1 x Mini PCIe & SIM slot		1 x Mini PCIe & SIM slot		1 x Mini PCIe & SIM slot; 2 x Mini PCIe or 2 x M.2 2280 for AI Acceleration Module	
	PCI/PCIe	-		1 x PCI & 1 x PCIe x 8 slot or 2 x PCI slot		-		-	
	MXM slot	-		-		1 x MXM slot		-	
Power	Input Voltage	9~36 V_{DC}							
Watchdog Timer	Output	System reset							
	Interval	Programmable 1~255 sec/min							
Environment	Operating Temperature	Industry SSD: max to -25 ~ 60 °C		Industry SSD: max to -25 ~ 60 °C		-25 ~ 40 °C (with Industry SSD) with 0.7m/s air flow		-25 ~ 50 °C (with Industry SSD) with 0.7m/s air flow	
	Storage Temperature	-40~85° C							
Mechanical Features	Dimension (W x H x D)	210 x 118 x 240 mm (8.27" x 4.65" x 9.45")		210 x 122 x 240 mm (8.27" x 4.8" x 9.45")		210 x 120 x 240 mm (8.27" x 4.72" x 9.45")		210 x 78 x 240 mm (8.27" x 3.07" x 9.45")	
	Install	Wall mount bracket							
Certification	EMC	CE/FCC, CCC, BSMI							
	Safety	UL, CCC, BSMI							
OS	Windows	Windows 7 & 10 for Skylake; Windows 10 for Kabylake							
	Linux	Ubuntu & Fedora							

Signaling and FEP Controllers

Model Name		ITA-2111	ITA-2211	ITA-2231
Processor System	CPU	Intel® Atom™ E3845	Intel® Atom™ E3845	Intel® Core™ i7-6822EQ
	Processor Base Frenquency	1.91 GHz	1.91 GHz	2.0 GHz
	Cache	2 MB	2 MB	8 MB
	Core Number	4	4	4
	TDP	10W	10W	25W
	Chipset	-	-	QM170
	BIOS	AMI® SPI 64 Mb	AMI® SPI 64 Mb	AMI® SPI 128 Mb
Memory	Technology	Due channel DDR3 1333	Due channel DDR3 1333	Dual-channel DDR4 2133
	Max. Capacity	Onboard 4 GB (up to 8 GB with VLP SO-DIMM)	Onboard 4 GB (up to 8 GB with SO-DIMM)	Onboard 16 GB (Up to 32 GB with SO-DIMM)
	Socket	1 x 204 pin SO-DIMM	1 x 204 pin SO-DIMM	1 x 204 pin SO-DIMM
Graphics	Chipset	Intel® HD Graphics for Intel Atom® Processor Z3700 Series	Intel® HD Graphics for Intel Atom® Processor Z3700 Series	Intel® HD Graphics 530
	VRAM	Shared system memory up to 256 MB SDRAM	Shared system memory up to 256 MB SDRAM	Shared system memory up to 512 MB SDRAM
	Display ports	1 x VGA and 1 x DVI-D Single channel maximum: 1920 x 1080 @ 60 Hz Dual channel maximum: 1920 x 1080 @ 60 Hz	1 x VGA and 1 x DVI-D Single channel maximum: 1920 x 1080 @ 60 Hz Dual channel maximum: 1920 x 1080 @ 60 Hz	1 x DVI-I and 1 x DVI-D Single channel maximum: 1920 x 1080 @ 60 Hz Dual channel maximum: 1920 x 1080 @ 60 Hz
Ethernet	Interface	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	4 x Intel® I210IT	2 x Intel® I210IT	1 x Intel® I219IT, 1 x Intel® I210IT
	Connector	4 x RJ-45	2 x RJ-45	2 x RJ-45
Storage	SSD	1 x mSATA (optional with SATA2)	1 x mSATA (optional with SATA2)	1 x M.2 (with SATA interface)
	HDD	1 x 3.5" or 2 x 2.5" HDD bay	1 x 3.5" or 2 x 2.5" HDD bay	1 x 3.5'' or 2 x 2.5'' HDD bay
I/O Interface	VGA	1	1	-
	DVI-I	-	-	1
	DVI-D	1	1	1
	LAN	4	2	2
	USB	6 x USB 2.0, 1 x USB 3.0	6 x USB 2.0, 1 x USB 3.0	4 x USB 3.0, 3 x USB 2.0
	Serial	2 x DB9 (RS-232/422/485) and 8 x RS-232/422/485 with 2 x 20-pin terminal block	2 x DB9 (RS-232/422/485)	2 x DB9 (RS-232/422/485) with 2.5KV Isolation
	CAN	2	-	-
	PS/2	1	1	1
	Audio	1 x Speaker-out with 2 x 4W amplifier, 1 x Mic-in	1 x Speaker-out with 2 x 4W amplifier, 1 x Mic-in	1 x Speaker-out with 2 x4W Amp, 1 x Mic-in
Expansion Slots	ITA-EM	-	3	3
	PCI104	1	1	1
	Mini PCIe	1	1	1
Power module		Single Power Module	Single Power Module / Dual Power Module	Single Power Module / Dual Power Module
	Input Range	100~240 V_{AC} / 110 V_{DC}	100~240 V_{AC} / 110 V_{DC} / Dual 100~240 V_{AC} / 110 V_{DC}	100~240 V_{AC} / 110 V_{DC} / Dual 100~240 V_{AC} / 110 V_{DC}
	Connector	1 x 3pin 5.08mm Terminal Block	1 x 3pin 5.08mm Terminal Block / 2 x 3pin 5.08mm Terminal Block	1 x 3pin 5.08mm Terminal Block / 2 x 3pin 5.08mm Terminal Block
	Wattage (60°C)	110W	110W (Load Balance)	110W (Load Balance)
Watchdog Timer	Output	System reset	System reset	System Reset
	Interval	Programmable 1~255 sec/min	Programmable 1~255 sec/min	Programmable 1~255 sec/min
Environment	Temperature	Operating (with SSD): -25 ~ 60° C Operating (with HDD): 0 ~ 40 °C Non-Operating: -40~85° C	Operating (with SSD): -25 ~ 60° C Operating (with HDD): 0 ~ 40 °C Non-Operating: -40~85° C	Operating (with SSD): -25 ~ 60° C Operating (with HDD): 0 ~ 40 °C Non-Operating: -40~85° C
Physical Characteristics	Dimensions (W x H x D)	426 x 44.4 x 326.65 mm (16.77" x 1.75" x 12.86")/ 482.6 x 44.4 x 350.35 mm (19" x 1.75" x 13.8") with mounting kits	427 x 88 x 325 mm (16.81" x 3.46" x 12.79")/ 482.6 x 88 x 344.77 mm (19" x 3.46" x 13.57") with mounting kits	427 x 88 x 325 mm (16.81" x 3.46" x 12.79")/ 482.6 x 88 x 344.77 mm (19" x 3.46" x 13.57") with mounting kits
Certification	EMC	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A
	Safety	UL,CB,CCC	UL,CB,CCC	UL,CB,CCC
	Compliance	EN 50121-4, Level 4 EMS	EN 50121-4, Level 4 EMS	EN 50121-4, Level 4 EMS

