



Product Catalog 2019 - 2020

# Networks & Communications

Telecom, Enterprise, Industrial & Video Infrastructure

- Carrier-grade & High-performance Servers & Blade Servers
- x86 Network Appliances
- PCI Express Adapters
- ATCA Blades & Integrated Systems
- CPCI Boards & Enclosures
- VPX Blades
- Video Processing Platforms

**ADVANTECH**

*Enabling an Intelligent Planet*

[www.advantech.com](http://www.advantech.com)



# Table of Contents

## ■ Overview

About Advantech Networks & Communications Group	0-1
Your Network Platform Partner	0-2
Ecosystem Partnerships	0-3
Remote Evaluation Services	0-4
Premium Global Services	0-5

## ■ Solutions

Edge Computing	0-7
NFV Infrastructure	0-8
uCPE & SD-WAN	0-9
Network Security	0-10
Core Network	0-11
Mission Critical	0-12
Video Infrastructure	0-13

## ■ Products

Packetarium XL Blade Servers	1-1
High Performance Servers	2-1
Network Appliances	3-1
PCI Express Adapters	4-1
Network Switches	5-1
ATCA Blades & Integrated Systems	6-1
CPCI Boards & Enclosures	7-1
VPX Blades	8-1
Video Processing & IP Media Platforms	9-1

# About Advantech Networks & Communications Group



Founded in 1983, Advantech is a leader in providing trusted innovative embedded and automation products and solutions. Advantech Networks and Communications Group has been providing mission critical hardware to the world's leading telecom and networking equipment manufacturers for over 15 years. Whether it is wired or wireless, virtual or physical nodes at the core or the edge of the network, Advantech's products are embedded in the telecommunications infrastructure that our world depends upon.

Quick Facts	
Headquarters	Taipei, Taiwan
Established	1983
Publicly listed	TPE: 2395
Employees	8,000
Revenue (2018)	USD \$1.6 Billion
Worldwide support	95 cities, 26 countries

Our customers can choose from the broadest choice of communications infrastructure platforms in the industry, scaling from one to hundreds of Intel® processor cores, consolidating packet, application, and control processing onto a single platform architecture and one code base. Our technology leadership stems from field-proven design expertise on Intel® architecture combined with high performance switching, hardware acceleration, and innovative offload techniques.

We team up locally with customers and partners to evaluate project requirements, share application knowledge and build optimized solutions together. Our standard commercial off-the-shelf platforms coupled with comprehensive pre-validated operating system and application support and remote evaluation services provide the foundations for rapid and smooth deployments. In addition, Advantech's customization capabilities allow customers to choose the precise level of differentiation, cost optimization or enhancement they require. This can range from small hardware or mechanical changes, to full-custom design or complete system branding, bundling and logistics services.

From Research & Development and support facilities in the USA, Europe and Asia, our customer-facing project teams link seamlessly into our worldwide network of nearly 8,000 employees. We manufacture to stringent quality procedures in our own ISO-9001 certified factories in Taiwan and China and our global integration and logistics centers operate on all continents to provide unified and localized services for optimum supply chain efficiency.

In this Networks & Communications brochure, we bring together the core competencies of our Telecom, Enterprise, Industrial, and Video Platforms. It also mirrors the changing market requirements we are observing, where computing moves to the network edge. The products represented here provide a wide range of platform choices for designers of the next wave of communications platforms as well as those in broader markets where high performance, mission critical attributes are important.

# Your Network Platform Partner

## Enabling Industry Leading Solutions

Companies that provide market leading solutions have learned that working with trusted partners that help them create value and reduce risks is one of the most critical contributors to continued success. Good partners provide expertise, access to technology and time-to-market benefits that every innovator can benefit from. Also crucial are development and manufacturing strategies that encourage innovation, delivering flexible and scalable platforms able to run next-generation services anywhere in the network without sacrificing its mission critical nature. Our broad range of products combined with our customization capabilities, industry expertise and global services allow us to firmly accompany customers through their network transformation process towards the New IP Infrastructure.

### Easily Adapt to Changing Business Requirements

Scalability is considered one of the most important criteria when deploying network solutions today. Our unrivaled range of networking platforms based on Intel® Architecture allows service providers to select the most effective solution that meets today's performance needs and easily adapt as requirements change. For the New IP Infrastructure, our NFV Elasticity initiative extends your reach to the edge by supporting scalable carrier-grade platforms that can run VNFs anywhere in the network over a common execution environment.



2 Intel® Cores

### Integration, Customization & Design Services

Starting from commercial-off-the-shelf platforms, we offer personalized products through a wide range of specialized services. All of our platforms are application-ready with branding options available including chassis color, logo and front bezel design. Customers can cost optimize our modular appliances and servers to reach their sweet spot of price, performance and functionality. In addition, solution providers can leverage our Customized COTS framework for semi-custom electronic or mechanical design as well as BIOS firmware strings or IDs. When the migration of proprietary IP to a new platform is essential, our Customized COTS framework helps bridge the gap between ODM and standard product to speed time to market.



### Added Value Beyond just Hardware Designs

Advantech's solutions are more than just hardware designs as we go much further than an ordinary hardware vendor. We ensure that our systems not only have outstanding stability secured by a world class design quality assurance process, but are enhanced by building in features which improve availability, serviceability and usability. Advanced platform features include redundant images and fail safe updates using a single industry standard protocol (HPM.1) which are built into Advantech's dedicated R&D Carrier Grade BIOS and IPMI firmware.

Remote Monitoring & Control	Remote Update	Redundant Firmware	Failsafe Update	Chassis Intrusion Detection	Digital Inventory	Service-friendly Design	Advanced LAN Bypass	Advanced Hot Plug

Additional features such as NEBS certification, operation up to 55°C ambient, resilience to single PSU and fan failures, support for DC power supplies, equipment grounding or front air filters are the foundation of platforms tailored to deliver five 9's availability. All these system and platform features have a moderate impact on cost as they have been carefully designed by Advantech's in-house engineering teams and are kept consistent across the product line.

# Ecosystem Partnerships

## Choosing the Right Partners



To ensure functionality of business critical solutions, Advantech has formed an Ecosystem Alliance Program that brings together industry leaders and innovators to foster technology teamwork, interoperability testing and solution development. Proven product interoperability means Communication Service Providers and OEMs can readily integrate tested combinations of hardware and software components with total confidence. In a fast paced market this allows them to evaluate and deliver innovative solutions more rapidly and respond more effectively to emerging customer needs.

Participating ecosystem partners collaborate to meet customers' application-specific needs by facilitating the transformation of leading-edge embedded technologies into readily available business solutions. Our partner ecosystem is made up of leaders in each of their respective areas of expertise. Together, these companies provide all of the essential components for developing, verifying, integrating and building high performance products.

### Transforming the Virtual Provider Edge



<p><b>Intel® Select Solutions</b> for NFVI to build Next Generation Central Offices</p>	<p>MANO-deployed <b>virtual Router</b> chosen by Italian CommSPELO</p>	<p>Flexible <b>virtual BNG</b> that enables "pay as you grow" models</p>	<p>Accelerating <b>virtual BRAS</b> data plane throughput</p>	<p><b>Virtual EPC</b> solutions with SKY servers</p>
---	--	--	---	--

### Choosing the Right uCPE Partners

	Ensemble Suite on Advantech Whitebox uCPE		Full service Integration for Universal CPE Deployment
	White box uCPE with Carrier-Class Capabilities		NFV Integration for Universal CPE Deployment
	Lightweight to Hi-End uCPE and SD-WAN Solutions		Intel® Select Solutions for uCPE Deployment
	Open uCPE Portfolio for SMB Segment		Remote Evaluation of Intel® Select Solutions for uCPE in Advanced Technology Labs
	NFV-Based Solution for SD-WAN and SD-Security		
	Remote Evaluation Portal for White-box uCPE Testing	<p>In addition, Advantech works with Intel® on Intel® Select Solutions for uCPE. Find our verified configurations at <a href="http://www.advantech.com/nc/spotlight/Intel-uCPE">www.advantech.com/nc/spotlight/Intel-uCPE</a></p>	

### The New NFV Ecosystem

The arrival of game-changing technologies to the communications industry opens up new business models and no longer locks operators into fixed architectures. The new network infrastructure is flexible, modular and open. At Advantech, we understand that a strong co-working ecosystem is required to ensure that white boxes, middleware, operating systems, orchestration and network functions work together in this multi-vendor environment. We collaborate closely with hardware and software partners in different initiatives, from industry alliances such as Intel® Network Builders to Proof of Concepts, to ensure interoperability at the earliest possible stage in the development cycle and enable our customers with early access to the latest technology which accelerates their next generation product roll-outs.

### If you'd like to join Advantech's Ecosystem Partner Program:

Please email us at



[NCG@advantech.com](mailto:NCG@advantech.com)

or visit



[www.advantech.com/NC](http://www.advantech.com/NC)

for further details.

# Remote Evaluation Services

## Get on the Fast Track to Deployment

Advantech's Remote Evaluation Service (RES) is designed to help you get ahead of the curve and rapidly evaluate next-generation technology on a wide range of network platforms that can emulate different deployment scenarios at different network locations. We work together with leading silicon, middleware and Network Functions Virtualization (NFV) ecosystem partners so that you can:



Early evaluate and benchmark latest hardware and software technologies



Perform functional and interoperability testing



Get an early start on development while saving resources, time and money

RES puts virtual control of your own test lab at your finger-tips. You no longer need to incur the costs of shipping heavy freight around the world, purchasing expensive test rigs or breaking your back installing equipment in a lab which you probably wouldn't sit in anyway. The systems we propose are pre-integrated, application-ready platforms embedded in a qualified, dedicated, and secure network test environment. In addition, our NFV Test-Drive Portals build a full-stack NFV Infrastructure (NFVI) platform where users can remotely evaluate Virtual Network Functions (VNFs) performance or interoperability for a particular NFVI configuration:



**Bare Metal Evaluation:** check out the performance gains achievable on next generation Intel® CPUs and NICs or see how your software scales across multiple blades in a Packetarium XLc server. You can measure the acceleration which DPDK and Intel® QuickAssist offload can bring or get a grasp of terabit throughput on Advantech ATCA.



**NFV Test-Drive Portals:** lower risks and reduce time-to-market of NFV solutions by remotely validating VNFs and use cases on a wide range of Advantech's platforms powered by software from a rich NFV ecosystem. You can early detect and remove NFV performance bottlenecks and incompatibilities or simply compare throughput of data plane intensive VNFs running on an accelerated vs non-accelerated environment.

## Get NFV Solutions to Market Faster and at Lower Risk

The NFVI consists of several building blocks from different vendors that need to work together to form the consistent network-wide virtual infrastructure that runs the VNFs. The tight relationship between all NFV components makes collaboration a key element in NFV deployment success. RES provides a powerful tool to address NFV integration challenges and help eliminate NFV performance uncertainties by enabling collaboration beyond basic ecosystem partnership. End-users and partners can remotely test VNF performance and interoperability on an open NFVI and work collaboratively towards production-ready end-to-end solutions. RES also offers a powerful tool to support developers in their critical decision making process when designing high-performance, scalable, carrier-grade NFV software.



**Performance and scalability:** RES allows vendors and service providers to easily test how multi-threaded, multi-tenancy VNFs scale out across multiple network nodes with several instances running on different VMs, and optimize VM provisioning and mapping. The wide choice of white boxes, appliances and servers that can be deployed to implement the virtual edge makes RES a perfect tool to accelerate the selection process and choose the appropriate platform with the right price/performance point.



**Interoperability and integration:** RES helps simplify complex NFV-stack dependencies when testing VNF compliance with standard NFVI interfaces or the conformity of a particular NFVI configuration to guarantee VNF portability. Partners can tap into RES to reduce time and costs of multi-vendor certifications. The joint effort of certifying that particular NFV hardware or software products have been validated to work together is a common initiative that reduces NFV integration risks and streamlines end-user's purchasing process.

Visit our Live NFV Test-Drive Portals  
[www.go-res.com](http://www.go-res.com)

# Premium Global Services



Manufacturing



Logistics



Customer Support

*The foundation of our business is built on world-class manufacturing, quality and integration processes that enable our customers to deploy reliable business-critical solutions worldwide with total confidence.*

Deploying standards-based products that enable our customers to create industry leading solutions requires a full suite of high-quality products, advanced customization technology, an extensive ecosystem and a full complement of life-cycle services. Advantech's platforms, Customized COTS framework, Ecosystem Alliance Program, Remote Evaluation and Global Services meet these needs perfectly. We provide a comprehensive service package that integrates our key service models into a complete transaction process, from the manufacturing and system integration phase, global logistics and after-sales support. In order to create the maximum value for our customers, Advantech Global Services is the shortcut for transforming your projects into reality.

## Manufacturing Capabilities

Our world-class manufacturing centers in Taiwan and China both maintain precise quality control, and offer a full range of cost-effective, state-of-the-art production capabilities. To maximize the efficiency of operational procedures, 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. We pride ourselves on our:

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

## We Build It Exactly as You Imagine It

Advantech provides full customization and branding services to integrate our innovative platforms with existing product lines and give them customers' look and feel. With our Configure-To-Order-Services we provide cost efficient services to build different system SKUs in our logistic centers around the world. Through these services we bring our clients the benefits of greater flexibility, lower inventory, shorter lead times and global reach with local touch at work.

## International Quality Standards

The Group Quality system is audited and compliant with ISO 9001. The Quality system covers all aspects of product design, component selection, design verification, manufacturing, quality control and customer satisfaction. From the board of directors

down, each member takes pride in providing our customers with the highest level of quality in products and services. We also hold global certifications of ISO 13485, TL 9000, ISO 14001, OHSAS 18001 and IECQ QC 080000.

## Global Logistics Services

With strong integrated ERP and SAP supply chain solutions, our worldwide logistics network offers a wide range of flexibilities to bring out different delivery models including local and global solutions that meet your unique needs and budget requirements. Advantech's Logistics Service gives you the flexibility to simplify your logistical networks, bring your products to market on time, and enjoy a timely return on your investment.

## Customer Support Services

Our global presence provides localizable, customizable, and reliable customer support services that can be leveraged to create an optimized maintenance and support plan that helps reduce costs and proactively mitigate business risks. In addition to our complete technical and repair support, we provide a variety of customizable after-sales services, including extended warranty, advance replacement, upgrade, fast repair, etc. Our knowledgeable local support groups enable a consistent support experience around the world and help keep your investment at peak performance and within your budget.

- 24/7 technical support: hotline AE & online chat support
- Global deployment with local full-line repair capability
- Easy-to-use web-based repair and tracking system
- Various other value-added, after-sales support services

## Global Operation Infrastructure and Logistics Network with Local Delivery

Advantech is located in 25 countries and 93 cities in each major operating region, offering a global reach with teams in many geographic regions. We support our customers through an extensive global network of offices and an industry-leading eBusiness infrastructure designed to provide responsive service that benefits clients anytime, anywhere.



## Online Technical and Repair Services for Total Lifecycle Support

Our Post-Sales Repair Service is equal in importance to our Design and Manufacturing division. The service represents our commitment to provide comprehensive technical support after delivery of new products. Web-based eRMA System is a personalized portal system which offers real-time RMA status-tracking at all times, anywhere via the Internet. Through Advantech's worldwide Customer Support Centers, our clients can get regional technical support and repair services along with a stringent, dependable quality standard.

## Six Ready-to-Go AdvantechCare Service Packages

### (1) Extended Warranty Service:

Advantech provides 3-month, 6-month, and 1-to-3-year extended warranty service.

### (2) Onsite Service:

Defective parts will be replaced with the same or higher quality components and Advantech also provide one-off onsite service by request.

### (3) Fast Repair Service:

Commitment to repair the defective unit within 24 / 48 hours.

### (4) Advanced Replacement Service:

Advantech provides advanced replacement service by 1-2-3 year contract and all parts are free of charge during the warranty period.

### (5) Technology Update Service:

Upgrade, furnish, and refurbish your stock at a fraction of the new purchase cost. Customizable product revision management solution. Optimize system performance and extend equipment life cycles.

### (6) Preventive Maintenance Service:

Advantech Preventive Maintenance Service preserves and enhances equipment reliability by replacing worn components before they actually fail.

# Edge Computing

## Extend Your Reach with Advantech's Micro-data-center-in-a-Box

The next wave of innovation in the communications industry that introduces new concepts such as real-time interactive services or the Internet of Things (IoT) is redefining the network edge role. Edge computing has the potential to transform the digital experience as it allows applications to seize user's proximity to provide low latency and high bandwidth benefits. Equipment manufacturers, developers and service providers are co-working to enable this new Virtual Edge where diverse access protocols co-exist with revenue generating applications. The result is a decentralized and elastic architecture using cloudlets at the edge of the network that also provides an intermediary processing stage to avoid the costs of transporting large amounts of data back to the cloud.

As the industry seeks to accelerate the delivery of these new services at the edge, it is vital that Communication Service Providers (CSPs) optimize infrastructure for density and cost leveraging existing brown field sites where possible. Advantech's Packetarium XLc carrier-grade blade server is designed to efficiently meet increasing edge computing trends by bringing higher aggregate compute performance closer to the user while fully complying with telecom industry equipment practices. It extends the same programming and deployment environment of the datacenter to central offices, aggregation sites or base stations, taking a micro-datacenter-in-a-box approach that packs 18 Intel® Xeon® D processors, redundant user and control plane switching and system management in a 6U platform with only 400mm depth and 400W/RU power consumption.



### On the Road to 5G

Advantech has designed the Packetarium XLc for next generation carrier networks with a number of objectives in mind:

- Help integrators and operators to evolve from closed proprietary solutions to an **agile and scalable software-driven** architecture using virtualized network functions running on general-purpose Intel® architecture processors anywhere in the network.
- Ensure **carrier-grade availability** and conformity to standards such as NEBS in order to accelerate brown field deployment in the network edge.
- Facilitate the deployment of vRAN by providing a platform which can be used to scale baseband pools with virtualized baseband units (vBBUs) and evolve the traditional BBU beyond C-RAN and hoteling.
- Enable greater NFV elasticity allowing operators to deploy just-in-time baseband resources to match increased network load rather than provisioning capacity to meet expected peak demand in each cell.
- Offer sufficient compute capacity to enhance 4G performance now and deploy 5G-ready services earlier.
- Provide the flexibility needed now to deploy the new applications and services described by the ETSI Mobile Edge Computing ISG, paving the way to **5G and the Internet of Things (IoT)**.

# NFV Infrastructure

## Carrier-grade Platforms designed for Five 9's Availability

### Central Office Virtualization and Workload Consolidation

With the challenges of growing data-rates and over-the-top competition, NFV and SDN offer the potential of massive infrastructure economies to service providers through the use of a reduced number of building blocks based on open source software and white-box hardware. They also give service providers the agility of a cloud provider with platforms that enable the rapid provisioning of new revenue-generating services.

NFV and SDN have triggered the current surge in telecom central office and edge redesign initiatives which involve the virtualization of vast numbers of proprietary hardware platforms onto standard, commercial-off-the-shelf x86-based servers. Communication Service Providers around the globe, either independently or through projects such as Central Office Re-architected as a Datacenter (CORD), are seizing the opportunity brought about by NFV to transform over 300 types of specialized CapEx and OpEx-consuming equipment into a fabric of white-box servers, switches, storage, and I/O running open source software. Advantech's SKY servers provide CSPs with a new generation of carrier-grade platforms based on the latest Intel® Xeon® processors that offer the performance and reliability required for deployment in central office environments to run low latency compute, networking and signaling workloads. They have been designed from the ground up to provide greater robustness and meet more stringent NEBS Level 3 environmental conditions while complying with reduced rack depths. Key features such as hot swappable redundant power supplies and fans, advanced carrier grade remote management, and redundant BIOS or firmware images for fail safe updates all bring increased reliability and serviceability advantages to CSPs.

### Carrier Wi-Fi Controller

Service providers are increasingly adopting a Heterogeneous Network (HetNet) approach to cope with the growing number of bandwidth eager mobile devices and overcome performance limitations of traditional macro cells in indoor environments. Wi-Fi is an inexpensive way to improve broadband coverage at large public venues such as shopping malls or transport hubs and can be deployed to complement a small cell infrastructure especially in high density areas or crowded events such as stadiums or exhibition centers. A carrier-grade Wireless LAN (WLAN) controller can scale to support over 10,000 access points and 100,000 clients and is designed to comply with telecom availability standards.

Advantech's SKY servers offer a high-performance, reliable and standard architecture solution to host WLAN controller functions in Carrier Wi-Fi deployments. They support dual Intel® Xeon® E5 processors and high-density PCIe I/O that is balanced between CPU sockets to handle control and data plane traffic of large-scale deployments. Certified acceleration and smart adapters can be integrated to offload packet classification, load-balancing and encryption tasks which is essential to implement and scale application-aware analytics, traffic filtering and advanced authentication functions in high-end WLAN controllers. What is more, Advantech's SKY Servers have been designed for telecom applications and combine cutting-edge performance with the ruggedness and reliability of a NEBS 3 ready platform in a 20" deep platforms that follows the long system lifecycles required by networking equipment providers.



# uCPE & SD-WAN

## Your New Universal Whitebox Devices Just Arrived



### FWA-T011

Intel® Celeron® or Pentium® N Series

**Slim CPE for cloud-based deployments**



### FWA-1012VC

Intel® Atom™ Processor C3000

**Versatile platform for wide-scale deployments**



### FWA-3050

Intel® Xeon® Processor D-2100

**Fully configurable to fit any enterprise deployments**



### FWA-5070

Intel® Xeon® Scalable Processor

**Throughput and connectivity for the most demanding deployments**

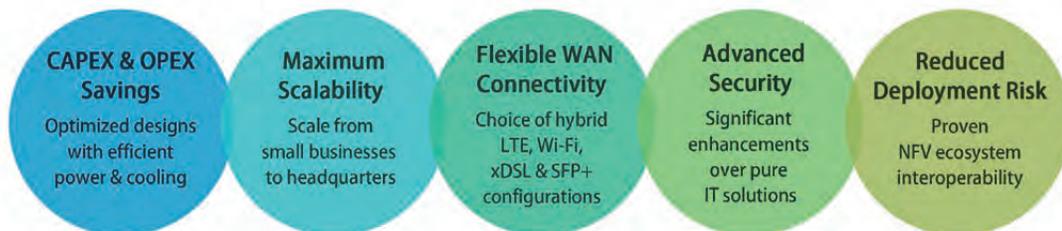
Enterprise services offered by service providers have traditionally required the installation of multiple appliances at the customer site in order to deliver mainstream functions such as routing, firewall and VPN. The customer premise equipment or CPE used to accomplish this is typically deployed on proprietary or specialized WAN technology with dedicated appliances. In addition, WAN traffic generally flows over E1/T1 lines using MPLS technology and the CSP provides the management systems that are required to operate and maintain the network.

This approach has the benefits of guaranteeing enterprise customers with reliable network services and helps to ensure that service level agreements can be met. On the flip side, it offers little flexibility for businesses who require more capacity or additional services as it lacks the agility needed to quickly respond to new business opportunities. Time to revenue ultimately suffers as CSPs struggle to provision new services, which in turn slows the innovation cycle and delays growth.

These challenges can now be overcome thanks to NFV elasticity which allows network services to be moved around different locations in the network, both at the service provider edge and on the customer premises. Network functions like routers and firewalls become virtual network functions and can run on open networking platforms based on Intel® architecture in the cloud as well as at the branch office. While physical service functions require a truck roll to deploy a new service, NFV provides the ability to bring virtualized service network functions to managed network service customers much faster.

## The Appliance Advantage

Although standard IT servers may be considered for deployment of uCPE on the customer premises, white box appliances offer a reduced CAPEX alternative for deployment in volume. Advantech's Universal CPE offering embraces CSP disaggregation strategies through NFV and enables a more cost effective separation of hardware and software in the provisioning of zero-touch appliances installed at customer branch offices.



Advantech's open white-box uCPE approach, using standard Intel® processors in feature-flexible appliances, provides the range of bare-metal server platforms needed by CSPs and system integrators to transform conventional deployment models in the enterprise WAN.

Visit [www.ucpe.tech](http://www.ucpe.tech) to find out more about our uCPE range and the ecosystem partners that enable end-to-end solutions

# Network Security

## Excel to Protect Your Customers

Network security evolves as rapidly as new threats spread. Security applications protect services and users in a variety of network deployments with different architectures. However, they all share a basic requirement: complete visibility and control over the traffic crossing the network. Applications such as intrusion detection and prevention, SSL inspection, Unified Threat Management or next-generation firewalls need to capture 100% of the traffic across all packet sizes without risking any portion of data therefore strongly relying on Deep Packet Inspection (DPI) techniques to accurately classify network traffic. Traditional DPI stopped at the application identification but latest application-aware solutions can classify both enterprise and consumer applications and protocols, and extract valuable insights up to Layer 7.

Network security equipment vendors need solutions able to perform packet processing at wire speeds on 40GbE and 10GbE ports as well as on legacy gigabit Ethernet ports. In addition, their network application platforms need to be scalable and flexible in order to adjust to evolving requirements such as increases in network bandwidth, application performance, and the virtualization of security functions. To achieve this, network security vendors are investing more and more in application software development and require flexible, scalable and high performance platforms to deliver their solutions. From their perspective, any appliance upon which their network applications are delivered must meet and exceed strict performance criteria, reduce overall development costs, and accelerate time-to-market.

### Network Throughputs from Mbps to Tbps

Advantech's communications platforms provide that scalability and reliability with the broadest range of communication platforms based on Intel® architecture scaling from megabits to terabits per second of throughput. Our desktop and 1U rackmount server platforms meet the needs of UTM solution providers supplying small to medium businesses as well as large enterprises. For large enterprise solutions requiring the fastest of security appliances, Advantech's high end platforms scale from 2U rackmount appliances all the way up to multi-bladed server solutions offering scalable performance for data center and telecom network security, where customers need terabits per second of processing performance.



We help accelerate time-to-market by working closely with major processor and network interface vendors on early silicon to ensure we have the latest technology available for the earliest possible customer sampling. By working in close unison with silicon vendors we are able to provide platforms, blades and accelerators which give our customers first mover advantage and allow them to deploy solutions in volume as soon as production level silicon is available.

### Intel® QuickAssist & Data Plane Development Kit (DPDK)

NPU-like packet processing performance is attained by leveraging the performance-optimized libraries in the DPDK to speed up packet processing and increase throughput. The platform integrates Intel® QuickAssist Technology, a set of software modules for bulk encryption, data compression, and other workloads critical to networking. As acceleration hardware embedded within the chipset or add-in modules are available, compute-intensive algorithms can be off-loaded from the CPU cores, freeing up processor cycles for application and control processing.

What's more, you can tap into Intel® architecture with the guarantee of proven software compatibility spanning multiple processor generations allowing you to commit to any platform today with the assurance your software investment is securely future-proofed. Scalability makes it simpler to design a range of products using a common software base starting with desktop appliances for SMB security and ranging to UTMs and policy enforcement engines leveraging DPDK and Intel® QuickAssist Technology in next-generation network platforms.

# Core Network

## Extend the Life of Your ATCA Infrastructure

The telecommunications industry is fundamentally evolving and equipment manufacturers are repositioning themselves along the telecommunications value chain. Advantech provides the foundation building blocks for that value chain in the form of standard off-the-shelf computing platforms designed to meet the new virtual infrastructure needs. These building blocks enable our Telecom Equipment Manufacturer (TEM) partners to focus on differentiated services, such as application development and network management as they themselves evolve into solutions providers.

### Coexistence of Legacy and the New IP Infrastructure

The shift to network virtualization and programmability is underway. Advantech is firmly committed to helping the telecommunications industry make a smooth transition to the new, open and software-driven infrastructure by working closely with the worldwide community of equipment manufacturers, software developers, solution providers, integrators and service providers. This commitment includes the upgrade of our ATCA blade product line to the latest processing and switching technology so that TEMs can extend existing infrastructure life with best-in-breed support from Advantech while operators make the move to the New IP at their own pace and according to their needs.

### Integration, Customization and Partnership

Our blade computing division provides solid and timely technology introductions while designing to stringent industry standard requirements such as NEBS and ETSI. From experience, we know how to work hand-in-hand with system integrators and TEMs during the pre-certification phase of their integrated platforms. Advantech's ATCA systems integration team unites products designed in our own labs and manufactured on our own production lines with trusted and tested ecosystem partner building blocks. Our customer focused architects work closely with networking and telecom OEMs to design systems from pretested ATCA elements with proven product interoperability.

When standard product adaptation is necessary, Advantech understands how to change, move or remove connectors and components, re-adjust for EMC and adjust for chassis-specific cooling issues in a timely manner. Since not all required ATCA blade-level functions or elements are available as off-the-shelf products, we invested in geo-regional R&D teams to accompany our TEM partners in design-to-order-services (DTOS). Our DTOS organization offers same time-zone project management for the development of custom or accelerated designs based on our IP design libraries.

### Increase the Return of Your ATCA Investment

Upgrade your ATCA blades to the latest processing and switching technology with Advantech.

#### MIC-5345



Dual/single Intel® Xeon® E5-2600 Series Processors CPU ATCA blade with 40GbE fabric ports

#### MIC-5342



Dual Intel® Xeon® E5-2600 Series Processors CPU ATCA blade with Intel® QuickAssist and 40GbE fabric ports

#### MIC-5604



Intel® Xeon® D-1500 Series Processor AdvancedMC card with DDR4 EEC

#### ATCA-9112



10/40GbE switch ATCA blade for 16 slots and 8 front panel uplinks with a 640Gbps non-blocking fabric switch

# Mission Critical

## Secure Your Long Term Success

Many mission-critical applications benefit from the robustness and modularity offered by CompactPCI systems. For more than 15 years, Advantech has been developing standard CompactPCI equipment tailored to high-tech industries that require high levels of specialization leveraging COTS and customization. In addition, our growing range of 3U and 6U VPX blades are OpenVPX-compliant, long-life cycle, COTS modules that have been carefully designed to serve compute intensive defense applications.



### Transportation

With over 11,000 km of tracks in service and 1.3 million daily ridership, the high-speed rail network in China is the largest and most heavily used in the world. Safety being the major concern, not only train operation is monitored but also external factors that can have a fatal impact. Integrated as part of the disaster prevention system, Advantech CompactPCI platforms collect and analyze metrological, seismic and intrusion data allowing to foresee unwanted circumstances and react if necessary. Dual CompactPCI systems in active-backup configuration help the system integrator bring the reliable, non-stop operation required.



### Machine Automation

Surface-mount technology (SMT) is a method of producing electronic circuits in which components are mounted directly onto the surface of printed circuit boards. To satisfy high market demands driven by mobile devices high-speed SMT placement machines are required to precisely mount the smallest parts being used in mass production while being able to handle next generation components. Advantech CompactPCI platforms are used in this rugged environment to ensure reliability and uptime. Advantech's wide range of CompactPCI cards allow customers to perfectly balance cost and performance.



### Military & Aerospace

Radar technology is the cornerstone of Intel<sup>®</sup>ligence, surveillance and reconnaissance systems. C4ISR solutions rely on radar data processing and control which finds in VPX the perfect ally for high bandwidth and robust computing. Advantech's OpenVPX-compliant blades combine the high-performance that allows real-time processing with the ruggedness that secures continuous operation of mission-critical radar solutions. The extensive operating system support of our VPX modules and our strong design and customization capabilities bring maximum development flexibility to military and aerospace equipment manufacturers for reduced time-to-market and in-house development efforts.



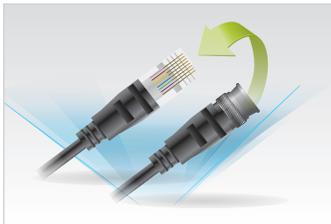
### Medical

Manufacturers of MRI equipment are constantly focusing on offering higher performance in terms of improved image quality and consistency, faster imaging and processing. With high levels of reliability, modularity and upgradability, Advantech CompactPCI platforms have been chosen as processing element of MRI equipment design. Advantech's flexibility in modifying standard products is a decisive factor, as not all CompactPCI manufacturers' CPU blades offer the required feature set.

# Video Infrastructure

## Accelerating the Intelligent Video Infrastructure

Advantech VEGA Video Platforms are designed to boost video infrastructure performance from edge contribution to cloud distribution with a constant eye on low latency, bandwidth optimization and power efficiency. By providing commercial-off-the-shelf access to powerful acceleration technology on IT-based platforms we streamline the deployment of next-generation, intelligent video solutions. Cloud, media, IoT, automotive or medical customers can easily leverage VEGA platforms to accelerate the artificial intelligence, deep learning, media processing and virtual reality applications that will shape our future world.



### UHD Live Streaming

As video demand skyrockets, media companies are looking for a way to optimize their operations and prepare for the upcoming UHD wave. Advantech VEGA platforms provide the low-latency 4K/8K acceleration needed to efficiently scale high-density cloud-based transcoding applications and keep bitrates under control.



### Faster Artificial Intelligence

The world that surrounds us is being digitalized, changing the way we interact with our environment for good. Advantech VEGA FPGA platforms enable this new intelligent world by accelerating the army of artificial intelligence and deep learning machines behind it with faster video image analysis and classification.



### True Medical Imaging

The introduction of UHD imaging into medical applications is helping develop novel diagnosis and surgical procedures. Advantech VEGA platforms support resolutions over 8K in compact video appliances that meet the ultra-low latency and high quality requirements of advanced medical imaging applications.



# Video Infrastructure

## Boost Your Media Cloud Performance

### Do More with Less

Traditional server hardware is not well suited to video processing, especially when multiple high-resolution channels require manipulation. Using hardware acceleration allows a server to do more of what it is good at, and significantly reduces power, cost and footprint of high-density media solutions. Advantech's ultra-low power video encoder, decoder and transcoder platforms enable real-time HEVC/AVC encoding at up to 20x less power consumption than a software-only solution helping OEMs successfully address the challenges of live media processing in a cost-effective manner. Advantech products can provide the acceleration required to support video processing across a range of applications from UHD HEVC broadcast encoding to high-density OTT transcoding in the cloud.



### The Online Video Era

The media industry is undergoing a profound transformation driven by the fundamental change in video consumers' behavior that disrupts the traditional business model. Media organizations and service providers are looking to optimize their operations and monetize the big opportunities that the mobile video era brings. Advantech helps equipment manufacturers lead the video-centric network transformation with products that address its current upheaval and the convergence of broadcast, networking and IT technologies.

### In 2020



There will be 26.3 billion networked devices (3.4 per capita), 41% of which will be video enabled consumer devices.



Internet traffic will grow 3-fold from 2015. Video will be 82% of all Internet traffic.



It would take an individual over 5 million years to watch the amount of video that will cross the Internet each month.

## 8K, Artificial Intelligence & Gaming

## Social Media & Anywhere Broadcasting

## Cloud & Mobile Video

IP

HDR



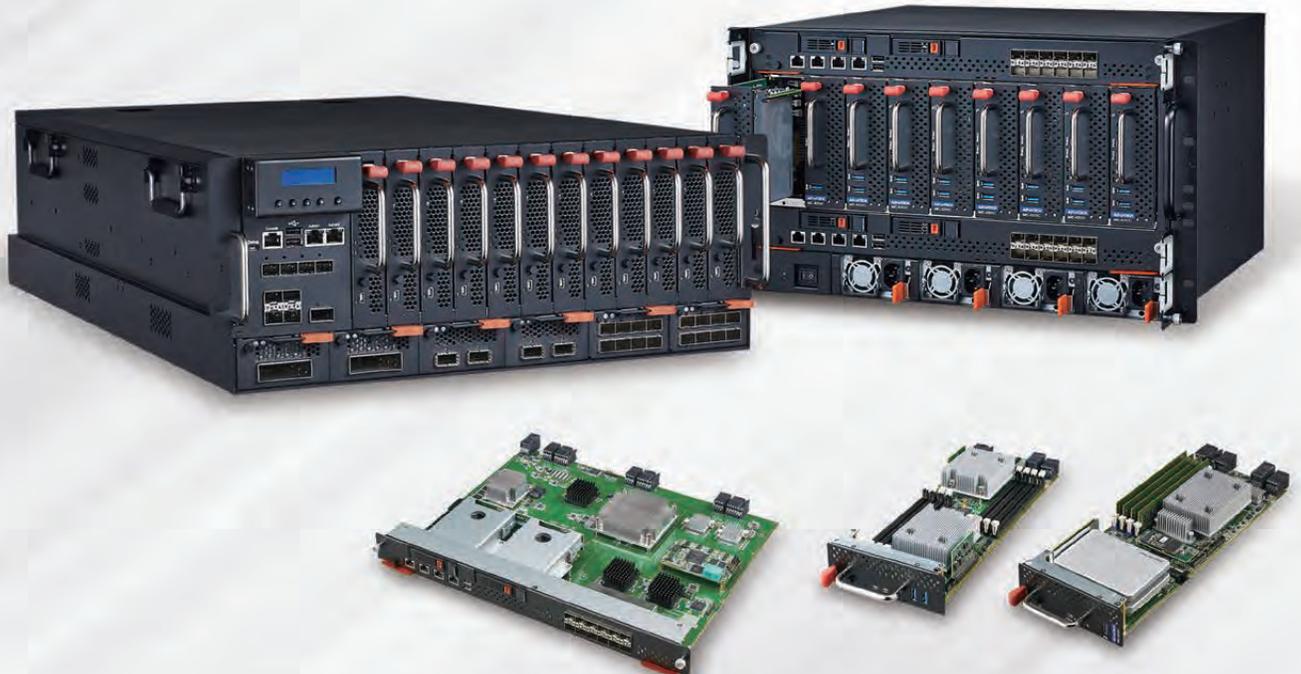
Discover our latest video processing solutions and the applications they accelerate at [www.video-acceleration.com](http://www.video-acceleration.com)



# Packetarium XL Blade Servers

<b>Overview</b>		<b>1-1</b>
<b>Selection Guide</b>		<b>1-2</b>
<b>PAC-4010</b>	Packetarium XLe Ultra High Performance Blade Server with 100G Switched Midplane	<b>1-5</b>
<b>PMM Modules</b>	Packetarium XLe Series PHY Mezzanine Modules	<b>1-7</b>
<b>PAC-6009</b>	6U Carrier Grade Blade Server for Edge Computing and NFV	<b>1-8</b>
<b>MIC-8301</b>	Packetarium XLe Single Socket CPU Blade with Intel® Xeon® Processor E5-2600 v3/v4	<b>1-10</b>
<b>MIC-8303C</b>	Packetarium XLc Dual Node Blade with Intel® Xeon® D-1500 series SoCs	<b>1-12</b>
<b>MIC-8304C</b>	Packetarium XLc Intel® Xeon® D-1500 series Blade with additional on-board storage	<b>1-14</b>
<b>MIC-8304S</b>	A new cloud controller blade for Packetarium XLc with massive on-board storage capacity	<b>1-16</b>
<b>ESP-9002C</b>	Advantech Switch Blade for Packetarium XLc	<b>1-17</b>

Please visit [www.advantech.com/nc](http://www.advantech.com/nc) for the latest product updates.





# Packetarium XL Blade Servers

Advantech's Packetarium XL is a family of scale out network platforms that leverages best IT and networking design principles to optimize the performance of enterprise and network applications in a virtualized environment. Packetarium XL platforms take a microserver approach with a modular design that scales compute performance on Intel® Architecture processors distributed across high-speed switched backplanes, bringing greater flexibility and cost efficiencies to higher density deployments with reduced total cost of ownership. Packetarium XL blade servers seamlessly integrate with standard software frameworks to provide an open infrastructure that accelerates the roll-out of next generation NFV and software defined services.

## Packetarium XL Family



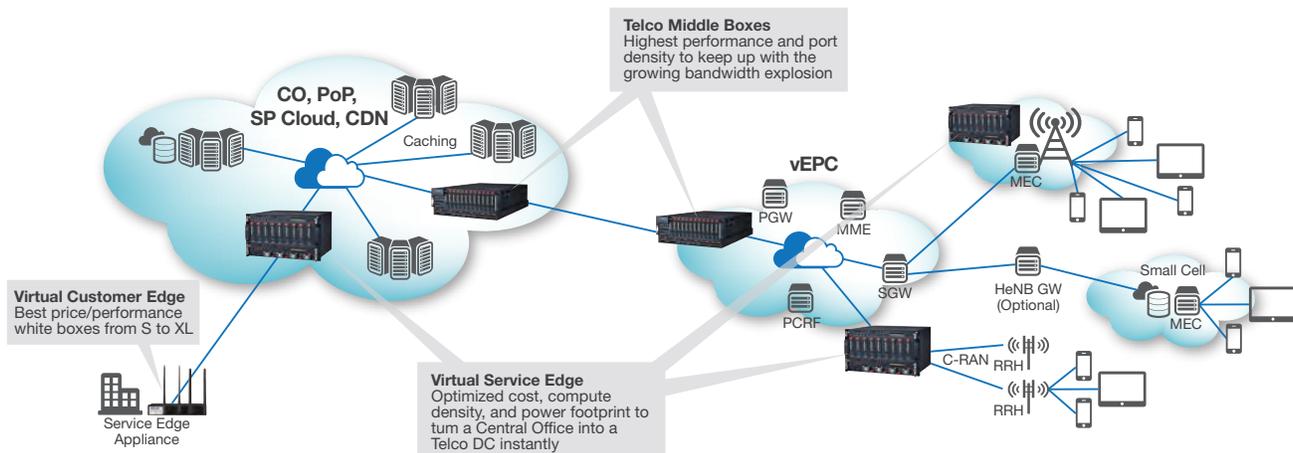
### Carrier Grade

The Packetarium XLc is a truly carrier-grade network platform for the telecom cloud infrastructure that optimizes VNF performance, yet meets demanding industry standards with five 9's availability and NEBS-3 compliance in a 6U, compact format with a reduced depth of 400mm. Packetarium XLc is the first telco-grade server of its class to extend NFV elasticity to both edge and access equipment bringing higher processing densities, more memory for VNF support and the scale-out headroom needed to meet stringent service level agreements.

### Ultra-high Performance

The enterprise version of the Packetarium XL family, the Packetarium XLe, achieves higher CPU and I/O density in a 4U, 27" deep system that meets the increased demand for faster packet handling at lower cost. The Packetarium XLe targets Network Intel® ligenge deployments requiring accelerated packet processing performance in applications such as high-end network security, policy control and traffic analysis.

## NFV Elasticity for a Competitive Edge



NFV Elasticity allows service providers and network operators to provision an efficient base line service at the edge of the network while covering peak loading at the core over a consistent virtual infrastructure with a common execution environment. Advantech's NFV Elasticity program supports scalable platforms based on server-class Intel® processors that can run Virtual Network Functions anywhere in the network. Moreover, Advantech's edge platforms enable new premium services as described by the Multi-access Edge Computing ETSI group requiring low latency, near real time response paired with best-in-class performance per watt of compute. We work with key ecosystem partners, including system integrators, to give you a head start on NFV by putting together production-ready, end-to-end NFV solutions such as Universal CPE for the enterprise and Network in a box leveraging vRAN and vEPC functions.

- 1 Packetarium XL Blade Servers
- 2 High Performance Servers
- 3 Network Appliances
- 4 PCI Express Adapters
- 5 Network Switches
- 6 ATCA Blades & Integrated Systems
- 7 CPCI Boards & Enclosures
- 8 VPX Blades
- 9 Video Processing & IP Media Platforms

# Selection Guide

## Packetarium XL Systems



Model		PAC-4010	PAC-6009	
Processor System	CPU	12 CPU blades, Single Intel® Xeon® Processor E5-2600 v3/v4 series on each CPU blade	9 CPU blades, Single Intel® Xeon® processor E5-2600, Dual or Single Intel® Xeon® D SoC per blade	
	Switch	Up to 1.68 Tbps data plane switching capacity, Up to 320Gbps control plane switching capacity, Up to 100Gbps connectivity per blade	Up to 280Gbps data plane switching capacity, Up to 40Gbps mid-plane connectivity per CPU blade, Up to 100Gbps external I/O connectivity	
External I/O Modules & Interface	CPU Blade	Flexible processor blade with up to 12 CPU blades which equip with single Intel® Xeon® E5-2600 v3/v4 series	Flexible processor blade with up to 9 CPU blades which equip with single or dual Intel® Xeon® D SoC Dual 8- or 16-core Intel® Xeon® Processor D (MIC-8303), Single 8- or 16-core Intel® Xeon® Processor D with additional on-board SSD storage (MIC-8304)	
	PMM Modules	Flexible I/O with up to 6 PHY Mezzanine Modules (PMMs) which can host 1x100GbE, 3x40GbE, 2x40GbE, or 8x10GbE ports each Maximum 120Gbps traffic for each PHY Mezzanine Module (PMM)	-	
	LAN	4 x SFP+ for data plane, 4 x SFP+ and 1 x QSFP+ for control plane, 2 x GbE for system management	10 x SFP+ for data plane, 2 x SFP+ for control plane	
	Serial Console	2 x RS-232 (with RJ-45 port for ShMC) per CPU blade	2 x RS-232 (with miniUSB port for ShMC) per CPU blade	
	USB	2 x USB 2.0 ports connect to switch LMP	Up to 2 x USB 3.0 port connect to Intel® Xeon® D per CPU blade	
Storage	SATA	2 x system storages (2.5" SSD or HDD) 2 x on-board m-SATA storages on the switch board 2 x m-SATA M.2 SSD on each CPU blade	2 x 2.5" SATA SSD per ESP-9002C switch blade	
Cooling	Technology	Six Rear pluggable, hot swappable fan modules with PICMG compliant fan speed control	Four Rear pluggable, hot swappable fan modules with PICMG compliant fan speed control	
Power	AC Input	Up to four redundant power supply units with separate AC inlets. AC 200~240V, 50~60Hz, with 2+2 and N+1 power redundancy options (max output 3600W) AC 100~127V, 50~60Hz, with N+1 power redundancy (max output 3000W)	Up to four redundant power supply units with separate AC inlets. AC 220V, 50~60Hz, maximum output 1800W per PSU, with 2+2 and N+1 power redundancy options AC 110V, 50~60Hz, maximum output 1000W per PSU, with N+1 power redundancy	
	DC Input	Up to four redundant power supply units with separate DC inlets. DC -40V - -60V, 55A, with 2+2 and N+1 power redundancy options (max output 3600W)	Up to four redundant power supply units with separate DC inlets. DC -40V - -60V, maximum output 1800W per PSU, with 2+2 and power redundancy options	
	PSU cooling	Self cooled	Self-cooled	
	Output DC voltage	+12V	+12V	
	Output Current rating	Maximum 148A @ +12V per PSU Maximum 2A @ +12VSB per PSU	Maximum 148A @ +12V per PSU (under 220V AC source; -48V DC source) Maximum 2A @ +12VSB per PSU	
	Power Consumption	3100W (with configuration: 12 x CPU blades with 4 x 2133MHz 16GB DDR4 memory and 2 x M.2 SSD each blade, 6 x single port 100GbE PMMs)	2400W (with configuration: 9 x Dual Intel® Xeon® Processor D CPU blades with 8 x 2133MHz 16GB DDR4 memory and 2 x M.2 SATAIII SSD each blade, 2 x Switch blades)	
Shelf management	BMC	ARM 9 based controller (400MHz)	ARM 9 based controller (400MHz)	
	IPMI	IPMI 2.0 based on Advantech IPMI Core	IPMI 2.0 based on Advantech IPMI Core	
	Interfaces	RMCP, SSH, SNMP, CLI, and serial interfaces	RMCP, SSH, SNMP, CLI, and serial interfaces	
Accessibility	Sensors	FRU presence, fan health, PSU health, temperatures, input voltages	FRU presence, fan health, PSU health, temperatures, input voltages	
	Front	CPU blades, PMMs, 2.5" SSDs or HDDs	CPU blades, Switch blades, 2.5" SSDs, AC or DC PSU's	
Physical Characteristics	Rear	Fan modules, AC or DC PSU's	Fan modules	
	Dimensions (H x W x D)		177 x 483 x 686 mm	266 x 483 x 400 mm
	Weight		63 kg	48 kg
	Operating	Temperature	0 ~ 40 °C (32 ~ 104 °F)	-5 ~ 55 °C (23 ~ 131 °F)
		Humidity	50% @ 25 °C to 95% @ 40 °C (non condensing)	50% @ 25 °C to 95% @ 40 °C (non condensing)
		Altitude	Up to 13000ft @ 45 °C	Up to 13000ft @ 45 °C
		Acoustic	61.3dB(A) (Idle mode)	83dB @ 23 ~ 27 °C
Non-operating	Temperature	- 40 ~ 70 °C (-40 ~ 158 °F)	- 40 ~ 70 °C (-40 ~ 158 °F)	
	Humidity	95% @ 60 °C (non-condensing)	95% @ 60 °C (non-condensing)	
Compliance	PICMG	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size	
	Safety & EMC	CB report (IEC60950-1), CE mark (EN60950-1), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024), RCM Mark (AS/NZS CISPR 22), VCCI, KCC	CB report (IEC60950-1), CE mark (EN60950-1), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024), RCM Mark (AS/NZS CISPR 22), VCCI	
	NEBS	-	Designed to comply with NEBS Level 3	

# Selection Guide

## Packetarium XL Node Blades



Model		MIC-8301	MIC-8303C	MIC-8304C	MIC-8304S	MIC-8304P	
Processor System	CPU	Single Intel® Xeon® E5-2600 v3/v4 series	Dual Intel® Xeon® D SoC	Single Intel® Xeon® D SoC	Single Intel® Xeon® D SoC	Single Intel® Xeon® D SoC	
	BIOS	Dual 64-Mbit BIOS firmware flashes with AMI UEFI based BIOS	Dual 64-Mbit BIOS firmware flashes with AMI UEFI based BIOS	Dual 64-Mbit BIOS firmware flashes with AMI UEFI based BIOS	Dual 64-Mbit BIOS firmware flashes with AMI UEFI based BIOS	Dual 64-Mbit BIOS firmware flashes with AMI UEFI based BIOS	
Memory	Technology	Dual channel DDR4 ECC RDIMM up to 2133MHz	Dual channel DDR4 ECC RDIMM up to 2133MHz	Dual channel DDR4 ECC RDIMM up to 2133MHz	Dual channel DDR4 ECC RDIMM up to 2133MHz	Dual channel DDR4 ECC RDIMM up to 2133MHz	
	Max. Capacity	Configurable up to 256GB	Configurable up to 256GB	Configurable up to 128GB	Configurable up to 32GB	Configurable up to 32GB	
	Socket	4 ECC RDIMMs	8 ECC RDIMMs	4 ECC RDIMMs	2 x ECC DDR4 SO-DIMM	2 x ECC DDR4 SO-DIMM	
Connection	Fabric Interface	2 x 40GbE in KR4 for data plane interface and 2 x 10GbE in KR for control plane interface	2 x Intel® Xeon® D 10GBASE-KR per processor	2 x Intel® Xeon® D 10GBASE-KR	2 x Intel® Xeon® D 10GBASE-KR	2 x Intel® Xeon® D 10GBASE-KR	
	Base Interface	1 x GbE in 1000Base-KX	i210 GbE	i350 GbE	i210 GbE	i210 GbE	
Front I/O Interface	Serial (COM)	1 x mini USB console	2 x mini USB console	1 x mini USB console	1 x mini USB console	1 x mini USB console	
	USB 3.0	NA	2 x Type A ports	1 x Type A ports	1 x Type A ports	1 x Type A ports	
Storage	SATA/PCIe	1 x M.2 SATAIII SSD	Up to 2 x M.2 SATAIII SSD per blade	1x M.2 SATAIII SSD 2x 2.5" SATAIII SSD	2 x 2280/2242 M.2 SATA/PCIe SSD 6 x 2.5" SATA/PCIe SSD	2 x 2280/2242 M.2 SATA/PCIe SSD	
Hardware Management	BMC	ARM 9 based controller (400MHz)	ARM 9 based controller (400MHz)	ARM 9 based controller (400MHz)	ARM 9 based controller (400MHz)	ARM 9 based controller (400MHz)	
	IPMI	IPMI 2.0 based on Advantech IPMI Core	IPMI 2.0 based on Advantech IPMI Core	IPMI 2.0 based on Advantech IPMI Core	IPMI 2.0 based on Advantech IPMI Core	IPMI 2.0 based on Advantech IPMI Core	
Power Requirement	Configuration	1 x 105W CPU, 64GB memory, 2 x 64GB M.2 SATAIII SSD	2 x 65W SoCs, 128GB memory, no storage	1 x 65W SoCs, 128GB memory, 2 x 512GB 2.5" SATAIII SSD	1 x 65W SoCs, 32GB memory, 2 x 512GB 2280 M.2 SATA SSD, 6 x 512GB 2.5" SATA SSD	1 x 65W SoCs, 32GB memory, 2 x 512GB 2280 M.2 SATA SSD	
	Consumption	200W (Estimated)	200W (Estimated)	200W (Estimated)	200W (Estimated)	200W (Estimated)	
Physical Characteristics	Dimensions (HxWxD)	27.40 x 134.20 x 543.95 mm	44.30 x 130.30 x 357.21 mm	44.30 x 130.30 x 357.21 mm	44.30 x 130.30 x 357.21 mm	44.30 x 130.30 x 357.21 mm	
	Weight	2.3 kg	1.235 kg	1.225 kg	1.275 kg	1.2 kg	
Environment	Operating	Temperature	0 ~ 40 °C (32 ~ 104 °F)	-5 ~ 55 °C (23 ~ 131 °F)	-5 ~ 55 °C (23 ~ 131 °F)	-5 ~ 55 °C (23 ~ 131 °F)	-5 ~ 55 °C (23 ~ 131 °F)
		Humidity	50% @ 25 °C to 95% @ 40 °C (non condensing)	50% @ 25 °C to 95% @ 40 °C (non condensing)	50% @ 25 °C to 95% @ 40 °C (non condensing)	50% @ 25 °C to 95% @ 40 °C (non condensing)	50% @ 25 °C to 95% @ 40 °C (non condensing)
		Altitude	Up to 13000ft @ 45 °C	Up to 13000ft @ 45 °C			
	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)	-40 ~ 70 °C (-40 ~ 158 °F)
Humidity		95% @ 60 °C (non-condensing)	95% @ 60 °C (non-condensing)	95% @ 60 °C (non-condensing)	95% @ 60 °C (non-condensing)	95% @ 60 °C (non-condensing)	
Compliance	PICMG	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size	
	Safety & EMC	CB report (IEC60950-1), CE mark (EN60950-1), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024), RCM Mark (AS/NZS CISPR 22), VCCI, KCC	CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024/EN300386), RCM, VCCI	CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024/EN300386), RCM, VCCI	CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024/EN300386), RCM, VCCI	CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024/EN300386), RCM, VCCI	

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- PCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Packetarium XLc Switch Blade



Model		ESP-9002C	
Processor	Processor	Freescale P2040	
	Switch	Up to 280 Gbps data plane switching capacity,	
Storage	SATA	Up to 2x 2.5" SSD per switch blade	
I/O Front Interface	BMC console port	1 x RJ-45	
	LMP console port	1 x RJ-45	
	USB	1 x USB1.0, 1 x USB 2.0	
	Control Plane port	2 x ZSFP+	
	Data Plane port	10 x ZSFP+	
Shelf Management	BMC	ARM 9 based controller (400MHz)	
	IPMI	IPMI 2.0 based on Advantech IPMI Core	
	Interfaces	RMCP, SSH, SNMP, CLI, and serial interfaces	
	Sensors	FRU presence, fan health, PSU health, temperatures, input voltages	
Physical Characteristics	Dimensions (H x W x D)	430 x 330 x 43 mm	
	Weight	3.24kg	
Software Support	Bootloader	U-boot	
	HW Management	IPMI 2.0	
	Switch Management	Broadcom FASTPATH 8.2	
Environment	Operating	Temperature	-5 ~ 40 °C (23 ~ 131 °F)
		Humidity	50% @ 25 °C to 95% @ 40 °C (non condensing)
		Altitude	Up to 13000ft @ 45 °C
	Non-operating	Temperature	-40 ~ 70 °C (-40 ~ 158 °F)
		Humidity	95% @ 60 °C (non-condensing)
Compliance	PICMG	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size	
	Safety & EMC	CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024/EN300386), RCM, VCCI	

## Packetarium XLc PHY Mezzanine Modules (PMM)

Preliminary



Model		PMM-4103	PMM-2400	PMM-3200	PMM-3201	
Ethernet PHY		APM S28115	TI DS125RT	TI DS125RT	TI DS125RT	
I/O		1 x 100GbE LAN	8 x 10GbE LAN	2 x 40GbE LAN	3 x 40GbE LAN	
Interface		CFP2	SFP+	QSFP+	QSFP+	
Physical Characteristics	Dimensions (H x W x D)	39.50 x 73.50 x 162.26 mm (including handle)	39.50 x 73.50 x 162.26 mm (including handle)	39.50 x 73.50 x 162.26 mm (including handle)	39.50 x 73.50 x 162.26 mm (including handle)	
	Weight	0.8 kg	0.8 kg	0.8 kg	0.8 kg	
Environment	Operating	Temperature	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	
		Humidity	50% @ 25 °C to 95% @ 40 °C (non condensing)	50% @ 25 °C to 95% @ 40 °C (non condensing)	50% @ 25 °C to 95% @ 40 °C (non condensing)	50% @ 25 °C to 95% @ 40 °C (non condensing)
		Altitude	Up to 13000ft @ 45 °C	Up to 13000ft @ 45 °C	Up to 13000ft @ 45 °C	Up to 13000ft @ 45 °C
	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)
		Humidity	95% @ 60 °C (non-condensing)	95% @ 60 °C (non-condensing)	95% @ 60 °C (non-condensing)	95% @ 60 °C (non-condensing)
Compliance	Safety & EMC	CB report (IEC60950-1), CE mark (EN60950-1), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024), RCM Mark (AS/NZS CISPR 22), VCCI, KCC	CB report (IEC60950-1), CE mark (EN60950-1), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024), RCM Mark (AS/NZS CISPR 22), VCCI, KCC	CB report (IEC60950-1), CE mark (EN60950-1), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024), RCM Mark (AS/NZS CISPR 22), VCCI, KCC	CB report (IEC60950-1), CE mark (EN60950-1), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024), RCM Mark (AS/NZS CISPR 22), VCCI, KCC	

# PAC-4010

## Packetarium XLe Ultra High Performance Blade Server with 100G Switched Midplane



### Features

- Highest CPU and I/O density platform in the Packetarium XL family
- Up to 12 CPU blades with single Intel® Xeon® Processor E5-2600 v3/v4
- Up to 2Tbps switching capacity with 100Gbps midplane connectivity per blade
- Flexible I/O configurations with up to 6 PHY Mezzanine Modules (PMMs) which can host 1x100GbE, 3x40GbE, 2x40GbE, or 8x10GbE ports each
- Broadcom FastPath v8.2 and Advantech Load Balancer (L2) supports
- Enhanced platform management features for increased RASUM
- Hot swappable and redundant AC/DC and DC/DC PSU options
- Front-to-rear push-pull cooling mode. Six rear pluggable, hot swappable fan modules with fan speed control
- Optional SATA storage devices on the CPU blade and on the system mount
- Optional LCD module support



### Introduction

Advantech's Packetarium XLe series meets the higher levels of performance and throughput needed by next generation enterprise and telecom applications, offering new, cost-effective ways to scale-out compute density using Intel® Architecture processors distributed across high-speed switched backplanes.

The system is optimized for maximum CPU and network I/O density, enabling faster packet handling to meet the increased data throughput rates needed in enterprise networking and in telecom middle boxes. It is ideal for Network Intelligence deployments requiring accelerated packet processing performance on 10GbE, 40GbE and 100GbE ports in applications such as high-end network security, policy control and traffic analysis. The first model in the Packetarium XLe for Enterprise series, the PAC-4010 fits in just 4RU and reaches the performance levels typically only found in specialized ATCA or proprietary network processor-based solutions, but at a fraction of the cost.

The platform uses common IP and building blocks to bring greater cost efficiencies and economies of scale which can then be passed on to customers.

The PAC-4010, packs up to 840 Gbps of I/O, up to 2 Tbps of switching capacity and up to 12 Intel® Xeon® Processor E5-2600 v3/v4 CPUs in just 4RU. The integrated switch & system control module is based on the high capacity Broadcom StrataXGS® Trident II/II+ switch family managed by an Intel® Atom™ Processor C2000 and provides six hot swappable PHY mezzanine module (PMM) slots to accommodate a wide choice of 10 GbE, 40 GbE and 100 GbE ports with optional LAN bypass support.

Many different payloads can be integrated into Advantech Packetarium XLe systems and configured to address a broad range of industry applications. For more details on integrating a specific configuration please contact your local sales representative.

### Specifications

Processor System	CPU <sup>NOTE1</sup>	12 CPU blades, Single Intel® Xeon® Processor E5-2600 v3/v4 series on each CPU blade
	Switch	Up to 1.68 Tbps data plane switching capacity, Up to 320Gbps control plane switching capacity, Up to 100Gbps connectivity per blade
External I/O Modules & Interface	PMM Modules <sup>NOTE1</sup>	Flexible I/O with up to 6 PHY Mezzanine Modules (PMMs) which can host 1x100GbE, 3x40GbE, 2x40GbE, or 8x10GbE ports each Maximum 120Gbps traffic for each PHY Mezzanine Module (PMM)
	LAN	4x SFP+ for data plane, 4x SFP+ and 1x QSFP+ for control plane, 2x GbE for system management
	Serial Console	2x RS-232 (one with RJ45 port for switch LMP and the other with miniUSB port for ShMC)
	USB	2x USB 2.0 port connect to switch LMP
Storage	SATA	Up to 2x system storages (2.5" SSD or HDD) and 2x on-board m-SATA storages on the switch board Up to 2x m-SATA M.2 SSD on each CPU blade
Cooling	Technology	Six Rear pluggable, hot swappable fan modules with PICMG compliant fan speed control
Power	AC Input	Up to four redundant power supply units with separate AC inlets. AC 200-240V, 50-60Hz, with 2+2 and N+1 power redundancy options (max output 3600W) AC 100-127V, 50-60Hz, with N+1 power redundancy (max output 3000W)
	DC Input	Up to four redundant power supply units with separate DC inlets. DC -40V - -60V, 55A, with 2+2 and N+1 power redundancy options (max output 3600W)
	PSU cooling	Self cooled
	Output DC voltage	+12V
	Output Current rating	Maximum 148A@ +12V per PSU Maximum 2A@ +12VSB per PSU
	Power Consumption	3100W (with configuration: 12x CPU blades with 4x 2133MHz 16GB DDR4 memory and 2x M.2 SSD each blade, 6x single port 100GbE PMMs)

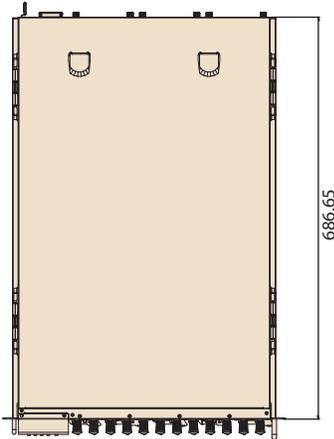
- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Specifications (Cont.)

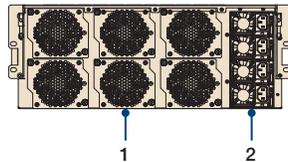
Shelf management	BMC	ARM 9 based controller (400MHz)	
	IPMI	IPMI 2.0 based on Advantech IPMI Core	
	Interfaces	RMCP, SSH, SNMP, CLI, and serial interfaces	
	Sensors	FRU presence, fan health, PSU health, temperatures, input voltages	
Accessibility	Front	CPU blades, PMMs, 2.5" SSDs or HDDs	
	Rear	Fan modules, AC or DC PSU's	
Physical Characteristics	Dimensions (H x W x D)	4U x 19" x 686 mm	
	Weight	63kg (system weight with full configuration (including 12x CPU blades and 6x PMMs))	
Environment	Temperature	Operating 0 ~ 40 °C (32 ~ 104 °F)	Non-operating - 40 ~ 70 °C (-40 ~ 158 °F)
	Humidity	50% @ 25 °C to 95% @ 40 °C (non condensing)	95% @ 60 °C (non-condensing)
	Altitude	Up to 13000ft @ 45 °C	
	Acoustic	61.3dB(A) (Idle mode)	
	PICMG	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size	
Compliance	CB report (IEC60950-1), CE mark (EN60950-1), UL60950-1/CSAC22.2		
	Safety & EMC FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024), RCM Mark (AS/NZS CISPR 23), VCCI, KCC		

## Dimensions

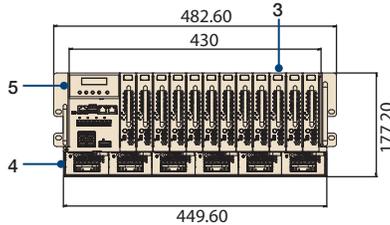
Top View



Rear View



Front View



- 1. Hot swappable FAN module
- 2. AC/DC or DC/DC PSU
- 3. CPU blade (MIC-8301)
- 4. PMM (PMM-4103)
- 5. LCM module

## Ordering Information

Part Number	Description
PAC-4010-BTO	4U, 12x processor blade slots with 4x 1800W PSUs, 6x fan modules, optional processor blades and PMMs

## Chassis FRU List

Model Series	Description
PAC-4010SC2-P1AE	4U, 12x processor blade slots with 4x 1800W AC PSUs, N+1 power redundancy, 6x fan modules, w/o processor blades and PMMs
PAC-4010SC2-P2AE	4U, 12x processor blade slots with 4x 1800W AC PSUs, 2+2 power redundancy, 6x fan modules, w/o processor blades and PMMs
PAC-4010SC2-P1DE	4U, 12x processor blade slots with 4x 1800W DC PSUs, N+1 power redundancy, 6x fan modules, w/o processor blades and PMMs
PAC-4010SC2-P2DE	4U, 12x processor blade slots with 4x 1800W DC PSUs, 2+2 power redundancy, 6x fan modules, w/o processor blades and PMMs
PAC-4010SF1-00E	PAC-4010 fan module
PAC-4010SP1-ACE	Power supply AC 1800W for PAC-4010
PAC-4010SP1-DCE	Power supply DC 1800W with 3m 6AWG DC power cable for PAC-4010
MIC-8301S-000E	Filler panel for PAC-4010 processor blade slot
PMM-0000-AD0000E	Filler panel for PAC-4010 PMM slot

## Related Products

Model Series	Configuration
MIC-8301	Advantech Single socket CPU Blade with Intel® Xeon® Processor E5 series
PMM-2400	8 port 10GbE PHY Mezzanine Modules (PMM)
PMM-4103	Single port 100GbE PMM
PMM-3200	2 port 40GbE PMM
PMM-3201	3 port 40GbE PMM

NOTE 1: Please contact your local Advantech sales representative for more information on CPU blades and PMMs.

# PMM Modules

## Packetarium XLe Series PHY Mezzanine Modules

### Introduction

PHY Mezzanine Modules (PMM) provide a modular solution for network connectivity offering a broad choice of transport media with 10, 40 and 100GbE ports. PMMs are front loadable, offering easy maintenance & field upgradability.

Customers can take full advantage of PMMs to match different application and networking needs using various Advantech system platforms.

### Specifications



Product Name		PMM-4103	PMM-2400	PMM-3200	PMM-3201 (Preliminary)
Ethernet PHY		APM S28115	TI DS125RT410	TI DS125RT410	TI DS125RT410
I/O		1x 100GbE LAN	8x 10GbE LAN	2x 40GbE LAN	3x 40GbE LAN
Interface		CFP2 (SR-10, LR-4)	SFP+	QSFP+	QSFP+
Compatible with the Following Platform		PAC-4010	PAC-4010	PAC-4010	PAC-4010
Physical Characteristics	Dimension (H x W x D)	39.50 x 73.50 x 162.26 mm (including handle)			
	Weight	0.80 kg			
Environment		Operating		Non-operating	
	Temperature	0 ~ 40 °C (32 ~ 104 °F)		- 40 ~ 70 °C (-40 ~ 158 °F)	
	Humidity	50%@25 °C to 95%@40 °C (non condensing)		95% @ 60 °C (non-condensing)	
	Altitude	Up to 13000ft@45 °C			

Packetarium XLe Blade Servers **1**

High Performance Servers **2**

Network Appliances **3**

PCI Express Adapters **4**

Network Switches **5**

ATCA Blades & Integrated Systems **6**

PCI Boards & Enclosures **7**

VPX Blades **8**

Video Processing & IP Media Platforms **9**

# PAC-6009

## 6U Carrier Grade Blade Server for Edge Computing and NFV



### Features

- Carrier Grade Blade Server with support for industry standard software frameworks accelerates the roll-out of next-generation NFV solutions
- Up to 9 front slots for hot-swappable Intel® Xeon® Processor E5-2600 or Intel® Xeon® Processor D based CPU blades for cloud networking and computing
- 9 slot mid-plane for dual star connectivity between switch boards and blades. Each fabric and star network supports dual GbE control/management ports per slot and dual 10GbE data fabric ports per compute slot
- 2 x ESP-9002C Switch/Management Modules integrating Broadcom Trident+ BCM56842 data plane switch and Broadcom BCM53346 GbE control plane / management switch
- Hot swappable and redundant AC/DC and DC/DC PSU options
- Front-to-rear push-pull cooling Mode. Four rear pluggable, hot swappable fan modules with fan speed control
- Optional SATA storage devices on the CPU blade and on the switch blade
- Optional network synchronization support
- Shelf management based on Advantech IPMI
- Designed to comply with NEBS Level 3



### Introduction

The Packetarium XLc carrier grade blade server is designed to accommodate the highest density of hot-swappable compute power available in a 400mm deep 6U carrier-grade chassis. It is a highly scalable platform for deploying Intel® Xeon® Processor E5-2600 and Intel® Xeon® Processor D-based blades designed for the most demanding NFV workloads. The system's 400W per RU power footprint enables deployment in industry standard 19" racks, in addition its shallow depth and straight front to rear airflow make it easy to install and operate in data centers, central offices and telecom rooms at the edge of the network alike. The system has been carefully designed to meet carrier grade requirements in these environments including NEBS level 3 compliance and five 9's availability. These features make Packetarium XLc ideal for applications such as Mobile Edge Computing (MEC), Cloud RAN (C-RAN) and Central Office consolidation among others. The system has been interoperability-tested with software building blocks from key Network Function Virtualization (NFV) ecosystem vendors to provide a fully-functional NFV Infrastructure (NFVI).

The first model in the Packetarium XLc Carrier Grade Blade Server series, the PAC-6009, incorporates a highly versatile and modular design with 9 front slots to host 9 single or dual node Intel® Xeon® processor blades. Generic compute blades run application workloads (VNFs) while dedicated cloud control nodes provide orchestration and virtual infrastructure management functions. The system includes 2 integrated switch blades using low-latency Broadcom StrataXGS® Trident+ switches, each with 280Gbps data plane switching capacity enabling 40Gbps mid-plane connectivity per CPU blade(1). The switch blades also provide ten 10GbE SFP+ ports each for 100Gbps of external I/O connectivity and uplinks. Support for an optional timing module based on IEEE1588v2 is also available to support network synchronization using industry standard mechanisms.

PAC-6009 system management is based on Advantech's widely deployed SMM-5060 shelf & system manager and is integrated on the switch / management modules. Low level shelf management runs on a dedicated ARM processor while a Freescale QorIQ P2040 runs switch management and higher level system management functions.

High availability of Shelf and System management is implemented by running the modules in an active/hot standby scheme. A low latency failover mechanism is provided by a robust, low level failover interface and using crossover Ethernet connections for more extensive state and log synchronization.

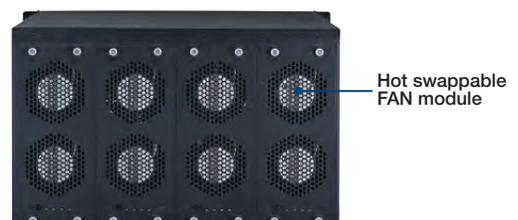
A full suite of management interfaces is provided ranging from a command line interface for debugging purposes, to a Secure Shell (SSH), Simple Network Management Protocol (SNMP) and a Web interface. A System Explorer is available as a secure web server with graphical user interface (GUI) that displays status and control information such as views of the system repository, sensor data and system health. It also provides access to system configuration and supports system maintenance tasks such as upgrade management.

Various payloads can be integrated into the PAC-6009 allowing the system to be configured to address a broad range of telecom and industry applications. For more details on integrating a specific configuration please contact your local sales representative.

### Front View



### Rear View



## Specifications

Processor & Switch	CPU <sup>(2)</sup>	9 CPU blades, Single Intel® Xeon® processor E5-2600, Dual or Single Intel® Xeon® D SoC per blade
	Switch	Up to 280Gbps data plane switching capacity, Up to 40Gbps mid-plane connectivity per CPU blade, Up to 100Gbps external I/O connectivity.
CPU Blade and Interface	CPU Blade <sup>(2)</sup>	Flexible processor blade with up to 9 CPU blades which equip with single or dual Intel® Xeon® D SoC. Dual 8- or 16-core Intel® Xeon® Processor D (MIC-8303), Single 8- or 16-core Intel® Xeon® Processor D with additional on-board SSD storage (MIC-8304).
	Serial Console	Up to 2x RS-232 (with miniUSB port for ShMC) per CPU blade
	USB	Up to 2x USB 3.0 port connect to Intel® Xeon® D per CPU blade (2x MIC-8303C; 1x MIC-8304C)
Storage	SATA	Up to 2x 2.5" SSD per switch blade (ESP-9002C) Up to 2x M.2 SATAIII SSD per CPU blade (MIC-8303) Up to 2x on-board 2.5" SSD per CPU blade (MIC-8304)
Cooling	Technology	Four Rear pluggable, hot swappable fan modules with PICMG compliant fan speed control
Power	AC Input	Up to four redundant power supply units with separate AC inlets. AC 220V, 50–60Hz, maximum output 1800W per PSU, with 2+2 and N+1 power redundancy options AC 110V, 50–60Hz, maximum output 1000W per PSU, with N+1 power redundancy
	DC Input	Up to four redundant power supply units with separate DC inlets. DC -40V–60V, maximum output 1800W per PSU, with 2+2 and N+1 power redundancy options
	PSU cooling	Self-cooled
	Output DC Voltage	+12V
	Output Current Rating	Maximum 148A @ +12V per PSU (under 220V AC source; -48V DC source) Maximum 2A @ +12VSB per PSU
	Power Consumption	2400W (with configuration: 9x Dual Intel® Xeon® Processor D CPU blades with 8x 2133MHz 16GB DDR4 memory and 2x M.2 SATAIII SSD each blade, 2x Switch blades)
Shelf management	BMC	ARM 9 based controller (400MHz)
	IPMI	IPMI 2.0 based on Advantech IPMI Core
	Interfaces	RMCP, SSH, SNMP, CLI, and serial interfaces
	Sensors	FRU presence, fan health, PSU health, temperatures, input voltages
Accessibility	Front	CPU blades, Switch blades, 2.5" SSDs, AC or DC PSU's
	Rear	Fan modules
Physical Characteristics	Dimensions (H x W x D)	483 x 266 x 400 mm
	Weight	48kg
Environment	Temperature	Operating: -5 – 55 °C (23 – 131 °F) Non-operating: -40 – 70 °C (-40 – 158 °F)
	Humidity	50% @ 25 °C to 95% @ 40 °C (non condensing) 95% @ 60 °C (non-condensing)
	Altitude	Up to 13000ft @ 45 °C
	Acoustic	83dB @ 23 – 27 °C
	PICMG	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size
Compliance	Safety & EMC	CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024/EN300386), RCM, VCCI
	NEBS	Designed to comply with NEBS Level 3

## Ordering Information

Part Number	Description	
PAC-6009S3A-0AAE	6U, 4x 1800W AC PSUs, 2+2 power redundancy, 4x fan modules	
	7x Dual 16-core Intel® Xeon® Processor D-1500 series CPUs with	8x 2133MHz 16GB DDR4 REG/ECC memory 2x 128GB M.2 SATAIII SSD
	2x Single 8-core Intel® Xeon® Processor D-1500 series CPUs with	4x 2133MHz 16GB DDR4 RDG/ECC memory 1x 64GB M.2 SATAIII SSD 2x Optional 2.5" SSD storage
	2x Switch blades with	2x Optional 2.5" SSD storage
PAC-6009S4A-0AAE	6U, 4x 1800W DC PSUs, 2+2 power redundancy, 4x fan modules	
	7x Dual 16-core Intel® Xeon® Processor D-1500 series CPUs with	8x 2133MHz 16GB DDR4 REG/ECC memory 2x 128GB M.2 SATAIII SSD
	2x Single 8-core Intel® Xeon® Processor D-1500 series CPUs with	4x 2133MHz 16GB DDR4 RDG/ECC memory 1x 64GB M.2 SATAIII SSD 2x Optional 2.5" SSD storage
	2x Switch blades with	2x Optional 2.5" SSD storage

## Related Products

Part Number	Description
ESP-9002C	Advantech Switch and Management Blade for PAC-6009 <ul style="list-style-type: none"> <li>Timing Module supports SyncE and IEEE-1588v2, one-step clocking</li> <li>2 slots of SSD 2.5" SATAIII</li> </ul>
MIC-8303	Advantech CPU Blade with dual 8- or 16-core Intel® Xeon® Processor D-1500 series CPUs <ul style="list-style-type: none"> <li>Dual 8- or 16-core Intel® Xeon® Processor D-1500 series CPUs</li> <li>8 slots of DDR4 RDIMM</li> <li>2 slots of SSD M.2 2242</li> </ul>
MIC-8304	Advantech CPU Blade with single 8- or 16-core Intel® Xeon® Processor D-1500 series CPUs with additional on-board SSD storage <ul style="list-style-type: none"> <li>Single 8- or 16-core Intel® Xeon® Processor D-1500 series CPUs</li> <li>4 slots of DDR4 RDIMM</li> <li>1 slot of SSD M.2 2242</li> <li>2 slots of SSD 2.5" SATAIII</li> </ul>

### NOTES

<sup>1</sup>Mid-plane connectivity to Dual SOC CPU blade is 40Gbps, while single CPU blade is 20Gbps.

<sup>2</sup>Please contact your local Advantech sales representative for more information of CPU blades and PMMs.

Packetarium  
XL Blade  
Servers **1**

High  
Performance  
Servers **2**

Network  
Appliances **3**

PCI Express  
Adapters **4**

Network  
Switches **5**

ATCA Blades  
& Integrated  
Systems **6**

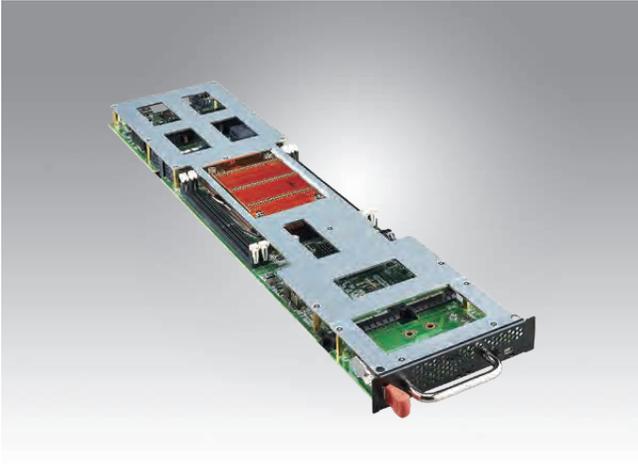
CPCI Boards  
& Enclosures **7**

VPX Blades **8**

Video  
Processing  
& IP Media  
Platforms **9**

# MIC-8301

## Packetarium XLe Single Socket CPU Blade with Intel® Xeon® Processor E5-2600 v3/v4



### Features

- Single 12 Core /14 Core Intel® Xeon® Processor E5-2600 v3/v4
- Intel® C610 Series Chipset
- Four DDR4 VLP DIMMs with ECC support
- 2x 40GbE in KR4 for data plane interface and 2x 10GbE in KR for control plane interface; 1x GbE in 1000Base-KX
- Optional 2x SATA M.2 SSD devices on the CPU blade
- Hardware management based on Advantech IPMI Core



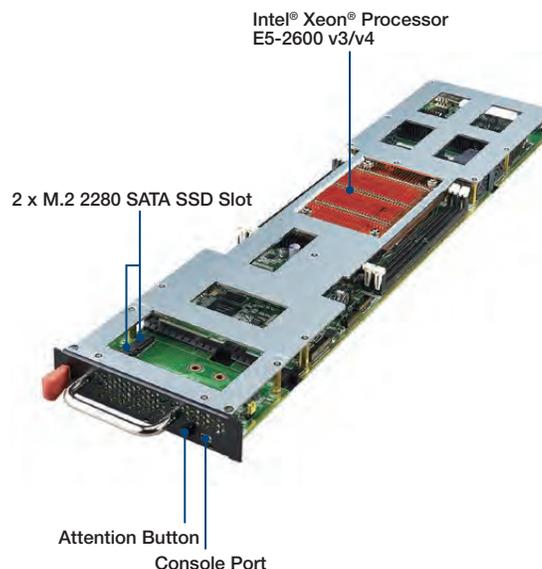
### Introduction

Advantech's Packetarium XLe series meets the higher levels of performance and throughput needed by next generation enterprise and telecom applications, offering new, cost-effective ways to scale-out compute density using Intel® Architecture processors distributed across high-speed switched backplanes.

Advantech's MIC-8301 is a single processor blade for the Advantech Packetarium XLe platform, with Intel® Xeon® E5-2600v3/v4 series EP processor and C610 PCH. The MIC-8301 enables the latest x86 CPU technology in micro blade-style form factor with up to 14 cores and 28 threads of processing power. The blade provides high-speed PCI Express Gen3 lanes running at up to 8Gbps. Four DDR4 DIMMs running up to 2133MT/s support memory densities up to 128GB, while two 2280 M.2 SSD slots support up to 1TB (2x 512GB) storage capacities.

Advantech's MIC-8301 supports one mini-USB console port for the management interface. The fabric connection is implemented by two Intel® Ethernet Controller XL710 devices providing two 40GBASE-KR connections. MIC-8301 includes dual 40GBASE-KR4 network ports for the data plane Interface, dual 10GBASE-KR4 ports for the control plane interface, and one 1000Base-KX port for management purposes.

Two standard CPU blade configurations are available. For other configurations please contact your local sales representative.



## Specifications

Processor System	CPU	Single 12 core/14 core Intel® Xeon® Processor E5-2600 v3/v4	
	Max. Speed	2.2 GHz	
	Chipset	Intel® C610 series chipset	
	BIOS	Dual 64-Mbit BIOS firmware flashes with AMI UEFI based BIOS	
	QPI	9.6 GT/s	
Memory	Technology	Quad channel DDR4 ECC VLP RDIMM up to 2133MHz	
	Max. Capacity	Configurable up to 128GB (default 64GB)	
	Socket	4x VLP DIMMs	
Connection	Fabric Interface	Dual 40GBASE-KR4 for data plane interface and dual 10GBASE-KR4 for control plane interface	
	Base Interface	1x 1000BASE-KX port	
Front I/O Interface	Serial (COM)	1x mini USB console	
Storage	SATA	2x M.2 SATAIII SSD	
Shelf management	BMC Controller	ARM 9 based controller (400MHz)	
	IPMI	IPMI 2.0 based on Advantech IPMI Core	
Power Requirement	Configuration	1x 105W CPU, 64GB memory, 2x 64GB M.2 SATAIII SSD	
	Consumption	200W (Estimated)	
Physical Characteristics	Dimensions (H x W x D)	27.40 x 134.20 x 543.95 mm	
	Weight	2.3 kg	
Environment	Temperature	Operating	Non-operating
		0 ~ 40 °C (32 ~ 104 °F)	- 40 ~ 70 °C (-40 ~ 158 °F)
	Humidity	50% @ 25 °C to 95% @ 40 °C (non condensing)      95% @ 60 °C (non-condensing)	
	Altitude	Up to 13000ft @ 45 °C	
Compliance	PICMG	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size	
	Safety & EMC	CB report (IEC60950-1), CE mark (EN60950-1), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024), RCM Mark (AS/NZS CISPR 23), VCCI, KCC	

## Ordering Information

Part Number	Configuration
MIC-8301SA2-P1E	Advantech single socket CPU Blade with Intel® Xeon® Processor E5 series, 4x 16GB 2133MHz DDR4, 2x 64GB M.2 2280 SATAIII SSD
MIC-8301SA1-P1E	Advantech single socket CPU Blade with Intel® Xeon® Processor E5 series, 4x 16GB 2133MHz DDR4

## Related Products

Model Series	Configuration
PAC-4010	4U, 12x processor blade slots with 4x 1800W PSUs, 6x fan modules, optional processor blades and PMMs
PMM-2400	8 port 10GbE PHY Mezzanine Module (PMM)
PMM-4103	Single port 100GbE PMM
PMM-3200	2 port 40GbE PMM
PMM-3201	3 port 40GbE PMM

NOTE

<sup>1</sup> Please contact your local Advantech sales representative for more information of PAC-4010 system, CPU blades, and PMMs.

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

# MIC-8303C

## Packetarium XLc Dual Node Blade with Intel® Xeon® D-1500 series SoCs



### Features

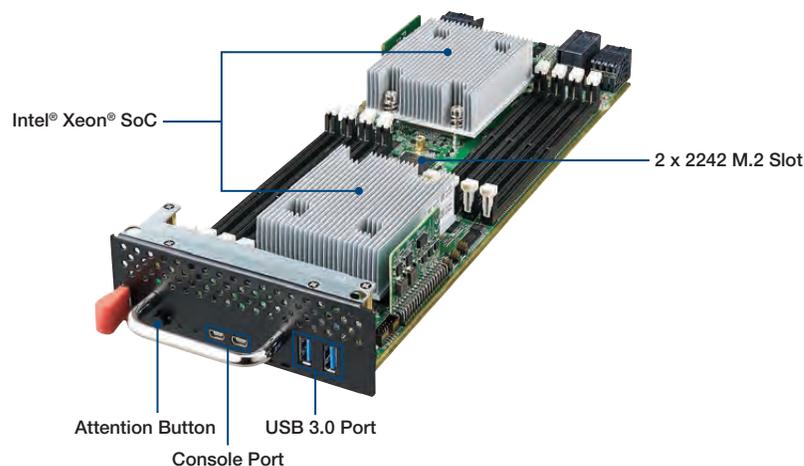
- Two Intel® Xeon® D-1500 series SoCs, each combines up to sixteen high performance physical cores and the PCH onto a single die.
- Low power consumption with only 65W per SoC
- Eight DDR4 regular DIMMs up to 2133 256GB with ECC support
- 10GBASE-KR for Fabric connection to support Dual Star Topology
- Optional 2 SATA M.2 storage devices on the CPU blade
- Hardware management based on Advantech IPMI Core



### Introduction

The MIC-8303C is a dual node blade with up to 32 cores / 64 threads of processing power, and fast PCI Express Gen3 lanes running at up to 8Gbps. With eight DDR4 DIMMs per processor in a two channel design running up to 2133MT/s, it can support memory densities of up to 128GB. Each CPU supports one USB 3.0 port to the front, one mini USB console port for Management Interface, and the fabric connection is implemented by two 10GBASE-KR connections from each of the onboard System-on-chips (SoC).

The blade is based on the Intel® Xeon® Processor D-1500 family which offers new options for infrastructure optimization by bringing the performance and advanced intelligence of Intel® Xeon® processors into a dense, lower-power system-on-a-chip. The Intel® Xeon® Processor D-1500 product family is the first 64-bit SoC based on Intel® Xeon® processor technology and addresses a broad range of low-power, high-density infrastructure needs. The system on a chip (SoC) has an integrated platform controller hub (PCH), integrated I/O, two integrated 10 Gigabit Intel® Ethernet ports, and a low thermal design point (TDP). It can run the same instruction set as more robust Intel® Xeon® processors to provide elasticity and software consistency from the data center to the network edge. Hardware management is based on Advantech IPMI Core connecting to a full suite of management interfaces on the PAC-6009's switch/management module.



## Specifications

Processor System	CPU <sup>(1)</sup>	Dual 16-core Intel® Xeon® Processor D-1587 series	
	BIOS	Dual 64-Mbit BIOS firmware flashes with AMI UEFI based BIOS	
Memory	Technology	Dual channel DDR4 ECC RDIMM up to 2133MHz	
	Max. Capacity	Configurable up to 128GB per processor	
	Socket	4 ECC RDIMMs per processor	
Connection	Fabric Interface	2x 10GBASE-KR per processor	
	Base Interface	2x 1000BASE-KX per processor	
Front I/O Interface	Serial (COM)	1x mini USB console per processor	
	USB 3.0	1 x Type A ports per processor	
Storage	SATA	Up to 1x M.2 SATAIII SSD per processor	
Hardware Management	BMC	ARM 9 based controller (400MHz)	
	IPMI	IPMI 2.0 based on Advantech IPMI Core	
Power Requirement	Configuration	2x 65W SoCs, 128GB memory, no storage	
	Consumption	200W (Estimated)	
Physical Characteristics	Dimensions (H x W x D)	44.30 x 130.30 x 357.21 mm	
	Weight	1.235 kg	
Environment		Operating	Non-operating
	Temperature	-5 ~ 55 °C (23 ~ 131 °F)	- 40 ~ 70 °C (-40 ~ 158 °F)
	Humidity	50% @ 25 °C to 95% @ 40 °C (non condensing)	95% @ 60 °C (non-condensing)
	Altitude	Up to 13000ft@45 °C	
Compliance	PICMG	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size	
	Safety & EMC	CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024/EN300386), RCM, VCCI	

## Ordering Information

Part Number	Configuration
MIC-8303C1A-A21	Dual 16-core Intel® Xeon® Processor D-1587 series CPUs with 8x 2133MHz 16GB DDR4 REG/ECC memory 2x 128GB M.2 SATAIII SSD

## Related Products

Model Series	Configuration
PAC-6009	6U Carrier Grade Blade Server for Edge Computing and NFV 6U, 4x 1800W AC PSUs, 2+2 power redundancy, 4x fan modules Scale out and scale up system
ESP-9002	Advantech Switch and Management Blade for PAC-6009 Timing Module supports SyncE and IEEE-1588v2, one-step clocking 2 slots of SSD 2.5" SATAIII
MIC-8304	Advantech CPU Blade with single 8- or 16-core Intel® Xeon® Processor D-1500 series CPUs with additional on-board SSD storage Single 8- or 16-core Intel® Xeon® Processor D-1500 series CPUs 4 slots of DDR4 RDIMM 1 slot of SSD M.2 2242 2 slots of SSD 2.5" SATAIII

NOTE

<sup>1</sup> Please contact your local Advantech sales representative for more information of CPU blades.

Packetarium XL Blade Servers **1**

High Performance Servers **2**

Network Appliances **3**

PCI Express Adapters **4**

Network Switches **5**

ATCA Blades & Integrated Systems **6**

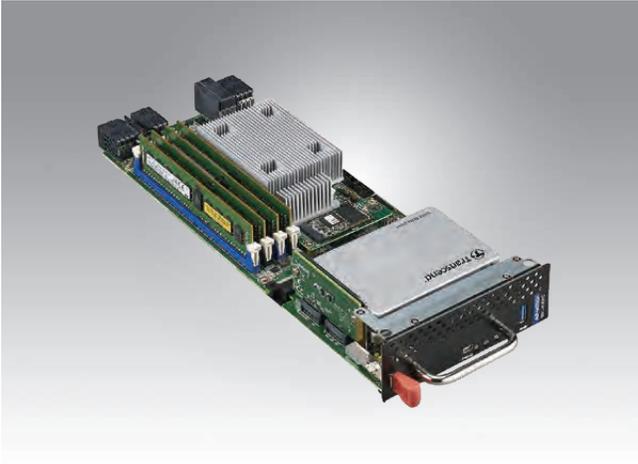
CPCI Boards & Enclosures **7**

VPX Blades **8**

Video Processing & IP Media Platforms **9**

# MIC-8304C

## Packetarium XLc Intel® Xeon® D-1500 series Blade with additional on-board storage



### Features

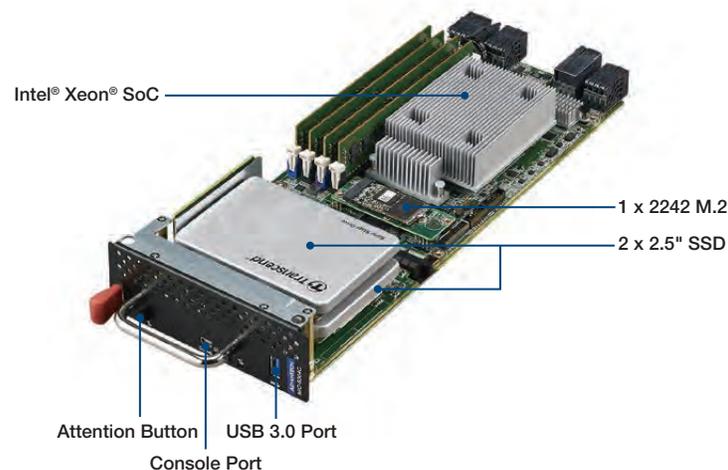
- Single Intel® Xeon® D-1500 series SoCs, each combines up to sixteen high performance physical cores and the PCH onto a single die.
- Low power consumption with only 65W per SoC
- Four DDR4 regular DIMMs up to 2133 128GB with ECC support
- 10GBASE-KR for Fabric connection to support Dual Star Topology
- Optional one SATA M.2 storage and two 2.5" SATA SSD devices on the CPU blade
- Hardware management based on Advantech IPMI Core



### Introduction

The MIC-8304C is a single processor blade with up to 16 cores / 32 threads of processing power, and fast PCI Express Gen3 lanes running at up to 8Gbps. With four DDR4 DIMMs in a two channel design running up to 2133MT/s, it can support memory densities up to 128GB. Optional one 2242 SATA M.2 and two 2.5" SATAIII SSD devices provide the flexibility of storage. The SoC provides one USB 3.0 port to the front, one mini USB console port for management, and two 10GBASE-KR connections to the fabric interface.