Application-oriented Rolling Stock Controllers






Model Name		☞ ITA-5231 ☞ ITA-5231S ☞ ITA-5231W	☞ ITA-5831	☞ ARS-2610/ ARS-2610K	☞ ARS-2620/ ARS-2620K	☞ ITA-5512	☞ ARS-2110
Processor System	CPU	Intel® 6th Gen. Core™ i7/i5/Celeron	Intel® 6th Gen. Core™ i7/i5/Celeron	Intel® i7-6600U/ Intel® i7-7600U	Intel® i7-6600U/ Intel® i7-7600U	Intel® Atom™ x7-E3950	Intel® Atom™ E3845
	CPU TDP	25W	25W	15W	15W	12W	10W
	Frequency	Up to 2.8/2.7/ 1.6 GHz	Up to 2.8/2.7/1.6 GHz	Up to 3.4/3.9 GHz	Up to 3.4/3.9 GHz	Up to 2.0 GHz	Up to 1.9 GHz
	Core Number	4/4/2	4/4/2	2/2	2/2	4	4
	Cache	8/6/2 MB	8/6/2 MB	4 MB	4 MB	2 MB	2 MB
	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI EFI 64Mbit
	Chipset	Intel® QM170	Intel® QM170	-	-	-	-
Memory	Technology	Dual channel DDR4 2133	Dual channel DDR4 2133	Single channel DDR4 2133	Single channel DDR4 2133	Single channel DDR3L 1600	Single channel DDR3L 1333
	Capacity	Up to 32 GB	Up to 32 GB	Up to 16 GB	Up to 16 GB	Up to 8 GB	Up to 8 GB
	Onboard Memory	8 GB or 16 GB	8 GB or 16 GB	-	-	4 GB default	-
	SO-DIMM Slot	1	1	1	1	-	1 (4 GB default)
Display	Graphic Memory	Shared with system memory up to 512 MB	Shared with system memory up to 512 MB	Shared with system memory	Shared with system memory	Shared with system memory up to 256 MB	Shared with system memory up to 256 MB
	Multiple Display	Dual	Dual	Dual	Dual	Single	Dual
Ethernet	Controller	1 x Intel® i219LM and 2 x Intel® i210-IT	1 x Intel® i219LM and 2 x Intel® i210-IT	2 x Intel® i210-IT	6 x Intel® i210-IT	2 x Intel® i210-IT	2 x Intel® i210
	Speed	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Connector	3 x M12 X-coded	3 x M12 X-coded	2 x M12 X-coded	6 x M12 X-coded	2 x M12 X-coded	2 x M12 A-coded
	PoE port / Max. power budget	-	-	-	4 / Up to 60 Watts	-	-
Storage	Onboard Slot	1 x mSATA	1 x mSATA	1 x mSATA	1 x mSATA	1 x mSATA	1 x mSATA
	Easy Swap Module	Max. 4 x 2.5" SSD (ITA-5231) or 4 x 2.5" HDD (ITA-5231S) or 1 x 2.5" SSD (ITA-5231W)	Max. 3 x 2.5" SSD or 2 x 2.5" HDD by by ITA-EM expansion	Max. 2 x 2.5" SSD	Max. 2 x 2.5" SSD	Max. 1 x 2.5" SSD	Max. 2 x 2.5" SSD
Expansion Interface	Mini PCIe	3 (ITA-5231/ ITA-5231S), 2 (ITA-5231W)	3	3	3	1	3
	M.2	4 (ITA-5231W)	-	-	-	1	-
	SIM Slots	2 (ITA-5231/ ITA-5231S), 8 (ITA-5231W with dual-SIM support)	2	2	2	1	1
	ITA-EM / AIO-EM	4 (ITA-5231), 1 (ITA-5231S), - (ITA-5231W)	2	2	2	-	2
I/O	Display	1 x DVI-I	1 x DVI-I	2 x DVI-D	2 x DVI-D	1 x VGA	1 x VGA + 1 x DVI-D
	Audio	1 x Speaker-out with 2 x 4W amplifier, 1 x Mic-in	1 x Speaker-out with 2 x 4W amplifier, 1 x Mic-in	Line-out, Mic-in, Line-in	Line-out, Mic-in, Line-in	-	Line-out, Mic-in, Line-in
	Ethernet	3	3	2	6	2	2
	USB3.0	2 (Type A)	2 (Type A)	2 (Type A)	2 (Type A)	-	1 (Type A)
	USB2.0	1 x USB2.0 (M12 A-coded)	1 x USB2.0 (M12 A-coded)	1 x USB2.0 (M12 A-coded)	1 x USB2.0 (M12 A-coded)	2 x USB2.0 (M12 A-coded)	1 x USB2.0 (M12 A-coded)
	COM	2	2	2	2	1	2
	Digital I/O	4 x DI & 4 x DO	4 x DI & 4 x DO	-	4 x DI & 4 x DO	-	-
Power	Input Range	24/48/72/110 V_{DC} (selectable) (M12 S-coded)	24/48/72/110 V_{DC} (selectable) (M12 S-coded)	24/48/72/110 V_{DC} (selectable) (M12 A-coded)	24/48/72/110 V_{DC} (selectable) (M12 A-coded)	24/48/72/110 V_{DC} (selectable) (M12 S-coded)	24/48/72/110 V_{DC} (selectable) (M12 A-coded)
Physical Characteristics	Dimensions (W x H x D)	427 x 88 x 200 mm (19.0" x 3.46" x 7.87")	220 x 88 x 200 mm (8.66" x 3.46" x 7.87")	313 x 103 x 180 mm (12.3" x 4.2" x 7.1")	313 x 127 x 180 mm (12.3" x 5" x 7.1")	215 x 100 x 80 mm (8.5" x 3.94" x 3.15")	267 x 87.5 x 175 mm (10.5" x 3.44" x 6.89")
Environment	Operating Temperature	EN 50155 TX -40 ~ 70 °C (With SSD)	EN 50155 OT4 -40 ~ 70 °C (With SSD)	EN 50155 TX -40 ~ 70 °C (With SSD)	EN 50155 TX -40 ~ 70 °C (With SSD)	EN 50155 OT4 -40 ~ 70 °C (With SSD)	EN 50155 TX -40 ~ 70 °C (With SSD)
	Ingress Protection	IP-40	IP-40	IP-40	IP-40	IP-65	IP-40
Certification	EMC	CE, EMC, CCC	CE, EMC, CCC	CE, FCC	CE, FCC	CE, EMC, CCC	CE, FCC
	Safety Certifications	UL, CB	UL, CB	UL, CB	UL, CB	UL, CB	UL, CB
	Other	EN 50155, EN 50121-3-2, EN 50121-4, EN 45545	EN 50155, EN 50121-3-2, EN 50121-4, EN 45545	EN 50155, EN 50121-3-2, EN 50121-4, EN 45545	EN 50155, EN 50121-3-2, EN 50121-4, EN 45545	EN 50155, EN 50121-3-2, EN 50121-4, EN 45545	EN 50155, EN 50121-3-2, EN 50121-4, EN 45545

Passenger Information Display Systems

Model Name		☞ ARS-P3800	☞ ARS-P2800/ARS-P2800F	☞ ITA-7220/ITA-7220F
Computer System	CPU	AMD® Embedded G-Series GX-217GA dual-core (1.65 GHz)	Intel® Celeron® J1900 quad-core (2.00 GHz)	Intel® Celeron® J1900 quad-core (2.00 GHz)
	Memory	DDR3 1600MHz 204-pin SO-DIMM (up to 8 GB)	DDR3L 1333MHz 204-pin SO-DIMM (up to 8 GB)	DDR3L 1333MHz 204-pin SO-DIMM (up to 8 GB)
Storage	mSATA	1 x mSATA SSD (64 GB default)	1 x mSATA SSD (64 GB default)	1 x mSATA SSD (64 GB default)
Graphics	Chipset	Radeon™ HD8280E, max. 450 MHz	Intel® HD Graphics, max. 688 MHz	Intel® HD Graphics, max. 688 MHz
Display	Display Type	38" TFT LCD panel	28" TFT LCD panel	22" TFT LCD panel
	Resolution	max. 1920 x 540	max. 1920 x 357	max. 1920 x 1080
	Aspect ratio	16:4.5	16:3	16:9
	Brightness	800 nits	1000 nits	400 nits
	Contrast Ratio	5000:1	6500:1	1000:1
I/O	Ethernet	1 x 10/100/1000 Mbps (M12 A-coded)	1 x 10/100/1000 Mbps (M12 X-coded)/ 2 x 10/100/1000 Mbps (M12 X-coded)	1 x 10/100/1000 Mbps (M12 X-coded)/ 2 x 10/100/1000 Mbps (M12 X-coded)
	USB	1 x USB 2.0 (M12 A-coded), 1 x USB 2.0 (Type A)	1 x USB 2.0 (M12 A-coded), 1 x USB 2.0 (Type A)	1 x USB 2.0 (M12 A-coded), 1 x USB 2.0 (Type A)
	Video Output	1 x HDMI	1 x DVI-D	1 x DVI-D
Software	Operating System	Linux	Linux	Linux
Power	Input Voltage	110 V_{DC} (M12 A-coded)	24/48/72/110 V_{DC} (selectable) (M12 A-coded)	24/48/72/110 V_{DC} (selectable) (M12 A-coded)
Enviornment	Operating Temperature	EN 50155 T1: -25 ~ +55 °C	EN 50155 T1: -25 ~ +55 °C	EN 50155 T1: -25 ~ +55 °C
	Vibration, Shock	IEC 61373	IEC 61373	IEC 61373
	Ingress Protection	IP-54	IP-65	IP-40
Physical Characteristics	Dimensions (W x H x D)	1065 x 342 x 63 mm (42.0" x 13.5" x 2.5")	814 x 178 x 56 mm (32.0" x 7.0" x 2.2")	575 x 299 x 56 mm (23" x 12" x 2.2")
	Weight	11 kg (24.3 lb)	8.3 kg (18.3 lb)	7 kg (15.4 lb) / 6.5 kg (14.3 lb)
Certification	EMC	EN 50121-3-2, CE/FCC Class A	EN 50121-3-2, CE/FCC Class A	EN 50121-3-2, CE/FCC Class A
	Safety	UL	UL	UL
	Railway	EN 50155 (EN 45545 compliant)	EN 50155 (EN 45545 compliant)	EN 50155 (EN 45545 compliant)

Driver Machine Interfaces

Model Name		☞ ITA-8100	☞ ITA-8100B	☞ ITA-8120
Computer System	CPU	Intel® Atom™ x7-E3950 quad-core (Up to 2.00 GHz)	Intel® Atom™ x7-E3950 quad-core (Up to 2.00 GHz)	Intel® Atom™ x7-E3950 quad-core (Up to 2.00 GHz)
	Memory	1 x DDR3L SO-DIMM (Default 4 GB, up to 8 GB)	1 x DDR3L SO-DIMM (Default 4 GB, up to 8 GB)	1 x DDR3L SO-DIMM (Default 4 GB, up to 8 GB)