The blade is based on the Intel® Xeon® Processor D-1500 family which offers new options for infrastructure optimization by bringing the performance and advanced intelligence of Intel® Xeon® processors into a dense, lower-power system-on-a-chip. The Intel® Xeon® Processor D-1500 product family is the first 64-bit SoC based on Intel® Xeon® processor technology and addresses a broad range of low-power, high-density infrastructure needs. The system on a chip (SoC) has an integrated platform controller hub (PCH), integrated I/O, two integrated 10 Gigabit Intel® Ethernet ports, and a low thermal design point (TDP). It can run the same instruction set as more robust Intel® Xeon® processors to provide elasticity and software consistency from the data center to the network edge. Hardware management is based on Advantech IPMI Core connecting to a full suite of management interfaces on the PAC-6009 system's switch/management module.



## Specifications

Processor System	CPU <sup>(1)</sup>	Single Intel® Xeon® Processor D-1500 series		
	BIOS	Dual 64-Mbit BIOS firmware flashes with AMI UEFI based BIOS		
Memory	Technology	Dual channel DDR4 ECC RDIMM up to 2133MHz		
	Max. Capacity	Configurable up to 128GB		
	Socket	4 ECC RDIMMs		
Connection	Fabric Interface	2x 10GBASE-KR		
	Base Interface	1x 1000BASE-KX		
Front I/O Interface	Serial (COM)	1x mini USB console		
	USB 3.0	1 x Type A ports		
Storage	SATA	1x M.2 SATAIII SSD 2x 2.5" SATAIII SSD		
	BMC	ARM 9 based controller (400MHz)		
Hardware Management	IPMI	IPMI 2.0 based on Advantech IPMI Core		
	Configuration	1x 65W SoCs, 128GB memory, 2x 512GB 2.5" SATAIII SSD		
Power Requirement	Consumption	200W (Estimated)		
	Dimensions (H x W x D)	44.30 x 130.30 x 357.21 mm		
Physical Characteristics	Weight	1.225 kg		
	Environment	Operating	Non-operating	
Temperature		-5 ~ 55 °C (23 ~ 131 °F)	- 40 ~ 70 °C (-40 ~ 158 °F)	
Humidity		50% @ 25 °C to 95% @ 40 °C (non condensing)	95% @ 60 °C (non-condensing)	
Compliance	Altitude	Up to 13000ft@45 °C		
	PICMG	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size		
Safety & EMC		CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/CSAC22.2		
		FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024/EN300386), RCM, VCCI		

## Ordering Information

Part Number	Configuration
MIC-8304C1A-A11E	Single 8-core Intel® Xeon® Processor D-1548 series CPUs with 4x 2133MHz 16GB DDR4 RDG/ECC memory 1x 64GB M.2 SATAIII SSD without 2x Optional 2.5" SSD storages

## Related Products

Model Series	Configuration
PAC-6009	6U Carrier Grade Blade Server for Edge Computing and NFV 6U, 4x 1800W AC PSUs, 2+2 power redundancy, 4x fan modules Scale out and scale up system
ESP-9002	Advantech Switch and Management Blade for PAC-6009 Timing Module supports SyncE and IEEE-1588v2, one-step clocking 2 slots of SSD 2.5" SATAIII
MIC-8303	Advantech CPU Blade with dual 8- or 16-core Intel® Xeon® Processor D-1500 series CPUs Dual 8- or 16-core Intel® Xeon® Processor D-1500 series CPUs 8 slots of DDR4 RDIMM 2 slots of SSD M.2 2242

NOTE

<sup>1</sup> Please contact your local Advantech sales representative for more information of CPU blades.

Packetarium  
XL Blade  
Servers **1**

High  
Performance  
Servers **2**

Network  
Appliances **3**

PCI Express  
Adapters **4**

Network  
Switches **5**

ATCA Blades  
& Integrated  
Systems **6**

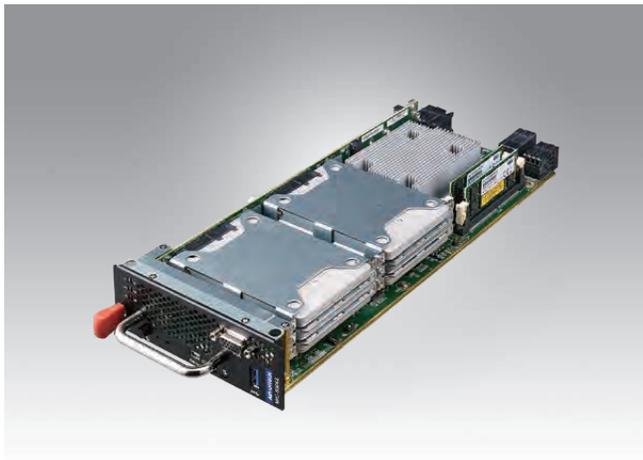
CPCI Boards  
& Enclosures **7**

VPX Blades **8**

Video  
Processing  
& IP Media  
Platforms **9**

# MIC-8304S

A new cloud controller blade for Packetarium XLc with massive on-board storage capacity



## Features

- Single Intel® Xeon® D-1500 series SoC, with up to sixteen high performance physical cores
- Two DDR4 SO-DIMMs up to 16GB with ECC support and up to 2400MT/s
- Two 10GBASE-KR fabric, one PCIe x4 and two SATA interfaces
- Optional on board two SATA/PCIe M.2 devices and six 2.5" SATA/PCIe SSD for over 20TB of storage
- Hardware management based on Advantech IPMI Core



## Introduction

The MIC-8304S is a new cloud controller blade for the Packetarium XLc high density edge computing platform, and is architected around an Intel® Xeon® Processor D-1548, offering 16 cores of server class compute and up to 23.8TB of storage. The blade leverages the advantages of up to six data center-class Intel® SSD DC S4500 series drives based on TLC Intel® 3D NAND Technology enabling faster storage for next generation, low-latency edge applications. The new blade offers a compact, rugged and reliable solution for fast and secure IoT data collection coupled with edge analytics in private cloud networks such as industrial plants, airports, and large vessel, freight or cargo centers. It also enables high capacity data caching at the network edge and can help solve network traffic variability challenges related to content sharing.

## Specifications

Processor System	CPU <sup>(1)</sup>	Single Intel® Xeon® D SoC
	BIOS	Redundant 64-Mbit BIOS firmware flashes with AMI UEFI based BIOS
Memory	Technology	Dual channel DDR4 ECC SO-DIMM up to 2400MHz
	Max. Capacity	Configurable up to 32GB
	Socket	2 x SO-DIMMs with ECC
Connection	Fabric Interface	2 x 10GBASE-KR
	Base Interface	2 1000BASE-KX
Front I/O Interface	Serial (COM)	1 x mini USB console
	USB	1 x USB 2.0/3.0
	VGA	1 x VGA port
Storage	SATA/PCIe	2 x 2242 or 2280 M.2 SATA-III/PCIe SSD slots 6 x 2.5" SATA-III/PCIe SSD slots
	BMC	ARM 9 based controller (400MHz)
Hardware Management	IPMI	IPMI 2.0 based on Advantech IPMI Core with security and reliability enhancements
	Configuration	1 x 65W SoCs, 32GB memory, 2 x 128GB M.2 SATA-III SSD and 6 x 256GB 2.5" SATA-III SSD
Power Requirement	Consumption	200W (max)
	Dimensions (H x W x D)	38 x 200 x 122 mm
Physical Characteristics	Weight	1.195 kg
	Environment	Temperature
Humidity		50% @ 25 °C to 95% @ 40 °C (non condensing)    95% @ 60 °C (non-condensing)
Altitude		Up to 13000ft @ 45 °C
Compliance		PICMG
	Safety & EMC	CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55032/EN55024/EN300386), RCM, VCCI

## Ordering Information

Part Number	Description
MIC-8304S1A-A11E	Single 8-core Intel® Xeon® Processor D-1548 CPU with 1x 64G M.2 SATA-III SSD

Notes

<sup>1</sup> Please contact your local Advantech sales representative for more information of CPU blades.



# ESP-9002C

## Advantech Switch Blade for Packetarium XLc



### Features

- ESP-9002C Switch/Management Modules integrating Broadcom Trident+ BCM56842 data plane switch and Broadcom BCM53346 GbE control plane / management switch
- Supports SyncE/IEEE1588
- Supports SNMP/CLI/Web-based configuration
- System storage – two 2.5 inch HDD slots, supports SATA 1.0 and 2.0 and can be accessed from the Local Management Processor (LMP)
- 10GbE switching between 18 data fabric ports and 10 front panel ports
- GbE switching between 18 control plane ports
- Each switch blade can interconnect management LAN port to ShMC, LMP, control plane switch, and alternative switch blade



### Introduction

The ESP-9002C switch/management blade is based on low-latency Broadcom StrataXGS® Trident+ switches, each with 280Gbps data plane switching capacity enabling up to 40Gbps mid-plane connectivity per CPU blade. The switch blade also provides ten 10GbE SFP+ ports for 100Gbps of external I/O connectivity and uplinks. Support for an optional timing module based on IEEE1588v2 is also available to support network synchronization using industry standard mechanisms.

The Broadcom BCM56842 provides Layer 2 routing and Quality of Service (QoS) management for the dataplane. Control plane switching is implemented via a Broadcom BCM53346 device. The ESP-9002C is fully compatible with the Broadcom SDK (Software Development Kit) and offers Layer 2 fast path capabilities. Switch management is handled by an on-board Freescale QorIQ P2040 processor.

The ESP-9002C also provides PAC-6009 system management based on Advantech's widely deployed SMM-5060 shelf and system manager and is fully integrated on the switch/management module. Low level shelf management runs on a dedicated ARM processor while a Freescale QorIQ P2040 runs switch management and higher level system management functions. High availability is implemented by running the modules in an active/hot standby scheme. A low latency fail-over mechanism is provided by a robust, low level fail-over interface and using crossover Ethernet connections for more extensive state and log synchronization.

A full suite of management interfaces are available ranging from a command line interface (CLI) for debugging purposes, to a Secure Shell (SSH), Simple Network Management Protocol (SNMP) and a Web interface. A System Explorer is also available as a secure web server with graphical user interface (GUI) that displays status and control information such as views of the system repository, sensor data and system health. It also provides access to system configuration and supports system maintenance tasks such as upgrade management.

### Specifications

Processor	Processor	Freescale P2040
	Switch	Up to 280 Gbps switching capacity
Storage	SATA	Up to 2x 2.5" SSD per switch blade
	BMC console port	1 x RJ-45
I/O Front Interface	LMP console port	1 x RJ-45
	USB	1 x USB1.0, 1 x USB 2.0
	Control Plane port	2 x SFP+
	Data Plane port	10 x SFP+
	BMC	ARM 9 based controller (400MHz)
Shelf management	IPMI	IPMI 2.0 based on Advantech IPMI Core
	Interfaces	RMCP, SSH, SNMP, CLI, and serial interfaces
	Sensors	FRU presence, fan health, PSU health, temperatures, input voltages
	Dimensions (HxWxD)	430 x 330 x 43 mm
Physical Characteristics	Weight	3.24kg
	Bootloader	U-boot
SW Support	HW Mgmt	IPMI 2.0
	Switch Mgmt	Broadcom FASTPATH 8.2
	Operating	Non-operating
Environment	Temperature	-5 ~ 55 °C (23 ~ 131 °F) / -40 ~ 70 °C (-40 ~ 158 °F)
	Humidity	50% @ 25 °C to 95% @ 40 °C (non condensing) / 95% @ 60 °C (non-condensing)
	Altitude	Up to 13000ft@45 °C
Compliance	PICMG	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size
	Safety & EMC	CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386), RCM, VCCI

### Ordering Information

Part Number	Description
ESP-9002C1A-AA2E	ESP-9002C switch blade for Packetarium XLc, with timing module
ESP-9002C2A-AA2E	ESP-9002C switch blade for Packetarium XLc, without timing module



## High Performance Servers

<b>Overview</b>		<b>2-1</b>
<b>Selection Guide</b>		<b>2-2</b>
<b>SKY-7210</b>	2U Rackmount Hybrid Network Server with Intel® Xeon® Processor Scalable Family, up to 3 NMC slots	<b>2-8</b>
<b>SKY-8100</b>	1U Carrier Grade Server based on Intel® Pentium® Processor D and Intel® Xeon® Processor D series	<b>2-10</b>
<b>SKY-8101</b>	Compact 1U High Performance Server based on Intel® Xeon® Processor Scalable Family	<b>2-12</b>
<b>SKY-8101D</b>	Compact 1U High Performance Server based on Intel® Xeon® Processor Scalable Family	<b>2-14</b>
<b>SKY-8101L</b>	Compact 1U High Capacity Storage Server based on Intel® Xeon® Processor Scalable Family	<b>2-16</b>
<b>SKY-8200</b>	2U Carrier Grade Server based on Dual Intel® Xeon® Processor E5-2600 v3 v4 Series	<b>2-18</b>
<b>SKY-8201</b>	Compact 2U Carrier Grade, High Performance Server based on Intel® Xeon® Processor Scalable Family	<b>2-20</b>
<b>SKY-8201L</b>	Compact 2U High Capacity Storage Server based on Intel® Xeon® Processor Scalable Family	<b>2-22</b>
<b>SKY-8211</b>	2U High Performance Edge Server based on Intel® Xeon® Processor Scalable Family	<b>2-24</b>
<b>SKY-9240</b>	2U4N Rackmount Server, Designed for Hyper-converged and HPC Application	<b>2-26</b>
<b>SKY-9340</b>	High Performance Multi-node Server with Integrated Data Plane Fabric	<b>2-29</b>

Please visit [www.advantech.com/nc](http://www.advantech.com/nc) for the latest product updates.





# High Performance Servers

Advantech's SKY 8000 Server line integrates the most performing Intel® Xeon® processors with a rich I/O subsystem and extensive PCI Express based expansion capabilities into a compact system design tailored to operate in business and mission critical environments.

## More than CPU Performance

Unlike IT servers, SKY servers are designed from the ground up to optimize throughput and offload required by communication and industrial workloads. The systems not only combine powerful CPUs with support for high thermal design power (TDP) PCI Express cards but also carefully balance I/O between multiple processor sockets. These performance and density advantages maximize system throughput in smaller footprint deployments which reduce total cost of ownership (TCO).

## High Availability

In business and mission critical applications, service interruptions result in the loss of valuable data, revenue and customers. To minimize system downtime, our servers do more than just use the reliability features of the processor platform: Advantech's advanced design yields higher margins and lower component stress for improved platform reliability. The servers support single failures of critical components such as power supply modules and fans. In addition, redundant BIOS and firmware images not only provide a safe way to recover from component failures but also offer remote fail-safe update capabilities via Advantech's IPMI which reduces MTRR and costly on-site services.

## Robustness

SKY servers have been designed to withstand high levels of shock and vibration and provide unique thermal properties for the most challenging environments. They can continuously operate at high temperatures up to 55 °C in both clean environments and applications that require air filters for dust immunity.

## Compact & Easy

With just 20" (508 mm) depth, SKY-8000 servers can easily be deployed in space constrained environments such as 600 mm telecom racks, high-end machinery or in-vehicle units where standard IT servers cannot. The SKY-8000 service friendly design and its front to rear airflow combined with Advantech's integration service ease product development reducing technical and schedule risks.

## Secure & Serviceable

All SKY-8000 Series serviceable items are Field Replaceable Units (FRUs) accessible from the front or rear of the chassis.

While optimizing Mean-Time-To-Repair (MTTR), this also enables advanced physical security via intrusion detection sensors. Security-optimized BIOS and IPMI firmware, Trusted Platform Module (TPM) support, and the option to leverage internal SSDs as boot and application drives allow for a clear separation between user and manufacturer privileges.

## Integration, Customization & Design

Advantech takes a complete platform approach with the high-performance SKY server line to help solution providers offload the complex system integration and validation services of PCIe cards from Advantech and third parties. Advantech integrates, tests and delivers fully integrated systems. Solution providers can also leverage our Customized COTS framework for semi-custom electronic or mechanical design as well as full product branding including artwork, packaging and BIOS firmware strings or IDs. As we design and manufacture all our sub-assemblies we are able to modify and optimize any element in the system to suit a specific market need.

## Pre-Validation & Certification

Advantech works together with key Operating System, Virtualization, and Provisioning software partners to certify SKY servers towards production-ready end-to-end solutions that reduce time to market, integration and deployment risks. In addition, Advantech's certification program helps manage the whole platform life cycle more efficiently by staying up to date with continuous software version upgrades.

## Full Life Cycle Support

Advantech operates a totally integrated value chain starting from in-house R&D and self-owned factories to global logistics and integration centers as well as local field support engineers. That allows us to apply strict Bill-of-Materials (BOM) control and to provide a "No Surprises" policy to our customers across the full product life span.



Optimized CPU Selection



Interoperable & Optimized IO



Thermal Simulation



Safety/Reliability Test



Mechanical Design



System Integration



Certification



Longevity Support

Packetarium XL Blade Servers 1

High Performance Servers 2

Network Appliances 3

PCI Express Adapters 4

Network Switches 5

ATCA Blades & Integrated Systems 6

PCI Boards & Enclosures 7

VPX Blades 8

Video Processing & IP Media Platforms 9

# Selection Guide



Model	SKY-9240	SKY-8100
Description		1U Carrier Grade Server Based on Intel® Pentium® Processor D and Intel® Xeon® Processor D Series
Form Factor	2U - Rack Mount	1U - Rack Mount
Processor System	Processor	Dual Intel® Xeon-SP® (per node)
	Core Number	Up to 28C
	Frequency	–
	Chipset	Intel® C620 Series (per node)
Memory	Technology	16 x DDR4 DIMMs, ECC/REG/RDIMM/LRDIMM, up to 2666MHz/node (per node)
	Max. Capacity	1024 GB/ 64 GB per DIMM (per node)
	Socket	16 x 288-pin RDIMM/LRDIMM
	ECC Support	ECC/REG
Networking	Controller	–
	1GbE	1 x 10/100/1000Mbps BMC ports (per node)
	10GE	–
Expansion	PCIe Slot	2 x HH/HL PCIe gen 3 x 16 slots (SKU A) 1 x HH/HL PCIe gen 3 x 16 slots (SKU B) (per node) 1 x PCIe Gen3 OCP x8 slot, supporting KR/SFI x2 (per node)
	M.2 PCIe/SSD	2 x M.2 2280 slot (per node)
	mSATA	–
Storage	2.5" HDD/SSD	1 x 2.5" SAS/SATA/NVMe HDD/SSD drives (per node)
	3.5" HDD	12 x 3.5" SATA/SAS HDD drives (3 per node)
	mSATA SSD	–
I/O	Console port	–
	USB2.0/USB3.0	2x USB3.0/USB2.0 Type A port at rear (per node)
	LED Indicator	Power, UID
	Reset button	Power, UID
	Others	1 x VGA port (per node) 1 x Debug port (per node)
		2 x RJ45
Power	Power Type	Redundant AC 2000W (Redundant power limitation for 100-127V <sub>AC</sub> is up to 1000W)
	Watts	2000W
	Input	1000W@100-127V <sub>AC</sub> /12-9.5A, 1800W@200-220V <sub>AC</sub> /10-9.5A, 1980W@220-230V <sub>AC</sub> /10-9.8A, 2000W@230-240V <sub>AC</sub> /10-9.8A
	Power Adaptor	AC redundant
Environment	Operating Temperature (air flow 0.7 m/ sec)	0 ~ 35 °C (32 ~ 95 °F)
	Non-operating Temperature	- 40 ~ 60 °C (-40 ~ 140 °F)
Cooling	4 x 8cm (8076) hot-swappable PWM fans with fan speed control	4* 40 x 56mm fan
Mechanical	Construction	Iron
	Mounting	Rack-mounting
	Dimensions (W x D x H)	438 x 88 x 774 mm (17.2" x 3.46" x 30.47")
	Weight	30 Kg (w/o peripherals)
OS Support	VMware (Certification), Redhat 7.x (Certification), CentOS 7.x, Ubuntu Server 16.x, Windows Server 2016	Linux (CentOS, Red Hat, Ubuntu)
IPMI	Aspeed AST2500 Carrier Grade BMC (IPMI v2.0 compliant) with fail safe updates, Web Interface, KVM, Redfish (Advantech IPMI Core)	1. Aspeed AST2400 BMC 2. Supports IPMI 2.0 3. Supports iKVM 4. Dedicated NIC via NC-SI on management LAN ports
Certification	CB, UL, FCC, CE, CCC, VCCI, BSMI, RoHS, REACH	CB, UL, FCC, CE, CCC, RoHS, REACH

Packetarium XL Blade Servers	1
High Performance Servers	2
Network Appliances	3
PCI Express Adapters	4
Network Switches	5
ATCA Blades & Integrated Systems	6
CPCI Boards & Enclosures	7
VPX Blades	8
Video Processing & IP Media Platforms	9



Model	SKY-8101 (20")	SKY-8101L1 (27.5")	SKY-8101L2 (27.5")	SKY-8101L3 (27.5")
<b>Description</b>	Compact 1U High Capacity Storage Server Based on Intel® Xeon® Processor Scalable Family			
<b>Form Factor</b>	1U- Rack Mount			
<b>Processor System</b>	<b>Processor</b> Single Intel® Xeon® Scalable Skylake-SP processor			
	<b>Core Number</b> Up to 28C			
	<b>Frequency</b> 2.6GHz			
	<b>Chipset</b> Intel® C622/ C625/ C626/ C627			
<b>Memory</b>	<b>Technology</b> 6 x DDR4 DIMMs, ECC/REG/RDIMM/LRDIMM, up to 2666MHz			
	<b>Max. Capacity</b> 384 GB/ 64 GB per DIMM			
	<b>Socket</b> 6 x 288-pin RDIMM/LRDIMM			
	<b>ECC Support</b> ECC/REG			
<b>Networking</b>	<b>Controller</b> GbE LAN1/2: Intel® i210-AT			
	<b>1GbE</b> 10GbE SFP+ LAN1/2: Integrated into PCH, with SR-IOV and RDMA support			
	<b>10GE</b> 2 x 10/100/1000 Mbps Mgmt ports 2 x 1Gbps/10Gbps SFP+ ports			
<b>Expansion</b>	<b>PCIe Slot</b> 2 x FH/FL PCIe gen.3 x8 slots (or 1x FH/FL PCIe gen.3 x16 slot) 1 x LP/HL PCIe gen.3 x8 slot 1 x PCIe gen.3 x4 expansion slot for Advantech Personalization card		2 x FH/FL PCIe gen.3 x8 slots (or 1x FH/FL PCIe gen.3 x16 slot) 2 x LP/HL PCIe gen.3 x8 slots 1 x PCIe gen.3 x4 expansion slot for Advantech Personalization card	
	<b>M.2 PCIe/SSD</b> 1 x M.2 2280 slot (SATA/PCIe)			
	<b>mSATA</b> -			
<b>Storage</b>	<b>2.5" HDD/SSD</b> 4 x 2.5" hot-swappable, SAS/SATA HDD/SSD drives	8 x 2.5" hot-swappable, SAS/SATA HDD/SSD drives 2 x 2.5" hot-swappable NVMe SSD	8 x 2.5" hot-swappable, SAS/SATA HDD/SSD drives	-
	<b>3.5" HDD</b> -	-	-	4 x 3.5" hot-swappable, SAS/SATA HDD/SSD drives
	<b>mSATA SSD</b> -	-	-	-
<b>I/O</b>	<b>Console port</b> 1x microUSB console			
	<b>USB2.0/USB3.0</b> (Front) 1 x USB3.0/2.0 Type A port (Rear) 2 x USB3.0/2.0 Type A port		1 x RS232 D-sub console (Front) 2 x USB3.0/2.0 Type A port (Rear) 2 x USB3.0/2.0 Type A port	
	<b>LED Indicator</b> ID, Power, 3 x SW definable LEDs			
	<b>Reset button</b> Power button ID button			
	<b>Others</b> 1 x Display port 2 x GbE RJ45 2 x 10GbE SFP+			
	<b>Power</b>	<b>Power Type</b> Redundant AC 700W Redundant DC 600W		Redundant AC 850W
<b>Watts</b> (AC) 700W (DC) 600W		(AC) 850W		
<b>Input</b> (AC) 100-240V <sub>AC</sub> , 9-4A, 50-60Hz (DC)-44- -65V <sub>DC</sub> , 18-10A		(AC) 100-240V <sub>AC</sub> , 12-6A, 50-60Hz		
<b>Power Adaptor</b> AC or DC, redundant		AC, redundant		
<b>Environment</b>	<b>Operating Temperature (air flow 0.7 m/ sec)</b> -5 °C (23 °F) to 55 °C (131 °F)		0 °C (32 °F) to 40 °C (104 °F)	
	<b>Non-operating Temperature</b> -40 °C (-40 °F) to 70 °C (158 °F)			
<b>Mechanical</b>	<b>Cooling</b> 5" 40 x 65mm fan		6" 40 x 56mm fan	
	<b>Construction</b> Iron		Iron	
	<b>Mounting</b> Rack-mounting		Rack-mounting	
	<b>Dimensions (W x D x H)</b> 438.00 x 506.20 x 44.20 mm (17.24" x 19.93" x 1.74")		438.40 x 696.15 x 44.20 mm (17.26" x 27.41" x 1.74") with ear handle	
	<b>Weight</b> 15kg		16kg	
<b>OS Support</b> Linux (CentOS, Red Hat, Ubuntu), Windows Server				
<b>IPMI</b> 1. Aspeed AST2500 BMC 2. Advanced Lights Out Management compliant to IPMI2.0 with security and availability enhancements 3. iKVM support Advantech Web GUI style node 4. Configurable shared or dedicated NIC support				
<b>Certification</b> CB, UL, FCC, CE, VCCI, RCM, CCC, KCC, RoHS, REACH CB, UL, FCC, CE, VCCI, RCM, RoHS, REACH				

# Selection Guide



Model		SKY-8101D (29.5")	SKY-8200
Description		Compact 1U High Performance Server Based on Intel® Xeon® Processor Scalable Family	2U Carrier Grade Server Based on Dual Intel® Xeon® Processor E5-2600 v3/v4 Series
Form Factor		1U - Rack Mount	2U - Rack Mount
Processor System	Processor	Dual Intel® Xeon® Scalable Skylake-SP processor	Dual Intel® Xeon® Processor E5-2600 v3 v4 Series
	Core Number	Up to 28C	Up to 14C
	Frequency	2.6 GHz	2.3GHz
	Chipset	Intel® C622/ C625/ C626/ C627	Intel® DH8900/ Intel® DH8925
Memory	Technology	24 x DDR4 DIMMs, ECC/REG/RDIMM/LRDIMM, up to 2666MHz	16 x DDR4 DIMMs, ECC/REG/RDIMM/LRDIMM, up to 2400 MHz
	Max. Capacity	1536 GB/ 64 GB per DIMM	1024 GB/ 64 GB per DIMM
	Socket	24x 288-pin RDIMM/LRDIMM	16x 288-pin RDIMM/LRDIMM
	ECC Support	ECC/REG	ECC/REG
Networking	Controller	Intel® i210-AT	Intel® i210-AT
	1GbE	2 x 10/100/1000 Mbps Mgmt ports	2 x 10/100/1000Mbps Mgmt ports
	10GE	2 x 10Gbps SFP+ ports (OCP Mezz. card)	-
Expansion	PCIe Slot	4 x FH/¼L PCIe gen.3 x16 slots	4 x FH/FL PCIe gen.3 x8 slots 2 x FH/HL PCIe gen.3 x8 slots 1 x LP PCIe gen.3 x8 slot (or 2 x FH/FL PCIe gen 3 x16 slots)
	M.2 PCIe/SSD	2 x M.2 2280 slot (SATA/PCIe)	-
	mSATA	-	2 x mSATA slot
Storage	2.5" HDD/SSD	4 x 2.5" hot-swappable, SAS/SATA HDD/SSD drives (optional) 4 x 2.5" hot-swappable NVMe SSD	4 x 2.5" hot-swappable SAS/SATA HDD/SSD drives
	3.5" HDD	-	-
	mSATA SSD	-	2 x mSATA
I/O	Console port	1 x RJ45	2 x RJ45
	USB2.0/USB3.0	(Front) 2 x USB3.0/2.0 Type A port	(Front) 2 x USB3.0/USB2.0 Type A port (Rear) 2 x USB3.0/USB2.0 Type A port
	LED Indicator	ID, Power, 3x SW definable LEDs	ID, Critical, Major, Minor, Power, status LEDs
	Reset button	Power button ID button	Power button ID button
	Others	1 x VGA port 2 x GbE RJ45 2 x 10GbE SFP+	1 x Telco Alarm port 1 x VGA port 1 x external mini SAS port
Power	Power Type	Redundant AC 800W / 1200W / 1600W	Redundant AC 1400W Redundant DC 1400W
	Watts	(AC) 800W / 1200W / 1600W	(AC/DC) 1400W
	Input	(AC) 100-240V <sub>AC</sub> , 50-60Hz, 12-6A	(AC) 100-240V <sub>AC</sub> , 12-10A, 50-60Hz (DC) -36- -72V <sub>DC</sub> , 40-25A
	Power Adaptor	AC, redundant	AC or DC, redundant
Environment	Operating Temperature (air flow 0.7 m/ sec)	0 °C (32 °F) to 40 °C (104 °F)	-5 °C (23 °F) to 55 °C (131 °F)
	Non-operating Temperature	-40 °C (-40 °F) to 70 °C (158 °F)	-40 °C (-40 °F) to 70 °C (158 °F)
Cooling		6* 40 x 56mm fan	6* 80 x 38mm fan
Mechanical	Construction	Iron	Iron
	Mounting	Rack-mounting	Rack-mounting
	Dimensions (W x D x H)	438 x 749.7 x 44.2 mm (17.25" x 29.5" x 1.74")	430 x 500.1 x 88.1 mm (16.93" x 19.69" x 3.47")
	Weight	20 Kg	22 Kg
OS Support		Linux (CentOS, Red Hat, Ubuntu)	Linux (CentOS, Red Hat, Ubuntu)
IPMI		1. Aspeed AST2500 BMC 2. Advanced Lights Out Management compliant to IPMI2.0 with security and availability enhancements 3. iKVM support Advantech WeB GUI style node 4. Configurable shared or -dedicated NIC support	1. Aspeed AST2400 BMC + AMI- MegaRAC firmware 2. Supports IPMI 2.0 3. Supports iKVM 4. Dedicated NIC via NC-SI on-management LAN ports
Certification		CB, UL, FCC, CE, VCCI, RCM, RoHS, REACH	CB, UL, FCC, CE, CCC, RoHS, REACH, NEBS Level 3



Model	SKY-8201 (20")	SKY-8201L1 (27.5")	SKY-8201L2 (27.5")	SKY-8211B (17")	SKY-8211F (17")
<b>Description</b>	Compact 2U High Performance Server Based on Intel® Xeon® Processor Scalable Family	Compact 2U High Capacity Storage Server Based on Intel® Xeon® Processor Scalable Family		Skylake-SP Single Socket 2U High Performance Server based on Intel® Xeon® Processor Scalable Family	Skylake-SP Single Socket 2U High Performance Server based on Intel® Xeon® Processor Scalable Family
<b>Form Factor</b>	2U - Rack Mount			2U - Rack Mount	
<b>Processor System</b>	<b>Processor</b>	Dual Intel® Xeon® Scalable Skylake-SP processor			Single Intel® Xeon® Scalable Skylake-SP processor
	<b>Core Number</b>	Up to 28C			Up to 28C
	<b>Frequency</b>	2.6GHz			2.6GHz
	<b>Chipset</b>	Intel® C622/ C626/ C627/ C628			Intel® C621/ C622/ C626/ C627/ C628
<b>Memory</b>	<b>Technology</b>	16 x DDR4 DIMMs, ECC/REG/RDIMM/LRDIMM, up to 2666MHz			6 x DDR4 DIMMs, ECC/REG/RDIMM/LRDIMM, up to 2666MHz
	<b>Max. Capacity</b>	1024 GB/ 64 GB per DIMM			384 GB/ 64 GB per DIMM
	<b>Socket</b>	16x 288-pin RDIMM/LRDIMM			6x 288-pin RDIMM/LRDIMM
	<b>ECC Support</b>	ECC/REG			ECC/REG
<b>Networking</b>	<b>Controller</b>	GbE LAN1: Intel® i210-AT 10GbE SFP+ LAN1/2: Integrated into PCH, with SR-IOV and RDMA support			GbE LAN1/2 (mgmt): Intel® i210-AT 10GbE SFP+: Intel® XL710 1GbE SFP: Intel® i350
	<b>1GbE</b>	2 x 10/100/1000 Mbps Mgmt ports			2 x 10/100/1000 Mbps Mgmt ports 24 x 1Gbps SFP ports 8 x 1Gbps SFP ports
	<b>10GE</b>	2 x 1Gbps/10Gbps SFP+ ports			8 x 1Gbps/10Gbps SFP+ ports 16 x 1Gbps/10Gbps SFP+ ports
<b>Expansion</b>	<b>PCIe Slot</b>	4 x FH/FL PCIe gen.3 x8 slots + 2 x FH/HL PCIe gen.3 slots (or 4x FH/FL PCIe gen.3 x 16 slots) 2 x LP PCIe gen.3 x8 slots			-
	<b>M.2 PCIe/SSD</b>	1 x M.2 2280 slot (SATA/PCIe)			1 x M.2 2280 slot (SATA)
	<b>mSATA</b>	-			-
<b>Storage</b>	<b>2.5" HDD/SSD</b>	4 x 2.5" hot-swappable, SAS/SATA HDD/SSD drives	-	24 x 2.5" hot-swappable, SAS/SATA HDD/SSD drives (optional) 4 x 2.5" hot-swappable NVMe SSD	-
	<b>3.5" HDD</b>	-	12 x 3.5" hot-swappable, SAS/SATA HDD/SSD drives (optional) 4 x 2.5" hot-swappable NVMe SSD	-	-
	<b>mSATA SSD</b>	-			-
<b>I/O</b>	<b>Console port</b>	1 x RJ45			1 x RJ45
	<b>USB2.0/USB3.0</b>	(Front) 2 x USB3.0/2.0 Type A port (Rear) 2 x USB3.0/2.0 Type A port	(Front) 2 x USB2.0 Type A port (Rear) 2 x USB3.0/2.0 Type A port		(Front) 2 x USB3.0/2.0 Type A port
	<b>LED Indicator</b>	ID, Critical, Major, Minor, Power, status LEDs	ID, Power, Status LEDs		-
	<b>Reset button</b>	-			-
	<b>Others</b>	1 x Display port 1 x VGA port 2 x GbE RJ45 2 x 10GbE SFP+			1 x Display port 2 x GbE RJ45 2 x 10GbE SFP+
<b>Power</b>	<b>Power Type</b>	Redundant AC 1400W Redundant DC 1400W	Redundant AC 1200W		Redundant AC 550W Redundant DC 800W
	<b>Watts</b>	(AC/DC) 1400W	(AC) 1200W		(AC)550W (DC)800W
	<b>Input</b>	(AC) 100-240V <sub>AC</sub> , 12-10A, 50-60Hz (DC) -36-- 72V <sub>DC</sub> , 40-25A	(AC) 100-240V <sub>AC</sub> , 50-60Hz, 12-6A		(AC) 100-240V <sub>AC</sub> , 8-4A, 50-60Hz (DC)-48V <sub>DC</sub> , 12A
	<b>Power Adaptor</b>	AC or DC, redundant	AC, redundant		AC or DC, redundant
<b>Environment</b>	<b>Operating Temperature (air flow 0.7 m/ sec)</b>	-5 °C (23 °F) to 55 °C (131 °F)	0 °C (32 °F) to 40 °C (104 °F)		-20 °C (-4 °F) to 70 °C (158 °F)
	<b>Non-operating Temperature</b>	-40 °C (-40 °F) to 70 °C (158 °F)			-40 °C (-40 °F) to 70 °C (158 °F)
<b>Cooling</b>	6 x 80 x 38 mm fan	4 x 80 x 38mm fan		4 x 80 x 38mm fan	
<b>Mechanical</b>	<b>Construction</b>	Iron			Iron
	<b>Mounting</b>	Rack-mounting	Rack-mounting	Rack-mounting	Rack-mounting
	<b>Dimensions (W x D x H)</b>	438 x 518.1 x 88.1 mm (17.25" x 20.4" x 3.46")	438.4 x 699.8 x 88.1 mm (17.26" x 27.5" x 3.46")		430 x 430 x 88.1 mm (16.93" x 16.93" x 3.46")
	<b>Weight</b>	20 Kg	25 Kg		15kg
<b>OS Support</b>	Linux (CentOS, Red Hat, Ubuntu), Windows Server			Linux (CentOS, Red Hat, Ubuntu)	
<b>IPMI</b>	1. Aspeed AST2500 BMC 2. Advanced Lights Out Management compliant to IPMI2.0 with security and availability enhancements 3. iKVM support Advantech Web GUI style node 4. Configurable shared or -dedicated NIC support			1. Aspeed AST2500 BMC 2. Advanced Lights Out Management compliant to IPMI2.0 with security and availability enhancements 3. iKVM support Advantech Web GUI style node 4. Configurable shared or dedicated NIC support	
<b>Certification</b>	CB, UL, FCC, CE, VCCI, RCM, RoHS, REACH	CB, UL, FCC, CE, RoHS, REACH	CB, UL, FCC, CE, RoHS, REACH	CB, UL, FCC, CE, VCCI, RCM, RoHS, REACH	

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

# Selection Guide



Model		SKY-7210L	SKY-7210F
Form Factor		2U - Rack Mount	2U - Rack Mount
Processor System	Processor	2 x Intel® Xeon® Scalable Processors, Skylake-SP	2 x Intel® Xeon® Scalable Processors, Skylake-SP
	Core Number	8C/10C/12C/14C/16C/18C/20C/22C/24C/26C/28C	8C/10C/12C/14C/16C/18C/20C/22C/24C/26C/28C
	Frequency	2.0GHz/2.1GHz/2.2GHz/2.3GHz/2.4GHz/2.6GHz/3.0GHz/3.2GHz/3.4GHz/3.6GHz	2.0GHz/2.1GHz/2.2GHz/2.3GHz/2.4GHz/2.6GHz/3.0GHz/3.2GHz/3.4GHz/3.6GHz
	L2 Cache	30MB ~ 75 MB	30MB ~ 75 MB
	L3 Cache	-	-
	Chipset	Purley (C621)	Purley (C622)
Virtualization		AMI Efi 64Mbit VT-d	AMI Efi 64Mbit VT-d
Memory	Technology	DDR4, 2133/2400/2666MHz	DDR4, 2133/2400/2666MHz
	Max. Capacity	1563GB (CPUx12,CPU1x12)	1563GB (CPUx12,CPU1x12)
	Socket	24 x 288-pin RDIMM	24 x 288-pin RDIMM
	ECC Support	Yes	Yes
Networking	Controller	Intel i210	Intel i210
	1GbE	2 x 10/100/1000 Mbps RJ45 via Intel I210 chip	2 x 10/100/1000 Mbps RJ45 via Intel I210 chip
	10GE	-	2 x 10G SFP+ via Intel C622
	LAN bypass	Advanced Legacy	LBP support by NMC LBP support by NMC
Expansion	PCIe x 16	2 x 1 Full-high Full-length Gen3 x16 slots	1 x 1 Full-high Full-length Gen3 x16 slots
	PCIe x 8	2 x 2 Full-high Full-length Gen3 x8 slot	2 x 2 Low-profile Gen3 x8 slot
	PCIe x 4	-	-
	PCIe x 1	-	-
	NMC	3 NMCs	3 NMCs
	m.2 PCIe	1 x (2280)	1 x (2280)
	Mini PCIe	-	-
NMCs compatible list			
NMC Type		Thumb screw	Thumb screw
GbE	2 port Copper	-	-
	4 port Copper	NMC-0121-04CBSA1	NMC-0121-04CBSA1
	8 port Copper	NMC-0806-08CBSA1	NMC-0806-08CBSA1
	2 port Fiber	-	-
10GbE	4 port Fiber	NMC-0120-04FBSSA1	NMC-0120-04FBSSA1
	8 port Fiber	-	-
40GbE	2 port Copper	-	-
	4 port Copper	-	-
100GbE	2 port Fiber	NMC-1008-02FBSSA1	NMC-1008-02FBSSA1
	4 port Fiber	NMC-4005-04FSA1	NMC-4005-04FSA1
Storage	2 port Fiber	NMC-4006-02FSA1	NMC-4006-02FSA1
	2.5" HDD/SSD	-	-
	3.5" HDD	Max. 12 x 3.5" HDD/SSD	Max. 12 x 3.5" HDD/SSD
	m.2 SSD	1 x M.2 2280	1 x M.2 2280
	mSATA SSD	-	-
CompactFlash/ CFast		-	-
Display		VGA (AST2500)	VGA (AST2500)
I/O	Console port	1	1
	USB3.0	2	2
	USB2.0	-	-
	GPIO	-	-
	LED Indicator	6 x System LEDs (PWR/HDD/LAN1/LAN2/Info/ID)	6 x System LEDs (PWR/HDD/LAN1/LAN2/Info/ID)
	Reset button	1 x Reset button	1 x Reset button
TPM		TPM1.2	TPM1.2
LCD Module		-	-
Others		-	-
Power	Power Type	AC , redundant DC, redundant (optional)	AC , redundant DC, redundant (optional)
	Watts	850W	1200W
	Input	100V ~ 240V	100V ~ 240V
	Connector	CRPS	CRPS
Power Adaptor		-	-
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)
	Non-operating Temperature	-20 ~ 80 °C (-4 ~ 167 °F) and 40 °C @ 95% RH Non-Condensing	-20 ~ 80 °C (-4 ~ 167 °F) and 40 °C @ 95% RH Non-Condensing
	Vibration Resistance	with SSD: 0.3 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	with SSD: 0.3 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis
	Shock Protection	with SSD: 10G, IEC-60068-2-27, half sine, 11ms duration	with SSD: 10G, IEC-60068-2-27, half sine, 11ms duration
Cooling		6x system FAN with smart FAN	6x system FAN with smart FAN
Mechanical	Construction	Iron	Iron
	Mounting	2U Rackmount	2U Rackmount
	Dimensions (W x H x D)	438 x 88 x 730 mm (17.24" x 3.46" x 28.74")	438 x 88 x 730 mm (17.24" x 3.46" x 28.74")
	Weight	26 KG	28 KG
OS Support		Linux (CentOS, Red Hat, Ubuntu)	Linux (CentOS, Red Hat, Ubuntu)
Advantech S/W Packages		QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>afwu</li> <li>ipmitool</li> <li>LCD4Linux</li> <li>Advanced LBP Utility</li> <li>Intel DPDK</li> <li>Intel QAT</li> </ul> DUI (Offline Diagnostics) Individual packages: <ul style="list-style-type: none"> <li>Advanced LBP Library</li> <li>DUI (Offline Diagnostics)</li> </ul>	QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>afwu</li> <li>ipmitool</li> <li>LCD4Linux</li> <li>Advanced LBP Utility</li> <li>Intel DPDK</li> <li>Intel QAT</li> </ul> DUI (Offline Diagnostics) Individual packages: <ul style="list-style-type: none"> <li>Advanced LBP Library</li> <li>DUI (Offline Diagnostics)</li> </ul>
IPMI		Industry standard BMC, IPMI v2.0 compliant, with web interface, iKVM on request (AMI MegaRAC SP-X)	Industry standard BMC, IPMI v2.0 compliant, with web interface, iKVM on request (AMI MegaRAC SP-X)
Certification		CE/FCC/CB/UL/CCC	CE/FCC/CB/UL/CCC

# Selection Guide



	SKY-7221L	SKY-7221S
<b>Processor Support</b>	2U Rackmount IoT Storage Server with Intel® Xeon® Processor Scalable Family, up to 2 NMC slots	2U Rackmount IoT Storage Server with Intel® Xeon® Processor Scalable Family, up to 2 NMC slots
<b>Key Applications</b>	<ul style="list-style-type: none"> <li>Hyperconverge Storage</li> <li>High End Enterprise Server</li> <li>Virtualization</li> </ul>	<ul style="list-style-type: none"> <li>Hyperconverge Storage</li> <li>High End Enterprise Server</li> <li>Cloud Computing</li> </ul>
<b>Outstanding Features</b>	<ul style="list-style-type: none"> <li>Internal SAS RAID Mezz. support: RAID 0, 1, 10, 5, 50, 6, and 60 with hardware acceleration</li> <li>Boot Optimized Storage Subsystem: 2x M.2 2280</li> <li>Up to 16 x 3.5" (up to 4x NVMe Support)</li> <li>Up to 3x 300W GPU</li> <li>OCF v2.0 (PCIe x16)</li> </ul>	<ul style="list-style-type: none"> <li>Internal SAS RAID Mezz. support: RAID 0, 1, 10, 5, 50, 6, and 60 with hardware acceleration</li> <li>Boot Optimized Storage Subsystem: 2x M.2 2280</li> <li>24x 2.5" drive bays (up to 16x NVMe Support)</li> <li>Up to 3x 300W GPU</li> <li>OCF v2.0 (PCIe x16)</li> </ul>
<b>Serverboard</b>	SKY-7221x	SKY-7221x
<b>Chipset</b>	Intel® C621/C622/C624 chipset (by SKUs)	Intel® C621/C622/C624 chipset (by SKUs)
<b>System Memory (Max.)*</b>	24x DIMM slots, Up to 3TB ECC 3DS LRDIMM, Up to 2666 MHz	24x DIMM slots, Up to 3TB ECC 3DS LRDIMM, Up to 2666 MHz
<b>Expansion Slots</b>	3 PCI-E 3.0 x 16 (FH/FL); 1 OCP v3.0 (default) 2 PCIe 2.0 x16 (FH/FL); 2 NMC slots; 1 OCP v3.0 (by SKU)	3 PCI-E 3.0 x 16 (FH/FL); 1 OCP v3.0 (default) 2 PCIe 2.0 x16 (FH/FL); 2 NMC slots; 1 OCP v3.0 (by SKU)
<b>Onboard Storage Controller</b>	Intel® C621/C622/ C624 SATA3 (6Gb/s) controller Intel®	Intel® C621/C622/ C624 SATA3 (6Gb/s) controller Intel®
<b>Connectivity</b>	<p>SKY-7221L-1: 3 1Gbase-T Ethernet ports (2 for Mgmt, 1 for IPMI); 1 VGA ports (rear), 2 USB 2.0(front), 2 USB3.0(rear) ports; 1 Serial Port</p> <p>SKY-7221L-2: 2 10G SFP+ Ethernet ports; 3 1Gbase-T Ethernet ports (2 for Mgmt, 1 for IPMI); 1 VGA ports (rear), 2 USB 2.0(front), 2 USB3.0(rear) ports; 1 Serial Port</p> <p>SKY-7221L-4: 4 10G SFP+ Ethernet ports; 3 1Gbase-T Ethernet ports (2 for Mgmt, 1 for IPMI); 1 VGA ports (rear), 2 USB 2.0(front), 2 USB3.0(rear) ports; 1 Serial Port</p>	<p>SKY-7221S-1: 3 1Gbase-T Ethernet ports (2 for Mgmt, 1 for IPMI); 1 VGA ports (rear), 2 USB 2.0(front), 2 USB3.0(rear) ports; 1 Serial Port</p> <p>SKY-7221S-2: 2 10G SFP+ Ethernet ports; 3 1Gbase-T Ethernet ports (2 for Mgmt, 1 for IPMI); 1 VGA ports (rear), 2 USB 2.0(front), 2 USB3.0(rear) ports; 1 Serial Port</p> <p>SKY-7221S-4: 4 10G SFP+ Ethernet ports; 3 1Gbase-T Ethernet ports (2 for Mgmt, 1 for IPMI); 1 VGA ports (rear), 2 USB 2.0(front), 2 USB3.0(rear) ports; 1 Serial Port</p>
<b>VGA/Audio</b>	Aspeed AST2500 BMC	Aspeed AST2500 BMC
<b>Management</b>	Industry standard BMC, IPMI v2.0 compliant, with web interface, iKVM on request (AMI MegaRAC SP-X)	Industry standard BMC, IPMI v2.0 compliant, with web interface, iKVM on request (AMI MegaRAC SP-X)
<b>Drive Bays</b>		
<b>Peripheral Bays</b>	up to 16 hot-swap 3.5" drive support; 4 NVMe/SATA3 ports	Up to 24 hot-swap 2.5" drive support; 4 NVMe/SATA3 ports Up to 16 hot-swap 2.5" drive support; 16 NVMe/SATA3 ports
<b>Power Supply</b>	850W/1200W CRPS redundant Power Supply	850W/1200W CRPS redundant Power Supply
<b>Cooling System</b>	6 heavy duty fans w/ Optimal Fan Speed Control	6 heavy duty fans w/ Optimal Fan Speed Control
<b>Form Factor</b>	2U Chassis; Enclosure: 438 x 88 x 755 mm (17.24" x 3.46" x 29.72")	2U Chassis; Enclosure: 438 x 88 x 755 mm (17.24" x 3.46" x 29.72")

Packetarium XL Blade Servers **1**

High Performance Servers **2**

Network Appliances **3**

PCI Express Adapters **4**

Network Switches **5**

ATCA Blades & Integrated Systems **6**

CPCI Boards & Enclosures **7**

VPX Blades **8**

Video Processing & IP Media Platforms **9**

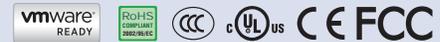
# SKY-7210

## 2U Rackmount Hybrid Network Server with Intel® Xeon® Processor Scalable Family, up to 3 NMC slots



### Features

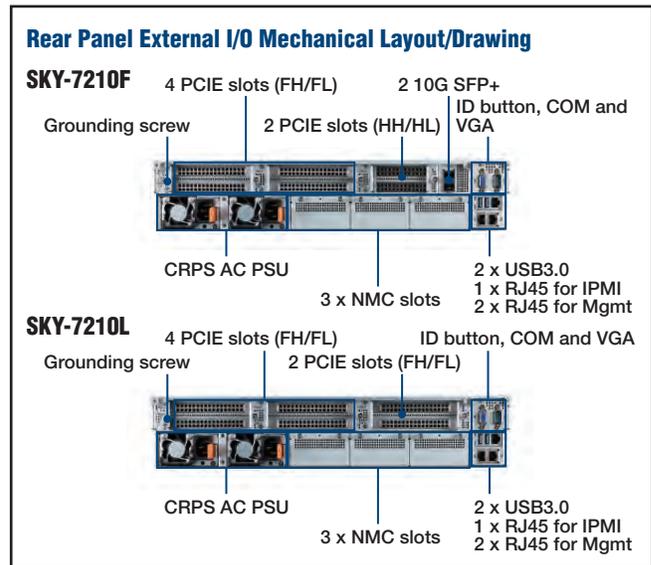
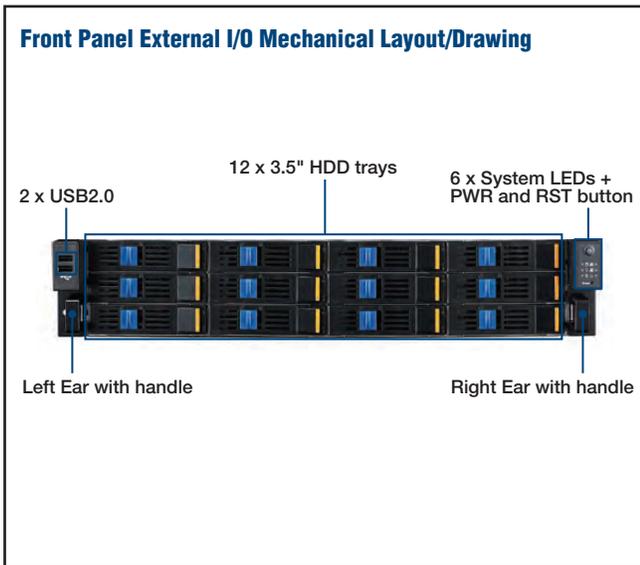
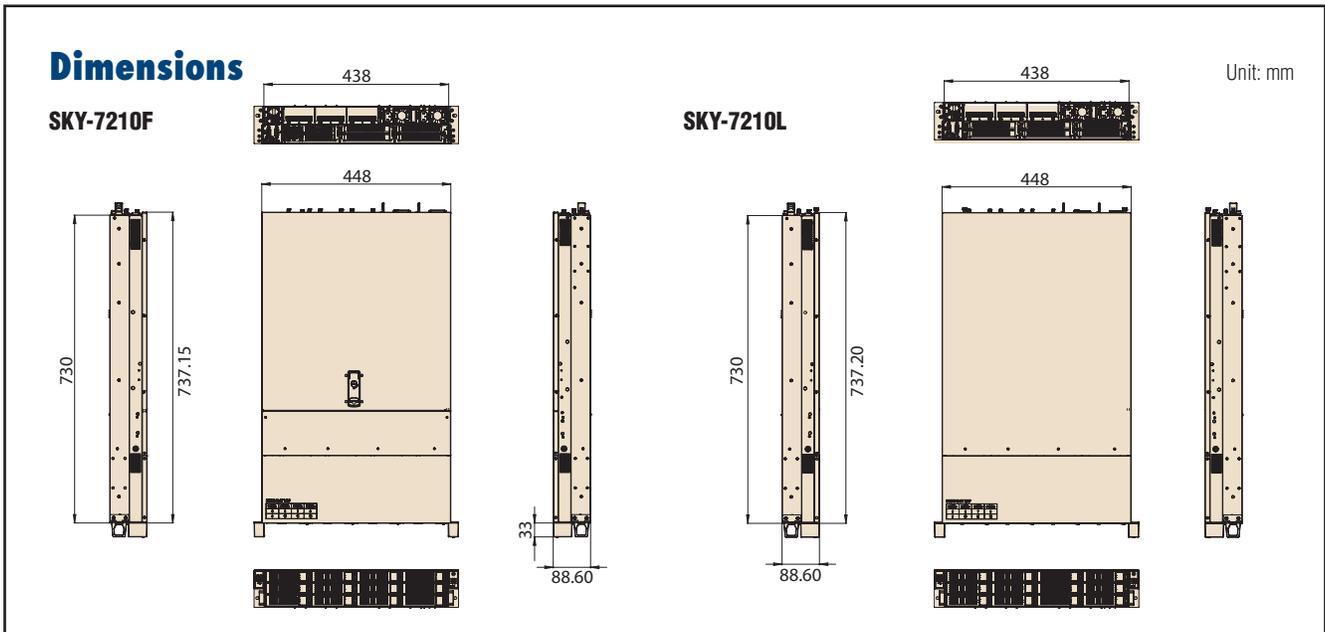
- 2 x Intel® Xeon® Scalable Processors Platinum 8100, Gold 6100 & 5100, Silver 4100 and Bronze 3100
- 24 x DDR4 2133/2400/2666 ECC registered memory up to 1536GB
- C621 or C622 PCH w/ 2x10G SFP+ support
- 3 x NMC (Network Mezzanine Card) slots for a wide range of GbE, 10GbE, 40GbE and 100GbE NMCs with or without Advanced LAN bypass
- Optional support 3 x HDD kit (for 2.5" HDD) on the NMC slots
- Max. up to 6 x PCIe8 (FH/HL) or 3 x PCIe16 (FH/FL) slots by SKUs option
- 12 x 3.5"/2.5" removable external SATA/SAS HDDs/SSDs
- 1 x M.2 2280 SSD
- IPMI 2.0 compliant Remote Management



### Specifications

System P/N		SKY-7210F	SKY-7210L
Form Factor		2U - Rack Mount	2U - Rack Mount
Processor System	Processor	2 x Intel® Xeon® Scalable Processors Platinum 8100, Gold 6100 & 5100, Silver 4100 and Bronze 3100 Max. up to 205W	2 x Intel® Xeon® Scalable Processors Platinum 8100, Gold 6100 & 5100, Silver 4100 and Bronze 3100 Max. up to 165W
	Core Number	8C/10C/12C/14C/16C/18C/20C/22C/24C/26C/28C	
	Frequency	2.0GHz/2.1GHz/2.2GHz/2.3GHz/2.4GHz/2.6GHz/3.0GHz/3.2GHz/3.4GHz	
	L2 Cache	30MB ~ 75 MB	
	Chipset	C622 (without QAT)	C621 (without QAT)
	BIOS	AMI EFI 64Mbit	
Virtualization		VT-d	
Memory	Technology	DDR4, 2133/2400/2600MHz	
	Max. Capacity	1563GB (CPU0x12,CPU1x12)	
	Socket	24 x 288-pin RDIMM	
	ECC Support	Yes	
Networking	Controller	3 x Intel I210-AT	
	1GbE	2 x 1GbE RJ45 for management via Intel I210-AT, 1 x 1GbE RJ45 for IPMI	
	10GbE	2 x 10G SFP+ via PCH +CS4277 (10G Dual PHY)	None
	LAN bypass	None	
Expansion	PCIex8	2 x FH/FL + 2 x HH/HL	2 x FH/FL
	PCIex16	1 x FH/FL	2 x FH/FL
	NMC	3 x NMCs	
Storage	3.5"/2.5" HDD/SSD	12 x 2.5" HDD/SSD or 12 x 3.5" HDD/SSD	
	2.5" NVME	4 x 2.5" NVME (option) in front, 6 x 2.5" NVME (option) in rear by NMC slots	
	M.2	1 x (2280)	
I/O	Console port	1 (D-Sub)	
	USB2.0/3.0	2 x USB3.0 on board pin header 2 x USB3.0 ports in rear 2 x USB2.0 ports in front	
	LED Indicator	1 x PWR_LED, 1 x HDD_LED, 1 x Info_LED, 1 x ID_LED, 2 x LAN_LED(Mgmt)	
	VGA	1 (D-Sub)	
	Others	1 x Power button, 1 x Reset button, 1 x ID button	
	TPM	Trust Platform Module	Modularized TPM(1.2), Option: TPM(2.0)
LCD Module		None	
Power Supply	Power Type	Redundant AC PSU (redundant DC PSUs on request)	Redundant AC PSU (redundant DC PSUs on request)
	Watts	1200W	850W
	Input	AC 100 ~ 240 V @ 50 ~ 60 Hz, full range	AC 100 ~ 240 V @ 50 ~ 60 Hz, full range
	Connector	AC 3pin plug	AC 3pin plug
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)	
	Non-operating Temperature	-20 ~ 80 °C (-4 ~ 167 °F) and 40 °C @ 95% RH Non-Condensing	
	Vibration Resistance	With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	
	Shock Protection	With SATA HDD: 10G, IEC-60068-2-27, half sine, 11ms duration	
Cooling		6 x system FAN with smart FAN control	
Mechanical	Construction	Iron	
	Mounting	2U Rackmount	
	Dimensions (W x H x D)	438 x 88 x 730 mm (17.24" x 3.46" x 28.74")	
	Weight	28 Kg	26 Kg
OS support		Linux (CentOS, Red Hat, Ubuntu), Windows server	
Advantech S/W Packages		- QuickStart Linux Image (CentOS based reference BSP) including	
		▪ AHG (Advantech health guide)	
		▪ ipmitool ▪ lmsensors ▪ flashrom ▪ Advanced LBP Utility	
	Individual packages: - Advanced LBP Library		
IPMI		Industry standard BMC, IPMI v2.0 compliant, with web interface, iKVM on request (AMI MegaRAC SP-X)	
Certification	EMC	CE/FCC/CB/UL/CCC	

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**



## Ordering Information

Part Number	CPU	DDR4	PCH	NMC slot	PCIe slot	HDD qty.	BMC	TPM	10G SFP+	GbE port	VGA	FAN module	PSU
SKY-7210F-00A1	2 sockets for Intel® Xeon® Scalable Processors	24	C622	3	2x 2PCIEx8 1x PCIEx16 (FH/FL)	12 (3.5")	Yes	1.2	2	3 (2 for Mgmt, 1 for IPMI)	Yes	Swappable	1200W AC
SKY-7210L-00A1	2 sockets for Intel® Xeon® Scalable Processors	24	C621	3	1x 2PCIEx8 2x PCIEx16 (FH/FL)	12 (3.5")	Yes	Option	N/A	3 (2 for Mgmt, 1 for IPMI)	Yes	Fixed	850W AC

## Packing List

Part no.	Description
1960081028N001	CPU Heatsink
1651003079-01	CPU Clip for Heatsink
1960083839N000	Bracket for FH/FL long PCIe card

## Optional Power Supply List

Part Number	Description
96PSRM-A1K2WCR	AC 1200W PSU CRPS module
XFWA-DPS800AB-14G	DC 800W PSU CRPS module
96PSRM-A850WCRP	AC 850W PSU CRPS module

## Optional Accessories

Part no.	Description
1702002600	Power cord 3P 180 cm, USA
1702002605	Power cord 3P 180 cm, Europe
1702031801	Power cord 3P 180 cm, UK
1700000237	Power cord 3P 180 cm, JP
1700009652	Power cord 3P 180 cm, China
1700027969-01	Power cable for GPU card
968AE00029	Slide rail kit

# SKY-8100

## 1U Carrier Grade Server based on Intel® Pentium® Processor D and Intel® Xeon® Processor D series



### Features

- 1U network server, < 20" deep
- Supports Intel® Pentium® Processor D1508, Intel® Xeon® Processor D-1527, D-1528, and D-1548
- Four DIMM sockets support up to 128 GB DDR4 1600/1866/2133/2400 MHz SDRAM(ECC/UDIMM)
- Supports PCIe Gen3
- 2 x PCIe x8, Full-Height/Full-Length
- 2 x 2.5" hot-swappable HDDs or on board SFF SSDs
- Carrier Grade BIOS Features
- LOM (Light Out Management) module for BMC support (AST2400)



### Introduction

The Advantech SKY-8100 is a highly configurable carrier-grade server designed to balance the best in x86 server-class processing performance with maximum I/O and offload density in a 20" depth chassis. The system is a cost effective, highly available platform optimized to meet next-generation networking equipment needs. It is specifically designed for applications where offload and acceleration technology is essential. The power and cooling options along with the streamlined mechanical design make it ideal for Digital Signal Processing and other high tdp PCIe adapter cards. Architected around single 5th Intel® Pentium® Processor and Intel® Xeon® Processor D series, processors, the SKY-8100 combines cutting-edge performance with the ruggedness, reliability, and long sytem lifecycles required by both industrial and networking equipment providers. The system supports single Intel® Pentium D-1508, Intel® Xeon® Processor D-1527, D-1528, and D-1548 with a maximum memory capacity up to 128GB with 4 DIMM sockets.

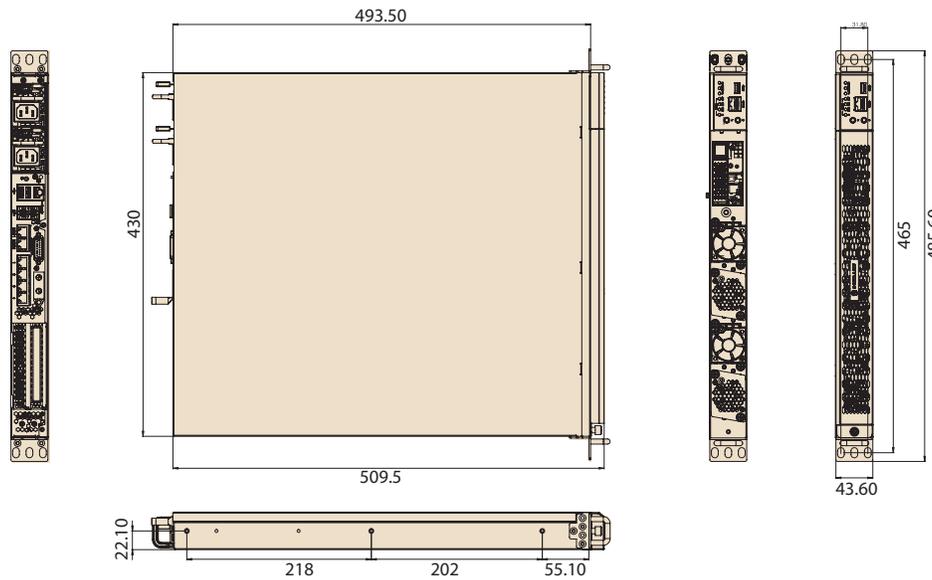
The system provides hot-swappable and redundant 650W power supply modules, 4 sets of hot-swappable fans, 2 hot-swappable hard disk drives, and 2 FH/FL PCIe expansion slots. A management card provides 4 GbE Ethernet ports, 2 10GbE ports, 2 USB and a TAM alarm module connector. The SKY-8100 is designed for NEBS Level 3 carrier grade environments and where limited rack space is available. Interoperability testing is performed with a wide selection of third-party PCIe card vendors.

### Specifications

Processor System	CPU	Supports Intel® Pentium D-1508, Intel® Xeon® Processor D-1527, D-1528, and D-1548
Memory	Technology	4 x DDR4 DIMMs, ECC/non-ECC UDIMM/RDIMM, 1600/1866/2133/2400 MHz
	Capacity	Max memory capacity per channel RDIMM: 64GB UDIMM: 32GB RDIMM: 32GB per slot UDIMM: 16GB per slot Max memory capacity total in system RDIMM: 128GB UDIMM: 64GB RDIMM: 32GB x 4 DIMMs UDIMM: 16GB x 4 DIMMs
	Socket	4 x 288-pin DIMM
PCIe	Expansion slot	Total 2 x PCIe x8 FH/FL
IO	Front Mgmt IO	1 x PWR button, 1 x ID button, 1 x RJ45-type console, 2 x USB, LEDs
	Rear Mgmt IO	1 x RJ45-type console, 1 x DB15 for TAM, 2 x USB, 2 x GbE Mgmt ports (1 for IPMI), 4 x GbE Ethernet ports, 1 x VGA (Optional)
Ethernet	Management Interface	10/100/1000 Mbps
	Controller	GbE LAN1: Intel® I210-AT, GbE LAN2: Intel® I210-AT
	Connector	RJ-45 x 2
	Traffic Interface	10/100/1000 Mbps, 10Gbps
Ethernet	Controller	GbE LAN1-LAN4: Intel® I350-AM4, 10Gbps LAN1-LAN2: Intel® BDE
	Connector	RJ-45 x 4, SFP x 2
Storage		2 x 2.5", hot-swappable, SATA/SSD trays in front
Power Supply	Watt	650W AC/DC Redundant PSU
	Input	(AC) 100-240V <sub>ac</sub> , 12-10A, 50-60Hz (DC) -36 ~ -72V <sub>dc</sub> , 25-11A
Environment	Humidity operational (non-condensing)	5% to 85%
	Operational temperature	-5 °C (23 °F) to 55 °C (131 °F)
	Storage temperature	-40 °C (-40 °F) to 70 °C (158 °F)
Cooling	Chassis Fan	4 * 40 x 56 high speed fan
	Air Filter	Yes
System Management	IPMI	Aspeed AST2400 iBMC Supports IPMI 2.0 Supports iKVM Shared NIC via NC-SI on management LAN ports
Physical	Dimension (W x D x H)	430 x 493.5 x 43.6 mm (16.93" x 19.43" x 1.72")
	Weight (N.W)	15kg

## Dimensions

Unit: mm [inch]



Front View



Rear View



## Ordering Information

Part Number	Description
SKY-8100AS-0000E	1U HPS w GSMB-3010 Intel® Xeon® Processor D-1548 8C/STD AC/PCIEx8
SKY-8100BS-0000E	1U HPS w GSMB-3010 Pentium® Processor D1508 2C/STD AC/PCIEx8
SKY-8100CS-0000E	1U HPS w GSMB-3010 Xeon® Processor D-1527 4C/STD AC/PCIEx8
SKY-8100DS-0000E	1U HPS w GSMB-3010 Xeon® Processor D-1528 6C/STD AC/PCIEx8
SKY-8100AS-0001E	1U HPS w GSMB-3010 Xeon® Processor D-1548 8C/STD DC/PCIEx8
SKY-8100BS-0001E	1U HPS w GSMB-3010 Pentium® Processor D1508 2C/STD DC/PCIEx8
SKY-8100CS-0001E	1U HPS w GSMB-3010 Xeon® Processor D-1527 4C/STD DC/PCIEx8
SKY-8100DS-0001E	1U HPS w GSMB-3010 Xeon® Processor D-1528 6C/STD DC/PCIEx8

## Packing List

Part Number	Description	Qty
9680017059	20" slide rail (pair)	1
1700012372-11	Console cable	1

## Optional Accessories

Part Number	Description
1702002600-02	Power Cord 3P UL/CSA(USA) 125V 10A 1.83M 180D
1702002605-02	Power Cord 3P European 10A/16A 250V 1.83M 90D
1702031801	Power Code 3P (UK) 5A-Fuse 183cm
1700000237-01	Power Cord 3P PSE 12A 125V 1.83M Japan

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

# SKY-8101

## Compact 1U High Performance Server based on Intel® Xeon® Processor Scalable Family



### Features

- 1U 20" deep rackmount server
- Single Intel® Xeon® Platinum, Gold, Silver or Bronze Processor
- 6x DIMM sockets support up to 384 GB DDR4 1600/1866/2133/2400/2666 MHz SDRAM (ECC/RDIMM/LRDIMM)
- Rich Add-In Card Support: Up to two FH/FL PCIe x8 Gen3 slots (optional: one FH/FL PCIe x16 Gen3 slot), one LP PCIe x8 Gen3 slot, one PCIe x4 Gen3 slot for Advantech Personalization Card
- Up to 4x 2.5" hot-swappable HDD/SSD drives
- 1x M.2 2280 SATA SSD
- IPMI 2.0-compliant management with reliability and security enhancements
- Optimized platform design for Industrial and Carrier Grade Robustness



### Introduction

The Advantech SKY-8101 is a highly configurable high performance server designed to balance the best in x86 server-class processing with maximum I/O and offload density in a 20" depth chassis. The system is a cost effective, robust platform optimized for superior reliability in business critical applications including, but not limited to, communications, edge and industrial high performance computing. It is specifically designed for high density PCIe card payloads where maximum IO connectivity is needed or the integration of industry leading offload and acceleration technology is essential. The power and cooling options along with the streamlined mechanical design make it ideal for demanding applications requiring high performance acceleration technologies such as GPU, DSP and FPGA cards.

Architected around the new Intel® Xeon® Processor Scalable Family, the single-socket SKY-8101 combines cutting-edge performance with the ruggedness, reliability, and long system lifecycles required by the industry. With integrated security and compression offload based on Intel® QuickAssist technology and two onboard 10GbE ports with SR-IOV and RDMA support, the system offers best-in-class integration in a compact 1U, 20" deep form factor.

The SKY-8101 is designed to withstand extended environmental conditions in terms of shock, vibration and operating temperature. A replaceable front air filter is supported to cope with dust. Redundant power supplies, the ability to withstand single fan failures, redundant firmware images with failsafe upgrades and hot swappable FRUs make the SKY-8101 the platform of choice for applications requiring zero downtime. The SKY-8101 is designed for NEBS Level 3 carrier grade environments and where limited rack space is available. Interoperability testing is performed with a wide selection of third-party PCIe card vendors.

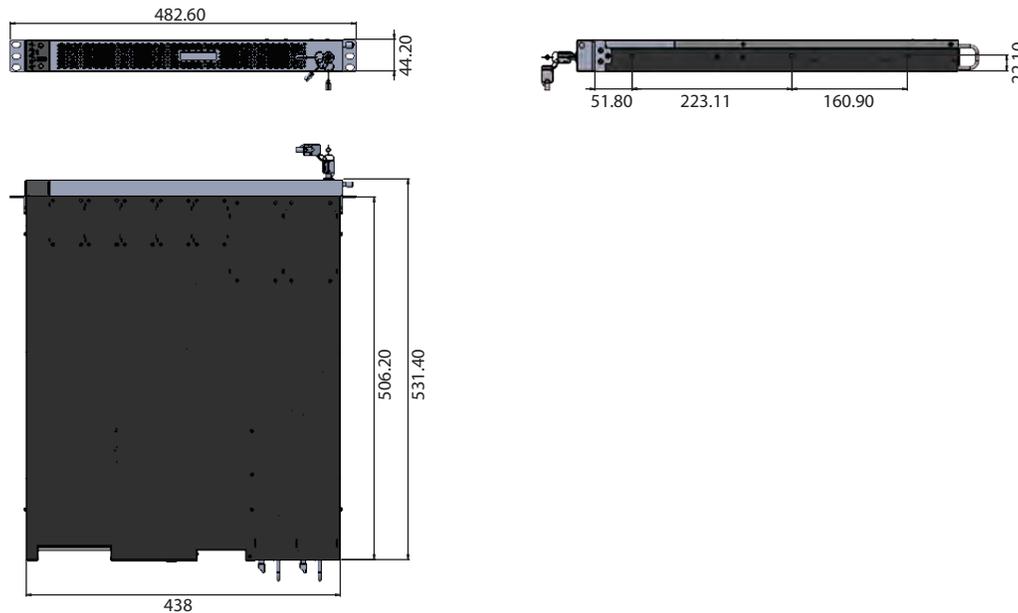
### Specifications

Processor System	CPU	Single CPU from the New Intel® Xeon® Processor Scalable Family up to 28 cores, 165W
	Chipset	Intel® C622 chipset (optional variants with C626 and C627)
Memory	Technology	Up to 6x 2666MHz DDR4 ECC Standard ECC RDIMM/LRDIMM
	Capacity	Max capacity per channel: 64GB Max total capacity per system: 384GB
	Socket	6x 288-pin DIMM
	Expansion slots	Total 2x rear PCIe x8 (FH/FL) or 1x rear PCIe x16 (FH/FL), 1x PCIe x8 (LP/HL), 1x PCIe x4 expansion slot for Advantech Personalization Card (PersCard)
IO	Front IO	Option1 (Default): 1x PWR button, 1x ID button, 1x USB3.0/2.0, 1x microUSB console, 5x LEDs (Power, ID, 3x SW definable) Option2: 1x PWR button, 1x ID button, 1x RJ45 console, 5x LEDs (Power, ID, 3x SW definable)
	Rear IO	2x GbE LAN RJ45, 1x Display port, 2x USB3.0/2.0, 2x 10GE SFP+, 2x hole ground lug
Ethernet	Gigabit Ethernet Interface	10/100/1000 Mbps
	10 Gigabit Ethernet Interface	1Gbps / 10Gbps
	Controller	GbE LAN1: Intel i210-AT, GbE LAN2: Intel i210-AT 10GbE SFP+ LAN1/2: Integrated into PCH, with SR-IOV and RDMA support
	Connector	2x RJ-45, 2x SFP+
Storage		4x 2.5", hot-swappable, SAS/SATA HDD/SSD trays in front (SAS drives supported via HBA/RAID adapter on PCIe slots) 1x M.2 2280 SATA SSD
Power Supply	Power Rating	700W red. AC PSU / 600W red. DC PSU
	Input	(AC) 100-240Vac, 9-4A, 50-60Hz (DC) -44 -65Vac, 18-10A
Environment	Humidity Operational (non-condensing)	5% to 85%
	Operational Temperature	-5 °C (23 °F) to 55 °C (131 °F)
	Storage Temperature	-40 °C (-40 °F) to 70 °C (158 °F)
Cooling	Chassis Fan	Five 40 x 56 mm front replaceable, hot swappable fans
	Thermal Control	Two separate thermal zones for motherboard and FL PCIe cards
	Reliability	Resilient to single fan failure
	Air Filter	Front replaceable
System Management	Advantech BMC	Aspeed AST2500 BMC Advanced Lights Out Management compliant to IPMI2.0 with security and availability enhancements iKVM Support Configurable shared or dedicated NIC support
	Dimension (W x D x H)	438.00 x 506.20 x 44.20 mm (17.24" x 19.93" x 1.74")
Physical	Weight (N.W.)	15kg
	Security	Lockable front bezel and chassis intrusion sensor

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Dimensions

Unit: mm [inch]



## Front View



## Rear View



## Ordering Information

Part Number	Description
SKY-8101SAS-0000E	20" 1U server w GSMB-8101, single Intel® Xeon® Processor, Intel® C622 chipset, AC 700W PSU, 4 x 2.5" SSD/HDD, 2 x FH/FL slots, 1 x LP slot, 1 x Advantech PersCard slot
SKY-8101SAS-0001E	20" 1U server w GSMB-8101, single Intel® Xeon® Processor, Intel® C622 chipset, DC 600W PSU, 4 x 2.5" SSD/HDD, 2 x FH/FL slots, 1 x LP slot, 1 x Advantech PersCard slot

## Optional Accessories

Part Number	Description
1700025629-01	Cable, Display Port to D-Sub (VGA) 150cm
1702002600-02	Power Cord 3P UL/CSA(USA) 125V 10A 1.83M 180D
1702002605-02	Power Cord 3P European 10A/16A 250V 1.83M 90D
1700000237-01	Power Cord 3P PSE 12A 125V 1.83M Japan

## FRU Accessories

Part Number	Description
SKY-8101S-PSUACE	SKY-8101 AC PSU Module, 700W
SKY-8101S-PSUDCE	SKY-8101 DC PSU Module, 600W
SKY-8101S-FAN00E	SKY-8101 Fan Module
SKY-8101S-SRL00E	22" slide rail (pair) for SKY-8101

## Advantech Personalization Card Options

Part Number	Description
PCIE-1220PS-00A1E	Dual 10GbE X710 w. 2x SFP+
PCIE-1221PS-00A1E	Dual 10GBASE-T w. X550
PCIE-1130PS-00A1E	Quad GbE i350 w. 4x RJ45
PCIE-1131PS-00A1E	Quad GbE i350 w. 4x SFP

NOTE1: Please contact your local Advantech sales representative for more information of Processor, memory, storage, PCI express card selection.

# SKY-8101D

## Compact 1U High Performance Server based on Intel® Xeon® Processor Scalable Family



### Features

- 1U 29.5" deep rackmount server
- Dual Intel® Xeon® Platinum, Gold, Silver or Bronze Processor
- 24x DIMM sockets support up to 1536 GB DDR4 1600/1866/2133/2400/2666 MHz SDRAM (ECC/RDIMM/LRDIMM)
- Rich Add-In Card Support: Up to four FH/¾L PCIe x16 Gen3 slots
- Up to 4x 2.5" hot-swappable HDD/SSD drives
- 2x M.2 2280 SATA SSD
- IPMI 2.0-compliant management with reliability and security enhancements



### Introduction

The Advantech SKY-8101D is a highly configurable high performance server designed to balance the best in x86 server-class processing with maximum I/O and offload density in a 1U 29.5" depth chassis. The system is a cost effective, robust platform optimized for superior reliability in business critical applications such as communications, edge and industrial high performance computing. It is specifically designed for high density PCIe card payloads where maximum IO connectivity is needed or the integration of industry leading offload and acceleration technology is essential. The power and cooling options along with the streamlined mechanical design make it ideal for demanding applications requiring high performance acceleration technologies such as GPU, DSP and FPGA cards.

Architected around the new Intel® Xeon® Processor Scalable Family, the dual socket SKY-8101D combines cutting-edge performance with the ruggedness, reliability, and long system lifecycles required by the industry. With integrated security and compression offload based on Intel® QuickAssist technology and two 10GbE ports with SR-IOV and RDMA support, the system offers best-in-class integration in a compact form factor.

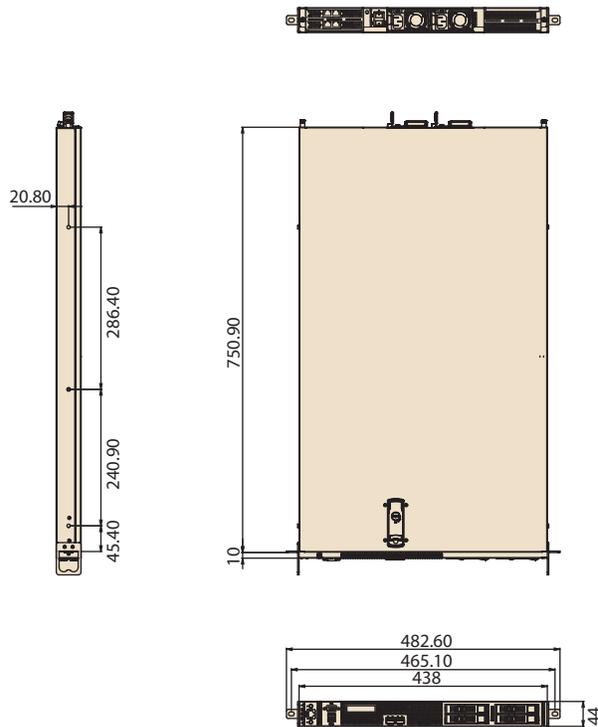
The SKY-8101D accommodates up to four 10.5" PCIe x16 Gen3 adapters, designed for applications requiring high TDP, high speed networking capacity or longer length add-on cards. The server can significantly scale the bandwidth up and provide better cost advantages for applications such as NFV infrastructure requiring up to 400Gbps throughput, high definition multi-stream video processing and AI workloads leveraging high density FPGA offload adapters. Redundant power supplies, the ability to withstand single fan failures, redundant firmware images with failsafe upgrades and hot swappable FRUs make the SKY-8101D the platform of choice for applications requiring zero downtime. Interoperability testing is performed with a wide selection of Advantech and third-party PCIe card vendors in order to accelerate integration and shorten time to deployment.

### Specifications

Processor System	CPU	Dual CPU from the New Intel® Xeon® Processor Scalable Family up to 28 cores, 165W Supports 205W CPU with customized BIOS
	Chipset	Intel® C622 chipset (optional variants with C625 and C626)
Memory	Technology	Up to 24x 2666MHz DDR4 ECC Standard ECC RDIMM/LRDIMM
	Capacity	Max capacity per channel: 64GB Max total capacity per system: 1536GB
	Socket	24x 288-pin DIMM
PCIe	Expansion slots	Total 4x PCIe x16 (FH/¾L) slots
IO	Front IO	1x PWR button, 1x ID button, 2x USB3.0/2.0, 1x RJ45 console, 5x LEDs (Power, ID, 3x SW definable), 1x VGA port, 2x 10GbE SFP+
	Rear IO	2x GbE LAN RJ45, 2x hole ground lug
Ethernet	Gigabit Ethernet Interface	10/100/1000 Mbps
	10 Gigabit Ethernet Interface	1Gbps / 10Gbps
	Controller	GbE LAN1: Intel i210-AT, GbE LAN2: Intel i210-AT 10GbE SFP+ LAN1/2: OCP Mezzanine card SFI (from PCH)
	Connector	2x RJ-45, 2x SFP+
Storage		4x 2.5", hot-swappable, SAS/SATA HDD/SSD or NVMe SSD trays in front (SAS drives supported via HBA/RAID adapter on PCIe slots) 2x M.2 2280 SATA SSD
Power Supply	Power Rating	1200W red. AC PSU / (Optional) 800W or 1600W red. AC PSU / (Optional) 1600W red. AC PSU
	Input	(AC) 200-240Vac, 7.08A, 47-63Hz
Environment	Humidity Operational (non-condensing)	5% to 85%
	Operational Temperature	0 °C (32 °F) to 40 °C (104 °F)
	Storage Temperature	-40 °C (-40 °F) to 70 °C (158 °F)
Cooling	Chassis Fan	Six 40 x 56 mm replaceable, hot swappable fans
	Thermal Control	Three separate thermal zones for motherboard and PCIe cards
	Reliability	Resilient to single fan failure
System Management	IPMI	Aspeed AST2500 BMC Advanced Lights Out Management compliant to IPMI2.0 with security and availability enhancements iKVM Support Configurable shared or dedicated NIC support
Physical	Dimension (W x D x H)	438.00 x 749.7 x 44.20 mm (17.24" x 29.50" x 1.74")
	Weight (N.W.)	20kg

## Dimensions

Unit: mm [inch]



## Front View



## Rear View



## Ordering Information

Part Number	Description
SKY-8101DAS-0000E	29.5" 1U server w GSMB-8101D, dual Intel® Xeon® Processor, Intel® C622 chipset, AC 1200W PSU, 4 x 2.5" SAS/SATA HDD/SSD or NVMe SSD, 4x FH/¼L slots

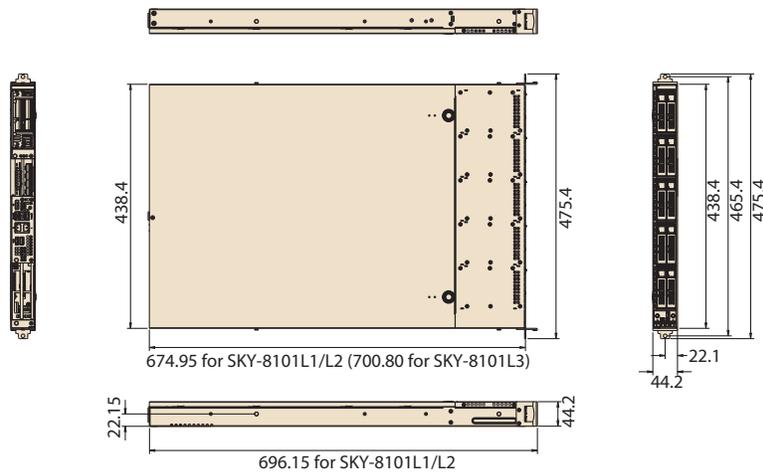
## Optional Accessories

Part Number	Description
1702002600-02	Power Cord 3P UL/CSA(USA) 125V 10A 1.83M 180D
1702002605-02	Power Cord 3P European 10A/16A 250V 1.83M 90D
1700000237-01	Power Cord 3P PSE 12A 125V 1.83M Japan

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**



Dimensions



Specifications Cont.

Cooling	Chassis Fan	Six 40 x 56 mm replaceable fans
	Thermal Control	Two separate thermal zones for motherboard and Full Length (FL) PCIe cards
	Reliability	Resilient to single fan failure
	Air Filter	NA
System Management	IPMI	Aspeed AST2500 BMC Advanced Lights Out Management compliant to IPMI2.0 with security & availability enhancements iKVM Support Advantech Web GUI style node manager Configurable shared or dedicated NIC support
	Dimension (W x D x H)	SKY-8101L1/L2: 438.40 x 674.95 x 44.20 mm (17.26" x 26.57" x 1.74") without ear handle; SKY-8101L3: 438.40 x 700.80 x 44.20 mm (17.26" x 27.59" x 1.74") without ear handle;
Physical	Weight (N.W)	16kg

Front View

SKY-8101L1



SKY-8101L2



SKY-8101L3



Rear View



Ordering Information

Part Number	Description
SKY-8101LAS-0010E (SKY-8101L1)	27.5" 1U server w GSMB-8101, single Skylake-SP socket, redundant AC 850W PSU, 10x 2.5" bay (8x SAS/SATA + 2x NVMe), 2x FH/FL rear slots, 1x LP rear slot, 1x Advantech personalization card slot
SKY-8101LAS-0020E (SKY-8101L2)	27.5" 1U server w GSMB-8101, single Skylake-SP socket, redundant AC 850W PSU, 8x 2.5" SAS/SATA bay, 1x LP PCIe front slot, 2x FH/FL rear slots, 1x LP rear slot, 1x Advantech personalization card slot
SKY-8101LAS-0030E (SKY-8101L3)	27.5" 1U server w GSMB-8101, single Skylake-SP socket, redundant AC 850W PSU, 4x 3.5" SAS/SATA bay, 2x FH/FL rear slots, 1x LP rear slot, 1x Advantech personalization card slot

Optional Accessories

Part Number	Description
1702002600-02	Power Cord 3P UL/CSA(USA) 125V 10A 1.83M 180D
1702002605-02	Power Cord 3P European 10A/16A 250V 1.83M 90D
1702031801	Power Code 3P (UK) 5A-Fuse 183cm
1700000237-01	Power Cord 3P PSE 12A 125V 1.83M Japan

Advantech Personalization Card Options

Part Number	Description
PCIE-1220PS-00A1E	Dual 10GbE X710 w. 2x SFP+
PCIE-1221PS-00A1E	Dual 10GBASE-T w. X550
PCIE-1130PS-00A1E	Quad GbE i350 w. 4x RJ45
PCIE-1131PS-00A1E	Quad GbE i350 w. 4x SFP

- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

# SKY-8200

## 2U Carrier Grade Server based on Dual Intel® Xeon® Processor E5-2600 v3 v4 Series



### Features

- Dual Intel® Xeon® Processor E5-2600 v3 v4 Series
- 16 DIMM sockets support up to 1024 GB DDR4 1600/1866/2133/2400 MHz SDRAM (ECC/REG/RDIMM)
- 4 FH/FL PCIe x8 Gen3 slots, 2 FH/HL PCIe Gen3 x8 slots, 1 low profile PCIe x 8 Gen 3 slot
- 4 x 2.5" hot-swappable SAS/SATA HDD/SSD drives
- Telco Alarm Module support & IPMI 2.0-compliant remote management
- Carrier Grade and Optimized I/O versions
- Best-in-class compute for applications requiring high density offload and I/O in a carrier grade design
- Shortened development time with integrated services including rich portfolio of qualified PCIe adapters plus customization & branding options



### Introduction

The Advantech SKY-8200 is a highly configurable carrier-grade server designed to balance the best in x86 server-class processing performance with maximum I/O and offload density in a 20" depth chassis. The system is a cost effective, highly available platform optimized to meet next-generation networking equipment needs. It is specifically designed for high density PCIe card payloads where maximum port count is needed or the integration of industry leading offload and acceleration technology is essential. The PCIe I/O is balanced between CPU sockets for optimum throughput. The power and cooling options along with the streamlined mechanical design make it ideal for Digital Signal Processing (DSP) payloads for video encoding/decoding, transcoding and transrating applications.

The non NEBS SKY-8200 system variant caters for higher power and cooling requirements when NEBS certification is not mandatory. Architected around two Intel® Xeon® Processor E5 v3 or v4 Series CPUs, the SKY-8200 combines cutting-edge performance with the ruggedness, reliability, and long system lifecycles required by networking equipment providers. The system supports dual Intel® Xeon® Processor E5-2600 v3/v4 processors and DDR4 memory up to 1024GB with 16 DIMM sockets. The system provides hot-swappable and redundant 1400W(AC) & 1400W(DC) power supply modules, 3 sets of hot-swappable fans, 4 hot-swappable hard disk drives connected to LSI 3008 SAS controller, and 6 PCIe expansion slots.

The SKY-8200 is designed for NEBS Level 3 carrier grade environments and where limited rack space is available. Interoperability testing is performed with a wide selection of third-party PCIe card vendors.

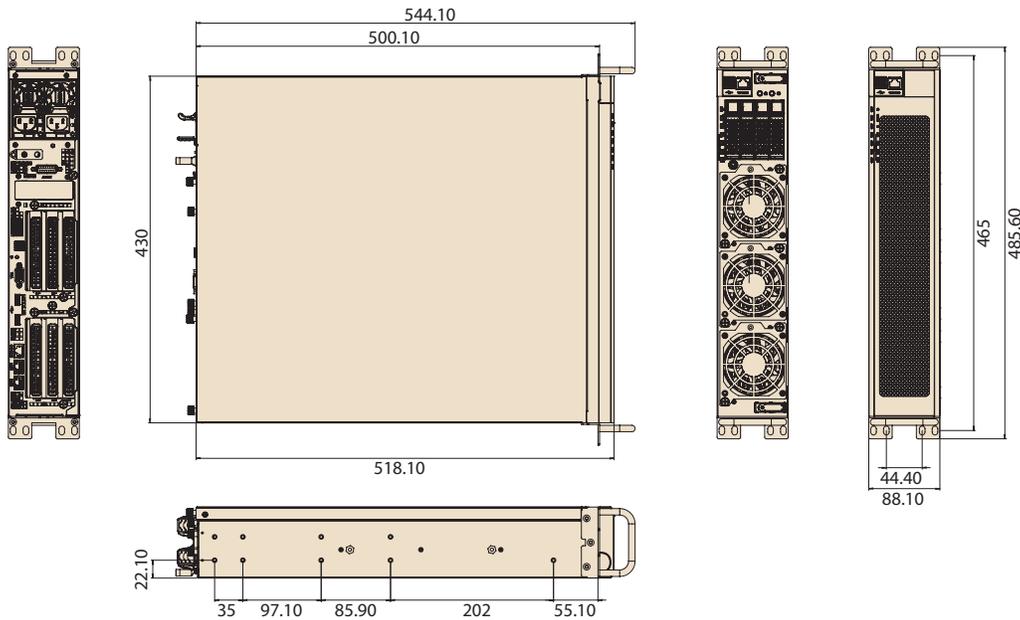
### Specifications

Processor System	CPU	Dual Intel® Xeon® Processor E5-2600 v3 v4 Supports: Non-NEBS: E5-2690v3, E5-2680v3, E5-2670v3, E5-2660v3, and E5-2650v3 NEBS: E5-2658v3, E5-2648Lv3, E5-2628Lv3, E5-2618Lv3, E5-2608Lv3 E5-2628Lv4 30MB 12C 1.9GHz, E5-2648Lv4 35MB 14C 1.8GHz, E5-2650v4 30MB 12C 2.2GHz, E5-2658v4 35MB 14C 2.3GHz, E5-2680v4 35MB 14C 2.4GHz.
	Chipset	Intel® DH 8900 & DH 8925 chipset
Memory	Technology	16 x DDR4 DIMMs, ECC/REG memory, 1600/1866/2133/2400 MHz, Supports 1.2V memory model
	Capacity	1024GB/ 64GB per DIMM
	Socket	16 x 288-pin DIMM
PCIe	Expansion slot	Total 4 x PCIe x8 (FH/FL), 2 x PCIe x8 (FH/HL), & 1 x Advantech expansion slots for Advantech LAN card
IO	Front Mgmt IO	1 x PWR button, 1 x ID button, 1 x RJ45-type console, 2 x USB, LEDs
	Rear Mgmt IO	1 x RJ45-type console, 1 x DB15 for TAM (Optional), 2 x USB, 2 x GbE Mgmt ports, 1 x VGA, and 1 x external mini SAS port
Ethernet	Management Interface	10/100/1000 Mbps
	Controller	GbE LAN1: Intel® i210-AT, GbE LAN2: Intel® i210-AT
	Connector	RJ-45 x 2
Storage		4 x 2.5", hot-swappable, SAS/SATA HDD/SSD trays in front, 2 x mSATA
Power Supply	Watt	1400W AC/DC PSU
	Input	(AC) 100-240V <sub>ac</sub> , 12-10A, 50-60Hz (DC) -36--72V <sub>dc</sub> , 40-25A
Environment	Humidity Operational (non-condensing)	5% to 85%
	Operational Temperature	-5 °C (23 °F) to 55 °C (131 °F)
	Storage Temperature	-40 °C (-40 °F) to 70 °C (158 °F)
Cooling	Chassis Fan	6 * 80 x 38 high speed fan
	Air Filter	Yes
System Management	IPMI	Aspeed AST2400 iBMC + AMI MegaRAC firmware Supports IPMI 2.0 Supports iKVM Dedicated NIC via NC-SI on management LAN ports
Physical	Dimension (W x D x H)	430 x 500.1 x 88.1 mm (16.93" x 19.69" x 3.47")
	Weight (N.W)	22kg

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Dimensions

Unit: mm [inch]



Front View



Rear View



## Ordering Information

Part Number	Description
SKY-8200AN-0000E	2U HPS w NAMB-6010 E5-2600v3v4/8925/TPM/B/B/AC/x8
SKY-8200AN-0001E	2U HPS w NAMB-6010 E5-2600v3v4/8925/TPM/B/B/DC/x8
SKY-8200BN-0000E	2U HPS w NAMB-6010 E5-2600v3v4/8900/TPM/B/B/AC/x8
SKY-8200BN-0001E	2U HPS w NAMB-6010 E5-2600v3v4/8900/TPM/B/B/DC/x8

## Optional Accessories

Part Number	Description
1700020095	Military Power Cord UL 3P 15A 125V 1.83M 14AWG
1702002605-02	Power Cord 3P European 10A/16A 250V 1.83M 90D
1700000237-01	Power Cord 3P PSE 12A 125V 1.83M Japan

## Packing List

Part Number	Description	Qty
9680017059	20" slide rail (pair)	1
1700012372-11	Console cable	1
1700024872-11	Power cord Cable 2*3P-5.0 180cm for SKY-8200(for DC version only)	2
1960062167N001	Heatsink I-Core i7-2600-S-95W 106X70X25-SS	2

The Red Hat Certified hardware logo is a registered trademark of Red Hat, Inc. In the U.S. and other countries. Used under license.

# SKY-8201

## Compact 2U Carrier Grade, High Performance Server based on Intel® Xeon® Processor Scalable Family



### Features

- 2U 20" deep rackmount server
- Dual Intel® Xeon® Platinum, Gold, Silver or Bronze Processor (Up to 165W TDP)
- 16x DIMM sockets support up to 1024GB DDR4 1600/1866/2133/2400/2666 MHz DDR4 (ECC/RDIMM/LRDIMM)
- Rich Add-In Card Support: Up to four FH/FL PCIe x8 Gen3 slots, two FH/HL PCIe x8 Gen3 slots (Optional: four FH/FL PCIe x16 Gen3 slots), plus two LP PCIe x8 Gen3 slot or Advantech Personalization card
- Up to 4x 2.5" hot-swappable HDD/SSD drives
- 1x M.2 2280 SATA SSD
- IPMI 2.0-compliant management with reliability and security enhancements



### Introduction

The Advantech SKY-8201 is a highly configurable high performance server designed to balance the best in x86 server-class processing with maximum I/O and offload density in a 20" depth chassis. The system is a cost effective, robust platform optimized for superior reliability in business critical applications including, but not limited to, communications, edge and industrial high performance computing. It is specifically designed for high density PCIe card payloads where maximum IO connectivity is needed or the integration of industry leading offload and acceleration technology is essential. The power and cooling options along with the streamlined mechanical design make it ideal for demanding applications requiring high performance acceleration technologies such as DSP and FPGA cards.

Architected around the new Intel® Xeon® Processor Scalable Family, the Dual-Socket SKY-8201 combines cutting-edge performance with the ruggedness, reliability, and long system lifecycles required by the industry. With integrated security and compression offload based on Intel® QuickAssist technology and two onboard 10GbE ports with SR-IOV and RDMA support, the system offers best-in-class integration in a compact 2U, 20" deep form factor.

The SKY-8201 is designed to withstand extended environmental conditions in terms of shock, vibration and operating temperature. A replaceable front air filter is supported to cope with dust. Redundant power supplies, the ability to withstand single fan failures, redundant firmware images with failsafe upgrades and hot swappable FRUs make the SKY-8201 the platform of choice for applications requiring zero downtime. The SKY-8201 is designed for NEBS Level 3 carrier grade environments and where limited rack space is available. Interoperability testing is performed with a wide selection of third-party PCIe card vendors.

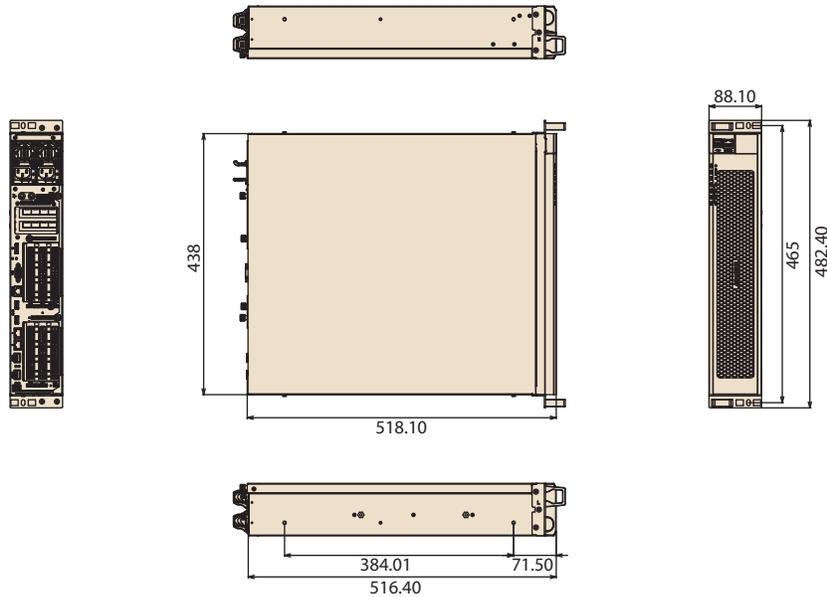
### Specifications

Processor System	CPU	Dual CPU from the New Intel® Xeon® Processor Scalable Family up to 28 cores, 165W	
	Chipset	Intel® C622 chipset (optional variants with C625, C626, C627, and C628)	
Technology	Technology	Up to 16x 2400/2666MHz DDR4 ECC Standard ECC RDIMM/LRDIMM	
	Max Capacity	Max capacity per channel: 64GB Max total capacity per system: 1024GB	
	Socket	16x 288-pin DIMM	
PCIe	Expansion slot	Total 4 x rear PCIe x8 (FH/FL) and 2 x rear PCIe x8 (FH/HL) or 2 x rear PCIe x16 (FH/FL), plus 2 x rear PCIe x8 (LP) or 2 x rear PCIe x8 expansion slot for Advantech Personalization card	
IO	Front IO	2 x USB2.0, PWR, ID Button, Status LEDs	
	Rear IO	2 x GbE LAN RJ45(Management ports), 1 x Display port, 1 x VGA, 2 x USB3.0/2.0, 2 x 10GE SFP+	
Ethernet	Management Interface	10/100/1000 Mbps	
	10GbE Ethernet Interface	16Gbps / 10Gbps	
	Controller	GbE LAN1: Intel i210-AT, GbE LAN2: Intel i210-AT 10GbE SFP+ LAN1/2: Integrated into PCH, with SR-IOV and RDMA support	
	Connector	2 x RJ-45, 2 x SFP+	
Storage	SKY-8201 SKU	4 x 2.5" HDD/SSD	
Power	Input	1400W AC/DC PSU (AC) 100-240V <sub>AC</sub> , 12-10A, 50-60Hz (DC) -36~-72V <sub>DC</sub> , 40-25A	
	Output Current Rating	1200W, Max: +12V/70A, +5Vsb/3A, per PSU	
Environment	Temperature	Operating	Non-operating
		-5 ~ up to 55 °C (23 ~ 131 °F) Depends on CPU model and configuration	
	Humidity	50% @ 25 °C to 95% @ 40 °C (non condensing)      95% @ 60 °C (non-condensing)	
Cooling	Chassis Fan	6 x 80 x 38 high speed fan	
	Thermal Control	Two separate thermal zones for motherboard and Full Length (FL) PCIe cards	
	Reliability	Resilient to single fan failure	
	Air Filter	Yes (optional)	
System Management	IPMI	Aspeed AST2500 BMC Advanced Lights Out Management compliant to IPMI2.0 with security & availability enhancements iKVM Support Advantech Web GUI style node manager Configurable shared or dedicated NIC support	
Physical	Dimension (W x D x H)	430 x 508 x 88.6 mm (16.9" x 20" x 3.48")	
	Weight (N.W)	~17kg	

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Dimensions

Unit: mm



## Front View



## Rear View



## Ordering Information

Part Number	Description
SKY-8201SAS-0010E	20" 2U server w Dual Intel® Xeon® Processor, Intel® C622 chipset, AC 1400W PSU, 4x 2.5" HDD/ SSD slot, 4 x FH/FL slots, 2 x FH/HL slots, 2 x LP slots
SKY-8201SAS-0001E	20" 2U server w Dual Intel® Xeon® Processor, Intel® C622 chipset, DC 1400W PSU, 4x 2.5" HDD/ SSD slot, 4 x FH/FL slots, 2 x FH/HL slots, 2 x LP slots
SKY-8201SAS-0016E	20" 2U server w Dual Intel® Xeon® Processor, Intel® C622 chipset, AC 1400W PSU, 4x 2.5" HDD/ SSD slots, 4 x FH/FL PCIe x16 slots, 2 x LP slots

## Packing List

Part Number	Description	Qty
9680016959	22" Rail Kit for 438mm chassis	1
1700012372-11	Console cable	1
1700024872-11	Power cord Cable 2*3P-5.0 180cm for SKY-8201(for DC version only)	2

## Optional Accessories

Part Number	Description
1702002600-02	Power Cord 3P UL/CSA(USA) 125V 10A 1.83M 180D
1702002605-02	Power Cord 3P European 10A/16A 250V 1.83M 90D
1702031801	Power Code 3P (UK) 5A-Fuse 183cm
1700000237-01	Power Cord 3P PSE 12A 125V 1.83M Japan

## Advantech Pers Card Options

Part Number	Description
PCIE-1220PS-00A1E	Dual 10GbE X710 w. 2x SFP+
PCIE-1221PS-00A1E	Dual 10GBASE-T w. X550
PCIE-1130PS-00A1E	Quad GbE i350 w. 4x RJ45
PCIE-1131PS-00A1E	Quad GbE i350 w. 4x SFP

# SKY-8201L

## Compact 2U High Capacity Storage Server based on Intel® Xeon® Processor Scalable Family



### Features

- 2U 27.5" deep rackmount server
- Dual Intel® Xeon® Platinum, Gold, Silver or Bronze Processor (Up to 205W TDP)
- 16x DIMM sockets support up to 1024GB DDR4 1600/1866/2133/2400/2666 MHz DDR4 (ECC/RDIMM/LRDIMM)
- Rich Add-In Card Support: Up to four FH/FL PCIe x8 Gen3 slots, two FH/HL PCIe x8 Gen3 (Optional: four FH/FL PCIe x16 Gen3 slots) , plus two LP PCIe x8 Gen3 slot, or Advantech Personalization card
- Up to 12x 3.5" or 24x 2.5" hot-swappable HDD/SSD drives and optional 4x 2.5" NVMe SSD drives
- 1x M.2 2280 SATA SSD
- IPMI 2.0-compliant management with reliability and security enhancements



### Introduction

The Advantech SKY-8201L is a highly configurable high performance server designed to balance the best in x86 server-class processing with maximum storage, I/O and offload density in a 2U 27.5" depth chassis. The system is a cost effective, robust platform optimized for superior reliability in business critical applications such as communications, edge and industrial high performance computing. It is specifically designed for high density PCIe card payloads where maximum I/O connectivity is needed or the integration of industry leading offload and acceleration technology is essential. The power and cooling options along with the streamlined mechanical design make it ideal for demanding applications requiring acceleration technologies such as GPU, DSP and FPGA cards.

Architected around the new Intel® Xeon® Processor Scalable Family, the Dual-socket SKY-8201L combines an unprecedented choice of performance levels from 6 to 28-cores with the ruggedness, reliability, and long system lifecycles required by the industry. With integrated security and compression offload based on Intel® QuickAssist technology and two onboard 10GbE ports with SR-IOV and RDMA support, the system offers best-in-class integration in a compact form factor.

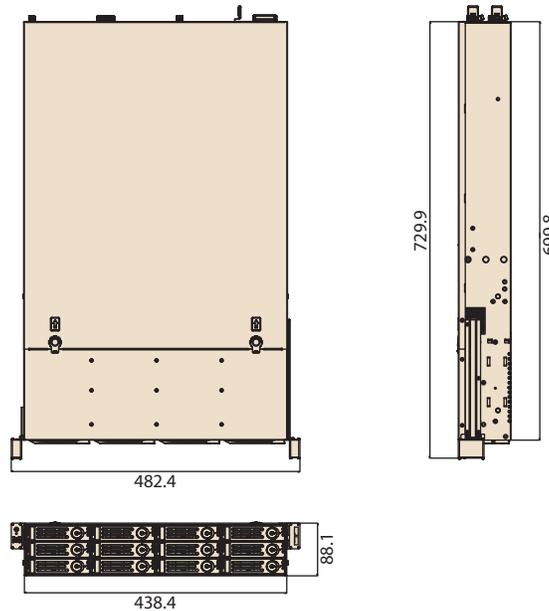
Specifically designed for applications requiring higher capacity, front loading, hot-swappable storage with RAID support, the SKY-8201L accommodates up to twelve 3.5" or twenty-four 2.5" removable drive bays at the front of the system, eight/twenty of which support SATA/SAS connectivity and a further four optional 2.5" NVMe drives, each connected to a PCIe Gen3 x4 Intel OCuLink bus. With support for Intel® VROC hybrid NVMe and SATA RAID, the server is ideal for video caching and edge transcoding, data acquisition, storage and processing as well as accelerated edge processing and analytics. The SKY-8201L meets a variety of acquisition, preprocessing and forwarding performance needs and can operate in environments with limited space, higher ambient temperature and lower low noise level constraints.

The SKY-8201L is designed to withstand extended environmental conditions in terms of shock, vibration and operating temperature. Redundant power supplies, the ability to withstand single fan failures, redundant firmware images with failsafe upgrades and hot swappable FRUs all make the SKY-8201L the platform of choice for applications requiring zero downtime. Interoperability testing is performed with a wide selection of Advantech and third-party PCIe card vendors in order to accelerate integration and shorten time to deployment.

### Specifications

Processor System	CPU	Dual CPU from the New Intel® Xeon® Processor Scalable Family up to 28 cores, 205W	
	Chipset	Intel® C622 chipset (optional variants with C625, C626, C627, and C628)	
Technology	Technology	Up to 16x 2400/2666MHz DDR4 ECC Standard ECC RDIMM/LRDIMM	
	Max Capacity	Max capacity per channel: 64GB Max total capacity per system: 1024GB	
	Socket	16x 288-pin DIMM	
PCIe	Expansion slot	Total 4x rear PCIe x8 (FH/FL) or 2x rear PCIe x16 (FH/FL), 2x rear PCIe x8 (FH/HL), plus 2x rear PCIe x8 (LP) or 2x rear PCIe x8 expansion slot for Advantech Personalization card.	
IO	Front IO	2x USB2.0, PWR, Status LEDs	
	Rear IO	2x GbE LAN RJ45(Management ports), 1x Display port, 1xVGA, 2x USB3.0/2.0, 2x 10GE SFP+	
Ethernet	Management Interface	10/100/1000 Mbps	
	10GbE Ethernet Interface	1Gbps / 10Gbps	
	Controller	GbE LAN1: Intel i210-AT, GbE LAN2: Intel i210-AT 10GbE SFP+ LAN1/2: Integrated into PCH, with SR-IOV and RDMA support	
	Connector	2x RJ-45, 2x SFP+	
Storage	SKY-8201L1 SKU	12x 3.5", front hot-swappable, SAS/SATA HDD/SSD trays (SAS drives supported via HBA/RAID adapter on PCIe slots), additional 4x 2.5" front hot-swappable NVMe SSD trays on SKY-8201L1	
	SKY-8201L2 SKU	24x 2.5", front hot-swappable, SAS/SATA HDD/SSD trays (SAS drives supported via HBA/RAID adapter on PCIe slots), additional 4x 2.5" front hot-swappable NVMe SSD trays on SKY-8201L2.	
Power	Input	Two 1200W (1+1) redundant AC PSU (AC) 100-240Vac, 50-60Hz, 12-6A, per PSU	
	Output Current Rating	1200W, Max: +12V/70A, +5Vsb/3A, per PSU	
Environment	Operating Temperature	0 - 40 °C (32 - 104 °F)	Non-operating -40 - 70 °C (-40 - 158 °F)
	Humidity	50% @ 25 °C to 95% @ 40 °C (non condensing)	95% @ 60 °C (non-condensing)
Cooling	Chassis Fan	Four replaceable fans	
	Thermal Control	Two separate thermal zones for motherboard and Full Length (FL) PCIe cards	
	Reliability	Resilient to single fan failure	
System Management	IPMI	Aspeed AST2500 BMC Advanced Lights Out Management compliant to IPMI2.0 with security & availability enhancements iKVM Support Advantech Web GUI style node manager Configurable shared or dedicated NIC support	
Physical	Dimension (W x D x H)	438.4 x 699.8 x 88.1 mm (17.26" x 27.5" x 3.46")	
	Weight (N.W)	~25kg	

Dimensions



Unit: mm

Front View

SKU1 (SKY-8201L1)



SKU2 (SKY-8201L2)



Rear View



Ordering Information

Part Number	Description
SKY-8201LAS-0010E	27.5" 2U server w Dual Intel® Xeon® Processor, Intel® C622 chipset, AC 1200W PSU, 12 x 3.5" SSD/HDD slots, 4x 2.5" NVMe SSD slots, 4 x FH/FL slots, 2 x FH/HL slots, 2 x LP slots
SKY-8201LAS-0020E	27.5" 2U server w Dual Intel® Xeon® Processor, Intel® C622 chipset, AC 1200W PSU, 24 x 2.5" SSD/HDD slot, 4x 2.5" NVMe SSD slots, 4 x FH/FL slots, 2 x FH/HL slots, 2 x LP slots
SKY-8201LAS-0016E	27.5" 2U server w Dual Intel® Xeon® Processor, Intel® C622 chipset, AC 1200W PSU, 12 x 3.5" SSD/HDD slots, 4 x FH/FL PCIe x16 slots, 2 x LP slots
SKY-8201LIS-IS02E	Intel® Select Solution for NFVi SKU 27.5" 2U server w Dual Intel® Xeon® Platinum 8160(T) Processor, Intel® C628 chipset, AC 1200W PSU, 12 x 3.5" SSD/HDD slots, 4x 2.5" NVMe SSD, 2x SSD , 1x PCIe-2320(XL710 for 40GbE QSFP+), 4 x FH/FL slots, 2 x FH/HL slots, 2 x LP slots

Advantech Pers Card Options

Part Number	Description
PCIE-1220PS-00A1E	Dual 10GbE X710 w. 2x SFP+
PCIE-1221PS-00A1E	Dual 10GBASE-T w. X550
PCIE-1130PS-00A1E	Quad GbE i350 w. 4x RJ45
PCIE-1131PS-00A1E	Quad GbE i350 w. 4x SFP
PCIE-2320NP-00A1E	2-ports 40G (QSFP+) NIC w/ Intel XL710

Packing List

Part Number	Description	Qty
	27.5" slide rail (pair) for SKY-8201L	1
	Console cable	1

Optional Accessories

Part Number	Description
1702002600-02	Power Cord 3P UL/CSA(USA) 125V 10A 1.83M 180D
1702002605-02	Power Cord 3P European 10A/16A 250V 1.83M 90D
1702031801	Power Code 3P (UK) 5A-Fuse 183cm
1700000237-01	Power Cord 3P PSE 12A 125V 1.83M Japan

- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

# SKY-8211

## 2U High Performance Edge Server based on Intel® Xeon® Processor Scalable Family



### Features

- 2U 430mm deep rackmount server with an operating temperature of -20 to 70 °C
- Single Intel® Xeon® Platinum, Gold, Silver or Bronze Processor
- 6 x DIMM sockets support up to 384GB DDR4 2133/2400/2666 MHz SDRAM (ECC/RDIMM/LRDIMM)
- Rich I/O LAN port available
- 1 x M.2 2280 SATA SSD
- IPMI 2.0-compliant management with reliability and security enhancements
- Optimized platform design for Industrial and Business Critical Robustness



### Introduction

The SKY-8211 series represents the next generation of white box servers designed to replace proprietary routers and gateways with an open programmable off-the-shelf platform entirely based on processors and network interfaces from Intel. When deployed as virtual routers they provide the functionality of legacy, fixed-function routers with more flexibility and lower cost. The platforms are ideal for software defined networking deployment and are based on the highly versatile Intel Xeon Processor Scalable series enabling high performance control and dataplane processing. With multiple front facing ethernet ports connected to a cost optimized planar PCIe board the platforms eliminate the need for multiple PCIe cards and offer all the physical connectivity advantages of an off-the-shelf enterprise or provider edge router. Together with software from leading ecosystem partners the SKY-8211 becomes the first modular programmable switch to eliminate specialized dataplane processing using non-Intel Architecture components.

The SKY-8211's are essentially highly configurable high performance servers designed to balance the best in x86 server-class processing with maximum I/O and offload density in a 2U 430mm depth chassis. The system is a cost effective, robust platform optimized for superior reliability in business critical applications such as communications, edge and industrial high performance computing. It is specifically designed to meet high density I/O connectivity and wide operation temperature. The power and cooling options along with the streamlined mechanical design make it ideal for demanding applications requiring in a -20 °C to 70 °C environment. The SKY-8211 meets a variety of acquisition, preprocessing and forwarding performance needs and can operate in environments with limited space, higher ambient temperature and lower low noise level constraints. Architected around the new Intel® Xeon® Processor Scalable Family, the single-socket SKY-8211 combines an unprecedented choice of performance levels from 6 to 28-cores with the ruggedness, reliability, and long system lifecycles required by the industry. With integrated security and compression offload based on Intel® QuickAssist technology, the system offers best-in-class integration in a compact form factor. The SKY-8211 is designed to withstand extended environmental conditions in terms of shock, vibration and operating temperature. Redundant power supplies, the ability to withstand single fan failures, and redundant firmware images with failsafe upgrades make the SKY-8211 for reliable. The front hot swappable FRUs and I/O ports makes the SKY-8211 the platform of choice for fast and simple service. For more details please contact your Advantech local sales representative.

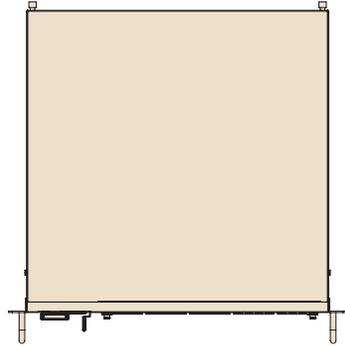
### Specifications

Processor System	CPU	Single CPU from the New Intel® Xeon® Processor Scalable Family	
	Chipset	Intel® C621 chipset (optional variants with C622, C626, and C627)	
	Technology	Up to 6x 2666MHz DDR4 ECC Standard ECC RDIMM/LRDIMM	
Memory	Max Capacity	Max capacity per channel: 64GB Max total capacity per system: 384GB	
	Socket	6 x 288-pin DIMM	
	IO	SKY-8211B: 8 x 10GbE, 24 x 1GbE ports, 1 x RJ45 console port, 2 x GbE LAN RJ45 (management ports), 1 x Display port, 2 x USB3.0/2.0 SKY-8211F: 16 x 10GbE, 8 x 1GbE ports, 1 x RJ45 console port, 2 x GbE LAN RJ45 (management ports), 1 x Display port, 2 x USB3.0/2.0	
Ethernet	Management Interface	10/100/1000 Mbps	
	10GbE Ethernet Interface	1Gbps / 10Gbps	
	1GbE Ethernet Interface	1Gbps	
	Controller	GbE LAN1 (mgmt): Intel I210-AT, GbE LAN2 (mgmt): Intel I210-AT 10GbE SFP+ LAN: Intel XL710 1GbE SFP LAN: Intel I350	
	Connector	SKY-8211B: 2 x RJ45 (GbE LAN mgmt), 8 x SFP+ (10GbE SFP+ LAN), 24 x SFP (1GbE SFP LAN) SKY-8211F: 2 x RJ45 (GbE LAN mgmt), 16 x SFP+ (10GbE SFP+ LAN), 8 x SFP (1GbE SFP LAN)	
Storage	1 x M.2 2280 SATA SSD		
Power	Input	Two (1+1) redundant hot-swappable 550W PSU (AC) 100 ~ 240V <sub>ac</sub> , 8 ~ 4A, 50 ~ 60Hz (DC) -48V <sub>dc</sub> , 12A	
	Output Current Rating	550W, Max: +12V/44A, +12Vsb/2.1A, per PSU	
Environment	Temperature	Operating -20 ~ 70 °C (-4 ~ 158 °F)	Non-operating -40 ~ 70 °C (-40 ~ 158 °F)
	Humidity	50% @ 25 °C to 95% @ 40 °C (non condensing)	
	Chassis Fan	Four 80 x 38 mm fans	
Cooling	Thermal Control	Two separate thermal zones for motherboard and PSU	
	Reliability	Resilient to single fan failure	
	Air Filter	NA	
System Management	IPMI	Aspeed AST2500 BMC Advanced Lights Out Management compliant to IPMI2.0 with security & availability enhancements iKVM Support Advantech Web GUI style node manager Configurable shared or dedicated NIC support	
		Physical	Dimension (W x D x H) 430 x 430 x 88 mm (16.93" x 16.93" x 3.46") Weight (N.W) 15kg

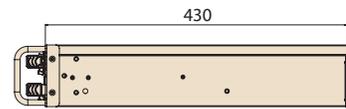
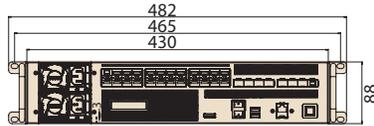
- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Dimensions

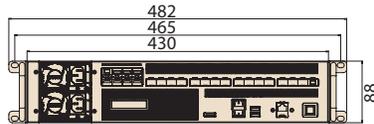
Unit: mm



SKY-8211B



SKY-8211F



## Front View

SKY-8211B



SKY-8211F



## Rear View



## Ordering Information

Part Number	Description
SKY-8211BS-0001E	2U 430mm deep server, single Intel® Xeon® Processor 4116T, Intel® C621 chipset, 1+1 redundant DC 550W PSU, 8 x 10G SFP+ ports, 24 x 1G SFP ports, 6x DDR4 2400MHz 4GB memory, 1x 256G M.2 2280 SSD
SKY-8211FS-0001E	2U 430mm deep server, single Intel® Xeon® Processor 6130T, Intel® C621 chipset, 1+1 redundant DC 550W PSU, 16 x 10G SFP+ ports, 8 x 1G SFP ports, 6x DDR4 2400MHz 8GB memory, 1x 256G M.2 2280 SSD
SKY-8211BS-0000E	2U 430mm deep server, single Intel® Xeon® Processor slot, Intel® C621 chipset, 1+1 redundant DC 550W PSU, 8 x 10G SFP+ ports, 24 x 1G SFP ports, 1 x M.2 2280 slot
SKY-8211BS-0010E	2U 430mm deep server, single Intel® Xeon® Processor slot, Intel® C621 chipset, 1+1 redundant AC 550W PSU, 8 x 10G SFP+ ports, 24 x 1G SFP ports, 1 x M.2 2280 slot
SKY-8211FS-0000E	2U 430mm deep server, single Intel® Xeon® Processor slot, Intel® C621 chipset, 1+1 redundant DC 550W PSU, 16 x 10G SFP+ ports, 8 x 1G SFP ports, 1 x M.2 2280 slot
SKY-8211FS-0010E	2U 430mm deep server, single Intel® Xeon® Processor slot, Intel® C621 chipset, 1+1 redundant AC 550W PSU, 16 x 10G SFP+ ports, 8 x 1G SFP ports, 1 x M.2 2280 slot

## Optional Accessories

Part Number	Description
1700025629-01	Cable, Display Port to D-Sub (VGA) 150cm
1702002600-02	Power Cord 3P UL/CSA(USA) 125V 10A 1.83M 180D
1702002605-02	Power Cord 3P European 10A/16A 250V 1.83M 90D
1700000237-01	Power Cord 3P PSE 12A 125V 1.83M Japan
1700028676-01	DC Power Cord 1*3P-5.0/Z-TEM 200CM for SKY-8211

# SKY-9240

## 2U4N Rackmount Server, Designed for Hyper-converged and HPC Application

Preliminary



### Features

- Up to 4 Hot-Swappable CPU Node boards with dual Intel® Xeon® Scalable Processors
- Up to 16 DIMM slots DDR4 2666MHz RDIMM/LRDIMM 3DS (per Node)
- Flexible I/O configurations with up to 2x PCIe Gen3 x16 slots (half length, low profile) (per Node)
- Support one PCIe Gen3 x8 OCP mezzanine (per Node)
- Optional redundant M.2 storage devices & one 2.5" SSD/HDD slot (per Node)
- up to 12x 3.5" SAS/SATA storage on the system
- Hot swappable and redundant AC PSU options
- Carrier Grade BMC (IPMI v2.0 compliant) with fail safe updates, Web Interface, KVM, Redfish



### Introduction

The SKY-9240 is a 2U 4-node rackmount server designed for hyper-converged infrastructure and high performance compute in markets demanding enhanced solutions for applications such as hyper-converged secondary storage, object recognition and deep-learning, virtual desktop infrastructure and compute intensive cloud.

The system delivers the highest performance and efficiency in a 2U 4-node design, creating the flexibility to deploy independent workloads with all the economies of a shared chassis infrastructure, including cooling and power. This significantly lowers the total cost of ownership (TCO) to less than the cost of four regular 1U or 2U servers.

The hot-swappable compute nodes are designed with dual Intel® Xeon® Scalable processors and the latest DDR4 memory technology. Each node supports up to two 28-core CPUs with an increased UPI bandwidth of 10.4GT/s, nearly 10% improvement from the previous generation, lowering latency and accelerating inter-processor communications. In addition, a 6-channel memory design increases memory bandwidth by up to 50% and supports up to 512GB RAM per node.

The compute nodes employ an innovative and modular design concept for maximum configuration flexibility in a space-efficient form-factor. One OCP mezzanine slot and up to two PCIe slots per node enable a broader choice of I/O, offload and acceleration than similar designs.

Each compute node provides 2.5" data storage capabilities with a further twelve 3.5" SAS/SATA drive bays available at chassis level for optional cold data storage. Redundant, hot-swappable 1+1 power and fans enhance product stability and serviceability, maximizing availability and increasing uptime.

The system offers enhanced platforms management capabilities and supports the latest major Linux distributions including CentOS, Red Hat Enterprise Linux, Ubuntu, and VMware.

### Specifications

#### System (Model name: SKY-9240)

Physical Characteristics	Form Factor	2U Rackmount
	Dimension (W x H x D)	438 x 88 x 774 mm
	Motherboard	4 x Hot-Swappable MIC-8312 CPU Nodes
	Net weight	30kg
Front Panel	Buttons	Power On/Off button UID button
	LED	Power status LED (integrated in Power button) HDD activity/status LED Network activity LEDs UID LED (integrated in UID button) Information LED
Front External Drive Bay	Type/Quantity	12 x Hot-Swappable 3.5" HDD trays (3 x HDD trays per Node)
	Interface	SAS 12Gb/s or SATA 6Gb/s
System Cooling	Fan	4 x 8cm (8076) hot-swappable PWM fans with fan speed control or 4 x 8cm (8038) non hot-swappable PWM fans with fan speed control
Power Supply*	Type/Quantity	2 x Redundant (1+1) PSU with PMBus (Redundant power limitation for 100-127V <sub>AC</sub> is up to 1000W)
	Input Range	2000W: 1000W@100-127V <sub>AC</sub> /12-9.5A, 1800W@200-220V <sub>AC</sub> /10-9.5A, 1980W@220-230V <sub>AC</sub> /10-9.8A, 2000W@230-240V <sub>AC</sub> /10-9.8A
		2200W: 1200W@100-127V <sub>AC</sub> /14-11A, 1800W@200-220V <sub>AC</sub> /10-9.5A, 1980W@220-230V <sub>AC</sub> /10-9.8A, 2090W@230-240V <sub>AC</sub> /10-9.8A, 2200W@220-240V <sub>AC</sub> /12-11A
	Efficiency	80 Plus Titanium
	Output Watts	Up to 2200W (sku dependent)
Environment	Operating Temperature / Humanity	0 ~ 35 °C (32 ~ 95 °F) / 5% to 95% @ 35 °C (non-condensing)
	Non-operating Temperature/ Humanity	- 40 ~ 60 °C (-40 ~ 140 °F) / 5% to 95% @ 60 °C (non-condensing)
Certification	EMC/Safety	CE/FCC/UL/cUL/CB/VCCI
RoHS	RoHS 6/6 Compliant	Yes
SW Support	Operating System	VMware (Certification), Redhat 7.x (Certification), CentOS 7.x, Ubuntu Server 16.x, Windows Server 2016

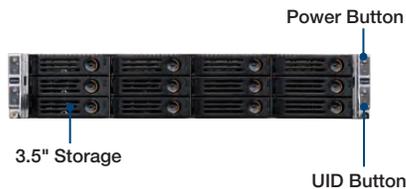
**CPU Node (Model name: MIC-8312)**

Processor	Supported CPU Series	Dual Intel® Xeon® Scalable Processors (Socket P, LGA 3647), up to 28 cores per processor (Thermal dependent) Dual UPI up to 10.4 GT/s
	Thermal Design Power (TDP)	Up to 85W (2U4N with redundant 8076 fan design) Up to 140W (2U4N with non-redundant 8038 fan design) Up to 165W (2U2N with non-redundant 8038 fan design)
Chipset	Supported Chipset Series	Intel® C622*
Memory	Support DIMM Quantity	16 x DIMM slots (4x Blue slots are Apache DIMM design compliant )
	DIMM Type/Speed	DDR4 ECC RDIMM/RDIMM 3DS/LRDIMM/LRDIMM 3DS Up to 2666MHz
	Capacity	Up to 2TB ECC 3DS LRDIMM, 512GB ECC RDIMM
	Memory Channel	6 Channels
	Memory Voltage	1.2V
Expansion	PCIe Slot	SkU A: 2 x PCIe Gen3 x16 slots (half height, half length) SkU B: 1 x PCIe Gen3 x16 slot (half height, half length)
	OCP Mezzanine Slot (Type1 form factor)	1 x PCIe Gen3 x8 slot, supporting KR/SFI x2
Storage	2.5" Device	SkU A: N/A SkU B: 1 x SAS 12Gb/s, SATA 6Gb/s, or PCIe Gen3 x4 SSD/HDD, up to 15mm height
	M.2 Device	2 x SATA 6Gb/s or PCIe Gen3 x4 M.2 SSD (2280) slots
I/O	Console Port	1 x microUSB connector
	Management Port	1 x 1GbE RJ45 for IPMI
	VGA	1 x DSUB connector
	USB	2 x USB 3.0 ports
TPM	TPM module	TPM 2.0 is supported by the optional module with Infineon chipset
Server Management	Solution	Onboard Aspeed AST2500 Carrier Grade BMC (IPMI v2.0 compliant) with fail safe updates, Web Interface, KVM, Redfish (Advantech IPMI Core)
BIOS	Solution	AMI Aptio v5 based UEFI BIOS with Advantech enhancements

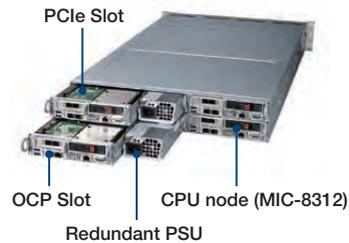
\*Please contact your local Advantech sales representative for other sku demand.

**SKY-9240**

**Front View**

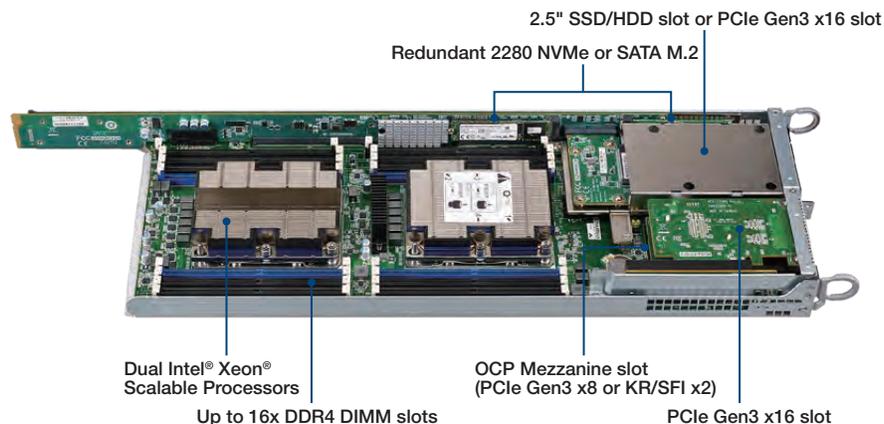


**Rear View**



**MIC-8312**

**Top view**



- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Ordering Information

### System

Part Number	CPU Node	PSU	Fan	3.5" interface	Other Peripherals (CPU, memory, storage, TPM)
SKY-9240CRA00MCFC	4 x MIC-8312CFC	2 x 2000W Titanium	4 x 8076 hot-swappable redundant fan	SAS/SATA	N/A
SKY-9240CRA00MCPC	4 x MIC-8312CPC	2 x 2000W Titanium	4 x 8076 hot-swappable redundant fan	SAS/SATA	N/A
SKY-9240MSA00HCF	4 x MIC-8312CF	2 x 2200W Titanium	4 x 8038 non-redundant fan	SAS/SATA	N/A
SKY-9240MSA00MCF	4 x MIC-8312CF	2 x 2000W Titanium	4 x 8038 non-redundant fan	SAS/SATA	N/A
SKY-9240SSA10HSF	4 x MIC-8312SF	2 x 2200W Titanium	4 x 8038 non-redundant fan	SATA	N/A

### CPU Node

Part Number	SKU	OCP	PCIe	TPM	CPU	Memory	M.2 device	2.5" device
MIC-8312CFC	1 x 2.5" storage slot, 1 x PCIe slot	OCP-2010F	PCIe-1130PS-CHA1E	N/A	N/A	N/A	N/A	N/A
MIC-8312CPC	1 x 2.5" storage slot, 1 x PCIe slot	OCP-2010P	PCIe-1130PS-CHA1E	N/A	N/A	N/A	N/A	N/A
MIC-8312CC	1 x 2.5" storage slot, 1 x PCIe slot	OCP-2001C	N/A	N/A	N/A	N/A	N/A	N/A
MIC-8312CF	1 x 2.5" storage slot, 1 x PCIe slot	OCP-2010F	N/A	N/A	N/A	N/A	N/A	N/A
MIC-8312SC	2 x PCIe slots	OCP-2001C	N/A	N/A	N/A	N/A	N/A	N/A
MIC-8312SF	2 x PCIe slots	OCP-2010F	N/A	N/A	N/A	N/A	N/A	N/A

## Related Products

### PCIe Card

Part Number	Item	Description
PCIe-1130PS-MLA1E	4 x RJ-45 GbE	Advantech 4-ports 1G copper with Intel® I350 controller
PCIe-1130PS-CHA1E	2 x RJ-45 GbE	Advantech 2-ports 1G copper with Intel® I350 controller
PCIe-1220PS-CHA1E	2 x SFP+	Advantech 2-ports 10G fiber NIC with Intel® X710 controller
PCIe-1221PS-CHA1E	2 x Copper 10GBase-T	Advantech 2-ports 10G Base-T with Intel® X550 controller
PCIe-2320NP-00A1E	2 x 40G QSFP+	Advantech 2-ports 40G fiber NIC with Intel® XL710 controller

### OCP Mezzanine Card

Part Number	Item	Description
OCP-2010F	2 x SFP+	Advantech 2-ports 10G SFI (from PCH), connector C
OCP-2010P	2 x Copper 10GBase-T	Advantech 2-ports 10GBase-T with Intel® X557 PHY (KR from PCH), connector C
OCP-2001C	2 x RJ-45 GbE	Advantech 2-ports 1G copper with Intel® I350 controller, connector A

### Processor/DIMM

Part Number	Description
96MPXE-2.1-11M36	Skylake Server H-0 11MB 8c 2.1GHz 85W 768GB LCC INTEL® XEON® Silver 4110, DDR4 freq. up to 2400MHz
96MPXE-2.3-16M36	Skylake Server H-0 16.5MB 12c 2.3GHz 105W 768GB XCC INTEL® XEON® GOLD 5118, DDR4 freq. up to 2400MHz
96D4-8G2666ER-AT	ATP 8GB DDR4-2666 ECC RDIMM1.2V (A4B08QD8BNTDSE)
AQD-D4U8GR24-SE	Apacer 8GB DDR4-2400 ECC RDIMM1.2V
96D4-32G2400ER-AT	ATP 32GB DDR4-2400 ECC RDIMM1.2V (A4B32QB4BNRCSE)

### Storage

Part Number	Interface	Description
<b>2.5" HDD/SSD</b>		
96ND600G-SS-SG10E1	SAS	SEAGATE Enterprise 2.5" 600GB 10KRPM SAS 12Gb/s 256MB
Y171110-0TS1384	SAS	HGST SS200 SAS-3.0 12Gb/s, 1.6TB, 3D1, MLC
96FD25-S240-INB3	SATA	INTEL S3520 SERIES SSDSC2BB240G7 240GB, 3D1 MLC
Y180122-0TS1307	NVMe	HGST Ultrastar SN200 NVMe (PCIe Gen3x4) 1.6TB
<b>3.5" HDD</b>		
96HD1TB-ST-SG7KE1	SATA	SEAGATE Enterprise 1TB 3.5" SATAIII(6Gb/s) 7KRPM
96HD1TB-SS-SG7KE	SAS	SEAGATE Enterprise 3.5" 1TB 7KRPM SAS 12Gb/s
<b>M.2 2280 SSD</b>		
96FD80-N128-LIS	SATA	LITEON M.2 SSD 2280 128GB SATAIII(6Gb/s) MLC
96FD80-N256-LIS	SATA	LITEON M.2 SSD 2280 256GB SATAIII(6Gb/s) MLC
96FD80-P128-PLG	NVMe	LITEON M.2 SSD 2280 128GB PCIe Gen3x4 MLC
96FD80-P256-LIS	NVMe	LITEON M.2 SSD 2280 256GB PCIe Gen3x4 MLC

NOTE: Please contact your local Advantech sales representative for more information of system configurations.

## Optional Accessories

Part Number	Description
1700020095	Power Cord UL 3P 15A 125V 183cm (type B), USA
1700020096	Power Cord EU 3P 10A 250V 183cm (type F) , Europe
1700020097	Power Cord BSI 3P 10A 250V 183cm (type G), UK/Singapore
1700020100	Power Cord CCC 3P 10A 250V 183cm (type I), China
1700020099	Power Cord PSE 3P 15A 125V 183cm (type B), Japan
1700020098	Power Cord SAA 3P 10A 250V 183cm (type I), Australia

# SKY-9340

## High Performance Multi-node Server with Integrated Data Plane Fabric

Preliminary



### Features

- Converged system with the highest CPU, I/O, Storage density per RU in the market
- Up to 4 hot pluggable CPU Node boards with dual Intel® Xeon® scalable processors
- More than 800Gbps of I/O bandwidth
- Integrated data plane fabric for internal nodes transaction to lower data latency
- Flexible I/O configurations with up to 8x PCIe card
- Storage expansion with up to 24x 2.5"/12x 3.5" SAS/SATA/NVMe front hot swappable drives
- Hot swappable and redundant AC or DC PSU options
- Front-to-Rear Push-Pull Cooling Mode. Two rear pluggable, hot swappable fan modules with fan speed control
- Integrated system management



### Introduction

Advantech SKY-9K series is the next generation converged platform for enterprise applications, focusing on modularity, power efficiency and provides an optimal cost performance solution. The system design is optimized for maximum CPU, I/O and storage density, bringing higher throughput to meet the increased demand for faster packet handling and processing required for modern enterprise networking and application acceleration. SKY-9K series is an application ready platform for applications such as Erasure Coding, Network Application Acceleration, Network Security and Analytics.

The first model in the SKY-9K series, the SKY-9340, packs up to 480Gbps of I/O, up to 8x Intel® Xeon® scalable processors, flexible I/O and storage configuration in 3RU. The integrated fabric is benefit for instantly node to node and external communications, supporting up to 4x100G for multi host Skylake-SP blades connectivity and I/O expansion.

Many different payloads can be integrated into Advantech SKY-9K series systems and configured to address diverse industry applications. For more details on integrating a specific configuration, please contact your local sales representative.

### Specifications

Processor System	CPU Blade <sup>NOTE1</sup>	Up to 4 CPU Node boards, Dual Intel® Xeon® scalable processors on each CPU Node boards Up to 16x DDR4 32GB Regular RDIMMs 1x PCIe3.0x16 slot
	System management process(SMP) unit	1x Intel Denverton C3338 SoC (Optional) Up to 2x DDR4 32GB VLP RDIMMs (Optional)
External I/O Ports & Interface	PCIe Cards <sup>NOTE1</sup>	Flexible I/O with up to 8 PCIe Cards
	LAN	8x 10G SFP+ 2x RJ45 management plane 4x 40G/100G fabric link for CPU blades connectivity (integrated data plane fabric) and I/O expansion
	Serial Console	1 X RJ45 Management console to ShMC
	USB	2 XUSB 3.0 connect to SMP(C3000) (optional)
Storage	SATA	Up to 2x M.2 2242/2280 SSD on each CPU board Up to 2x M.2 SSD supporting software RAID1 for SMP and PXE boot images Up to 24x system storage (2.5" SATA/SAS/NVMe storage device)
Cooling	Technology	Two Rear pluggable, hot-swappable system fan module. Each CPU blade has 4 fan module
Power	AC Input	Up to four redundant power supply units with separate AC inlets AC 200-240V, 50-60Hz, with 2+2 and N+1 power redundancy options (max output 3600W) AC 100-127V, 50-60Hz, with N+1 power redundancy (max output 3000W)
	DC Input	Up to four redundant power supply units with separate DC inlets DC -40V--72V, 56A, with 2+2 and N+1 power redundancy options (max output 3600W)
	PSU cooling	Self-cooled
	Output DC voltage	+12V
	Output Current rating	Maximum 148A @ +12V per PSU Maximum 2A @ +12VSB per PSU
Shelf management	Power Consumption	2900W (with configuration: 4x CPU blades with dual 130W processors, 16x 2400MHz 32GB DDR4 VLP RDIMM, and 2x M.2 SSD each blade, 100G data plane fabric, 4x PCIe cards, and 12x 2.5" SSDs)
	Management Plane Switch	4 x 1G link for four CPU blade management connectivity 2 x 1G link for ShMC management connectivity 2 x 1G link for SMP management connectivity 2 x 1000 Base-T to front panel for external connectivity
	IPMI	IPMI 2.0 based on Advantech IPMI Core
	Interfaces	RMCP, SSH, SNMP, CLI, and serial interfaces
	Sensors	FRU presence, fan health, PSU health, temperatures, input voltages

Packetarium XL Blade Servers 1

High Performance Servers 2

Network Appliances 3

PCI Express Adapters 4

Network Switches 5

ATCA Blades & Integrated Systems 6

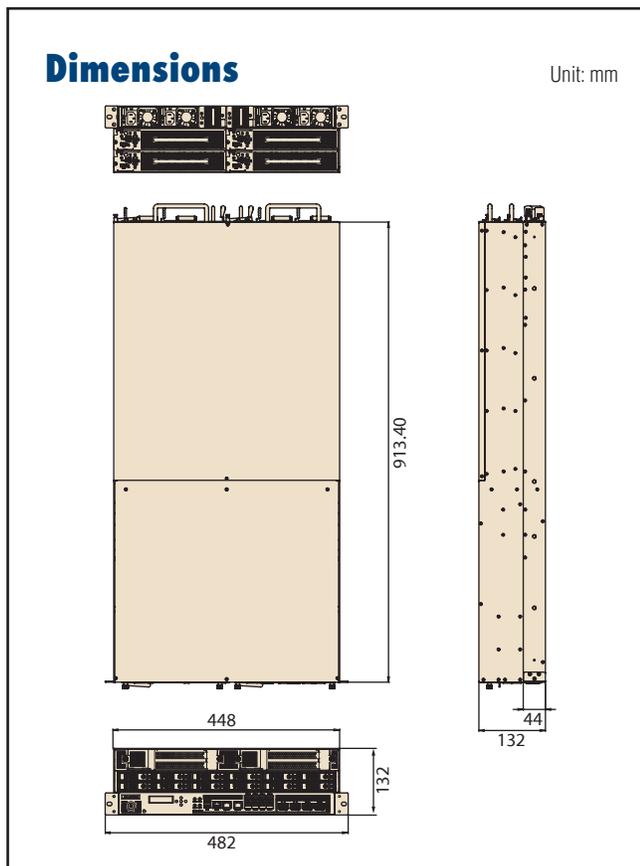
CPCI Boards & Enclosures 7

VPX Blades 8

Video Processing & IP Media Platforms 9

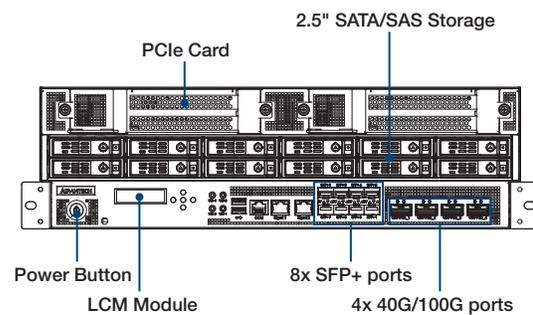
## Specifications (Cont.)

Accessibility	Front	Data plane, PCIe Cards, 2.5" SSDs or HDDs	
	Rear	CPU blades, Fan modules, AC or DC PSUs	
Physical Characteristics	Dimensions (W x H x D)	450 x 3U x 914.4 mm	
	Weight	60kg (system weight with mixed sku configuration, including 4x CPU blades, 4x PCIe cards, and 12x 2.5" SSDs)	
Environment		Operating	Non-operating
	Temperature	0 ~ 40 °C (32 ~ 104 °F)	-40 ~ 70 °C (-40 ~ 158 °F)
	Humidity	50% @ 25 °C to 95% @ 40 °C (non condensing)	95% @ 60 °C (non-condensing)
Compliance	Management	IPMI, HPM.1 firmware upgrade, HPM.2 extended message size	
	Safety & EMC	CE/FCC/UL/CB	

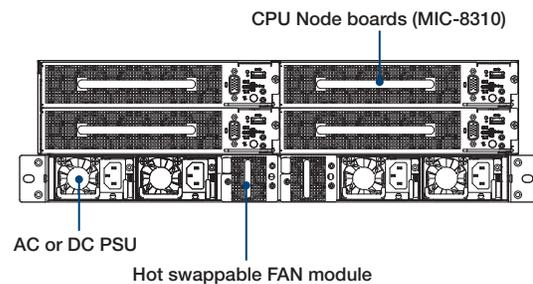


## I/O View

### Front View - Mixed PCIe/Storage Sku



### Rear View



## Ordering Information

Model Series	Configuration
SKY-9340-SM1	3U, 4x processor blades slot with 4x 1800W AC PSUs, 2+2 power redundancy, 4x fan modules, supporting 4x PCIe slot and 12x 2.5" SATA/SAS/NVMe storage devices, w/o processor blades and peripherals
SKY-9340-SP1	3U, 4x processor blades slot with 4x 1800W AC PSUs, 2+2 power redundancy, 4x fan modules, supporting 8x PCIe slot, w/o processor blades and peripherals
SKY-9340-SS1	3U, 4x processor blades slot with 4x 1800W AC PSUs, 2+2 power redundancy, 4x fan modules, supporting 24x 2.5" SATA/SAS/NVMe storage devices, w/o processor blades and peripherals

## Related Products

Model Series	Configuration
PCIE-2220NP-00A1E	Dual 10G fiber (SFP+) i82599 PCIe x8 LP/FH
PCIE-2230NP-00A1E	Quad 10G fiber (SFP+) XL710-BM1 PCIe x8 LP/FH
PCIE-2320NP-00A1E	Dual Port Fiber 40G Ethernet PCI Express Server Adapter with Intel® XL710-BM2
96FD25-S128-PLG1	LITEON SSD 128GB 2.5" SATA3 MLC 7mm
96FD25-S240-INB2	Intel SSD DC S3520 240GB, 2.5" SATA3, MLC
MIC-8310-SP1	Processor blade with dual 18C/36T, 2.3GHz, 140W (6140) CPUs
MIC-8310-SP2	Processor blade with dual 16C/32T, 3.2GHz, 130W (6134) CPUs

NOTE 1: Please contact your local Advantech sales representative for more information of CPU blades, Storage Devices and PCIe Cards.

## Network Appliances

<b>Overview</b>		<b>3-1</b>
<b>Selection Guide</b>		<b>3-2</b>
<b>Network Appliance Servers</b>		
<b>FWA-T011</b>	Tiny Network Appliance with Intel® Celeron® N3350/J3455 for Entry Level SD-WAN and Security Gateway	<b>3-20</b>
<b>FWA-1010VC</b>	Tabletop Network Appliance with Intel® Atom™ Processor C2000 for universal vCPE and SD-WAN	<b>3-22</b>
<b>FWA-1011</b>	Tabletop Network Appliance with Intel Celeron® J3455/J3355 processor Platform with 6GbE LAN Ports	<b>3-24</b>
<b>FWA-1012VC</b>	Universal Network Appliance with Intel® Atom™ Processor C3000 for vE-CPE and SD-WAN	<b>3-26</b>
<b>FWA-1211</b>	Industrial Grade Cyber Security Appliance based on Intel® Atom™ x5-E3940/ x5-E3930 Processor	<b>3-28</b>
<b>FWA-1330</b>	Tabletop Network Appliance with Intel® Celeron® Processor J1900/ N2807 and 4 GbE ports	<b>3-30</b>
<b>FWA-2011</b>	1U Rackmount Network Appliance with Intel® Atom™ X5-E3930&3940 Processor and 6 GbE ports	<b>3-32</b>
<b>FWA-2012</b>	Rackmount Platform for Network Application with Intel® Atom™ C3000 Processor	<b>3-34</b>
<b>FWA-3033</b>	1U Rackmount Network appliance with 10 Gb LAN ports and 2NMC Slots Based on Intel Coffee lake CPU Xeon® E family and 8th/9th gen. Intel® Core™ i7/i5/i3 processors	<b>3-36</b>
<b>FWA-3050</b>	Remote manageable 1U network appliance for uCPE and Next-Generation Firewall with Intel® Xeon D-2100 series processor	<b>3-38</b>
<b>FWA-3260</b>	1U Rackmount Network Appliance with Intel® Xeon® Processor D Family for vE-CPE and Network Applications, 2 NMC slots	<b>3-40</b>
<b>FWA-3270</b>	1U Rackmount Network Appliance with Intel® Xeon® Processor E3 series and 6th gen. Intel® Core™ i7/ i5/ i3 Processor, up to 2 NMC slots	<b>3-42</b>
<b>FWA-4000</b>	2U Rackmount Platform based on ZhaoXin ZX-C C4711 Processor	<b>3-44</b>
<b>FWA-4030</b>	2U Rackmount Network Appliance Platform based on Intel® Xeon® E3 series and 6th/7th generation Intel® Core™ i7/i5/i3 Processors, up to 4NMC slots	<b>3-46</b>
<b>FWA-4130</b>	2U Rackmount Network Appliance Platform based on Intel® Xeon® E3 series and 6th/7th generation Intel® Core™ i7/i5/i3 Processors	<b>3-48</b>
<b>FWA-5020</b>	1U Rackmount Network Appliance with Intel® Xeon® Processor E5-2600 v4 series, up to 4 NMC slots	<b>3-50</b>
<b>FWA-5070</b>	1U Rackmount Network Appliance with Intel® Xeon® Processor Scalable Family, up to 4 NMC Slots	<b>3-52</b>
<b>FWA-6070</b>	2U Rackmount Network Appliance with single Intel® Xeon® Processor Scalable Family	<b>3-54</b>
<b>FWA-6170</b>	2U Rackmount Network Appliance with Intel® Xeon® Processor Scalable Family, up to 8 NMC slots	<b>3-56</b>
<b>FWA-6520</b>	2U Rackmount Network Appliance with Intel® Xeon® Processor E5-2600 v3/v4 series, up to 4 NMC slots	<b>3-58</b>
<b>FWA-6520L</b>	Intel® Xeon® E5-2600/E5-1600 v3/v4 Processor-based 2U Network Application Platform	<b>3-60</b>
<b>Network Mezzanine Card</b>		
<b>NMC-0120</b>	4ports 1GbE FiberBypass Network Management Card	<b>3-62</b>
<b>NMC-0121</b>	4ports 1GbE RJ45 Network Management Card (Optional Advanced LAN Bypass)	<b>3-63</b>
<b>NMC-0806</b>	8ports 1GbE RJ45 Network Management Card (Optional Advanced LAN Bypass)	<b>3-64</b>
<b>NMC-1001</b>	4ports 10GbE SFP+ Network Management Card	<b>3-65</b>
<b>NMC-1010</b>	2ports 10GbE FiberBypass Network Management Card	<b>3-66</b>
<b>NMC-2501</b>	2ports 25GbE SFP28 Network Management Card	<b>3-67</b>
<b>NMC-4006</b>	2ports 40GbE QSFP+ Network Management Card	<b>3-68</b>
<b>NMC-4007</b>	4ports 10GbE FiberBypass Network Management Card	<b>3-69</b>
<b>NMC-6002</b>	2ports 100GbE QSFP28 Network Management Card	<b>3-70</b>

Please visit [www.advantech.com/nc](http://www.advantech.com/nc) for the latest product updates.





# Network Appliances

Advantech offers a broad portfolio of x86-based Network Platforms built with the latest generation Intel® processors, LAN access devices and accelerator silicon for SSL and IPsec encryption. Integrated into state-of-the-art tabletop and rackmount designs, a range of customized branding options are available for fast and efficient deployment. The platforms range from cost-efficient and compact tabletop solutions to higher performance 1U rackmount server designs and scalable 2U Enterprise/Data Center level platforms. Specifically designed to meet the requirements of Network Equipment Providers (NEPs), Cyber Security OEMs, and Communication Service Providers, the platforms are highly scalable and configurable with flexible port counts across a wide range of 1GbE, 10GbE, 40GbE and 100GbE options.

Advantech platforms are deployed in volume around the world in a wide range of applications for network and cyber security in the form of Unified Threat Management (UTM) appliances, Intrusion Prevention and Detection (IPS / IDS) devices, Next Generation Firewalls (NGFW) and Security Gateways (SeGW) among others. They are ideally suited for enterprise applications such as vE-CPE and SD-WAN, and widely used as physical appliances such as load balancers, application delivery controllers (ADC), WAN Optimization Controllers (WOC) and VPN gateways.

## Scalability by Design

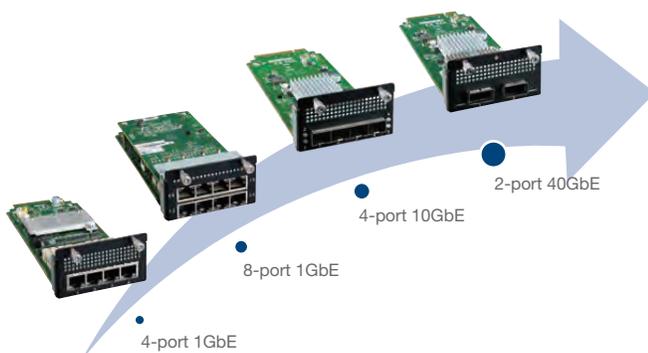
Advantech works to realize Communication Service Providers' scalability goals by providing solutions based on Intel® architecture where individual systems can be easily expanded with new hardware options and across compatible product families ranging from table-top appliances all the way up to blade servers with terabit-per-second throughput. Building a product portfolio that can indeed do this requires an underlying hardware architecture that can support a consistent and cohesive software framework that in turn is able to scale up based on the functionality and capacity requirements. A silicon partner like Intel®, delivering dependable year over year performance and feature improvements using world leading process technology is a key enabler in these fast paced times.

At the foundation of Advantech's portfolio is the Intel® Platform for Communications Infrastructure. Specifically designed for workload consolidation, it is capable of performing application, control plane, and data plane processing concurrently with scalable security performance to over 100 Gbps of IPsec acceleration.

## Enhanced Platform Management Lowers Total Cost of Ownership

Advantech's network appliances have been specifically designed to run high-availability networking services and minimize costly downtime. Advantech's Advanced Platform management provides all required IPMI v2.0 Baseboard Management Controller (BMC) functionality and also additional features that allow local and remote users to early detect system degradation, avoid system interruption and shorten mean time to repair.

## Pay-as-you-Grow with Advantech's Modular I/O



Advantech's Network Mezzanine Cards (NMCs) are cost-optimized, high density I/O modules for use in Advantech's appliances. A wide choice of GbE, 10 GbE and 40 GbE modules supporting copper and fiber interfaces with or without advanced LAN bypass gives customers the flexibility to match varying deployment scenarios. At the same time, Advantech's modular I/O approach reduces the total cost of ownership and service cost via re-usability across the product range and multiple product generations. The option of factory and field installation enables upselling opportunities and pay-as-you-grow concepts. Leveraging best-in-class Intel® Ethernet controller technology, NMCs provide a "it just works" user experience and a maximum of software compatibility.

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# FWA Series Selection Guide



Model		FWA-T011	FWA-1010VC	FWA-1011
Form Factor		Tiny box	Tabletop	Tabletop
Processor System	Processor	Intel® Celeron® N3350/J3455	Intel® Atom™ C2558/C2758	Intel® Celeron® J3355/J3455
	Core Number	2/4core	4/8-core	2/4-core
	Frequency	1.1GHz/1.5GHz	2.4GHz/2.4GHz	2.0GHz/1.5GHz
	L2 Cache	2MB	2MB/4MB	2MB/2MB
	L3 Cache	-	-	-
	Chipset	-	-	-
Virtualization	BIOS	AMI Efi 64Mbit	AMI Efi 64Mbit	AMI Efi 64Mbit
	Technology	VT-x, VT-d	VT-x	VT-x, VT-d
Memory	Max. Capacity	DDR3L 1600/1866MHz 8GB	DDR3/DDR3L 1600MHz 32GB	DDR3L 1333/1600/1867MHz 8GB
	Socket	1 x 204-pin SO-DIMM	2 x 240-pin DIMM	1 x 204-pin SODIMM
	ECC Support	Non-ECC	Yes	Non-ECC
	Controller	4 x Intel i210	3 x Marvell 88E1112 1 x Marvell 88E6141	6 x Intel i211-AT
Networking	1GbE	4 x 10/100/1000BASE-T RJ45 port	2 x 10/100/1000BASE-T RJ45 or SFP auto-negotiation link via Marvell 88E1112 1 x 10/100/1000BASE-T RJ45 port via Marvell 88E1112 4 x 10/100/1000BASE-T RJ45 ports via Marvell 88E6141 with 1GbE uplink to CPU	6 x 10/100/1000 Mbps RJ45 via /i211-AT
	10GE	-	-	-
	LAN bypass	Advanced Legacy	-	- 1 x pair of LAN Bypass
Expansion	PCIe x 16	-	-	-
	PCIe x 8	-	-	-
	PCIe x 4	-	-	-
	PCIe x 1	-	-	-
	NMC	-	-	-
	m.2 PCIe	1 x M.2 2230 for WiFi/BT module with 2 x antenna holes 1 x M.2 3042 for 3G/4G LTE module with 2 x antenna holes (USB2.0/USB3.0)	1 x M.2 2232 for WiFi module with 2 x antenna holes	1 x M.2 2230 for WiFi/BT module with 2 x antenna holes 1 x M.2 3042 for 3G/4G LTE module with 2 x antenna holes (option with M.2 SSD)
	Mini PCIe	-	1 x full-size Mini PCIe with SIM holder for 3G/4G LTE module with 2 x antenna holes	-
	SIM Socket	1	1	1
Storage	2.5" HDD/SSD	-	1 x 2.5" SATA3.0 Gen3 SSD bracket (Max 9.5mm height only) (only on C2758 SKU)	1 x 2.5" SSD
	3.5" HDD	-	-	-
	m.2 SSD	1 x M.2 2280	1 x M.2 2280 (option 2x M.2 2242)	1 x M.2 2260 or 2242
	mSATA SSD	-	-	-
	CompactFlash/ CFast	-	-	-
I/O	Display	-	-	HDMI option
	Console port	1	1	1
	USB3.0	-	-	1 x USB 3.0 Front
	USB2.0	2 x USB2.0	1 x USB2.0 Pin Header	1 x USB2.0 Front & 1 x USB 2.0 Pin Header
	GPIO	-	-	-
	LED Indicator	Power, HDD, 4G LTE, WiFi, Software-defined status	Power, HDD, LTE, WiFi, SW defined status	Power, HDD, 6 pairs LAN,wifi & LTE
	Reset button	-	-	Yes
Others	-	1 x Power Switch 1 x Software definable button	1 x Power Switch DC power connector	
TPM	TPM1.2 or TPM2.0 (option)	optional by module: 98923260H0E	TPM 1.2 or TPM 2.0 (option)	
LCD Module		-	-	-
Others		-	-	-
Power	Power Type	DC	DC	DC
	Watts	36W	60W	40W
	Input	100V ~ 240V	100V ~ 240V	100 V ~ 240 V
	Connector	DC Jack	DC Jack	DC Jack
Environment	Power Adaptor	12V 3A, 36W external adaptor	12V 5A, 60W external adaptor	40W external adaptor
	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)
	Non-operating Temperature	-40 ~ 85 °C (-50 ~ 140 °F)	-40 ~ 60 °C (-50 ~ 140 °F)	-20 ~ 75 °C (-4 ~ 167 °F) 5 ~ 95%
	Vibration Resistance	With SSD: 0.3 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	With SSD: 0.3 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	TBD
Shock Protection	With SSD: 10G, IEC-60068-2-27, half sine, 11ms duration	With SSD: 10G, IEC-60068-2-27, half sine, 11ms duration	TBD	
Cooling		fanless	1 x system fan with smart fan	fanless
Mechanical	Construction	Iron	Iron	Iron
	Mounting	Support desktop/Wall-mounting options	Support desktop/Rack/Wall-mounting options	Desktop
	Dimensions (W x H x D)	152 x 21 x 125 mm (5.9" x 0.8" x 4.9")	250 x 44 x 190.4 mm (9.8" x 1.7" x 7.5")	210 x 150 x 38mm
Weight	0.7 Kg (1.55lb)	2.3 Kg (4.8lb)	TBD	
OS Support		Linux, Windows 10	Linux, Windows 10	Linux (CentOS, Red Hat, Ubuntu)
Advantech S/W Packages		QuickStart Linux Image (Ubuntu based reference BSP) including <ul style="list-style-type: none"> <li>afwu</li> <li>Imensors</li> <li>flashrom</li> <li>Sierra QMI drivers</li> <li>Intel DPK</li> <li>Intel QAT</li> <li>DUI (Offline Diagnostics)</li> </ul> Individual packages: <ul style="list-style-type: none"> <li>DUI (Offline Diagnostics)</li> </ul>	QuickStart Linux Image (Ubuntu based reference BSP) including <ul style="list-style-type: none"> <li>afwu</li> <li>Imensors</li> <li>flashrom</li> <li>Sierra QMI drivers</li> <li>Intel DPK</li> <li>Intel QAT</li> <li>DUI (Offline Diagnostics)</li> </ul> Individual packages: <ul style="list-style-type: none"> <li>DUI (Offline Diagnostics)</li> </ul>	QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>Afru</li> <li>Advanced LAN Bypass Utility</li> <li>Intel DPK</li> </ul>
IPMI		-	-	-
Certification		CE, FCC Class B, CCC, CB, UL	CE, FCC Class B (with RF), CCC, CB, UL, BSMI, KCC, VCCI, RCM, BIS	CCC/CE/FCC/UL/CB, CLASS B (NOT Include any RF certificate)



Model	FWA-1012V/C		FWA-1211		FWA-1320		FWA-1330		
<b>Form Factor</b>	Tabletop		Din Rail		Tabletop		Tabletop		
<b>Processor System</b>	Processor	Intel® Atom™ C3338/C3558/C3758		Intel® Atom™ E3940/E3930		Intel Atom C2358/2558		Intel® Celeron N2807/J1900	
	Core Number	2/4/8-core		4/2-core		2/4-core		2/4-core	
	Frequency	1.5G/2.2G/2.2G		1.6GHz/1.3GHz		1.7GHz/2.4GHz		1.58GHz/2.0GHz	
	L2 Cache	≤8C L2 is 2MB/Core; >8C is 2MB/Core Pair		2MB/2MB		1MB/2MB		1MB/2MB	
	L3 Cache	-		-		-		-	
	Chipset	-		-		-		-	
BIOS	AMI Efi 64Mbit		AMI Efi 64Mbit		AMI Efi 64Mbit		AMI Efi 64Mbit		
<b>Virtualization</b>	Technology	VT-x, VT-d		VT-x, VT-d		VT-x		VT-x	
	Max. Capacity	DDR4 2400MHz		DDR3L 1333/1600/1867MHz		DDR3/DDR3L 1600MHz		DDR3L 1333MHz	
<b>Memory</b>	Socket	1 x 288-pin DIMM for 2 core 2 x 288-pin DIMM for 4/8 core		1 x 204-pin SODIMM		2 x 240-pin DIMM		1 x 204-pin SO-DIMM	
	ECC Support	Yes		Non-ECC		Yes		-	
	Controller	1 x Intel i350 1 x Marvell phy 88E1543		3 x Intel i210-AT or 5 x Intel i210-AT		4 x Marvell 88E1111		4 x Intel i211-AT	
<b>Networking</b>	1GbE	2 x 10/100/1000BASE-T RJ45 and 2 x SFP via Intel i350 4 x 10/100/1000BASE-T RJ45 port via Marvell 88E1543 (2 of 4 can support POE+)		3 x 10/100/1000 Mbps RJ45 via /i210-IT or 5 x 10/100/1000 Mbps SFP via /i210-IS plus 2 x 1000 Mbps SFP via /i210-IS		4 x 1GbE RJ45 with 2 segment advanced bypass support via Marvell 88E1111 2 x 1GbE RJ45 for management via Intel i210-AT		4 x 10/100/1000 Mbps RJ45 via Intel i211-AT	
	10GE	-		-		-		-	
	LAN bypass	Advanced	-		1 or 2 pairs of LAN bypass (option)		2 x segment (4x ports)		-
	Legacy	-		1 or 2 pairs of LAN bypass		-		2 x segment (4x ports)	
<b>Expansion</b>	PCIe x 16	-		-		-		-	
	PCIe x 8	-		-		-		-	
	PCIe x 4	-		-		-		-	
	PCIe x 1	-		-		-		-	
	NMC	-		-		-		-	
	m.2 PCIe	1 x B-Key for M.2 2242/2280 SSD or LTE 1 x B-Key for M.2 2242 SSD or LTE		-		-		-	
	Mini PCIe	1 x Half size Wi-Fi module 1 x Full size Wi-Fi module		-		-		1 x mini PCIe, half size, USB interface (Option with PCIe interface)	
SIM Socket	2		-		-		-		
<b>Storage</b>	2.5" HDD/SSD	1 x 2.5" SATA3.0 Gen3 SSD bracket (Max 9.5mm height only) (only on C3758 SKU)		1 x 2.5" SSD		1 x 2.5" SATA3.0 Gen3 HDD/SSD bracket (Max 9.5mm height only)		1 x 2.5" HDD	
	3.5" HDD	-		-		-		-	
	m.2 SSD	1 x B-Key for M.2 2242/2280 SSD or LTE 1 x B-Key for M.2 2242 SSD or LTE		-		-		-	
	mSATA SSD	-		1		1		1 x mSATA (Half Size or Full Size)	
	CompactFlash/ CFast	-		-		-		-	
Display	-		micro-HDMI option		-		1 x VGA port		
<b>I/O</b>	Console port	1		1		1		1	
	USB3.0	2 x USB3.0		-		-		-	
	USB2.0	-		2 x USB2.0 & 1 x USB 2.0 Pin Header		2 x USB2.0		2 x USB2.0 & 1 x USB 2.0 Pin Header	
	GPIO	-		-		Pin Header		Pin Header	
	LED Indicator	Power, SW define(1), HDD, WiFi, LTE, Wifi or LTE, SW define(2), SW define(3)		Power, HDD, LAN, SW define 1, SW define 2		Power, HDD status		Power, HDD status, LAN status	
	Reset button	-		Yes		-		Pin Header	
	Others	1 x Power Switch 1 x Software definable button		6 pin DC in		1 x Power Switch		1 x Power Switch DC power connector	
TPM	TPM 1.2 or TPM 2.0 (option)		TPM 1.2 or 2.0 (option)		TPM 1.2 support by Infineon SLB9635TT1.2		TPM 1.2		
LCD Module	-		-		-		-		
Others	-		-		-		-		
<b>Power</b>	Power Type	DC		DC 9~36V		DC		DC	
	Watts	36W for 2 core 60W for 4/8 core		-		60W		40W	
	Input	100V ~ 240V		-		100 V ~ 240 V		100 V ~ 240 V	
	Connector	DC Jack		6pin with P-Fail		DC Jack		DC Jack	
Power Adaptor	12V 5A, 60W external adaptor		-		12V 5A, 60W external adaptor		External AC/DC, adaptor		
<b>Environment</b>	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)		-40 ~ 70 °C		0 ~ 40 °C (32 ~ 104 °F)		0 ~ 40 °C (32 ~ 104 °F)	
	Non-operating Temperature	-40 ~ 60 °C (-50 ~ 140 °F)		-40 ~ 85 °C		-40 ~ 60 °C (-50 ~ 140 °F)		-40 ~ 60 °C (-50 ~ 140 °F)	
	Vibration Resistance	With SSD: 0.3 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis		TBD		With HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis With SSD: 0.3 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis		With HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis With SSD: 0.3 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	
	Shock Protection	With SSD: 10G, IEC-60068-2-27, half sine, 11ms duration		TBD		With HDD: 10G, IEC-60068-2-27, half sine, 11ms duration With SSD: 10G, IEC-60068-2-27, half sine, 11ms duration		With HDD: 10G, IEC-60068-2-27, half sine, 11ms duration With SSD: 10G, IEC-60068-2-27, half sine, 11ms duration	
<b>Cooling</b>	Power Type	2 x system fan with smart fan (for 8core SKU) or 2 x system fan with smart fan (for 2/4core SKUs)		fanless		1x system fan with smart fan		1x system fan with smart fan	
	Construction	Iron		Iron		Iron		Iron	
<b>Mechanical</b>	Mounting	Support desktop/Rack-mounting options		Din Rail		Desktop		Desktop	
	Dimensions (W x H x D)	250 x 190 x 44 mm (9.8" x 7.5" x 1.7")		150 x 127 x 88 mm (5.9" x 5" x 3.5")		280 x 44 x 176mm (11" x 1.7" x 6.9")		208 x 44 x 178 mm (8.2" x 1.7" x 7.0")	
	Weight	2.3kg (4.8lb)		TBD		2 Kg (3.3 lb)		1.8 Kg (3.96 lb)	
OS Support	Linux (CentOS, Red Hat, Ubuntu)		Linux (CentOS, Red Hat, Ubuntu)		Linux (CentOS, Red Hat, Ubuntu)		Linux (CentOS, Red Hat, Ubuntu)		
Advantech S/W Packages	<ul style="list-style-type: none"> <li>QuickStart Linux Image (Ubuntu based reference BSP) including <ul style="list-style-type: none"> <li>afwu</li> <li>Imensors</li> <li>flashrom</li> <li>Sierra QMI drivers</li> <li>Intel DPK</li> <li>Intel QAT</li> <li>DUI (Offline Diagnostics)</li> </ul> </li> <li>Individual packages: <ul style="list-style-type: none"> <li>DUI (Offline Diagnostics)</li> </ul> </li> </ul>		TBD		<ul style="list-style-type: none"> <li>QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>afwu</li> <li>Imensors</li> <li>flashrom</li> <li>Advanced LBP Utility</li> <li>DUI (Offline Diagnostics)</li> </ul> </li> <li>Individual packages: <ul style="list-style-type: none"> <li>Advanced LBP Library</li> <li>DUI (Offline Diagnostics)</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>afwu</li> <li>Imensors</li> <li>flashrom</li> <li>Legacy LBP utility</li> </ul> </li> <li>Individual packages: <ul style="list-style-type: none"> <li>Legacy LBP utility</li> </ul> </li> </ul>		
IPMI	-		-		-		-		
Certification	CE, FCC Class B (with RF), CCC, CB, UL, CE-RED		CCC/CE/FCC/UL/CB		CE, FCC, CB, UL, CCC		CE, FCC, CB, UL, CCC		

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# FWA Series Selection Guide



Model		FWA-2011	FWA-2012	FWA-2320	FWA-2330
Form Factor		1U - Rack Mount	1U - Rack Mount	1U - Rack Mount	1U - Rack Mount
Processor System	Processor	Intel Apollo Lake 4C/2C CPU, E3940&3930, J3355&3455	Intel® Atom™C3558/C3758/C3958	Intel Atom C2358/2558/C2758	Intel Celeron J1900
	Core Number	2/4-core	4/8/16-core	2/4/8-core	4-core
	Frequency	1.6GHz/2.0GHz	2.2GHz/2.2GHz/2.0GHz	1.7GHz/2.4GHz/2.4GHz	2.0GHz
	L2 Cache	2MB/2MB	≤8C L2 is 2MB/Core; >8C is 2MB/Core Pair	1MB/2MB/4MB	2MB
	L3 Cache	-	-	-	-
	Chipset	-	-	-	-
	BIOS	AMI Eli 64Mbit	AMI Eli 64Mbit	AMI Eli 64Mbit	AMI Eli 64Mbit
Virtualization		VT-x, VT-d	VT-x, VT-d	VT-x	VT-x
Memory	Technology	DDR3L 1866MHz	DDR4 2400MHz	DDR3/DDR3L 1600MHz	DDR3L 1333MHz
	Max. Capacity	8GB	64GB	16GB	8GB
	Socket	2 x 204-pin SO-DIMM	2 x 288-pin DIMM	2 x 240-pin DIMM	1 x 204-pin SO-DIMM
	ECC Support	Non-ECC	Yes	Non-ECC or ECC	Non-ECC
Networking	Controller	6 x Intel i210-AT	1 x Marvell 88E1543 2 x Intel i210	4 x Marvell 88E1111 2 x Intel i210	4 x Intel i211-AT
	1GbE	6 x 10/100/1000 Mbps RJ45 via Intel i210-AT	4 x 1GbE RJ45 via Marvell 1543 with 2 pairs LAN Bypass 2 x GbE RJ45 port via Intel i210	4 x 1GbE RJ45 with 2 segment advanced bypass support via Marvell 88E1111 2 x 1GbE RJ45 for management via Intel i210-AT	4 x 10/100/1000 Mbps RJ45 via Intel i211-AT
	10GE	-	-	-	-
	LAN bypass	Advanced 2 x segment (4 x ports) (option) Legacy 2 x segment (4 x ports)	2 x segment (4 x ports)	2 x segment (4 x ports)	2 x segment (4 x ports)
Expansion	PCIe x 16	-	-	-	-
	PCIe x 8	-	-	-	-
	PCIe x 4	-	1 x gen3 x4 slot	-	-
	PCIe x 1	-	-	-	-
	NMC	1 x NMC	1 x NMC	-	1 x NMC
	m.2 PCIe	-	-	-	-
	Mini PCIe	1 x mini PCIe, half size/full size, USB interface (Option with PCIe interface) (option)	-	-	1 x mini PCIe, half size, USB interface (Option with PCIe interface)
Storage	SIM Socket	-	-	-	-
	2.5" HDD/SSD	1 x 2.5" HDD/SSD (option)	1 x 3.5" HDD	1 x 2.5" HDD/SSD (by request)	-
	3.5" HDD	1 x 3.5" HDD	1 x 2.5" HDD (option)	1 x 3.5" HDD	1 x 3.5" HDD
	m.2 SSD	-	1 x M.2 SSD 2242/2260/2280 (Key M)	-	-
	mSATA SSD	1 x mSATA	-	1	1 x mSATA
CompactFlash/CFast	CF(option)	-	-	-	
Display		VGA box header	-	-	VGA box header
I/O	Console port	1	1	-	1
	USB3.0	2	2 x USB3.0	-	-
	USB2.0	-	1 x USB 2.0 Pin Header	2 x USB2.0	2 x USB2.0 & 1 x USB 2.0 Pin Header
	GPIO	Pin Header	Pin Header	Pin Header	Pin Header
	LED Indicator	1 x Power, HDD	Power, Status, Location LED	Power, HDD status	Power, HDD status LED
	Reset button	Pin Header	Yes	-	Pin Header
	Others	1 x AC Power Switch ,RS232	1 x AC Power Switch	1 x Power Switch	RS232, 1 x AC Power Switch
TPM		TPM 1.2 or 2.0 (option)	TPM 1.2 or 2.0 (option)	TPM 1.2 support by Infineon SLB9635TT1.2	TPM 1.2 support by Infineon SLB9635TT1.2
LCD Module		16x2 graphic display, 5 buttons	-	16x2 graphic display,5 buttons	-
Others		-	-	-	-
Power	Power Type	AC	AC	AC	AC
	Watts	60W	150W	100W	16 x 2 graphic display,5 buttons
	Input	100 V ~ 240 V	100 V ~ 240 V	100 V ~ 240 V	100 V ~ 240 V
	Connector	AC 3pin plug	AC 3pin plug	AC 3pin plug	AC 3pin plug
Power Adaptor		AC, Openframe	-	-	-
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)
	Non-operating Temperature	-40 ~ 60 °C (-50 ~ 140 °F)	-40 ~ 60 °C (-50 ~ 140 °F)	-40 ~ 60 °C (-50 ~ 140 °F)	-40 ~ 60 °C (-50 ~ 140 °F)
	Vibration Resistance	With HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	With HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis With SSD: 0.3 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	With HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis
	Shock Protection	With HDD: 10G, IEC-60068-2-27, half sine, 11ms duration With	With SATA HDD: 10G, IEC-60068-2-27, half sine, 11ms duration	With HDD: 10G, IEC-60068-2-27, half sine, 11ms duration With SSD: 10G, IEC-60068-2-27, half sine, 11ms duration	With HDD: 10G, IEC-60068-2-27, half sine, 11ms duration With
Cooling		2 x system fan with smart fan	2 x system fan with smart fan	1 x system fan with smart fan	2 x system fan with smart fan
Mechanical	Construction	Iron	Iron	Iron	Iron
	Mounting	1U Rackmount	1U Rackmount	1U Rackmount	1U Rackmount
	Dimensions (W x H x D)	430 x 44 x 300 mm (16.7" x 1.7" x 11.8")	430 x 44 x 320.7 mm (16.7" x 1.7" x 12.6")	426 x 44 x 318 mm (16.8" x 1.7" x 12.5")	430 x 44 x 300 mm (16.7" x 1.7" x 11.8")
	Weight	5.4 kg (11.9 lbs)	6.6 Kg (14.5 lbs)	4.5 Kg (9.9 lb)	5.4 kg (11.9 lbs)
OS Support		Linux (CentOS, Red Hat, Ubuntu) Windows* 10	Linux (CentOS, Red Hat, Ubuntu)	Linux (CentOS, Red Hat, Ubuntu)	Linux (CentOS, Red Hat, Ubuntu)
Advantech S/W Packages		QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>afu</li> <li>ipmitool</li> <li>Imensors</li> <li>LCD4Linux</li> <li>Intel DPK</li> <li>Advanced LBP utility</li> </ul> Individual packages: <ul style="list-style-type: none"> <li>Advanced LBP utility</li> </ul>	QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>afu</li> <li>ipmitool</li> <li>Imensors</li> <li>LCD4Linux</li> <li>Intel DPK</li> <li>Advanced LBP utility</li> </ul> Individual packages: <ul style="list-style-type: none"> <li>Advanced LBP utility</li> </ul>	QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>afu</li> <li>Imensors</li> <li>flashrom</li> <li>LCD4Linux</li> <li>Advanced LBP Utility</li> <li>DUI (Offline Diagnostics)</li> </ul> Individual packages: <ul style="list-style-type: none"> <li>Advanced LBP utility</li> </ul>	QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>afu</li> <li>Imensors</li> <li>flashrom</li> <li>Legacy LBP utility</li> </ul>
IPMI		-	Option with Advantech LOM Module	-	-
Certification		CE, FCC, CB, UL, CCC	CE, FCC, CCC, CB, UL	CE, FCC, CCC, CB, UL	CE, FCC, CCC, CB, UL

Packetarium XL Blade Servers 1

High Performance Servers 2

Network Appliances 3

PCI Express Adapters 4

Network Switches 5

ATCA Blades & Integrated Systems 6

PCI Boards & Enclosures 7

VPX Blades 8

Video Processing & IP Media Platforms 9



Model	FWA-3033		FWA-3050		FWA-3230	
Form Factor	1U - Rack Mount		1U - Rack Mount		1U - Rack Mount	
Processor System	Processor	Intel® Xeon® E-2278GE/E-2226GE/E-2176G/E-2174G, 8th/9th gen. Intel® Core™ i7/i5/i3 processors , Intel® Pentium® G5400 and Intel® Celeron® G3900 Processor		Intel Xeon processor D-2100 processor family		E3-1225(4C,3.2G)/E3-1275(4C,3.5G)/E3-1268L(4C,2.3G)/i7-4770S(4C,3.1G)/i5-4570S(4C,2.9G)/i5-4570TE(2C,2.7G), Socket LGA1150 Haswell DT v3
	Core Number	2/4/6/8-core		4/8/16-core Option: 12/14-core		2C/4C
	Frequency	2.1GHz-3.8GHz		1.9G-2.2GHz		2.0GHz-3.5GHz
	L2 Cache	12MB		11MB/22MB		4MB/6MB/8MB
	L3 Cache	-		-		-
	Chipset	Intel C246		-		-
	BIOS	AMI EFI 256Mbit		AMI Efi 64Mbit		AMI Efi 64Mbit
Virtualization	VT-x, VT-d		VT-x, VT-d, EPT		VT-x, VT-d	
Memory	Technology	DDR4 2400/2666MHz		DDR4 2133/2400/2666MHz		DDR3/DDR3L, 1600MHz
	Max. Capacity	128GB		256GB		A:4 x DIMM Slots Expandable to 32GB B:2 x DIMM Slots Expandable to 16GB
	Socket	4 x 240-pin UDIMM		4 x 288-pin DIMM		2/4 x 240-pin UDIMM
	ECC Support	Only Xeon E serial CPU support ECC; i3/i5/i7 not support ECC		Yes		ECC for SKUA Non-ECC for SKUB
Networking	Controller	6 x i210-AT 4 x i210-IS		2 x Intel i350 2 x Intel 210		6 x Intel i210 2 x Intel i210(LOM)
	1GbE	6 x 1GbE RJ45 with 2 segment advanced bypass support via Intel i210 4 x 1GbE SFP via Intel i210-IS		4 x 10/100/1000 Mbps RJ45 via Intel i350-AM4, 4 x 10/100/1000 Mbps RJ45 via Intel i350-AM4 (Option: Advanced LAN bypass), 2 x 10/100/1000Mbps RJ45 via Intel i210-AT for management		6 x 1GbE RJ45 with 3 segment advanced bypass support via Intel i210 2 x 1GbE RJ45 for management via Intel i210-AT
	10GE	-		4 x 10GbE SFP+ via Intel X722		-
	LAN bypass	Advanced	2 x segment		2 x segment (4 x ports) (option)	
	Legacy	2 segment is option		-		3 segment (option by jumper)
Expansion	PCIe x 16	-		-		-
	PCIe x 8	-		1 x HH/HL gen3 x8 slot		A:1 FH/HL (option)
	PCIe x 4	1 x FH/HL gen3 x4 1 x FH/HL Gen3 x2		-		A:2 FH/HL
	PCIe x 1	-		-		-
	NMC	2 x NMC		1		2 NMCs +
	m.2 PCIe	1		2		-
	Mini PCIe	1		-		1 x Mini PCIe Slot(full Size, USB Interface Default, PCIe Interface Option)
	SIM Socket	-		-		-
Storage	2.5" HDD/SSD	2 x 2.5" HDD/SSD		2 x 2.5" SATA HDD bay		2 x 2.5" HDD/SSD
	3.5" HDD	1 x 3.5" HDD option		-		1 x 3.5" HDD/SSD(option)
	m.2 SSD	1 x m.2 2280,2260		2 x m.2 2280		-
	mSATA SSD	-		-		1
	CompactFlash/ CFast	1 x CF slot (SKU option)		-		-
Display	1 x HDMI pin header		1x VGA (rear)		1 x VGA box header	
I/O	Console port	1		1 x RJ45		1
	USB3.0	2		2		2
	USB2.0	2 pin header		-		2 (pin header)
	GPIO	Pin Header		8-bit GPIO		8-bit GPIO
	LED Indicator	Power, HDD status LED		Power/Alert/Location/Software-defined LED		Power, HDD status
	Reset button	Pin Header		Pin Header		Pin Header
	Others	-		-		1 x RS232, 2 x USB2.0, VGA Opt. by request
TPM	module option		module option		TPM 1.2	
LCD Module	16 x 2 graphic display,5 buttons		16 x 2 graphic display, 5 buttons		16 x 2 graphic display,5 buttons	
Others	-		-		-	
Power	Power Type	AC, fixed & redundant option DC, redundant option		AC, fixed & redundant option DC, redundant option		Single AC or Redundant AC/DC
	Watts	300W (1+1) AC/DC(Option: ATX 250W)		300W (1+1) AC/DC(Option: ATX 250W)		250W / 300W (1+1)AC/DC
	Input	100 V ~ 240 V / DC-48V		100 V ~ 240 V / DC-48V		100 V ~ 240 V / DC-48V
	Connector	AC 3pin plug / DC pin header		AC 3pin plug/DC pin header		AC 3pin plug / DC pin header
Power Adaptor	-		-		AC or DC, redundant and non-redundant	
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)		0 ~ 40 °C (32 ~ 104 °F)		0 ~ 40 °C (32 ~ 104 °F)
	Non-operating Temperature	-40 ~ 60 °C (-50 ~ 140 °F)		-40 ~ 60 °C (-50 ~ 140 °F)		-20 ~ 80 °C (-4 ~ 167 °F)
	Vibration Resistance	With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis		With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis		with SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis
	Shock Protection	With SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X,-Y-Z axis, 3times per axis		With SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X,-Y-Z axis, 3times per axis		with SATA HDD: 10G, IEC-60068-2-27, half sine, 11ms duration
Cooling	Max. 4x system fan with smart fan (Option: Hot-swappable FAN)		Max. 4x system fan with smart fan (Option: Hot-swappable FAN)		4 x system Fans	
Mechanical	Construction	Iron		Iron		Iron
	Mounting	1U Rackmount		1U Rackmount		1U Rackmount
	Dimensions (W x H x D)	438 x 44 x 520 mm (17.2" x 1.7" x 16.5")		438 x 44 x 420 mm (17.2" x 1.7" x 16.5")		430 x 44 x 500 mm (16.6" x 1.7" x 19.7")
	Weight	15 Kg (33lb)		15 Kg (33lb)		A SKU:15 Kg (33lb) B SKU:13 Kg (29lb)
OS Support	Linux (CentOS, Red Hat, Fedora, Ubuntu)		Linux (CentOS, Red Hat, Fedora, Ubuntu)		Linux (CentOS, Red Hat, Ubuntu)	
Advantech S/W Packages	QuickStart Linux Image (CentOS based reference BSP) including • afwu • ipmitool • LCD4Linux • Advanced LBP Utility • Intel DPDK • Intel QAT • DUI (Offline Diagnostics)		QuickStart Linux Image (CentOS based reference BSP) including • afwu • ipmitool • LCD4Linux • Advanced LBP Utility • Intel DPDK • Intel QAT • DUI (Offline Diagnostics)		QuickStart Linux Image (CentOS based reference BSP) including • afwu • ipmitool • Imensors • flashrom • LCD4Linux • Advanced LBP Utility	
	Individual packages: • Advanced LBP Library • DUI (Offline Diagnostics)		Individual packages: • Advanced LBP Library • DUI (Offline Diagnostics)		Individual packages: • Advanced LBP Library	
IPMI	IPMI v2.0 compliant BMC with web interface		IPMI v2.0 compliant BMC with web interface		A: optional IPMI v2.0 compliant LOM module (AMI MegaRAC SP-X)	
Certification	CE, FCC, CCC, CB, UL		CE, FCC, CCC, CB, UL		CE/FCC/CB/UL/CCC	