Storage	M.2	1 x M.2 2242 SSD (Default 64 GB)	1 x M.2 2242 SSD (Default 64 GB)	1 x M.2 2242 SSD (Default 64 GB)
Graphics	Chipset	Intel® HD Graphics (Max. Frequency 650 MHz)	Intel® HD Graphics (Max. Frequency 650 MHz)	Intel® HD Graphics (Max. Frequency 650 MHz)
Display	Display Type	10.4" TFT LCD panel (Max. resolution 1024 x 768 XGA)	10.4" TFT LCD panel (Max. resolution 1024 x 768 XGA)	12.1" TFT LCD panel (Max. resolution 1024 x 768 XGA)
	Brightness	500 nits	1300 nits	600 nits
	Contrast Ratio	1000:1	700:1	1000:1
Touch Panel and Function Keys	Touch Type	Projected capacitive touchscreen (Multi-touch)	Projected capacitive touchscreen (Multi-touch)	Projected capacitive touchscreen (Multi-touch)
	Brightness Adjustment	Auto (built-in light sensor)	Auto (built-in light sensor)	Auto (built-in light sensor)
	Function Keys	32 keypads (UIC 612-01 Compliant)	32 keypads (UIC 612-01 Compliant)	32 keypads (UIC 612-01 Compliant)
I/O Interface	LAN	2 x 10/100/1000 Mbps (M12 X-coded)	2 x 10/100/1000 Mbps (M12 X-coded)	2 x 10/100/1000 Mbps (M12 X-coded)
	Serial Port	2 x RS-422/485 (M12 A-coded)	2 x RS-422/485 (M12 A-coded)	2 x RS-422/485 (M12 A-coded)
	USB	1 x USB 2.0 (M12 A-coded)	1 x USB 2.0 (M12 A-coded)	1 x USB 2.0 (M12 A-coded)
Digital I/O	Input/Output	5 Inputs / 1 Output, isolated (M12 A-coded)	5 Inputs / 1 Output, isolated (M12 A-coded)	5 Inputs / 1 Output, isolated (M12 A-coded)
Software	Operating System	Windows 10, Linux	Windows 10, Linux	Windows 10, Linux
Power	Input Voltage	24/48/72/110 V_{DC} (selectable) (M12 A-coded)	24/48/72/110 V_{DC} (selectable) (M12 A-coded)	24/48/72/110 V_{DC} (selectable) (M12 A-coded)
Environment	Operating Temperature	EN 50155 OT4 -40 ~ 70 °C (85 °C 10 minutes)	EN 50155 OT4 -40 ~ 70 °C (85 °C 10 minutes)	EN 50155 OT4 -40 ~ 70 °C (85 °C 10 minutes)
	Shock and Vibration	IEC 61373	IEC 61373	IEC 61373
	Ingress Protection	IP65-rated front panel	IP65-rated front panel	IP65-rated front panel
Physical Characteristics	Dimensions (W x H x D)	310 x 214 x 70 mm (12.2" x 8.4" x 2.8")	310 x 214 x 70 mm (12.2" x 8.4" x 2.8")	350 x 260 x 71.5 mm (13.8" x 10.2" x 2.8")
	Weight	4.5 kg	4.5 kg	5 kg
Certification	Railway Related	EN 50155:2017 (inc. EN 45545) EN 50121-3-2, EN 50121-4, IEC 60571	EN 50155:2017 (inc. EN 45545) EN 50121-3-2, EN 50121-4, IEC 60571	EN 50155:2017 (inc. EN 45545) EN 50121-3-2, EN 50121-4, IEC 60571
	EMC and Safety	CE/FCC Class A, UL 62368	CE/FCC Class A, UL 62368	CE/FCC Class A, UL 62368