# FWA Series Selection Guide



Model		FWA-3231	FWA-3232	FWA-3260	FWA-3270
Form Factor		1U - Rack Mount	1U - Rack Mount	1U - Rack Mount	1U - Rack Mount
Processor System	Processor	4th Gen Intel Xeon E3, Core-I family, Pentium & Celeron processors	4th Gen Intel Xeon E3, Core Desktop family, Pentium & Celeron processors	Intel Xeon processor D-1500 processor family	6th Gen Intel Xeon E3, Core Desktop family, Pentium & Celeron processors
	Core Number	2/4-core	2/4-core	Default: 4/8-core Option: 2/6/12/16-core	2/4-core
	Frequency	2.0GHz~3.5GHz	2.0GHz~3.5GHz	1.7GHz~2.4GHz	2.4GHz~3.6GHz
	L2 Cache	2MB/3MB/4MB/6MB/8MB	2MB/3MB/4MB/6MB/8MB	3MB/6MB/9MB/12MB/18MB/24MB	2MB/4MB/8MB
	L3 Cache	-	-	-	-
	Chipset	Intel C226	Intel C226/H81	-	Intel C236 & H110
	BIOS	AMI Efi 64Mbit	AMI Efi 64Mbit	AMI Efi 64Mbit	AMI Efi 64Mbit
Virtualization		VT-x, VT-d	VT-x, VT-d	VT-x, VT-d	VT-x, VT-d
Memory	Technology	DDR3 1600MHz	DDR3 1600MHz	DDR4 2400MHz	DDR4 2400MHz
	Max. Capacity	32GB	32GB	128GB	64GB
	Socket	4 x 240-pin DIMM	4 x 240-pin DIMM	4 x 288-pin DIMM	4 x 288-pin DIMM
	ECC Support	Yes	Yes (3233A)	Yes	Yes
Networking	Controller	2 x Intel i210-AT	8 x Intel i210-AT(3232A) 6 x Intel i210-AT(3232B)	4 x Intel i350 2 x Intel i210	8 x Intel i210-AT(3270A) 6 x Intel i210-AT(3270B)
	1GbE	2 x 10/100/1000 Mbps RJ45 via Intel i210-AT	8 x 10/100/1000 Mbps RJ45 (3232A) 6 x 10/100/1000 Mbps RJ45 (3232B)	4 x 1GbE RJ45 with 2 segment advanced bypass support via Intel i350 2 x 1GbE RJ45 for management via Intel i210-AT	8 x 10/100/1000 Mbps RJ45 (3270A) 6 x 10/100/1000 Mbps RJ45 (3270B)
	10GE	-	-	2 x 10G SFP+ via Intel Xeon-D SoC	-
	LAN bypass	Advanced Legacy	- 3 segment (6x ports) (option) 3 segment (6x ports)	2 x segment (4x ports) -	3 segment (6x ports) 2 segment (4x ports) (option) 3 segment (6x ports) (3270A) 2 segment (4x ports) (3270B)
Expansion	PCIe x 16	-	-	-	-
	PCIe x 8	1 x FH/HL gen3 x8 slot (option)	1 x FH/HL gen3 x8 slot(option)	A:1 FH/HL	1x FH/HL gen3 x8 slot
	PCIe x 4	1 x FH/HL gen2 x4 slot (option)	2 x FH/HL gen3 x4 slot	A:2 FH/HL (option)	2 x FH/HL gen3 x4 slot (option)
	PCIe x 1	-	-	-	TPM 2.0 (3270A only)
	NMC	4 x NMC	2 x NMC (3232A) 1 x NMC (3232B)	2 x NMC	2 x NMC (3270A) 1 x NMC (3270B)
	m.2 PCIe	-	-	-	-
	Mini PCIe	-	-	-	-
Storage	2.5" HDD/SSD	2 x 2.5" SATA HDD bay	2 x 2.5" SATA HDD/SSD bay	2 x 2.5" HDD/SSD	2 x 2.5" SATA HDD/SSD bay
	3.5" HDD	1 x 3.5" SATA HDD bay(option)	1 x 3.5" SATA HDD bay	1 x 3.5" HDD/SSD (option)	1 x 3.5" SATA HDD bay
	m.2 SSD	-	-	2 x m.2 (2280/2242)	1 x m.2 (2242/2260/2280)
	mSATA SSD	1 x mSATA	1 x mSATA	-	1 x mSATA
	CompactFlash/CFast	-	-	-	-
Display		VGA box header	VGA box header	-	HDMI(3270A)/DVI(3270B)
I/O	Console port	1	1	1	1
	USB3.0	-	2 x USB3.0	2	2
	USB2.0	2 x USB2.0	1 x USB 2.0 Pin Header	-	-
	GPIO	Pin Header	Pin Header	Pin Header	Pin Header
	LED Indicator	Power, Status, Location LED	Power, HDD status LED	Power, HDD status LED	Power, HDD status LED
	Reset button	Pin Header	Pin Header	Pin Header	Pin Header
TPM		TPM 1.2 support by Infineon SLB9635TT1.2	TPM 1.2	A SKU: TPM(2.0), Option: TPM(1.2)	TPM 2.0 (3270A only)
LCD Module		16x2 graphic display,5 buttons	16x2 graphic display,5 buttons	16x2 graphic display,5 buttons	16x2 graphic display,5 buttons
Others		-	-	-	-
Power	Power Type	AC, fixed & redundant option DC, redundant option	AC, fixed & redundant option DC, redundant option	AC, fixed & redundant option DC, redundant option	AC, fixed & redundant option DC, redundant option
	Watts	250W / 300W (1+1)AC/DC	250W / 300W (1+1)AC/DC	250W / 300W (1+1)AC/DC	250W / 300W (1+1)AC/DC
	Input	100 V ~ 240 V / DC-48V	100 V ~ 240 V / DC-48V	100 V ~ 240 V / DC-48V	100 V ~ 240 V
	Connector	AC 3pin plug	AC 3pin plug	AC 3pin plug	AC 3pin plug
Environment	Power Adaptor	-	-	-	-
	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)
	Non-operating Temperature	-40 ~ 60 °C (-50 ~ 140 °F)	-40 ~ 60 °C (-50 ~ 140 °F)	-40 ~ 60 °C (-50 ~ 140 °F)	-40 ~ 60 °C (-50 ~ 140 °F)
	Vibration Resistance	With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis
Shock Protection		With SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X,-Y-Z axis, 3times per axis	With SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X,-Y-Z axis, 3times per axis	With SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X,-Y-Z axis, 3times per axis	With SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X,-Y-Z axis, 3times per axis
Cooling		4 x system fan with smart fan	4 x system fan with smart fan	4 x system fan with smart fan	4 x system fan with smart fan
Mechanical	Construction	Iron	Iron	Iron	Iron
	Mounting	1U Rackmount	1U Rackmount	1U Rackmount	1U Rackmount
	Dimensions (W x H x D)	430 x 44 x 550 mm (16.9" x 1.7" x 21.6")	430 x 44 x 500 mm (16.9" x 1.7" x 19.6") (FWA-3232A) 430 x 44 x 375 mm (16.9" x 1.7" x 14.7") (FWA-3232B)	430 x 44 x 500 mm (16.9" x 1.7" x 19.7")	430 x 44 x 500 mm (16.9" x 1.7" x 19.6") (FWA-3232A) 430 x 44 x 375 mm (16.9" x 1.7" x 14.7") (FWA-3232B)
	Weight	10kg	10 kg/6 kg	A SKU:15 Kg (33lb) B SKU:13 Kg (29lb)	10 kg/6 kg
OS Support		Linux (CentOS, Red Hat, Ubuntu)	Linux (CentOS, Red Hat, Ubuntu)	Linux (CentOS, Red Hat, Ubuntu)	Linux (CentOS, Red Hat, Ubuntu)
Advantech S/W Packages		Individual packages: ▪ Legacy LBP utility	Individual packages: ▪ Legacy LBP utility	QuickStart Linux Image (CentOS based reference BSP) including ▪ afu ▪ ipmitool ▪ insensors ▪ flashrom ▪ LCD4Linux ▪ Advanced LBP Utility Individual packages: ▪ Advanced LBP Library	QuickStart Linux Image (CentOS based reference BSP) including ▪ afu ▪ insensors ▪ flashrom ▪ LCD4Linux ▪ Advanced LBP Utility Individual packages: ▪ Advanced LBP Library
IPMI		-	-	Option with Advantech LOM Module	Option with Advantech LOM Module
Certification		CE, FCC, CCC, CB, UL	CE, FCC, CCC, CB, UL	CE, FCC, CCC, CB, UL	CE, FCC, CCC, CB, UL



Model		FWA-4000	FWA-4030	FWA-4130	
Form Factor		2U - Rack Mount	2U - Rack Mount	2U - Rack Mount	
Processor System	Processor	Zhaxin ZX-C+ Processor C4711	Skylake-S WS/DT, Socket LGA 1151	Skylake-S WS/DT, Socket LGA 1151	
	Core Number	4-core	2/4-core	2/4-core	
	Frequency	2.0GHz	2.4GHz~3.6GHz	2.4GHz~3.6GHz	
	L2 Cache	2MB	2MB/4MB/8MB	2MB/4MB/8MB	
	L3 Cache	-	-	-	
	Chipset	zhaxin ZX-100S	100 Series Chipset (C236/H110)	100 Series Chipset (C236)	
	BIOS	AMI 8 Mbit SPI	AMI Efi 64Mbit	AMI Efi 64Mbit	
Virtualization		-	-	-	
Memory	Technology	DDR3 UDIMM 1333/1600MHz	DDR4 2133/2400MHz	DDR4 2133/2400MHz	
	Max. Capacity	32GB	4 x DIMM Slots Expandable to 64GB	4 x DIMM Slots Expandable to 64GB	
	Socket	4 x 288 pin UDIMM	4 x 288-pin UDIMM	4 x 288-pin UDIMM	
	ECC Support	-	Yes (E3 CPU only)	Yes (E3 CPU only)	
Networking	Controller	4 x 10/100/1000 Mbps RJ45 via Intel i350-AM4 4 x SFP via Intel i350-AM4	6 x Intel i210-AT	2 x Intel i210-AT	
	1GbE	4 x 10/100/1000 Mbps RJ45 via Intel i350-AM4 4 x SFP via Intel i350-AM4	6 x 10/100/1000 Mbps RJ45 via Intel i210 chip	2 x 10/100/1000 Mbps RJ45 via Intel i210 chip	
	10GE	NA	-	-	
	LAN bypass	Advanced	-	2 x pair of LAN Bypass	-
		Legacy	2 segment	optional	support by NMC
Expansion	PCIe x 16	-	-	-	
	PCIe x 8	1 x FH/HL gen3 x8 slot(option)	-	-	
	PCIe x 4	-	1 x FH/HL gen3 x4 slot (option)	2 x FH/HL gen3 x4 slot (option)	
	PCIe x 1	2	-	-	
	NMC	1 NMC	2/4 NMCs	4/8 NMCs	
	m.2 PCIe	-	-	-	
	Mini PCIe	-	-	-	
	SIM Socket	-	-	-	
Storage	2.5" HDD/SSD	1 x 2.5" HDD bay optional	optional	2 x 2.5" HDD bay	
	3.5" HDD	2 x 3.5" HDD bay	4 x 3.5" HDD bay	-	
	m.2 SSD	-	-	-	
	mSATA SSD	-	1 x mSATA	1 x mSATA	
	CompactFlash/ CFast	1 x CFast	1 x CF slot	1 x CF slot	
Display		VGA box header	DVI	DVI	
I/O	Console port	1	1 x RJ45	1 x RJ45	
	USB3.0	-	4 (2 in front+2 with pin header)	4 (2 in front+2 with pin header)	
	USB2.0	2	-	-	
	GPIO	Pin Header	16-bit GPIO	1 (Pin header)	
	LED Indicator	Power, HDD status LED	1 x Power led, 1 x HDD status led	1 x Power led, 1 x HDD led	
	Reset button	Pin Header	Pin Header	Pin Header	
	Others	-	RS232, VGA option	RS232, 2 x USB option	
TPM		-	TPM 1.2 or TPM 2.0 (option)	TPM 1.2 or TPM 2.0 (option)	
LCD Module		16x2 graphic display,5 buttons	16x2 graphic display,5 buttons	16x2 graphic display,5 buttons	
Others		-	-	-	
Power	Power Type	AC, fixed & redundant option DC, redundant option	AC, redundant and non-redundant DC, redundant DC (optional)	AC, redundant DC, redundant DC (optional)	
	Watts	250W / 300W (1+1)AC/DC	300W	300W	
	Input	100 V ~ 240 V	100 V ~ 240 V	100 V ~ 240 V	
	Connector	AC 3pin plug	AC 3pin plug / DC pin header	AC 3pin plug / DC pin header	
	Power Adaptor	-	AC or DC, redundant	AC or DC, redundant	
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	
	Non-operating Temperature	-40 ~ 60 °C (-50 ~ 140 °F)	-40 ~ 60 °C (-40~140 °F) 5 ~ 95%	-40 ~ 60 °C (-40~140 °F) 5 ~ 95%	
	Vibration Resistance	With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	with SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	with SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	
	Shock Protection	With SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X,-Y-Z axis, 3times per axis	with SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X,-Y-Z axis, 3times per axis	with SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X,-Y-Z axis, 3times per axis	
Cooling		3x system fan with smart fan	2/3x system smart FAN and 1x cooling	3x system smart FAN and 1x cooling	
Mechanical	Construction	Iron	Iron	Iron	
	Mounting	2U Rackmount	2U Rackmount	2U Rackmount	
	Dimensions (W x H x D)	438 x 88 x 520 mm (17.24" x 3.4" x 20.4")	438 x 88 x 520 mm (17.24" x 3.4" x 20.4")	438 x 88 x 520 mm (17.24" x 3.4" x 20.4")	
	Weight	20 KG	20 KG	20 KG	
OS Support		Linux (CentOS, Red Hat)	Linux (CentOS, Red Hat, Ubuntu)	Linux (CentOS, Red Hat, Ubuntu)	
Advantech S/W Packages		QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>afu</li> <li>Imensors</li> <li>flashrom</li> <li>LCD4Linux</li> <li>Advanced LBP Utility</li> </ul> Individual packages: <ul style="list-style-type: none"> <li>Advanced LBP Library</li> </ul>	QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>afu</li> <li>Imensors</li> <li>flashrom</li> <li>LCD4Linux</li> <li>Advanced LBP Utility</li> </ul> Individual packages: <ul style="list-style-type: none"> <li>Advanced LBP Library</li> </ul>	QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>afu</li> <li>Imensors</li> <li>flashrom</li> <li>LCD4Linux</li> <li>Advanced LBP Utility</li> </ul> Individual packages: <ul style="list-style-type: none"> <li>Advanced LBP Library</li> </ul>	
IPMI		-	-	option	
Certification		CCC	CE/FCC/CB/UL/CCC	CE/FCC/CB/UL/CCC	

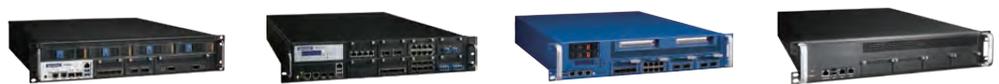
- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

# FWA Series Selection Guide



Model	FWA-4231		FWA-4232		FWA-5020		FWA-5070		
<b>Form Factor</b>	2U - Rack Mount		2U - Rack Mount		1U - Rack Mount		1U - Rack Mount		
<b>Processor System</b>	Processor	4th Gen Intel Xeon E3, Core-i family, Pentium & Celeron processors		4th Gen Intel Xeon E3, Core-i family, Pentium & Celeron processors		1/2x Intel® Xeon® E5-2600 v3/v4 processor family		1 x Intel® Xeon® Scalable Processor family	
	Core Number	2/4-core		2/4-core		8C/10C/12C/14C/16C/18C/20C/22C		8C/10C/12C/14C/16C/18C/20C/22C/24C/26C/28C	
	Frequency	2.4GHz~3.5GHz		2.0GHz~3.5GHz		2.0GHz/2.1GHz/2.2GHz/3GHz/2.4GHz/2.6GHz		2.0GHz/2.1GHz/2.2GHz/2.3GHz/2.4GHz/2.6GHz/3.0GHz/3.2GHz/3.4GHz/3.6GHz	
	L2 Cache	2MB/3MB/6MB/8MB		2MB/3MB/4MB/6MB/8MB		30MB - 55 MB		4MB - 28MB	
	L3 Cache	-		-		-		Up to 38.5MB	
	Chipset	Intel C226		Intel C226 & H81		Intel C612		Intel C626 or C621	
BIOS	AMI Eli 64Mbit		AMI Eli 64Mbit		AMI Eli 64Mbit		AMI Eli 64Mbit		
<b>Virtualization</b>	VT-x, VT-d	-		-		-		-	
	Technology	DDR3 1600MHz		DDR3 1600MHz		DDR4 2400MHz		DDR4 2400/2666MHz	
	Max. Capacity	32GB		32GB		512GB		768GB	
	Socket	4 x 240-pin DIMM		4 x 240-pin DIMM		8/16x 288-pin DIMM		12x 288-pin DIMM	
<b>Networking</b>	ECC Support	Yes		Yes		Yes		Yes	
	Controller	2 x Intel i210-AT		8 x Intel i210-AT(4232A) 6 x Intel i210-AT(4232B)		1 x Intel i210		Intel i210	
	1GbE	2 x 10/100/1000 Mbps RJ45 via i210AT		8 x 10/100/1000 Mbps RJ45 (4232A) 6 x 10/100/1000 Mbps RJ45 (4232B)		4 x 1GbE RJ45 with 2 segment advanced bypass support via i-350 AM4 2 x 1GbE RJ45 for management via Intel i210-AT		2 x 10/100/1000 Mbps RJ45 via Intel i210 chip	
	10GE	-		-		2 x 10G SFP+ via Intel X710 (5020 SKU2)		2 x 10G SFP+ via Intel C626 (by SKU)	
LAN bypass	Advanced	Supported by NMC		optional		2 x segment (4x ports) (5020 SKU2)		Supported by NMC	
	Legacy	-		3 segment (6x ports) (4232A) 2 segment (4x ports) (4232B)		-		Supported by NMC	
<b>Expansion</b>	PCIe x 16	1 FH/HL		-		1 HH/HL (Internal Proprietary) PCIe-3021-00E		1 HH/HL (Internal Proprietary)	
	PCIe x 8	-		1x FH/HL gen3 x8 slot		-		-	
	PCIe x 4	-		-		-		-	
	PCIe x 1	-		-		-		-	
	NMC	4 x NMC		2 x NMC		2/4 x NMC		4 x NMC	
	m.2 PCIe	-		-		-		1 x M.2 PCIe Slot (2280, SATA Interface Default, PCIe Interface Option)	
	Mini PCIe	-		-		-		-	
	SIM Socket	-		-		-		-	
<b>Storage</b>	2.5" HDD/SSD	Max. 4 x 2.5" HDD/SSD or 2 x 3.5" HDD		2 x 2.5" SATA HDD/SSD bay		Max. 2 x 2.5" HDD/SSD		Max. 3 x 2.5" HDD/SSD (2 is default)	
	3.5" HDD	Max. 4 x 2.5" HDD/SSD or 2 x 3.5" HDD		2 x 3.5" SATA HDD/SSD bay		-		-	
	m.2 SSD	-		-		-		1 x M.2 2280	
	mSATA SSD	1 x mSATA		1 x mSATA SSD		2		1 x mSATA	
	CompactFlash/ CFast	-		-		-		1 x CF slot (Optional)	
<b>I/O</b>	Display	VGA box header		VGA box header		VGA box header		VGA box header	
	Console port	1		1		Pin Header		1	
	USB3.0	-		2 x USB 3.0		2		2	
	USB2.0	2		2		-		-	
	GPIO	Pin Header		Pin Header		Pin Header		Pin Header	
	LED Indicator	1 x Power led, 1 x HDD led, 1 x Location		Power, HDD status LED		Power, HDD status LED		Power, Status, Locate LED by IPMI	
	Reset button	Pin Header		Pin Header		Pin Header		Pin Header	
Others	RS232, 2 x USB option		RS232, VGA option		RS232, 2x USB, VGA opt.		1 x power button		
TPM	TPM 1.2 support by Infineon SLB9635TT1.2		TPM 1.2		On board TPM 1.2		TPM1.2 / TPM 2.0 (Optional)		
LCD Module	16x2 graphic display,5 buttons		16x2 graphic display,5 buttons		16x2 graphic display,5 buttons		-		
Others	-		-		-		-		
<b>Power</b>	Power Type	AC, fixed & redundant option DC, redundant option		AC, fixed & redundant option DC, redundant option		AC, redundant option DC, redundant option		AC: Redundant, Default DC: Redundant, Optional	
	Watts	350W/ 300W		300W/ 250W		650W		AC: 650W / DC: 800W	
	Input	100 V ~ 240 V/-36 ~ -60V <sub>oc</sub>		100 V ~ 240 V		(AC) 100V ~ 240V (DC) -40 ~ -72V		(AC) 100V ~ 240V (DC) -40 ~ -72V	
	Connector	AC 3pin plug		AC 3pin plug		AC 3pin plug		AC 3pin plug	
	Power Adaptor	-		-		-		-	
<b>Environment</b>	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)		0 ~ 40 °C (32 ~ 104 °F)		0 ~ 40 °C (32 ~ 104 °F)		0 ~ 40 °C (32 ~ 104 °F)	
	Non-operating Temperature	-40 ~ 60 °C (-50 ~ 140 °F)		-40 ~ 60 °C (-50 ~ 140 °F)		-40 ~ 60 °C (-50 ~ 140 °F)		-40 ~ 60 °C (-50 ~ 140 °F)	
	Vibration Resistance	With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis		With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis		With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis		With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	
	Shock Protection	With SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X,-Y-Z axis, 31times per axis		With SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X,-Y-Z axis, 31times per axis		With SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X,-Y-Z axis, 31times per axis		With SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X,-Y-Z axis, 31times per axis	
<b>Mechanical</b>	Cooling	3x system samrt fan		3x system samrt fan		2/3x system fan with smart fan		3x system fan with smart fan	
	Construction	Iron		Iron		Iron		Iron	
	Mounting	2U Rackmount		2U Rackmount		1U Rackmount		1U Rackmount	
	Dimensions (W x H x D)	430 x 88x 500 mm (16.9" x 3.4" x 19.6")		430 x 88x 500 mm (16.9" x 3.4" x 19.6")		438 x 44x 625 mm (17.24" x 1.732" x 24.61")		438 x 44 x 550 mm	
Weight	20 KG		20 KG		18 KG		20 KG		
OS Support	Linux (CentOS, Red Hat, Ubuntu)		Linux (CentOS, Red Hat, Ubuntu)		Linux (CentOS, Red Hat, Ubuntu)		Linux (CentOS, Red Hat, Ubuntu)		
Advantech S/W Packages	Individual packages: ▪ Legacy LBP utility		Individual packages: ▪ Legacy LBP utility		QuickStart Linux Image (CentOS based reference BSP) including ▪ afu ▪ ipmitool ▪ LCD4Linux ▪ Advanced LBP Utility ▪ Intel DPK ▪ Intel QAT ▪ DUI (Offline Diagnostics)		QuickStart Linux Image (CentOS based reference BSP) including ▪ afu ▪ ipmitool ▪ LCD4Linux ▪ Advanced LBP Utility ▪ Intel DPK ▪ Intel QAT ▪ DUI (Offline Diagnostics)		
IPMI	-		-		IPMI v2.0 compliant BMC with web interface and iKVM		IPMI v2.0 compliant, with web interface and iKVM		
Certification	CCC		CCC		CE, FCC, CCC, CB, UL		CE, FCC, CCC, CB, UL		

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**



Model	FWA-6070		FWA-6170		FWA-6520		FWA-6520L		
<b>Form Factor</b>	2U - Rack Mount		2U - Rack Mount		2U - Rack Mount		2U - Rack Mount		
<b>Processor System</b>	Processor	1 x Intel® Xeon® Scalable Processor family		2 x Intel® Xeon® Scalable Processor family		2x Intel® Xeon® E5-2600 v3/v4 processor family		1x Intel® Xeon® E5-2600 v3/v4 processor family	
	Core Number	8C/10C/12C/14C/16C/18C/20C/22C/24C/26C/28C		8C/10C/12C/14C/16C/18C/20C/22C/24C/26C/28C		8C/10C/12C/14C/16C/18C/20C/22C		8C/10C/12C/14C/16C/18C/20C/22C	
	Frequency	2.0GHz/2.1GHz/2.2GHz/2.3GHz/2.4GHz/2.6GHz/3.0GHz/3.2GHz/3.4GHz/3.6GHz		2.0GHz/2.1GHz/2.2GHz/2.3GHz/2.4GHz/2.6GHz/3.0GHz/3.2GHz/3.4GHz/3.6GHz		2.0GHz/2.1GHz/2.2GHz/2.3GHz/2.4GHz/2.6GHz		1.6~3.7GHz	
	L2 Cache	4MB - 28MB		30MB - 75 MB		30MB - 55 MB		10MB - 55MB (LLC)	
	L3 Cache	Up to 38.5MB		#REF!		-		35MB (LLC Embedded)	
	Chipset	Intel C626 or C621		Intel C626 or C622		-		Intel C612	
	BIOS	AMI Efi 64Mbit		AMI Efi 64Mbit		AMI Efi 64Mbit		AMI Efi 64Mbit	
<b>Virtualization</b>	Technology	VT-x, VT-d		VT-x, VT-d		VT-x, VT-d		VT-x, VT-d	
	Max. Capacity	DDR4 2400/2666MHz		DDR4 2400MHz		DDR4 2400MHz		DDR4 2400MHz	
	Socket	12x 288-pin DIMM		24x 288-pin DIMM		16x 288-pin DIMM		8x 288-pin DIMM	
	ECC Support	Yes		Yes		Yes		Yes	
<b>Networking</b>	Controller	Intel i210		Intel i210		1 x Intel i210		2 x Intel i210-AT	
	1GbE	2 x 10/100/1000 Mbps RJ45 via Intel i210 chip		2 x 10/100/1000 Mbps RJ45 via Intel i210 chip		2 x 10/100/1000 Mbps RJ45 via Intel i210 chip		2 x 10/100/1000 Mbps RJ45 via Intel i210-AT	
	10GE	2 x 10G SFP+ via Intel C626 (by SKU)		2 x 10G SFP+ via Intel C622/ C626		-		-	
	LAN bypass	Advanced	Supported by NMC		Supported by NMC		Supported by NMC		-
	Legacy	Supported by NMC		-		-		Supported by NMC	
<b>Expansion</b>	PCIe x 16	-		-		2 FH/HL		-	
	PCIe x 8	Up to 2x FH/HL Gen3 x8 slot		2 x low-profile Gen3 x8 slot		-		1 FH/HL Gen3 x8 slot	
	PCIe x 4	-		-		-		-	
	PCIe x 1	-		-		-		-	
	NMC	4/8 NMC		8 x NMC		4/6/8 x NMC		4 x NMC	
	m.2 PCIe	1 x M.2 PCIe Slot (2280, Co-layout with SATA 3.0)		-		-		-	
	Mini PCIe	-		-		-		-	
	SIM Socket	-		-		-		-	
		-		-		-		-	
<b>Storage</b>	2.5" HDD/SSD	1 x 2.5" HDD/SSD		Max. 10 x 2.5" HDD/SSD		Max. 2 x 2.5" HDD/SSD		-	
	3.5" HDD	Up to 4 x 3.5" HDD bay		-		-		4 x 3.5" HDD bay	
	m.2 SSD	1 x M.2 2280		2 x M.2 2280		-		-	
	mSATA SSD	1 x mSATA		-		2 x mSATA		1 x mSATA	
	CompactFlash/ CFast	1 x CF slot (Optional)		-		-		1 x CF slot	
<b>Display</b>	Display	VGA box header		VGA box header		VGA box header		VGA box header	
	Console port	1		1		1		1	
	USB3.0	2		2		2		-	
	USB2.0	-		-		-		2	
	GPIO	Pin Header		Pin Header		Pin Header		Pin Header	
	LED Indicator	Power, HDD status LED		Power, Status, Locate LED by IPMI		Power, Status, Locate LED by IPMI		Power, HDD status LED	
	Reset button	Pin Header		Pin Header		Pin Header		Pin Header	
Others	1 x power button		1 x power button		1 x power button		-		
<b>TPM</b>	TPM 1.2 / TPM 2.0 (Optional)		TPM 1.2		-		TPM 1.2		
<b>LCD Module</b>	-		16x2 graphic display,5 buttons		16x2 graphic display,5 buttons		-		
<b>Others</b>	-		-		-		-		
<b>Power</b>	Power Type	AC: Redundant, Default DC: Redundant, Optional		AC, redundant option DC, redundant option		AC, redundant option DC, redundant option		AC, redundant option DC, redundant option	
	Watts	AC: 650W / DC: 800W		800W/1200W		820W		500W	
	Input	(AC) 100V ~ 240V (DC) -40 ~ -72V		(AC) 100V ~ 240V (DC) -40 ~ -72V		(AC) 100V ~ 240V (DC) -40 ~ -72V		(AC) 100V ~ 240V (DC) -40 ~ -72V	
	Connector	AC 3pin plug		AC 3pin plug		AC 3pin plug		AC 3pin plug	
	Power Adaptor	-		-		-		-	
<b>Environment</b>	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)		0 ~ 40 °C (32 ~ 104 °F)		0 ~ 40 °C (32 ~ 104 °F)		0 ~ 40 °C (32 ~ 104 °F)	
	Non-operating Temperature	-40 ~ 60° C (-50 ~ 140° F)		-40 ~ 60° C (-50 ~ 140° F)		-40 ~ 60° C (-50 ~ 140° F)		-40 ~ 60° C (-50 ~ 140° F)	
	Vibration Resistance	With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis		With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis		With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis		With SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	
	Shock Protection	With SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X, -Y-Z axis, 3times per axis		With SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X, -Y-Z axis, 3times per axis		With SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X, -Y-Z axis, 3times per axis		With SATA HDD: 10G, 11ms, IEC-60068-2-27, X,Y,X-X, -Y-Z axis, 3times per axis	
<b>Cooling</b>	Construction	Iron		Iron		Iron		Iron	
	Mounting	2U Rackmount		2U Rackmount		2U Rackmount		2U Rackmount	
	Dimensions (W x H x D)	438 x 44 x 550 mm		438 x 88 x 684.5 mm (16.9" x 3.4" x 26.9")		430 x 88 x 558 mm (16.9" x 3.4" x 22")		TBD	
	Weight	26.56 KG		20 KG		20 KG		20 KG	
<b>OS Support</b>	Linux (CentOS, Red Hat, Ubuntu)		Linux (CentOS, Red Hat, Ubuntu)		Linux (CentOS, Red Hat, Ubuntu)		Linux (CentOS, Red Hat, Ubuntu)		
<b>Advantech S/W Packages</b>	QuickStart Linux Image (CentOS based reference BSP) including	<ul style="list-style-type: none"> <li>▪ afru</li> <li>▪ ipmitool</li> <li>▪ LCD4Linux</li> <li>▪ Advanced LBP Utility</li> <li>▪ Intel DPDK</li> <li>▪ Intel QAT</li> <li>▪ DUI (Offline Diagnostics)</li> </ul>		<ul style="list-style-type: none"> <li>▪ afru</li> <li>▪ ipmitool</li> <li>▪ LCD4Linux</li> <li>▪ Advanced LBP Utility</li> <li>▪ Intel DPDK</li> <li>▪ Intel QAT</li> <li>▪ DUI (Offline Diagnostics)</li> </ul>		<ul style="list-style-type: none"> <li>▪ afru</li> <li>▪ ipmitool</li> <li>▪ LCD4Linux</li> <li>▪ Advanced LBP Utility</li> <li>▪ Intel DPDK</li> <li>▪ Intel QAT</li> <li>▪ DUI (Offline Diagnostics)</li> </ul>		<ul style="list-style-type: none"> <li>▪ afru</li> <li>▪ ipmitool</li> <li>▪ LCD4Linux</li> <li>▪ Advanced LBP Utility</li> <li>▪ Intel DPDK</li> <li>▪ Intel QAT</li> <li>▪ DUI (Offline Diagnostics)</li> </ul>	
	Individual packages:	<ul style="list-style-type: none"> <li>▪ Advanced LBP Library</li> <li>▪ DUI (Offline Diagnostics)</li> </ul>		<ul style="list-style-type: none"> <li>▪ Advanced LBP Library</li> <li>▪ DUI (Offline Diagnostics)</li> </ul>		<ul style="list-style-type: none"> <li>▪ Advanced LBP Library</li> <li>▪ DUI (Offline Diagnostics)</li> </ul>		<ul style="list-style-type: none"> <li>▪ Advanced LBP Library</li> <li>▪ DUI (Offline Diagnostics)</li> </ul>	
<b>IPMI</b>	IPMI v2.0 compliant, with web interface and iKVM		IPMI v2.0 compliant, with web interface, iKVM on request		IPMI v2.0 compliant BMC with web interface		IPMI v2.0 compliant BMC with web interface		
<b>Certification</b>	CE, FCC, CCC, CB, UL		CE, FCC, CCC, CB, UL		CE, FCC, CCC, CB, UL		CCC		

# NMC Series Selection Guide



Model Name		NMC-0107	NMC-0108	NMC-0111	NMC-0112	NMC-0114
Ordering Part Number		NMC-0107-04CBSA1	NMC-0108-04FSA1	NMC-0111-04CBSA1	NMC-0112-04FSA1	NMC-0114-04HBSA1
Chipset		Intel I350-AM4	Intel I350-AM4	Intel I211	Intel I210-IS	Intel I350-AM4
Speed		1 Gbps	1 Gbps	1 Gbps	1 Gbps	1 Gbps
Connector Type		4 x Copper(RJ45)	4 x Fiber(SFP)	4 x Copper(RJ45)	4 x Fiber(SFP)	2 x Copper(RJ45) + 2 x Fiber(SFP)
Interfaces		1 x PCIe x4, Gen2	1 x PCIe x4, Gen2	1 x PCIe x4, Gen2	1 x PCIe x4, Gen2	1 x PCIe x4, Gen2
LAN Bypass (Legacy/Advanced)		Legacy LBP: (Micro_P 8051) -Bypass, Normal, Disconnect	NA	Lagacy LBP 2 x Pairs	NA	Lagacy LBP 1 x Pair
Present Pin Detection		YES	YES	YES	YES	YES
LED Definition		Speed LED(Left): 10Mbps: N/A 100Mps: Amber on (Downgrade speed) 1000Mbps: Green on (Maximum speed)  Link/Act/Bypass LED(Right): Link: Green on Active: Green Blinking LAN Bypass: Amber on Disconnect: Amber blinking	Speed LED: 10Mbps: N/A 100Mps: NA 1000Mbps: NA  Link/Act/Bypass LED: Link: Green on Active: Green Blinking LAN Bypass: NA Disconnect: NA	Speed LED(Left): 10Mbps: N/A 100Mps: Amber on (Downgrade speed) 1000Mbps: Green on (Maximum speed)  Link/Act/Bypass LED(Right): Link: Green on Active: Green Blinking LAN Bypass: Amber on Disconnect: Amber blinking	Speed LED: 10Mbps: N/A 100Mps: NA 1000Mbps: NA  Link/Act/Bypass LED: Link: Green on Active: Green Blinking LAN Bypass: NA Disconnect: NA	Speed LED(Left): 10Mbps: N/A 100Mps: Amber on (Downgrade speed) 1000Mbps: Green on (Maximum speed)  Link/Act/Bypass LED(Right): Link: Green on Active: Green Blinking LAN Bypass: Amber on Disconnect: Amber blinking
Power	Voltage	+12V ± 10%	+12V ± 10%	+12V ± 10%	+12V ± 10%	+12V ± 10%
	Consumption	10W	10W	6W	6W	10W
Environment	Operating Temperature (air flow 0.7 m/sec)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)
	Storage Temperature	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)
	Storage Humidity	5 ~ 85 % @ 60 °C (140 °F)	5 ~ 85 % @ 60 °C (140 °F)	5 ~ 85 % @ 60 °C (140 °F)	-	5 ~ 85 % @ 60 °C (140 °F)
	Vibration Resistance	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis
Shock Protection	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	
Mechanical	Dimensions W x H x D (mm)	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm
	Weight (kg)	0.3kg	0.3kg	0.3kg	0.3kg	0.3kg

Packetarium XL Blade Servers	1
High Performance Servers	2
Network Appliances	3
PCI Express Adapters	4
Network Switches	5
ATCA Blades & Integrated Systems	6
CPCI Boards & Enclosures	7
VPX Blades	8
Video Processing & IP Media Platforms	9



Model Name		NMC-0115	NMC-0116	NMC-0120		NMC-0121	
Ordering Part Number		NMC-0115-02CBSA1	NMC-0116-02FSA1	NMC-0120-04FBSSA2	NMC-0120-04FBLSA2	NMC-0121-04CSA1	NMC-0121-04CBSA1
Chipset		Intel I350-AM2	Intel I350-AM2	Intel I350-AM4	Intel I350-AM4	Intel I350-AM4	Intel I350-AM4
Speed		1 Gbps	1 Gbps	1 Gbps	1 Gbps	1 Gbps	1 Gbps
Connector Type		2 x Copper(RJ45)	2 x Fiber(SFP)	4 x Fiber LC(SX)	4 x Fiber LC(LX)	4 x Copper(RJ45)	4 x Copper(RJ45)
Interfaces		1 x PCIe x4, Gen2	1 x PCIe x4, Gen2	1 x PCIe x4, Gen2	1 x PCIe x4, Gen2	1 x PCIe x4, Gen2	1 x PCIe x4, Gen2
LAN Bypass (Legacy/Advanced)		Lagacy LBP 1 x Pair	NA	Fiber bypass OBM-B3BH4-E26_V1	Fiber bypass OBM-A3BA4-C26_V1	N/A	Advanced LBP: (Micro_P 8051) -Bypass, Normal, Disconnect
Present Pin Detection		YES	YES	YES	YES	YES	YES
LED Definition		Speed LED(Left): 10Mbps: N/A 100Mbps: Amber on (Downgrade speed) 1000Mbps: Green on (Maximum speed)  Link/Act/Bypass LED(Right): Link: Green on Active: Green Blinking LAN Bypass: Amber on Disconnect: Amber blinking	Speed LED(Left): 10Mbps: N/A 100Mbps: Amber on (Downgrade speed) 1000Mbps: Green on (Maximum speed)  Link/Act/Bypass LED(Right): Link: Green on Active: Green Blinking LAN Bypass: NA Disconnect: NA	Link / Act LED (Right/Left): Link: Green on Active: Green Blinking  Bypass LED: (Middle): LAN Bypass: Amber on Disconnect: Amber blinking Connect: N/A	Link / Act LED (Right/Left): Link: Green on Active: Green Blinking  Bypass LED: (Middle): LAN Bypass: Amber on Disconnect: Amber blinking Connect: N/A	Speed LED(Left): 10Mbps: N/A 100Mbps: Amber on (Downgrade speed) 1000Mbps: Green on (Maximum speed)  Link/Act/Bypass LED(Right): Link: Green on Active: Green Blinking LAN Bypass: NA Disconnect: NA	Speed LED(Left): 10Mbps: N/A 100Mbps: Amber on (Downgrade speed) 1000Mbps: Green on (Maximum speed)  Link/Act/Bypass LED(Right): Link: Green on Active: Green Blinking LAN Bypass: Amber on Disconnect: Amber blinking
Power	Voltage	+12V ± 10%	+12V ± 10%	+12V ± 10%	+12V ± 10%	+12V ± 10%	+12V ± 10%
	Consumption	10W	10W	10W	10W	10W	10W
Environment	Operating Temperature (air flow 0.7 m/sec)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)
	Storage Temperature	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)
	Storage Humidity	5 ~ 85 % @ 60 °C (140 °F)	5 ~ 85 % @ 60 °C (140 °F)	5 ~ 85 % @ 60 °C (140 °F)	5 ~ 85 % @ 60 °C (140 °F)	5 ~ 85 % @ 60 °C (140 °F)	5 ~ 85 % @ 60 °C (140 °F)
	Vibration Resistance	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis
Mechanical	Shock Protection	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)
	Dimensions W x H x D (mm)	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm
	Weight (kg)	0.3kg	0.3kg	0.7kg	0.7kg	0.4kg	0.4kg

# NMC Series Selection Guide



Model Name		NMC-0803	NMC-0804	NMC-0805	NMC-0806	
Ordering Part Number		NMC-0803-08CBSA1	NMC-0804-08FSA1	NMC-0805-08HSA1	NMC-0806-08CSA1	NMC-0806-08CBSA1
Chipset		Intel I350-AM4	Intel I350-AM4	Intel I350-AM4	Intel I350-AM4	Intel I350-AM4
Speed		1 Gbps	1 Gbps	1 Gbps	1 Gbps	1 Gbps
Connector Type		8 x Copper(RJ45)	8 x Fiber(SFP)	4 x Copper(RJ45) + 4 x Fiber(SFP)	8 x Copper(RJ45)	8 x Copper(RJ45)
Interfaces		2 x PCIe x4, Gen2	2 x PCIe x4, Gen2	2 x PCIe x4, Gen2	2 x PCIe x4, Gen2	2 x PCIe x4, Gen2
LAN Bypass (Legacy/Advanced)		Legacy LBP: (Micro_P 8051) -Bypass, Normal, Disconnect	NA	NA	NA	Advanced LBP: (Micro_P 8051) -Bypass, Normal, Disconnect
Present Pin Detection		YES	YES	YES	YES	YES
LED Definition		Speed LED(Left): 10Mbps: N/A 100Mbps: Amber on (Downgrade speed) 1000Mbps: Green on (Maximum speed)  Link/Act/Bypass LED(Right): Link: Green on Active: Green Blinking LAN Bypass: Amber on Disconnect: Amber blinking	Speed LED: 10Mbps: N/A 100Mbps: NA 1000Mbps: NA  Link/Act/Bypass LED: Link: Green on Active: Green Blinking LAN Bypass: NA Disconnect: NA	Speed LED(Left): 10Mbps: N/A 100Mbps: Amber on (Downgrade speed) 1000Mbps: Green on (Maximum speed) *Note: NA for SFP Connector  Link/Act/Bypass LED(Right): Link: Green on Active: Green Blinking LAN Bypass: Amber on Disconnect: Amber blinking	Speed LED(Left): 10Mbps: N/A 100Mbps: Amber on (Downgrade speed) 1000Mbps: Green on (Maximum speed)  Link/Act/Bypass LED(Right): Link: Green on Active: Green Blinking LAN Bypass: NA Disconnect: NA	Speed LED(Left): 10Mbps: N/A 100Mbps: Amber on (Downgrade speed) 1000Mbps: Green on (Maximum speed)  Link/Act/Bypass LED(Right): Link: Green on Active: Green Blinking LAN Bypass: Amber on Disconnect: Amber blinking
Power	Voltage	+12V ± 10%	+12V ± 10%	+12V ± 10%	+12V ± 10%	+12V ± 10%
	Consumption	15W	15W	15W	15W	15W
Environment	Operating Temperature (air flow 0.7 m/sec)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)
	Storage Temperature	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)
	Storage Humidity	5 ~ 85 % @ 60 °C (140 °F)	5 ~ 85 % @ 60 °C (140 °F)	5 ~ 85 % @ 60 °C (140 °F)	5 ~ 85 % @ 60 °C (140 °F)	5 ~ 85 % @ 60 °C (140 °F)
	Vibration Resistance	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis
Shock Protection	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	
Mechanical	Dimensions W x H x D (mm)	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm
	Weight (kg)	0.5kg	0.5kg	0.5kg	0.7kg	0.7kg



Model Name		NMC-0807	NMC-0808	NMC-0809	NMC-1001	NMC-1004
Ordering Part Number		NMC-0807CB-08A1S00	NMC-0808CF-01A1S00	NMC-0809F-01A1S00	NMC-1001-04FSA1	NMC-1004-02FSA1
Chipset		Intel I350-AM4	Intel I350-AM4	Intel I350-AM4	Intel XL710-BM1	Intel 82599ES
Speed		1G	1G	1G	10 Gbps	10 Gbps
Connector Type		8x Copper(RJ45)	4 x Copper(RJ45) + 4 x Fiber(SFP)	8x Fiber(SFP)	4 x Fiber(SFP+)	2 x Fiber(SFP+)
Interfaces		1 x PCIe x4, Gen2	1 x PCIe x4, Gen2	1 x PCIe x4, Gen2	1 x PCIe x8, Gen3	1 x PCIe x8, Gen2
LAN Bypass (Legacy/Advanced)		Advanced LBP: (Micro_P 8051) -Bypass, Normal, Disconnect	Advanced LBP: (Micro_P 8051) -Bypass, Normal, Disconnect	NA	NA	NA
Present Pin Detection		YES	YES	YES	YES	YES
LED Definition		Speed LED(Left): 10Mbps: N/A 100Mbps: Amber on (Downgrade speed) 1000Mbps: Green on (Maximum speed)  Link/Act/Bypass LED(Right): Link: Green on Active: Green Blinking LAN Bypass: Amber on Disconnect: Amber blinking	Speed LED(Left): 10Mbps: N/A 100Mbps: Amber on (Downgrade speed) 1000Mbps: Green on (Maximum speed) *Note: NA for SFP Connector  Link/Act/Bypass LED(Right): Link: Green on Active: Green Blinking LAN Bypass: Amber on Disconnect: Amber blinking	Speed LED: 10Mbps: N/A 100Mbps: NA 1000Mbps: NA  Link/Act/Bypass LED: Link: Green on Active: Green Blinking LAN Bypass: NA Disconnect: NA	Speed LED: 1Gbps: N/A 10Gbps: N/A  Link/Act/Bypass LED: Link: Green on Active: Green Blinking LAN Bypass: NA Disconnect: NA	Speed LED: 1Gbps: Amber on (Downgrade speed) 10Gbps: Green on (Maximum speed)  Link/Act/Bypass LED: Link: Green on Active: Green Blinking LAN Bypass: NA Disconnect: NA
Power	Voltage	+12V ± 10%	+12V ± 10%	+12V ± 10%	+12V ± 10%	+12V ± 10%
	Consumption	15W	15W	15W	15W	15W
Environment	Operating Temperature (air flow 0.7 m/sec)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)
	Storage Temperature	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)
	Storage Humidity	5 ~ 85 % @ 60 °C (140 °F)	5 ~ 85 % @ 60 °C (140 °F)	5 ~ 85 % @ 60 °C (140 °F)	5 ~ 85 % @ 60 °C (140 °F)	5 ~ 85 % @ 60 °C (140 °F)
	Vibration Resistance	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis
Shock Protection	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	
Mechanical	Dimensions W x H x D (mm)	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm
	Weight (kg)	0.5kg	0.5kg	0.5kg	0.5kg	0.4kg

Packetarium XL Blade Servers 1

High Performance Servers 2

Network Appliances 3

PCI Express Adapters 4

Network Switches 5

ATCA Blades & Integrated Systems 6

CPCI Boards & Enclosures 7

VPX Blades 8

Video Processing & IP Media Platforms 9

# NMC Series Selection Guide



Model Name		NMC-1008		NMC-1009	NMC-1010	NMC-1011
Ordering Part Number		NMC-1008-02FBSSA2	NMC-1008-02FBLSA2	NMC-1009-02FSA1	NMC-1010-02FBSSA1	NMC-1011-08FSA1
Chipset		Intel 82599ES	Intel 82599ES	Intel XL710-BM1	Intel X710-BM2	Intel XL710-BM1
Speed		10 Gbps				
Connector Type		2 x Fiber LC(SR)	2 x Fiber LC(LR)	2 x Fiber(SFP+)	2 x Fiber LC(SR)	8 x Fiber(SFP+)
Interfaces		1 x PCIe x8, Gen2	1 x PCIe x8, Gen2	1 x PCIe x8, Gen3	1 x PCIe x8, Gen3	1 x PCIe x8, Gen3
LAN Bypass (Legacy/Advanced)		Fiber bypass OBM-B1CH2-P20_V1	Fiber bypass OBM-A3CB2-C26_V1	NA	Fiber bypass OBM-B1CH2-P10_V2	NA
Present Pin Detection		YES	YES	YES	Yes	YES
LED Definition		Link / Act LED (Right/Left): Link: Green on Active: Green Blinking	Link / Act LED (Right/Left): Link: Green on Active: Green Blinking	Speed LED: 1Gbps: N/A 10Gpbs: N/A	Link / Act LED (Right/Left): Link: Green on Active: Green Blinking	Speed LED(Left): 1Gbps: Amber on (Downgrade speed) 10Gpbs: Green on (Maximum speed)
		Bypass LED: (Middle): LAN Bypass: Amber on Disconnect: Amber blinking Connect: N/A	Bypass LED: (Middle): LAN Bypass: Amber on Disconnect: Amber blinking Connect: N/A	Link/Act/Bypass LED: Link: Green on Active: Green Blinking LAN Bypass: NA Disconnect: NA	Bypass LED: (Middle): LAN Bypass: Amber on Disconnect: Amber blinking Connect: N/A	Link/Act/Bypass LED(Right): Link: Green on Active: Green Blinking LAN Bypass: NA Disconnect: NA
Power	Voltage	+12V ± 10%				
	Consumption	15W	15W	15W	15W	15W
Environment	Operating Temperature (air flow 0.7 m/sec)	-5 ~ 45 °C (23 ~ 113 °F)				
	Storage Temperature	-20 ~ 65 °C (-4 ~ 149 °F)				
	Storage Humidity	5 ~ 85 % @ 60 °C (140° F)	5 ~ 85 % @ 60 °C (140° F)	5 ~ 85 % @ 60 °C (140° F)	5 ~ 85 % @ 60 °C (140° F)	5 ~ 85 % @ 60 °C (140° F)
	Vibration Resistance	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis
	Shock Protection	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)
Mechanical	Dimensions W x H x D (mm)	74.6 x 42.4 x 174.7mm				
	Weight (kg)	0.7kg	0.7kg	0.5kg	0.7kg	0.7kg



Model Name		NMC-2501	NMC-4001	NMC-4005	NMC-4006
Ordering Part Number		NMC-2501-02FSA1	NMC-4001-04FSA1	NMC-4005-04FSA1	NMC-4006-02FSA1
Chipset		Intel XXV710-DA2	Intel 82599ES	Intel XL710-BM1	Intel X710-BM2
Speed		25 Gbps	10 Gbps	10 Gbps	40 Gbps
Connector Type		2 x Fiber(SFP28)	4 x Fiber(SFP+)	4 x Fiber(SFP+)	2 x Fiber(QSFP+)
Interfaces		1 x PCIe x8, Gen3	1 x PCIe x8, Gen3	1 x PCIe x8, Gen3	1 x PCIe x8, Gen3
LAN Bypass (Legacy/Advanced)		NA	NA	NA	NA
Present Pin Detection		YES	Yes	Yes	YES
LED Definition		Speed LED: Non-25Gbps: Amber on(Downgrade speed) 25Gbps: Green on (Maximun speed)  Link/Act LED/Bypass LED: Link: Green on Activity: Green Blanking LAN Bypass: NA Disconnect: NA	Speed LED: 1Gbps: N/A 10Gbps: N/A  Link/Act/Bypass LED: Link: Green on Active: Green Blinking LAN Bypass: NA Disconnect: NA	Speed LED: 1Gbps: N/A 10Gbps: N/A  Link/Act/Bypass LED: Link: Green on Active: Green Blinking LAN Bypass: NA Disconnect: NA	Speed LED: Non-40Gbps: NA 40Gbps: NA  Link/Act LED/Bypass LED: Link: Green on Activity: Green Blanking LAN Bypass: NA Disconnect: NA
Power	Voltage	+12V ± 10%	+12V ± 10%	+12V ± 10%	+12V ± 10%
	Consumption	16W	15W	15W	15W
Environment	Operating Temperature (air flow 0.7 m/sec)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)
	Storage Temperature	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)
	Storage Humidity	5 ~ 85 % @ 60 ° C (140 ° F)	5 ~ 85 % @ 60 ° C (140 ° F)	5 ~ 85 % @ 60 ° C (140 ° F)	5 ~ 85 % @ 60 ° C (140 ° F)
	Vibration Resistance	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis
Shock Protection	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	
Mechanical	Dimensions W x H x D (mm)	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm
	Weight (kg)	0.7kg	0.4kg	0.5kg	0.6kg

Packetarium XL Blade Servers 1

High Performance Servers 2

Network Appliances 3

PCI Express Adapters 4

Network Switches 5

ATCA Blades & Integrated Systems 6

CPCI Boards & Enclosures 7

VPX Blades 8

Video Processing & IP Media Platforms 9

# NMC Series Selection Guide



Model Name		NMC-4007		NMC-4008	NMC-4009	NMC-6002
Ordering Part Number		NMC-4007-04FBSSA2	NMC-4007-04FBLSA2	NMC-4008-02FBLSA1	NMC-4009-04CSA1	NMC-6002-02FSA1
Chipset		Intel XL710-BM2	Intel XL710-BM2	Intel XL710-BM2	Intel X550	Mellanox ConnectX-5
Speed		10 Gbps	10 Gbps	40 Gbps	10 Gbps	100 Gbps
Connector Type		4 x Fiber LC(SR)	4 x Fiber LC(LR)	2 x Fiber(QSFP+)	4 x Cooper(RJ45)	2 x Fiber(QSFP28)
Interfaces		1 x PCIe x8, Gen3	1 x PCIe x8, Gen3	1 x PCIe x8, Gen3	2 x PCIe x4, Gen3	2 x PCIe x8, Gen3
LAN Bypass (Legacy/Advanced)		Fiber bypass OBM-B1CH4-P20_V1	Fiber bypass OBM-A3CB4-C26_V1	Advanced LBP: (Micro_P 8051) -Bypass, Normal, Disconnect	NA	NA
Present Pin Detection		YES	YES	YES	YES	YES
LED Definition		Link / Act LED (Right/ Left): Link: Green on Active: Green Blinking	Link / Act LED (Right/ Left): Link: Green on Active: Green Blinking	Speed LED: Non-40Gbps: NA 40Gbps: NA  Link/Act/Bypass LED: Link: Green on Activity: Green Blanking LAN Bypass: Amber on Disconnect: Amber blinking	Speed LED: 1Gbps: Amber on (Downgrade speed) 10Gbps: Green on (Maximum speed)  Link/Act LED/Bypass LED: Link: Green on Activity: Green Blanking LAN Bypass: NA Disconnect: NA	Speed LED: Non-100Gbps: NA 100Gbps: NA  Link/Act/Bypass LED: Link: Green on Activity: Green Blanking LAN Bypass: NA Disconnect: NA
Power	Voltage	+12V ± 10%	+12V ± 10%	+12V ± 10%	+12V ± 10%	+12V ± 10%
	Consumption	17W	17W	15W	30W	35W
Environment	Operating Temperature (air flow 0.7 m/sec)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)	-5 ~ 45 °C (23 ~ 113 °F)
	Storage Temperature	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)	-20 ~ 65 °C (-4 ~ 149 °F)
	Storage Humidity	5 ~ 85 % @ 60 °C (140° F)	5 ~ 85 % @ 60 °C (140° F)	5 ~ 85 % @ 60 °C (140° F)	5 ~ 85 % @ 60 °C (140° F)	5 ~ 85 % @ 60 °C (140° F)
	Vibration Resistance	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis
	Shock Protection	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)
Mechanical	Dimensions W x H x D (mm)	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7mm	149.6 x 42.4 x 174.7mm
	Weight (kg)	0.7kg	0.7kg	0.5 kg	0.6kg	0.5kg

# Latch Type NMC Supporting List

## Latch Type NMC (By Project Support)

Life Cycle: 2029, Q1  
Dimensions(W x H x D) mm: 74.6 x 35.6 x 175.0mm

Model	PN	Chipset	Speed	Port#	Connector Type	Interfaces	LAN Bypass	Weight
NMC-0107	NMC-0107-10E	Intel I350-AM4	1G	4	Copper(RJ45)	1x PCIe x4, Gen2	Legacy LBP	0.3kg
NMC-0108	NMC-0108-10E	Intel I350-AM4	1G	4	Fiber(SFP)	1x PCIe x4, Gen2	NA	0.3kg
NMC-0111	NMC-0111-10E	Intel I211	1G	4	Copper(RJ45)	1x PCIe x4, Gen2	Lagacy LBP	0.3kg
NMC-0112	NMC-0112-10E	Intel I210-IS	1G	4	Fiber(SFP)	1x PCIe x4, Gen2	NA	0.3kg
NMC-0120	NMC-0120-000110E	Intel I350-AM4	1G	4	Fiber LC(SX)	1x PCIe x4, Gen2	Fiber Bypass OBM-B3BH4-E06_V4	0.7kg
NMC-0120	NMC-0120-000111E	Intel I350-AM4	1G	4	Fiber LC(LX)	1x PCIe x4, Gen2	Fiber Bypass OBM-A3BA4-C06_V4	0.7kg
NMC-0121	NMC-0121-000010E	Intel I350-AM4	1G	4	Copper(RJ45)	1x PCIe x4, Gen2	N/A	0.4kg
NMC-0121	NMC-0121-000110E	Intel I350-AM4	1G	4	Copper(RJ45)	1x PCIe x4, Gen2	Advanced LBP	0.4kg
NMC-0803	NMC-0803-10E	Intel I350-AM4	1G	8	Copper(RJ45)	2x PCIe x4, Gen2	Legacy LBP	0.5kg
NMC-0806	NMC-0806-000010E	Intel I350-AM4	1G	8	Copper(RJ45)	2x PCIe x4, Gen2	NA	0.7kg
NMC-0806	NMC-0806-000110E	Intel I350-AM4	1G	8	Copper(RJ45)	2x PCIe x4, Gen2	Advanced LBP	0.7kg
NMC-1001	NMC-1001F-04A1S	Intel XL710-BM1	10G	4	Fiber(SFP+)	1x PCIe x8, Gen3	NA	0.5kg
NMC-1004	NMC-1004-10E	Intel 82599ES	10G	2	Fiber(SFP+)	1x PCIe x8, Gen2	NA	0.5kg
NMC-1008	NMC-1008-000110E	Intel 82599ES	10G	2	Fiber LC(SR)	1x PCIe x8, Gen2	Fiber Bypass OBM-B1CH2-P10_V2	0.7kg
NMC-1008	NMC-1008-000111E	Intel 82599ES	10G	2	Fiber LC(LR)	1x PCIe x8, Gen2	Fiber Bypass OBM-A3CB2-C06_V3	0.7kg
NMC-1009	NMC-1009-000010E	Intel XL710-BM1	10G	2	Fiber(SFP+)	1x PCIe x8, Gen3	NA	0.5kg
NMC-1010	NMC-1010-000110E	Intel X710-BM2	10G	2	Fiber LC(LR)	1x PCIe x8, Gen3	Fiber Bypass OBM-B1CH2-P10_V2	0.7kg
NMC-4001	NMC-4001-10E	Intel 82599ES	10G	4	Fiber(SFP+)	1x PCIe x8, Gen3	NA	0.4kg
NMC-4005	NMC-4005-000010E	Intel XL710-BM1	10G	4	Fiber(SFP+)	1x PCIe x8, Gen3	NA	0.5kg
NMC-4006	NMC-4006-000010E	Intel XL710-BM2	40G	2	Fiber(QSFP+)	1x PCIe x8, Gen3	NA	0.6kg
NMC-4007	NMC-4007-000110E	Intel XL710-BM2	10G	4	Fiber LC(SR)	1x PCIe x8, Gen3	Fiber Bypass OBM-B1CH4-P10_V2	0.7kg
NMC-4007	NMC-4007-000111E	Intel XL710-BM2	10G	4	Fiber LC(LR)	1x PCIe x8, Gen3	Fiber Bypass OBM-A3CB4-C06_V3	0.7kg
NMC-4008	NMC-4008-02FBSL	Intel XL710-BM2	40G	2	Fiber(QSFP+)	1x PCIe x8, Gen3	Advanced LBP	0.7kg
NMC-4009	NMC-4009-000010E	Intel X550	10G	4	Copper(RJ45)	2x PCIe x4, Gen3	NA	0.7kg

## Latch Type NMC Double Width (By Project Support)

Life Cycle: 2029, Q1  
Dimensions(W x H x D) mm: 149.6 x 35.6 x 175.0mm

Model	PN	Chipset	Speed	Port#	Connector Type	Interfaces	LAN Bypass	Weight
NMC-6002	NMC-6002FD-02A1L	Mellanox ConnectX-5	100G	2	Fiber(QSFP28)	2x PCIe x8, Gen3	NA	0.5kg

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# NMC Mapping Guide



Model	FWA-T011	FWA-1010VC	FWA-1011	FWA-1012VC	FWA-1211	FWA-1320	FWA-1330	FWA-2011
<b>NMC Type</b>	-	-	-	-	-	-	-	Thumb Screw
<b>GbE</b>	2 port Copper	-	-	-	-	-	-	-
	4 port Copper	-	-	-	-	-	-	NMC-0107E
	8 port Copper	-	-	-	-	-	-	-
	2 port Fiber	-	-	-	-	-	-	-
	4 port Fiber	-	-	-	-	-	-	NMC-0108E
	8 port Fiber	-	-	-	-	-	-	-
<b>10GbE</b>	2 port Copper	-	-	-	-	-	-	-
	4 port Copper	-	-	-	-	-	-	-
	2 port Fiber	-	-	-	-	-	-	-
	4 port Fiber	-	-	-	-	-	-	-
	8 port Fiber	-	-	-	-	-	-	-
<b>25GbE</b>	2 port Fiber	-	-	-	-	-	-	-
<b>40GbE</b>	2 port Fiber	-	-	-	-	-	-	-
<b>100GbE</b>	2 port Fiber	-	-	-	-	-	-	-



Model	FWA-2012	FWA-2320	FWA-2330	FWA-3033	FWA-3050	FWA-3230	FWA-3231	
<b>NMC Type</b>	Latch Type	-	Handle	Thumb Screw	Thumb Screw	Latch Type	Handle/Latch	
<b>GbE</b>	2 port Copper	-	-	-	-	-	-	
	4 port Copper	NMC-0121	-	NMC-0111E	NMC-0121-04CSA1	NMC-0121-04CSA1	NMC-0107-10E	NMC-0107E
	8 port Copper	NMC-0806	-	-	NMC-0807CB-08A1S00	NMC-0806-08CSA1	NMC-0803-10E	NMC-0803E
	2 port Fiber	NMC-0116	-	-	NMC-0116-02FSA1	NMC-0116-02FSA1	-	-
	4 port Fiber	NMC-0120	-	NMC-0112E	NMC-0108-04FSA1	NMC-0108-04FSA1	NMC-0108-10E	NMC-0108E
	8 port Fiber	NMC-0804	-	-	NMC-0809F-01A1S00	NMC-0804-08FSA1	-	NMC-0804E
<b>10GbE</b>	2 port Copper	-	-	-	-	-	-	
	4 port Copper	-	-	-	-	-	-	
	2 port Fiber	NMC-1009	-	-	NMC-1009-02FSA1	NMC-1009-02FSA1	NMC-1004-10E	NMC-1004E
	4 port Fiber	NMC-1001	-	-	NMC-1001-04FSA1	NMC-1001-04FSA1	NMC-4001-10E	NMC-4001E
	8 port Fiber	NMC-1011	-	-	-	NMC-1011-08FSA1	-	-
<b>25GbE</b>	2 port Fiber	NMC-2501	-	-	NMC-2501-02FSA1	NMC-2501-02FSA1	-	-
<b>40GbE</b>	2 port Fiber	NMC-4006	-	-	NMC-2501-02FSA1	NMC-4006-02FSA1	NMC-4006-000010E	NMC-4006-000010E
<b>100GbE</b>	2 port Fiber	-	-	-	-	-	-	

Packetarium XL Blade Servers	1
High Performance Servers	2
Network Appliances	3
PCI Express Adapters	4
Network Switches	5
ATCA Blades & Integrated Systems	6
CPCI Boards & Enclosures	7
VPX Blades	8
Video Processing & IP Media Platforms	9



Model	FWA-3232	FWA-3260	FWA-3270	FWA-4000	FWA-4030	FWA-4130	FWA-4231	
NMC Type	Handle	Latch	Latch	Thumb Screw	Thumb Screw	Thumb Screw	Handle	
GbE	2 port Copper	-	-	-	-	-	-	
	4 port Copper	NMC-0107E	NMC-0121-000110E	NMC-0121-000110E	NMC-0107E	NMC-0121-04CSA1	NMC-0121-000110E	NMC-0107E
	8 port Copper	NMC-0803E	NMC-0806-000100E	NMC-0806-000100E	-	NMC-0806-08CSA1	NMC-0806-000100E	NMC-0803E
	2 port Fiber	-	-	-	-	NMC-0116-02FSA1	-	-
	4 port Fiber	NMC-0108E	NMC-0120-000110E	NMC-0120-000110E	NMC-0108E	NMC-0108-04FSA1	NMC-0120-000110E	NMC-0108E
	8 port Fiber	NMC-0804E	-	-	-	NMC-0804-08FSA1	-	NMC-0804E
10GbE	2 port Copper	-	-	-	-	-	-	
	4 port Copper	-	-	-	-	-	-	
	2 port Fiber	NMC-1004E	NMC-1008-000110E	NMC-1008-000110E	NMC-1004E	NMC-1009-02FSA1	NMC-1008-000110E	NMC-1004E
	4 port Fiber	NMC-4001E	NMC-4005-000010E	NMC-4005-000010E	-	NMC-1001-04FSA1	NMC-4005-000010E	NMC-4001E
	8 port Fiber	-	-	-	-	-	-	-
25GbE	2 port Fiber	-	-	-	-	-	-	
40GbE	2 port Fiber	-	NMC-4006-000010E	NMC-4006-000010E	-	NMC-4006-02FSA1	NMC-4006-000010E	NMC-4006-000010E
100GbE	2 port Fiber	-	-	-	-	-	-	



Model	FWA-4232	FWA-5020	FWA-5070	FWA-6070	FWA-6170	FWA-6520	FWA-6520L	
NMC Type	Handle	Latch	Thumb Screw	Thumb Screw	Thumb Screw	Latch	Thumb Screw	
GbE	2 port Copper	-	-	-	-	-	-	
	4 port Copper	NMC-0107E	NMC-0121-000110E	NMC-0121-04CSA1	NMC-0121-04CSA1	NMC-0121-000110E	NMC-0121-000110E	NMC-0107E
	8 port Copper	NMC-0803E	NMC-0806-000110E	NMC-0806-08CSA1	NMC-0806-08CSA1	NMC-0806-000100E	NMC-0806-000110E	NMC-0803E
	2 port Fiber	-	-	NMC-0116-02FSA1	NMC-0116-02FSA1	-	-	-
	4 port Fiber	NMC-0108E	NMC-0120-000110E	NMC-0108-04FSA1	NMC-0108-04FSA1	NMC-0120-000110E	NMC-0120-000110E	NMC-0108E
	8 port Fiber	NMC-0804E	-	NMC-0804-08FSA1	NMC-0804-08FSA1	-	-	NMC-0804E
10GbE	2 port Copper	-	-	-	-	-	-	
	4 port Copper	-	-	-	-	-	-	
	2 port Fiber	NMC-1004E	NMC-1008-000110E	NMC-1009-02FSA1	NMC-1009-02FSA1	NMC-1008-000110E	NMC-1008-000110E	NMC-1004E
	4 port Fiber	NMC-4001E	NMC-4005-000010E	NMC-1001-04FSA1	NMC-1001-04FSA1	NMC-4005-000010E	NMC-4005-000010E	NMC-4001E
	8 port Fiber	-	-	NMC-1011-08FSA1	NMC-1011-08FSA1	-	-	-
25GbE	2 port Fiber	-	-	NMC-2501-02FSA1	NMC-2501-02FSA1	-	-	
40GbE	2 port Fiber	-	NMC-4006-000010E	NMC-4006-02FSA1	NMC-4006-02FSA1	NMC-4006-000010E	NMC-4006-000010E	-
100GbE	2 port Fiber	-	-	NMC-6002-02FSA1	NMC-6002-02FSA1	-	-	

# FWA-T011

## Tiny Network Appliance with Intel® Celeron® N3350/J3455 for Entry Level SD-WAN and Security Gateway

Preliminary



### Features

- Industry-standard x86 platform for SOHO and small enterprise installations
- Certified by key ecosystem partners in NFV and security industry
- Tiny physical appearance and fan-less design supported by optional Wall/VESA/DIN-rail mounting kit
- Quad 1GbE RJ45 with optional 3G/4G LTE and Wifi connectivity
- Optional TPM2.0 or Non-TPM supported by request



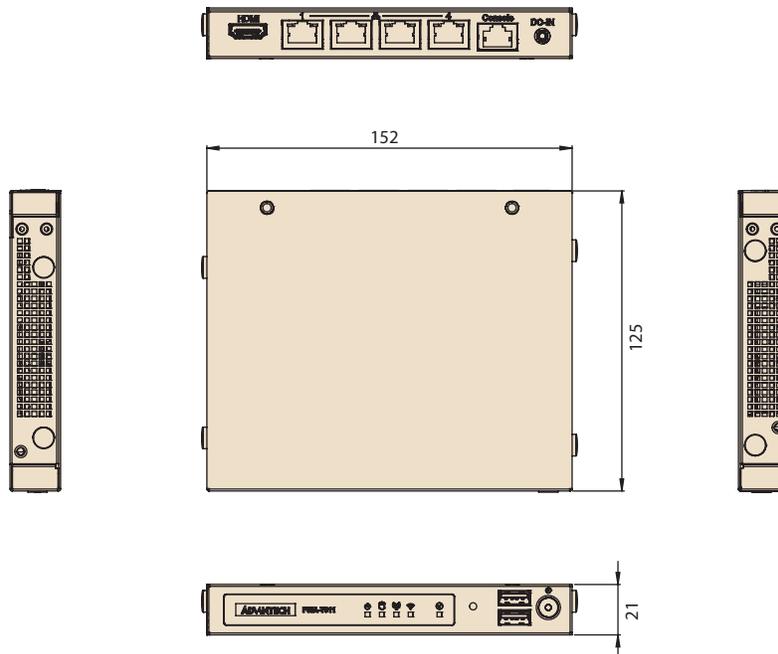
### Specifications

Form Factor		Tiny box	
Processor System <sup>Note1</sup>	Processor	Intel® Celeron® N3350	Intel® Celeron® J3455
	Core Number	2C	4C
	Frequency	1.1GHz	1.5GHz
	L2 Cache	2MB	2MB
	BIOS	AMI Efi 64Mbit	
Virtualization		VT-x, VT-d	
Memory	Technology	DDR3L 1600/1866MHz	
	Max. Capacity	8GB	
	Socket	1 x 204-pin SO-DIMM	
	ECC Support	Non-ECC	
Networking	Controller	4 x Intel i210-AT	
	1GbE	4 x 10/100/1000BASE-T RJ45 port	
Expansion	m.2 PCIe	1 x M.2 2230 for WiFi/BT module with 2 x antenna holes 1 x M.2 3042 for 3G/4G LTE module with 2 x antenna holes	
	SIM Socket	1 x Mini SIM type (25 x 15mm)	
Storage	M.2 SSD	1 x M.2 2280 SATA3.0	
Display		1 x HDMI port	
I/O	Console port	1 x RJ45 port	
	USB2.0	2 x USB2.0 Type A host port	
	LED Indicator	Power, HDD, 4G LTE, WiFi, Software-defined status	
	Others	1 x Power button 1 x Software-defined button	
TPM		TPM1.2 (Optional TPM2.0 or non-TPM by request)	
Power	Power Type	ATX mode	
	Watts	36W	
	Input	100 V ~ 240 V	
	Connector	DC Jack	
	Power Adaptor	12V 3A, 36W external adaptor	
Environment	Operating Temperature	0 ~ 40 °C (32 ~ 104 °F) with 0.7m/s air flow	
	Non-operating Temperature	-40 ~ 85 °C (-40 ~ 185 °F) and 40 °C @ 95% RH Non-Condensing	
Cooling		Fanless	
Mechanical	Construction	Iron	
	Mounting	Optional DIN-Rail, Wall and VESA mounting kit	
	Dimensions (W x H x D)	152 x 21 x 125 mm (5.9" x 0.8" x 4.9")	
	Weight	0.7 Kg (1.55lb)	
OS Support		Linux, Windows10	
Advantech S/W Packages		QuickStart Linux Image, Server iManager	
Certification	Safety	UL, CB, CCC	
	EMC	CE EN55032/EN55024 ClassB, FCC ClassB, AS/NZS CISPR32	
	ROHS	ROHS, REACH, WEEE	

Note1: Other processor can be supported by request

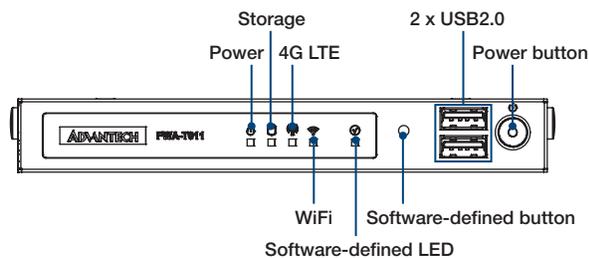
## Dimensions

Unit: mm

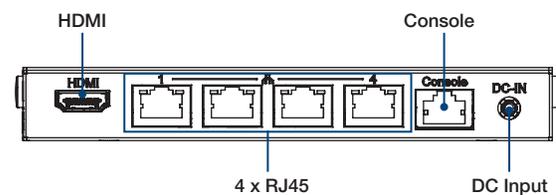


- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

### Front Panel External I/O Mechanical Layout/Drawing



### Rear Panel External I/O Mechanical Layout/Drawing



## Ordering Information

Part Number	Description
FWA-T011-2CA1S	Intel® Celeron® N3350 2Core 1.1GHz, 36W ADP
FWA-T011L-4CA1S	Intel® Celeron® J3455 4Core 1.5GHz, 36W ADP

## Packing List

Part Number	Description
96PSA-A36W12R1	AC-to-DC Adaptor, DC 12V 36W
FWA-T011-2CA1S or FWA-T011L-4CA1S	FWA-T011 System
19350304A0	M.2 screws
1931030520	Wall Mounting Kit Screws
1960085117N001	Wall Mounting Kit
202KAKMC00	China ROHS Letter

## Optional Accessories

Part Number	Description
1700001524	Canada, Philippines, Taiwan, Thailand, USA
170203183C	Europe, Indonesia, Israel
170203180A	Malaysia, Singapore, UK
1700008921	Japan
1700024849-01	Taiwan
1700018409	Korea
1700019146	China
1700025015-01	South Africa
1960087509N001	VESA Mounting kit
1960018849T000	DIN Rail Mounting Kit
1960085117N001	Wall Mounting Kit
FWA-T011-WLAN	FWA-T011 WIFI+BT KIT
FWA-T011-WWAN	FWA-T011 LTE Kit (EMEA & North America)

# FWA-1010VC

## Tabletop Network Appliance with Intel® Atom™ Processor C2000 for universal vCPE and SD-WAN

**NEW**



### Features

- Compliant with FCC and CE RED for deployable WWAN and WLAN function in North America and Europe
- Industry-standard, off-the-shelf x86 server platform for remote office, and small to medium enterprise installations
- Dual 1GbE RJ45 or SFP auto-negotiation link for WAN connectivity
- Enhanced design to optimize system performance by integrated offload technology
- Optional 3G, 4G LTE and WiFi connectivity for flexible deployment
- Tested and Certified by key software vendors for universal vE-CPE and SD-WAN roll-out

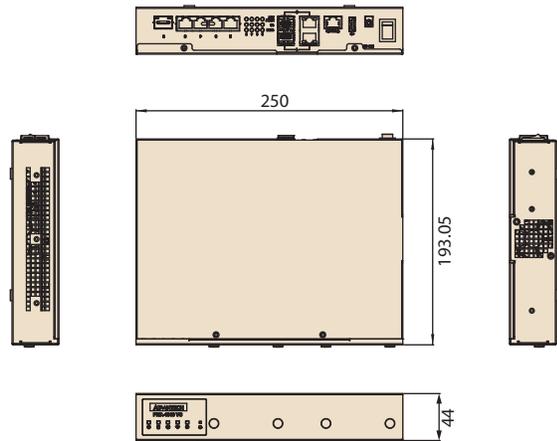


### Specifications

	FWA-1010VC-4CA2S	FWA-1010VC-8CA2S	FWA-1010VCR-8CA2S
Form Factor	Tabletop		
Processor System <sup>Note</sup>	Processor	Intel® Atom™ Processor C2558	Intel® Atom™ Processor C2758
	Core Number	4	8
	Frequency	2.4GHz	
	L2 Cache	2MB	4MB
	BIOS	AMI EFI 64Mbit	
Virtualization	VT-x		
Memory	Technology	DDR3/DDR3L 1600MHz	
	Max. Capacity	32GB (16GB per socket)	
	Socket	2 x 240-pin UDIMM	
	ECC Support	ECC or Non-ECC	
Networking	Controller	3 x Marvell 88E1112 1 x Marvell 88E6141	
	1GbE	2 x 1000/100/10BASE-T RJ45 or SFP auto-negotiation link by Marvell 88E1112	
		1 x 1000/100/10BASE-T RJ45 by Marvell 88E1112 4 x 1000/100/10BASE-T RJ45 by Marvell 88E6141 with 1GbE uplink to CPU	
Expansion	Mini PCIe	1 x Full-size Mini PCIe with SIM holder for 3G/4G LTE (WWAN) module with 2 x antenna holes	Sierra/MC7455 with Antenna; Sierra/MC7430 is optional by project support
	SIM socket	1 x Mini SIM type (25 x 15 mm)	
	M.2	1 x M.2 2232 for WiFi (WLAN) module with 2 x antenna holes	
Storage	2.5" SSD	None	1 x 2.5" SATA3.0 Gen3 SSD bracket (Max 9.5mm height only)
	M.2	1 x SATA3.0 Gen3 M.2 2280 (option 2x M.2 2242)	
I/O	Console port	1	
	USB2.0	1 x USB2.0 Type A host port	
	LED Indicator	Power, HDD, 3G/4G LTE, WiFi, SW defined status	
	Others	1 x Power Switch 1 x Software definable button with LED indicator	
TPM1.2	Optional support by TPM module: 98923260H0E		
Power Supply	Power Type	DC	
	Watts	60W	
	Input	100 V ~ 240 V	
	Connector	DC Jack	
	Power Adaptor	12V 5A, 60W external adaptor	
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)	
	Non-operating Temperature	-20 ~ 80 °C (-4 ~ 167 °F)	
	Humidity	95% @ 40 °C (non-condensing)	
	Vibration Resistance	with SSD: 0.3 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	
	Shock Protection	with SSD: 10G, IEC-60068-2-27, half sine, 11ms duration	
Cooling	1 x system FAN with smart FAN for maximum 37.5dB(A)		
Mechanical	Construction	Iron	
	Mounting	Support desktop/Rack/Wall-mounting options	
	Dimensions (W x H x D)	250 x 44 x 190.4 mm (9.8" x 1.7" x 7.5")	
	Weight	2.3 Kg (4.8lb)	
OS support	Linux (CentOS, Red Hat, Ubuntu)		
Advantech S/W Packages	QuickStart Linux Image (Ubuntu based reference BSP)	afwu, Imensors, flashrom, WiFi drivers, QMI Wireless drivers, Intel® DPKD, Intel® QAT, DUI (Offline Diagnostics)	
	Individual Package	DUI (Offline Diagnostics)	
Certification	without RF	EMC	BSMI: CNS13438 ; CE: EN55032/24 ClassB ; KCC: KN55032/35 ; RCM: AS/NZS CISPR32
		Safety	UL, CB, BIS, BSMI, CCC
	with RF	EMC	CE: ETSI EN 301 908-1 V11.1.1: 2016 ; ETSI EN 300 328 V2.1.1: 2016 ; ETSI EN 301 893 V2.1.1: 2017 ; EN 62311: 2008; EN301489-1-17-52 ; EN301908-2 ; EN301908-13 FCC: Part22H & 24E & 27B, C & L & 90S ; §15.247, Cat: DTS ; §15.407
		Safety	UL: 60950-1 (2nd Edition), CAN/CSA C22.2 No. 60950-1-07 (2nd Edition) LVD: EN 60950-1 CB: IEC 60950-1:2005 (2nd Edition) + Am 1:2009 + Am 2:2013, EN 60950-1:2006 /A11:2009/A1:2010/A12:2011/ A2:2013
	RoHS	RoHS, REACH, WEEE	

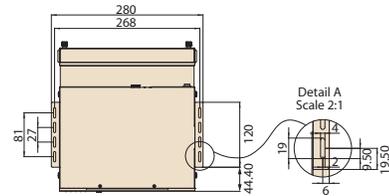
Note: Please contact your Advantech representative for other Atom C2000 processor support

**Dimensions**

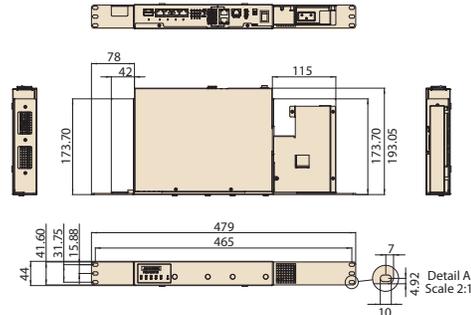


**Wall-Mount**

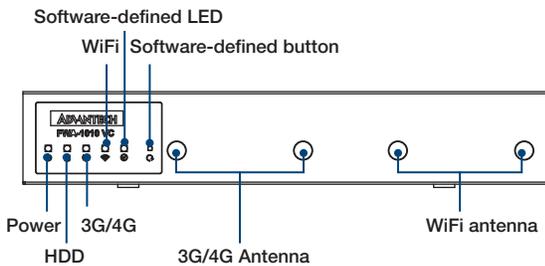
Unit: mm



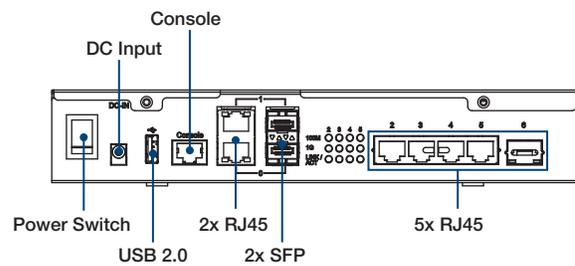
**Rack-Mount**



**Front Panel External I/O Mechanical Layout/Drawing**



**Rear Panel External I/O Mechanical Layout/Drawing**



**Ordering Information**

Ordering Information Part No.	CPU	CPU Core count	Socket/ Bracket	DDR3	2.5" SSD	M.2 2280	M.2 2232 (PCIe/USB)	Full Size MiniPCIe	Mini SIM	RJ45	1GbE SFP	DC Input	Wireless Kit	WLAN Module (EWM-W162M)	WLAN Antenna	WWAN Module (MC7455)	WWAN Antenna
FWA-1010VC-4CA2S	Atom C2558	4	2	N/A	1	1	1	1	1	5	2	1	N/A	N/A	N/A	N/A	N/A
FWA-1010VC-8CA2S	Atom C2758	8	2	1	1	1	1	1	1	5	2	1	N/A	N/A	N/A	N/A	N/A
FWA-1010VCR-8CA2S	Atom C2758	8	2	1	1	N/A	N/A	N/A	1	5	2	1	1	2	1	2	2

**Packing List**

Part Number	Description
-	China RoHS letter
193000688-01	M.2 SSD screws (2pcs)
96PSA-A60W12V1-1	AC-to-DC Adaptor, DC 12V 60W 0 – 40 °C for Home and Office Use

**Optional Accessories**

Part Number	Description
1700018950	Console cable
98923260H0E	TPM1.2 Module
FWA-1010VC-RMT	Rack-mount kit
FWA-1010VC-WMT	Wall-mount kit
FWA-1010VC-WWAN <sup>note</sup>	LTE 4G module kit for NA and EU (Sierra/MC7455 with antenna)
FWA-1010VC-WWAN2 <sup>note</sup>	LTE 4G module kit for APAC (Sierra/MC7430 with antenna)
FWA-1010VC-WLAN	WiFi module kit (Advantech/EWM-W162M with antenna)
1702002600	Power cord 3P 180 cm, USA
1702002605	Power cord 3P 180 cm, Europe
1702031801	Power cord 3P 180 cm, UK
1700000237	Power cord 3P 180 cm, JP
96CB-POWER-B-1.8M1	Power cord 3P 180 cm, China
1700025855-01	Power cord 3P 180 cm, India
1700025112-01	Power cord 3P 180 cm, Brazil
1700022938-01	Power cord 3P 300 cm, Korea
1700020098	Power cord 3P 180cm, Australia
1700024848-01	Power cord 3P 180cm, Taiwan

Note: Please contact your Advantech representative for details

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

# FWA-1011

## Tabletop Network Appliance with Intel Celeron® J3455/J3355 processor Platform with 6GbE LAN Ports

**NEW**



### Features

- Support Intel Celeron® J3455/J3355 processor
- One DDR3L 1333/1600/1867MHz SO-DIMM, up to 8GB
- Six GbE LAN ports with 1 segments LAN bypass
- One M.2 slot for storage (supports 2242/2260 module)
- Supports one fixed 2.5" SATA SSD bay
- Optional Wi-Fi and 4G LTE connectivity for flexible deployment
- Fanless heat dissipation without noise emission

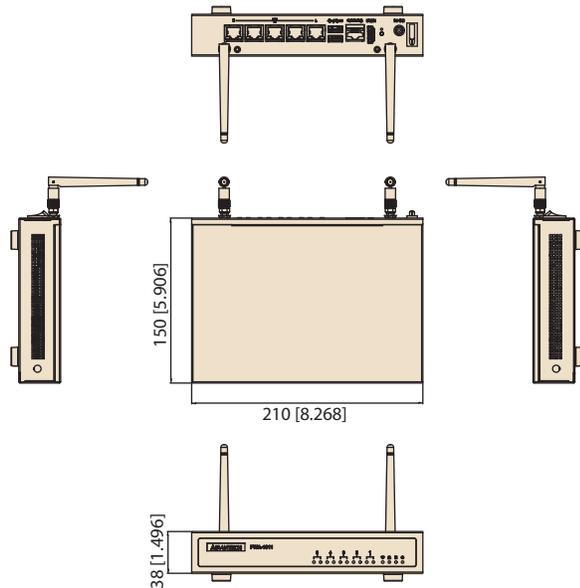


### Specifications

Processor System	CPU	Intel Celeron® J3355	Intel Celeron® J3455
	Max. Speed	2.0GHz (2Cores) up to 2.5GHz	1.5GHz (4Cores) up to 2.3GHz
	L2 Cache	2MB	
	BIOS	AMI 128 Mbit SPI	
Memory	Technology	1 x DDR3L 1333/1600/1867MHz	
	Socket	1 x 204-pin SODIMM	
	Max. Capacity	8 GB	
	ECC Support	Non-ECC	
Networking	Controller	6 x Intel i211-AT (i210-AT SKU optional)	
	1GbE	6 x 10/100/1000BASE-T RJ45 port	
	LAN Bypass	1 x pair of LAN Bypass, between LAN3 and LAN4 port (SKU optional)	
Expansion	M.2 for Wi-Fi	1 x M.2 2230(E-Key, PCIE x1, SKU optional) for Wi-Fi module	
	M.2 for LTE	1 x M.2 Slot 3042 (B Key, USB3.0, combo with storage ) for LTE module	
	SIM Socket	1 x Internal SIM socket	
Storage	M.2 SSD	1 x m.2 Slot 2242,2260 (B Key)	
	2.5" SSD	1 x 2.5" SSD bay	
Peripherals	Console port	1	
I/O	USB	1 x USB 3.0 and 1 x USB2.0	
	HDMI	1 x HDMI port	
	LED Indicator	1 x power LED, 1 x SATA LED, 6 x pairs of LAN LED, 1 x Wi-Fi LED (optional), 1 x LTE LED (optional)	
	Others	1 x power button, 1 x Reset button,	
TPM	TPM	TPM1.2 or TPM2.0 option	
Power	Power Type	DC	
	Watts	40W	
	Input	100 V ~ 240 V	
	Connector	DC Jack	
	Power Adaptor	DC, 12V 40W external power adaptor	
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)	
	Non-operating Temperature	-40 ~ 60 °C (-40 ~ 140 °F) and 40°C @5~95% RH Non-condensing	
Mechanical	Construction	Iron	
	Mounting	Tabletop	
	Dimensions (W x H x D)	210 x 38 x 150 mm (8.27" x 1.5" x 5.9")	
	Weight	1.8kg ( 3.96lbs)	
Advantech		QuickStart Linux Image (CentOS based reference BSP) Including LAN Bypass Utility; Afru, Intel DPDK, Wi-Fi driver, LTE driver	
Certification		CE/FCC/CB/UL/CCC (not including any Wi-Fi and LTE RF certificate)	

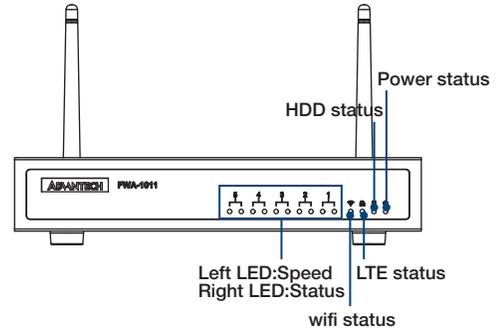
## Dimensions

Unit: mm [inch]



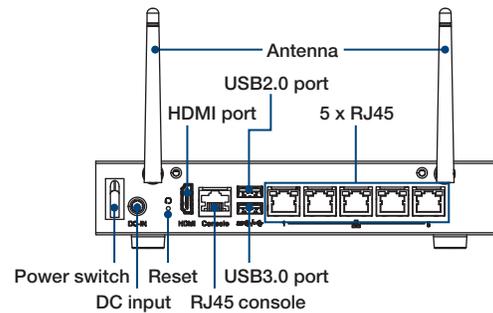
### FWA-1011W

#### Front Panel External I/O Mechanical Layout/Drawing



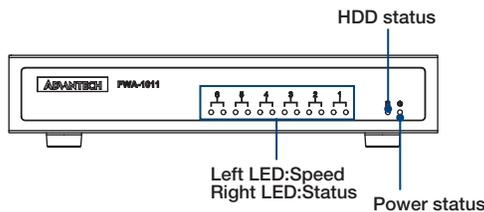
### FWA-1011W

#### Rear Panel External I/O Mechanical Layout/Drawing



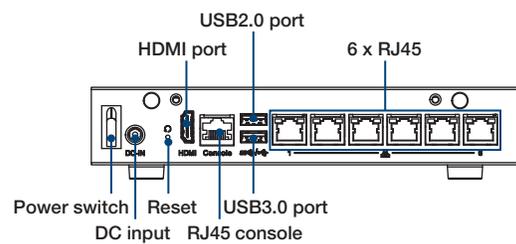
### FWA-1011F

#### Front Panel External I/O Mechanical Layout/Drawing



### FWA-1011F

#### Rear Panel External I/O Mechanical Layout/Drawing



## Ordering Information

Part Number	Processor	DDR3L	RJ45 LAN Port	Console	M.2 SSD	M.2 Wi-Fi	Bypass	PSU	Cooling
FWA-1011F-4C00E	Intel Celeron® J3455	1	6	1	1	NA	1 x bypass	DC12V 40W	Fanless
FWA-1011W-2C00E	Intel Celeron® J3355	1	5	1	1	1	NA	DC12V 40W	Fanless

## Packing List

Part Number	Description
96PSA-A40W12V3-1	ADP A/D 100-240V 40W 12V C14 DC PLUG 180°
1700020691-01	Console cable D-sub 9-pin 2 m

## Accessories

Part Number	Description
1702002600	3P 180 cm, USA
1702002605	3P 180 cm, Europe
1702031801	3P 180 cm, UK
1700000237	3P 180 cm, JP
1700009652	3P 180 cm, China

- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

# FWA-1012VC

## Universal Network Appliance with Intel® Atom™ Processor C3000 for vE-CPE and SD-WAN

**NEW**



### Features

- Intel® Atom® C3000 System On Chip with Intel® QuickAssist Technology at 10Gbps and Intel® AES-NI and VT-d Support
- Supports SR-IOV on all ports by Intel SOC integrated MAC and Intel i350 Ethernet Controller
- Optional 3G, 4G LTE and WiFi connectivity for deployment flexibility
- Optional IEEE 802.at/af compliant PoE kit to be PSE to support up to two 25.5W PD



### Specifications

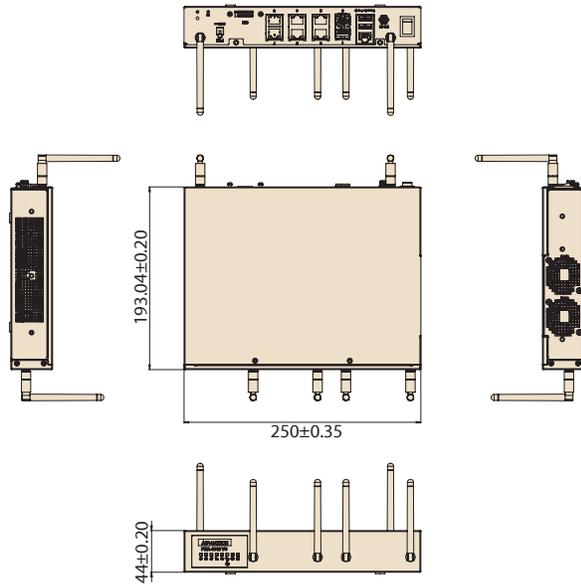
Form Factor	Tabletop			
Processor System	Processor	Intel® Atom™ Processor C3338	Intel® Atom™ Processor C3558	Intel® Atom™ Processor C3758
	Core Number	2	4	8
	Frequency	2.2GHz	2.2GHz	2.2GHz
	L2 Cache	2MB/Core Pair	2MB/Core	2MB/Core Pair
	BIOS	AMI EFI 64Mbit		
Virtualization	VT-x, VT-d			
Memory	Technology	DDR4 1866MHz	DDR4 2133MHz	DDR4 2400MHz
	Max. Capacity	32GB	64GB	
	Socket	1 x 288-pin DIMM	2 x 288-pin DIMM	
	ECC Support	ECC or Non-ECC		
Networking	Controller	1 x Marvell 88E1543	1 x Intel i350-AM2 1 x Marvell 88E1543	1 x Intel i350-AM4 1 x Marvell 88E1543
	1GbE	4 x 10/100/1000BASE-T RJ45 port via Intel® SoC Integrated MAC and Marvell 88E1543PHY	2 x SFP via Intel i350-AM2 4 x 10/100/1000BASE-T RJ45 port via Intel® SoC Integrated MAC and Marvell 88E1543PHY	2 x SFP and 2x 10/100/1000BASE-T RJ45 via Intel i350-AM4 4 x 1GbE RJ45 via Intel® SoC Integrated MAC and Marvell 88E1543PHY
Expansion	Mini PCIe	1 x Full-size Mini PCIe for WiFi module with 2 x antenna holes 1 x Half-size Mini PCIe for WiFi module with 2 x antenna holes (by project support)		
	SIM socket	2 x Mini SIM		
	M.2	1 x M.2 3042 B-key support USB, SATAIII or PCIe1 with 2 x SIM holders for 3G/4G module with 2 x antenna holes 1 x M.2 3042/2260/2280 B-key support USB, SATAIII or PCIe1 *each M.2 with 1 SIM holder by project support		
Storage	2.5" HDD/SSD	Optional 2.5" SATAIII SSD bracket (Max 9.5mm height)	1 x 2.5" SATAIII HDD/SSD bracket (Max 9.5mm height)	
I/O	Console port	1		
	USB3.0	2 x USB3.0 Type A host port		
	LED Indicator	Power, HDD, LTE, WiFi, SW defined status		
	Others	1 x Power Switch 1 x Software definable button with LED indicator		
TPM	Optional 1.2/2.0 support by TPM module			
Power	Power Type	External adaptor		
	Watts	36W	60W	
	Input	100 V ~ 240 V		
	Connector	DC Jack		
	Power Adaptor	12V 5A		
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)		
	Non-operating Temperature	-20 ~ 80 °C (-4 ~ 167 °F) and 40 °C @ 95% RH Non-Condensing		
Cooling	1 x system fan with smart fan		2 x system fans with smart fan	
Mechanical	Construction	Iron		
	Mounting	Support rack -mounting option		
	Dimensions (W x H x D)	250 x 44 x 193.04 mm (9.8" x 1.7" x 7.5")		
	Weight	2.3 Kg (4.8lb)	2.4 Kg (5.0lb)	
OS support	Linux (CentOS, Red Hat, Ubuntu)			
Advantech S/W Packages	QuickStart Linux Image (CentOS based reference BSP)	afru, Imensors, flashrom, WiFi drivers, QMI Wireless, Intel® DPDK, Intel® QAT, DUI (Offline Diagnostics)		
	Individual Package	DUI (Offline Diagnostics)		
Certification	CE/FCC Class B, CCC CB, UL, FCC ID, CE-RED			

Note1: Other processor can be supported by request

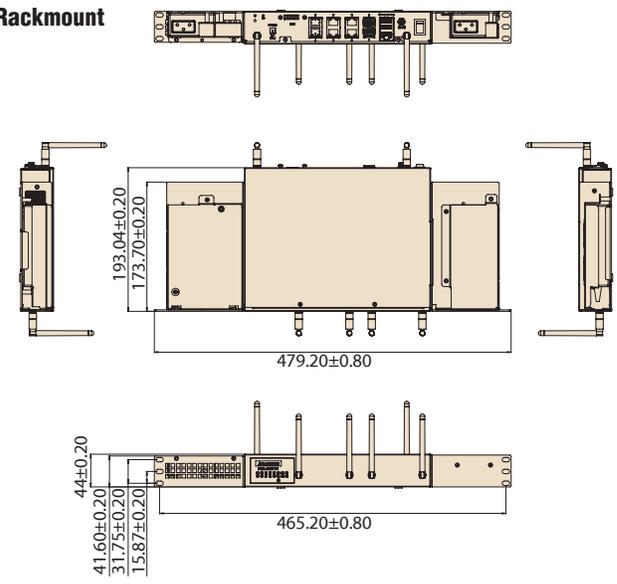
- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Dimensions

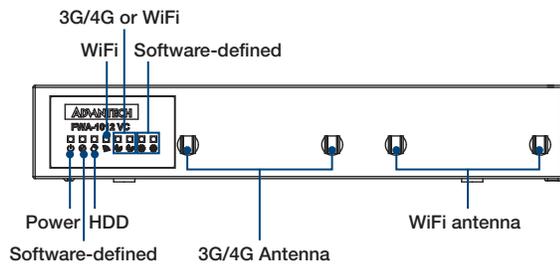
Unit: mm



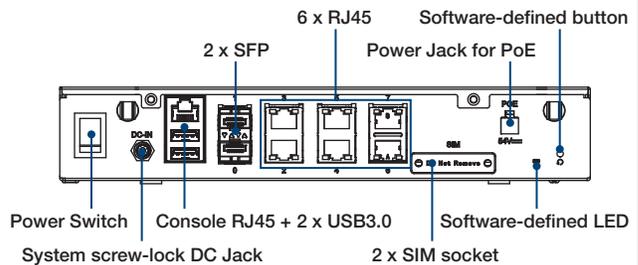
## Rackmount



## Front Panel External I/O Mechanical Layout/Drawing



## Rear Panel External I/O Mechanical Layout/Drawing



## Ordering Information

Part no.	CPU	DDR4	GbE RJ45	SFP	USB 3.0	Console RJ45	2.5" HDD Bracker	M.2 3042/2260/2280 B-Key	M.2 3042 B-key	Full Size Mini-PCIe	WiFi Module	LTE module	POE board	Power adaptor
FWA-1012VC-2CA1S	C3338 2core	1	4	NA	2	1	NA	1	1	1	NA	NA	NA	36W
FWA-1012VC-4CA1S	C3558 4core	2	4	2	2	1	NA	1	1	1	NA	NA	NA	60W
FWA-1012VCR-4CA1S	C3558 4core	2	4	2	2	1	NA	1	1	1	1	NA	NA	60W
FWA-1012VC-8CA1S	C3758 8core	2	6	2	2	1	1	1	1	1	NA	NA	NA	60W
FWA-1012VCR-8CA1S	C3758 8core	2	6	2	2	1	NA	1	1	1	1	NA	NA	60W
FWA-1012VCP-8CA1S	C3758 8core	2	6	2	2	1	NA	1	1	1	NA	NA	1	60W

## Optional Accessories

Part Number Description	Description	Supporting SKU
1700018550	Console cable	For all SKUs
985232600E	TPM1.2 Module	For all SKUs
989232600E	TPM2.0 Module	For all SKUs
FWA-1012VC-WLAN	WiFi module kit (Series PCE4302AN/Antenna/SMA cable/Screw)	For FWA-1012VC-4CA1S / FWA-1012VC-8CA1S
FWA-1012VC-WWAN	LTE module kit (Series EM7455/Antenna/SMA cable/Screw)	For FWA-1012VC-4CA1S / FWA-1012VC-8CA1S
FWA-1012VC-RMK	Rack mount kit (60W)	For FWA-1012VC-4CA1S / FWA-1012VC-8CA1S / FWA-1012VCR-4CA1S / FWA-1012VCR-8CA1S
FWA-1012VC-RMK1	Rack mount kit w/ PoE cover	For FWA-1012VCP-8CA1S
FWA-1012VC-RMK2	Rack mount kit (36W)	For FWA-1012VC-2CA1S
FWA-1012VC-POE	PoE module kit (with 54V adapter)	For FWA-1012VC-2CA1S / FWA-1012VC-4CA1S / FWA-1012VC-8CA1S / FWA-1012VCR-4CA1S / FWA-1012VCR-8CA1S
FWA-1012VC-HDD	2.5" HDD kit	For FWA-1012VC-2CA1S / FWA-1012VC-4CA1S / FWA-1012VC-8CA1S / FWA-1012VCR-4CA1S / FWA-1012VCR-8CA1S
1702002600	Power cord 3P 180 cm, USA	For FWA-1012VC-4CA1S / FWA-1012VC-8CA1S / FWA-1012VCR-4CA1S / FWA-1012VCR-8CA1S
1702002605	Power cord 3P 180 cm, Europe	For FWA-1012VC-4CA1S / FWA-1012VC-8CA1S / FWA-1012VCR-4CA1S / FWA-1012VCR-8CA1S
1702031801	Power cord 3P 180 cm, UK	For FWA-1012VC-4CA1S / FWA-1012VC-8CA1S / FWA-1012VCR-4CA1S / FWA-1012VCR-8CA1S
170000237	Power cord 3P 180 cm, JP	For FWA-1012VC-4CA1S / FWA-1012VC-8CA1S / FWA-1012VCR-4CA1S / FWA-1012VCR-8CA1S

Part Number Description	Description	Supporting SKU
1700009652	Power cord 3P 180 cm, China	For FWA-1012VC-4CA1S / FWA-1012VC-8CA1S / FWA-1012VCR-4CA1S / FWA-1012VCR-8CA1S
1700025855-01	Power cord 3P 180 cm, India	For FWA-1012VC-4CA1S / FWA-1012VC-8CA1S / FWA-1012VCR-4CA1S / FWA-1012VCR-8CA1S
1700025112-01	Power cord 3P 180 cm, Brazil	For FWA-1012VC-4CA1S / FWA-1012VC-8CA1S / FWA-1012VCR-4CA1S / FWA-1012VCR-8CA1S
1700022938-01	Power cord 3P 300 cm, Korea	For FWA-1012VC-4CA1S / FWA-1012VC-8CA1S / FWA-1012VCR-4CA1S / FWA-1012VCR-8CA1S
1700011524	Power cord 3P 180 cm, USA	For FWA-1012VC-2CA1S
1700018744	Power cord 3P 180 cm, Europe	For FWA-1012VC-2CA1S
1700025803-01	Power cord 3P 180 cm, UK	For FWA-1012VC-2CA1S
1700008921	Power cord 3P 180 cm, JP	For FWA-1012VC-2CA1S
1700025113-01	Power cord 3P 180 cm, China	For FWA-1012VC-2CA1S
1700022814-01	Power cord 3P 180 cm, Brazil	For FWA-1012VC-2CA1S
1700018409	Power cord 3P 300 cm, Korea	For FWA-1012VC-2CA1S

## Packing List

Part Number	Description
96PSA-A60W12W6	ADP A/D 100-240V 60W 12V C14 LOCKABLE DC PLUG

# FWA-1211

## Industrial Grade Cyber Security Appliance based on Intel® Atom™ x5-E3940/ x5-E3930 Processor



### Features

- Industrial Grade DIN Rail fanless Cyber Security Appliance
- Supports Intel® Atom™ x5-E3940/ x3-E3930 Processor
- 1 x DDR3L 1600/1867MHz SODIMM, up to 4GB
- 1 x GbE Copper Mgmt. port
- 4 x 10/100/1000 Mbps Copper ports with 2 segments of LAN bypass
- 2 x 10/100/1000 Mbps SFP ports
- 1 x 2.5" SATA SSD bay
- 1 x mSATA slot
- Wide operating temperature -40 ~ 70 °C
- IP Rating: IP40
- Dual power input: 9~36V



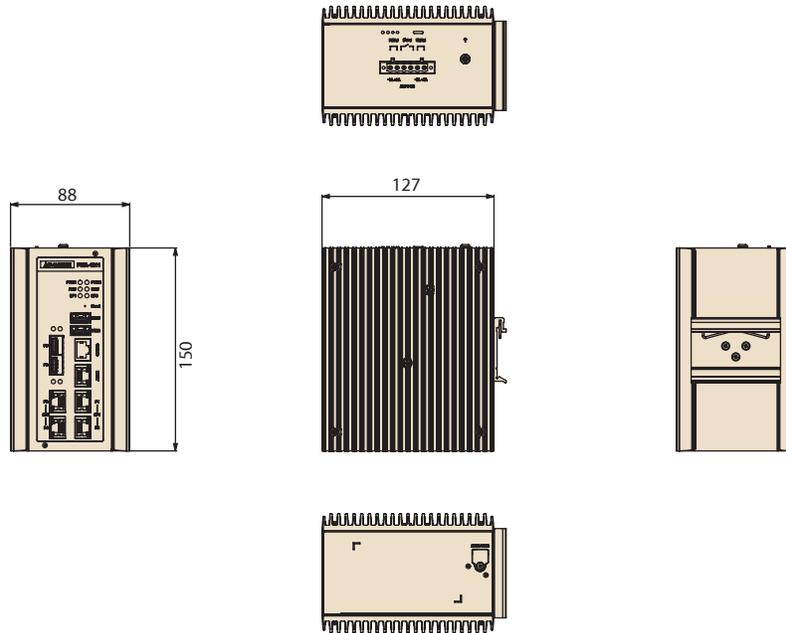
### Specifications

Processor System	CPU	Intel Apollo Lake x5-E3930	Intel Apollo Lake x5-E3940
	Max. Speed	1.3 GHz (2Cores)	1.6 GHz (4Cores)
	L2 Cache	2MB	
	BIOS	AMI EFI 16 Mbit	
Memory	Technology	1 x DDR3L 1333/1600/1867MHz/Wide temp	
	Socket	1 x 204-pin SODIMM	
	Capacity	4GB	
	ECC Support	Non-ECC	
Networking	Controller	5 x Intel i210-IT 2 x Intel i210-IS	
	1GbE	5 x 10/100/1000 Mbps RJ45 via Intel i210-IT	
	SFP	2 x 10/100/1000 Mbps SFP via Intel i210-IS	
	LAN bypass	2 pairs of Advanced LAN Bypass	
	Magnetic Isolation Protection	1.5KV magnetic isolation protection	
Storage	2.5" HDD/SSD	1x 2.5" SSD	
	mSATA SSD	1 x mSATA Slot (only Half Size)	
I/O Interface	Console port	1	
	USB	2 x USB2.0	
	Reset Button	1	
	Serial port	2 x DB9 RS-232/422/485 (SKU option)	
	Power LED	2, Green	
	HDD LED	1, Amber	
	Alarm LED	1, Red	
	Bypass LED	2, Amber	
	Display	1 x Micro-HDMI (Option, only for debug)	
Power	Power Type	Dual DC-IN	
	Input	DC 9~36V	
	Connector	Phoenix contact 6-pin connector w/ lock	
Environment	Operating Temperature	-40 ~ 70 °C (-40 ~ 158 °F)	
	Non-operating Temperature	-40 ~ 85 °C (-40 ~ 185 °F)	
	Humidity	5 ~ 95%	
Mechanical	Construction	Iron	
	Mounting	DIN Rail	
	System Cooling	Fanless	
	Dimensions (D x W x H)	127 x 88 x 150 mm (5" x 3.47" x 5.9")	
	Weight	3kg ( 6.6lbs)	
	IP Rating	IP40	
OS Support		Linux (CentOS, Red Hat.)	
Advantech S/W Packages		QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>▪ Aftru</li> <li>▪ Advanced LBP Utility</li> </ul>	
		Individual packages: <ul style="list-style-type: none"> <li>▪ Advanced LBP Library</li> <li>▪ Watchdog</li> <li>▪ Sensor Reader</li> <li>▪ GPIO</li> </ul>	
Certification	EMC	CE/FCC Class-A, CCC	
	Safety	UL/CB/CCC	
	Compliance	IEC 61850-3	

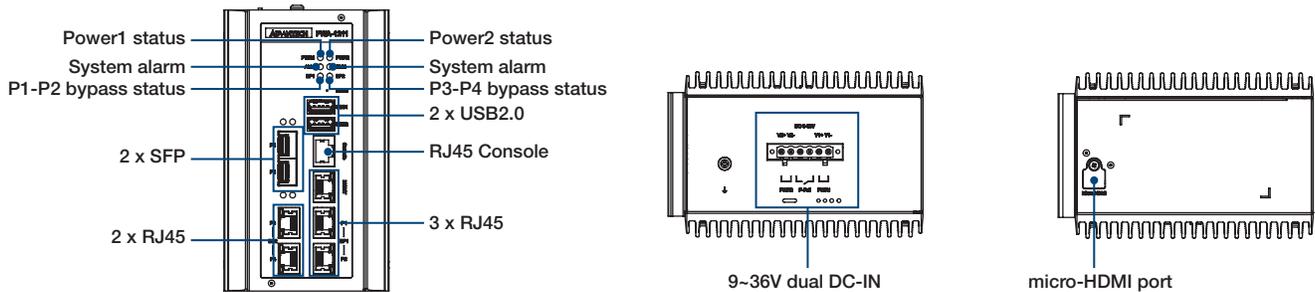
- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

## Dimensions

Unit: mm



## I/O View



## Ordering Information

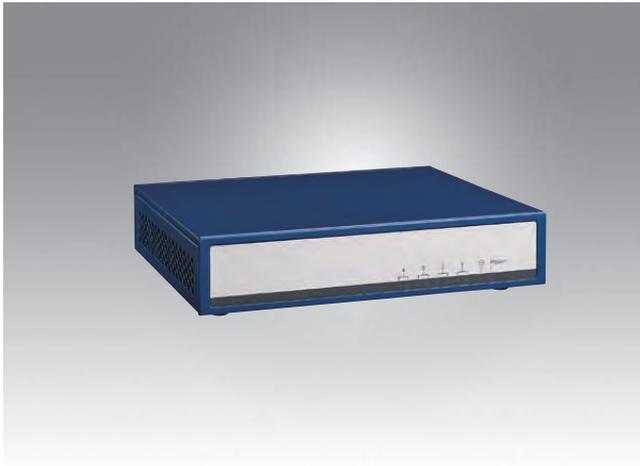
part number	Processor	DDR3L	RJ45 LAN port	SFP	Console	SATA SSD	mini-PCIE	Bypass
FWA-1211-4C00E	E3940	1	5	2	1	1	1	2
FWA-1211-2C00E	E3930	1	5	2	1	1	1	2

## Packing List

Part number	Description
1700020691-01	Console cable D-sub 9-pin 2m
1700030086-01	SATA cable

# FWA-1330

## Tabletop Network Appliance with Intel® Celeron® Processor J1900/ N2807 and 4 GbE ports



### Features

- Supports Intel® Celeron® Processor N2807/J1900
- One DDR3L 1333 SODIMM, up to 8 GB
- Four GbE LAN ports with 2 segments LAN bypass
- One mSATA Slot
- Supports One fixed 2.5" SATA HDD
- One Mini-PCIE slot



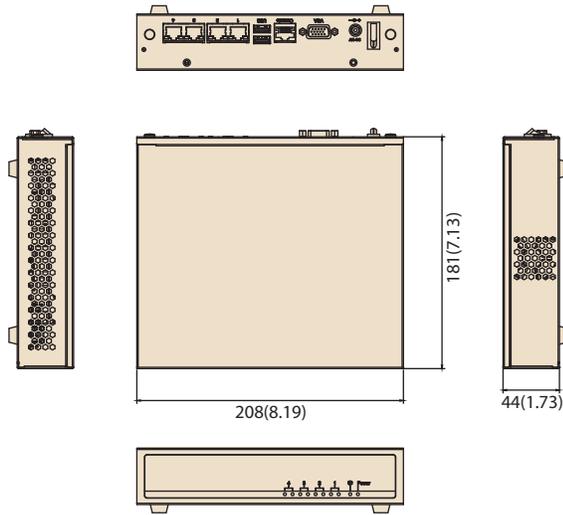
### Specifications

		FWA-1330A-01E	FWA-1330B-00E
Processor System	CPU	Intel® Celeron® J1900	Intel® Celeron® N2807
	Max. Speed	2.0 GHz (4 Cores)	1.58 GHz (2 Cores)
	L2 Cache	2MB	1MB
	BIOS	AMI 16 Mbit SPI	
Memory	Technology	1 x DDR3L 1066/1333 SODIMM	
	Socket	1 x 204-pin SODIMM	
	Capacity	8 GB	4 GB
	ECC Support	No	
Networking	Controller	4 x Intel® i211-AT	
	1GbE	4 x 10/100/1000 Mbps RJ45 via Intel® i211-AT	
	LAN bypass Advanced	-	
	LAN bypass Legacy	2 x pair of LAN Bypass	
Expansion	Mini PCIe	1 x Mini PCIe Slot(Half Size, USB Interface Default, PCIe Interface Option)	
Storage	2.5" HDD/SSD	1 x 2.5" HDD	
	mSATA SSD	1 x mSATA(Half Size or Full Size)	
I/O	Console port	1	
	USB2.0	2	
	LED Indicator	1 x Power, HDD LED, 4 pairs LAN LED	
	Others	1 x power button	
Power	Power Type	DC	
	Watts	40W	
	Input	100 V ~ 240 V	
	Connector	DC Jack	
	Power Adaptor	40W External DC,adapter	
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)	
	Non-operating Temperature	-20 ~ 75 °C (-4 ~ 167 °F)	
	Humidity	95% @ 40 °C (non-condensing)	
	Vibration Resistance	with 2.5" HDD:0.5 Grms; IEC 60068-2-64; 5-500Hz,1hr/axis	
	Shock Protection	with 2.5" HDD;10G, IEC-60068-2-27, half sine, 11 ms duration	
Mechanical	Construction	Iron	
	Mounting	Desktop	
	Dimensions(W x H x D)	208 x 44 x 178 mm (8.2" x 1.7" x 7.0")	
	Weight	1.8 Kg (3.96 lb)	
OS Support		Linux (CentOS, Red Hat)	
Advantech S/W Packages		QuickStart Linux Image (CentOS based reference BSP) including	
		<ul style="list-style-type: none"> <li>▪ afru</li> <li>▪ Imsensors</li> <li>▪ flashrom</li> <li>▪ Legacy LBP utility</li> </ul> Individual packages: <ul style="list-style-type: none"> <li>▪ Legacy LBP utility</li> </ul>	
Certification		CE/FCC/CB/UL/CCC	

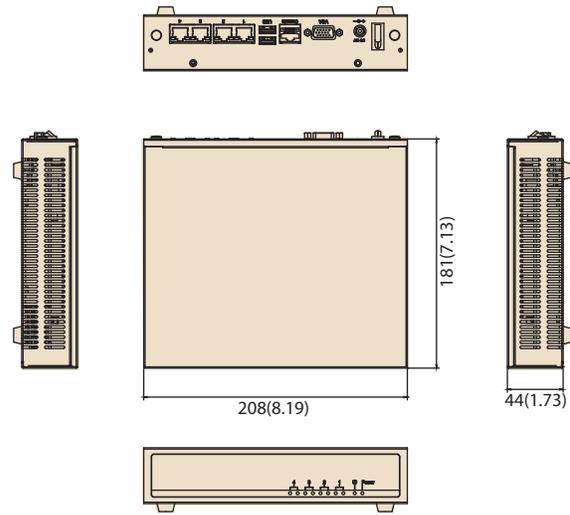
## Dimensions

Unit: mm

**FWA-1330A**

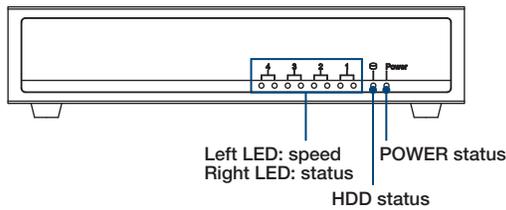


**FWA-1330B**

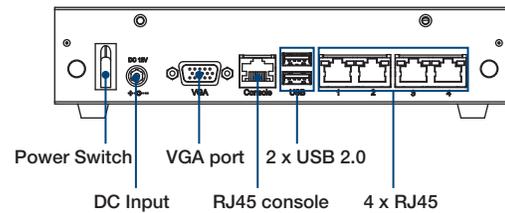


- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

### Front Panel External I/O Mechanical Layout/Drawing



### Rear Panel External I/O Mechanical Layout/Drawing



## Ordering Information

Part Number	Processor	L2 Cache	DDR3L	LAN	LAN Bypass	Cooling	DC input
FWA-1330A-01E	Intel® Celeron® J1900 4 core, 2.0GHz	2MB	1, up to 8GB	4	2 Segments	1 Smart Fan	40W
FWA-1330B-00E	Intel® Celeron® N2807 2 core, 1.58GHz	1MB	1, up to 4GB	4	2 Segments	Fanless	40W

## Packing List

Part Number	Description
96PS0-A60W12-1	OPENFRAME A/D 100-240V 60W 12V
1700020691-01	Console cable D-sub 9-pin 2 m
1700018155	PS/2 Keyboard/Mouse Cable 20CM

## Optional Accessories

Part Number	Description
1702002600	Power cord 3P 180 cm, USA
1702002605	Power cord 3P 180 cm, Europe
1702031801	Power cord 3P 180 cm, UK
1700000237	Power cord 3P 180 cm, JP
1700009652	Power cord 3P 180 cm, China

# FWA-2011

## 1U Rackmount Network Appliance with Intel® Atom™ X5-E3940 Processor and 6 GbE ports

**NEW**



### Features

- Supports Intel® E3940 processor
- Two DDR3L 1333/1600/1867MHz, up to 8GB
- Six GbE LAN ports with 2 segments LAN bypass
- One mSATA Slot
- Supports one fixed 3.5" SATA HDD bay
- One NMC slot for 4ports Ethernet card expansion
- One Mini-PCIE slot



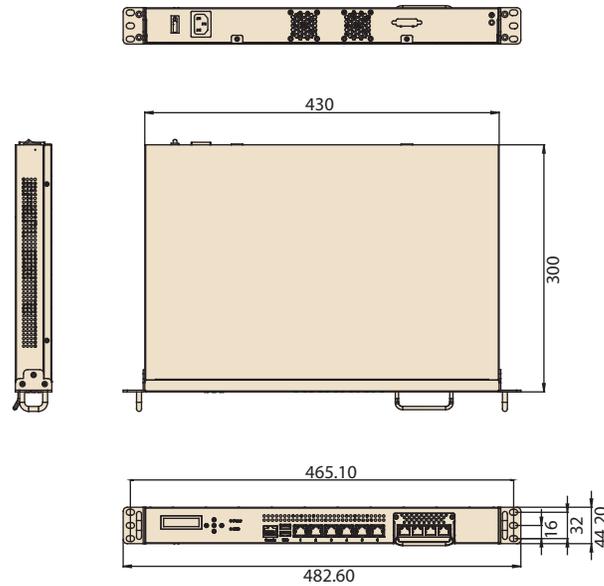
### Specifications

Processor System	CPU	Intel® E3940
	Core number	4C
	Max. Speed	1.6 GHz
	L2 Cache	2MB
	BIOS	AMI 16 Mbit SPI
Memory	Technology	2 x DDR3L 1333/1600/1867MHz
	Socket	2 x 204-pin SODIMM
	Capacity	8GB
	ECC Support	Non-ECC
Networking	Controller	6 x Intel® i210-AT
	1GbE	6 x 10/100/1000 Mbps RJ45 via Intel® i210-AT
	Legacy LAN bypass	2 x pair of LAN Bypass, Advanced Bypass option
Expansion	NMC	1 x NMC
Storage	2.5" HDD/SSD	1 x 3.5" or 2.5" HDD
	mSATA SSD	1 x mSATA Slot
I/O	Console port	1
	USB3.0	2
	LED Indicator	1x Power, HDD LED
	Others	1 x power button
LCD Module		16 x 2 graphic display, 5 buttons
Power	Power Type	AC
	Watts	60W
	Input	100 V ~ 240 V
	Connector	AC 4pin plug
	Power Adaptor	AC, Openframe
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)
	Non-operating Temperature	-40 ~ 60 °C (-40 ~ 140 °F)
	Humidity	95% @ 40 °C (non-condensing)
	Vibration Resistance	with SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis
	Shock Protection	with SATA HDD: 10G, 11ms, IEC-60068-2-27, X, Y, X-X, -Y-Z axis, 3times per axis
Mechanical	Construction	Iron
	Mounting	1U Rackmount
	Dimensions (W x H x D)	430 x 44 x 300 mm (16.7" x 1.7" x 11.8")
	Weight	5.4 kg (11.9 lbs)
OS Support		Linux (CentOS, Red Hat.) Windows* 10
Advantech S/W Packages		QuickStart Linux Image (CentOS based reference BSP) including Afru Advanced LAN Bypass Utility Intel DPDK
Certification		CCC/CE/FCC/CB/UL

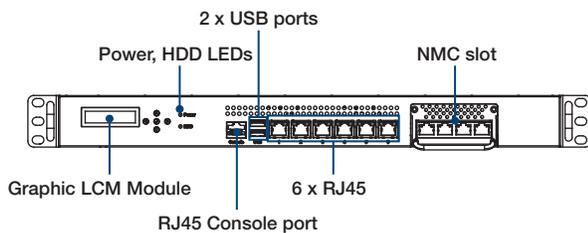
- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Dimensions

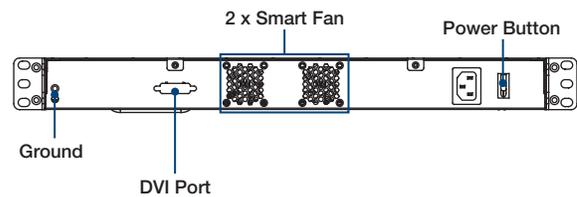
Unit: mm



### Front Panel External I/O Mechanical Layout/Drawing



### Rear Panel External I/O Mechanical Layout/Drawing



## Ordering Information

Part Number	Processor	DDR3L	USB 3.0	LAN Port	Console port	NMC Slot	LCM	mSATA	PSU
FWA-2011-4C00E	Intel Apollo lake E3940	2	2	6 copper	1	1	1	1	Open Frame 60W
FWA-2011-4C01E	Intel Apollo lake E3940	2	2	4copper+2SFP	1	0	0	1	Open Frame 60W

## Packing List

Part Number	Description
1700018971	SATA Data cable 15cm
1700020691-01	Console cable D-sub 9-pin 2 m
1960063246N002	Rack mount Ear bracket

## Optional Accessories

Part Number	Description
1702002600	Power cord 3P 180 cm, USA
1702002605	Power cord 3P 180 cm, Europe
1702031801	Power cord 3P 180 cm, UK
1700000237	Power cord 3P 180 cm, JP
1700009652	Power cord 3P 180 cm, China

# FWA-2012

## Rackmount Platform for Network Application with Intel® Atom® C3000 Processor



### Features

- Intel® Atom® C3000 System On Chip up to 16 cores Processor with QAT
- DDR4 2400 ECC registered memory up to 64GB
- Optimized LAN Port Extension
- Maximized storage options
- TPM 1.2
- Advanced Platform Reliability and Serviceability



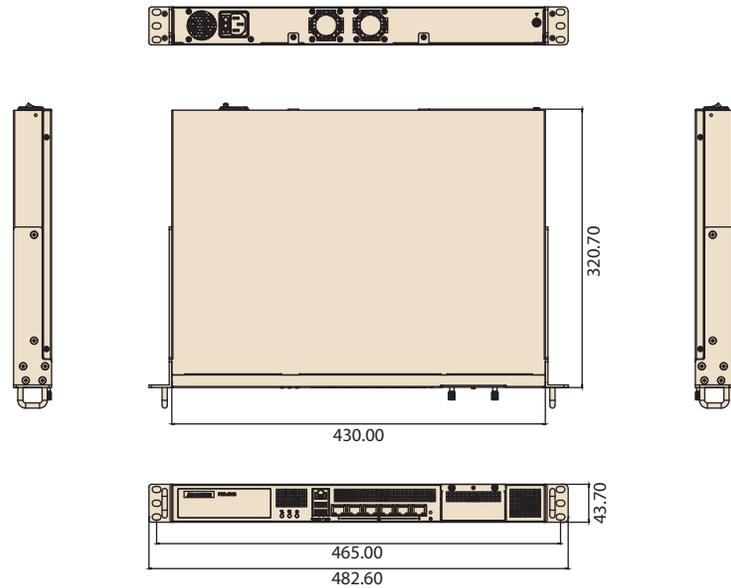
### Specifications

		FWA-2012-4CA1S	FWA-2012-8CA1S	FWA-2012-16A1S
Processor System	Processor	Intel® Atom™ C3000		
	Core Number	4 core	8 core	16 core
	Frequency	2.2GHz	2.2GHz	2.0GHz
	L2 Cache	2MB/Core	2MB/Core	2MB/Core Pair
	Chipset	Intel® Atom™ C3558	Intel® Atom™ C3758	Intel® Atom™ C3958
	BIOS	AMI Efi 64Mbit		
Virtualization		VT-x, VT-d		
Memory	Technology	DDR4, 2133/2400MHz		
	Max. Capacity	64GB		
	Socket	2 x 288-pin DIMM		
	ECC Support	ECC		
Networking	Controller	1 x Marvell 88E1543 2 x Intel i210		
	1GbE	4 x 1GbE RJ45 via Marvell 1543 with 2 pairs LAN Bypass 2 x GbE RJ45 port via Intel i210		
	LAN bypass	Advanced Legacy	2 segment -	
				1 x PCIe-2002 (optional)
Expansion	PCIe x 4	-		
	NMC	1 x NMC		
	2.5" HDD/SSD	1 x 2.5" HDD/SSD (optional)		
	3.5" HDD	1 x 3.5" HDD/SSD		
Storage	m.2 SSD	2 x M.2 (2280) (2nd M.2 daughter board: optional)		
	Console port	1		
	USB3.0	2		
I/O	LED Indicator	Power/Status/Location LED		
	Reset button	Yes		
	Others	1 x AC Power Switch		
	TPM	1.2 (optional)		
	LCD Module	16x2 graphic display, 5 buttons (optional)		
Power	Power Type	AC		
	Watts	150 W		
	Input	100 V ~ 240 V		
	Connector	AC 2pin plug		
	Power Adaptor	AC PSU		
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)		
	Non-operating Temperature	-40 ~ 60 °C (-40 ~ 140 °F) 5 ~ 95%		
	Vibration Resistance	with SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis		
Cooling	Shock Protection	with SATA HDD: 10G, IEC-60068-2-27, half sine, 11ms duration		
		2 x system Fans		
Mechanical	Construction	Iron		
	Mounting	1U Rackmount		
	Dimensions (W x H x D)	430 x 44 x 320.7 mm (16.7" x 1.7" x 12.6")		
	Weight	6.6 Kg (14.5 lbs)		
OS Support		Linux (CentOS, Red Hat, Ubuntu)		
Advantech S/W Packages		QuickStart Linux Image (CentOS based reference BSP) including		
		<ul style="list-style-type: none"> <li>▪ afu</li> <li>▪ ipmitool</li> <li>▪ lmsensors</li> <li>▪ LCD4Linux</li> <li>▪ Intel DPDK</li> <li>▪ Advanced LBP utility</li> </ul> Individual packages: <ul style="list-style-type: none"> <li>▪ Advanced LBP utility</li> </ul>		
IPMI		Low cost Carrier Grade BMC, IPMI v2.0 compliant (Advantech IPMI Core) (optional)		
Certification		CB/UL/CE/FCC/CCC		

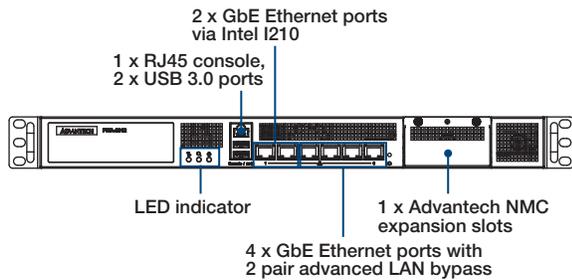
- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Dimensions

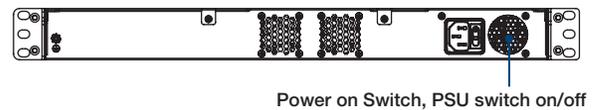
Unit: mm



### Front Panel External I/O Mechanical Layout/Drawing



### Rear Panel External I/O Mechanical Layout/Drawing



## Ordering Information

Part No.	CPU	DDR4 slot	PCIe slot	NMC slot	USB 3.0	RJ45 Lan Port	MGM Port	Console Port	LCM	TPM 1.2	IPMI	PSU
FWA-2012-4CA1S	Intel® Xeon® Atom C3558	2	x	1 (PCIe x4)	2	4	2	1	x	x	x	150W AC PSU
FWA-2012-8CA1S	Intel® Xeon® Atom C3758	2	x	1 (PCIe x8)	2	4	2	1	x	x	x	150W AC PSU
FWA-2012-16A1S	Intel® Xeon® Atom C3958	2	x	1 (PCIe x8)	2	4	2	1	x	x	x	150W AC PSU

## Packing List

Part Number	Description
1700020691-01	Console cable D-SUB9P(F)/RJ45 220 cm

## Optional Accessories

Part Number	Description
1702002600	Power cord 3P 180cm, USA
1702002605	Power cord 3P 180cm, Europe
1702031801	Power cord 3P 180cm, UK
1700000237	Power cord 3P 180cm, JP
1700009652	Power cord 3P 180cm, China

# FWA-3033

## 1U Rackmount Network Appliance with 10 GbE LAN ports and 2NMC Slots based on Intel Coffee Lake CPU Xeon® E family and 8th/9th gen. Intel® Core™ i7/i5/i3 processors

**NEW**



### Features

- Intel® Xeon® E family, 8th/9th gen. Intel® Core™ i7/i5/i3 processors, Intel® Pentium® and Intel® Celeron® Processor
- 4 x DDR4 2400/2666MHz, UDIMM ECC (Xeon E only) Up to 128GB
- 8 x 10/100/1000 Mbps Copper ports on board with 2 bypass segments
- 4 x 10/100/1000 Mbps SFP ports onboard(SKU options)
- 2 x NMC slots (Network Mezzanine Card) for a wide range of GbE, 10GbE and 40GbE, 100GbE NMCs with or without advanced LAN bypass
- 1 x M.2 slot for storage, 2 x 2.5" HDD Bay, 1 x 3.5" HDD Bay option, 1 CF slot SKU options
- 2 x PCIe x4 Slot on rear, support FH/HL add-on cards
- IPMI 2.0 compliant Remote Management



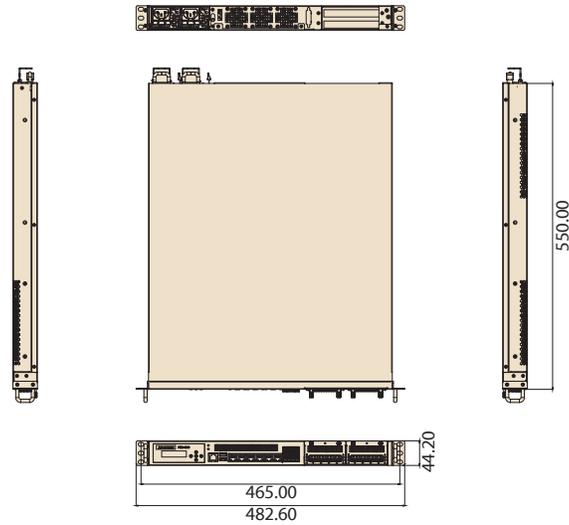
### Specifications

System PN		FWA-3033-00A1R	FWA-3033L-00A1S
Form factor		1U Rackmount	1U Rackmount
Processor System	Processor	Intel® Xeon® E-2278GE/E-2226GE/E-2176G/E-2174G, 8th gen. Intel® Core™ i7/i5/i3 processors, Intel® Pentium® G5400 and Intel® Celeron® G3900 Processors	Intel® Xeon® E-2176G/E-2174G, 8th gen. Intel® Core™ i7/i5/i3 processors, Intel® Pentium® G5400 and Intel® Celeron® G3900 Processor
	Core Number	2C/4C/6C/8C	2C/4C/6C
	Base Frequency	2.4GHz-3.8GHz	
	L2 Cache	10-55MB	
	Chipset	Intel C246	
	BIOS	AMI EFI 256Mbit	
Memory	Technology	DDR4 2400/2666MHz	
	Max. Capacity	128GB (4 x 32GB UDIMM)	
	Socket	4 x 288pin UDIMM	
	ECC Support	Yes (only Xeon E serial CPU Support ECC)	
Networking	Controller	6 x Intel i210-AT 4 x Intel i210-IS	8 x Intel i210-AT
	1GbE	6 x 10/100/1000 Mbps RJ45 4 x 10/100/1000 Mbps SFP	8 x 10/100/1000 Mbps RJ45
	LAN Bypass	2 pairs of Advanced LAN Bypass	
Expansion	NMC Slot	2 x NMC Slots	
	PCIe x 8 slot	2 x FH/HL PCIe x 8 Size slot (one slot bandwidth is PCI x4 Gen3, another is PCIe x2 Gen3)	
Storage	M.2 Slot	1 x M.2 2260/2280 Slot, M-Key	
	CF slot	1 x CF slot ( by project option)	
	3.5" HDD bay	2 x 3.5" HDD bay (One 3.5" HDD bay is Default, another is option)	
I/O	USB	2 x USB3.0 Type A on Front	
	Serial	1 x Console ports (RJ45 connector)	
	Power LED	1 (Green on indicates power on)	
	HDD LED	1 (Amber blink indicates HDD Read/Write)	
	Pin Header	GPIO, Reset, COM and HDMI	
TPM	TPM	Module option	
LCD Module	LCD Module	16 x 2 graphic display, 5 buttons	
Power	Power Type	AC, Redundant, DC -48V, Redundant option	AC Single Power
	Watts	Redundant 300W	Single 250W
	Input	100-240 VAC, auto range	
Environment	Connector	AC 3pin plug / DC pin header	
	Operating Temperature	0 - 40 °C (32 ~ 104 °F)	
	Non-operating Temperature	-40 - 60 °C (-40 - 140 °F) and 40 °C @ 5 - 95% RH Non-Condensing	
Mechanical	Construction	Iron	
	Mounting	1U Rackmount	
	Dimensions (W x H x D)	438 x 44 x 550 mm, 17.24" x 1.75" x 21.65"	
	Weight	15kg	
OS Support		Linux (CentOS, Red Hat, Ubuntu, etc.)	
Advantech S/W Packages		QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>▪ afu</li> <li>▪ LCD4Linux</li> <li>▪ Advanced LBP Utility</li> <li>▪ Intel DPDK</li> <li>▪ Intel QAT (need add one QAT PCIe Card)</li> </ul>	
		Individual packages: <ul style="list-style-type: none"> <li>▪ Advanced LBP Library</li> <li>▪ DUI (Offline Diagnostics)</li> </ul>	
IPMI		Carrier Grade BMC, IPMI v2.0 compliant, with web interface, iKVM on request (SKU Option)	
Certification/Safety		CCC/CE/FCC/UL/CB	

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Dimensions

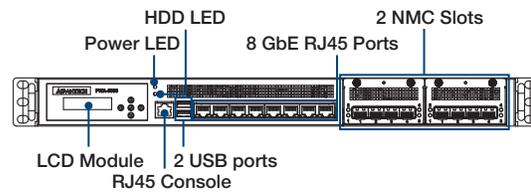
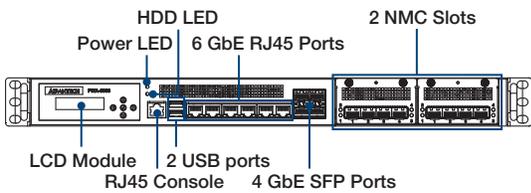
Unit: mm



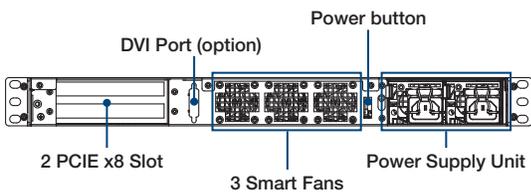
## Front Panel External I/O Mechanical Layout/Drawing

FWA-3033

FWA-3033L



## Rear Panel External I/O Mechanical Layout/Drawing



## Packing List

Part Number	Description
1700020691-01	Console cable D-SUB 9P(F)/RJ45 220cm

## Accessories

Part Number	Description
1702002600	Power cord 3P 180cm, USA
1702002605	Power cord 3P 180cm, Europe
1702031801	Power cord 3P 180cm, UK
1700000237	Power cord 3P 180cm, JP
1700009652	Power cord 3P 180cm, China
9680016905	Slide rail

## Ordering Information

Part Number	Processor	DIMM Qty	PCH	Console port	USB port	LAN Port Copper	LAN Port SFP	NMC slot	m.2 slot	HDD bay	PSU
FWA-3033-00A1R	Intel® Xeon® E-2278GE/E-2226GE/E-2176G/E-2174G, 8th gen. Intel® Core™ i7/ i5/i3 processors, Intel® Pentium® G5400 and Intel® Celeron® G3900 Processors	4	Intel C246	1	2	6	4	2	1	2 x 3.5" HDD Bay	Redundant AC 300W
FWA-3033L-00A1S	E-2176G/E-2174G, 8th gen. Intel® Core™ i7/i5/i3 /G5400/G3900 processors	4	Intel C246	1	2	8	NA	2	1	2 x 3.5" HDD tray	Single AC 250W

# FWA-3050

## Remote Manageable 1U Network Appliance for uCPE and Next-generation Firewall with Intel® Xeon D-2100 Series Processor

Preliminary



### Features

- Scalable Intel® Xeon D-2100 series processor up to 16C/32T with optional Intel® QAT and DPDK to boost performance
- Robust enclosure design with flexible system integration capability
- Value added platform with Advantech S/W package offering for out of band management or remote monitoring and Advanced LAN bypass utility
- Optimized foundation for the development of uCPE and NGFW solutions

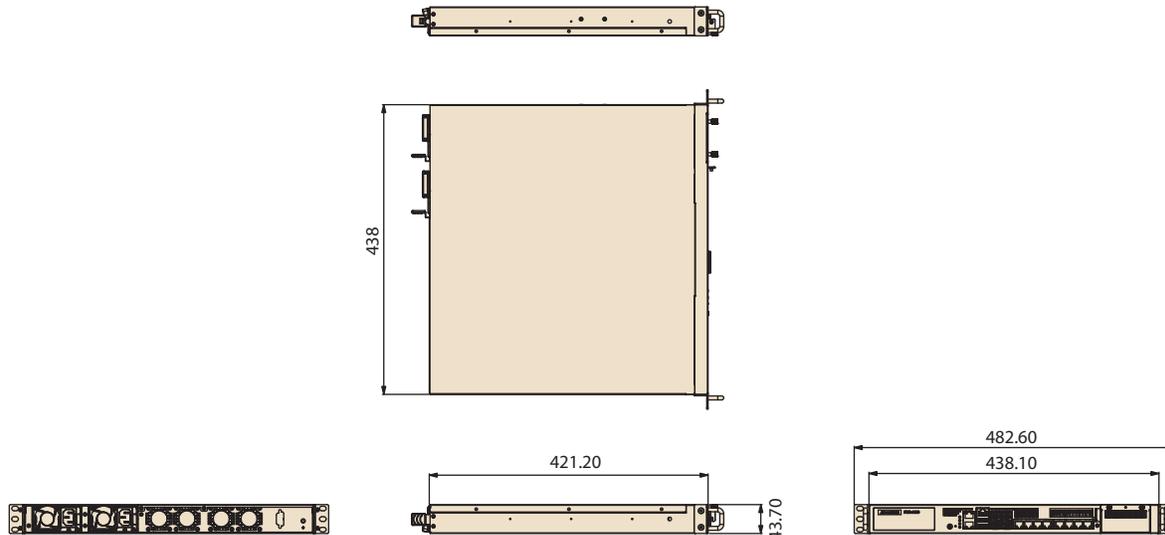
### Specifications

System P/N		FWA-3050-4CA1S	FWA-3050-8CA1R	FWA-3050-16A1R
Form Factor		1U Rackmount		
Processor System	Processor	Intel® Xeon D-2123IT	Intel® Xeon D-2145NT	Intel® Xeon D-2187NT
	Core Count	4C/8T	8C/16T	16C/32T
	Frequency	2.2GHz	1.9GHz	2.0GHz
	L2 Cache	8MB	11MB	22MB
	BIOS	AMI Efi 64Mbit		
Virtualization		VT-x, VT-d, EPT		
Memory	Technology	DDR4, 2133/2400/2666MHz		
	Max.Capacity	256GB		
	Socket	4 x 288-pin RDIMM		
	ECC Support	Yes		
Networking	Controller	1 x Intel X722, 2 x Intel i350, 2 x Intel i210		
	1GbE	4 x 10/100/1000 Mbps RJ45 via Intel i350-AM4, 4 x 10/100/1000 Mbps RJ45 via Intel i350-AM4 (Option: Advanced LAN bypass), 2 x 10/100/1000Mbps RJ45 via Intel i210-AT for management		
	10GbE	2 x 10GbE SFP+ via Intel X722	4 x 10GbE SFP+ via Intel X722	
	LAN bypass	None (Option: 2-segment/4 x ports Advanced LAN bypass)		
Expansion	PCIe	None	1 x PCIe x8 (Low-profile)	
	NMC	None	1	
Storage	2.5" HDD/SSD	2 (Internal)		
	M.2 SSD/NVMe	2 x M.2 2280		
I/O	Console port	1		
	USB3.0	2		
	LED Indicator	1 x Power LED, 3 x Software-defined LED	1 x Power LED, 1 x Alert LED, 1 x Locate LED, 1 x Software-defined LED	
	Others	1 x Power button, 1 x Software-defined button		
TPM		None (Option: Infineon TPM1.2/2,0 module)		TPM1.2 module
LCD Module		None (Option: 21 columns x 4 lines text display)		
Power	Power Type	Single ATX	Redundant 1+1 AC	
	Watts	250W	300W	
	Input	100V ~ 240V		
	Connector	ATX power	CRPS	
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)		
	Non-operating Temperature	-20 ~ 80 °C (-4 ~ 167 °F) and 40 °C @ 95% RH Non-Condensing		
	Vibration Resistance	TBD		
	Shock Protection	TBD		
Cooling		Fixed 2 x system FANs		Fixed 4 x system FANs
Mechanical	Construction	Steel		
	Mounting	1U Rackmount		
	Dimensions (W x H x D)	438 x 44 x 420 mm (17.2" x 1.7" x 16.5")		
	Weight	TBD		
OS Support		Linux (CentOS, Fedora, Red Hat, Ubuntu)		
Advantech S/W Packages		TBD		
IPMI		-	IPMI v2.0 compliant, with web interface, iKVM on request (Advantech IPMI Core)	
Certification		TBD		

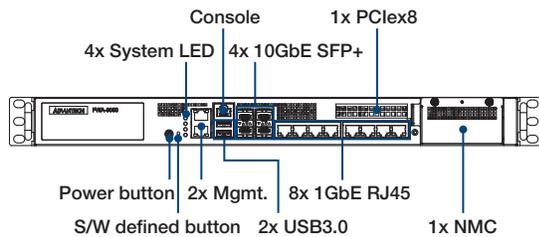
- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- PCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Dimensions

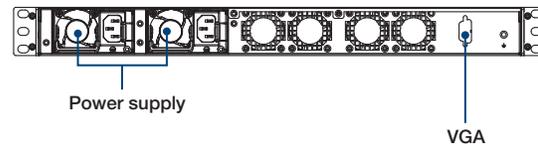
Unit: mm



### Front Panel External I/O Mechanical Layout/Drawing



### Rear Panel External I/O Mechanical Layout/Drawing



## Ordering Information

Part No.	CPU	Core/Thread	Base frequency	QAT	DDR4	BMC	10GbE SFP+	1GbE RJ45	PCIex8	NMC	VGA	System FAN	Power Supply	Redundancy
-	Intel® Xeon® D-2123IT	4/8	2.2GHz	None	4	None	2	8	1	1	None	2	250W ATX	None
-	Intel® Xeon® D-2145NT	8/16	1.9GHz	20G	4	Yes	4	8	1	1	1	2	300W AC	Yes
-	Intel® Xeon D-2187NT	16/32	2.0GHZ	100G	4	Yes	4	8	1	1	1	4	300W AC	Yes

## Packing List

Part Number	Description
-	FWA-3050 barebone
TBD	SATA cable

## Optional Accessories

Part Number	Description
1702002600	Power cord 3P 180cm, USA
1702002605	Power cord 3P 180cm, Europe
1702031801	Power cord 3P 180cm, UK
1700000237	Power cord 3P 180cm, JP
1700009652	Power cord 3P 180cm, China
1700020691-01	Console cable D-SUB9P(F)/RJ45 220cm
9680016959	Slide rail

# FWA-3260

## 1U Rackmount Network Appliance with Intel® Xeon® Processor D Family for vE-CPE and Network Applications, 2 NMC slots



### Features

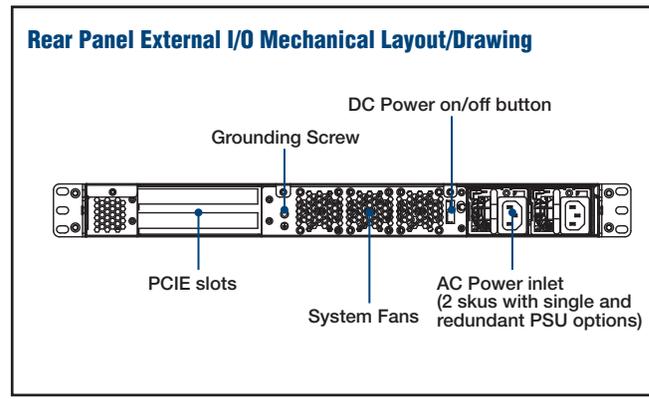
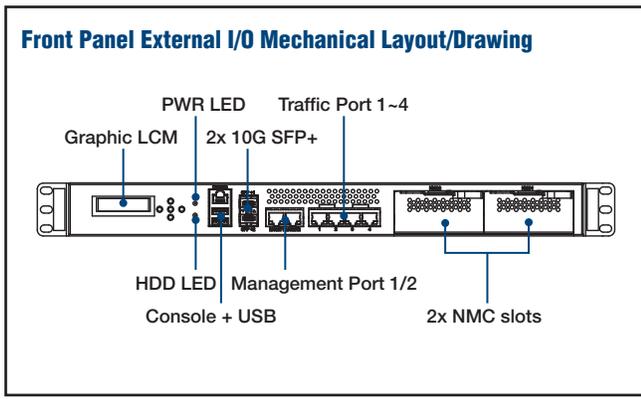
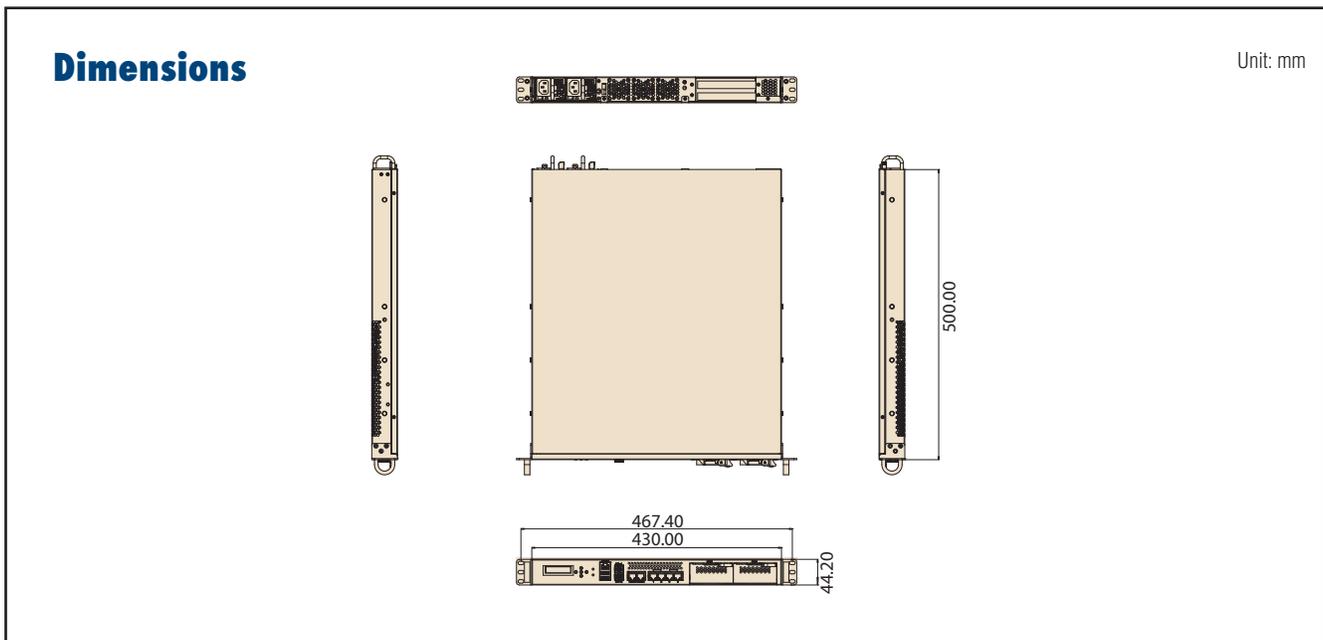
- Intel® Xeon® Processor D System On Chip up to 16 cores and 1.5MB last level cache per core
- 4 x DDR4 ECC UDIMMs/RDIMMs and RDIMMs, up to 2400MHz and up to 128GB
- 4 server class GbE ports implemented by an Intel® i350 Ethernet Controller with advanced LAN bypass support
- 2 GbE management ports
- 2 x 10GE SFP+ ports
- 2 Network Mezzanine Card bays for PCIe gen.3 based port expansion with 1GbE and 10GbE and 40GbE ports
- 1 x PCIe x8 full-height / half-length add-on cards
- Two 2.5" SATA HDDs/SSDs and two M.2 SSD sockets
- IPMI2.0 compliant Remote Management (optional)



### Specifications

		FWA-3260A	FWA-3260B
Processor System	Processor	Intel® Xeon® Processor D-1548(8C,2.0G)	Intel® Xeon® Processor D-1527(4C,2.2G)
	Core Number	8	4
	Frequency	2.0GHz	2.2GHz
	L2 Cache	12MB	6MB
	BIOS	AMI EFI 64Mbit	
Virtualization		VT-x, VT-d	
Memory	Technology	DDR4, 2133/2400MHz	
	Max. Capacity	128GB	
	Socket	4 x 288-pin RDIMM	
	ECC Support	Yes	
Networking	Controller	4 x Intel® i350-AM4 2 x Intel® i210-AT	
	1GbE	4 x 1GbE RJ45 with 2 segment advanced bypass support via Intel® i350-AM4 2 x 1GbE RJ45 for management via Intel® i210-AT	
	10GbE	2 x 10G SFP+ via BDE SOC+CS4277 (10G Dual PHY)	
	LAN bypass	2 segment	
Expansion	PCIex8	1 x FH/HL	Option
	NMC	2 x NMCs	
Storage	2.5" HDD/SSD	2 x 2.5" HDD/SSD, Option: 1 x 3.5" HDD	
	M.2	2 x (2280/2242)	
I/O	Console port	1	
	USB2.0/3.0	1 x USB2.0 on board 2 x USB3.0 ports in the front	
	LED Indicator	Power, HDD	
	GPIO	1x 8-bit GPIO pin header	
	Others	1 x Power button	
TPM	Trust Platform Module	A SKU: TPM(2.0), Option: TPM(1.2)	
LCD Module		16 x 2 graphic display, 5 buttons	
Power Supply	Power Type	Redundant AC PSU (redundant DC PSUs on request)	Single AC PSU
	Watts	300W	250W
	Input	AC 100 ~ 240 V @ 50 ~ 60 Hz, full range	AC 100 ~ 240 V @ 50 ~ 60 Hz, full range
	Connector	AC 3pin plug / DC pin header	AC 3pin plug
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)	
	Non-operating Temperature	-20 ~ 80 °C (-4 ~ 167 °F) and 40 °C @ 95% RH Non-Condensing humidity	
	Vibration Resistance	with SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	
	Shock Protection	with SATA HDD: 10G, IEC-60068-2-27, half sine, 11ms duration	
Cooling		4x system FAN with smart FAN	
Mechanical	Construction	Iron	
	Mounting	1U Rackmount	
	Dimensions (W x H x D)	430 x 44.2 x 500 mm (16.6" x 1.7" x 19.7")	
	Weight	15 Kg (33lb)	13 Kg (29lb)
OS support		Linux (CentOS, Red Hat, Ubuntu)	
Advantech S/W Packages		- QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>▪ afwu</li> <li>▪ lmsensors</li> <li>▪ LCD4Linux</li> <li>▪ ipmitool</li> <li>▪ flashrom</li> <li>▪ Advanced LBP Utility</li> </ul> Individual packages: - Advanced LBP Library	
IPMI		LOM Module with Aspeed AST1250 chip Supports IPMI 2.0, redundant BIOS and remote, failsafe BIOS update (Advantech IPMI Core)	Option
Certification	EMC	CE/FCC/CB/UL/CCC	

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**



## Ordering Information

Part Number	CPU	RAM	GbE	NMC	LOM	TPM	PCIe riser	PSU
FWA-3260A-01E	Intel® Xeon® D-1548 8C, 2.0 GHz	4x DDR4 R/U-DIMM	6 GbE + 2 10G SFP+	2 NMC slots	IPMI2.0	TPM2.0	1 PCIe x8	Red. AC
FWA-3260B-01E	Intel® Xeon® D-1527 4C, 2.2 GHz	4x DDR4 R/U-DIMM	6 GbE + 2 10G SFP+	2 NMC slots	N/A	N/A	N/A	Single AC

Note: SKUs for other CPU cores will be launched by project base only

## Packing List

Part Number	Description
1700012272	SATA Data Cable 25 cm
1700018950	RJ-45 Console Cable 220 cm
1960079966N001	EAR-R 295U FWA-3260
1960079968N001	EAR-L 295U FWA-3260
1961100D00	Ears Handle for NAS 1100 AL (A1)

## Optional Accessories

Part Number	Description
1702002600	Power cord 3P 180 cm, USA
1702002605	Power cord 3P 180 cm, Europe
1702031801	Power cord 3P 180 cm, UK
1700000237	Power cord 3P 180 cm, JP
1700009652	Power cord 3P 180 cm, China
9680017063	Customized 1/2 Extension Ball Bearing slide_3561

# FWA-3270

## 1U Rackmount Network Appliance with Intel® Xeon® Processor E3 series and 6th gen. Intel® Core™ i7/ i5/ i3 Processor, up to 2 NMC slots



### Features

- Intel® Xeon® E3-1275 /E3-1225/E3-1268L V5 (FWA-3270A only) and 6th generation Intel® Core™ i7-6700/i7-6700TE/i5-6500/i5-6500TE/i3-6100/i3-6100TE, Intel® Pentium® Processor G4400/G4400TE, Intel® Celeron® G3900/G3900TE
- Support max 4 x 2400MHz DDR4 ECC/UDIMMs, 32GB per channel, up to 64GB
- 2 GbE management ports
- 8x GbE LAN by Intel® I210-AT with 3 segment LAN bypass
- Max 2 Network Mezzanine Card bays for PCIe gen.3 based port expansion with 1 x PCIe x8 full-height / half-length add-on card
- 2 x 2.5" SATA HDDs/SSDs and 1x mSATA Socket or 1 x M.2 SSD sockets
- IPMI2.0 compliant Remote Management (optional)



### Specifications

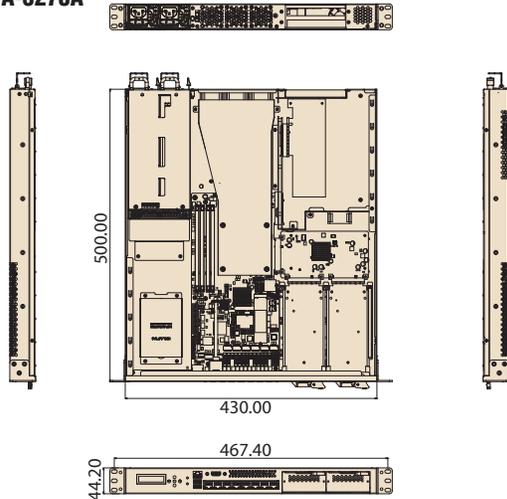
		FWA-3270A	FWA-3270B	
Processor System	Processor	Socket LGA 1151 (E3-1200v5; 6th Core-I; Pentium; Celeron®)	Socket LGA 1151 (6th Core-I, Pentium, Celeron®)	
	Core Number	2C/4C		
	Frequency	2.4GHz-3.6GHz	2.4GHz-3.4GHz	
	L2 Cache	2MB/4MB/8MB		
	Chipset	C236	H110	
	BIOS	AMI Efi 64Mbit		
Memory	Technology	Dual Channel DDR4 with 2133/2400 MHz	Dual Channel DDR4 with 2133/2400 MHz	
	Max. Capacity	4 x DIMM Slots Expandable to 64GB	2 x DIMM Slots Expandable to 32GB	
	Socket	4 x 288-pin UDIMM	2 x 288-pin UDIMM	
	ECC Support	Yes (E3 CPU only)	NA	
Networking	Controller	8 x Intel® i210-AT	6 x Intel® i210-AT	
	1GbE	8 x 10/100/1000 Mbps RJ45	6 x 10/100/1000 Mbps RJ45	
	LAN bypass	Advanced	3 x pair of LAN Bypass (default)	2 x pair of LAN Bypass (default)
		Legacy	2 x pair of LAN Bypass (option by jumper)	2 x pair of LAN Bypass (option by jumper)
	PCIe x 8	1 x FH/HL gen3 x8 slot (default)	NA	
	PCIe x 4	2 x FH/HL gen3 x4 slot (option)	NA	
NMC	2 x NMC	1 x NMC		
Storage	2.5" HDD/SSD	2 x 2.5" SATA HDD/SSD bay		
	3.5" HDD	1 x 3.5" SATA HDD bay		
	m.2 SSD	1 x m.2 SSD (2242/2260/2280)		
	mSATA SSD	1 x Half-Size mSATA SSD		
Display		HDMI	DVI	
I/O	Console port	1 x RJ45		
	USB3.0	4 (2 in front+2 with pin header)		
	GPIO	8-bit GPIO		
	LED Indicator	1 x Power led, 1 x HDD led		
	Reset button	Pin Header		
	Others	RS232, 2 x USB option		
	TPM	TPM 2.0	NA	
LCD Module		16x2 graphic display,5 buttons	NA	
Power	Power Type	AC, redundant and non-redundant DC, redundant DC (optional)	AC non-redundant	
	Watts	300W	250W	
	Input	100 V ~ 240 V		
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)		
	Non-operating Temperature	-40 ~ 60 °C (-40~140F)		
	Humidity	95% @ 40 °C (non-condensing)		
	Vibration Resistance	with SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis with SATA HDD: 10G, 11ms, IEC-60068-2-27, X, Y, X-X, -Y-Z		
	Shock Protection	axis, 3times per axis		
Cooling		4x system samrt FAN	3x system samrt FAN	
Mechanical	Construction	Iron		
	Mounting	1U Rackmount		
	Dimensions (W x H x D)	430 x 44 x 500 mm (16.9" x 1.7" x 19.6")	430 x 44 x 375 mm (16.9" x 1.7" x 14.7")	
	Weight	10 kg	6kg	
OS Support		Linux (CentOS, Red Hat, Ubuntu, etc.), Windows*10		
Advantech S/W Packages		QSI (Linux based Advantech Bring-Up Image, LANbypass, FRU)		
IPMI		Opiton	NA	
Certification		CE/FCC/CB/UL/CCC		

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

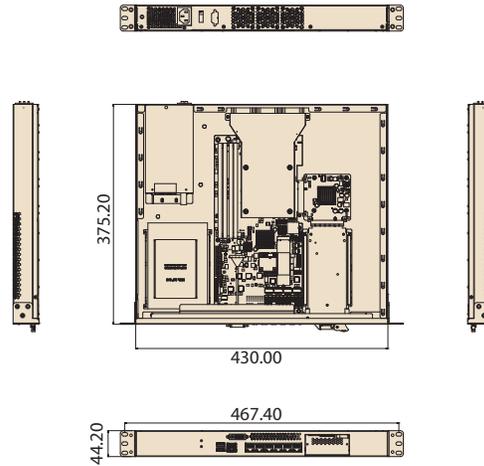
## Dimensions

Unit: mm

**FWA-3270A**

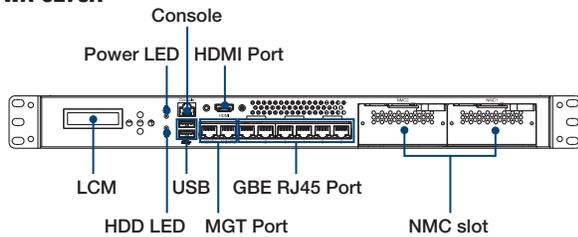


**FWA-3270B**



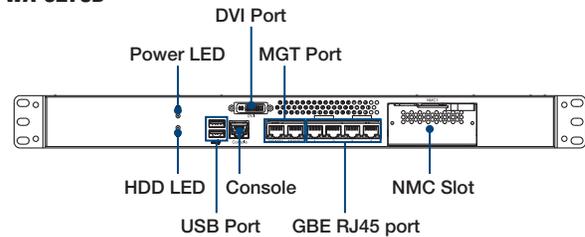
### Front Panel External I/O Mechanical Layout/Drawing

**FWA-3270A**



### Front Panel External I/O Mechanical Layout/Drawing

**FWA-3270B**



## Ordering Information

Part Number	PCH	DDR4 slot	1Gb LAN Port	Console	USB3.0	2.5HDD	3.5HDD	PCIe Expansion	NMC	Power
FWA-3270A-00A1E	C236	4	8	1	2	2	1	1 x PCIe x8 (conflict with 3.5" HDD)	2	AC 300W redundant
FWA-3270B-00A1E	H110	2	6	1	2	2	1	NA	1	AC 250W single

## Packing List

Part Number	Description
1700024783-01	SATA Data Cable 30cm
1700018950	RJ-45 Console Cable 220 cm

## Optional Accessories

Part Number	Description
1702002600	Power cord 3P 180cm, USA
1702002605	Power cord 3P 180cm, Europe
1702031801	Power cord 3P 180cm, UK
1700000237	Power cord 3P 180cm, JP
1700009652	Power cord 3P 180cm, China
1700024019-01	HDMI Cable 20 cm (FWA-3270A)
1700024962-01	DVI Cable 20 cm (FWA-3270B)
9680009153	1U 26" slide rail (pair)

# FWA-4000

## 2U Rackmount Platform based on ZhaoXin ZX-C C4711 Processor



### Features

- Support Zhaoxin ZX-C+ C4711 processor
- ZX-100S Chipset
- Four DDR3 UDIMM 1333/1600 , up to 64GB
- Four GbE LAN ports with 2 segments LAN bypass
- Four GbE SFP ports
- One NMC slot (Network Mezzanine Card) for a wide range of GbE and 10GbE NMCs with or without LAN bypass
- One PCIe x8 Slot on rear, support 2 x FH/HL add-on cards with PCIe x1 Gen2 bandwidth
- One CFast slot
- 2 x 3.5" SATA HDD bay and 1 x 2.5" SATA HDD bay (optional)

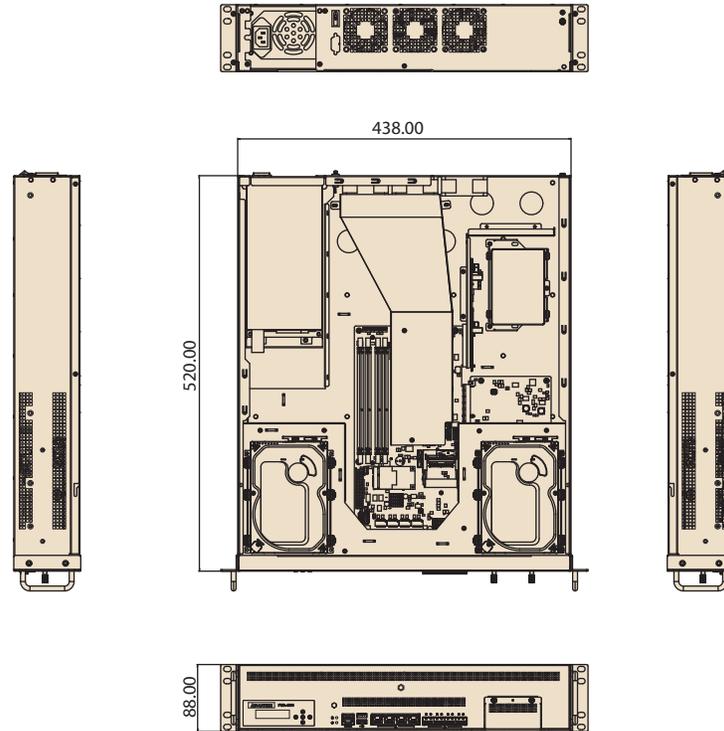


### Specifications

Processor System	CPU	Zhaoxin ZX-C+ Processor C4711
	Core number	4C
	Max. Speed	2.0 GHz
	L2 Cache	2MB
	BIOS	AMI 8 Mbit SPI
Chipset	Chipset	Zhaoxin ZX-100S
Memory	Technology	Dual channel with 4 x DDR3 UDIMM 1333/1600MHz
	Socket	4 x 288 pin UDIMM
	Capacity	Up to 64 GB
	ECC Support	Non-ECC
Networking	Controller	2 x Intel I350-AM4
	GbE	4 x 10/100/1000 Mbps RJ45 via Intel i350-AM4 4 x SFP via Intel i350-AM4
	LAN Bypass	2 x pairs of LAN Bypass
Expansion	NMC slot	1 x NMC slot, with Gen3 PCIe x8
	PCIe x8 slot	1 x PCIe x8 slot, support 2 x FH/HL PCIe card with PCIe x1 Gen2 Bandwidth
Storage	CFast Slot	1
	HDD/SSD	2 x 3.5" HDD bay , 1 x 2.5" HDD bay optional
I/O	Console port	1
	USB2.0	2
	LED Indicator	1 x Power LED (Green), 1 x HDD LED (Amber)
	Power button	1
LCD Module		16 x 2 graphic display, 5 buttons
Power	Power Type	AC Redundant DC Redundant (Optional)
	Watts	300W
	Input	100 V ~ 240 V
	Connector	AC 3pin plug
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)
	Non-operating Temperature	-40 ~ 60 °C (-40 ~ 140 °F) 5 ~ 95%
	Vibration Resistance	with SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis
	Shock Protection	with SATA HDD: 10G, 11ms, IEC-60068-2-27, X,-X Y,-Y Z,-Z axis, 3times per axis
	Construction	Iron
Mechanical	Mounting	2U Rackmount
	Dimensions (W x H x D)	438 x 88 x 520 mm (17.2" x 3.4" x 20.5")
	Weight	15kg ( lbs)
	OS Support	Linux (CentOS, Red Hat.)
Certification		CCC

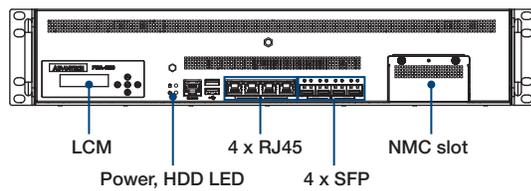
## Dimensions

Unit: mm

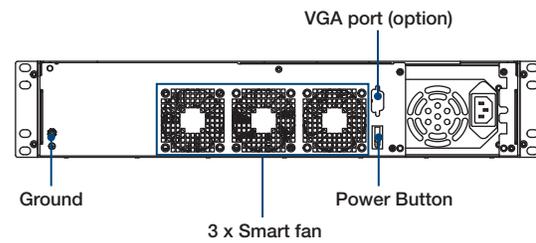


- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

### Front Panel External I/O Mechanical Layout/Drawing



### Rear Panel External I/O Mechanical Layout/Drawing



## Ordering Information

Part Number	Processor	Chipset	DDR3 slot	USB 2.0	RJ45 Port	SFP port	Console	3.5 HDD	2.5 HDD	NMC	Power
FWA-4000-4C00E	ZX-C+ C4711	ZX-100S	4	2	4	4	1	2	Optional	1	AC 300W Redundant

## Packing List

Part Number	Description
1700020691-01	Console cable D-sub 9-pin 2 m
1700020513-11	SATA Data cable 20cm
1700022749-11	SATA Power cable 10cm
1700021732-11	VGA cable 45cm

## Accessories

Part Number	Description
1700009652	3P 180 cm, China

# FWA-4030

**2U Rackmount Network Appliance Platform based on Intel® Xeon® E3 series and 6th/7th generation Intel® Core™ i7/i5/i3 Processors, up to 4NMC slots**

**NEW**



## Features

- Intel® Xeon® E3-1200 v5/v6 family and 6th/7th gen. Intel® Core™ i7/i5/i3 processors , Intel® Pentium® and Intel® Celeron® Processor
- 4 x DDR4 2133/2400MHz ECC (Xeon CPU only) UDIMMs, up to 64GB
- 6 x Intel i210-AT 10/100/1000 Mbps LAN on board with up to 2 bypass segments
- 4 x Intel i210-AT 10/100/1000 Mbps LAN(RJ45 or SFP) as optional
- Up to 4 x NMC slots (Network Mezzanine Card) for a wide range of GbE, 10GbE and 40GbE NMCs with or without advanced LAN bypass
- 1 x PCIe x4 Slot on rear, support FH/HL add-on cards
- up to 4 x 3.5" HDD Bay(internal or external ) , 1 x CF slot, 1xmSATA

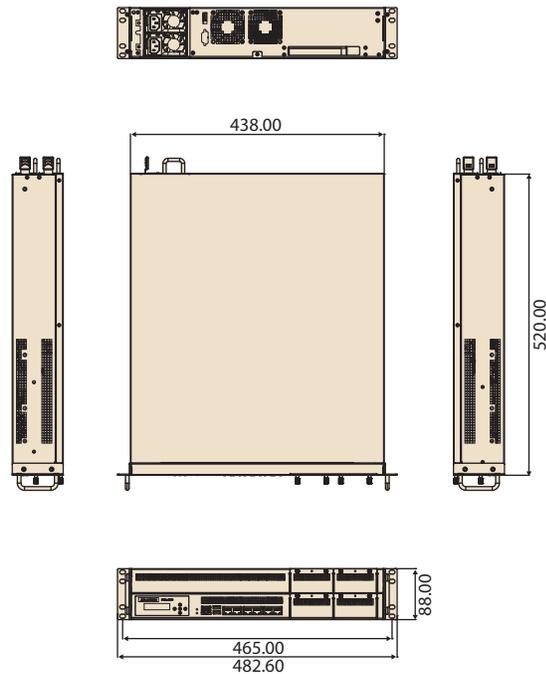


## Specifications

Processor System	Processor	Socket LGA 1151 (E3-1200 v5/v6 and 6th/7th gen. Core™ i7/i5/i3 , Pentium® and Celeron®)
	Core Number	2C/4C
	Frequency	2.4GHz~3.9GHz
	L2 Cache	2MB/4MB/8MB
	Chipset	100 Series Chipset (C236/H110)
	BIOS	AMI Efi 64Mbit
Memory	Technology	DDR4 2133/2400MHz
	Max. Capacity	4 x DIMM Slots Expandable to 64GB
	Socket	4 x 288-pin UDIMM
	ECC Support	Yes (E3 CPU only)
Networking	Controller	6 x Intel i210-AT
	1GbE	6 x 10/100/1000 Mbps RJ45 as default 4 x 10/100/1000 Mbps RJ45 or SFP as optional
	LAN bypass	2 x pair of Advanced LAN Bypass
Expansion	PCIe x 4	1 x FH/HL gen3 PCIe x 4 slot
	NMC	2/4 NMCs
Storage	3.5" HDD	up to 4 x 3.5" HDD bay (by SKU)
	mSATA SSD	1 x mSATA Half Size
	CompactFlash/ CFast	1 x CF slot
Display		HDMI/ DVI
I/O	Console port	1 x RJ45
	USB3.0	4 (2 in front+2 with pin header)
	GPIO	16-bit GPIO
	LED Indicator	1 x Power led, 1 x HDD led
	Reset button	Pin Header
	Others	RS232,VGA option
TPM		TPM1.2 or TPM2.0 option
LCD Module		16x2 graphic display,5 buttons
Power	Power Type	AC, redundant and non-redundant DC, redundant (optional)
	Watts	300W
	Input	100 V ~ 240 V
	Connector	AC 3pin plug / DC pin header
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)
	Non-operating Temperature	-40 ~ 60 °C (-40 ~ 140 °F) 5 ~ 95%
Mechanical	Construction	Iron
	Mounting	2U Rackmount
	Dimensions (W x H x D)	438 x 88 x 520 mm (17.24" x 3.4" x 20.4")
	Weight	20 KG
OS Support		Linux (CentOS, Red Hat, Ubuntu)
Advantech S/W Packages		QuickStart Linux Image (CentOS based reference BSP)
Certification		CCC/CE/FCC/CB/UL

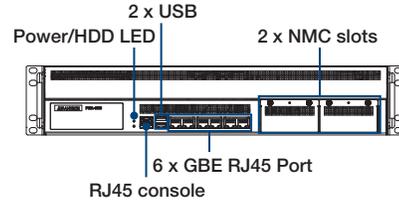
## Dimensions

Unit: mm



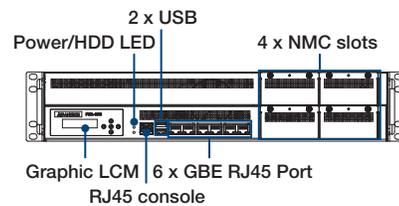
### FWA-4030CL

#### Front Panel External I/O Mechanical Layout/Drawing



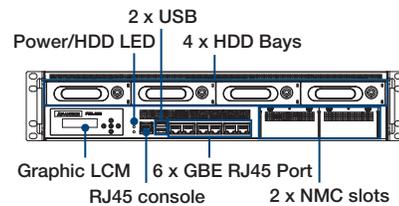
### FWA-4030CN

#### Front Panel External I/O Mechanical Layout/Drawing

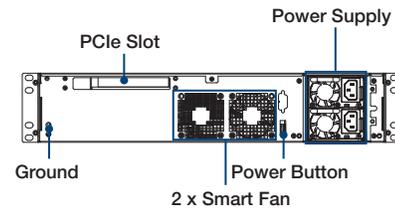


### FWA-4030CS

#### Front Panel External I/O Mechanical Layout/Drawing



#### Rear Panel External I/O Mechanical Layout/Drawing



## Ordering Information

Part Number	PCH	DDR4	1Gb LAN port	Console	USB 3.0	HDD bay	PCIe Expansion	NMC	Power
FWA-4030CL-00A1R	C236	4	6+4 (optional)	1	2	2x3.5 or 2.5	NA	2	AC 300W redundant
FWA-4030CN-00A1R	C236	4	6+4 (optional)	1	2	2x3.5 or 2.5	1PClex4	4	AC 300W redundant
FWA-4030CS-00A1R	C236	4	6+4 (optional)	1	2	4x3.5	1PClex4	2	AC 300W redundant
FWA-4030HL-00A1S	H110	2	6	1	2	2x3.5 or 2.5	NA	1	AC 300W single

## Packing List

Part Number	Description
1700024783-01	SATA DATA CABLE 7P/SATA 7P, 30CM
1700020691-01	RJ-45 Console Cable ,220 cm
1960083584N001	2U Rack Mount Kit-2U2X

## Optional Accessories

Part Number	Description
1702002600	Power cord 3P 180cm, USA
1702002605	Power cord 3P 180cm, Europe
1702031801	Power cord 3P 180cm, UK
1700000237	Power cord 3P 180cm, JP
1700009652	Power cord 3P 180cm, China
1700024673-11	HDMI cable,17.3cm
9680016905	2U slide rail, 26" (pair)

# FWA-4130

## 2U Rackmount Network Appliance Platform based on Intel® Xeon® E3 series and 6th/7th generation Intel® Core™ i7/i5/i3 Processors



### Features

- Intel® Xeon® E3 V5/V6 family and 6th/7th gen. Intel® Core™ i7/i5/i3 processors
- 4 x DDR4 2133/2400MHzECC UDIMMs, up to 64GB
- 2 x GbE Mgmt. ports
- 4 x NMC slots (Network Mezzanine Card) for a wide range of GbE, 10GbE and 40GbE NMCs with or without advanced LAN bypass, up to 8NMC slots (SKU optional)
- One PCIe x8 Slot on rear, support FH/HL add-on cards with Gen3 PCIe x4 bandwidth
- One mSATA slot, 2 x 3.5" HDD Bay, CF slot (Optional)
- IPMI2.0 compliant Remote Management (Module Optional)

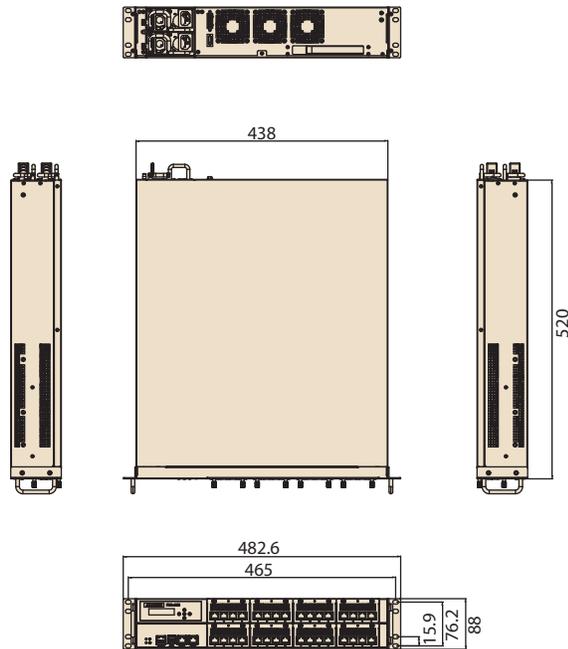


### Specifications

Processor System	CPU	Socket LGA 1151 (E3-1200v5; 6th Core-i; Pentium; Celeron®)
	Core number	2C/4C
	Max. Speed	2.4/3.6 GHz
	L2 Cache	2MB/4MB/6MB/8MB
	BIOS	AMI EFI 64Mbit
Memory	Technology	DDR4, 2133/2400MHz
	Socket	4 X 288-pin UDIMM
	Capacity	64 GB
	ECC Support	Yes (E3 CPU only)
Networking	Controller	2 x Intel i210-AT
	1GbE	2 x 10/100/1000 Mbps RJ45 via Intel I210 chip
	LAN Bypass	support by NMC
Expansion	NMCs	4 NMC slots, 8NMC (SKU optional)
	NMC PCIe Bandwidth	Slot1, 2 Gen3 PCIEx8 from CPU, Slot3, 4 Gen3 PCIEx4 from PCH (Slot1~4 sequence from Left to Right on Front)
	PCIe slot	1 PCIe x8 slot on rear, support FH/HL card with Gen3 PCIe x4 bandwidth
Storage	mSATA slot	1 mSATA slot
	CF slot	1 CF slot (Optional)
	HDD Bay	2 x 3.5" HDD bay, 2 x 2.5" HDD bay
I/O	Console port	1
	USB3.0	2
	LED Indicator	1x Power LED (Green), 1 x HDD LED (Amber)
	Power button	1
TPM	TPM	TPM2.0 module optional
LCD Module		16x2 graphic display, 5 buttons
Power	Power Type	AC Redundant, DC-48V Redundant (optional)
	Watts	300W
	Input	100 V ~ 240 V
	Connector	AC 3pin plug
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)
	Non-operating Temperature	-40 ~ 60 °C (-40 ~ 140 °F)
	Vibration Resistance	with SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis
	Shock Protection	with SATA HDD: 10G, 11ms, IEC-60068-2-27, X, Y, X-X, -Y-Z axis, 3times per axis
Mechanical	Construction	Iron
	Mounting	2U Rackmount
	Dimensions (W x H x D)	438 x 88 x 520 mm (17.24" x 3.4" x 20.4")
	Weight	20 kg (11.9 lbs)
OS Support		Linux (CentOS, Red Hat)
Advantech S/W Packages		QuickStart Linux Image (CentOS based reference BSP) including Afru IPMI tool Advanced LAN Bypass Utility Intel DPDK
IPMI		IPMI v2.0 compliant (Optional, based on AST2500 BMC module)
Certification		CE/FCC/CB/UL/CCC