14 Utility and Enery Solutions

Utility and Energy IoT Solutions

Introduction

The successful management of power and energy applications is becoming increasingly critical as new energy sources, distributed across a much wider area than fossil fuels, become increasingly important. The informatization, intellectualization, and energy development of these new energy sources will change the traditional model, from a single communication model without response, to an alarm-to-intercommunication unified model. Advantech, as a leading manufacturer of industrial PCs for power and energy applications, provides intelligent components, from smart meters, IEC-61850-3 certified industrial computers, intelligent wireless gateways, to SCADA software, substation automation system development, and energy management. Through a host of innovative products and solutions, Advantech has shown itself to be one of the key enablers of Industrial IoT and Industry 4.0.

Smart Substation Solutions

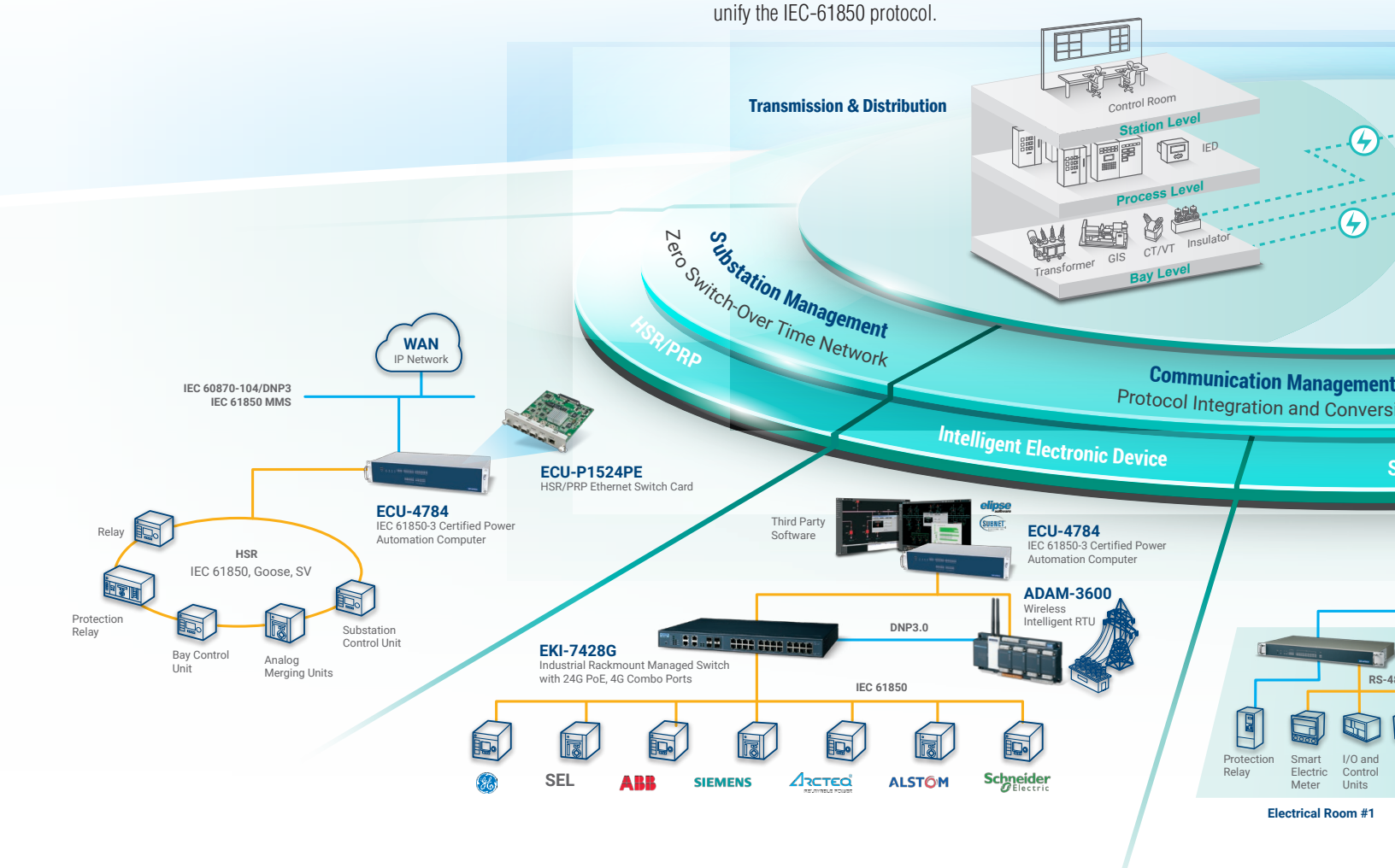
In smart substations, traditional primary devices including transforms, GIS, CT/VT, Thunder and other isolated switches, normally operate without precaution, monitoring unified communication protocols. Along with the development of modern smart substations, the IEC-61850 standard is latest trend in substation applications and primary device monitoring. To meet these requirements, Advantech provides IEC-61850 compliant computer platforms for data communication and transmission which keeps primary device operating normally.