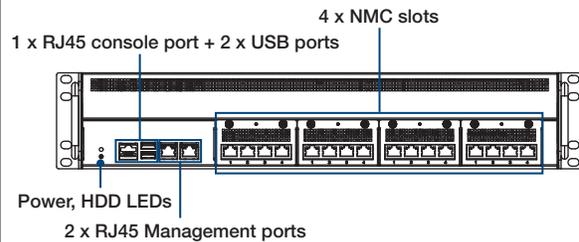
## Dimensions

Unit: mm



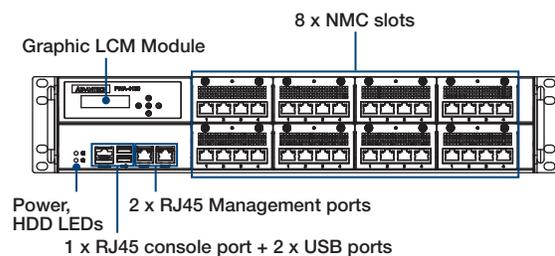
### FWA-4130L

#### Front Panel External I/O Mechanical Layout/Drawing

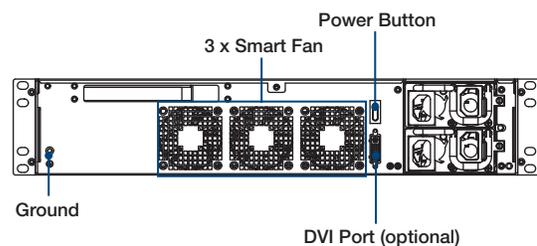


### FWA-4130F

#### Front Panel External I/O Mechanical Layout/Drawing



#### Rear Panel External I/O Mechanical Layout/Drawing



## Ordering Information

Part Number	PCH	DDR4	USB 3.0	Mgmt. Port	Console	NMC Slot	HDD bay	mSATA	CF	PSU
FWA-4130L-0000E	C236	4	2	2	1	4	2 x 3.5"	1	Optional	AC 300W redundant
FWA-4130F-0001E	C236	4	2	2	1	8	1 x 2.5"	1	Optional	AC 300W redundant

## Packing List

Part Number	Description
1700018971	SATA Data cable 15cm
1700020691-01	Console cable D-sub 9-pin 2 m
1960083584N001	Rack mount Ear bracket

Part Number	Description
1702002600	Power cord 3P 180 cm, USA
1702002605	Power cord 3P 180 cm, Europe
1702031801	Power cord 3P 180 cm, UK
1700000237	Power cord 3P 180 cm, JP
1700009652	Power cord 3P 180 cm, China

## Optional Accessories

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

# FWA-5020

## 1U Rackmount Network Appliance with Intel® Xeon® Processor E5-2600 v4 series, up to 4 NMC slots

**NEW**



### Features

- Single or dual Intel® Xeon® E5-2600 v4 processor(s) up to 145W TDP
- DDR4 2400 MHz ECC registered memory up to 512 GB (CPU SKU)
- 4 x GbE with LAN bypass, 2 x GbE for Mgmt (SKU dependent)
- 2 x 10GbE SFP+ NICs (SKU dependent)
- Up to 4 x NMC (Network Mezzanine Card) slots for a wide range of GbE, 10GbE and 40GbE NMCs with or without advanced LAN bypass
- 2 x 2.5" SATA HDDs/SSDs
- IPMI 2.0 compliant Remote Management
- Advanced Platform Reliability and Serviceability
- 2 x internal CLC PCIe card (Dual DH8955) supported (SKU dependent)

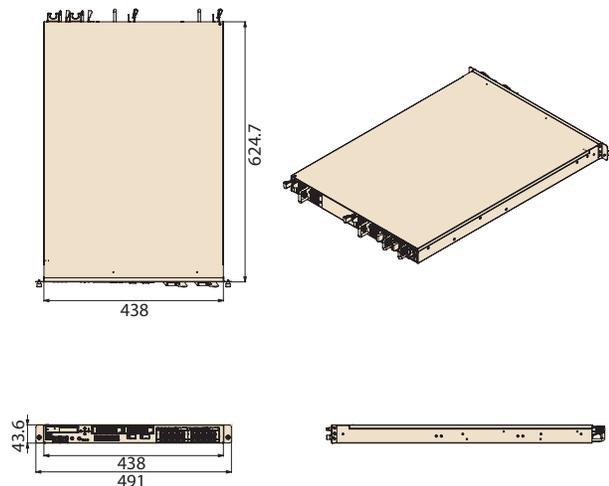


### Specifications

SKU		FWA-5020L-00A1R	FWA-5020U-00A1R	FWA-5020U-D0A1R
Form Factor		1U-Rack Mount		
Processor System	Processor	1 x Intel® Xeon® E5-2600 v3 / v4 Socket		2 x Intel® Xeon® E5-2600 v3 / v4 Socket
	Core Number	8C/10C/12C/14C/16C/18C/20C/22C		
	Frequency	2.0GHz/2.1GHz/2.2GHz/2.3GHz/2.4GHz/2.6GHz		
	L2 Cache	30MB – 55 MB		
	Chipset	C612		
	BIOS	AMI EFI 64Mbit		
Virtualization		VT-x		
Memory	Technology	DDR4, 2133/2400MHz(CPU SKU)		
	Max. Capacity	256GB (CPU0 x8 DIMM)		512GB (CPU0 x8 DIMM, CPU1 x8 DIMM)
	Socket	16 x 288-pin RDIMM		
	ECC Support	Yes		
Networking	Controller	1 x Intel® I210		
	1GbE	<ul style="list-style-type: none"> <li>▪ 2 x 1GbE RJ45 for management via Intel® i210-AT</li> </ul>	<ul style="list-style-type: none"> <li>▪ 4 x 1GbE RJ45 with 2 segment advanced bypass support via I-350 AM4</li> <li>▪ 2 x 1GbE RJ45 for management via Intel® i210-AT</li> </ul>	<ul style="list-style-type: none"> <li>▪ 2 x 1GbE RJ45 for management via Intel® i210-AT</li> </ul>
	10GbE	NA	2*10GbE SFP+ via Intel® X710	NA
	LAN Bypass	NA	2 segment Advanced LAN Bypass	NA
Expansion	NMC	2 NMCs		
	PCIe	NA		Up to 2* Proprietary x16 crypto PCIe
Storage	2.5" HDD/SSD	Max. 2 x 2.5" HDD/SSD		
	mSATA SSD	2 x mSATA		
I/O	Console port	1		
	USB 3.0	2		
LCD Module	TPM	On board TPM 1.2 Chip support		
	LCD	16x2 graphic display,5 buttons		NA
	Power Supply			
Power Supply	Power Type	AC, redundant/ DC, redundant (optional)		
	Watts	650W		
	Input	(AC) 100 – 240 V @ 50 – 60 Hz, full range, (DC) -40 -- - 72V, 12 – 24A		
	Connector	AC 3pin plug		
Environment	Operating Temperature (air flow 0.7 m/sec)	0 – 40 °C (32 – 104 °F)		
	Non-operating Temperature	-20 – 80 °C (-4 – 167 °F) and 40 °C @ 95% RH Non-Condensing humidity		
	Vibration Resistance	with SATA HDD: 0.5 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis		
	Shock Protection	with SATA HDD: 10G, IEC-60068-2-27, half sine, 11ms duration		
Cooling		2x system FAN with smart FAN	3x system FAN with smart FAN	
Mechanical	Construction	Iron		
	Mounting	Rack mount kits(ear)/ Slide rail(Optional)		
	Dimensions (W x H x D)	438 x 44x 625 mm (17.24" x1.732" x24.61")		
	Weight	15Kg		
OS support		Linux (CentOS, Red Hat, Ubuntu)		
Advantech S/W Packages		QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>▪ IPMI Tool</li> <li>▪ LCD4Linux</li> <li>▪ Advanced LBP Utility</li> </ul> Individual packages: <ul style="list-style-type: none"> <li>▪ Advanced LBP Library</li> </ul>		
IPMI		IPMI IPMI v2.0 compliant BMC with web interface (AMI MegaRAC SP-X)		
Certification		CE/FCC/CB/UL/CCC (FWA-5020U-D0A1R without CCC)		

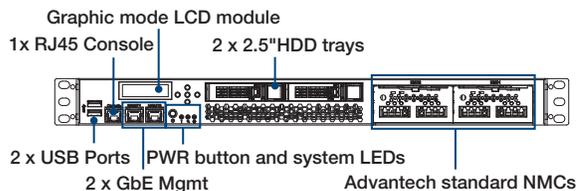
## Dimensions

Unit: mm



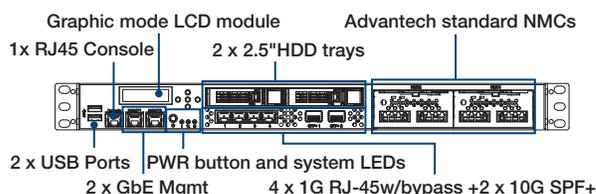
### FWA-5020L-00A1R

#### Front Panel External I/O Mechanical Layout/Drawing



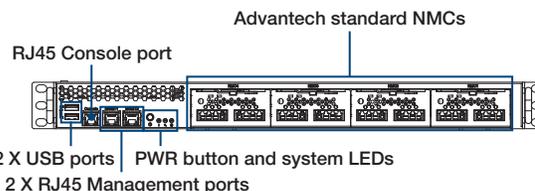
### FWA-5020U-00A1R

#### Front Panel External I/O Mechanical Layout/Drawing



### FWA-5020U-D0A1R

#### Front Panel External I/O Mechanical Layout/Drawing



## Ordering Information

PN	CPU	DDR4	PCIe Slot	Console Port	RJ45 LAN Port	Fixed I/O Port	NMC Slot	LCM	PSU
FWA-5020L-00A1R	Single Intel® Xeon® E5-2600 v3 / v4	8	NA	1	2	NA	2	1	Red. 650W AC PSU
FWA-5020U-00A1R	Single Intel® Xeon® E5-2600 v3 / v4	8	NA	1	2	-4*1G RJ-45 w/Advanced LBP -2*10G SFP+	2	1	Red. 650W AC PSU
FWA-5020U-D0A1R	Dual Intel® Xeon® E5-2600 v3 / v4	16	2*Proprietary Crypto x16 PCIe	1	2	NA	4	NA	Red. 650W AC PSU

## Packing List

Part Number	Description
1700020691-01	Console Cable D-SUB9P(F)/RJ45 220cm

## Recommended PCIe list

Part Number	Description
PCIe-3021-00E	Dual Intel Coletto 8955 Crypto card (x16 gold finger)

## Optional Accessories

Part Number	Description
9680016905	Tool-Less Server slide, 26", for 438 Chass
1700020691-01	Console Cable D-SUB9P(F)/RJ45 220cm
1702002600	Power cord 3P 180 cm, USA
1702002605	Power cord 3P 180 cm, Europe
1702031801	Power cord 3P 180 cm, UK
1700000237	Power cord 3P 180 cm, JP
1700009652	Power cord 3P 180 cm, China
1700025855-01	Power cord 3P 180 cm, India
1700025112-01	Power cord 3P 180 cm, Brazil
1700022938-01	Power cord 3P 300 cm, Korea

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

# FWA-5070

## 1U Rackmount Network Appliance with Intel® Xeon® Processor Scalable Family, up to 4 NMC Slots



### Features

- 1 x Intel® Xeon® Scalable Processors Platinum 8100, Gold 6100 & 5100, Silver 4100 and Bronze 3100
- 12 x DDR4 2133/2400/2666 ECC registered memory up to 384GB
- Build-in QAT support (By SKU)
- 4 x NMC (Network Mezzanine Card) slots for a wide range of GbE, 10GbE, 40GbE and 100GbE NMCs with or without Advanced LAN bypass.
- 1 x internal PCIe x8 or x16 slots support for FH/HL add-on card
- 2 x internal 2.5" SATA HDDs/SSDs
- 1 x M.2 2280 SSD
- IPMI 2.0 compliant Remote Management



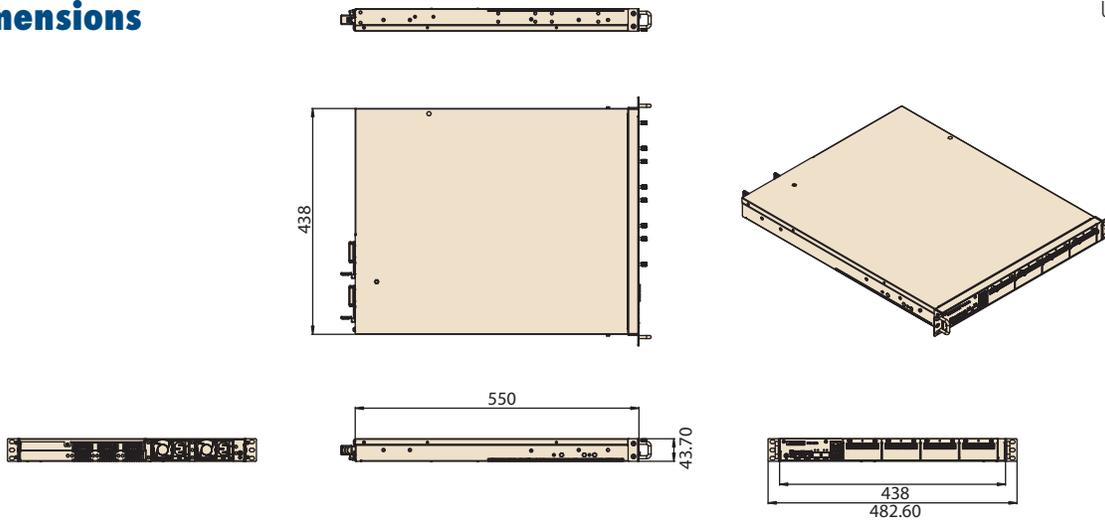
### Specifications

System P/N	FWA-5070L-00A1R		FWA-5070U-00A1R
Form Factor	1U- Rack Mount		
Processor System	Processor	Intel® Xeon® Platinum 8100, Gold 6100 & 5100, Silver 4100 and Bronze 3100 processors	
	Core Number	8C/10C/12C/14C/16C/18C/20C/22C/24C/26C/28C	
	Frequency	2.0GHz/2.1GHz/2.2GHz/2.3GHz/2.4GHz/2.6GHz/3.0GHz/3.2GHz/3.4GHz	
	L2 Cache	30MB ~ 75 MB	
	Chipset	C621 (without QAT)	C626 (with up to 40Gb/s QAT)
Virtualization	BIOS AMI Efi 64Mbit VT-x, VT-d, EPT		
Memory	Technology	DDR4, 2133/2400/2666MHz	
	Max.Capacity	384GB	
	Socket	12 x 288-pin RDIMM	
	ECC Support	Yes	
Networking	Controller	1 x Intel i210-AT	
	1GbE	2 x 10/100/1000 Mbps RJ45 via Intel i210-AT chip	
	10GbE	N/A	2 x 10G SFP+ via Intel C626
	LAN bypass	LAN bypass is supported by NMC	
Expansion	PCIe	1 x PCIe16(FH/HL)	1 x PCIe x8 (FH/HL)
	NMC	4	4
Storage	2.5"HDD/SSD	2 (Internal)	
	3.5"HDD	N/A	N/A
	m.2 SSD	1 x M.2 2280	
	Others	N/A	
I/O	Console port	1	
	USB3.0	2	
	LED Indicator	1 x PWR_LED, 1 x Alert_LED, 1 x SW_LED	
	Others	1 x Power Button	
TPM	Modularized TPM 1.2 (TPM 2.0 optional)		
LCD Module	N/A		
Power	Power Type	AC, redundant	
	Watts	650W	
	Input	100V ~ 240V	
	Connector	CRPS	
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)	
	Non-operating Temperature	-20 ~ 80 °C (-4 ~ 167 °F) and 40 °C @ 95% RH Non-Condensing	
	Vibration Resistance	0.3 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	
	Shock Protection	10G, IEC-60068-2-27, half sine, 11ms duration	
Cooling	3 x smart FAN module with smart FAN		
Mechanical	Construction	Steel	
	Mounting	1U Rackmount	
	Dimensions (W x H x D)	438 x 44 x 550(mm)	
	Weight	20KG	
OS Support	Linux (CentOS, Red Hat, Ubuntu)		
Advantech S/W Packages	QuickStart Linux Image (CentOS based reference BSP):		
	<ul style="list-style-type: none"> <li>▪ afru</li> <li>▪ ipmitool</li> <li>▪ LCD4Linux</li> <li>▪ Advanced LBP Utility</li> <li>▪ Intel DPDK</li> <li>▪ Intel QAT</li> <li>▪ DUI (Offline Diagnostics)</li> </ul> Individual packages: <ul style="list-style-type: none"> <li>▪ Advanced LBP Library</li> <li>▪ DUI (Offline Diagnostics)</li> </ul>		
IPMI	IPMI v2.0 compliant, with web interface, iKVM on request (Advantech IPMI Core)		
Certification	CE/FCC/CB/UL/CCC		

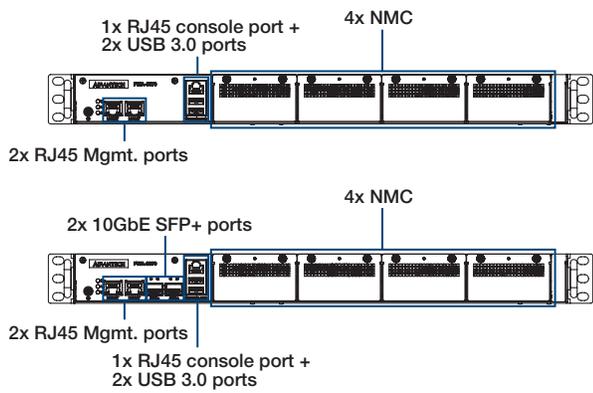
- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Dimensions

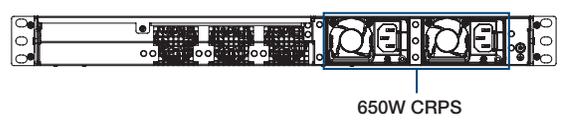
Unit: mm



### Front Panel External I/O Mechanical Layout/Drawing



### Rear Panel External I/O Mechanical Layout/Drawing



## Ordering Information

Part No.	CPU	DDR4	PCH	QAT	PCIe slot	NMC slot	USB 3.0	MGMT port	10G SFP+	Console	BMC	LCM	VGA	PSU
FWA-5070L-00A1R	1 socket for Intel® Xeon® Scalable Processors	12	C621	No	1	4	2	2	N/A	1	Yes	N/A	N/A	650W AC
FWA-5070U-00A1R	1 socket for Intel® Xeon® Scalable Processors	12	C626	Yes	1	4	2	2	2	1	Yes	N/A	N/A	650W AC

## Packing List

Part Number	Description
1700020691-01	Console cable D-SUB9P(F)/RJ45 220 cm

## Optional Accessories

Part Number	Description
1702002600	Power cord 3P 180cm, USA
1702002605	Power cord 3P 180cm, Europe
1702031801	Power cord 3P 180cm, UK
1700000237	Power cord 3P 180cm, JP
1700009652	Power cord 3P 180cm, China
9692326040E	TPM 2.0
9680016905	Slide rail

# FWA-6070

## 2U Rackmount Network Appliance with single Intel® Xeon® Processor Scalable Family



### Features

- 1 x Intel® Xeon® Scalable Processors Platinum 8100, Gold 6100 & 5100, Silver 4100 and Bronze 3100
- 12 x DDR4 2133/2400/2666 ECC registered memory up to 384 GB
- C621/C626 PCH, up to 40Gb/s QAT support
- Up to 8 x NMC (Network Mezzanine Card) slots for a wide range of GbE, 10GbE, 40GbE and 100GbE NMCs with or without Advanced LAN bypass
- 2 x internal PCIe x8 slots support for FH/HL add-on cards (By SKU)
- 4 x 3.5" removable external SATA HDD (By SKU)
- Build-in QAT support (By SKU)
- 1 x M.2 2280 SSD
- 1 x mSATA
- IPMI 2.0 compliant Remote Management

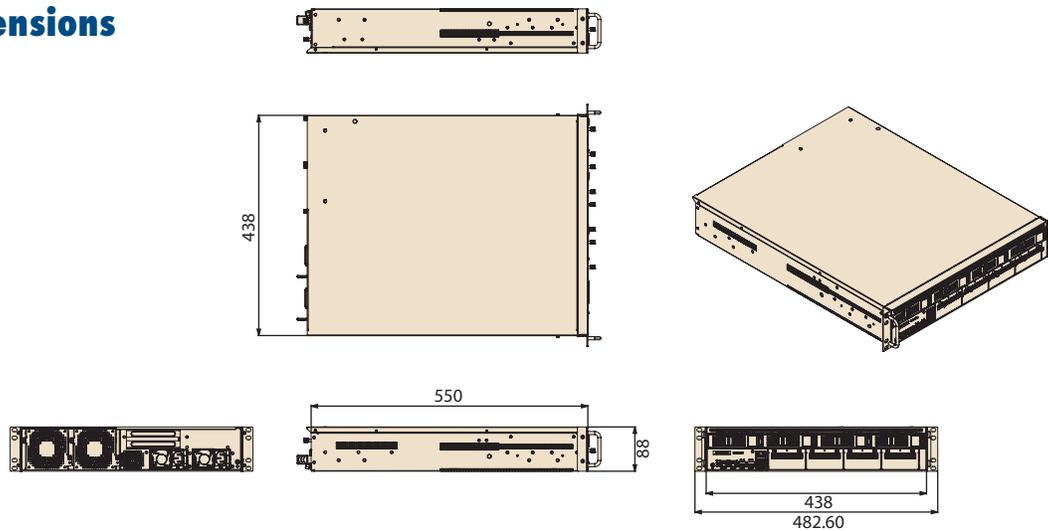


### Specifications

System P/N		FWA-6070S-00A1R	FWA-6070SQ-00A1R	FWA-6070N-00A1R
Form Factor		2U - Rack Mount		
Processor System	Processor	Intel® Xeon® Platinum 8100, Gold 6100 & 5100, Silver 4100 and Bronze 3100 processors		
	Core Number	8C/10C/12C/14C/16C/18C/20C/22C/24C/26C/28C		
	Frequency	2.0GHz/2.1GHz/2.2GHz/2.3GHz/2.4GHz/2.6GHz/3.0GHz/3.2GHz/3.4GHz		
	L2 Cache	30MB ~ 75 MB		
	Chipset	C621 (without QAT)	C626 (with up to 40Gb/s QAT)	C621 (without QAT)
BIOS	AMI Efi 64Mbit			
Virtualization		VT-x, VT-d, EPT		
Memory	Technology	DDR4, 2133/2400/2666MHz		
	Max.Capacity	384GB		
	Socket	12 x 288-pin RDIMM		
	ECC Support	Yes		
Networking	Controller	1 x Intel i210-AT		
	1GbE	2 x 10/100/1000 Mbps RJ45 via Intel i210-AT chip		
	10GbE	N/A	2 x 10G SFP+ via Intel C626	N/A
	LAN bypass	LAN bypass is supported by NMC		
Expansion	PCIe	2 x PCIe x8 (FH/HL)	1 x PCIe x8 (FH/HL)	N/A
	NMC	4	4	8 (6 x PCIe x8 ; 2 x PCIe x4)
Storage	2.5"HDD/SSD	N/A		
	3.5"HDD	4 x External 1 x Internal	4 x External 1 x Internal	2 (Internal)
	m.2 SSD	1 x M.2 2280		
	Others	1 x mSATA		
I/O	Console port	1		
	USB3.0	2		
	LED Indicator	1 x PWR_LED, 1 x Alert_LED, 1 x SW_LED		
	Others	1 x Power Button		
TPM		Modularized TPM 1.2 (TPM 2.0 optional)		
LCD Module		N/A		
Power	Power Type	AC, redundant		
	Watts	650W		
	Input	100V ~ 240V		
	Connector	CRPS		
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)		
	Non-operating Temperature	-20 ~ 80 °C (-4 ~ 167 °F) and 40 °C @ 95% RH Non-Condensing		
	Vibration Resistance	0.3 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis		
	Shock Protection	10G, IEC-60068-2-27, half sine, 11ms duration		
Cooling		2 x 80CM height		
Mechanical	Construction	Steel		
	Mounting	2U Rackmount		
	Dimensions (W x H x D)	438 x 88 x 550 (mm)		
	Weight	20KG		
OS Support		Linux (CentOS, Red Hat, Ubuntu)		
Advantech S/W Packages		System diagnostic tool and quick start image		
IPMI		IPMI v2.0 compliant, with web interface, iKVM on request (Advantech IPMI Core)		N/A
Certification		CE/FCC/CB/UL/CCC		

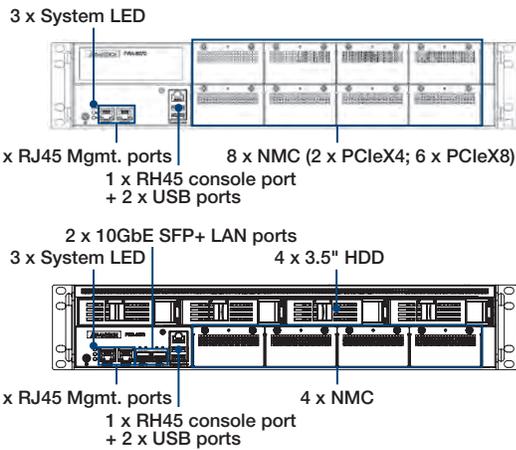
## Dimensions

Unit: mm

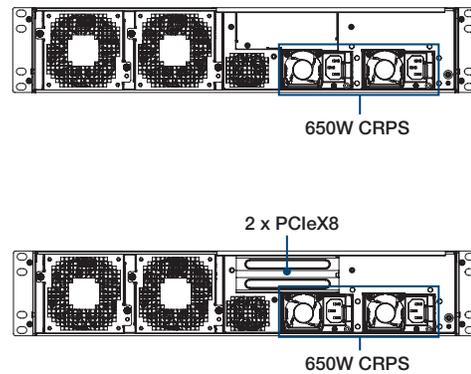


- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

### Front Panel External I/O Mechanical Layout/Drawing



### Rear Panel External I/O Mechanical Layout/Drawing



## Ordering Information

Part No.	CPU	DDR4	PCH	QAT	PCIe slot	NMC slot	USB 3.0	MGMT port	10G SFP+	Console	BMC	LCM	VGA	PSU
FWA-6070S-00A1R	1 socket for Intel® Xeon® Scalable Processors	12	C621	No	2	4	2	2	N/A	1	Yes	N/A	N/A	650W AC
FWA-6070SQ-00A1R	1 socket for Intel® Xeon® Scalable Processors	12	C626	Yes	1	4	2	2	2	1	Yes	N/A	N/A	650W AC
FWA-6070N-00A1R	1 socket for Intel® Xeon® Scalable Processors	12	C621	No	N/A	8	2	2	N/A	1	N/A	N/A	N/A	650W AC

## Packing List

Part Number	Description
1700020691-01	Console cable D-SUB9P(F)/RJ45 220 cm

## Optional Accessories

Part Number	Description
1702002600	Power cord 3P 180cm, USA
1702002605	Power cord 3P 180cm, Europe
1702031801	Power cord 3P 180cm, UK
1700000237	Power cord 3P 180cm, JP
1700009652	Power cord 3P 180cm, China
9692326040E	TPM 2.0
9680016905	Slide rail

# FWA-6170

## 2U Rackmount Network Appliance with Intel® Xeon® Processor Scalable Family, up to 8 NMC slots



### Features

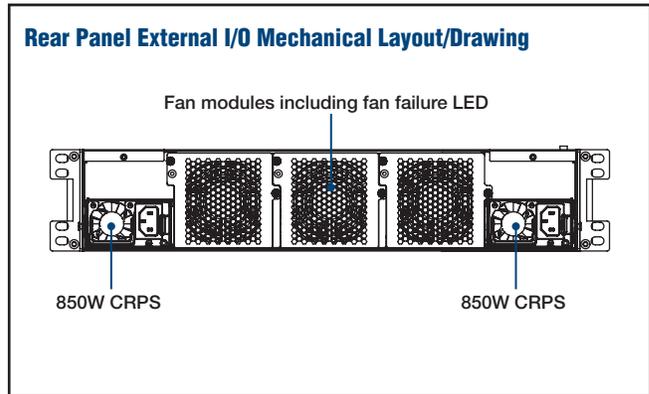
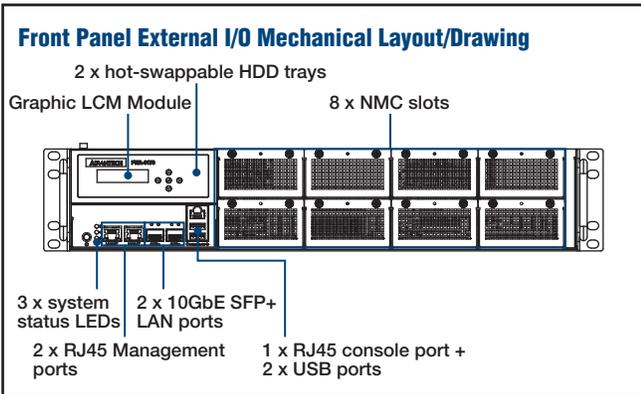
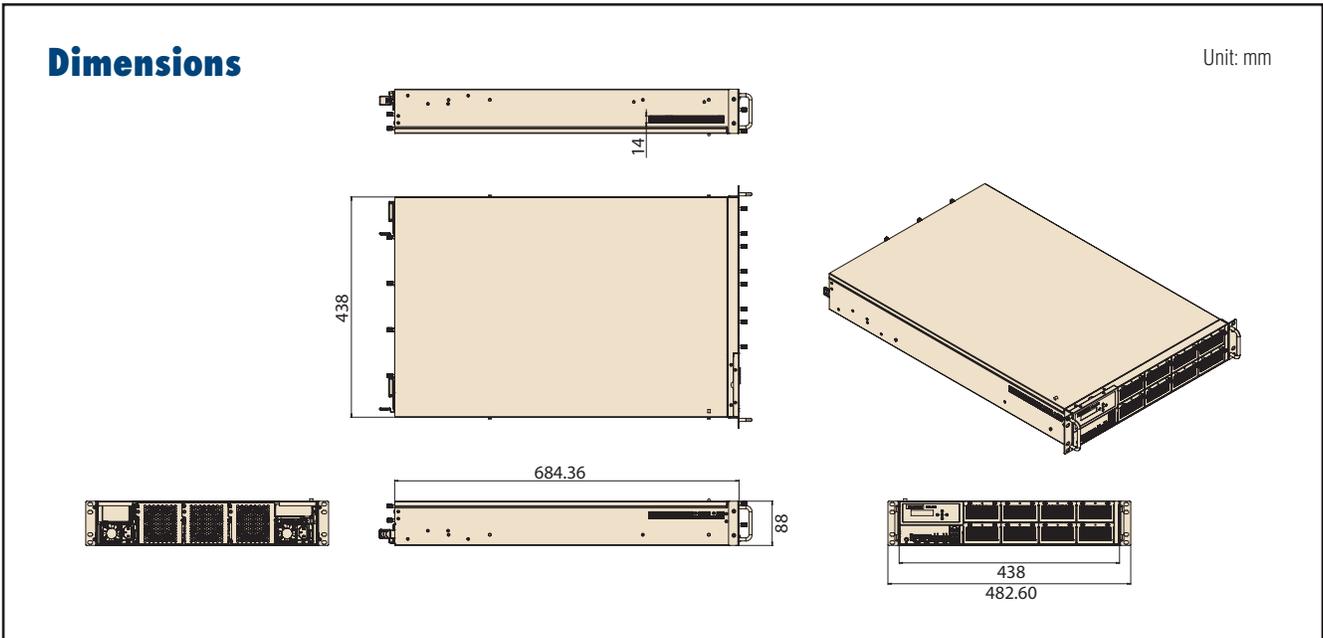
- 2 x Intel® Xeon® Scalable Processors Platinum 8100, Gold 6100 & 5100, Silver 4100 and Bronze 3100
- 24 x DDR4 2133/2400/2666 ECC registered memory up to 1536GB
- C626 PCH, 40Gb/s QAT support
- 8 x NMC (Network Mezzanine Card) slots for a wide range of GbE, 10GbE, 40GbE and 100GbE NMCs with or without Advanced LAN bypass. Optional support 4 x HDD kit (for 2.5" HDD) on the top NMC slots
- 2 x internal PCIe x8 slots support for low-profile add-on cards
- 2 x 2.5" removable external SATA HDDs/SSDs
- 2 x M.2 2280 SSD
- IPMI 2.0 compliant Remote Management



### Specifications

System P/N		FWA-6170F-00A1R	FWA-6170-00A1R	FWA-6170L-00A1R
Form Factor		2U - Rack Mount	2U - Rack Mount	2U - Rack Mount
Processor System	Processor	2 x Intel® Xeon® Scalable Processors Platinum 8100, Gold 6100 & 5100, Silver 4100 and Bronze 3100		
	Core Number	8C/10C/12C/14C/16C/18C/20C/22C/24C/26C/28C		
	Frequency	2.0GHz/2.1GHz/2.2GHz/2.3GHz/2.4GHz/2.6GHz/3.0GHz/3.2GHz/3.4GHz		
	L2 Cache	30MB ~ 75 MB		
	Chipset	C626 (with 40Gb/s QAT)	C622 (without QAT)	C621 (without QAT)
	BIOS	AMI Efi 64Mbit		
Virtualization		VT-d		
Memory	Technology	DDR4, 2133/2400/2666MHz		
	Max. Capacity	1563GB (CPU0x12,CPU1x12)		
	Socket	24 x 288-pin RDIMM		
	ECC Support	Yes		
Networking	Controller	2 x Intel i210-AT		
	1GbE	2 x 10/100/1000 Mbps RJ45 via Intel i210-AT chip		
	10GbE	2 x 10G SFP+ via Intel C622/C626		
	LAN bypass	LBP support by NMC		
Expansion	PCIe x8	2 x low-profile Gen3 x8 slot		
	NMC	8 NMCs		
Storage	2.5" HDD/SSD	Max. 2 x 2.5" HDD/SSD		
	m.2 SSD	2 x M.2 2280		
I/O	Console port	1		
	USB3.0	2		
	LED Indicator	1 x PWR_LED, 1 x Alert_LED, 1 x Locate_LED		
	Others	1 x power button		
	VGA	N/A	N/A	Yes
TPM		Modularized TPM 1.2 (TPM 2.0 optional)		
LCD Module		16 x 2 graphic display, 5 buttons		
Power	Power Type	AC, redundant DC, redundant (optional)		
	Watts	850W		
	Input	100V ~ 240V		
	Connector	CRPS		
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)		
	Non-operating Temperature	-20 ~ 80 °C (-4 ~ 167 °F) and 40 °C @ 95% RH Non-Condensing		
	Vibration Resistance	with SSD: 0.3 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis		
	Shock Protection	with SSD: 10G, IEC-60068-2-27, half sine, 11ms duration		
Cooling		6x system FAN with smart FAN		
Mechanical	Construction	Steel		
	Mounting	2U Rackmount		
	Dimensions (W x H x D)	438 x 88 x 684.15 mm (17.24 x 3.46 x 26.93 inch)		
	Weight	20 KG		
OS Support		Linux (CentOS, Red Hat, Ubuntu)		
Advantech S/W Packages		QuickStart Linux Image (CentOS based reference BSP) including <ul style="list-style-type: none"> <li>▪ afu</li> <li>▪ ipmitool</li> <li>▪ LCD4Linux</li> <li>▪ Advanced LBP Utility</li> <li>▪ Intel DPK</li> <li>▪ Intel QAT</li> <li>▪ DUI (Offline Diagnostics)</li> </ul>		
		Individual packages: <ul style="list-style-type: none"> <li>▪ Advanced LBP Library</li> <li>▪ DUI (Offline Diagnostics)</li> </ul>		
IPMI		Carrier Grade BMC, IPMI v2.0 compliant, with web interface, iKVM on request (Advantech IPMI Core)		
Certification		CE/FCC/CB/UL/CCC		

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**



## Ordering Information

Part No.	CPU	DDR4	PCH	QAT	PCIe slot	NMC slot	USB 3.0	MGMT port	10G SFP+	Console	BMC	LCM	VGA	PSU
FWA-6170F-00A1R	2 sockets for Intel® Xeon® Scalable Processors	24	C626	Yes	2	8	2	2	2	1	Yes	1	N/A	850W AC
FWA-6170-00A1R	2 sockets for Intel® Xeon® Scalable Processors	24	C622	No	2	8	2	2	2	1	Yes	1	N/A	850W AC
FWA-6170L-00A1R	2 sockets for Intel® Xeon® Scalable Processors	24	C621	No	2	8	2	2	N/A	1	N/A	1	Yes	850W AC

## Packing List

Part Number	Description
1700020691-01	Console cable D-SUB9P(F)/RJ45 220 cm

## Optional Power Supply List

Part Number	Description
96PSRM-A1K2WCR	AC 1200W PSU (Recommend for 2 x 205W CPU + 4 x NVMe SSD condition)
XFWA-DPS800AB-14G	DC 800W PSU

## Optional Accessories

Part Number	Description
1702002600	Power cord 3P 180cm, USA
1702002605	Power cord 3P 180cm, Europe
1702031801	Power cord 3P 180cm, UK
1700000237	Power cord 3P 180cm, JP
1700009652	Power cord 3P 180cm, China
9692326040E	TPM 2.0
9680016905	Slide rail

# FWA-6520

## 2U Rackmount Network Appliance with Intel® Xeon® Processor E5-2600 v3/v4 series, up to 4 NMC slots



### Features

- 2 x Intel® Xeon® E5-2600 v3/v4 processors up to 145W TDP
- DDR4 1866/2133 ECC registered memory up to 512GB
- PCIe gen. 3 support
- Up to 8 x NMC (Network Mezzanine Card) slots for a wide range of GbE, 10GbE and 40GbE NMCs with or without advanced LAN bypass
- 2 x PCIe x16 slots support FH/HL add-on cards
- 2 x 2.5" removable external SATA HDDs/SSDs
- IPMI 2.0 compliant Remote Management
- Advanced Platform Reliability and Serviceability



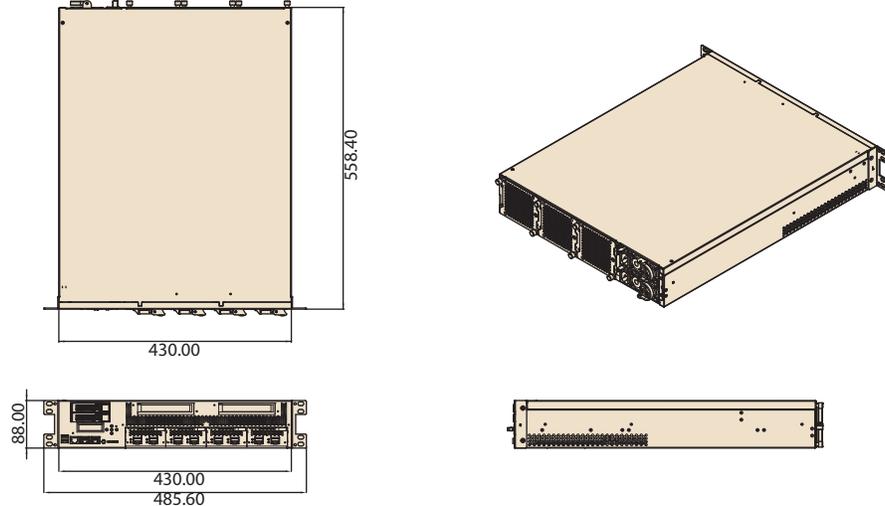
### Specifications

Form Factor		2U - Rack Mount	
Processor System	Processor	2 x Intel® Xeon® E5-2600 v3 / v4 Socket R3	
	Core Number	8C/10C/12C/14C/16C/18C/20C/22C	
	Frequency	2.0GHz/2.1GHz/2.2GHz/2.3GHz/2.4GHz/2.6GHz	
	L2 Cache	30MB ~ 55 MB	
	Chipset	C612	
	BIOS	AMI Efi 64Mbit	
Virtualization		VT-x	
Memory	Technology	DDR4, 2133/2400MHz	
	Max. Capacity	256GB (CPU0x8,CPU1x8)	
	Socket	16 x 288-pin RDIMM	
	ECC Support	Yes	
Networking	Controller	1 x Intel® I210	
	1GbE	2 x 10/100/1000 Mbps RJ45 via Intel® I210 chip	
	LAN bypass	Advanced	LBP support by NMC
		Legacy	-
Expansion	PCIe x 16	2 x FH/HL	
	NMC	4/6/8 NMCs	
Storage	2.5" HDD/SSD	Max. 2 x 2.5" HDD/SSD	
	mSATA SSD	2 x mSATA	
I/O	Console port	1	
	USB3.0	2	
	Others	1 x power button	
LCD Module		16x2 graphic display,5 buttons	
Power	Power Type	AC, redundant DC, redundant (optional)	
	Watts	820W	
	Input	100V ~ 240V	
	Connector	AC 3pin plug	
Environment	Operating Temperature (air flow 0.7 m/sec)	0 ~ 40 °C (32 ~ 104 °F)	
	Non-operating Temperature	-20 ~ 80 °C (-4 ~ 167 °F) and 40 °C @ 95% RH Non-Condensing humidity	
	Vibration Resistance	with SSD: 0.3 Grms, IEC 60068-2-64, 5-500Hz, 1hr/axis	
	Shock Protection	with SSD: 10G, IEC-60068-2-27, half sine, 11ms duration	
Cooling		3x system FAN with smart FAN	
Mechanical	Construction	Iron	
	Mounting	2U Rackmount	
	Dimensions (W x H x D)	430 x 88x 558 mm (16.9" x 3.4" x 22")	
	Weight	20 KG	
OS Support		Linux (CentOS, Red Hat, Ubuntu)	
Advantech S/W Packages		- QuickStart Linux Image (CentOS based reference BSP) including	
		<ul style="list-style-type: none"> <li>▪ ipmitool</li> <li>▪ LCD4Linux</li> <li>▪ Advanced LBP Utility</li> </ul> Individual packages: - Advanced LBP Library	
IPMI		IPMI v2.0 compliant BMC with web interface (AMI MegaRAC SP-X)	
Certification		CE/FCC/CB/UL/CCC	

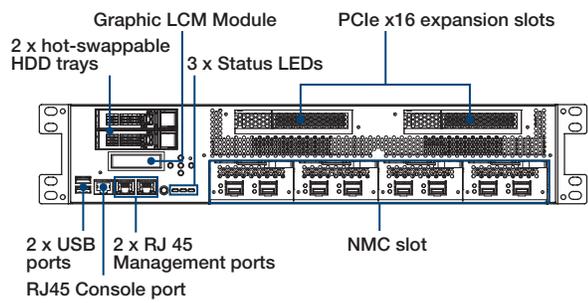
- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Dimensions

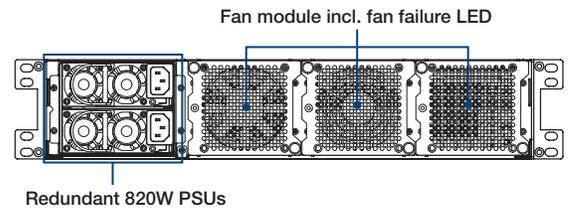
Unit: mm



### Front Panel External I/O Mechanical Layout/Drawing



### Rear Panel External I/O Mechanical Layout/Drawing



## Ordering Information

Part No.	CPU	DDR4	PCIe slot	NMC slot	USB 3.0	RJ45 LAN Port	Console port	LCM	PSU
FWA-6520-01E	Dual Intel® Xeon® E5-2600 v3 / v4 processors support, up to 145W TDP	16	2	4	2	2	1	1	820W AC PSU
FWA-6520-03E	Dual Intel® Xeon® E5-2600 v3 / v4 processors support, up to 145W TDP	16	N/A	8	2	2	1	1	820W AC PSU

DC SKU will be supported by MOQ base

## Packing List

Part Number	Description
1700020691-01	Console cable D-SUB9P(F)/RJ45 220 cm

## Optional Accessories

Part Number	Description
1702002600	Power cord 3P 180cm, USA
1702002605	Power cord 3P 180cm, Europe
1702031801	Power cord 3P 180cm, UK
1700000237	Power cord 3P 180cm, JP
1700009652	Power cord 3P 180cm, China
9680006904	Slide rail

# FWA-6520L

## Intel® Xeon® E5-2600/E5-1600 v3/v4 Processor-based 2U Network Application Platform



### Features

- 1 x Intel Xeon E5-2600/E5-1600 v3/v4 processors up to 145W TDP
- 8 x RDIMM DDR4 2133/2400 ECC REG memory up to 256GB
- 4 x NMC (Network Mezzanine Card) slots by PCIe gen. 3 support
- 1GbE/10GbE/40GbE NMCs with or without advanced LAN bypass
- 1 x PCIe x8 slots support FH/HL add-on cards
- 1 x CF slot
- 1 x mSATA Slot
- 4 x 3.5" HDD tray ( or 4 x 3.5" HDD internal bay, SKU option)
- IPMI 2.0 compliant Remote Management

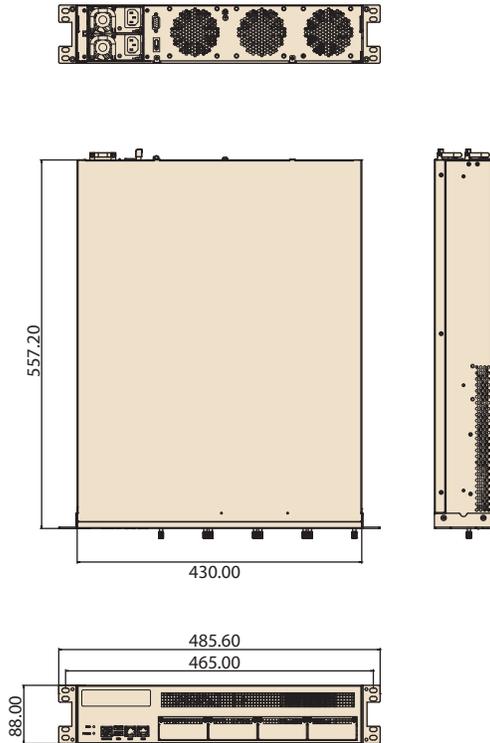


### Specifications

Form factor		2U Rack Mount
Processor System	Processor	1 Intel Xeon E5-2600/E5-1600 v3/v4
	Core Number	4C/6C/8C/10C/12C/14C/16C/18C/20C/22C
	Frequency	1.6~3.7GHz
	L2 Cache	10MB~55B
	Chipset	Intel C612
	BIOS	AMI EFI 128 Mbit
Memory	Technology	DDR4 2133/2400MHz
	Max. Capacity	256GB (8 x 32GB)
	Socket	24 x 288pin RDIMM
	ECC Support	Yes
Networking	Controller	2 x Intel i210-AT
	1GbE	2 x 10/100/1000 Mbps RJ45
	LAN Bypass	LAN Bypass supported by NMC
	NMC Slot	4 x NMC Slots
Expansion	PCIe x 8 slot	1 x low profile PCIe x 8 Gen3 slot
Storage	CF slot	1 x CF slot
	mSATA slot	1 x mSATA slot (Half Size or Full Size)
	3.5" HDD	4 x 3.5" HDD bay (HDD tray SKU option)
I/O	USB	2 x USB2.0
	Serial	1 x Console ports (RJ45 connector)
	Power LED	1 (Green on indicates power on)
	HDD LED	1 (Amber blink indicates HDD Read/Write)
	Pin Header	GPIO , Reset, COM and VGA
Power	Power Type	AC, Redundant DC, Redundant (optional)
	Watts	500W
	Input	100~240 VAC, auto range
Environment	Operating Temperature	0 ~ 40 °C (32 ~ 104 °F)
	Operating Temperature	-40 ~ 60 °C (-40 ~ 140 °F) and 40 °C @ 95% RH Non-Condensing
Mechanical	Construction	Iron
	Mounting	2u Rackmount
	Dimensions (W x H x D)	430 x 550 x 88 mm (W x L x H), 17" x 21.5" x 3.5"
	Weight	20kg
OS Support		Linux (CentOS, Red Hat, Ubuntu, etc.)
IPMI		Carrier Grade BMC, IPMI v2.0 compliant, with web interface, iKVM on request
Certification		CCC

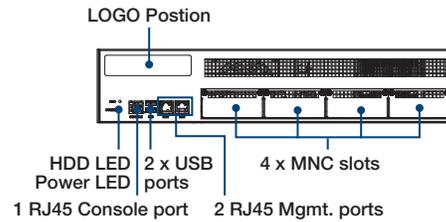
## Dimensions

Unit: mm



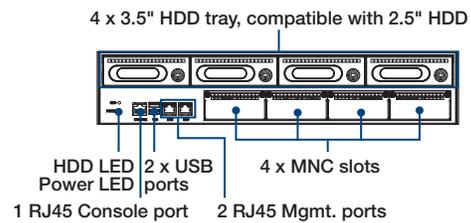
### Front (SKU1)

#### Front Panel External I/O Mechanical Layout/Drawing

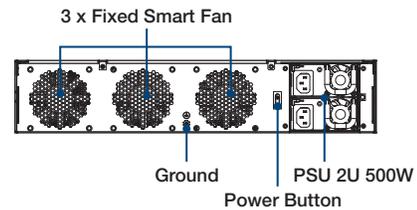


### Front (SKU2)

#### Front Panel External I/O Mechanical Layout/Drawing



#### Rear Panel External I/O Mechanical Layout/Drawing



## Ordering Information

Part Number	Processor	DIMM Qty	PCH	NMC slot	HDD tray	RJ45 LAN Port	Console port	USB port	PSU
FWA-6520L-00E	Intel Xeon processors E5-2600/E5-1600 v3/v4	8	Intel C612	4	NA( 4 x 3.5" HDD bracket internal )	2	1	2	500W AC
FWA-6520L-01E	Intel Xeon processors E5-2600/E5-1600 v3/v4	8	Intel C612	4	4 x 3.5" HDD tray	2	1	2	500W AC

## Packing List

Part Number	Description
1700019367-11	VGA port cable 45mm
1700020691-01	Console cable D-SUB 9P(F)/RJ45 220cm

## Optional Accessories

Part Number	Description
1702002600	Power cord 3P 180cm, USA
1702002605	Power cord 3P 180cm, Europe
1702031801	Power cord 3P 180cm, UK
1700000237	Power cord 3P 180cm, JP
1700009652	Power cord 3P 180cm, China
9680015345	Slide rail

- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

# NMC-0120

## 4 Ports 1GbE Fiber Bypass Network Management Card



### Features

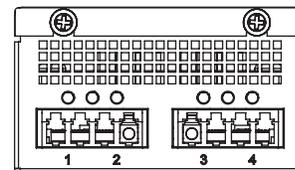
- 1x Intel® I350-AM4
- 4 ports LC(SX or LX) fiber connector with fiber bypass module
- 1x PCIe x4, Gen2
- Fiber bypass functionality includes Advanced LAN Bypass Mode, Normal Mode, and Disconnect Mode
- RoHS compliant



### Specifications

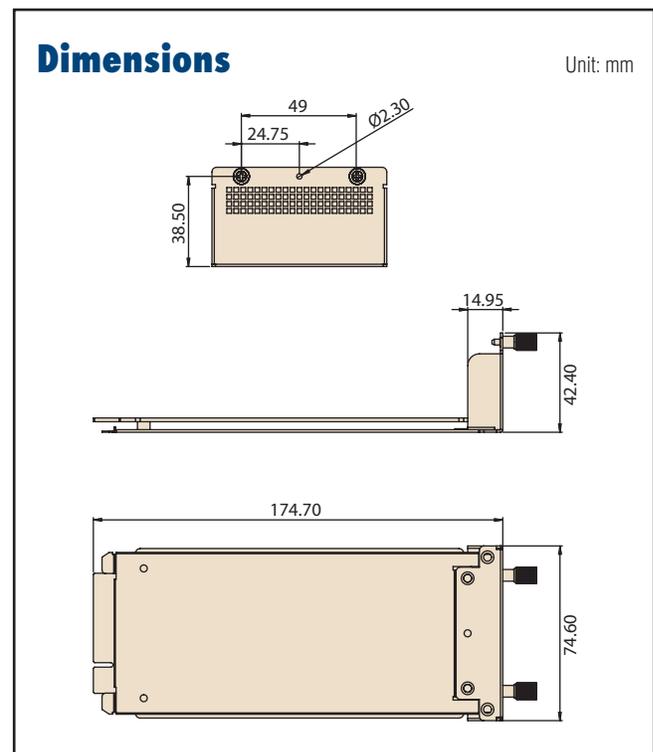
Controller	1x Intel® I350-AM4
Interface	1x PCIe x4, Gen2
Speed	1GbE
Port	4x Fiber Connector
LAN LED definition	Link / Act LED (Right/Left): Link: Green on Active: Green Blinking Bypass LED: (Middle): LAN Bypass: Amber on Disconnect: Amber blinking Connect: N/A
Advanced Software Features	Teaming support IEEE 802.3ad IEEE 802.1Q VLANs IEEE 802.3 2005 flow control support Interrupt moderation
OS Support	Windows® Server 2012 R2, 2012, 2008 R2 X86-64 Linux RedHat EL 6.5 and 7.0 IA-32, X86-64, and IA-64 Linux SuSE SLES 11 SP3 and 12 IA-32, X86-64, and IA-64 FreeBSD 9 and 10 IA-32, X86-64, and IA-64 UEFI 2.1 and 2.3 X86-64 and I-64 VMware ESXi 5.1, ESXi 5.5 and ESXi 6.0 X86-64
Operating Conditions	Operation: 0 ~ 45 °C Storage: -20 ~ 60 °C
Power Voltage & consumption	+12V ± 10% 10W
Dimension (W x H x D)	74.6 x 42.4 x 174.7 mm
Compliance	CE/FCC

### Front Panel Diagram



### Dimensions

Unit: mm

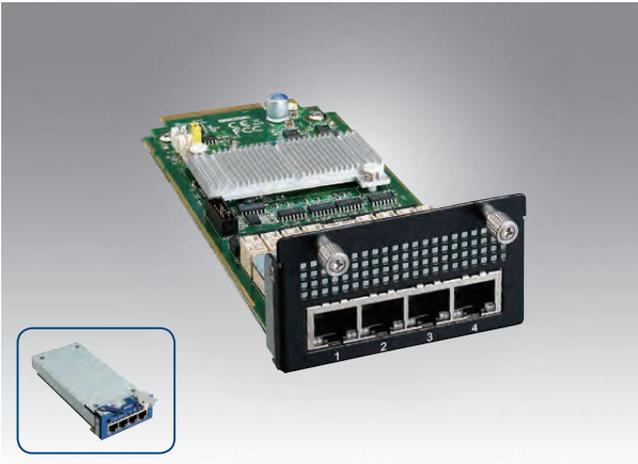


### Ordering Information

Part Number	Description
NMC-0120-000110E	4 ports 1GbE SX Latch Type Fiber Bypass Module
NMC-0120-000111E	4 ports 1GbE LX Latch Type Fiber Bypass Module
NMC-0120-04FBSSA2	4 ports 1GbE SX Thumbscrew Type Fiber Bypass Module
NMC-0120-04FBLA2	4 ports 1GbE LX Thumbscrew Type Fiber Bypass Module

# NMC-0121

## 4 Ports 1GbE RJ45 Network Management Card (with Optional Advanced LAN Bypass)



### Features

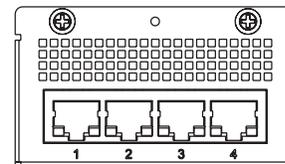
- 1x Intel® I350-AM4
- 4 ports RJ45 connector
- 1x PCIe x4, Gen2
- Optional Advanced LAN Bypass is Available
- RoHS compliant



### Specifications

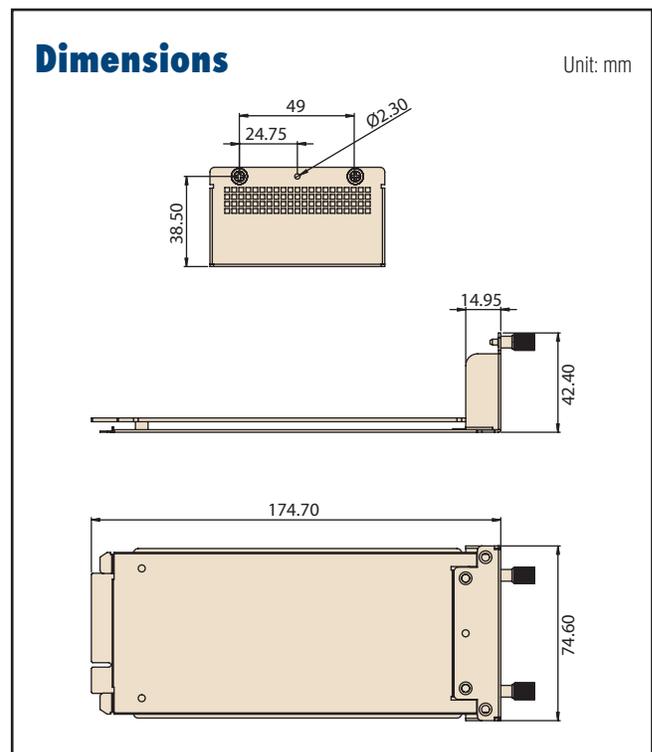
Controller	1x Intel® I350-AM4
Interface	1x PCIe x4, Gen2
Speed	1GbE
Port	4x RJ45 Ports
LAN LED definition	Speed LED(Left): 10Mbps: N/A 100Mbps: Amber on (Downgrade speed) 1000Mbps: Green on (Maximum speed)
	Link/Act/Bypass LED(Right): Link: Green on Active: Green Blinking LAN Bypass: Amber on (Optional) Disconnect: Amber blinking (Optional)
Advanced Software Features	Teaming support IEEE 802.3ad IEEE 802.1Q VLANs IEEE 802.3 2005 flow control support Interrupt moderation
OS Support	Windows® Server 2012 R2, 2012, 2008 R2 X86-64 Linux RedHat EL 6.5 and 7.0 IA-32, X86-64, and IA-64 Linux SuSE SLES 11 SP3 and 12 IA-32, X86-64, and IA-64 FreeBSD 9 and 10 IA-32, X86-64, and IA-64 UEFI 2.1 and 2.3 X86-64 and I-64 VMware ESXi 5.1, ESXi 5.5 and ESXi 6.0 X86-64
Operating Conditions	Operation: 0 ~ 45 °C Storage: -20 ~ 60 °C
Power Voltage & consumption	+12V ± 10% 10W
Dimension (W x H x D)	74.6 x 42.4 x 174.7 mm
Compliance	CE/FCC

### Front Panel Diagram



### Dimensions

Unit: mm



### Ordering Information

Part Number	Description
NMC-0121-000010E	4 Ports 1GbE RJ45 Latch Type
NMC-0121-000111E	4 Ports 1GbE RJ45 Latch Type with Advanced LAN Bypass
NMC-0121-04CSA1	4 Ports 1GbE RJ45 Thumbscrew Type
NMC-0121-04CBSA1	4 Ports 1GbE RJ45 Thumbscrew Type with Advanced LAN Bypass

Packetarium XL Blade Servers	1
High Performance Servers	2
Network Appliances	3
PCI Express Adapters	4
Network Switches	5
ATCA Blades & Integrated Systems	6
CPCI Boards & Enclosures	7
VPX Blades	8
Video Processing & IP Media Platforms	9

# NMC-0806

## 8 Ports 1GbE RJ45 Network Management Card (with Optional Advanced LAN Bypass)



### Features

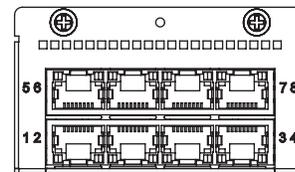
- 2x Intel® I350-AM4
- 8 ports RJ45 connector
- 2x PCIe x4, Gen2
- Optional Advanced LAN Bypass is Available
- RoHS compliant



### Specifications

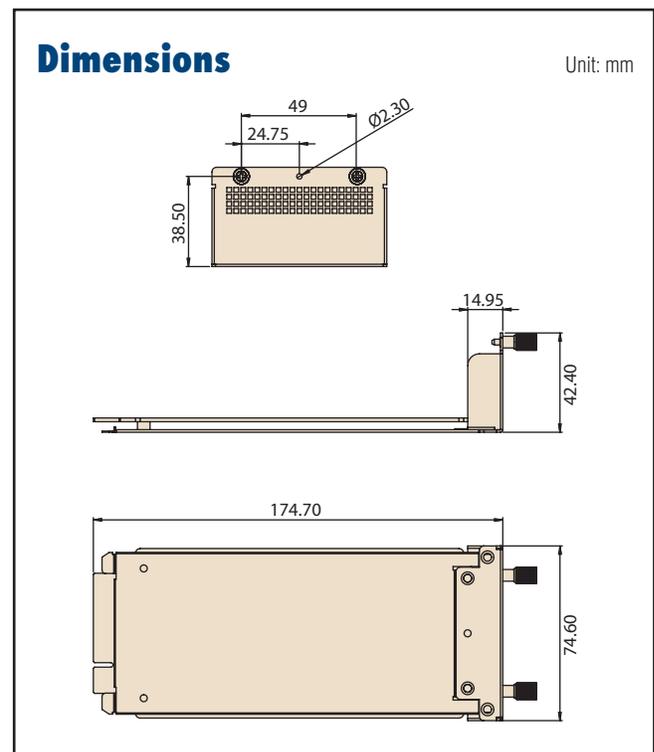
Controller	2x Intel® I350-AM4
Interface	2x PCIe x4, Gen2
Speed	1GbE
Port	8x RJ45
LAN LED definition	<p>Speed LED(Left):            10Mbps: N/A            100Mbps: Amber on (Downgrade speed)            1000Mbps: Green on (Maximum speed)</p> <p>Link/Act/Bypass LED(Right):            Link: Green on            Active: Green Blinking            LAN Bypass: Amber on (Optional)            Disconnect: Amber blinking (Optional)</p>
Advanced Software Features	Teaming support IEEE 802.3ad IEEE 802.1Q VLANs IEEE 802.3 2005 flow control support Interrupt moderation
OS Support	Windows® Server 2012 R2, 2012, 2008 R2 X86-64 Linux RedHat EL 6.5 and 7.0 IA-32, X86-64, and IA-64 Linux SuSE SLES 11 SP3 and 12 IA-32, X86-64, and IA-64 FreeBSD 9 and 10 IA-32, X86-64, and IA-64 UEFI 2.1 and 2.3 X86-64 and I-64 VMware ESXi 5.1, ESXi 5.5 and ESXi 6.0 X86-64
Operating Conditions	Operation: 0 ~ 45 °C Storage: -20 ~ 60 °C
Power Voltage & consumption	+12V± 10% 10W
Dimension (W x H x D)	74.6 x 42.4 x 174.7 mm
Compliance	CE/FCC

### Front Panel Diagram



### Dimensions

Unit: mm



### Ordering Information

Part Number	Description
NMC-0806-000010E	8 Ports 1GbE RJ45 Latch Type
NMC-0806-000110E	8 Ports 1GbE RJ45 Latch Type with Advanced LAN Bypass
NMC-0806-08CSA1	8 Ports 1GbE RJ45 Thumbscrew Type
NMC-0806-08CBSA1	8 Ports 1GbE RJ45 Thumbscrew Type with Advanced LAN Bypass

# NMC-1001

## 4 Ports 10GbE SFP+ Network Management Card



### Features

- 1 x Intel XL710-BM1
- 4 ports SFP+ connector
- 1x PCIe x8, Gen3
- RoHS compliant

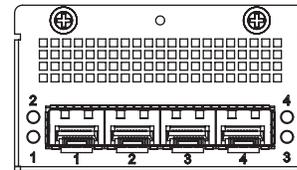


### Specifications

Controller	1x Intel XL710-BM1
Interface	1x PCIe x8, Gen3
Speed	10GbE
Port	4x SFP+ Port
LAN LED definition	Speed LED: 1Gbps: N/A 10Gbps: N/A
	Link/Act/Bypass LED: Link: Green on Active: Green Blinking LAN Bypass: NA Disconnect: NA
Advanced Software Features	Teaming support IEEE 802.3ad IEEE 802.1Q VLANs IEEE 802.3 2005 flow control support Interrupt moderation
OS Support	Windows® Server 2012 R2, 2012, 2008 R2 X86-64 Linux RedHat EL 6.5 and 7.0 IA-32, X86-64, and IA-64 Linux SuSE SLES 11 SP3 and 12 IA-32, X86-64, and IA-64 FreeBSD 9 and 10 IA-32, X86-64, and IA-64 UEFI 2.1 and 2.3 X86-64 and I-64 VMware ESXi 5.1, ESXi 5.5 and ESXi 6.0 X86-64
Operating Conditions	Operation: 5 ~ 45 °C Storage: -20 ~ 60 °C
Power Voltage & consumption	+12V ± 10% 15W
Dimension (W x H x D)	74.6 x 42.4 x 174.7 mm
Compliance	CE/FCC

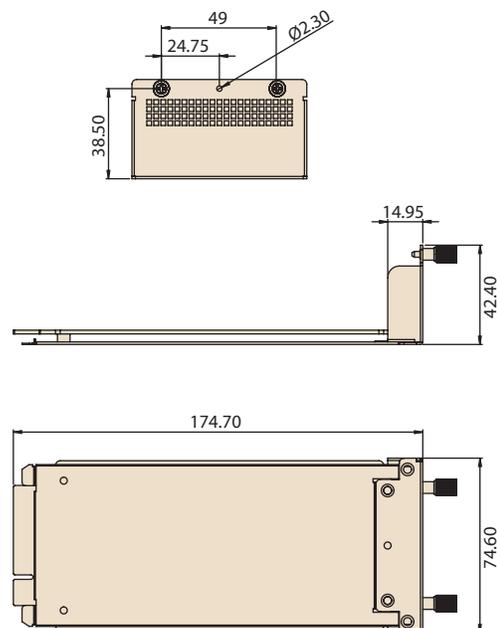


### Front Panel Diagram



### Dimensions

Unit: mm



### Ordering Information

Part Number	Description
NMC-1001-04FSA1	4 Ports 10GbE SFP+ Thumbscrew Type

Packetarium  
XL Blade  
Servers **1**

High  
Performance  
Servers **2**

Network  
Appliances **3**

PCI Express  
Adapters **4**

Network  
Switches **5**

ATCA Blades  
& Integrated  
Systems **6**

CPCI Boards  
& Enclosures **7**

VPX Blades **8**

Video  
Processing  
& IP Media  
Platforms **9**

# NMC-1010

## 2 Ports 10GbE Fiber Bypass Network Management Card



### Features

- 1x Intel X710-BM2
- 2 ports LC(SR) fiber connector with fiber pass module
- 1x PCIe x8, Gen3
- Fiber bypass functionality includes Advanced LAN Bypass mode, Normal mode, and Disconnect Mode
- RoHS compliant

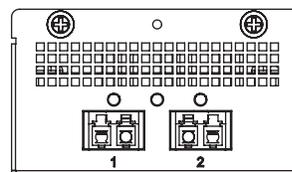


### Specifications

Controller	1x Intel X710-BM2
Interface	1x PCIe x8, Gen3
Speed	10GbE
Port	2x Fiber port
LAN LED definition	Link / Act LED (Right/Left): Link: Green on Active: Green Blinking
	Bypass LED: (Middle): LAN Bypass: Amber on Disconnect: Amber blinking Connect: N/A
Advanced Software Features	Teaming support IEEE 802.3ad IEEE 802.1Q VLANs IEEE 802.3 2005 flow control support Interrupt moderation
OS Support	Windows® Server 2012 R2, 2012, 2008 R2 X86-64 Linux RedHat EL 6.5 and 7.0 IA-32, X86-64, and IA-64 Linux SuSE SLES 11 SP3 and 12 IA-32, X86-64, and IA-64 FreeBSD 9 and 10 IA-32, X86-64, and IA-64 UEFI 2.1 and 2.3 X86-64 and I-64 VMware ESXi 5.1, ESXi 5.5 and ESXi 6.0 X86-64
Operating Conditions	Operation: -5 ~ 45 °C Storage: -20 ~ 60 °C
Power Voltage & consumption	+12V ± 10% 15W
Dimension (W x H x D)	74.6 x 42.4 x 174.7 mm
Compliance	CE/FCC

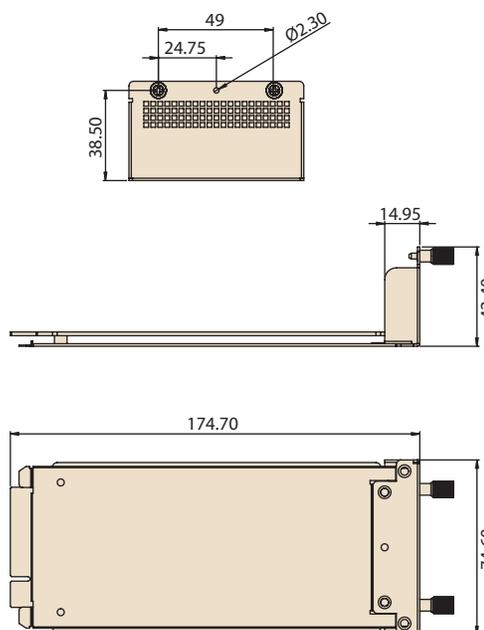


### Front Panel Diagram



### Dimensions

Unit: mm



### Ordering Information

Part Number	Description
NMC-1010-000110E	2 Ports 10GbE Latch Type Fiber Advanced LAN Bypass
NMC-1010-02FBSSA1	2 Ports 10GbE Thumbscrew Type Fiber Advanced LAN Bypass

# NMC-2501

## 2 Ports 25GbE SFP28 Network Management Card



### Features

- 1 x Intel XXV710-DA2
- 2 ports SFP28 connector
- 1x PCIe x8, Gen3
- RoHS compliant

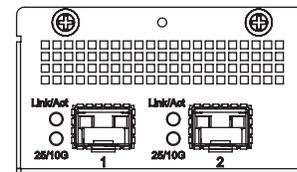


### Specifications

Controller	1 x Intel XXV710-DA2
Interface	1x PCIe x8, Gen3
Speed	25GbE
Port	2 x SPF28 Port
LAN LED definition	Speed LED: Non-25Gbps: Amber on(Downgrade speed) 25Gbps: Green on (Maximum speed)
	Link/Act LED/Bypass LED: Link: Green on Activity: Green Blanking LAN Bypass: NA Disconnect: NA
Advanced Software Features	Teaming support IEEE 802.3ad IEEE 802.1Q VLANs IEEE 802.3 2005 flow control support Interrupt moderation
OS Support	Windows® Server 2012 R2, 2012, 2008 R2 X86-64 Linux RedHat EL 6.5 and 7.0 IA-32, X86-64, and IA-64 Linux SuSE SLES 11 SP3 and 12 IA-32, X86-64, and IA-64 FreeBSD 9 and 10 IA-32, X86-64, and IA-64 UEFI 2.1 and 2.3 X86-64 and I-64 VMware ESXi 5.1, ESXi 5.5 and ESXi 6.0 X86-64
Operating Conditions	Operation: 0 ~ 45 °C Storage: -20 ~ 60 °C
Power Voltage & consumption	+12V ± 10% 16W
Dimension (W x H x D)	74.6 x 42.4 x 174.7 mm
Compliance	CE/FCC

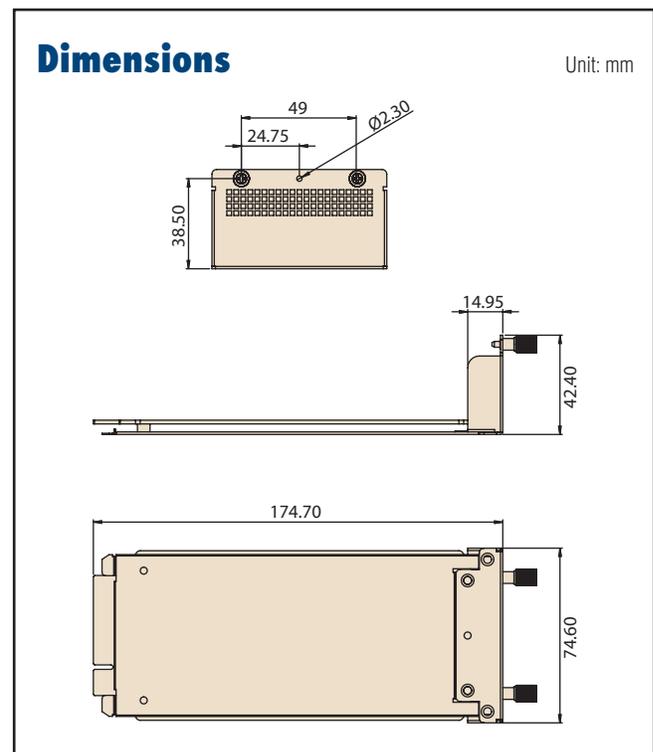


### Front Panel Diagram



### Dimensions

Unit: mm



### Ordering Information

Part Number	Description
NMC-2501-02FSA1	2 Ports 25GbE SFP28 Thumbscrew Type

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

# NMC-4006

## 2 Ports 40GbE QSFP+ Network Management Card



### Features

- 1x Intel® XL710-BM2
- 2 ports QSFP+ connector
- 1x PCIe x8, Gen3
- RoHS compliant

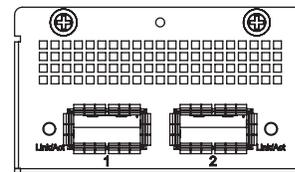


### Specifications

Controller	1x Intel® XL710-BM2
Interface	1x PCIe x8, Gen3
Speed	40GbE
Port	2x QSFP+ Port
LAN LED definition	Speed LED: Non-40Gbps: NA 40Gbps: NA
	Link/Act LED/Bypass LED: Link: Green on Activity: Green Blanking LAN Bypass: NA Disconnect: NA
Advanced Software Features	Teaming support IEEE 802.3ad IEEE 802.1Q VLANs IEEE 802.3 2005 flow control support Interrupt moderation
OS Support	Windows® Server 2012 R2, 2012, 2008 R2 X86-64 Linux RedHat EL 6.5 and 7.0 IA-32, X86-64, and IA-64 Linux SuSE SLES 11 SP3 and 12 IA-32, X86-64, and IA-64 FreeBSD 9 and 10 IA-32, X86-64, and IA-64 UEFI 2.1 and 2.3 X86-64 and I-64 VMware ESXi 5.1, ESXi 5.5 and ESXi 6.0 X86-64
Operating Conditions	Operation: 0 ~ 45 °C Storage: -20 ~ 60 °C
Power Voltage & consumption	+12V ± 10% 15W
Dimension (W x H x D)	74.6 x 42.4 x 174.7 mm
Compliance	CE/FCC

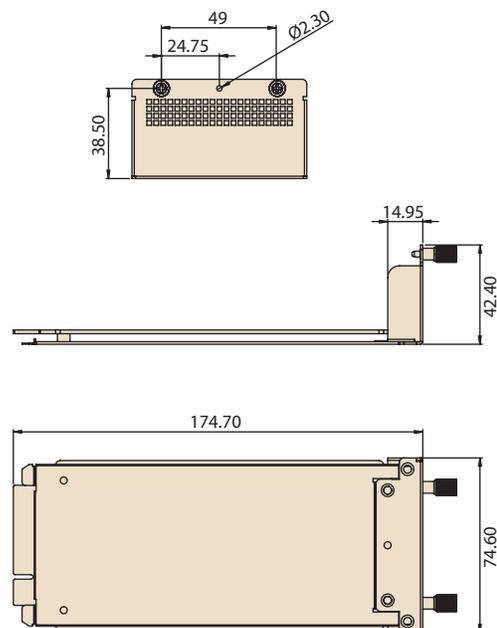


### Front Panel Diagram



### Dimensions

Unit: mm



### Ordering Information

Part Number	Description
NMC-4006-000010E	2 Ports 40GbE QSFP+ Latch Type
NMC-4006-02FSA1	2 Ports 40GbE QSFP+ Thumbscrew Type

# NMC-4007

## 4 Ports 10GbE Fiber Bypass Network Management Card



### Features

- 1x Intel® XL710-BM2
- 4 ports LC(SR or LR) fiber connector with fiber bypass module
- 1x PCIe x8, Gen3
- Lan Bypass model available (Advanced LAN Bypass-Bypass, Normal, Disconnect mode)
- RoHS compliant

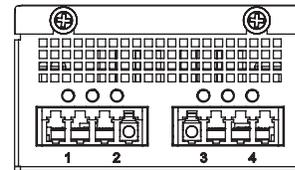


### Specifications

Controller	1x Intel® X710-BM2
Interface	1x PCIe x8, Gen3
Speed	10GbE
Port	4x Fiber port
LAN LED definition	Link / Act LED (Right/Left): Link: Green on Active: Green Blinking
	Bypass LED: (Middle): LAN Bypass: Amber on Disconnect: Amber blinking Connect: N/A
Advanced Software Features	Teaming support IEEE 802.3ad IEEE 802.1Q VLANs IEEE 802.3 2005 flow control support Interrupt moderation
OS Support	Windows® Server 2012 R2, 2012, 2008 R2 X86-64 Linux RedHat EL 6.5 and 7.0 IA-32, X86-64, and IA-64 Linux SuSE SLES 11 SP3 and 12 IA-32, X86-64, and IA-64 FreeBSD 9 and 10 IA-32, X86-64, and IA-64 UEFI 2.1 and 2.3 X86-64 and I-64 VMware ESXi 5.1, ESXi 5.5 and ESXi 6.0 X86-64
Operating Conditions	Operation: 0 ~ 45 °C Storage: -20 ~ 60 °C
Power Voltage & consumption	+12V ± 10% 17W
Dimension (W x H x D)	74.6 x 42.4 x 174.7 mm
Compliance	CE/FCC

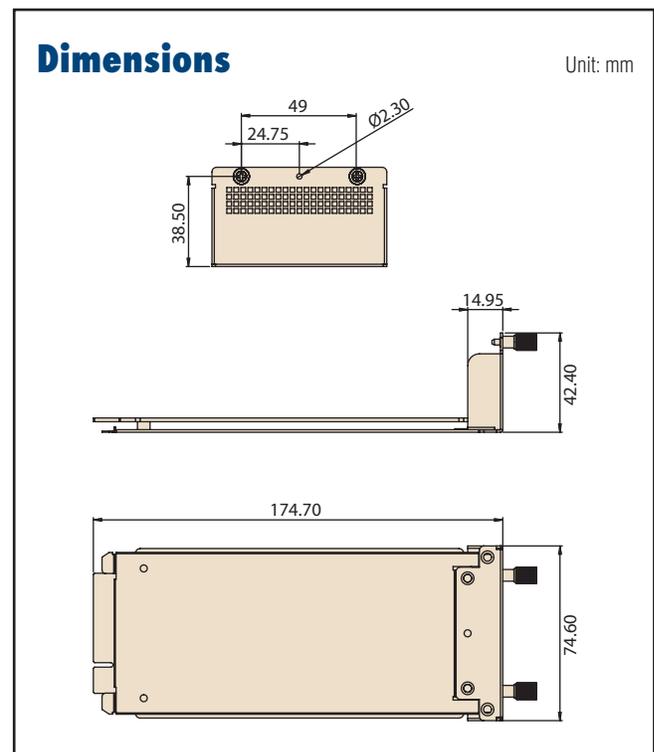


### Front Panel Diagram



### Dimensions

Unit: mm



### Ordering Information

Part Number	Description
NMC-4007-000110E	4 Ports 10GbE SR Thumbscrew Type Fiber Advanced LAN Bypass
NMC-4007-000111E	4 Ports 10GbE LR Latch Type Fiber Advanced LAN Bypass
NMC-4007-04FBSSA2	4 Ports 10GbE SR Thumbscrew Type Fiber Advanced LAN Bypass
NMC-4007-04FBLSA2	4 Ports 10GbE LR Thumbscrew Type Fiber Advanced LAN Bypass

- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

# NMC-6002FD

## 2 Ports 100GbE QSFP28 Network Management Card



### Features

- Single host NIC solution
- Overlay networks support : VxLAN & NVGRE
- CPU offload : TSO, LRO, GRO
- Jumbo frame support (9.6KB)
- Compatible with FWA-6520 & FWA-5020 Broadwell platform

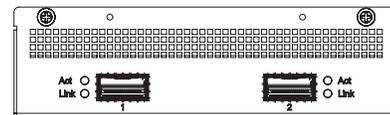


### Hardware Specifications

Controller	Mellanox ConnectX-5
IEEE Standard	IEEE 802.3bj, 802.3bm 100 Gigabit Ethernet IEEE 802.1Q, 802.1P VLAN tags and priority IEEE 802.1Qau (QCN) – Congestion Notification IEEE 802.1Qaz (ETS) IEEE 802.1Qaz (ETS) IEEE 802.1Qbg
Jumbo frame support (9.6KB)	Yes
Host Interface	2x PCIe X8, Gen3
Physical Interface	2 x QSFP28 ports
Data Rate	100 Gbps
NMC Type	Latch
LAN LED definition	Speed LED: Non-100Gbps: NA 100Gbps: NA  Link/Act/Bypass LED: Link: Green on Activity: Green Blanking LAN Bypass: NA Disconnect: NA
Transceiver types	LR4, SR4, AOC, DAC
Operating Temperature (Air flow 0.7 m/sec)	0°C ~ 40°C (23°F~113°F) with system
Storage Temperature	-20°C ~ 65°C (-4°F~149°F)
Storage Humidity	5 ~ 85 % @ 60 °C (140 °F)
Dimension (W x H x D)	149.6 x 42.4 x 174.7 mm
Weight	0.5 kg
Compliance	CE/FCC, RoHS

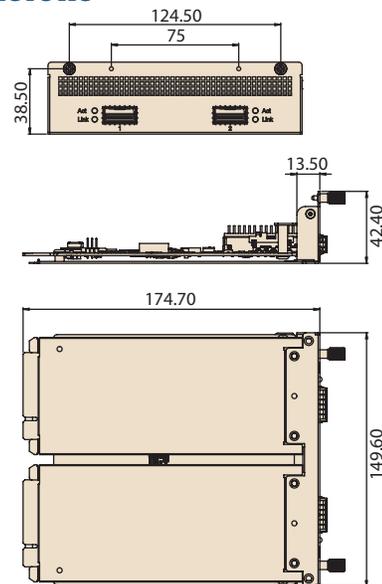


### Front Panel Diagram



### Dimensions

Unit: mm



### Software Specification & Features

Item	Specification / Features
OS Support	RHEL/CentOS
Overlay Networks Support	VxLAN & NVGRE
QoS	Strict Priority, ETS, Rate Limit & Packet Pacing
QCN	Supported
CPU offload	Checksum offload, RSS & Flow steering
DPDK	Supported
Promiscuous Mode	Supported

### Ordering Information

Part Number	Description
NMC-6002FD-02A2L	2 Ports 100GbE QSFP28 Latch Type
NMC-6002-02FSA2	2 Ports 100GbE QSFP28 Thumbscrew Type

### I/O Drawing



## PCI Express Adapters

<b>Overview</b>		<b>4-1</b>
<b>Selection Guide</b>		<b>4-2</b>
<b>PCIE-2130</b>	Quad Port Fiber Gigabit Ethernet PCI Express Server Adapter with Intel® I350	<b>4-5</b>
<b>PCIE-2131</b>	Quad Port/Dual port Copper Gigabit Ethernet PCI Express Server Adapter with Intel® I350	<b>4-6</b>
<b>PCIE-2220</b>	Dual Port Fiber 10GbE Ethernet PCI Express Server Adapter with Intel® 82599ES	<b>4-7</b>
<b>PCIE-2230</b>	Quad Port Fiber 10GbE Ethernet PCI Express Server Adapter with Intel® XL710-BM1	<b>4-8</b>
<b>PCIE-2221NP</b>	Dual Port Copper 10GbE Ethernet PCI Express Server Adapter with Intel® X550-AT2	<b>4-9</b>
<b>PCIE-2221BP</b>	Dual Port Fiber 10GbE Ethernet PCI Express Server Adapter with Intel® X710-BM2	<b>4-10</b>
<b>PCIE-2231</b>	Quad Port Copper 10GBase-T Ethernet PCI Express Server Adapter with Intel® XL710-BM1	<b>4-11</b>
<b>PCIE-2320</b>	Dual Port Fiber 40GbE Ethernet PCI Express Server Adapter with Intel® XL710-BM2	<b>4-12</b>
<b>PCIE-2410/ PCIE-2420</b>	Single/Dual Port Fiber 100GbE PCIe Adapter with Mellanox® ConnectX-5 Ethernet Controller	<b>4-13</b>
<b>PCIE-3030</b>	PCIe 3.0, x8 Crypto/ Compression LBG Server Adapter	<b>4-14</b>
<b>PCIE-3031</b>	PCIe 3.0, x16 Crypto/ Compression LBG Server Adapter	<b>4-15</b>

Please visit [www.advantech.com/nc](http://www.advantech.com/nc) for the latest product updates.





# PCI Express Adapters

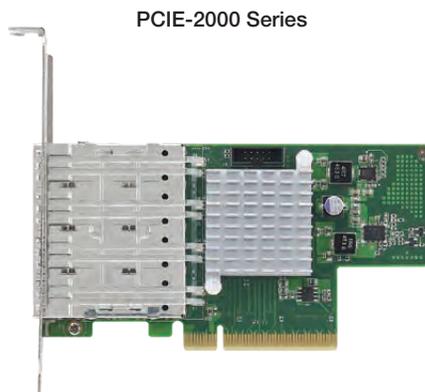
Advantech's PCI Express adapter range of accelerators and network interface cards enables network equipment and cybersecurity solution providers to integrate LAN access and acceleration devices with more robust and reliable feature sets into industrial PCs, high-performance servers and high-end network appliances. Advantech's family of PCI Express adapters comes in a range of form factors specifically adapted for deployment in high density network appliances and high performance servers.

Leveraging server-class Intel® Ethernet controller technology, Advantech's family of Network Interface Cards gives customers access to a full range of NICs with 10GbE, 25GbE, 40GbE and 100GbE interfaces with industrial life cycle and life cycle management. In addition, our dual or single Intel® QuickAssist Acceleration Cards can supplement the CPU throughput for the termination of standard security protocols such as IPsec and SSL, freeing up valuable cores and CPU cycles for application processing.

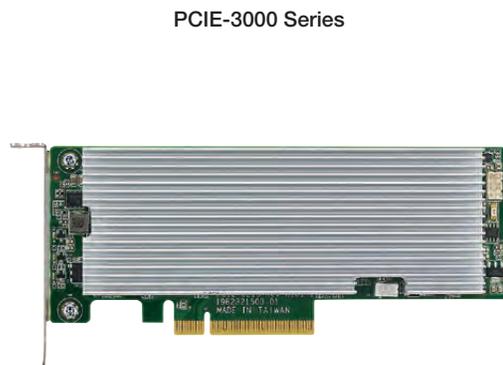
## Optimized for Virtual Environments

Our PCI Express adapters are designed for multi-core processing applications and optimized for virtualized environments. Support for optimization technologies such as VMDq, SR-IOV and DPDK helps reduce I/O bottlenecks and improve overall performance in multi-tenant environments, NFV as well as networking applications such as SD-WAN optimization and cybersecurity.

Multi-core processors and virtualized applications can leverage the I/O technologies available on the network controllers for load balancing data and interrupts amongst themselves. Advantech's PCI Express adapters offer excellent price/performance, enhanced power-savings and are backed by industrial life cycles along with our comprehensive industrial life cycle management program.