SCADA applications

In smart substations, it's essential to be able to remotely monitor substation devices from a central management center. To achieve this, high performance computing platforms integrate HMI/DATA collection, data monitoring, environmental status, which help operators accurately evaluate their devices' status and take action.

Communication and data gateway with IEC 61850

Within a substation, various devices use a wide variety of protocols, such as IEC-60870-101/103/104, Modbus or other private rules. The status and information of these devices needs to be accurately monitored and collected through a gateway computer with a unified communication transition protocol. It's very important that transfer devices use various protocols to unify the IEC-61850 protocol.



Distributed Energy Monitoring in Renewable Energy

With the increasing construction of solar power plants, customers are finding it difficult to handle issues of the number of communication protocol requests, unstable communication networks on distributed farms and no high-efficiency or intelligent monitoring software. This means traditional solar power monitoring solutions can not satisfy modern fast developing solar operation requirements.

Advantech provides high-performance computing platforms, total data acquisition modules, communication protocol gateways, network communications, and cloud software solutions with multiple communication protocols and stable Ethernet or wireless network support, network switchboards and remote monitoring software.

Wireless communication on distributed solar power

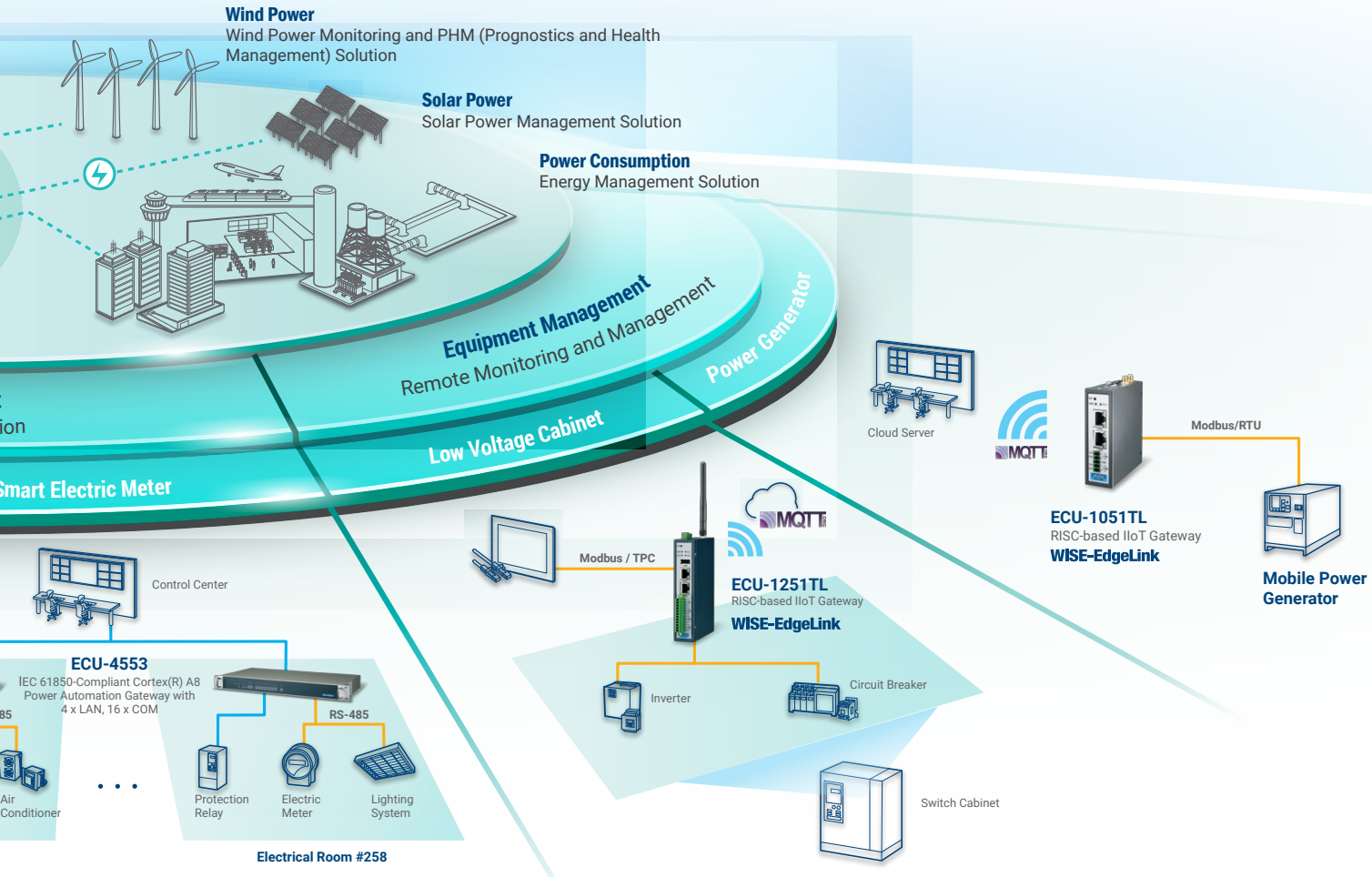
Distributed solar power farms are scattered over vast and remote areas, and establishing stable communication networks is not easy. To reduce wiring costs and maintain reliability, Advantech provides gateways capable of supporting 2G/3G/Wi-Fi/4G wireless for stable networks with data integrity.