Full Range of Network Interface Cards



Security and Compression Offload based on Intel® QuickAssist® Technology



Server Class Ethernet



Virtualization Support with SR-IOV and multiple queues



Networking, Storage and Security Offload



Ease of Integration



Full range of products from 1GbE to 100GbE



LAN bypass for fail to wire applications



Fiber options for long reach and noise immunity



Configure to Order Services



Interoperability tested



Revision control



Performance tested with leading Spirent SmartBits



Long Life Cycle

- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4**
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

# Selection Guide



Model Name		PCIE-2130	PCIE-2131	PCIE-2220	PCIE-2221NP	PCIE-2221BP	PCIE-2230
Description		Quad Port Fiber GbE w/ Intel® I350	Quad Port Copper Bypass GbE w/ Intel® I350	Dual Port Fiber 10GbE w/ Intel® 82599ES	Dual Port Copper 10GbE w/ Intel® X550-AT2	Dual Port Fiber 10GbE w/ Intel® X710-BM2	Quad Port Fiber 10GbE w/ Intel® XL710-BM1
Chipset		Intel® I350	Intel® I350	Intel® 82599ES	Intel® X550-AT2	Intel® X710-BM2	Intel® XL710-BM1
Network Interfaces	Ports	4 x SFP	4 x RJ45	2 x SFP+	2 x RJ45	2x SFP+	4 x SFP+
	Media	GbE Fiber	GbE Copper	10GbE Fiber	10GBase-T Copper	10GbE Fiber	10GbE Fiber
Form type		Standard L/P PCIe card	Standard L/P PCIe card	Standard L/P PCIe card	Standard L/P PCIe card	Standard L/P PCIe card	Standard L/P PCIe card
PCIe		PCIe gen.2 x4 (w/PCIe x8 gold finger)	PCIe gen.2 x4	PCIe gen.2 x8	PCIe gen.3 x4	PCIe gen.3 x8	PCIe gen.3 x8
HeatSink		Passive	Passive	Passive	Passive	Passive	Passive
Power	Voltage	+12V ± 15%	+12V ± 15%	+12V ± 15%	+12V ± 15%	+12V ± 15%	+12V ± 15%
	consumption	5W	5W	8.5W	12.5W	10W	9W
Environment	Operating Temperature (air flow 0.7 m/ sec)	0 ~ 45° C (32 ~ 113° F)	0 ~ 45° C (32 ~ 113° F)	0 ~ 45° C (32 ~ 113° F)	0 ~ 45° C (32 ~ 113° F)	0 ~ 45° C (32 ~ 113° F)	0 ~ 45° C (32 ~ 113° F)
	Storage Temperature	-40 ~ 65° C (-40 ~ 149° F)	-40 ~ 65° C (-40 ~ 149° F)	-40 ~ 65° C (-40 ~ 149° F)	-40 ~ 65° C (-40 ~ 149° F)	-40 ~ 65° C (-40 ~ 149° F)	-40 ~ 65° C (-40 ~ 149° F)
	Storage Humidity	0 ~ 90%, non-condensing	0 ~ 90%, non-condensing	0 ~ 90%, non-condensing	0 ~ 90%, non-condensing	0 ~ 90%, non-condensing	0 ~ 90%, non-condensing
Mechanical	Dimensions	167 x 68.9 mm	167 x 68.9 mm	167 x 68.9 mm	167 x 68.9 mm	167 x 68.9 mm	167 x 68.9 mm
	Net Weight	0.08kg	0.125kg	0.07kg	0.115kg	0.2kg	0.125kg
Part Number		PCIE-2130NP-00A1E	PCIE-2131BP-00A1E (4 ports w/ bypass) PCIE-2131NP-00A1E (2 ports w/o bypass) PCIE-2131NP-01A1E (4 ports w/o bypass)	PCIE-2220NP-00A1E	PCIE-2221NP-00A1E (2 ports) PCIE-2221NP-01A1E (1 port)	PCIE-2221BP-00A1E	PCIE-2230NP-00A1E

Packetarium XL Blade Servers	1
High Performance Servers	2
Network Appliances	3
PCI Express Adapters	4
Network Switches	5
ATCA Blades & Integrated Systems	6
CPCI Boards & Enclosures	7
VPX Blades	8
Video Processing & IP Media Platforms	9



Model Name	PCIE-2231	PCIE-2320	PCIE-2410	PCIE-2420	PCIE-2411	PCIE-2531	
<b>Description</b>	Quad Port Copper 10GBase-T w/ Intel® XL710-BM1	Dual Port Fiber 40GbE w/ Intel® XL710-BM2	Single Port Fiber 100GbE w/ Mellanox® ConnectX-5	Dual Port Fiber 100GbE w/ Mellanox® ConnectX-5	Single Port Fiber 100GbE w/ Intel® E810-CAM1	Single Port Fiber 100GbE w/ Intel® E810-CAM1	
<b>Chipset</b>	Intel® XL710-BM1	Intel® XL710-BM2	Mellanox® ConnectX-5	Mellanox® ConnectX-5	Intel® E810-CAM1	Intel® E810-CAM1	
<b>Network Interfaces</b>	<b>Ports</b>	4 x RJ45	2 x QSFP+	1 x QSFP28	2 x QSFP28	1 x QSFP28	4 x SFP28
	<b>Media</b>	10GBase-T Copper	40GbE Fiber	100GbE Fiber	100GbE Fiber	100GbE Fiber	25GbE Fiber
<b>Form type</b>	Standard L/P PCIe card	Standard L/P PCIe card	Standard L/P PCIe card	Standard L/P PCIe card	Standard L/P PCIe card	Standard L/P PCIe card	
<b>PCIe</b>	PCIe gen.3 x8	PCIe gen.3 x8	PCIe gen.4/ gen.3 x16	PCIe gen.4/ gen.3 x16	PCIe gen.4/ gen.3 x16	PCIe gen.4/ gen.3 x16	
<b>HeatSink</b>	Passive	Passive	Passive	Passive	Passive	Passive	
<b>Power</b>	<b>Voltage</b>	+12V ± 15%	+12V ± 15%	+12V ± 15%	+12V ± 15%		
	<b>consumption</b>	12.5W	9W	15W	15W		
<b>Environment</b>	<b>Operating Temperature (air flow 0.7 m/ sec)</b>	0 ~ 45° C (32 ~ 113° F)	0 ~ 45° C (32 ~ 113° F)	0 ~ 45° C (32 ~ 113° F)	0 ~ 45° C (32 ~ 113° F)	0 ~ 45° C (32 ~ 113° F)	
	<b>Storage Temperature</b>	-40 ~ 65° C (-40 ~ 149° F)	-40 ~ 65° C (-40 ~ 149° F)	-40 ~ 65° C (-40 ~ 149° F)	-40 ~ 65° C (-40 ~ 149° F)	-40 ~ 65° C (-40 ~ 149° F)	
	<b>Storage Humidity</b>	0 ~ 90%, non-condensing	0 ~ 90%, non-condensing	0 ~ 90%, non-condensing	0 ~ 90%, non-condensing	0 ~ 90%, non-condensing	
<b>Mechanical</b>	<b>Dimensions</b>	167 x 68.9 mm	167 x 68.9 mm	165 x 66 mm	165 x 66 mm		
	<b>Net Weight</b>	0.125kg	0.135kg	0.135kg	0.135kg		
<b>Part Number</b>	PCIE-2231NP-00A1E	PCIE-2320NP-00A1E (2 ports) PCIE-2320NP-01A1E (1 port)	PCIE-2410NP-00B1E (1 port gen3 x16)	PCIE-2420NP-00B1E (2 ports gen3 x16) PCIE-2420NP-00B2E (2 ports gen4 x16), Preliminary	Preliminary	Preliminary	

# Selection Guide



Model name		PCIe-3030			PCIe-3031	
Chipset		Lewisburg			Lewisburg	
Description		LBG-E(C625)	LBG-M(C626)	LBG-T(C627)	LBG-T(C627)	
Compression / Encryption Performance		20 Gb/s	40 Gb/s	50 Gb/s	100 Gb/s	
Network Interface (connector type)		PCIe			PCIe	
Form type		Proprietary PCIe card			Proprietary PCIe card	
PCIe		PCIe gen3. x8			PCIe gen3. x16	
HeatSink		Passive			Passive	
LAN Bypass (Legacy/Advanced)		NA			NA	
Present Pin Detection		NA			yes	
LAN LED definition		NA			NA	
Power	Voltage	+12V ± 15%			+12V ± 15%	
	consumption	8w	10w	19w	20w	
Environment	Operating Temperature (air flow 0.7 m/sec)	Tambient= 50°C & Airflow= 300LFM			Tambient= 50°C & Airflow= 300LFM	
	Storage Temperature	-40°C ~ 70°C (-40°F~158°F)			-40°C ~ 70°C (-40°F~158°F)	
	Storage Humidity	95 % @ 40° C (140° F)			95 % @ 40° C (140° F)	
	Vibration Resistance	1. 0.5Grms (operating); 2. 1.6Grms (Non operating) 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis			1. 0.5Grms (operating); 2. 1.6Grms (Non operating) 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	
	Shock Protection	4G each axis(Operating); 20G each axis(Non-operating)			4G each axis(Operating); 20G each axis(Non-operating)	
Mechanical	Dimensions (W x H x D) mm	121.02 x 21.75 x 145.53 mm (w/bracket)			121.02 x 21.75 x 145.53 mm (w/bracket)	
	Weight	0.35kg			0.35kg	

# PCIE-2130

## Quad Port Fiber Gigabit Ethernet PCI Express Server Adapter with Intel® I350



### Features

- 1 x Intel® I350-AM4 Ethernet Controller
- 4 x GbE SFP ports
- PCIe gen. 2 x4 host interface (w/ PCIe x8 gold finger)
- Supports multi-mode fiber (SX) and single mode fiber (LX) modules
- Supports SR-IOV based virtualization
- Low profile and half length form factors



### Introduction

Advantech's PCIE-2130 is a low-profile quad port Gigabit Ethernet PCI Express server adapter based on the Intel® I350-AM4 Ethernet Controller. By supporting a PCI Express gen. 2 x4 host interface, this adapter provides sufficient bandwidth for line rate traffic on all Gigabit Ethernet ports. Four SFP ports can be configured to support a variety of optical transceivers such as single mode SX, multi mode LX optical as well as 1G Base-T copper modules. Improved support for virtualization, including VMDq and SR-IOV make the PCIE-2130 a perfect fit for virtualized environments and applications with network overlays. PCIE-2130 can be used to achieve high densities of network interfaces on servers and platforms for networking as well as industrial applications.

### Specifications

Controller	Physical Functions	Intel® I350-AM4 MAC+PHY 2
	Virtual Functions	8
Host Interface	PCI Express	4 lanes gen. 2 Note: The card is with PCIe x8 gold finger
Network Interfaces	Ports	4 SFP cages
	LEDs (per port)	Link/Act LED (Green/ Green Blink)
Software support	Operating Systems	Red Hat, CentOS Linux (Windows Server and FreeBSD under investigation)
	Virtualization	KVM (VMware under investigation)
	Others	Intel® DPDK
Power consumption	+12V	5W
Environment	Operating Humidity	0 ~ 90%, non-condensing
	Operating Temperature	0 ~ 45° C (32 ~ 113° F)
	Storage	-40 ~ 65° C (-40 ~ 149° F)
Mechanical Specifications	Board Dimension	167 x 68.9mm (PCIe low profile)
	Bracket	Full height and low profile options available
Compliance	EMC Certifications:	FCC CE Class A, KCC

### Ordering Information

Part Number	Description
PCIE-2130NP-00A1E	4-port Fiber GbE Ethernet PCI Express Server Adapter with Intel® I350 controller

Please contact your Advantech representative of a list of supported and validated transceiver modules.

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

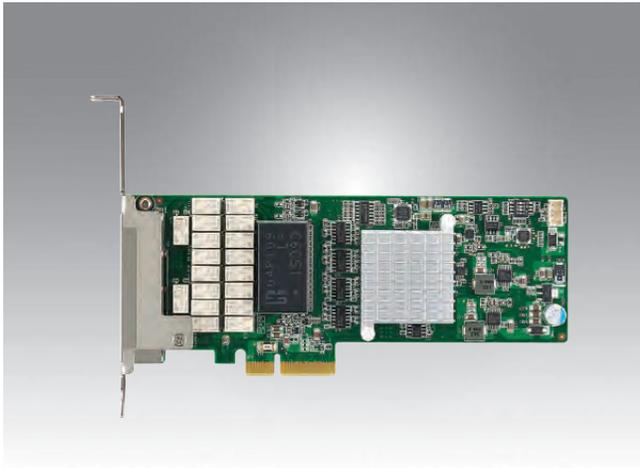
CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# PCIE-2131

## Quad Port/Dual port Copper Gigabit Ethernet PCI Express Server Adapter with Intel® I350



### Features

- 1 x Intel® I350-AM4 Ethernet Controller
- 4 x GbE Copper ports
- (Optional) 2 x GbE Copper ports (w/o LAN bypass)
- PCIe gen. 2 x4 host interface
- Supports SR-IOV based virtualization
- Low profile and full height form factors
- Advanced LAN bypass



### Introduction

Advantech's PCIE-2131 is a low-profile quad port Gigabit Ethernet PCI Express server adapter based on Intel® I350 Ethernet Controller. By supporting a PCI Express gen. 2 x4 host interface, this adapter provides sufficient bandwidth for line rate traffic on all Gigabit Ethernet ports. Improved support for virtualization – including, but not limited to – VMDq and SR-IOV make the PCIE-2131 a perfect fit for virtualized environments and applications with network overlays. PCIE-2131 can be used to achieve high densities of network interfaces on servers and platforms for networking as well as industrial applications.

### Specifications

Controller	Physical Functions	Intel® I350-AM4 MAC+PHY 2
	Virtual Functions	8
Host Interface	PCI Express	4 lanes gen. 2
Network Interfaces	Ports	4 RJ45 copper cages
	LEDs (per port)	Link/Act LED (Green/ Green Blink) Speed LED (GbE: Green, 100Mbps: Amber) Lan Bypass LED (Amber)
Software support	Operating Systems	RedHat, CentOS Linux (Windows Server and FreeBSD under investigation)
	Virtualization	KVM (VMWare under investigation)
	Others	Intel® DPDK
Power consumption	+12V	5W
Environment	Operating Humidity	0% ~ 90%, non-condensing
	Operating Temperature	0 ~ 45° C (32 ~ 113° F)
	Storage	-40 ~ 65° C (-40 ~ 149° F)
Mechanical Specifications	Board Dimension	167 x 68.9 mm (PCIe low profile)
	Bracket	Full height and half height options available
Compliance	EMC Certifications	FCC CE Class A, KCC

### Ordering Information

Part Number	Description
PCIE-2131BP-00A1E	4-port Copper GbE bypass Ethernet PCI Express Server Adapter with Intel® I350-AM4 controller
PCIE-2131NP-00A1E	4-port Copper GbE Ethernet PCI Express Server Adapter with Intel® I350-AM4 controller
PCIE-2131NP-01A1E	2-port Copper GbE Ethernet PCI Express Server Adapter with Intel® I350-AM2 controller

# PCIE-2220

## Dual Port Fiber 10GbE Ethernet PCI Express Server Adapter with Intel® 82599ES



### Features

- 1 x Intel® 82599ES Ethernet Controller
- 2 x 10GbE SFP+ ports
- PCIe gen. 2 x8 host interface
- Supports 10GBASE-SR and 10GBASE-LR
- Supports SR-IOV based virtualization
- Low profile and half length form factors



### Introduction

Advantech's PCIE-2220 is a low-profile dual port 10GbE Ethernet PCI Express server adapter based on the Intel® 82599ES Ethernet Controller. By supporting a PCI Express gen. 2 x8 host interface, this adapter provides sufficient bandwidth for line rate traffic on both 10GbE ports. Two SFP+ ports can be configured to support a variety of optical transceivers such as 10GBASE-SR and 10GBASE-LR optical modules as well as direct attach cables. Improved support for virtualization, including VMDq and SR-IOV make the PCIE-2220 a perfect fit for virtualized environments and applications with network overlays. PCIE-2220 is an ideal network interface solution for multi-tenant environments, Network Function Virtualization as well as networking applications such as WAN optimization and cyber security.

### Specifications

Controller		Intel® 82599ES MAC+PHY
	Physical Functions	2
	Virtual Functions	64
	Virtualization Support	VMDq, SRIOV
Host Interface	PCI Express	8 lanes gen. 2
	Ports	2 SFP+ cages
Network Interfaces	Media	10GBASE-SR, -LR, -ER, -T transceivers, Direct Attach cables
	LEDs (per port)	Link/Act LED (Green) Speed: 10GbE (Green), GbE (Amber)
	Operating Systems	Red Hat, CentOS Linux (Windows Server and FreeBSD under investigation)
Software support	Virtualization	KVM (VMware under investigation)
	Others	Intel® DPDK
	Power consumption	+12V 8.5W
Environment	Operating Humidity	0 ~ 90%, non-condensing
	Operating Temperature	0 ~ 45° C (32 ~ 113° F)
	Storage	-40 ~ 65° C (-40 ~ 149° F)
Mechanical Specifications	Board Dimension	167 x 68.9mm (PCIe low profile)
	Holder	Full height and low profile options available
Compliance	EMC Certifications	FCC CE Class A, KCC

### Ordering Information

Part Number	Description
PCIE-2220NP-00A1E	2-port Fiber 10GbE Ethernet PCI Express Server Adapter with Intel® 82599ES controller

Please contact your Advantech representative of a list of supported and validated transceiver modules.

Packetarium XL Blade Servers	1
High Performance Servers	2
Network Appliances	3
PCI Express Adapters	4
Network Switches	5
ATCA Blades & Integrated Systems	6
CPCI Boards & Enclosures	7
VPX Blades	8
Video Processing & IP Media Platforms	9

# PCIE-2230

## Quad Port Fiber 10GbE Ethernet PCI Express Server Adapter with Intel® XL710-BM1



### Features

- 1 x Intel® XL710-BM1 Ethernet Controller
- 4 x 10GbE SFP+ ports
- Supports 10GBASE-SR and 10GBASE-LR transceivers
- PCIe gen. 3 x8 host interface
- Supports SR-IOV based virtualization
- Advanced virtualization and network overlay support
- Low profile and half length form factors



### Introduction

Advantech's PCIE-2230 is a low-profile quad port 10GbE Ethernet PCI Express server adapter based on the Intel® XL710-BM1 Ethernet Controller. By supporting a PCI Express Gen3 x8 host interface, this adapter provides sufficient bandwidth for line rate traffic on all four 10GbE ports. Quad SFP+ ports can be configured to support a variety of optical transceivers such as 10GBASE-SR and 10GBASE-LR optical modules as well as direct attach cables. Improved support for virtualization, including VMDq, SR-IOV and VEB make the PCIE-2230 a perfect fit for virtualized environments and applications with network overlays. Packet filtering, load balancing and protocol offload capabilities further enhance efficiency by saving valuable processing time on the host.

PCIE-2230 is an ideal network interface solution for multi-tenant environments and Network Function Virtualization as well as networking applications such as WAN optimization and cyber security.

### Specifications

Controller	Physical Functions	Intel® XL710-BM1 MAC+PHY 4
	Virtual Functions	128
	Virtualization Support	VMDq, SRIOV, VEB
Host Interface	PCI Express	8 lanes gen. 3
Network Interfaces	Ports	4 SFP+ cages
	Media	10GBASE-SR, -LR, -ER, -T transceivers, Direct Attach cables
	LEDs (per port)	Link/Act LED (Green/ Green Blink) Speed LED (10GbE: Green, GbE: Amber)
Software support	Operating Systems	Red Hat, CentOS Linux (Windows Server and FreeBSD under investigation)
	Virtualization	KVM (VMWare under investigation)
	Others	Intel® DPDK
Power consumption	+12V	9W
Environment	Operating Humidity	0 ~ 90%, non-condensing
	Operating Temperature	0 ~ 45° C (32 ~ 113° F)
	Storage	-40 ~ 65° C (-40 ~ 149° F)
Mechanical Specifications	Board Dimensions	167 x 68.9mm (PCIe low profile)
	Bracket	Full height and low profile options available
Compliance	EMC Certifications	FCC CE Class A, KCC

### Ordering Information

Part Number	Description
PCIE-2230NP-00A1E	4-port Fiber 10GbE Ethernet PCI Express Server Adapter with Intel® XL710-BM1 controller

Please contact your Advantech representative of a list of supported and validated transceiver modules.

# PCIE-2221NP

## Dual Port Copper 10GbE Ethernet PCI Express Server Adapter with Intel® X550-AT2



### Features

- 1 x Intel® X550-AT2 Ethernet Controller
- 2 x 10GbE Copper ports
- PCIe gen. 3 x4 host interface
- Supports SR-IOV based virtualization
- Advanced virtualization and network overlay support
- Low profile and half length form factors



### Introduction

Advantech's PCIE-2221NP is a low-profile dual port 10GbE Ethernet PCI Express server adapter based on the Intel® X550-AT2 Ethernet Controller. By supporting a PCI Express gen. 3 x4 host interface, this adapter provides sufficient bandwidth for line rate traffic on all two 10GbE ports. Improved support for virtualization, including VMDq and VEB make the PCIE-2221NP a perfect fit for virtualized environments and applications with network overlays. PCIE-2221NP can be used to achieve high densities of network interfaces on servers and platforms for networking as well as industrial applications.

### Specifications

Controller		Intel® X550-AT2 MAC+PHY
	Physical Functions	2
	Virtual Functions	128
	Virtualization Support	VMDq, SRIOV, VEB
Host Interface	PCI Express	4 lanes gen. 3
Network Interfaces	Ports	2 RJ-45 Copper
	Media	10GBASE-T copper Physical Layer Transceivers
	LEDs (per port)	Link/Act LED (Green/Green Blink) Speed: 10GbE (Green), GbE (Amber)
	Operating Systems	Red Hat, CentOS Linux (Windows Server and FreeBSD under investigation)
Software support	Virtualization	KVM (VMware under investigation)
	Other	Intel® DPDK
	Power consumption	+12V 12.5W
Environment	Operating Humidity	0 ~ 90%, non-condensing
	Operating Temperature	0 ~ 45° C (32 ~ 113° F)
	Storage	-40 ~ 65° C (-40 ~ 149° F)
Mechanical Specifications	Board Dimension	167 x 68.9 mm (PCIe low profile)
	Bracket	Full height and low profile options available
Compliance	EMC Certifications	FCC CE Class A, KCC

### Ordering Information

Part Number	Description
PCIE-2221NP-00A1E	2-port 10GBase-T Ethernet PCI Express Server Adapter with Intel® X550 controller
PCIE-2221NP-01A1E	1-port 10GBase-T Ethernet PCI Express Server Adapter with Intel® X550 controller

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

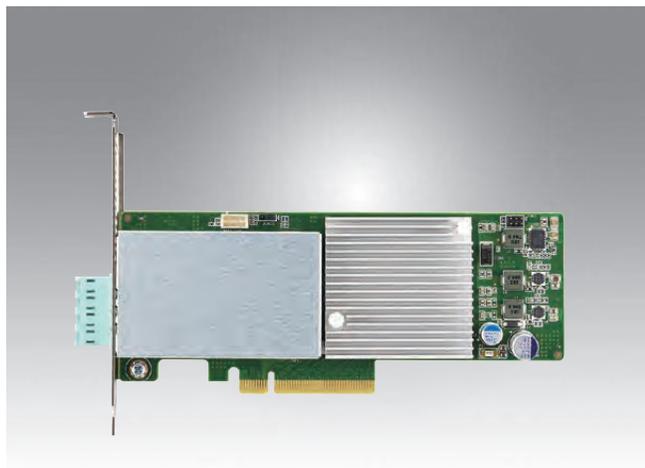
CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# PCIE-2221BP

## Dual Port Fiber 10GbE Ethernet PCI Express Server Adapter with Intel® X710-BM2



### Features

- 1 x Intel® X710-BM2 Ethernet Controller
- 2 x 10GbE LAN ports
- Supports 10G-SR, 10G-LR, 10G-ER Optical Bypass Module
- PCIe gen. 3 x8 host interface
- Supports SR-IOV based virtualization
- Low profile and half length form factors



### Introduction

Advantech's PCIE-2221BP is a low-profile dual port 10GbE PCI Express server adapter based on the Intel® X710-BM2 Ethernet Controller. By supporting a PCI Express gen. 3 x8 host interface, this adapter supports fiber interfaces with advanced LAN bypass. PCIE-2221BP is compliant with PCIe card form factor and can be used on Advantech network appliance platforms. Improved support for virtualization, including VMDq and SR-IOV and VEB make the PCIE-2221BP a perfect fit for virtualized environments and applications with network overlays. PCIE-2221BP can be used to achieve high densities of network interfaces on servers and platforms for networking as well as industrial applications.

### Specifications

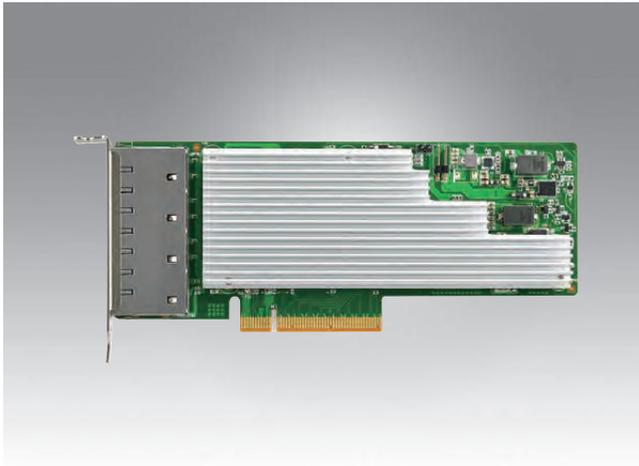
Controller	Physical Functions	Intel® X710-BM2 MAC+PHY 2
	Virtual Functions	128
	Virtualization Support	VMDq, SRIOV, VEB
	Host Interface	PCI Express 8 lanes gen. 3
Network Interfaces	Ports	2 SFP+ cages
	LEDs (per port)	Link/Act LED (Green/Green Blink) Lan Bypass LED (Amber)
Software support	Operating Systems	Red Hat, CentOS Linux (Windows Server and FreeBSD under investigation)
	Virtualization	KVM (VMware under investigation)
	Other	Intel® DPDK
Power consumption	+12V	10W
Environment	Operating Humidity	0% ~ 90%, non-condensing
	Operating Temperature	0 ~ 45° C (32 ~ 113° F)
	Storage	-40 ~ 65° C (-40 ~ 149° F)
Mechanical Specifications	Board Dimension	167 x 68.9 mm (PCIe low profile)
	Bracket	Full height and low profile options available
Compliance	EMC Certifications	FCC CE Class A

### Ordering Information

Part Number	Description
PCIE-2221BP-00A1E	2-port 10GbE fiber bypass NIC with Intel® X710 controller

# PCIE-2231

## Quad Port Copper 10GBase-T Ethernet PCI Express Server Adapter with Intel® XL710-BM1



### Features

- 1 x Intel® XL710-BM1 Ethernet Controller and X557 PHY
- 4 x 10GbE copper ports
- PCIe gen. 3 x8 host interface
- Supports SR-IOV based virtualization
- Advanced virtualization and network overlay support
- Standard CAT6a cabling with four RJ45 connectors
- Low profile and half length form factors



### Introduction

Advantech's PCIE-2231 is a low-profile quad port 10GbE Ethernet PCI Express server adapter based on the Intel® XL710-BM1 Ethernet Controller and X557 PHY. By supporting a PCI Express gen. 3 x8 host interface, this adapter provides sufficient bandwidth for line rate traffic on all four 10GbE ports. Improved support for virtualization, including VMDq, SR-IOV and VEB make the PCIE-2231 a perfect fit for virtualized environments and applications with network overlays. Packet filtering, load balancing and protocol offload capabilities further enhance efficiency by saving valuable processing time on the host.

PCIE-2231 is an ideal network interface solution for multi-tenant environments and Network Function Virtualization as well as networking applications such as WAN optimization and cyber security.

### Specifications

Controller	Physical Functions	Intel® XL710 + X557 PHY
	Virtual Functions	4
	Virtualization Support	128
		VMDq, SRIOV, VEB
Host Interface	PCI Express	8 lanes gen. 3
	Ports	4 RJ45 Copper cages
Network Interfaces	Media	10GBASE-T copper Physical Layer Transceivers
	LEDs (per port)	Link/Act LED (Green/ Green Blink) Speed LED (10GbE: Green, GbE: Amber)
	Operating Systems	Red Hat, CentOS Linux, Windows Server
Software support	Virtualization	KVM
	Others	Intel® DPDK
	Power consumption	+12V
Environment	Operating Humidity	0 ~ 90%, non-condensing
	Operating Temperature	0 ~ 45° C (32 ~ 113° F)
	Storage	-40 ~ 65° C (-40 ~ 149° F)
Mechanical Specifications	Board Dimensions	167.65 x 68.9 mm (PCIe low profile)
	Bracket	Full height and low profile options available
Compliance	EMC Certifications	FCC, CE Class A

### Ordering Information

Part Number	Description
PCIE-2231NP-00A1E	4-port Copper 10GBase-T Ethernet PCI Express Server Adapter with Intel® X710 controller + X557 PHY

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

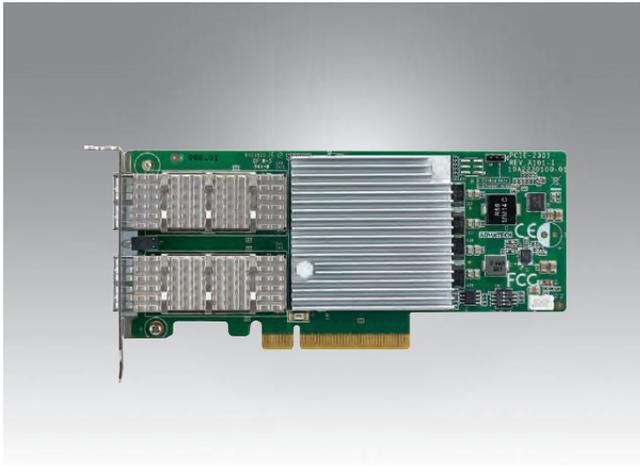
CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# PCIE-2320

## Dual Port Fiber 40GbE Ethernet PCI Express Server Adapter with Intel® XL710-BM2



### Features

- 1 x Intel® XL710-BM2 Ethernet Controller
- 2 x 40GbE QSFP+ ports
- Supports 40GBASE-SR and 40GBASE-LR (TBD) transceivers
- PCIe gen. 3 x8 host interface
- Supports SR-IOV based virtualization
- Advanced virtualization and network overlay support
- Low profile and half length form factors



### Introduction

Advantech's PCIE-2320 is a low-profile dual port 40GbE Ethernet PCI Express server adapter based on the Intel® XL710-BM2 Ethernet Controller. By supporting a PCI Express gen. 3 x8 host interface, this adapter provides sufficient bandwidth for line rate traffic on both 40GbE ports. Dual QSFP+ ports can be configured to support a variety of optical transceivers such as 40GBASE-SR and 40GBASE-LR (TBD) optical modules as well as direct attach cables. Improved support for virtualization, including VMDq, SR-IOV and VEB make the PCIE-2320 a perfect fit for virtualized environments and applications with network overlays. Packet filtering, load balancing and protocol offload capabilities further enhance efficiency by saving valuable processing time on the host.

PCIE-2320 is an ideal network interface solution for multi-tenant environments, Network Function Virtualization as well as networking applications such as WAN optimization and cyber security.

### Specifications

Controller	Physical Functions	Intel® XL710-BM2 MAC+PHY 2
	Virtual Functions	128
	Virtualization Support	VMDq, SRIOV, VEB
Host Interface	PCI Express	8 lanes gen. 3
Network Interfaces	Ports	2 QSFP+ cages
	Media	40GBASE-SR, -LR(TBD), -T transceivers, Direct Attach cables
	LEDs (per port)	Link/Act LED (Green/Green Blink)
Software support	Operating Systems	Red Hat, CentOS Linux (Windows Server and FreeBSD under investigation)
	Virtualization	KVM (VMware under investigation)
	Others	Intel® DPDK
Power consumption	+12V	9W
Environment	Operating Humidity	0% ~ 90%, non-condensing
	Operating Temperature	0 ~ 45° C (32 ~ 113° F)
	Storage	-40 ~ 65° C (-40 ~ 149° F)
Mechanical Specifications	Board Dimension	167 x 68.9 mm (PCIe low profile)
	Bracket	Full height and low profile options available
Compliance	EMC Certifications	FCC CE Class A, KCC

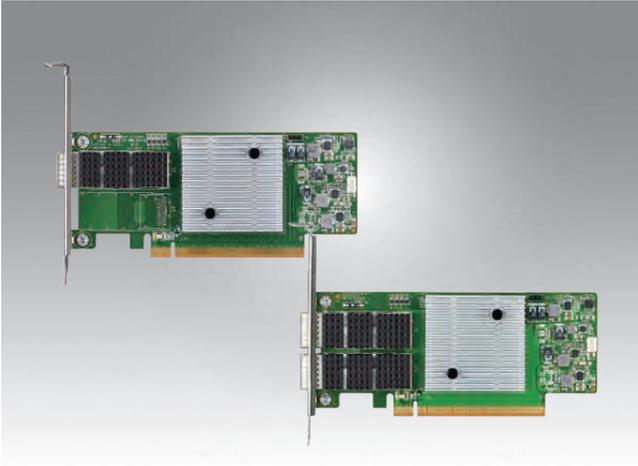
### Ordering Information

Part Number	Description
PCIE-2320NP-00A1E	2-port Fiber 40GbE (QSFP+) Ethernet PCI Express Server Adapter with Intel® XL710 controller
PCIE-2320NP-01A1E	1-port Fiber 40GbE (QSFP+) Ethernet PCI Express Server Adapter with Intel® XL710 controller

Please contact your Advantech representative of a list of supported and validated transceiver modules.

# PCIE-2410 / PCIE-2420

## Single/Dual Port Fiber 100GbE PCIe Adapter with Mellanox® ConnectX-5 Ethernet Controller



### Features

- 1 x Mellanox® ConnectX-5 Ethernet Controller
- Single/Dual 100GbE QSFP28 port
- Supports 100GBASE-SR4 and 100GBASE-LR4 transceivers
- PCIe gen. 3 / gen. 4 x16 host interface
- Support SR-IOV based virtualization
- Advanced virtualization and network overlay support
- Low profile and full height form factors



### Introduction

Advantech's PCIE-2410/PCIE-2420 is a low-profile single/dual port 100GbE PCIe adapter based on the Mellanox® ConnectX-5 Ethernet Controller and supports both PCIe gen. 3 and gen. 4. When connected to a host over a PCIe gen. 4 x16 interface, the adapter provides sufficient bandwidth for line rate traffic on both 100GbE ports. Two QSFP28 ports can be configured to support a variety of optical transceivers such as 100GBASE-SR4 and 100GBASE-LR4 optical modules as well as direct attach cables and active optical cables.

Improved support for virtualization, including SR-IOV, Guaranteed QoS for VMs and Open vSwitch offload make the PCIE-2410/PCIE-2420 a perfect fit for virtualized environments and applications with network overlays. Packet filtering, load balancing and protocol offload capabilities further enhance efficiency by saving valuable processing time on the host. PCIE-2410/PCIE-2420 is an ideal network interface solution for multi-tenant environments and Network Function Virtualization as well as networking applications such as WAN optimization and Network security.

### Specifications

Controller	Ethernet Controller	Mellanox® ConnectX-5 Ethernet Controller
	Physical Functions	16 per host
	Virtual Functions	1K
	Virtualization Support	SRIOV, OVS offload
Host Interface	PCI Express	16 lanes gen. 3/ gen. 4
Network Interfaces	Ports	1x/2x QSFP28 cages
	Media	100GBASE-SR4, -LR4 transceivers, Direct Attached Cables, Active Optical Cables
	LEDs (per port)	Link/Act LED (Green/ Green Blink)
Software support	Operating Systems	RHEL/CentOS, FreeBSD, VMware
	Virtualization	KVM (VMWare under investigation)
	Others	Intel® DPDK
Power consumption	+12V	17W (Dual 100GbE PCIe gen. 3 x16); 13W (Single 100GbE PCIe gen. 3 x16)
Environment	Operating Humidity	0 ~ 90% @ 40 °C (non-condensing)
	Operating Temperature	0 ~ 40 °C (32 ~ 104 °F)
	Storage	-40 ~ 65 °C (-40 ~ 149 °F)
Mechanical Specifications	PCB Dimension	165 x 66 mm (PCIe low profile)
	Bracket	Full height and low profile options available
Compliance	EMC Certifications	FCC, CE Class B

Please contact your Advantech representative of a list of supported and validated transceiver modules.

### Ordering Information

Part Number	Description
PCIE-2410NP-00B1E	Single port 100GbE fiber (QSFP28) NIC with Mellanox CX-5 controller, PCIe gen. 3 x16
PCIE-2420NP-00B1E	Dual ports 100GbE fiber (QSFP28) NIC with Mellanox CX-5 controller, PCIe gen. 3 x16
PCIE-2420NP-00B2E <i>*Preliminary</i>	Dual ports 100GbE fiber (QSFP28) NIC with Mellanox CX-5 controller, PCIe gen. 4 x16

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

CPCI Boards  
& Enclosures 7

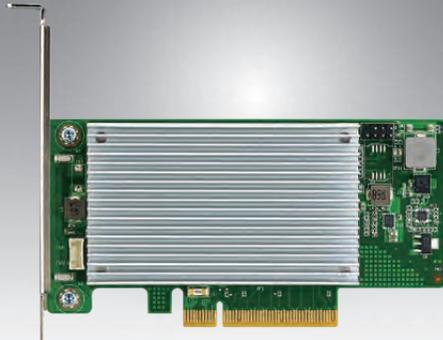
VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# PCIe-3030

## PCIe 3.0, x8 Crypto/ Compression LBG Server Adapter

Preliminary



### Features

- Controller supports PCI Express Base Specification 3.0 (8 GTs)
- PCI Express x8 lanes
- Intel® QuickAssist Technology for Crypto and Compression
  - Compression/Decompression(Deflate)
  - RSA Decrypt
  - IPSec/SSL
  - Wireless: KASUMI, ZUC, SNOW 3G(Lewisburg only)
  - Bulk: AES, 3DES, (A)RC4
  - Hash: MD5, SHA-1/2 SHA-3 HMAC



### Technical Specifications

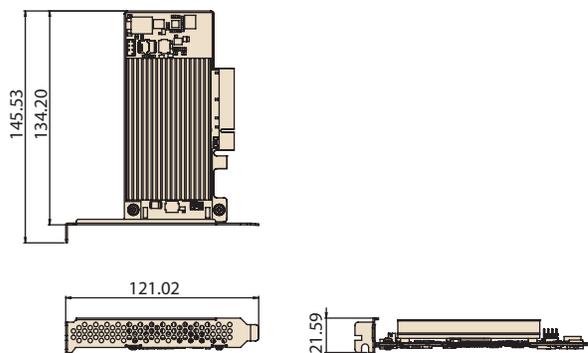
General Technical Specifications	Interface Standard	PCIe Gen 3.0 (8GTs)		
	Board Size(bracket is exclusive)	132.3*68.9 mm (L*H)		
	PCI Express Card Type	x8 Lane		
	PCI Express Voltage	+12V There will not be an external Aux power input		
	PCI Connector	Gold Finger: x8		
	Controllers	Intel® C625	Intel® C626	Intel® C627
	Compression / Encryption Performance	20Gb/s	40Gb/s	50Gb/s
	Weight	155gr (5.47oz)		
	Power Consumption	8W	10W	19W
	Holder	Metal Bracket: Full height (default) Low profile (accessory)		
	Operating Temperature (Required airflow: 300LFM)	-5 ~ 55 °C		
	Operating Humidity test	45 °C @ 95%		
	Cooling	Passive Heatsink		
	Storage Temperature	-40 ~ 85 °C		
	Storage Humidity test	60 °C @ 95%		
	Regulation	CE/FCC		
Operating Systems Support	Operating Systems Support	Linux		

### Ordering Information

Part Number	Description
PCIe-3030NP-00A1E	PCIe3.0x8 Crypto/Compression LBG Server Adapter (C625)
PCIe-3030NP-01A1E	PCIe3.0x8 Crypto/Compression LBG Server Adapter (C626)
PCIe-3030NP-02A1E	PCIe3.0x8 Crypto/Compression LBG Server Adapter (C627)

### Dimensions

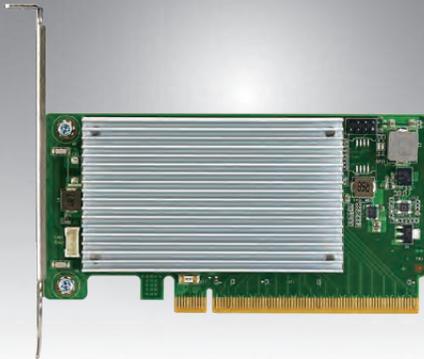
Unit: mm



# PCIE-3031

## PCIe 3.0, x16 Crypto/ Compression LBG Server Adapter

Preliminary



### Features

- Controller supports PCI Express Base Specification 3.0 (8 GTs)
- PCI Express x16 lanes
- Intel® QuickAssist Technology for Crypto and Compression
  - Compression/Decompression (Deflate)
  - RSA Decrypt
  - IPSec/SSL
  - Wireless: KASUMI, ZUC, SNOW 3G (Lewisburg only)
  - Bulk: AES, 3DES, (A)RC4
  - Hash: MD5, SHA-1/2 SHA-3 HMAC



### Technical Specifications

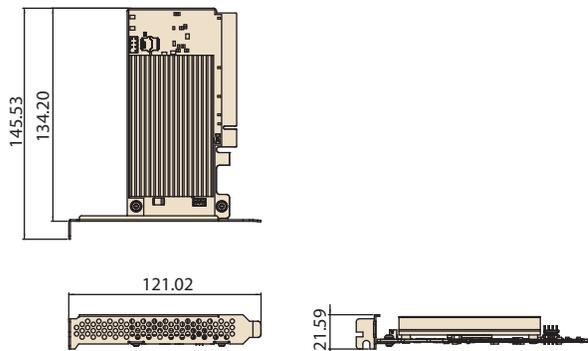
General Technical Specifications	Interface Standard	PCIe Gen 3.0 (8GTs)
	Board Size(bracket is exclusive)	132.3*68.9 mm (L*H)
	PCI Express Card Type	x16 Lane
	PCI Express Voltage	+12V There will not be an external Aux power input
	PCI Connector	Gold Finger: x16
	Controllers	Intel® C627
	Compression / Encryption Performance	100Gb/s
	Weight	155gr (5.47oz)
	Power Consumption	20w
	Holder	Metal Bracket: Full height (default) Low profile (accessory)
	Operating Temperature (Required airflow: 300LFM)	-5 ~ 55 °C
	Operating Humidity test	45 °C @ 95%
	Cooling	Passive Heatsink
	Storage Temperature	-40 ~ 85 °C
	Storage Humidity test	60 °C @ 95%
Regulation	CE/FCC	
Operating Systems Support	Operating Systems Support	Linux

### Ordering Information

Part Number	Description
PCIE-3031NP-00A1E	PCIe3.0x16 Crypto/Compression LBG Server Adapter (C627)

### Dimensions

Unit: mm



Packetarium XL Blade Servers 1

High Performance Servers 2

Network Appliances 3

PCI Express Adapters 4

Network Switches 5

ATCA Blades & Integrated Systems 6

CPCI Boards & Enclosures 7

VPX Blades 8

Video Processing & IP Media Platforms 9



## Network Switches

<b>Overview</b>		<b>5-1</b>
<b>Selection Guide</b>		<b>5-2</b>
<b>ESP-2120</b>	High Performance 10/25GbE connectivity SmartNIC	<b>5-3</b>
<b>ESP-9210</b>	High Performance 10/40GbE Top of Rack Ethernet Switch	<b>5-4</b>
<b>ESP-9230</b>	High Performance 10/25/40/50/100GbE Top of Rack Ethernet Switch	<b>5-5</b>
<b>ESP-9400</b>	High Performance 10/40GbE Top of Rack Ethernet Switch	<b>5-6</b>

Please visit [www.advantech.com/nc](http://www.advantech.com/nc) for the latest product updates.





# Network Switches

White-box switching platforms from Advantech offer the intelligent bare-metal switching capabilities upon which network equipment providers and proficient SDN/NFV developers can design their own software and services. They offer a new generation of intelligent switching platform for software defined networks that provide the performance, flexibility and port density required by highly virtualized enterprise and data center environments. The portfolio is designed for NFV network architects requiring open switching platforms that are programmable, scale easily and offer greater operational simplicity allowing them to develop functions that provide a deeper understanding of what's going on in their network.

The switches are all based on standard merchant silicon from Broadcom, Intel® and NXP, making the switch more programmable and economical, allowing developers to easily add new services and capabilities that give them greater network insight.

The platforms utilize standards-based protocols such as OpenFlow, and support manageability through open technologies such as OpenStack and OpenDaylight. They also allow developers to implement virtual security functions for high performance packet processing functions such as firewalling, intrusion detection and IPSEC over VxLAN.

Redundant, hot swappable, DC power supplies and fans, along with IPMI 2.0 and OpenIPMI hardware management interfaces provide the high availability and management features which equip the switch for managing business-critical traffic.

The platforms help OEMs and their customers unleash the full value of SDN, while saving power and cost by eliminating the need for additional appliances commonly required in traditional switching implementations.



**ESP-2120**  
High Performance 10/25GbE connectivity SmartNIC



**ESP-9210**  
High Performance 10/40GbE Top of Rack Ethernet Switch



**ESP-9230**  
High Performance 10/25/40/50/100GbE Top of Rack Ethernet Switch

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# Selection Guide



Model name		ESP-2120	ESP-9210	ESP-9230	ESP-9400
Part Number		ESP-2120-25AA00	ESP-9210-10AA10	ESP-9230-25AA21	ESP-9400-10AA00
Processor, Memory and Switch	CPU	NXP	Intel	Intel	NXP
	Switch	N/A	Broadcom	Broadcom	Broadcom
	Flash Memory	2x128MB	2x8MB SPI flash	2 x 1Gbit SPI Flash	1x32MB SPI flash
	Memory	up to 2*16G DDR4	up to 2*16G DDR4	up to 2*16G DDR4	up to 16GB
	Bandwidth	50Gbps		3.2Tbps	320Gbps
Interface	Switch I/O	2 x 10/25GbE SFP28 or 4 x 10/25GbE SFP28	48 x 10GbE SFP+ port 6 x QSFP 40G port	2 x 10GbE SFP+ 32 x 100GbE QSFP28/ 64x 50GbE/ 32x40GbE/ 128x 25-GbE/ 128x 10-GbE	24 x 10GbE SFP+ port 2 x QSFP 40G port
	Mgmt I/O	1 x GbE RJ-45	2 x GbE RJ-45	2 x GbE RJ-45	2 x GbE RJ-45
	Console	1 x pin header	RJ-45	RJ-45	RJ-45
	USB	-	2 x USB	2 x USB	2 x USB
Local Storage	SATA	-	2 x M.2 SATA	2 x M.2 SATA	1 x M.2 SATA
Fan	System Fans	-	4 x Hot-swappable redundant FAN trays; support reverse and forward airflow	5 x Hot-swappable redundant FAN trays; support reverse and forward airflow	2 x FAN
	Air Flow	-	Forward/Reverse	Forward/Reverse	Forward/Reverse
Power	Power Supply	external 6-pin ATX power connector	Redundant AC/DC PSU	Redundant AC/DC PSU	250W ATX Power
	Power Input	12V DC	AC 100 ~ 240 V @ 47 ~ 63 Hz, full range	AC 100 ~ 240 V @ 47 ~ 63 Hz, full range	AC 110 ~ 240 V @ 50 ~ 60 Hz
	Consumption	71 Watt Max		435 Watt (Max.)	140 Watt Max
Environment	Operating	0 to 45 °C @ 1800m and 85%RH	0 to 50 °C @ 1800m and 85%RH	0 to 40 °C @ 1800m and 85%RH	0 to 50 °C @ 1800m and 85%RH
	Storage	-20 to 70 °C @ 3000m and 95%RH	-20 to 70 °C @ 3000m and 95%RH	-40 to 70 °C @ 3000m and 95%RH	-20 to 70 °C @ 3000m and 95%RH
	Humidity	5 ~ 95% (non-condensing)	5 ~ 95% (non-condensing)	5 ~ 95% (non-condensing)	5 ~ 95% (non-condensing)
Mechanical	Dimensions (W x H x D) mm	106.7 x 241.3 x 14.3 mm (4.20" x 9.50" x 0.56")	440 x 446 x 44 mm (17.32" x 17.56" x 1.73")	17.32" x 17.56" x 1.73"	220 x 420 x 43 mm (8.67" x 16.54" x 1.69")
	Weight	0.5kg	10 kg	20kg	4 kg
SW	ONIE	-	-	V	-
	FastPATH	-	V	V	V
	OF-DPA	-	-	V	-
SW (Others)	NXP BSP	V	-	-	-

# ESP-2120

## High Performance 10/25GbE connectivity SmartNIC



### Features

#### Hardware

- NXP LX2160A ARM® Cortex®-A72 16 cores processor
- Support 2x10/25G or 4x10/25G ports
- Support PCIe Gen4x8 interface
- Support SR-IOV based virtualization functions
- Support open vSwitch offload with various OS platform
- Support DPDK offloads
- Strong network acceleration capacity
- Allow custom programmability
- Support extra power input
- Full height and 3/4 length



### Introduction

ESP-2120 is a smartNIC support 2-ports or 4-ports 10/25GbE connectivity. By supporting a PCI Express Gen4 x8 host interface, this adapter provides sufficient bandwidth for line rate traffic on both 10/25GbE ports. Ethernet ports can be configured to support a variety of optical transceivers such as 10/25GBASE-SR and 10/25GBASE-LR optical modules as well as direct attach cables to deploy in variety of environments. ESP-2120 is designed as a data center and network offload solution, built-in powerful LX2160A ARM® Cortex®-A72 16 cores processor to provide strong computing and acceleration capacity. With ESP-2120 to offload security, networking and storage related features; the server host CPU cost could be significantly reduced. Also, ESP-2120 contains security throughput 50G, allows user to develop crypto or security features. Comprehensive standard API support including DPDK and OVS to make ESP-2120 a perfect solutions for virtualized environments. ESP-2120 is an ideal network interface solution for multi-tenant environments. The agility of smartNIC allows service provider to deploy various applications. The custom programmability allows user to develop services across VMs for a wide range of scenarios.

### Specifications

Processor and memory	Processor	NXP LX2160A
	Memory	2 x SO-DIMM slot, support DDR4 w/2400MHz, per slot up to 16G, up to 32G
Interface	Ethernet	2-port 25GbE, SFP+ (10GbE) / SFP28 (25GbE)
	Management	1-port 1G RJ-45 Console 1 x internal pin header
Power		71 Watt (max)
Physical	Dimension (W x D x H)	106.7 x 241.3 x 14.3 mm (4.20" x 9.50" x 0.56")
	Weight	0.5 kg
Environment	Operating	0 to 45 °C
	Airflow	200LFM (minimum)

### Ordering Information

Part Number	Description
ESP-2120-25AA00	2-ports 10/25G, LX2160A 2.0GHz, 2 x16G DDR4 SO-DIMM
ESP-2120-25AA10	4-ports 10/25G, LX2160A 2.0GHz, 2 x16G DDR4 SO-DIMM

Please contact your Advantech regional sales office or email [ncg@advantech.com](mailto:ncg@advantech.com) for additional ordering information and pricing.

Packetarium XL Blade Servers	1
High Performance Servers	2
Network Appliances	3
PCI Express Adapters	4
Network Switches	5
ATCA Blades & Integrated Systems	6
CPCI Boards & Enclosures	7
VPX Blades	8
Video Processing & IP Media Platforms	9

# ESP-9210

## High Performance 10/40GbE Top of Rack Ethernet Switch



### Features

#### Hardware

- Built-in Intel Broadwell-DE series CPU options
- Broadcom switch solution
- 720Gbps forwarding bandwidth
- Fiber support 6x QSFP+ and 48x SFP+
- Embedded Broadcom FASTPATH to support L2/L3 features
- Redundant & Hot-swappable PSU design
- 4x hot-swappable fan modules
- Network boot nodes from the switch
- IPMI 2.0 compliant hardware management function
- Provide ONIE pre-loaded option



### Introduction

The ESP-9210 is a new generation switch from Advantech Networks and Communications Group and it is optimized for use in software-defined networks (SDN) requiring 10 and 40 Gigabit Ethernet connectivity. It combines a high performance, low-latency Broadcom StrataXGS® switch for up to 720Gbps of forwarding bandwidth and a various Intel Broadwell-DE series processor options, providing a powerful and flexible platform that supports enhanced features essential for top-of-the-rack deployment in modern data center switching installations. Data center networks require increasingly denser 10GbE and 40GbE connectivity at the access and aggregation layers in order to address the higher speed network interface cards being deployed in servers and the increased link utilization due to widespread use of virtualization.

With fiber support for six 40GbE QSFP+ ports and forty-eight 10GbE SFP+ ports in a 1U rackmount design, the ESP-9210 can be used to build highly scalable, feature-rich, top-of-rack switches, and aggregation equipment to connect big data, cloud and optimized workloads in the data center.

Redundant, hot swappable, power supplies and fans, along with IPMI 2.0 and OpenIPMI hardware management interfaces provide the high availability and management features which equip the switch for managing business-critical traffic. In addition, the front-to-rear or rear-to-front cooling capabilities of the ESP-9210 help to reduce air conditioning costs by matching the airflow of other servers in the rack. One 10/100/1000 Ethernet RJ45 port and two ports are available for out-of-band management with two USB3.0 ports available for installation and maintenance needs. Please contact your local Advantech sales office for more details.

### Specifications

Processor, Memory and Switch	Processor	Intel Broadwell-DE series
	Switch Chip	Broadcom StrataXGS®
	Memory	2 x DDR4 SO-DIMM, up to 32G
	Storage	2 x M.2 SATA, up to 1TB
	Forwarding Bandwidth	720Gbps
Ethernet I/O	Fiber Version	48x 10GbE SFP+ 6x 40GbE QSFP+
Management I/O	Ethernet	2 x GbE RJ-45
	Serial	1 x RJ-45 Type console port
	USB	2 x USB3.0
System FRU	Power supply	2 x Redundant AC PSU
	Power input	AC 100 -240 V @ 47-63 Hz, full range
	Type/Watt	450 W 2U (1+1 redundant, 450 W each)
	System power	322 Watt Max.
	System Fans	4 x Hot-swappable redundant FAN trays
Physical	Dimension (W x D x H)	440 x 446 x 44 mm (17.32" x 17.56" x 1.73")
	Weight	10 kg
Environment	Operating	0 to 45 °C
	Storage	- 20 to 70 °C

### Ordering Information

Part Number	Description
ESP-9210-10AA10	48 ports 10GbE SFP+, 6 ports 40GbE QSFP+, with CPU Intel Broadwell-DE 1518, AC power
ESP-9210-10AA20	48 ports 10GbE SFP+, 6 ports 40GbE QSFP+, with CPU Intel Broadwell-DE 1548, AC power

Please contact your Advantech regional sales office or email [ncg@advantech.com](mailto:ncg@advantech.com) for additional ordering information and pricing.

# ESP-9230

## High Performance 10/25/40/50/100GbE Top of Rack Ethernet Switch



### Features

- High Density
  - 32 40/50/100GbE ports in 1 RU
  - Up to 128 10/25/50GbE ports
- Wire Speed Switching
- Ultra low latency
  - As low as 400 nanoseconds

### Benefits

- Non-blocking cut-through switching fabric
- Easy Scale from one to thousands of nodes and switches
- Arranged and Organized Data Center
  - Support speeds of 10/25/40/50/100GbE
  - Easy deployment
  - Easy maintenance
- Unprecedented performance
  - Line rate performance on all ports at all packet sizes
  - Storage and server application run faster
- Software Defined Networking (SDN) support
- Running Broadcom FASTPATH®, alternative operating systems over ONIE
- IPMI 2.0 compliant hardware management function

## Introduction

The Advantech Networking ESP-9230 is a high-performance, power-efficient, 100Gbps Top-of-Rack (TOR) switch designed for data center use. The ESP-9230 delivers line-rate L2 and L3 forwarding capacity on all ports in this compact, 1-rack-unit (1U) model. The ESP-9230 is loaded with the Open Network Install Environment (ONIE) which supports installation of compatible NOS, including Open Network Linux and commercial offerings. The Advantech Networking ESP-9230 is a Quad Small Form-Factor Pluggable (QSFP) switch with 32 QSFP28 ports. Each QSFP28 port can operate at 10, 25, 40, 50, and 100 Gbps, up to a maximum of 128 x 25-Gbps ports.

While running with a powerful x86-based processor, this system is not only the highest performing switch fabric element, but also has the ability to a Linux running server into the same device.

Including the ONIE software offering, the ESP-9230 has three software offerings in total to fulfill different customer applications. Details are below.

- Powered by the Broadcom OF-DPA pipeline, the ESP-9230 becomes a 3.2T OpenFlow switch plus a high-end NFV computer platform in a single 1U device. The Broadcom switch silicon, managed by the OpenFlow protocol for the Broadcom OF-DPA, provides full line rate switching across all ports.
- With the Broadcom FASTPATH®, the ESP-9230 helps users achieve quick time-to-market for new Ethernet products. FASTPATH operates on the Linux operating system and supports numerous industry RFCs, standards and protocols, like L2 and L3 Ethernet switching, and routing protocols.
- Loaded with the Open Network Install Environment (ONIE), the ESP-9230 supports the installation of compatible independent switchOS offerings.

The ESP-9230 supports the Open Network Install Environment (ONIE) for zero touch installation of network operating systems.

## Specifications

Processor, Memory and Switch	Processor	Intel® Xeon® Processor D-1500 Family
	Flash Memory	2 x 128MB SPI Flash
	Max DDR4 DIMM#	2 x DDR SO-DIMM, up to 32GB
	Ethernet Switch	Broadcom StrataXGS® Tomahawk BCM56960
	Forwarding Bandwidth	3.2Tbps
Ethernet I/O	Fiber Version	32 x 100GbE QSFP28/ 64x 50GbE/ 32x40GbE/ 128x 25-GbE/ 128x 10-GbE
		2 x 10GbE SFP+
Management I/O	Ethernet	2 x GbE RJ-45
	Serial	1 x RJ-45 Type console port for D-1548
	USB	2 x USB 3.0
Local Storage	SATA	2 x M.2 SATA devices
System FRU	Power supply	Redundant AC/DC PSU
	Power input	AC 100 -240 V @ 47-63 Hz, full range
	Type/Watt	600 W (1+1 redundant, 500 W each)
	System power consumption	435 Watt (Max.)
	System Fans	5 x Hot-swappable redundant FAN trays; support reverse and forward airflow
Physical	Dimension (W x D x H)	17.32" x 17.56" x 1.73"
	Operating	0 to 40 °C @ 1800m and 85%RH
Environment	Storage	- 40 to 70 °C @ 3000m and 95%RH

## Ordering Information

Part Number	Description
ESP-9230-25AA21	Support 32 x 100GbE QSFP28/ 64x 50GbE/ 32x40GbE/ 128x 25-GbE/ 128x 10-GbE; Intel® Xeon® Processor D-1518, 2*4G DDR4 memory, 2*64G M.2 SSD, L2 features included.

Please contact your Advantech regional sales office or email [ncg@advantech.com](mailto:ncg@advantech.com) for additional ordering information and pricing.

# ESP-9400

## High Performance 10/40GbE Top of Rack Ethernet Switch



### Features

#### Hardware

- Built-in NXP QorIQ® Layerscape ARM CPU
- Broadcom StrataXGS Trident switch solution
- 320Gbps forwarding bandwidth
- Fiber support 2x QSFP and 24x SFP+
- Designed as half rack width and 1U rack height
- Network boot nodes from the switch
- Compliant to medical requirement IEC/EN 60601-1



### Introduction

The ESP-9400 is a new generation switch from Advantech Networks and Communications Group and it is optimized for use in software-defined networks (SDN) requiring 10 and 40 Gigabit Ethernet connectivity. It combines a high performance NXP QorIQ® Layerscape ARM CPU and low-latency Broadcom StrataXGS® Trident switch solution for up to 320Gbps of forwarding bandwidth. Data center networks require increasingly denser 10GbE and 40GbE connectivity at the access and aggregation layers in order to address the higher speed network interface cards being deployed in servers and the increased link utilization due to widespread use of virtualization. Moreover, ESP-9400 is compliant to strict stipulations, as well as the requirements of the Medical certification IEC/EN 60601-1. ESP-9400 provide a powerful and flexible platform that support enhanced features essential for top-of-the-rack deployment in modern data center switching and medical installations. ESP-9400 is designed as half rack width and 1U rack height which require minimum space and easy to install in various environments. In addition, one 10/100/1000 Ethernet RJ45 port is available for out-of-band management and with one USB ports available for installation and maintenance needs.

### Specifications

Processor, Memory and Switch	Processor	NXP LS1046A
	Switch Chip	Broadcom switch solution
	Memory	1 x Standard DIMM, up to 16G
	Storage	1 x M.2 SATA
	Forwarding Bandwidth	320Gbps
Ethernet I/O	Fiber Version	24x 10GbE SFP+ 2x 40GbE QSFP+
	Ethernet	1 x GbE RJ-45
Management I/O	Serial	1 x USB COM port
	USB	1 x USB2.0
	Power supply	ATX power supply
System FRU	Power input	AC 110 -240 V @ 50-60 Hz
	Type/Watt	250 W
	System power	140 Watt Max.
	System Fans	2 (Forward/Reverse)
	Physical	Dimension (W x D x H)
Weight		4 kg
Environment	Operating	0 to 50° C @ 1800m and 85%RH
	Storage	- 20 to 70° C @ 3000m and 95%RH

### Ordering Information

Part Number	Description
ESP-9400-10AA00	24 ports 10GbE SFP+, 2 ports 40GbE QSFP+, with CPU NXP LS1046 1.2GHz, 4G DIMM, 32GB M.2 SATA

Please contact your Advantech regional sales office or email [ncg@advantech.com](mailto:ncg@advantech.com) for additional ordering information and pricing.

# ATCA Blades & Integrated Systems

<b>Overview</b>		<b>6-1</b>
<b>Selection Guide</b>		<b>6-2</b>
<b>MIC-5342</b>	AdvancedTCA, Dual Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Series Processors for Telecom Applications	<b>6-4</b>
<b>MIC-5345</b>	AdvancedTCA, Dual/Single Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Series Processors for Server and NFV Applications	<b>6-6</b>
<b>MIC-5604</b>	Advanced Mezzanine Card based on Intel® Xeon® D Processors with DDR4 ECC	<b>6-8</b>
<b>FMM Series</b>	Extension Modules for Advantech CPU Boards	<b>6-10</b>
<b>RTM-5107</b>	AdvancedTCA® Rear Transition Module for MIC-5333 and MIC-5342	<b>6-12</b>
<b>ATCA-9112</b>	40 GbE Switch Blade Supports Up to 16 Slots	<b>6-13</b>
<b>SMM-5060</b>	Netarium™ System Management Module	<b>6-14</b>
<b>Netarium-2</b>	3U 2-Slot AdvancedTCA Reference Platform	<b>6-16</b>
<b>Netarium-2v2</b>	3U 2-Slot AdvancedTCA Reference Platform with Advantech Shelf Manager support	<b>6-18</b>
<b>Netarium-6</b>	6U 6-Slot AdvancedTCA Reference Systems	<b>6-20</b>
<b>Netarium-6v2</b>	6U 6-Slot AdvancedTCA Reference Systems with Advantech Shelf Manager support	<b>6-22</b>
<b>Netarium-14</b>	14U 14-Slot AdvancedTCA Reference Systems	<b>6-24</b>

Please visit [www.advantech.com/nc](http://www.advantech.com/nc) for the latest product updates.



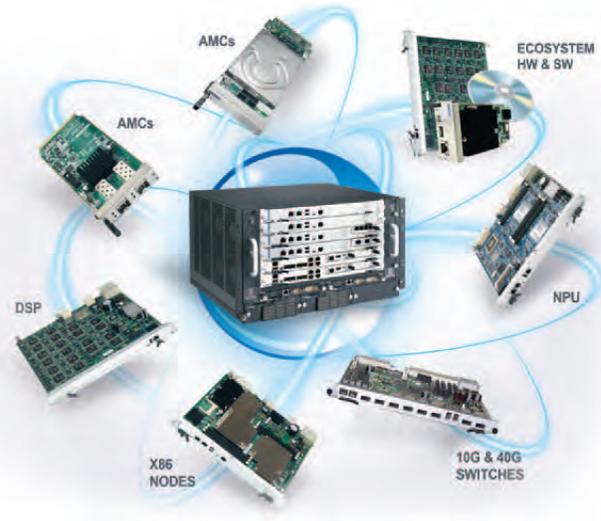


# ATCA Blades & Systems

Advantech began AdvancedTCA development in 2006 and is now one of the world's leading ATCA vendors serving the most important networking OEMs with standard and customized ATCA blades, as well as fully integrated systems.

Advantech's ATCA integration team unites products engineered by our own hardware and software designers with trusted and tested ecosystem partner building blocks. Our customer focused architects work closely with networking and telecom OEMs to design systems from pre-tested xTCA elements with proven product interoperability. As technology evolves, our integration teams facilitate the delivery of innovative solutions more rapidly to help network equipment OEMs overcome the capacity challenges they are facing and respond more effectively to ever increasing customer demand.

By reducing project risk and complexity at the system level, our customers get to market faster and more affordably, with tested and dependable solutions.



- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

## xTCA Product Lines



### AdvancedTCA Design Expertise

ATCA solutions are an extension of Advantech's existing technological expertise. Over the years, we have serviced customers with high-performance industrial-grade computing platforms. With Advantech's strength in AdvancedTCA dual processor designs, we can help our customers to architect the exact Telecom control and application blades that they desire. Our latest AdvancedTCA CPU boards represent a clear benchmark for our ATCA design capabilities.



### xTCA System Management

Advantech's expertise in system management began with IPMI on CPCI and the adaption of code for Tier-1 accounts. With the advent of MicroTCA, Advantech designed two generations of MCHs with the associated management software and also deploys IPMI on ATCA based on an Advantech codebase. This allows cross-platform re-use and special feature development for OEMs. The IPMI core has been tested against a variety of 3rd party shelf managers and with industry standard compliance test suites.



### ATCA Integrated Systems

Advantech's Netarium series of ATCA reference systems are specifically targeted to help network equipment providers reach superior levels of performance and extend their product range at the high end. The series represents a new generation of systems which offer superior performance, scalability and flexibility with the latest 40 and 100G switches and application blades. We optimize the systems to achieve the highest possible density at the rack level, with a maximum number of payload blades, network ports and switching capacity.

# Selection Guide

		Netarium-2v3	Netarium-6v3	Netarium-14v3
Physical Characteristics	Dimensions (H x W x D)	3U x 19 x 462 mm	6U x 19 x 462 mm	14U x 19 x 500 mm
	Slot	2	6	14
Power Supply	Input	AC/DC	AC/DC	AC/DC
	Output	2 x 850W	2 x 2750W/220V	5 x 1600W/220V
Cooling	Max Capacity	300W/slot	300W/slot	350W/slot
ShMM	Quantity per system	1	1 or 2	1 or 2
	Solution	Advantech SMM-5060	Advantech SMM-5060	PPS-500R
Backplane	Topology	replicated	triple-replicated	dual-star
Node board	X86 Platform	Dual or Single Intel E5-2600v3/v4	Dual or Single Intel E5-2600v3/v4	Dual or Single Intel E5-2600v3/v4
	Core per system	Up to 56	Up to 112	Up to 336
Data Plane Bandwidth	Backplane	MIC-5342: 160Gbps MIC-5345D: 80Gbps MIC-5345S: 20Gbps	MIC-5342: 640Gbps MIC-5345D: 320Gbps MIC-5345S: 80Gbps	MIC-5342: 1920Gbps MIC-5345D: 960Gbps MIC-5345S: 240Gbps
	External	n/a	160Gbps	160Gbps
	Options	120Gbps via RTM-5106 100Gbps via RTM-5108	240Gbps via RTM-5106 200Gbps via RTM-5108	720Gbps via RTM-5106 600Gbps via RTM-5108
Control Plane Bandwidth	Backplane	4Gbps	8Gbps	24Gbps
	External	4Gbps	40Gbps	40Gbps

Packetarium XL Blade Servers	<b>1</b>
High Performance Servers	<b>2</b>
Network Appliances	<b>3</b>
PCI Express Adapters	<b>4</b>
Network Switches	<b>5</b>
<b>ATCA Blades &amp; Integrated Systems</b>	<b>6</b>
CPCI Boards & Enclosures	<b>7</b>
VPX Blades	<b>8</b>
Video Processing & IP Media Platforms	<b>9</b>

# MIC-5342

## AdvancedTCA, Dual Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Series Processors for Telecom Applications



### Features



- Two 14-Core Intel® Xeon® E5-2600 v3/v4 Series processors
- Intel® Communications Chipset 8900 Series
- Eight DDR4 VLP DIMMs with ECC support
- Up to four 40GBase-KR4 ports on Fabric interface to support Dual-Dual Star Topology
- Two 10/100/1000Mbps BI ports
- Two 10/100/1000BASE-T front panel ports
- One Fabric Mezzanine Module (type II) for optional front I/O or additional acceleration
- Fully managed, hot-swappable RTM with 8 PCIe gen.3 lanes



### Introduction

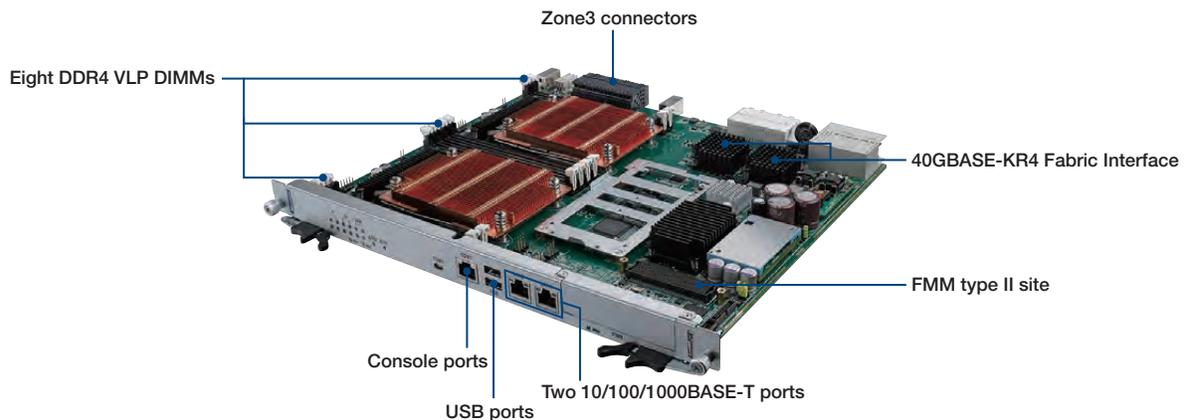
Advantech's MIC-5342 is a dual processor ATCA blade based on the Intel® platform formerly codenamed "River Forest". It enables the highest performance available in the ATCA form factor with up to 28 cores and 56 threads of processing power, fast PCI Express gen. 3 lanes running at up to 8Gbps, and best in class virtualization support. Two QPI interfaces between the CPUs improve memory and I/O access throughput and latencies when one processor needs to access resources hosted by the other socket. With four DDR4 DIMMs per socket in a quad channel design running up to 2400MT/s, the MIC-5342 not only offers superior memory bandwidth over 3-channel designs, but can also support RAM density up to 256GB. It outperforms previous generation dual socket designs while keeping similar thermal characteristics with balanced airflow resistance.

Fabric connectivity is implemented by two Intel® Ethernet controllers XL710-BM2 devices onboard, connecting to four backplane fabric channels. This allows the MIC-5342 to scale from legacy 10GbE to high speed 40GbE network interfaces as well as enable optional dual-dual star support for the most demanding applications utilizing 4 hub blades per system. A Fabric Mezzanine Module type II socket with PCIe x16 connectivity provides on-board expansion capability for additional front panel I/O, offload and acceleration controllers such as the Intel® Communications Chipset 8900 Series, IPSec offload engines, or customer specific logic.

The onboard IPMI firmware based on Advantech's advanced IPMI core enhances modularity and flexibility for customization of system management features, and provides a framework for value-added features that enhance the Reliability, Availability, Serviceability, Usability and Manageability (RASUM) of the product. HPM.1 based updates, including rollback support, are available for all programmable components such as the BIOS, BIOS settings, IPMC firmware, and FPGA. Advantech's IPMI solution, combined with an optimized UEFI BIOS, continues to offer advanced features used on previous generation Advantech MIC-533x blades, such as HPM.2 support, Dynamic Power Budgeting, BIOS redundancy, Real Time Clock Synchronization and MAC mirroring. Advantech's IPMI firmware has been tested for CP-TA compliance using the Polaris Networks ATCA Test Suite and against a variety of AdvancedTCA shelf management solutions.

The MIC-5342 connects 8 PCIe gen.3 lanes to the Zone 3 interface for hot-swappable RTMs such as the RTM-5107, which supports two SAS HDDs. Please contact Advantech for more information about available RTMs. The MIC-5342 can also be easily customized based on Advantech's unique Customized COTS framework with custom RTMs, FMMs, or modifications of the on-board system FPGA, IPMI and/or BIOS firmware.

The optimization of features and unmatched flexibility based on Advantech's leading FMM technology make the MIC-5342 equally well suited for both control plane and application workloads in telecom networks.



## Specifications

Processor System	CPU	Dual Intel® Xeon® E5-2600 v3/v4 Series processors up to 120W TDP (chassis airflow dependent)		
	Max. Speed	2.5 GHz (SKU dependent)		
	Chipset	Intel® Communications Chipset 8900 Series		
	BIOS	Redundant AMI UEFI based BIOS		
	QPI	9.6 GT/s		
Memory	Technology	Four channel DDR4 2400MHz SDRAM (72-bit ECC Un-/ Registered) to each CPU		
	Max. Capacity	Configurable up to 256GB		
	Socket	8 x VLP RDIMMs		
Zone 2	Fabric Interface	Up to four 40GBASE-KR4 ports		
	Base Interface	2 x 10/100/1000BASE-T ports		
Front I/O Interface	Serial (COM)	1 x 16C550 compatible Serial Port (RJ-45 connector)		
	Ethernet	2 x 10/100/1000BASE-T ports		
	USB 2.0	2 x Type A ports		
Operating System	Compatibility	CentOS 7.0, Red Hat Enterprise 7.0, Wind River Linux 6.0		
IPMC	BMC Controller	Compliant with IPMI 2.0		
FMM	Site	1 FMM type II socket		
	Interface	1 x PCIe x16		
Miscellaneous	Storage	2 x CFast or 2 x M.2 SSD (Supporting RAID) 1 x 2.5" SSD		
	TPM	TPM 2.0		
Power Requirement	Configuration	2 x E5-2658v4 (TDP 105W), 8 x DDR4 2400 8GB VLP Memory, FMM-5001F (Single Intel® Ethernet Controller with 2x SFP+ output to Front Panel), no RTM		
	Consumption	Input Voltage: -48V / 300W (Preliminary)		
Zone 3 (RTM)	RTM	Advantech common RTM interface Type 2		
	Interface	1 x PCIe x8, 1 x PCIe x16, 1x COM, 2x USB 2.0, 2x SATA 3.0		
Physical Characteristics	Dimensions (W x D)	6HP, 322.25 x 280.00 mm (12.69" x 11.02") (PCB size)		
	Weight	2.8 kg		
Environment	Temperature	Operating	Non-operating	
		0 ~ 55° C (32 ~ 131° F) (selected SKUs, only)		-40 ~ 70° C (-40 ~ 158° F)
	Humidity	5 to 95% @ 40° C (non-condensing)		95% @ 60° C (non-condensing)
	Shock	4 G each axis		-
	Vibration	5-200 Hz, 0.5 Grms each axis		5 Hz to 20 Hz @ 1 m2/s3 (0.01 g2 /Hz) (flat) 20 Hz to 200 Hz @ -3 dB/oct (slope down)
Compliance	Environment	ETSI EN300019-2-1 Class1.2, EN300019-2-2 Class 2.3, ETSI EN300019-2-3 Class 3.1E, Designed to meet GR-63-CORE		
	PICMG	3.0 R3.0, 3.1 R2.0, HPM.1, HPM.2, HPM.3		
	EMC	FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386) Designed to meet GR-1089-CORE		

## Ordering Information

Part Number	Description
MIC-5342SD1-P2E	DH8955 Chipset, four 40GBASE-KR4 FI ports with dual 14C/28T 105W (E5-2658v4) CPUs, no memory, no CFAST/SSD/M.2
MIC-5342SD4-P2E	DH8955 Chipset, two 40GBASE-KR4 FI ports with dual 14C/28T 105W (E5-2658v4) CPUs, no memory, no CFAST/SSD/M.2
MIC-5342SD3-P3E	DH8900 Chipset, two 40GBASE-KR4 FI ports with dual 14C/28T 75W (E5-2648Lv4) CPUs, no memory, no CFAST/SSD/M.2

Optional CFAST/SSD/M.2 and new FMMs/RTMs are introduced on a regular basis. Please contact Advantech for an up-to-date list of compatible modules.

## Related Products

Part Number	Description
RTM-5107S00E	Storage Extended ATCA RTM
FMM-5001FE	Niantic 10Gb LAN I/O Extended FMM (2x SFP+)
FMM-5002E	External VGA Port FMM
FMM-5006AE	Cave Creek Extended FMM (DH8920 chipset)
FMM-5006TE	Coleto Creek Extended FMM (DH8955 chipset)

Packetarium  
XL Blade  
Servers 1High  
Performance  
Servers 2Network  
Appliances 3PCI Express  
Adapters 4Network  
Switches 5ATCA Blades  
& Integrated  
Systems 6CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# MIC-5345

## AdvancedTCA, Dual/Single Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Series Processors for Server and NFV Applications



### Features



- Two SKUs available with one or two Intel® Xeon® E5-2600 v3/v4 Series processors
- Intel® C610 series PCH server class chipset
- Sixteen or eight DDR4 VLP DIMMs with ECC support
- Support 40G/10G ports on Fabric interface
- Two 10/100/1000Base-T BI ports
- Two 10/100/1000BASE-T front panel ports
- One Fabric Mezzanine Module (type II) for optional front I/O
- Support on-board VGA port
- Extended Storage options (2xSSD / MO-297)



**AdvancedTCA®**

### Introduction

Advantech's MIC-5345 is a 40G dual processor ATCA blade based on the Intel® server platform formerly codenamed "Grantley". MIC-5345 is offered in two main configurations: As a dual processor blade supporting 16 DDR4 VLP DIMM slots it offers best in class memory support at lowest cost making it an ideal choice for typical server workloads and virtualized application scenarios such as NFV. Up to 512GB memory capacity allow users to harness the full capabilities of Intel®'s E5-2600v3 series processors with up to 24 cores and 48 threads for virtualization by providing a high amount of physical memory per virtual machine.

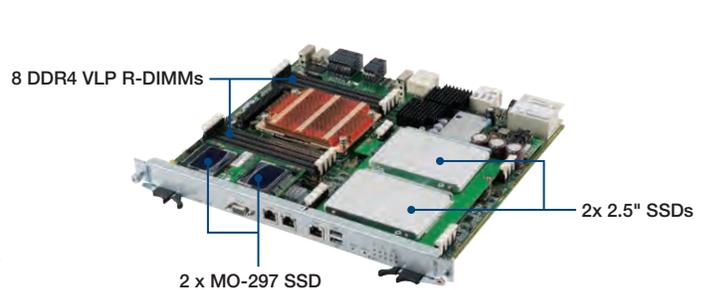
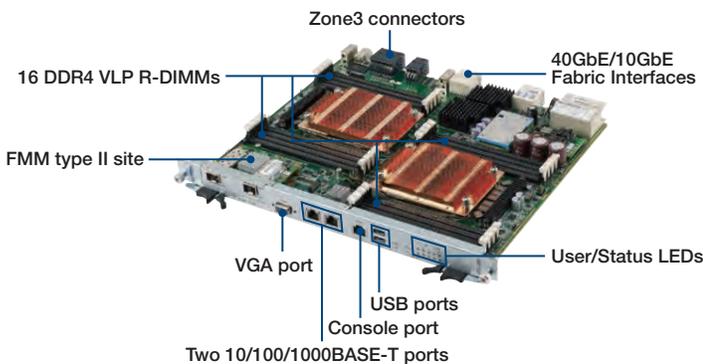
In a single processor configuration, the MIC-5345 offers a very attractive price point for applications which require lower processing power such as control plane and orchestration. With support for 8 DIMM sockets, two 2.5" SSDs and the processing performance offered by a 12 core Intel® E5-2600v3 processor, the MIC-5345 comes with an optimized feature set and outperforms 1st and 2nd generation dual socket ATCA blades resulting in a major cost reduction.

Both blade configurations feature two 10/40GbE fabric ports based on XL710-BM2 Ethernet controller with fast PCI Express gen. 3 technology running at up to 8Gbps per lane and best-in-class virtualization support. Two QPI interfaces between the CPUs improve memory and I/O access throughput and latencies when one processor needs to access resources hosted by the other socket. With eight DDR4 DIMMs per socket in a quad channel design running at up to 2133MT/s (1866MT/s with two DIMMs per channel populated) and RAM density up to 512GB, the MIC-5345 offers the latest memory technology with higher performance and lower power compared to DDR3 technology. It outperforms previous generation dual socket designs while keeping similar thermal characteristics. The dual socket SKU of MIC-5345 supports a Fabric Mezzanine Module type II socket with PCIe x8 connectivity providing extension possibilities for additional front port I/O, offload and acceleration controllers such as the Intel® Communications Chipset 89xx Series, IPSec offload engines or customer specific logic. The single socket MIC-5345 SKU features two additional MO-297 sockets instead of an FMM site.

The onboard IPMI firmware based on Advantech's IPMI core offers greater modularity and flexibility for the customization of system management features, and provides the framework for added value features enhancing Reliability, Availability, Serviceability, Usability and Manageability (RASUM) of the product. HPM.1 based updates are available for all programmable components (BIOS, BIOS Settings, IPMC firmware, FPGA) including rollback support. Advantech's IPMI solution, combined with an optimized UEFI BIOS, continues to offer advanced features used on previous generation MIC-533x blades, such as HPM.2 support, Dynamic Power Budgeting, BIOS redundancy, Real Time Clock Synchronization and MAC Mirroring. Advantech IPMI firmware has been tested for CP-TA compliance using the Polaris Networks ATCA Test Suite and against a variety of AdvancedTCA shelf management solutions. The MIC-5345 can be easily customized based on Advantech's unique Customized COTS framework with custom FMMs, modifications of the on-board system FPGA, IPMI and/or BIOS firmware.

### Dual CPU SKU with 16 DIMM Support

### Single CPU SKU with Extended Storage Support



## Specifications

Processor System	CPU	Single or Dual Intel® Xeon® E5-2600 v3/v4 Series processors up to 105W TDP (chassis airflow dependent)	
	Max. Speed	2.2GHz (SKU dependent)	
	Chipset	Intel® C610 series PCH server class chipset	
	BIOS	Redundant AMI UEFI based BIOS	
	QPI	9.6 GT/s	
Memory	Technology	DDR4 up to four channel / 2400MHz SDRAM (72-bit ECC Un-/ Registered), LR DIMM support	
	Max. Capacity	Configurable up to 256 GB	
	Socket	16 VLP RDIMMs(Dual CPU SKU) / 8VLP RDIMMs (Single CPU SKU)	
Zone 2	Fabric Interface	1 Intel® XL710 controller with 2 x 40GBaseKR4 ports(Dual CPU SKU) 1 X710-BM2 with 2x 10GBase-KR ports (Single CPU SKU)	
	Base Interface	i350 supporting two 10/100/1000Base-T ports	
Front I/O Interface	Serial (COM)	1 x Serial Port (RJ-45)	
	VGA	1 x VGA Port	
	Ethernet	2 x 10/100/1000BASE-T through Intel® i350	
	USB 3.0	2 x Type A ports	
Operating System	Compatibility	CentOS7.0, RedHat Enterprise 7.0	
IPMC	BMC Controller	Aspeed	
	IPMI	Compliant with IPMI 2.0 using Advantech advanced IPMI core	
FMM	Site	1 FMM type II socket	
	Interface	FMM type II: one PCIe x8 from CPU socket 0	
Miscellaneous	Storage	2 x MO-297 (Single and Dual CPU SKU) / 2 x SATAIII 2.5" SSD HD (Single CPU SKU only)	
	Real Time Clock	Built-in	
Power Requirement	Configuration	2 x E5-2648 v3 (TDP 75W), 16 x DDR4 2133 (1866) 8GB VLP Memory	
	Consumption	Input Voltage: -48V / 288W Input Voltage: -60V / 289W	
Zone 3 (RTM)	RTM	Advantech common RTM interface Type 2	
	Interface	2 x PCIe x8 (J34), 2 x USB2.0 (J31), 4 x SATA3.0 (J32) 12V, 3.3V power for RTM (P30)	
Physical Characteristics	Dimensions (W x D)	6HP, 322.25 x 302.00 mm (PCB size)	
	Weight	2.8 kg	
Environment	Temperature	Operating 0 ~ 55° C (32 ~ 131° F) (selected SKUs, only)	Non-operating -40 ~ 70° C (-40 ~ 158° F)
	Humidity	5 to 93% @ 40° C (non condensing)	95% @ 40° C (non-condensing)
	Shock	4 G each axis	20 G each axis
	Vibration (5 ~ 500 Hz)	0.5 Grms	2.16 Grms, 30 mins each axis
	Compliance	Environment	ETSI EN300019-2-1 Class1.2, EN300019-2-2 Class 2.3, ETSI EN300019-2-3 Class 3.1E Designed to meet GR63-CORE
	PICMG	3.0 R3.0, 3.1 R2.0, HPM.1	
	EMC	FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386) Designed to meet GR1089-CORE	

## Ordering Information

Part Number	Description
MIC-5345SS1-P1E	MIC-5345 single cpu sku, two 10GBASE-KR4 FI ports with single eight-cores E5-2608Lv3 CPUs, no memory, no MO-297/SSD
MIC-5345SD2-P2E	MIC-5345 dual cpu sku, fur 40GBASE-KR4 FI ports with two twelve-cores E5-2648Lv4 CPUs, no memory, no MO-297/SSD

## Related Products

Part Number	Description
RTM-5108	Rear Transition Module with dual 25G port, dual SAS 3.0 HDD supported (Available in 2017 Q2)
FMM-5001F	Niantic 10Gb LAN I/O Extended FMM (2x SFP+)

Packetarium  
XL Blade  
Servers 1High  
Performance  
Servers 2Network  
Appliances 3PCI Express  
Adapters 4Network  
Switches 5ATCA Blades  
& Integrated  
Systems 6PCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# MIC-5604

## Advanced Mezzanine Card based on Intel® Xeon® D Processors with DDR4 ECC



### Features

- Supports Intel® Grangeville Platform Processor family
- Intel® Xeon®-D Soc
- Up to 8 GB / 16 GB (DDR4 1866/2133 MHz) soldered SDRAM with ECC
- Two Gigabit Ethernet (RJ-45), one USB 2.0/3.0, one console (micro-USB), and one HDMI Type D to front panel
- AMC connector routes Gigabit Ethernet (x2), SATA 3.0 (x2), PCIe x4
- Boot from network, onboard flash, M.2 SSD or external devices
- Supports IPMI v1.5 and Serial-over-LAN function
- AMC.0, AMC.1, AMC.2, and AMC.3 compliant



### Introduction

The Advantech MIC-5604 is a single-width mid-size general purpose processor AMC module for ATCA or MicroTCA applications. Its design is based on Intel® Xeon®-D SoC processors in a BGA package. This AMC module supports processors with integrated memory controllers, and a maximum cache of 6MB. It can support up to 8/16 GB, dual-channel, on-board DDR4 memory with ECC at 2133/1866 MHz, making it ideal for mission critical applications requiring low latency and reliable memory access. For graphics or control applications the front panel HDMI port provides the Display support.

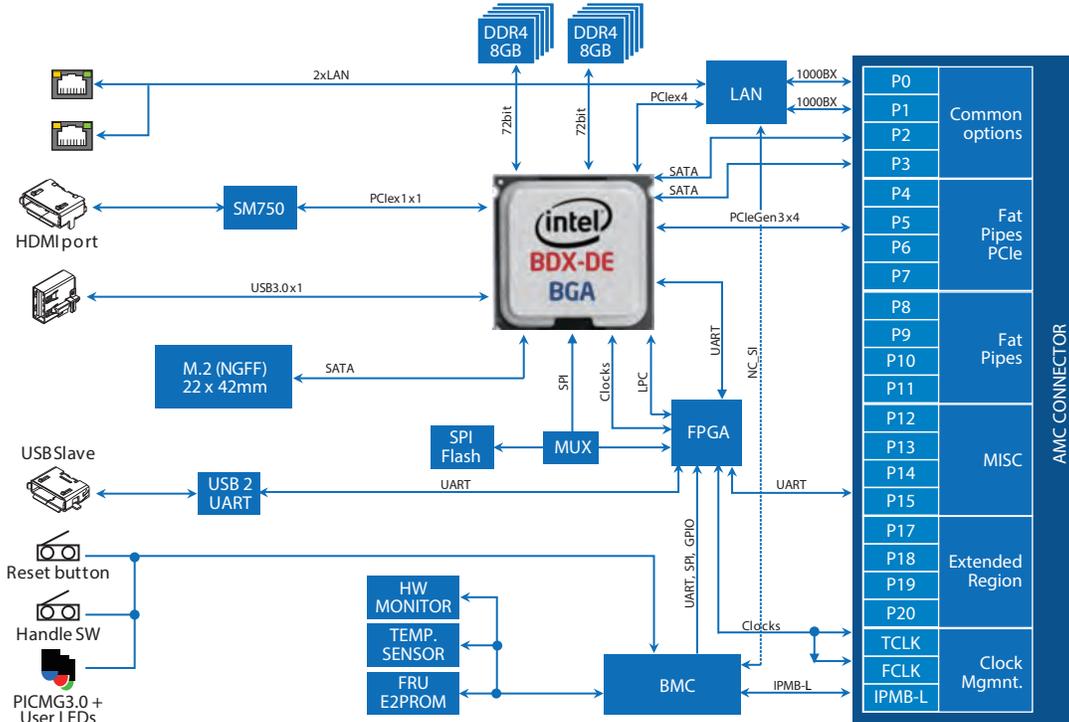
As standard feature, external Ethernet connectivity is provided on two dedicated GbE front panel ports, one each from the onboard Intel® I350 AM4 quad port LAN controller, which also provides two additional GbE ports to the AMC base fabric. The Intel® I350 supports remote management capabilities with Serial over LAN as well as introducing faster I/O than previous generation designs with SATA-III to AMC ports 2..3 and PCIe x4 gen.2 to ports 4..7. This module can also be configured to boot from the network, M.2 SSD, or external storage media such as HDD or USB drives.

To enable maximum application flexibility, the MIC-5604 is not only designed to support PICMG AMC sub-specifications such as AMC.1/2/3, it also has a fabric expansion mezzanine interface that allows the implementation of standard or customized mezzanine modules that offer enhanced fat pipe connectivity and I/O support. A dedicated Module Management Controller (MMC) monitors onboard conditions and manages hot swap operation, module replacement and field upgrades without the need to power down the carrier system.

### Specifications

Processor System	CPU	Intel® Grangeville Platform Xeon®-D(Broadwell-DE) <ul style="list-style-type: none"> <li>▪ D-1508 Broadwell-DE 3MB 2c 2.2GHz 25W</li> <li>▪ D-1527 Broadwell-DE 6MB 4c 2.2GHz 35W</li> </ul>
	Max. Speed	2.2 GHz
	PCH	Integrated PCH
	BIOS	UEFI BIOS based on AMI (1. Redundant flash with HPM.1 update & rollback, 2. Configuration settings can be changed over IPMI)
Memory	Technology	Dual-channel DDR4 memory at 1867/2133 MHz soldered SDRAM with ECC
	Max. Capacity	8 GB / 16GB RAM (soldered on-board memory)
Ethernet	Controllers	Intel® I350-AM4 Quad-port Gigabit Ethernet controller
	Interface	Two GbE accessible on front panel via RJ-45 and two SerDes links to AMC ports 0 and 1
Front I/O Interface	Serial (COM)	One x86 Serial Port (USB slave connector through onboard USB to Serial converter)
	Ethernet	Two 10/100/1000BASE-T from Intel® I350
	USB 2.0/3.0	One port (Type A)
Mass Storage	M.2	Mezzanine Module with CFast socket (NOTE 1)
SATA		
Interfaces	AMC edge connector	Two SATA interfaces (6Gbps) to common option ports 2..3
	Other	One SATA routed to M.2 daughter board (optional)
Operating System	Compatibility	RHEL, CentOS, Windows Server 2008, Windows Server 2012
System Management	MMC	NXP LPC1768
	IPMI Compliancy	IPMI 1.5 with IPMI 2.0 features (e.g. RMCP, SOL) using Advantech IPMI Core
Watchdog Timer	Supervision	One MMC watchdog, One payload watchdog
	Interval	IPMI compliant
Miscellaneous	LEDs	x1 blue for hot swap, x1 red/amber for failure and OOS, x1 green for general purpose
Compliance	Standards	PICMG AMC.0, AMC.1, AMC.2, AMC.3, IPMI v1.5, HPM.1
Power Consumption	Configuration	Intel® Xeon®-D D-1508 + 8GB on-board DDR-4 memory
	TDP (Estimated)	40W max. (52W max with D-1527 35W CPU)

## Block Diagram



- 1 Packetarium XL Blade Servers
- 2 High Performance Servers
- 3 Network Appliances
- 4 PCI Express Adapters
- 5 Network Switches
- 6 ATCA Blades & Integrated Systems
- 7 CPCI Boards & Enclosures
- 8 VPX Blades
- 9 Video Processing & IP Media Platforms

## Specifications (Cont.)

Physical Characteristics	Dimensions (W x D)	Mid-size (or Full-size), 180.6 x 73.5 mm	
Environment	Temperature	Operating	Non-operating
	Humidity	-5 ~ 55° C (23 ~ 131° F) (NOTE 2)	
	Vibration (5 ~ 500Hz)	-40 ~ 70° C (-40 ~ 158° F)	
	Shock	IEC60068-2-78 (95%RH @ 40° C)	
	Altitude	IEC60068-2-6 (0.002G2/Hz, 1Grms)	
Regulatory	Conformance	IEC60068-2-27 (10G, 11ms)	
		4,000m above sea level	
		10,000m above sea level	
		UL94V0, FCC Class B, CE, RoHS & WEEE Ready	

## Ordering Information

Part Number (NOTE3, NOTE4)	Description
MIC-5604AM-S27-16E	With Intel® D-1527, Quad Cores, 2.2G ,35W CPU, 16G DDR4 memory, with M.2 daughter board but no M.2 Module
MIC-5604AM-S08-M8E	With Intel® D-1508, Dual Cores, 2.2G ,25W CPU, 8G DDR4 memory, with M.2 daughter board but no M.2 Module.

Where A stands for general AMC module option (M for Mid-Size, S= Standard).

Note:

1. M.2 module, available on the mid-size sku as default, and the AMC Mezzanine Module are mutually exclusive.
2. Operating Temperature: depending on the actual air flow through the AMC slot.
3. For lower or higher on-board memory support, please contact your local Advantech sales for options.
4. For the Intel® Xeon®-D CPU support, please contact your local Advantech sales.

# FMM Series

## Extension Modules for Advantech CPU Boards



### Features

- PCIe based extension modules for ATCA CPU & RTM boards
- Implicit e-keying support
- Ideal to add additional I/O or customer-specific functionality to a standard product:
  - Different or additional I/O on a blade
  - Accelerators and offload engines to a platform
  - Backplane fabric ports on a blade
- FRU EEPROM on mezzanine for management
- Smaller, lower power & less expensive than AMC modules



### Introduction

Advantech's Fabric Mezzanine Modules (FMM) provide additional flexibility to Advantech ATCA CPU and RTM boards. Additional flexibility can be I/O ports such as 10GE SFP+ ports, 40GE networking, VGA server type graphics module, PCIe-based expression offload, as well various FI interfaces for ATCA CPU boards. Fabric Mezzanine Modules facilitate ease of system customization by using standard CPU boards and RTMs.

Fabric Mezzanine Modules have a PCIe x8 or x16 high speed local CPU / processor interface, which can be routed to local resources, or ATCA Zone 2/3. Advantech has defined two types of modules, Fabric mezzanine Type I and Fabric mezzanine Type II, offering different functionality dependent on the host board. Type I FMMs are internal mezzanines with PCIe and fabric connectivity, providing customized fabric interface, such as XAU1, KR, or KR4. Type II FMMs have the same PCB shape as Type I modules, but support I/O connectors and front panel mounting. With one PCIe x16 or two PCIe x8 gen.3 ports routed to the front CPU blade, the FMM socket is a perfect solution for I/O port expansion, and also customer-defined acceleration and interfaces. As FMM modules are less complex than AMC modules, customers can deploy faster with a customized design.