Distributed Energy Monitoring in Energy Consumption

In order to reduce production costs and increase product profitability, manufacturing factories require integrated monitoring management and optimization measures to manage their high energy-consuming facilities. Advantech not only provides practical and easy-to-implement energy management solutions, but also has a full range of product portfolios, including smart meters, data acquisition modules, and control hosts, as well as and back-end management platforms to offer complete solutions for enterprises to achieve energy efficiency.

High energy-consuming equipment monitoring applications

Since harmonics can have a significant impact on electrical distribution systems and the critical facilities they need, Advantech's energy management solution used equipment failure diagnosis and prevention mechanisms to provide analytical information through monitoring harmonic currents generated by non-linear electronic loads, so as to improve production efficiency and reduce maintenance and energy costs.



Communication Central Platforms

x86-based Industrial Automation Computers

NEW NEW NEW NEW





Model Name	ECU-4685	ECU-4676	ECU-4576	ECU-4784 Xeon	☞ ECU-4784
Certification	IEC 61850-3/IEEE 1613 China Electricity Certificate IV level	IEC 61850-3 / IEEE 1613 Compliant China Electricity Certificate IV level	IEC 61850-3/IEEE 1613 China Electricity Certificate IV level	IEC 61850-3/IEEE 1613 China Electricity Certificate IV level	IEC 61850-3/IEEE 1613 China Electricity Certificate IV level
CPU	Intel Celeron 2980U 1.7GHz	Intel ATOM E3940 1.6GHz	Intel ATOM E3940 1.6GHz	Intel SkyLake Xeon E3-1505L Quad-core 2.0GHz	Intel Haswell Core i7 4650U 1.7GHz dual-core, i3 4010U 1.7GHz, Celeron 2980U 1.6GHz
RAM	4G DDR3L SDRAM	4G DDR3 SDRAM	2G DDR3 SDRAM	32G DDR4 SDRAM	8G DDR3L SDRAM 16G DDR3L SDRAM
Display	VGA	VGA	VGA	VGA/DVI	VGA/DVI
Serial Ports	8 x Isolated RS-232/422/485 (Terminal Block)	2 x isolated RS-232 1 x IRIG-B 16 x Isolated RS-232/485	2 x isolated RS-232 8 x isolated RS-232/485	2 x Isolated RS-232 (Standard) 8 x RS-232/422/485 (Terminal Block)	2 x Isolated RS-232 (Standard) 8 x RS-232/422/485 (Terminal Block)
Ethernet Ports	6 x 10/100/1000Base-T	8 x 10/100/1000 Base-T	8 x 10/100/1000 Base-T	8 x 10/100/1000Base-T	8 x 10/100/1000Base-T
USB Ports	6 (1 x internal)	5 (1 x internal)	5 (1 x internal)	6 (1 x internal)	6 (1 x internal)
Expansion	-	1 x PCIE	1 x PCIE	2 x PCI/PCIE	2 x PCI/PCIE
Onboard I/O	-	8 x isolated DI, 8 x isolated DO	-	-	-
Watchdog Timer	✓	✓	✓	-	✓
CompactFlash Slots	1 x Internal (mSATA)	1 x Internal (CF)	1 x Internal (CF)	1 x Internal (CFast)	1 x Internal (CFast)
2.5" HDD Expansion	2 x SATA	2 x SATA	2 x SATA	2 x SATA	2 x SATA
Operating Systems	WES7, Windows7, Windows 8, Windows Server 2012R2, Windows Server 2008R2(64bits), Windows Windows Embedded 8 64-bit	WES7, Windows7, Linux	WES7, Windows7, Linux	WES7, Windows7, Windows 8, Windows Server 2012R2, Windows Server 2008R2(64bits), Windows Embedded 8 (64bits)	WES7, Windows7, Windows 8, Windows Server 2012R2, Windows Server 2008R2(64bits), Windows Embedded 8 (64bits)
Mounting	2U Rackmount	2U Rackmount	1U Rackmount	-	2U Rackmount
Anti-Vibration	2 G w/mSATA, 1 G w/HDD	2 G w/CF, 1 G w/HDD	2 G w/CF, 1 G w/HDD	-	2 G w/CF, 1 G w/HDD
Anti-Shock	30 G w/mSATA, 20 G w/HDD	30 G w/CF, 20 G w/HDD	30 G w/CF, 20 G w/HDD	-	30 G w/CF, 20 G w/HDD
Operating Temperature	-20 ~ 70°C (-4 ~ 158°F)	-25 ~ 70°C (-13 ~ 158°F)	-20 ~ 70°C (-4 ~ 158°F)	-20 ~ 60°C with 50% CPU/ I/O loading, without 2D/3D -20 ~ 45°C with 100% CPU/ I/O loading	-20 ~ 70°C (-4 ~ 158°F)
Power Consumption Typical	22W	24W	24W	35W	22W (i7 dual-core) 24.2W (Celeron)
Power Requirements	Supports Redundant Power Input Power 1: 100 ~ 240 V_{AC} or 100 ~ 240 V_{DC} Power 2: 100 ~ 240 V_{AC} or 100 ~ 240 V_{DC}	Supports Redundant power input Power 1: 100 ~ 240 V_{AC} or 100 ~ 240 V_{DC} Power 2: 100 ~ 240 V_{AC} or 100 ~ 240 V_{DC}	Supports Redundant power input Power 1: 100 ~ 240 V_{AC} or 100 ~ 240 V_{DC} Power 2: 100 ~ 240 V_{AC} or 100 ~ 240 V_{DC}	Supports Redundant power input Power 1: 100 ~ 240 V_{AC} or 100 ~ 240 V_{DC} Power 2: 100 ~ 240 V_{AC} or 100 ~ 240 V_{DC}	Supports Redundant Power Input Power 1: 100 ~ 240 V_{AC} or 100 ~ 240 V_{DC} Power 2: 100 ~ 240 V_{AC} or 100 ~ 240 V_{DC}
Dimensions (W x D x H)	440 x 280 x 88 mm	440 x 220 x 88 mm (17.3" x 8.6" x 3.4")	440 x 272 x 44 mm (17.3" x 8.6" x 3.4")	440 x 280 x 88 mm	440 x 280 x 88 mm
Weight	5.5 kg	~ 6.0 kg	4.6 kg	~ 6.0kg	~ 6.0 kg
Ordering Information	ECU-4685-LC24SAE	ECU-4676-A53SBE ECU-4676-LBA53SBE	ECU-4576-A53SAE	ECU-4784-E56SAE ECU-4784-E57SAE	ECU-4784-D55SAE ECU-4784-D56SBE ECU-4784-E15SAE ECU-4784-C25SAE

Edge Intelligent IoT Gateways

RISC-based Industrial Communication Gateways

Module Name	ECU-1251	ECU-1152	ECU-4553
Certification	CE/FCC	CE/FCC	CE/FCC/CCC
CPU	TI Cortex A8 800MHz	TI Cortex A8 800MHz	TI Cortex A8 800MHz
RAM	DDR3L 256MB	DDR3L 512MB	DDR3L 1GB
Serial Ports	4 x Isolated RS-232/485	6 x isolated RS-232/485	16 x isolation RS-232/485
Ethernet Ports	2 x 10/100 Base-T	2 x 10/100 Base-T	4 x 10/100 Base-T
CAN	-	-	2 x CAN 2.0B
Display	-	-	VGA
USB Ports	1	1	1
IRIG-B	-	-	✓
Storage	2 x SD (Micro-SD)	2 x SD (Micro-SD)	2 x SD (Micro-SD)
Watch Timer	✓	✓	✓
Power Requirements	10 ~ 30 V_{DC}	10 ~ 30 V_{DC}	100 ~ 240 V_{AC} or 100 ~ 240 V_{DC}
Operating System	RT-Linux 3.12	RT-Linux 3.12	RT-Linux 3.12
Mounting	Wall-mount/ DIN-rail	Wall-mount/ DIN-rail	1U Rack-mount
Anti-vibration	2G w/Micro-SD	2G w/Micro-SD	2G w/Micro-SD
Anti-shock	10G w/Micro-SD	10G w/Micro-SD	10G w/Micro-SD
Operating Temperature	-40 ~ 70°C	-40 ~ 70°C	-40 ~ 70°C
Typical Power Consumption	2.4W	2.4W	6.6W
Dimensions	140 x 96.5 x 30 mm	170 x 110 x 32.2 mm	440 x 220 x 44 mm
Weight	1.5 kg	1.5 kg	4.5 kg

Memo

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