FMM-5001B



FMM-5001F



FMM-5001Q



FMM-5002



FMM-5004M



FMM-5006



## Specifications

	Fabric mezzanine type I*			Fabric mezzanine type II		
FMM Module/ Main Chip	FMM-5001B	Intel® 82599EB	FMM-5001F	Intel® 82599ES		
	FMM-5001Q	4 x Intel® 82599ES	FMM-5002	Silicon Motion SM750		
	FMM-5004M	Mellanox CX3	FMM-5006	Intel® Communications Chipset 8900 Series		
Management	EEPROM FRU	Microchip 24LC32A				
	Thermal IC	TI TMP75AIDR				
Protocol / I/O ports	FMM-5001B	Dual ports XAUI to backplane				
	FMM-5001F	2 SFP+				
	FMM-5001Q	Dual ports 4 x KR to backplane				
	FMM-5002	VGA				
	FMM-5004M	Dual ports KR4 to backplane				
	FMM-5006	Quick Assist				
Power Requirement	FMM-5001B	FMM-5001F	FMM-5001Q	FMM-5002	FMM-5004M	FMM-5006
	7.35W	9.29W	29.4W	4.54W	6.8W	28.08W Max
Physical Characteristics	Dimensions (W x D)	Single Size (75mm x 64mm): FMM-5001B, FMM-5001F, FMM-5002, FMM-5004M, FMM-5006				
		Double Size (150mm x 64mm): FMM-5001Q				
	Weight	FMM-5001B	FMM-5001F	FMM-5001Q	FMM-5002	FMM-5004M
		75g	75g	90g	60g	35g
Environment		Operating		Non-operating		
	Temperature	0 ~ 55° C (32 ~ 131° F)		- 40 ~ 70° C (-40 ~ 158° F)		
	Humidity	5 to 93% @40° C (non-condensing)		95% @ 40° C (non-condensing)		
	Shock	3G, half-sine 11ms, each axis		18G, half-sine 11ms, each axis		
	Vibration	5 - 200 Hz, 0.2G, each axis		5 Hz to 20 Hz @ 1 m2/s3 (0.01 g2 /Hz) (flat) 20 Hz to 200 Hz @ -3 dB/oct (slope down) 95% @ 40° C (non-condensing)		
Compliance	Environment	ETSI EN300019-2-1 Class1.2, EN300019-2-2 Class 2.3, ETSI EN300019-2-3 Class 3.1E				
	PICMG	3.0 R3.0, HPM.1, IRTM.0				
	EMC	CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386) Designed to meet GR1089-CORE				

\*Note: Type I FMMs do not include a front panel, other than the FMM-5001B

## Compatibility

	FMM-5001B	FMM-5001F	FMM-5001Q	FMM-5002	FMM-5004M	FMM-5006
MIC-5332	Yes	Yes	-	Yes	-	Yes
MIC-5333	Yes	Yes	Yes	Yes	Yes	Yes
RTM-5104	-	Yes	-	Yes	-	Yes
MIC-5342	-	Yes	-	Yes	-	Yes
MIC-5345	-	Yes	-	Yes	-	Yes

## Ordering Information

Part Number	Description
FMM-5001BE	10GE Dual-dual star FI support
FMM-5001FE	10GE Intel® 82599ES with dual SFP+ output
FMM-5001QE	Quad Intel® 82599ES for 40GE FI support
FMM-5002E	Server graphic with one external VGA port
FMM-5004ME	Mellanox CX3 for 40GE FI support
FMM-5006AE	Intel® DH8920 PCH QuickAssist Accelerator
FMM-5006TE	Intel® DH8955 PCH QuickAssist Accelerator

## Related Products

Model Name	Description
MIC-5332 series	ATCA CPU blade with dual Intel® Xeon® CPU
MIC-5333 series	ATCA CPU blade with dual Intel® Xeon® CPU
MIC-5342 series	ATCA CPU blade with dual Intel® Xeon® CPU
MIC-5345 series	ATCA CPU blade with dual Intel® Xeon® CPU
RTM-5104 series	AdvancedTCA® RTM for MIC-5332

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

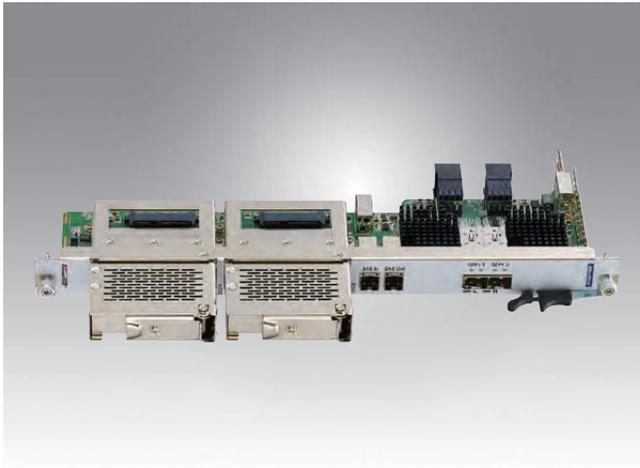
CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# RTM-5107

## AdvancedTCA® Rear Transition Module for MIC-5333 and MIC-5342



### Features



- PICMG IRTM.0 compliant
- Supports two 2.5" SAS HDD / SATA SSD
- Supports two miniSAS HD connectors to external device & failover
- SAS interface speeds up to 12Gbps
- Supports two SFP+ ports



### Introduction

The RTM-5107 is a single slot (6HP) ATCA rear transition module of Advantech ATCA CPU blades.

An Avago SAS3008 controller provides two SAS/SATA ports to two 2.5" Direct Attached Storage drives installed in the RTM-5107 storage trays and two miniSAS HD ports. One miniSAS HD port can be connected to external SAS devices (up to 4 devices). The other miniSAS HD port is used in a failover configuration, so two sets of compute blades and two RTM-5107 modules can be connected in a crossover mode to provide fail safe storage if used in conjunction with SAS disks supporting dual host ports. All internal and external SAS ports support 12Gbps lane speed.

For rear LAN access, an Intel® Ethernet Controller X710-BM2 on the RTM-5107 provides two SFP+ ports on the RTM panel for 10GbE/1GbE connections.

### Specifications

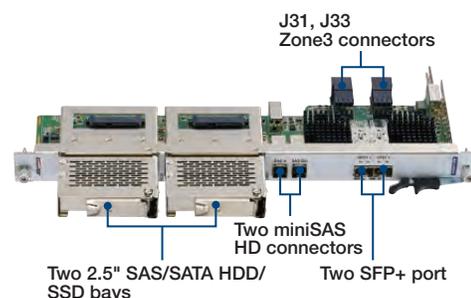
Rear Panel Interface	Ethernet	Intel® Ethernet Controller X710-BM2 supporting two SFP/SFP+ ports
	Storage	Two 2.5" SAS/SATA HDD/SSD bays. Support SAS3008 HW RAID 0/1, RAID 1 support Disk Hot-swap auto-recovery Two miniSAS HD connectors to external device & failover
IPMI	MMC Controller	NXP LPC1756
	IPMI	Advantech IPMI core, compliant with IRTM.0 and IPMI 1.5/2.0
Zone 3	RTM	Advantech common RTM interface Type II
	Interface	Two PCIe x8, IPMB-L, MMC management interface
Power Requirement	Max Power Consumption	14.6W without SAS hard drives (estimated)
		24W with two SAS hard drives (estimated)
Physical Characteristics	Dimensions (W x D)	6 HP, 322.25 x 94.00 mm (PCB size) Note: 322.25 x 123.92 mm (The HDD's cages extend beyond the rear panel)
	Weight	1.2 kg (with two SAS hard drivers) 0.72 kg (without SAS hard drivers)
Environment	Temperature	Operating: 0 ~ 55° C (32 ~ 131° F) Non-operating: - 40 ~ 70° C (-40 ~ 158° F)
	Humidity	5 to 93% @ 40° C (non condensing) 95% @ 40° C (non-condensing)
	Shock	4Grms, each axis
	Vibration	5 - 200 Hz, 0.2G, each axis 5 Hz to 20 Hz @ 1 m2/s3 (0.01 g2/Hz) (flat) 20 Hz to 200 Hz @ -3 dB/oct (slope down)
Compliance	Environment	ETSI EN300019-2-1 Class 1.2, EN300019-2-2 Class 2.3, ETSI EN300019-2-3 Class 3.1E
	PICMG	3.0 R3.0, HPM.1, IRTM.0
	Safety	CE Mark (EN60950-2005), UL60950-1/CSAC22.2
	EMC	FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386) Designed to meet GR1089-CORE

### Ordering Information

Part Number	Description
RTM-5107S00E	Rear Transition Module compatible with MIC-5333 and MIC-5342* ATCA compute blades

\*Note: Two SFP+ port is not supported with MIC-5342.

Please contact Advantech for further information about current and future ATCA product offerings.



# ATCA-9112

## 40 GbE Switch Blade Supports Up to 16 Slots



### Features

- PICMG 3.0/3.1 compliant AdvancedTCA®
- Supports up to 16-slot platforms
- Separate base and fabric interface switching to provide enhanced security and protection
- 10/40G fabric interface with eight 10GE uplinks
- Fabric interface bandwidth up to 640G
- 1/10G basic interface with two GE uplinks
- Basic interface bandwidth up to 64G
- One AMC slot

### Specifications

Local Mgmt. Processor (LMP)	Processor	Freescale QorIQ P1011	
	E500 Core Frequency	800 MHz	
	Memory Type and Capacity	Unbuffered 2Gb DDR3 1333 MHz	
	Interface	Two SGMII interface PCIe x1 interface USB 2.0 interface SDHC interface	
Switch	Ethernet Switch	Broadcom BCM56846 for 40Gb & 10G	
	Management Switch	Broadcom BCM56321 for 10Gb & 1Gb	
	PCIe Switch	PLX PEX8614	
Boot Flash	Redundant Flash Type (LMP)	Parallel NOR Flash 128MB TSOP56	
AMC	Interface	1 x XAUI SAS PCIe x4	
	Zone 3 Interface (RTM)	Physical Connection	Advantech RTM interface
		Interface	PCIex4 SAS/SATA 2 x XLAUI or 2 x XAUI
I/O Front Interface	LMP Console Debug Port	1 x RJ-45	
	LMP USB Port	-	
	SFP+ Port	10 x SFP+	
	Ethernet Management Port	RJ-45 10/100/1000BT	
Physical Characteristics	Dimensions (W x D)	6HP, 322.25 x 280.00 mm (12.69" x 11.02") (PCB size)	
	Weight	3.0 kg (Est.)	
SW Support	Bootloader	U-Boot	
	HW Mgmt	IPMI	
	Switch Mgmt	Broadcom FASTPATH 8.0	
	Operating System	WindRiver Linux 4.0	
Environment	Operating Environment	Temperature: 0 to 40° C Humidity: 20% to 90 % RH	
	Storage Temperatures	Temperature: -20 to 70° C Humidity: 5% to 95 % RH	
Compliance	EMC/Safety	CE/ FCC/ UL/CB (planned)	

### Ordering Information

Part Number	Description
ATCA-9112	40GbE ATCA Switch Blade

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# SMM-5060

## Netarium System Management Module



### Features

- ATCA / eATCA Shelf and System Management
- ARM9 based Shelf Management controller with Advantech IPMI core
- Full event log synchronization, robust redundancy and failover
- Optional Netarium System Manager on Intel® Atom™ Processor C2000 series
- Features include SoL Proxy, System Explorer, System Boot Server, etc.
- Up to two GbE (RJ45), two USB (host) ports, and two console ports (one RJ-45 and one micro-USB) on front panel
- Two microSD slots for shelf and system event logs storage.
- Up to two internal M0300 SSDs for OS, system management applications, and extended event logs storages
- System mount RAID boot disks and LCD module support
- HPM.1 updates, HPM.2, HPM.3 and HPI options
- Option to host customer applications

### Introduction

Advantech's SMM-5060 is the Intel® intelligence in Netarium ATCA or eATCA systems responsible for platform health and management as a whole. All individual FRU elements in the system including each power supply, fan module, node blade, hub blade, RTM or eRTM, backplane, and even the module itself can be monitored and controlled through the Shelf Manager residing in the SMM-5060's BMC module. The SMM-5060's Shelf Management (ShM) is ATCA compliant and supports the latest PICMG specifications such as HPM.1, HPM.2 and HPM.3. In addition to providing full redundancy and failover support, Advantech's ShM features full log and state synchronization. All firmware and software on the Shelf Manager supports redundant images and can be upgraded via HPM.1 for maximum reliability.

As an option, the SMM-5060 can be extended with System Manager functionality via a module based on the Intel® Atom™ processor C2000. Advantech's System Manager (SysM) acts as centralized service access point (such as SoL Proxy), blade boot server (provisioning OS images and node blades' applications), and advanced configuration manager enabling any iA node in the Netarium system to boot with a tailored set of BIOS settings yielding best performance for a specific workload. In addition, an integrated web front end, the System Explorer can be used to provide graphical displays of various levels of system information such as system inventory, health views, sensor status, system IDs, and event logs, leading to a friendlier shelf/system management user experience. An LCD module implemented on the chassis can also be interfaced to the SMM-5060 and used to display system statistics or status to onsite technicians, allowing the Netarium system to be managed like a big appliance. Customers who are using appliances for their entry and mid-range network gear can now have a consistent system management view for their high end product line based on Advantech's Netarium platform and SMM-5060.

### Specifications

Processor System	X86 CPU	Intel® Atom™ Processor C2000 Series (C2358/ 2 Cores/ 2 Threads/ 1 MB L2 Cache or C2558/ 4 Cores/ 4 Threads, 2 MB L2 Cache)
	Max. Speed	2.4 GHz
	BIOS	Carrier Grade UEFI BIOS based on AMI 1. Redundant flash with HPM.1 update & rollback 2. Configuration settings can be changed over IPMI
	BMC Processor	ARM9 based Microcontroller (400MHz)
Memory	Technology	x86: 2x 2GB DDR3 1333 MHz with ECC (2GB on board, 2GB on SODIMM) BMC: On-board DDR3/ 800 MHz/ 512 MB
	Max. Capacity	Up to 4GB for x86 module
Ethernet	Devices	x86: Intel® i354 Quad port Gigabit Ethernet controller BMC: 2 integrated 10/100/1000 Mbit MACs
	Interface	Up to 2 x GbE uplink Interfaces (only one uplink for basic shelf management SKU) 2 x Base Interface (100 Mbps) 1 x Cross-over interface to other SMM-5060 (GbE)
Front I/O Interface	Serial (COM)	2 x Console ports (1 RJ-45 connector for x86 module and 1 micro-USB connector for BMC module)
	Ethernet	2 x GbE ports (RJ-45 connectors)
	USB 2.0	2 x Type A ports (available only for x86 SKU)
	SDHC	2 x MicroSD Sockets
Mass Storage	Onboard	2 x 64GB (or 2 x 32GB) M0300 SATA SSD (available only for x86 SKU)
	Off board (system connector)	Two SATA-II Interfaces (available only for x86 SKU)
Operating System	Compatibility	CentOS 6 64 bit, RHEL6 64bit, others on request
Shelf Management	BMC	ARM 9 based controller (400MHz)
	IPMI	IPMI 2.0 based on Advantech IPMI Core
Watchdog Timer	Supervision	BMC watchdog
	Interval	IPMI compliant

## Specifications

Miscellaneous	LEDs	x1 blue for hot swap, x1 red for failure and OOS, x4 green/amber for general purpose (user definable)	
Compliance	Standards	PICMG 3.0, IPMI v1.5, HPM.1, HPM.2, HPM.3	
Power Consumption	Configuration	Based on Intel® Atom™ C2558, 2 x 1333MHz 2GB DDR3 memory	
	Measured	30W max.	
Physical	Dimensions	6HP, 278.3 mm x 144.8 mm	
Environment		Operating	Non-operating
	Temperature	-5 ~ 55° C (23 ~ 131° F) NOTE1	- 40 ~ 70° C (-40 ~ 158° F)
	Humidity	IEC60068-2-78 (95%RH @ 40° C)	
	Vibration (5 ~ 500Hz)	IEC60068-2-6 (0.002G2/Hz, 1Grms)	
	Shock	IEC60068-2-27 (10G, 11ms)	
Regulatory	Altitude	4000m above sea level	10,000m above sea level
	Conformance	UL94V0, FCC Class B, CE, RoHS & WEEE Ready	
	NEBS Level 3	Designed to meet GR-63-CORE and GR-1089-CORE	

## Ordering Information

Part Number <sup>(2)</sup>	Description
SMM-5060P1-M4E	Netarium system management module with Intel® Atom™ Processor C2558 module, 4GB DDR3 with ECC, 2x M0300 64GB SSDs, 2x USB host ports, 2x GbE uplink ports
SMM-5060P2-M2E	Netarium system management module with Intel® Atom™ Processor C2358 module, 2GB DDR3 with ECC, 2x M0300 32GB SSDs, 2x USB host ports, 2x GbE uplink ports, no system mount SATA interfaces to backplane
SMM-5060B1-M1E	Netarium shelf management module. No Intel® processor module, 1x GbE uplink port

NOTE 1: Operating Temperature: depends on the actual air flow through the ShMM slot. Numbers based on Advantech Netarium series

NOTE 2: Two main SKUs are available – one basic SKU provisioning PICMG3.0 compliant shelf management functions, the other SKU contains an x86-based module to provide advanced system management functions

NOTE 3: Contact your regional Advantech NCG representative for detailed information, including other system memory and SSD configurations.

Packetarium XL Blade Servers **1**

High Performance Servers **2**

Network Appliances **3**

PCI Express Adapters **4**

Network Switches **5**

ATCA Blades & Integrated Systems **6**

CPCI Boards & Enclosures **7**

VPX Blades **8**

Video Processing & IP Media Platforms **9**

# Netarium-2

## 3U 2-Slot AdvancedTCA Reference Platform



### Features

- 3U 2-slot 19" rackmount ATCA shelf with integrated server blades
- 2 front slots with power distribution and cooling for up to 300W per slot
- 2 rear transition module (RTM) slots
- Supports two redundant Shelf Managers
- 40G ATCA-compliant backplane with cross-connected Base and Fabric Interfaces, handles up to 10 Gbps and 3.125 Gbps per differential pair
- Redundant AC and DC power options
- Right-to-Left Push-Pull Cooling Mode
- Hot swappable FRUs (blades, RTMs, fan trays, power modules, and ShMM)
- PICMG 3.0 (AdvancedTCA Base Specification) Compliance



### Introduction

Advantech's Netarium series of ATCA reference systems are specifically targeted to help network equipment providers reach superior levels of performance over traditional rackmount servers or appliances and extend their product range at the high end. The series represents a new generation of systems which offer higher performance, greater scalability and extreme flexibility by using the latest 40 Gigabit Ethernet (40G) backplanes, switches and application blades. Advantech optimizes the systems to achieve the highest possible density at the rack level, enabling a maximum number of processor cores, network ports and switching capacity.

Each system is tailored for customers to rapidly deploy in data communication markets for applications which require faster and deeper packet processing such as policy and charging enforcement, network security, real-time traffic monitoring, load balancing, subscriber analytics and content optimization among others. As ATCA was designed to meet the carrier-grade constraints of the telecom industry, the systems integrate the chassis, cooling, power distribution and shelf management into an off-the-shelf platform solution capable of superior 5 NINES availability and reliability.

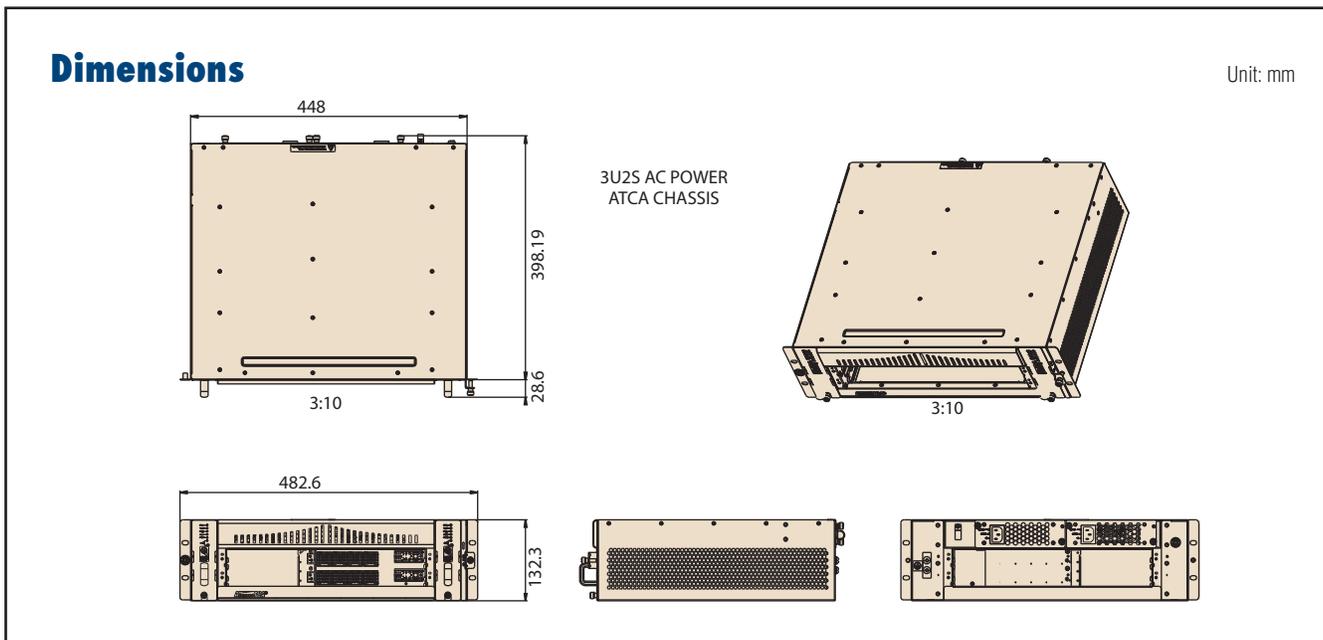
Netarium-2 is the ultimate in entry level flexibility. This 2-slot platform allows OEMs to redeploy common platform hardware which scales when needed. Based on the MIC-5333 it packs more processing power than previous generation 6-slot systems. With an increase in miniaturization and performance at the blade level it is accompanied by a new concept at the mezzanine level to bring more I/O and acceleration closer to the processing cores. With four FMM sites on each ATCA blade and RTM, the MIC-5333 integrated into the Netarium-2 Reference System offers the broadest flexibility in entry level system performance on ATCA.

Many different payloads can be integrated into Advantech Netarium systems and configured to address diverse industry applications. For more details on integrating a specific configuration please contact your local sales representative.

### Specifications

Number of slots	Front blades	2 ATCA compliant node blades
	RTM's	2 ATCA rear transition modules
Backplane	IPMB	Bussed (radial available on request)
	Base interface	Dual star, 1000 Base-T
	Fabric interface	Full mesh, 3.125Gbps or 10Gbps per differential pair
Cooling	Technology	Two front pluggable, hot swappable push-pull fan trays with N+1 redundant fans (no degradation with a single fan failure)
	Max. Capacity	>CPTA B.4, 300W/slot
	Air filter	One hot swappable air filter on the right side of chassis
Accessibility	Front	ATCA blades, ShMC's, front fan trays
	Rear	RTM's, PEM's / AC PSU's
Power	AC	Integrated dual, redundant AC power supplies, 850W
	PSU cooling	Self cooled
	DC feed	2 redundant, hot swappable PEMs w. integrated EMI filters
	DC voltage	-36V to -72V (Nominal -48V)
	Current rating	30A per feed
Shelf management	Full featured	Dual, redundant enhanced shelf managers
	Interfaces	RMCP, SSH, SNMP, CLI, Web and serial interfaces
	Sensors	FRU presence, fan health, PSU health, temperatures, input voltages
Miscellaneous	ESD plug	Front and rear
	Cable management	Front / rear cable trays (optional)
Physical Characteristics	Dimensions (H x W x D)	3U x 19 x 462 mm
	Weight	10kg (chassis weight only)

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**



## Specifications

Environment	Operating	0 ~ 55° C (32 ~ 131° F)	Non-operating	- 40 ~ 70° C (-40 ~ 158° F)
	Temperature	0 ~ 55° C (32 ~ 131° F)		
	Humidity	5 to 93% @ 40° C (non condensing)		95% @ 40° C (non-condensing)
	Altitude	Up to 1800m (w/o cooling degradation)		Up to 4000m
Compliance	Environment	ETSI EN300019-2-1 Class 1.2, EN300019-2-2 Class 2.3, ETSI EN300019-2-3 Class 3.1E Designed to meet GR63-CORE		
	PICMG	3.0 R3.0, 3.1 R1.0, HPM.1		
	Safety & EMC	CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/C5AC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386) Designed to meet GR1089-CORE		

## Ordering Information

Model Series	Configuration
Netarium-2 (AC)	3U, 2-slot ATCA chassis with 2x 850W AC PSUs, 2 fan trays, air filter, full mesh backplane, optional ShMM
Netarium-2 (DC)	3U, 2-slot ATCA chassis with 2 PEMS, 2 fan trays, air filter, full mesh backplane, optional ShMM

Note: Please contact your local Advantech sales representative for more information.



- 1. PSU 1
- 2. Fan Tray 1
- 3. Shelf Management 1
- 4. MIC-5333 node board
- 5. PSU 2
- 6. Fan Tray 2
- 7. Shelf Management 2

## Related Products

Model Series	Description
MIC-5332	AdvancedTCA 10GbE Dual Socket CPU Blade with Intel® Xeon® E5-2600 Processors
MIC-5342	AdvancedTCA 40GbE Dual Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Processors for Telecom Applications
MIC-5345	AdvancedTCA 40GbE Dual/Single Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Processors for Server and NFV Applications
RTM-5104	AdvancedTCA RTM for MIC-5332
RTM-5107	AdvancedTCA Rear Transition Module for MIC-5333 and MIC-5342

# Netarium-2v2

## 3U 2-Slot AdvancedTCA Reference Platform with Advantech Shelf Manager support



### Features

- 3U 2-slot 19" rackmount ATCA shelf with integrated server blades
- 2 front slots with power distribution and cooling for up to 300W per slot
- 2 rear transition module (RTM) slots
- Supports two redundant Advantech Shelf Managers with Telco alarm signals
- 40G ATCA-compliant backplane with cross-connected Base and Fabric Interfaces, handles up to 10 Gbps and 3.125 Gbps per differential pair
- Redundant AC and DC power options
- Right-to-Left Push-Pull Cooling Mode
- Hot swappable FRUs (blades, RTMs, fan trays, power modules, and ShMM)
- PICMG 3.0 (AdvancedTCA Base Specification) Compliance



### Introduction

Advantech's Netarium series of ATCA reference systems are specifically targeted to help network equipment providers reach superior levels of performance over traditional rackmount servers or appliances and extend their product range at the high end. The series represents a new generation of systems which offer higher performance, greater scalability and extreme flexibility by using the latest 40 Gigabit Ethernet (40G) backplanes, switches and application blades. Advantech optimizes the systems to achieve the highest possible density at the rack level, enabling a maximum number of processor cores, network ports and switching capacity.

Each system is tailored for customers to rapidly deploy in data communication markets for applications which require faster and deeper packet processing such as policy and charging enforcement, network security, real-time traffic monitoring, load balancing, subscriber analytics and content optimization among others. As ATCA was designed to meet the carrier-grade constraints of the telecom industry, the systems integrate the chassis, cooling, power distribution and shelf management into an off-the-shelf platform solution capable of superior 5 NINES availability and reliability.

Netarium-2v2, which supports Advantech's SMM-5060 Advanced Shelf Management Module, providing IPMI2.0 and ATCA compliant shelf management, is the ultimate in entry level flexibility. This 2-slot platform allows OEMs to redeploy common platform hardware which scales when needed. Based on the MIC-5333 it packs more processing power than previous generation 6-slot systems. With an increase in miniaturization and performance at the blade level it is accompanied by a new concept at the mezzanine level to bring more I/O and acceleration closer to the processing cores. With four FMM sites on each ATCA blade and RTM, the MIC-5333 integrated into the Netarium-2 Reference System offers the broadest flexibility in entry level system performance on ATCA.

Many different payloads can be integrated into Advantech Netarium systems and configured to address diverse industry applications. For more details on integrating a specific configuration please contact your local sales representative.

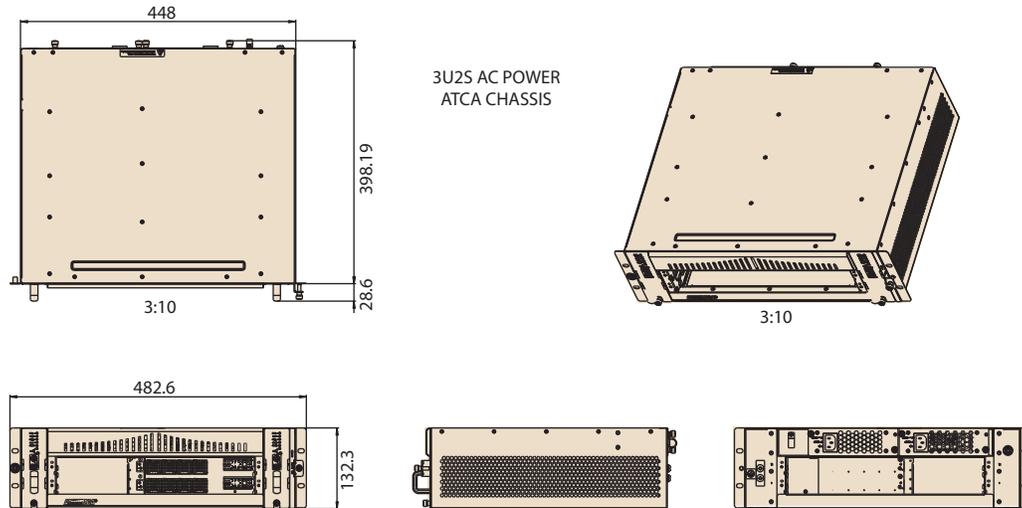
### Specifications

Number of slots	Front blades	2 ATCA compliant node blades
	RTM's	2 ATCA rear transition modules
Backplane	IPMB	Bussed (radial available on request)
	Base interface	Dual star, 1000 Base-T
	Fabric interface	Full mesh, 3.125Gbps or 10Gbps per differential pair
Cooling	Technology	Two front pluggable, hot swappable push-pull fan trays with N+1 redundant fans (no degradation with a single fan failure)
	Max. Capacity	>CPTA B.4, 300W/slot
	Air filter	One hot swappable air filter on the right side of chassis
Accessibility	Front	ATCA blades, ShMC's, front fan trays
	Rear	RTM's, PEM's / AC PSU's
Power	AC	Integrated dual, redundant AC power supplies, 850W
	PSU cooling	Self cooled
	DC feed	2 redundant, hot swappable PEMs w. integrated EMI filters
	DC voltage	-36V to -72V (Nominal -48V)
	Current rating	30A per feed
Shelf management	Full featured	Dual, redundant enhanced shelf managers based on Advantech SMM-5060
	Interfaces	RMCP, SSH, SNMP, CLI, Web and serial interfaces
	Telco alarm	Telco alarm signals, populated on each ShMM
	Sensors	FRU presence, fan health, PSU health, temperatures, input voltages
Miscellaneous	ESD plug	Front and rear
	Cable management	Front / rear cable trays (optional)
Physical Characteristics	Dimensions (H x W x D)	3U x 19" x 462 mm
	Weight	10kg (chassis weight only)

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Dimensions

Unit: mm



## Specifications

Environment	Temperature	Operating 0 ~ 55° C (32 ~ 131° F)	Non-operating - 40 ~ 70° C (-40 ~ 158° F)
	Humidity	5 to 93% @ 40° C (non condensing)	95% @ 40° C (non-condensing)
	Altitude	Up to 1800m (w/o cooling degradation)	Up to 4000m
	Compliance	Environment: ETSI EN300019-2-1 Class 1.2, EN300019-2-2 Class 2.3, ETSI EN300019-2-3 Class 3.1E Designed to meet GR63-CORE PICMG: 3.0 R3.0, 3.1 R1.0, HPM.1 Safety & EMC: CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386) Designed to meet GR1089-CORE	

## Ordering Information

Model Series	Configuration
Netarium-2v2 (AC)	3U, 2-slot ATCA chassis with 2x 850W AC PSUs, 2 fan trays, air filter, full mesh backplane, optional ShMM
Netarium-2v2 (DC)	3U, 2-slot ATCA chassis with 2 PEMS, 2 fan trays, air filter, full mesh backplane, optional ShMM

Note: Please contact your local Advantech sales representative for more information.

## Related Products

Model Series	Description
MIC-5332	AdvancedTCA 10GbE Dual Socket CPU Blade with Intel® Xeon® E5-2600 Processors
MIC-5342	AdvancedTCA 40GbE Dual Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Processors for Telecom Applications
MIC-5345	AdvancedTCA 40GbE Dual/Single Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Processors for Server and NFV Applications
RTM-5104	AdvancedTCA RTM for MIC-5332
RTM-5107	AdvancedTCA Rear Transition Module for MIC-5332 and MIC-5342
SMM-5060	Netarium System Management Module



- 1. PSU 1
- 2. Fan Tray 1
- 3. SMM-5060 Shelf Management 1
- 4. MIC-5333 node board
- 5. PSU 2
- 6. Fan Tray 2
- 7. SMM-5060 Shelf Management 2

# Netarium-6

## 6U 6-Slot AdvancedTCA Reference Systems



### Features

- 6U 6-slot 19" rackmount ATCA shelf with integrated switches and server blades
- 4 node + 2 hub slots with power distribution and cooling for up to 350W per slot
- 6 rear transition module (RTM) slots
- Supports two redundant Shelf Managers, and one optional Shelf Alarm Panel
- 40G ATCA-compliant backplane, with triple full mesh on fabric channel and dual star on base channel, supports up to 10 Gbps and 3.125 Gbps per differential pair
- Redundant AC and DC power options
- Right-to-Left Push-Pull Cooling Mode
- Hot swappable FRUs (blades, RTMs, fan trays, power modules, ShMM, and Telco alarm module)
- PICMG 3.0 (AdvancedTCA Base Specification) Compliance



### Introduction

Advantech's Netarium series of ATCA reference systems are specifically targeted to help network equipment providers reach superior levels of performance over traditional rackmount servers or appliances and extend their product range at the high end. The series represents a new generation of systems which offer higher performance, greater scalability and extreme flexibility by using the latest 40 Gigabit Ethernet (40G) backplanes, switches and application blades. Advantech optimizes the systems to achieve the highest possible density at the rack level, enabling a maximum number of processor cores, network ports and switching capacity.

Each system is tailored for customers to rapidly deploy in data communication markets for applications which require faster and deeper packet processing such as policy and charging enforcement, network security, real-time traffic monitoring, load balancing, subscriber analytics and content optimization among others. As ATCA was designed to meet the carrier-grade constraints of the telecom industry, the systems integrate the chassis, cooling, power distribution and shelf management into an off-the-shelf platform solution capable of superior 5 NINES availability and reliability.

The mid-range Netarium-6 focuses on the high performance needs of large enterprise customers in a cost effective system loaded with four MIC-5333 dual Intel® Xeon® blades and 40G switches in a dual-star configuration. The system provides up to 1.28 Tbps switching capacity and each MIC-5333 blade with RTM pair can accommodate up to 4 FMMs for over 100 Gbps egress per blade with high-speed encryption using FMM-based acceleration modules.

Many different payloads can be integrated into Advantech Netarium systems and configured to address diverse industry applications. For more details on integrating a specific configuration please contact your local sales representative.

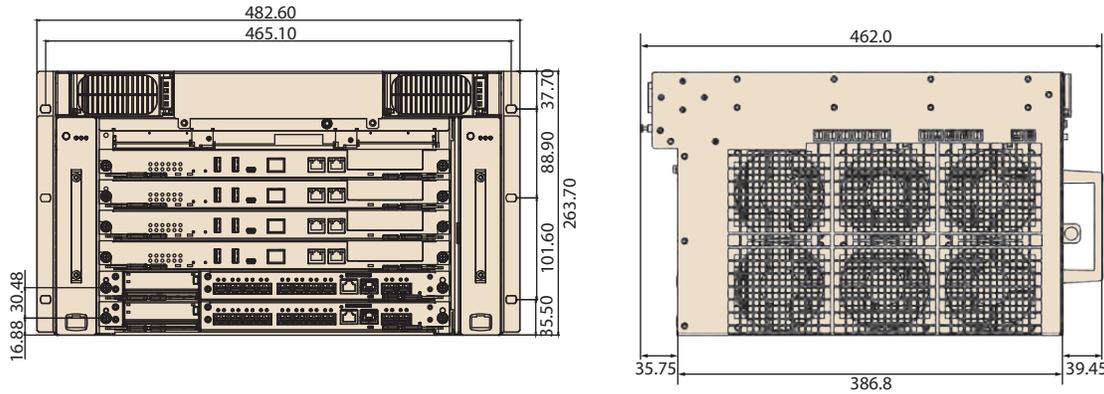
### Specifications

Number of slots	Front blades	6 ATCA compliant node or hub blades (4 node blades and 2 hub blades)
	RTM's	6 ATCA rear transition modules
Backplane	IPMB	Bussed (radial available on request)
	Base interface	Dual star, 1000 Base-T
	Fabric interface	Triple replicated Full mesh, up to 10Gbps and 3.125Gbps per differential pair
Cooling	Technology	Two front pluggable, hot swappable push-pull fan trays with N+1 redundant fans (no degradation with a single fan failure)
	Max. Capacity	3350W/slot with $\Delta t=12K$
	Air filter	Front replaceable air inlet filter with presence monitoring
Accessibility	Front	ATCA blades, ShMC's, front fan trays
	Rear	RTM's, PEM's / AC PSU's
Power	AC	Integrated dual, redundant AC power supplies, 2725W 230V @ 50.5A or 115V @ 22A (with limited performance) per AC inlet
	PSU cooling	Self cooled
	DC feed	2 redundant, hot swappable PEMs w. integrated EMI filters
	DC voltage	-54V (Nominal -48V)
	Current rating	50A per feed
Shelf management	Full featured	Dual, redundant Shelf Manager ACB-V, SW executes on the Pigeon Point Shelf Management Mezzanine 500 (ShMM-500)
	Interfaces	RMCP, SSH, SNMP, CLI, Web and serial interfaces
	Telco alarms	Optional Telco alarm panel (with three Telco alarm LEDs and one DB15-male Telco alarm connector)
	Sensors	FRU presence, fan health, PSU health, temperatures, input voltages
Miscellaneous	ESD plug	Front and rear
	Cable management	Front / rear cable trays (optional)
Physical Characteristics	Dimensions (H x W x D)	6U x 19 x 462 mm
	Weight	23 kg (chassis weight only)

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Dimensions

Unit: mm



## Specifications

Environment	Temperature	Operating 0 ~ 55° C (32 ~ 131° F)	Non-operating - 40 ~ 70° C (-40 ~ 158° F)
	Humidity	5 to 93% @ 40°C (non condensing)	95% @ 40° C (non-condensing)
	Altitude	Up to 1800m (w/o cooling degradation)	Up to 4000m
Compliance	Environment	ETSI EN300019-2-1 Class1.2, EN300019-2-2 Class 2.3, ETSI EN300019-2-3 Class 3.1E	
	PICMG	Designed to meet GR63-CORE 3.0 R3.0, 3.1 R1.0, HPM.1	
	Safety & EMC	CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386) Designed to meet GR1089-CORE	

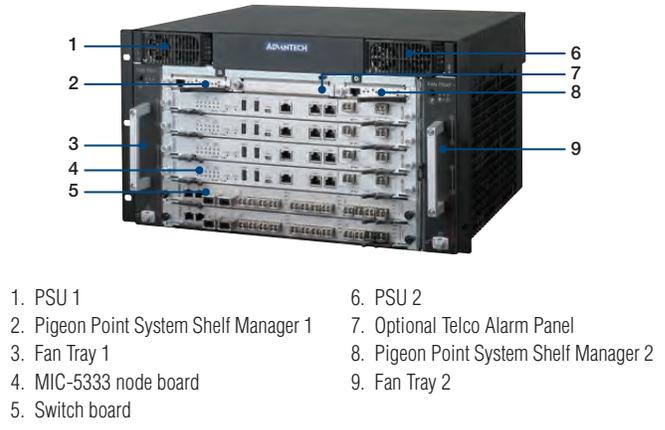
## Ordering Information

Model Series	Configuration
Netarium-6 (AC)	6U, 6-slot ATCA chassis with 2x 2725W AC PSUs, 2 fan trays, air filter, triple replicated full mesh backplane, optional ShMM & Shelf Alarm Module
Netarium-6 (DC)	6U, 6-slot ATCA chassis with 2 PEMs, 2 fan trays, air filter, triple replicated full mesh backplane, optional ShMM & Shelf Alarm Module

Note: Please contact your local Advantech sales representative for more information.

## Related Products

Model Series	Description
MIC-5332	AdvancedTCA 10GbE Dual Socket CPU Blade with Intel® Xeon® E5-2600 Processors
MIC-5342	AdvancedTCA 40GbE Dual Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Processors for Telecom Applications
MIC-5345	AdvancedTCA 40GbE Dual/Single Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Processors for Server and NFV Applications
RTM-5104	AdvancedTCA RTM for MIC-5332
RTM-5107	AdvancedTCA Rear Transition Module for MIC-5333 and MIC-5342
ATCA-9112	40GbE AdvancedTCA Switch Blade support up to 16 slots
Telco Systems T-HUB4	40GbE AdvancedTCA Switch Blade support up to 16 slots
Telco Systems T-ATCA510	100GbE AdvancedTCA Switch Blade



- 1. PSU 1
- 2. Pigeon Point System Shelf Manager 1
- 3. Fan Tray 1
- 4. MIC-5333 node board
- 5. Switch board
- 6. PSU 2
- 7. Optional Telco Alarm Panel
- 8. Pigeon Point System Shelf Manager 2
- 9. Fan Tray 2

# Netarium-6v2

## 6U 6-Slot AdvancedTCA Reference Systems with Advantech Shelf Manager support



### Features

- 6U 6-slot 19" rackmount ATCA shelf with integrated switches and server blades
- 4 node + 2 hub slots with power distribution and cooling for up to 300W per slot
- 6 rear transition module (RTM) slots
- Supports two redundant Advantech Shelf Managers with Telco alarm signals
- 40G ATCA-compliant backplane, with dual star topology on Base and Fabric Interfaces, handles up to 10 Gbps and 3.125 Gbps per differential pair
- Redundant AC and DC power options
- Right-to-Left Push-Pull Cooling Mode
- Hot swappable FRUs (blades, RTMs, fan trays, power modules, and ShMM)
- PICMG 3.0 (AdvancedTCA Base Specification) Compliance



### Introduction

Advantech's Netarium series of ATCA reference systems are specifically targeted to help network equipment providers reach superior levels of performance over traditional rackmount servers or appliances and extend their product range at the high end. The series represents a new generation of systems which offer higher performance, greater scalability and extreme flexibility by using the latest 40 Gigabit Ethernet (40G) backplanes, switches and application blades. Advantech optimizes the systems to achieve the highest possible density at the rack level, enabling a maximum number of processor cores, network ports and switching capacity.

Each system is tailored for customers to rapidly deploy in data communication markets for applications which require faster and deeper packet processing such as policy and charging enforcement, network security, real-time traffic monitoring, load balancing, subscriber analytics and content optimization among others. As ATCA was designed to meet the carrier-grade constraints of the telecom industry, the systems integrate the chassis, cooling, power distribution and shelf management into an off-the-shelf platform solution capable of superior 5 NINES availability and reliability.

The mid-range Netarium-6v2, which supports Advantech's SMM-5060 Advanced Shelf Management Module, providing IPMI2.0 and ATCA compliant shelf management, focuses on the high performance needs of large enterprise customers in a cost effective system loaded with four MIC-5333 dual Intel® Xeon® blades and 40G switches in a dual-star configuration. The system provides up to 1.28 Tbps switching capacity and each MIC-5333 blade with RTM pair can accommodate up to 4 FMMs for over 100 Gbps egress per blade with high-speed encryption using FMM-based acceleration modules.

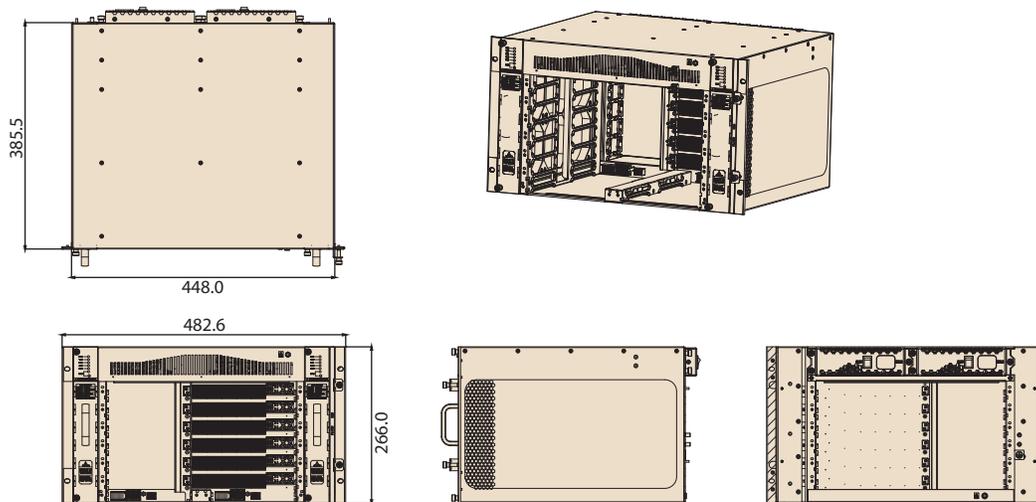
Many different payloads can be integrated into Advantech Netarium systems and configured to address diverse industry applications. For more details on integrating a specific configuration please contact your local sales representative.

### Specifications

Number of slots	Front blades	6 ATCA compliant node or hub blades (4 node blades and 2 hub blades)
	RTM's	6 ATCA rear transition modules
Backplane	IPMB	Bussed (radial available on request)
	Base interface	Dual star, 1000 Base-T
	Fabric interface	Dual star, up to 10Gbps and 3.125Gbps per differential pair
Cooling	Technology	Two front pluggable, hot swappable push-pull fan trays with N+1 redundant fans (no degradation with a single fan failure)
	Max. Capacity	>CPTA B.4, 300W/slot
	Air filter	One hot swappable air filter on the right side of chassis
Accessibility	Front	ATCA blades, ShMC's, front fan trays
	Rear	RTM's, PEM's / AC PSU's
Power	AC	Integrated dual, redundant AC power supplies, 2000W
	PSU cooling	Self cooled
	DC feed	2 redundant, hot swappable PEMs w. integrated EMI filters
	DC voltage	-36V to -72V (Nominal -48V)
	Current rating	40A per feed
Shelf management	Full featured	Dual, redundant enhanced shelf managers based on Advantech SMM-5060
	Interfaces	RMCP, SSH, SNMP, CLI, Web and serial interfaces
	Telco alarm	Telco alarm signals, populated on each ShMM
	Sensors	FRU presence, fan health, PSU health, temperatures, input voltages
Miscellaneous	ESD plug	Front and rear
	Cable management	Front / rear cable trays (optional)
Physical Characteristics	Dimensions (H x W x D)	6U x 19" x 462mm
	Weight	23kg (chassis weight only)

## Dimensions

Unit: mm



## Specifications

Environment	Temperature	Operating 0 ~ 55° C (32 ~ 131° F)	Non-operating - 40 ~ 70° C (-40 ~ 158° F)
	Humidity	5 to 93% @ 40° C (non condensing)	95% @ 40° C (non-condensing)
	Altitude	Up to 1800m (w/o cooling degradation)	Up to 4000m
Compliance	Environment	ETSI EN300019-2-1 Class 1.2, EN300019-2-2 Class 2.3, ETSI EN300019-2-3 Class 3.1E Designed to meet GR63-CORE	
	PICMG	3.0 R3.0, 3.1 R1.0, HPM.1	
	Safety & EMC	CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386) Designed to meet GR1089-CORE	

## Ordering Information

Model Series	Configuration
Netarium-6v2 (AC)	6U, 6-slot ATCA chassis with 2x 2000W AC PSUs, 2 fan trays, air filter, dual star backplane, optional ShMM
Netarium-6v2 (DC)	6U, 6-slot ATCA chassis with 2 PEMs, 2 fan trays, air filter, dual star backplane, optional ShMM

Note: Please contact your local Advantech sales representative for more information.

## Related Products

Model Series	Description
MIC-5332	AdvancedTCA 10GbE Dual Socket CPU Blade with Intel® Xeon® E5-2600 Processors
MIC-5342	AdvancedTCA 40GbE Dual Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Processors for Telecom Applications
MIC-5345	AdvancedTCA 40GbE Dual/Single Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Processors for Server and NFV Applications
RTM-5104	AdvancedTCA RTM for MIC-5332
RTM-5107	AdvancedTCA Rear Transition Module for MIC-5333 and MIC-5342
ATCA-9112	40GbE AdvancedTCA Switch Blade support up to 16 slots
SMM-5060	Netarium System Management Module
Telco Systems T-HUB4	40GbE AdvancedTCA Switch Blade support up to 16 slots
Telco Systems T-ATCA510	100GbE AdvancedTCA Switch Blade



- |                                |                                |
|--------------------------------|--------------------------------|
| 1. PSU 1                       | 6. PSU 2                       |
| 2. Fan Tray 1                  | 7. Fan Tray 2                  |
| 3. MIC-5333 node board         | 8. Air Filter                  |
| 4. Switch board                | 9. SMM-5060 Shelf Management 2 |
| 5. SMM-5060 Shelf Management 1 |                                |

- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

# Netarium-14

## 14U 14-Slot AdvancedTCA Reference Systems



### Features

- 14U 14-slot 19" rackmount ATCA shelf with integrated switches and server blades
- 12 node + 2 hub slots with power distribution for over 350W per slot
- 14 rear transition module (RTM) slots
- Supports two redundant Shelf Managers, and two redundant Shelf FRU Data and Telco Alarms boards
- 40G ATCA-compliant backplane, with dual star topology on fabric channel and base channel, supporting up to 10 Gbps per differential pair for the fabric
- Redundant AC and DC power options
- Front-to-rear Pull Cooling Mode
- Hot swappable FRUs (blades, RTMs, fan trays, power modules, and ShMM)
- PICMG 3.0 (AdvancedTCA Base Specification) Compliance



### Introduction

Advantech's Netarium series of ATCA reference systems are specifically targeted to help network equipment providers reach superior levels of performance over traditional rackmount servers or appliances and extend their product range at the high end. The series represents a new generation of systems which offer higher performance, greater scalability and extreme flexibility by using the latest 40 Gigabit Ethernet (40G) backplanes, switches and application blades. Advantech optimizes the systems to achieve the highest possible density at the rack level, enabling a maximum number of processor cores, network ports and switching capacity.

Each system is tailored for customers to rapidly deploy in data communication markets for applications which require faster and deeper packet processing such as policy and charging enforcement, network security, real-time traffic monitoring, load balancing, subscriber analytics and content optimization among others. As ATCA was designed to meet the carrier-grade constraints of the telecom industry, the systems integrate the chassis, cooling, power distribution and shelf management into an off-the-shelf platform solution capable of superior 5 NINES availability and reliability.

Rising volumes of data traffic, media-rich applications and data center consolidation are driving the need for increased bandwidth scalability and high-speed connections. To meet these challenges, Advantech's flagship Netarium-14 targets the high-end market where equipment providers require superior performance, scalability and deployment flexibility for their large enterprise, managed security service provider or carrier customers.

Many different payloads can be integrated into Advantech Netarium systems and configured to address diverse industry applications. For more details on integrating a specific configuration please contact your local sales representative.

### Specifications

Number of slots	Front blades	14 ATCA compliant node or hub blades (12 node blades and 2 hub blades)
	RTM's	14 ATCA rear transition modules
Backplane	IPMB	Bussed
	Base interface	Dual star, 1000 Base-T
	Fabric interface	Dual star, up to 10Gbps per differential pair
Cooling	Technology	Four front pluggable, hot swappable high pressure fan trays with N+1 redundant fans (no degradation with a single fan failure)
	Max. Capacity	350W for front board and 35W for RTM
	Air filter	Front pluggable air inlet filter with redundant presence sensor
Accessibility	Front	ATCA blades, fan trays, air filter, and AC PSU's
	Rear	RTM's, ShMC's, and PEM's
Power	AC	Up to five redundant (N+1) power supply units with separate AC inlets, 1600W (at high line) and 1200W (at low line)
	PSU cooling	Self cooled
	DC feed	2 redundant, hot swappable PEMs w. integrated EMI filters
	DC voltage	-48V / -60V
	Current rating	105A@-48V and 84A@-60V via 4 studs
Shelf management	Full featured	Dual, redundant carrier board for Pigeon Point Shelf Management Mezzanine 500 (ShMM-500)
	Interfaces	RMCP, SSH, SNMP, CLI, Web and serial interfaces
	Telco alarms	Dual, redundant Shelf FRU Data and Telco alarm boards (Optional)
	Sensors	FRU presence, fan health, PSU health, temperatures, input voltages
Miscellaneous	ESD plug	Front and rear
	Cable management	Front and rear cable management trays (optional)

## Specifications

Physical Characteristics	Dimensions (H x W x D)	14U x 19 x 500 mm	
	Weight	40kg (chassis weight only)	
Environment		Operating	Non-operating
	Temperature	0 ~ 55° C (32 ~ 131° F)	- 40 ~ 70° C (-40 ~ 158° F)
	Humidity	5 to 93% @ 40° C (non condensing)	95% @ 40° C (non-condensing)
	Altitude	Up to 1800m (w/o cooling degradation)	Up to 4000m
Compliance	Environment	ETSI EN300019-2-1 Class1.2, EN300019-2-2 Class 2.3, ETSI EN300019-2-3 Class 3.1E	
		Designed to meet GR63-CORE	
	PICMG	3.0 R3.0, 3.1 R1.0, HPM.1	
	Safety & EMC	CB report (IEC60950-1), CE mark (EN60950-2001), UL60950-1/CSAC22.2 FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386) Designed to meet GR1089-CORE	

## Ordering Information

Model Series	Configuration
Netarium-14 (AC)	14U, 14-slot ATCA chassis with 5x 1600W AC PSUs, 4 fan trays, air filter, dual star backplane, optional ShMM & Shelf Alarm Module
Netarium-14 (DC)	14U, 14-slot ATCA chassis with 2 PEMs, 4 fan trays, air filter, dual star backplane, optional ShMM & Shelf Alarm Module

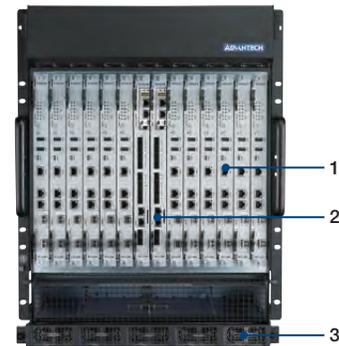
Note: Please contact your local Advantech sales representative for more information.

## Related Products

Model Series	Description
MIC-5332	AdvancedTCA 10GbE Dual Socket CPU Blade with Intel® Xeon® E5-2600 Processors
MIC-5342	AdvancedTCA 40GbE Dual Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Processors for Telecom Applications
MIC-5345	AdvancedTCA 40GbE Dual/Single Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Processors for Server and NFV Applications
RTM-5104	AdvancedTCA RTM for MIC-5332
RTM-5107	AdvancedTCA Rear Transition Module for MIC-5333 and MIC-5342
ATCA-9112	40GbE AdvancedTCA Switch Blade support up to 16 slots
Telco Systems T-HUB4	40GbE AdvancedTCA Switch Blade support up to 16 slots
Telco Systems T-ATCA510	100GbE AdvancedTCA Switch Blade

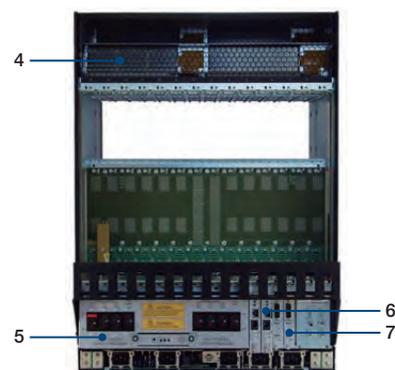
## Front View

Netarium-14 (AC)



## Rear View

Netarium-14 (AC) Shelf



- 1. MIC-5333 node board
- 2. ATCA-9112 Switch board
- 3. Power Supply Unit
- 4. Fan Tray
- 5. Power Entry Module
- 6. Shelf Manager
- 7. Shelf FRU Data and Telco Alarms board

- 1 Packetarium XL Blade Servers
- 2 High Performance Servers
- 3 Network Appliances
- 4 PCI Express Adapters
- 5 Network Switches
- 6 ATCA Blades & Integrated Systems
- 7 CPCI Boards & Enclosures
- 8 VPX Blades
- 9 Video Processing & IP Media Platforms



## CPCI Boards & Enclosures

<b>Overview</b>		<b>7-1</b>
<b>Selection Guide</b>		<b>7-2</b>
<b>MIC-3328</b>	3U CompactPCI® PlusIO Intel® 3rd Gen. Core™ Processor Blade	<b>7-10</b>
<b>MIC-3329</b>	3U CompactPCI® Intel® Quad-Core Atom™ Processor Blade	<b>7-12</b>
<b>MIC-3332</b>	3U CompactPCI PlusIO Intel® 6th Gen. Quad- Core™ Processor Blade	<b>7-14</b>
<b>MIC-3396</b>	6U CompactPCI Intel® 4th Gen. Core™ i3/i5/i7 Processor Blade with ECC support	<b>7-16</b>
<b>MIC-3396MIL</b>	6U CompactPCI Intel® 4th/5th Gen. Core™ i5/i7 Processor Blade with ECC support	<b>7-18</b>
<b>MIC-3397</b>	6U CompactPCI Quad Core Intel® Xeon® Processor E3 & Dual Core Intel® Pentium® Processor Blade	<b>7-20</b>
<b>MIC-3398</b>	6U CompactPCI Intel® Atom™ Processor Blade	<b>7-22</b>
<b>MIC-3500</b>	6U CompactPCI 8HP Intel® Xeon® D-1500 Processor Blade with ECC support	<b>7-24</b>
<b>MIC-3666</b>	Dual 10 Gigabit Ethernet XMC	<b>7-26</b>
<b>MIC-3667</b>	Quad Ports Gigabit Ethernet XMC	<b>7-27</b>
<b>MIC-3951</b>	6U CompactPCI® Dual PMC or CMC Carrier Board (64-bit/66 MHz)	<b>7-28</b>
<b>MIC-3953</b>	3U CompactPCI® Single PMC Slot Carrier Card	<b>7-29</b>
<b>MIC-3954</b>	3U CompactPCI® Serial MiniPCIe® or Storage Carrier Card	<b>7-30</b>
<b>MIC-3955</b>	3U CompactPCI® RS-232/422/485 Serial Communication Card	<b>7-31</b>
<b>MIC-3957</b>	3U CompactPCI® GPS Communication Card	<b>7-33</b>
<b>MIC-3958 Ethernet Card</b>	3U CompactPCI® Card 4 Port RJ45/M12 X-code Gigabit Ethernet	<b>7-34</b>
<b>MIC-3961</b>	6U CompactPCI® PCI Carrier Board	<b>7-36</b>
<b>RIO-3315</b>	6U CompactPCI® Rear Transition Board for MIC-3395	<b>7-37</b>
<b>RIO-3316</b>	6U CompactPCI® Rear Transition Board for MIC-3396	<b>7-38</b>
<b>RIO-3396MIL</b>	6U CompactPCI® Rear Transition Board for MIC-3396MIL	<b>7-39</b>
<b>MIC-3022</b>	4U Height CompactPCI® Enclosure for 3U Cards	<b>7-41</b>
<b>MIC-3022 Plus IO</b>	4U CompactPCI® Plus IO Enclosure for 3U Cards	<b>7-43</b>
<b>MIC-3023</b>	3U CompactPCI® Enclosure for 3U Cards	<b>7-44</b>
<b>MIC-3042</b>	4U CompactPCI® Enclosure with cPCI Power Supply (non-CT Bus)	<b>7-45</b>

Please visit [www.advantech.com/networks-telecom/cpci](http://www.advantech.com/networks-telecom/cpci) for the latest product updates.

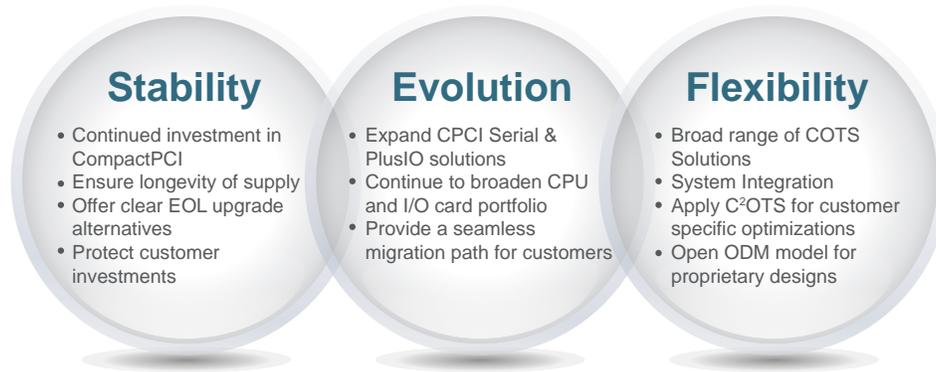




# CPCI Boards & Enclosures

Advantech offers a complete range of 3U and 6U CompactPCI products including chassis, CPU boards, and industrial and networking I/O. Advantech CPCI platforms are widely used in mission-critical industrial and telecommunication applications that demand enhanced reliability, high-availability and serviceability as well as long-term upgradability and manageability.

Advantech has been a key player in CompactPCI development for well over a decade now, assisting rugged and industrial OEMs as well as telecom equipment manufacturers to design and integrate CompactPCI in their business and mission critical systems. Our broad selection of processing power and I/O and our flexible approach to customization allow us to adapt to each customer's requirements and business model. Advantech CompactPCI team is committed to providing long-term technology support and timely new product introductions so that our customers can choose when to upgrade their equipment based on strategy and market demands, well ahead of silicon end-of-life scenarios.



At Advantech, we understand the impact which the discontinuation of a component can have on a customer's product portfolio and we have solid lifecycle management processes in place to handle it. We've also learnt how to step in when a key supplier announces the end of a product line and a second source blade is urgently needed which meets the same form, fit and function. Our CompactPCI team is committed to providing long-term technology support and timely new product introductions so that our customers can choose when to upgrade their equipment based on strategy and market demands, well ahead of silicon end-of-life scenarios.

## Your OEM Blade

There's almost always a special feature that your customer needs you to integrate to meet a specific requirement. It's been that way since CompactPCI started and spans back even further to the early days of VMEbus. Mezzanine card technology has evolved in various form factors and with different interconnects helps address the problems caused by over-customization. But when the rubber meets the road and you can't find that feature on COTS products, you need a partner who is ready to go the extra mile and is geared to helping you re-engineer a product to meet your needs. Advantech's CompactPCI customization team is here to identify and scope your special requests.



## CompactPCI PlusIO Solutions

Advantech has a long tradition of driving platform innovation in multiple form factors using industry-leading processor architectures. Our commitment to extending the lifetime of our customer's CompactCPCI solutions is no different. Our products support a smooth transition path to new technologies and we support our customer's migration with reference platforms and integrated systems.

Advantech CompactPCI PlusIO solutions provide a backward compatible migration path for your proven CompactPCI solutions to newly designed, high speed serial peripherals based on CompactPCI Serial. With our CompactPCI PlusIO and CompactPCI Serial solutions, we protect your investments but also take them a step forward - by giving you the ability to utilize the latest high speed bus interfaces available from Advantech and the CompactPCI ecosystem in the same system that hosts your legacy I/O boards. Our focus on allowing you to reuse well qualified platform building blocks like special purpose I/O cards along with the related software in these hybrid systems helps you to stay within your R&D budgets, meet your time-to-market objectives and mitigate risk.

Packetarium XL Blade Servers 1

High Performance Servers 2

Network Appliances 3

PCI Express Adapters 4

Network Switches 5

ATCA Blades & Integrated Systems 6

CPCI Boards & Enclosures 7

VPX Blades 8

Video Processing & IP Media Platforms 9

# Selection Guide



Model		MIC-3396	MIC-3396MIL	
Form Factor		6U	6U	
Processor System	CPU	4th Generation Intel® Core™ i3/i5/i7 Processor	5th Generation Intel® Core™ i3/i5/i7 Processor	
	Chipset	QM87	QM87	
Memory	Technology	DDR3 1600 low voltage ECC memory	DDR3 1600 low voltage ECC memory	
	Max. Capacity	16GB (8GB on board, socket SO-UDIMM x1, max 8GB)	16GB (8GB on board, socket SO-UDIMM x1, max 8GB)	
CompactPCI Interface	J1	32-bit PCI	32-bit PCI	
	J2	64-bit PCI	64-bit PCI	
	J3	PICMG2.16 RTM 1 x PCIe x8	PICMG2.16 RTM PCIe x16	
	J4~J5	RTM	RTM	
Front I/O	VGA	1	DVI-I	
	DP	-	-	
	USB3.0 (type A)	2	2	
	USB2.0 (type A)	1	2	
	LAN (RJ45)	2 GbE	2 GbE	
	LAN (M12 X-code)	-	-	
	SFP+	-	-	
	COM (RJ45)	1	-	
	COM (DB9)	-	2	
	Front Panel LEDs		Power Hot swap HDD Master/Drone BMC heartbeat	Power Hot swap HDD Master/Drone BMC heartbeat
		Others	CPU reset button BMC reset button	CPU reset button BMC reset button
	RTM interface	USB3.0	2	2
USB2.0		6	4	
COM		2	2	
LAN		4	2	
SATA 2.0		2	2	
SATA 3.0		2	2	
PCIe		PCIe x8 Gen3	PCIe x16 Gen3	
Others		PS/2 for KB/MS, DVI-I and DVI-D	PS/2 for KB/MS, DVI-I and DVI-D	
Storage	Mode	SATA-III	SATA-III	
	2.5" HDD/SSD	1 (SATA III)	1 (SATA III)	
	CFast	1 (SATA II)	1 (SATA II)	
	M.2 2280	-	-	
	M.2 2242	-	-	
	onboard flash	-	-	
XMC/PMC Socket	PCIe x8	Gen3 (7GT/s)	-	
	PCI	64-bit/66 MHz	-	
BMC	Controller	optional	optional	
Operating System	Compatibility	Windows 7, Linux VxWorks 6.x (on request)	Windows 7, Linux VxWorks 6.x (on request)	
Power Consumption	TDP	Up to 80 W (quad core), 50 W (dual core) or less, depending on CPU type	Up to 80 W (quad core), 50 W (dual core) or less, depending on CPU type	
Physical Characteristics	Dimensions (W x D)	233.35 x 160 mm (9.19" x 6.3")	233.35 x 160 mm (9.19" x 6.3")	
	Operating Temperature	0 ~ 55 °C (32~ 122 °F)	-40 ~ 85 °C (measured at wedge lock)	
Environment	non-operating temperature	-40 ~ 85 °C (-40~ 185 °F)	-40 ~ 85 °C (-40~ 185 °F)	
	Humidity	95 % @ 40 °C, non-condensing (Operating) 95 % @ 60 °C, non-condensing (Non-operating)	95 % @ 40 °C, non-condensing (Operating) 95 % @ 60 °C, non-condensing (Non-operating)	
	Vibration	3.5Grms (without HDD)	3.5Grms (without HDD)	
	Shock	25G, 6ms (non-operating)	25G, 6ms (non-operating)	
	Altitude	4,000m (operating) 10,000m (non-operating)	4,000m (operating) 10,000m (non-operating)	
	Regulatory	Conformance	FCC Class A, CE, RoHS	FCC Class A, CE, RoHS
Compliance	Standards	PICMG2.0 R3.0, PICMG2.1 R.0, PICMG2.9 R1.0, PICMG2.16 R1.0,	PICMG2.0 R3.0, PICMG2.1 R.0, PICMG2.9 R1.0, PICMG2.16 R1.0,	



Model		MIC-3397	MIC-3398	MIC-3500
Form Factor		6U	6U	6U
Processor System	CPU	Quad-Core Intel® Xeon® Processor E3-1125C v2/E3-1105C v2; Dual-Core Intel® Pentium® Processor B925C	Intel® Atom™ SoC E38xx, Celeron N2930 and J1900 processors,	Intel® XEON D-1548
	Chipset	Intel® DH8900 PCH (Cave creek)		-
Memory	Technology	Dual Channel DDR3 1333/1600 MHz with ECC	1333MHz DDR3L memory	Dual channel DDR4 2400MHz w/ ECC
	Max. Capacity	Up to 16GB, 8GB on board, 8GB SO-DIMM	Up to 8GB	DDR4 RDIMM up to 128GB
CompactPCI Interface	J1	32-bit PCI	32-bit PCI	32-bit PCI
	J2	64-bit PCI	64-bit PCI	64-bit PCI
	J3	PICMG2.16 RTM	-	PICMG2.16 RTM 1 x PCIe x8
	J4~J5	RTM	-	RTM
Front I/O	VGA	1	DVI-D	1
	DP	-	-	-
	USB3.0 (type A)	-	1	2
	USB2.0 (type A)	3	2	2
	LAN (RJ45)	2 GbE	2 (for 4HP) 4 (for 8HP)	2
	LAN (M12 X-code)	-	-	-
	SFP+	-	-	2
	COM (RJ45)	1	-	-
	COM (DB9)	-	2	1
	Front Panel LEDs	Power Hot swap HDD Master/Drone	HDD, Master/Drone mode Power	Power Hot swap HDD Master/Drone BMC heartbeat
	Others	CPU reset button	CPU reset button BMC reset button	CPU reset button BMC reset button
	RTM interface	USB3.0	-	-
USB2.0		3	-	2
COM		2	-	2
LAN		2 ports (1 switchable with front)	-	2 ports (2 switchable with front)
SATA 2.0		-	-	-
SATA 3.0		2	-	2
PCIe		PCIe x4 Gen2	-	1x PCIe x8
Others		PS/2 for KB/MS, DVI-I and DVI-D	-	VGA (switchable with front)
Storage	Mode	SATA-II	SATA-II	SATA-III
	2.5" HDD/SSD	1 SATA-II	1 (SATA-II)	-
	CFast	1	1 (SATA-II)	-
	M.2 2280	-	-	2
	M.2 2242	-	-	-
	onboard flash	1	-	-
	other channel	-	-	2 channels to RTM (SATA III)
XMC/PMC Socket	PCIe x8	-	-	-
	PCI	-	-	-
BMC	Controller	-	-	
Operating System	Compatibility	Windows7, Windows7 Embedded, Linux	Win7/WES7, Win8/WES8, Linux, VxWorks 6.x (on request)	CentOS 7.4 (Kernel: 3.10.0-693.el7.x86_64) Red Hat Enterprise Linux Server release 7.2 (Maipo)(Kernel: 3.10.0-327.el7.x86_64) DOS Windows 2012 R2 x64 Datacenter Build 9600
Power Consumption	TDP	4HP:80W (MIC-3397) 8HP:115W (MIC-3397 + MIC-3314)	21 W (E3845), 20 W (J1900) or less, depending on CPU type	Up to 90W (8-core)
Physical Characteristics	Dimensions (W x D)	233.35 x 160 mm (9.19' x 6.3")	233.35 x 160 mm (9.19' x 6.3")	8HP, 160.00 x 100.00 mm (6.30' x 3.95")
	Operating Temperature	0 ~ 55 °C (32~ 122 °F)	0 ~ 55 °C (32 ~ 122 °F)	0 ~ 55 °C fanless (32 ~ 122 °F)
Environment	non-operating temperature	-40 ~ 85 °C (-40~ 185 °F)	-40 ~ 85 °C (-40~ 185 °F)	-40 ~ 85 °C (-40~ 185 °F)
	Humidity	95 % @ 40 °C, non-condensing (Operating) 95 % @ 60 °C, non-condensing (Non-operating)	95 % @ 40 °C, non-condensing (Operating) 95 % @ 60 °C, non-condensing (Non-operating)	95 % @ 40 °C, non-condensing (Operating) 95 % @ 60 °C, non-condensing (Non-operating)
	Vibration	2Grms (Single slot, without HDD) 1.06Grms (Dual slot, without HDD) (operating)	3.5Grms (without HDD)	2Grms (5-500Hz, without HDD) (Operating)
	Shock	10G (Without HDD) (operating) 30G (without HDD) (non-operating)	25G, 6ms (non-operating)	10G, 11ms (Without HDD) 30G (without HDD) (non-operating)
	Altitude	4,000m (operating) 10,000m (non-operating)	4,000m (operating) 10,000m (non-operating)	n/a
Regulatory	Conformance	FCC Class A, CE, RoHS	FCC Class A, CE, RoHS	FCC Class A, CE, RoHS
Compliance	Standards	PICMG2.0 R3.0, PICMG2.1 R.0, PICMG2.9 R1.0, PICMG2.16 R1.0,	PICMG2.0 R3.0, PICMG2.1 R.0, PICMG2.9 R1.0, PICMG2.16 R1.0,	PICMG2.0 R3.0, PICMG2.1 R2.0, PICMG2.9 R1.0, PICMG2.16 R1.0,

- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

# Selection Guide



Model		MIC-3328	MIC-3329	MIC-3332	
Form Factor		3U	3U	3U	
Processor System	CPU	Intel® 3rd Generation Core™ i7	Intel® Atom™ Processor SOC E3827/ E3845	Intel® Core™ Processor 6th gen Core i7/Xeon	
	Chipset	Intel QM77	-	CM236	
Memory	Technology	DDR3-1600MHz SDRAM, dual channel with ECC support	Single Channel DDR3L 1333 MHz with ECC	Dual channel DDR4 2133MHz ECC optional	
	Max. Capacity	8GB	Up to 4GB on board	Up to 16GB on board	
CompactPCI Interface	J1	32-bit PCI	32-bit PCI	32-bit PCI	
	J2	CompactPCI PlusIO / RTM	RTM	CompactPCI PlusIO / RTM	
	J3	-	-	-	
	J4~J5	-	-	-	
Front I/O	VGA	1	1	1	
	DP	2 (8HP-1)	-	-	
	USB3.0 (type A)	2	1	2	
	USB2.0 (type A)	-	1	-	
	LAN (RJ45)	2 GbE (4HP)	2 GbE(4HP)	2 GbE(4HP)	
	LAN (M12 X-code)	4 x 1GbE(8HP-4)	2 x GbE(8HP-2)	4 x GbE by x-code M12 or RJ45 (8HP-2)	
	SFP+	-	-	-	
	COM (RJ45)	2 (8HP-1)	-	-	
	COM (DB9)	n/a	2 (8HP-1)	1 COM pin head	
	Front Panel LEDs		Power Hot Swap HDD	Power Hot swap HDD Master/Drone	Power Hot swap HDD Master/Drone
		Others	CPU reset button	CPU reset button	CPU reset button
	RTM interface	USB3.0	-	-	-
USB2.0		4	2	4	
COM		2 (internal)	2	By option	
LAN		1	2 ports (2 switchable with front)	2	
SATA 2.0		2	2	3	
SATA 3.0		1	-	-	
PCIe		4 x PCIe1 Gen2 1 x PCIe x 8 (8HP-4)	2 x PCIe1	4 x PCIe1 Gen2 1 x PCIe x 8 (8HP-2) per option	
Others		DP Switch from front	VGA (switchable with front)	VGA	
Storage	Mode	SATA-II	SATA-II	SATA-III	
	2.5" HDD/SSD	1 SATA-III	1 SATA-II	1 SATA-II	
	CFast	1 SATA-II	1	1	
	M.2 2280	-	-	-	
	M.2 2242	-	-	2	
	onboard flash other channel	1 (optional) 3 channels to RTM	1 (optional)	- 3 channels to RTM	
XMC/PMC Socket	PCIe x8	Gen2 (5GT/s), Optional	-	-	
	PCI	-	-	-	
BMC	Controller	-	-	-	
Operating System	Compatibility	Windows XP Professional, Windows 7, Windows 8, Windows server 2008, VxWorks 6.9, Linux Redhat 6.1	Windows7, Windows10 Linux redhat6.5, CentOS6.6/6.5 CentOS 7.4	Windows10(UEFI), windows7(Legacy), Ubuntu 18.04, Centos7.5	
		TDP	23.42W/ 33.12W /43.91W	9W/12W	60W
Physical Characteristics	Dimensions (W x D)	3U 160.00 x 100.00 mm (6.30" x 3.95") 8HP	3U 160.00 x 100.00 mm (6.30" x 3.95") 8HP	3U 160.00 x 100.00 mm (6.30" x 3.95") 8HP	
		Environment	Operating Temperature	0 ~ 60 °C (32 ~ 140 °F)	-40 ~ 60 °C fanless (-40 ~ 140 F)
non-operating temperature	-40 ~ 85 °C (-40~ 185 °F)		-40 ~ 85 °C (-40~ 185 °F)	-40 ~ 85 °C (-40~ 185 °F)	
Humidity	95 % @ 40 °C, non-condensing (Operating)		95 % @ 40 °C, non-condensing (Operating)	95 % @ 40 °C, non-condensing (Operating)	
	95 % @ 60 °C, non-condensing (Non-operating)		95 % @ 60 °C, non-condensing (Non-operating)	95 % @ 60 °C, non-condensing (Non-operating)	
Vibration	2Grms		2Grms (5-500Hz, without HDD) (Operating)	2Grms	
Shock	10G, 11ms (Without HDD) 30G (without HDD) (non-operating)	10G, 11ms (Without HDD) 30G (without HDD) (non-operating)	10G, 11ms (Without HDD) 30G (without HDD) (non-operating)		
Regulatory	Conformance	4,000m (operating) 10,000m (non-operating)	-	n/a	
		FCC Class A, CE, RoHS	FCC Class A, CE, RoHS	FCC Class A, CE, RoHS	
Compliance	Standards	PICMG 2.0 Rev. 3.0, PICMG 2.1 R2.0, PICMG2.30 PlusIO compatible	PICMG2.0 R3.0, PICMG2.1 R.0	PICMG 2.0 Rev. 3.0, PICMG 2.1 R2.0, PICMG2.30 PlusIO compatible	



Model		MIC-3951	MIC-3961	MIC-3953	MIC-3954	MIC-3957
Form Factor		6U	6U	3U	3U	3U
Main Function		PMC carrier	PCI carrier	PMC carrier	mini-PCIe/HDD carrier	GPS board
Bus	PCI	From 32-bit/33 MHz up to 64-bit/66 MHz	From 32-bit/33 MHz up to 64-bit/66 MHz	32-bit PCI	CPCI-Serial	32-bit/33 MHz
	PCI-X	-	-	-	-	-
	PCIe	-	-	-	-	-
Power Consumption	TDP	2.2 W	1 W	depending on plugged card, 0.1A max. w/o card	depending on plugged card, 0.1A max. w/o card	2.5W
Environment	Operating Temperature	0 ~ 60 °C (32 ~ 140 °F)	0 ~ 60 °C (32 ~ 140 °F)	0 ~ 60 °C (32 ~ 140 °F)	0 ~ 60 °C (32 ~ 140 °F)	-25 ~ 55 °C (-13 ~ 131 °F)
	non-operating temperature	-20 ~ 80 °C (-4 ~ 176 °F)	20 ~ 80 °C (-4 ~ 176 °F)	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 85 °C (-40 ~ 185 °F)
	Humidity	5 ~ 95 % @ 60 C, non-condensing (non-operating)	5 ~ 95 % @ 60 C, non-condensing (non-operating)	95 % @ 40 °C, non-condensing (Operating) 95 % @ 60 °C, non-condensing (Non-operating)	95 % @ 40 °C, non-condensing (Operating) 95 % @ 60 °C, non-condensing (Non-operating)	10 ~ 95 % @ 40 °C, non-condensing
	Vibration	1.0 Grms (Operating) 2.0 Grms (Non-Operating)	1.0 Grms (Operating) 2.0 Grms (Non-Operating)	2Grms	2Grms (5-500Hz, without HDD) (Operating)	1.06 Grms Operating 2 Grms Non-Operating
	Shock	-	-	-	-	10 Grms Operating 20 Grms Non-Operating
	Altitude	-	-	-	-	4,000m (operating) 10,000m (non-operating)
Regulatory	Conformance	-	-	FCC Class A, CE, RoHS	FCC Class A, CE, RoHS	FCC Class A, CE, RoHS
Operating System	Compatibiity	-	-	-	-	-
Compliance	Standards	PICMG 2.0 R3.0 CompactPCI Specification PICMG 2.3 R1.0 CompactPCI PMC I/O Mapping Specification IEEE P1386.1 R2.3 PMC Specification	PICMG 2.0 R3.0 CompactPCI Specification PICMG 2.3 R1.0 CompactPCI PMC I/O Mapping Specification IEEE P1386.1 R2.3 PMC Specification	PICMG 2.0 R3.0 PICMG 2.3 R1.0 IEEE P1386.1 R2.3 PMC Specification	PICMG CPCI-S.0 CompactPCI@ Serial peripheral card	PICMG 2.0 Rev. 3.0

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

# Selection Guide



Model		MIC-3955	MIC-3958	MIC-3665	MIC-3666	MIC-3667
Form Factor		3U	3U	PMC	XMC	XMC
Main Function		4/8- RS232/422/485	Quad GbE LAN	Dual GbE LAN	Dual 10GE LAN	Quad GbE LAN
Bus	PCI	32-bit/33 MHz	32-bit PCI	32-bit/33 MHz, 64-bit/66 MHz	-	-
	PCI-X	-	-	100/133 MHz	-	-
	PCIe	-	-	-	PCIe x8 gen.2 @ 5Gbps/lane	PCIe x8 gen.2 @ 5Gbps/lane
Power Consumption	TDP	3.5W / 5W	Up to 9.5W	6 W	8.5 W	5W
Environment	Operating Temperature	-40 ~ 70 °C (-40 ~ 184 °F)	-40 ~ 60 °C (-40 ~ 140 F)	0 ~ 55 °C (32 ~ 131 °F)	0 ~ 60 °C (32 ~ 140 °F)	0 ~ 60 °C (32 ~ 140 °F)
	non-operating temperature	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 85 °C (-40 ~ 185 °F)	-40 ~ 60 °C (-40 ~ 140 °F)	-20 ~ 80 °C (-4 ~ 176 °F)	-20 ~ 80 °C (-4 ~ 176 °F)
	Humidity	10 ~ 95% @ 40 °C, non-condensing	95 % @ 40 °C, non-condensing (Operating) 95 % @ 60 °C, non-condensing (Non-operating)	5 ~ 95 % @ 60 C, non-condensing (non-operating)	5 ~ 95 % @ 60 C, non-condensing (non-operating)	5 ~ 95 % @ 60 C, non-condensing (non-operating)
	Vibration	1.06 Grms Operating 2 Grms Non-Operating	2Grms	1.0 Grms (Operating) 2.0 Grms (Non-Operating)	1.0 Grms (Operating) 2.0 Grms (Non-Operating)	1.0 Grms (Operating) 2.0 Grms (Non-Operating)
	Shock	10 Grms Operating 20 Grms Non-Operating	-	-	-	-
Altitude	4,000m (operating) 10,000m (non-operating)	-	-	-	-	
Regulatory	Conformance	FCC Class A, CE, RoHS	FCC Class A, CE, RoHS	-	-	-
Operating System	Compatiibiity	Windows XP 32bit/ Windows 7 64bit / Windows 10 64bit Fedora 14 64bit / CentOS 6 32/64bit / CentOS 7 64bit Neoklyn 64bit / Ubuntu 16.04 64bit / Ubuntu 18.04 64bit	Windows 7 Windows 10 64bit Centos 6.5/6.6	Windows® XP Professional Windows 2000 Professional Windows NT 4.0 Linux kernel 2.4.x	Linux X86 Kernel 2.6.x Windows Server2003, Server2008	Linux X86 Kernel 2.6.x Windows Server2003, Server2008
Compliance	Standards	PICMG 2.0 Rev. 3.0	PICMG2.0 R3.0	PICMG 2.0 R3.1 CompactPCI Specifications IEEE P1386.1 PMC Specification	IEEE Std 1386.1-2001 PMC specification VITA 42.0-2005, 42.3-2006 XMC specifications	IEEE Std 1386.1-2001 PMC specification VITA 42.0-2005, 42.3-2006 XMC specifications



Model		MIC-3042C			
Backplane	slot	System x 1, Peripheral x 7, Rear transition x 8			
	bus	Up to 64-bit/66 MHz PCI bus			
	H.110 CT bus	No			
	V (I/O)	+3.3 V/+5 V (selectable)			
Cooling	FAN	2 (front: 193 CFM, rear: 61.3 CFM)			
Device Bay	HDD	-			
	Slim DVD-RW/ RAM	-			
Management Interface	Alarm Indicators	-			
Power Supply	Input	AC 100 ~ 254 V @ 50 ~ 60 Hz, full range (MIC-3042X-A)			
	Output	AC cPCI 250 W redundant power module			
		+3.3V	+5V	+12V	-12V
	Max Load	36A	50A	10A	1A
	Min Load	0A	2A	0A	0A
Physical Characteristics	Dimensions (W x D)	440 x 177 x 320 mm (17.3" x 7" x 12.6")			
Environment		Operating		Non-operating	
	Temperature	0 ~ 45 °C (32 ~ 113 °F)		-20 ~ 60 °C (-4 ~ 140 °F)	
	Humidity	20 ~ 90% @ 40 °C, non-condensing		10 ~ 95% @ 40 °C, non-condensing	
	Vibration	1Grms		2Grms	
	Shock	10G		30G	
Reliability	MTBF	Backplane	FAN module	Power supply	
		800,000 hours	50,000 hours @ 25 °C	100,000 hours @70% load	
Regulatory	Conformance	RoHS, CE, FCC, UL, CCC			
Compliance	Standards	PICMG 2.0 R3.0 CompactPCI Specification PICMG 2.1 R2.0 CompactPCI Hot Swap Specification PICMG 2.5 R1.0 CompactPCI Computer Telephony Specification PICMG 2.11 R3.0 Front-Access Power Connectors Specification PICMG 2.16 R1.0 CompactPCI Packet Switching Backplane Specification (MIC-3042B, MIC-3042C are not compliant with PICMG 2.16)			

Packetarium XL Blade Servers 1

High Performance Servers 2

Network Appliances 3

PCI Express Adapters 4

Network Switches 5

ATCA Blades & Integrated Systems 6

CPCI Boards & Enclosures 7

VPX Blades 8

Video Processing & IP Media Platforms 9

# Selection Guide



Model		MIC-3022CE/MIC-3022PCE				MIC-3022AE/MIC-3022PAE				MIC-3023D1-A1E/MIC-3023S1-D1E			
Backplane	slot	MIC-3022CE: System x 1, Peripheral x 7, Rear transition x 8 MIC-3022PCE: CompactPCI® PlusIO system slot x1 CompactPCI® peripheral slot x3 CompactPCI® Serial peripheral slot x4				MIC-3022CE: System x 1, Peripheral x 7, Rear transition x 8 MIC-3022PCE: CompactPCI® PlusIO system slot x1 CompactPCI® peripheral slot x3 CompactPCI® Serial peripheral slot x4				MIC-3023D1-A1E: System x 2, Peripheral x 10, Rear transition x 0 MIC-3023S1-D1E: System x 1, Peripheral x 6, adding peripheral x7 by using bridge card, Rear transition x 0			
	bus	MIC-3022CE: 32-bit/33 MHz/66 MHz PCI bus MIC-3022PCE:: serial bus, up to 5.0Gb/s				MIC-3022CE: 32-bit/33 MHz/66 MHz PCI bus MIC-3022PCE:: serial bus, up to 5.0Gb/s				MIC-3023: 32-bit/33 MHz/66 MHz PCI bus			
	H.110 CT bus	-				-				-			
	V (I/O)	+3.3 V/+5 V (selectable)				+3.3 V/+5 V (selectable)				+3.3 V/+5 V (selectable)			
Cooling	FAN	2 Blowers (Max 45.6CFM/FAN); up to 4 Blowers for dual system				2 Blowers (Max 45.6CFM/FAN); up to 4 Blowers for dual system				fanless			
Device Bay	HDD	-				-				-			
	Slim DVD- RW/RAM	-				-				-			
Management Interface	Alarm Indicators	-				-				-			
Power Supply	Input	AC 100 ~ 240 V @ 50 ~ 60 Hz, full range				AC 100 ~ 240 V @ 50 ~ 60 Hz, full range				AC 100 ~ 240 V @ 50 ~ 60 Hz, full range DC 24V/110V			
	Output	AC cPCI 250 W redundant power module (for Legacy) AC cPCI 300 W redundant power module (for PlusIO)				ATX 400W PSU				AC cPCI 50W power module (for MIC-3023D) DC cPCI 150W redundant power module (for MIC-3023S)			
		+3.3V	+5V	+12V	-12V	+3.3V	+5V	+12V	-12V	+3.3V	+5V	+12V	-12V
	Max Load	18A (250W PSU) 40A (300W PSU)	25A (250W PSU) 40A (300W PSU)	5A (250W PSU) 10A (300W PSU)	0.5A (250W PSU) 2A (300W PSU)	11.6A	12.89A	11.74A	0.37A	0A (50W PSU) 10A (150W PSU)	10A (50W PSU) 20A (150W PSU)	0A (50W PSU) 3A (150W PSU)	0A (50W PSU) 0.5A (150W PSU)
	Min Load	0A	1A	0A	0A	0.3A	0.3A	0.5A	0A	0A	0.1A	0A	0A
Physical Characteristics	Dimensions (W x D)	440 x 177 x 295 mm (17.3" x 7" x 11.6")				440 x 177 x 295 mm (17.3" x 7" x 11.6")				436.8 x 133.3 x 252 mm (17.2" x 5.25" x 9.92")			
Environment		Operating		Non-operating		Operating		Non-operating		Operating		Non-operating	
	Temperature	0 ~ 50 °C (32 ~ 122 °F)		-40 ~ 70 °C (-40 ~ 158 °F)		0 ~ 50 °C (32 ~ 122 °F)		-40 ~ 70 °C (-40 ~ 158 °F)		-25 ~ 55 °C (-13 ~ 131 °F)		-40 ~ 85 °C (-40 ~ 185 °F)	
	Humidity	10 ~ 95% @ 40 °C, non-condensing		10 ~ 95% @ 40 °C, non-condensing		10 ~ 95% @ 40 °C, non-condensing		10 ~ 95% @ 40 °C, non-condensing		10 ~ 95% @ 40 °C, non-condensing		10 ~ 95% @ 60 °C, non-condensing	
	Vibration	2Grms		2Grms		2Grms		2Grms		1.06Grms		2Grms	
	Shock	10G		30G		10G		30G		10G		30G	
Reliability	MTBF	Backplane	FAN module	Power supply	Backplane	FAN module	Power supply	Backplane	Power supply	Backplane	Power supply	Backplane	Power supply
		800,000 hours	50,000 hours @ 25°C	100,000 hours @ 70% load	800,000 hours	50,000 hours @ 25°C	100,000 hours @ 70% load	147,077 hours	AC:733,472 hours @ 50% load DC: 2,815,391 hours @ 50% load				
Regulatory	Conformance	RoHS, CE, FCC, UL, CCC				RoHS, CE, FCC, UL, CCC				RoHS, CE, FCC, CCC			
Compliance	Standards	PICMG 2.0 R3.0 CompactPCI Specification PICMG 2.1 R2.0 CompactPCI Hot Swap Specification PICMG 2.11 R3.0 Front-Access Power Connectors Specification				PICMG 2.0 R3.0 CompactPCI Specification PICMG 2.1 R2.0 CompactPCI Hot Swap Specification PICMG 2.11 R3.0 Front-Access Power Connectors Specification				PICMG 2.0 R3.0 CompactPCI Specification PICMG 2.1 R2.0 CompactPCI Hot Swap Specification PICMG 2.11 R3.0 Front-Access Power Connectors Specification			

# Mapping Guide

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

Main board	Model	Rear panel								
		LAN	USB3.0	COM (RJ-45)	USB2.0	PS/2	DVI-D	DVI-I	Display Pot	COM (DB9)
MIC-3395	RIO-3315-A1E	2	–	1	2	1	1	1	–	–
	RIO-3315-B1E	2	–	1	2	1	1	1	–	1
	RIO-3315-C1E	4	–	1	2	1	1	1	–	–
MIC-3396	RIO-3316-C1E	4	1	1	1	1	1	1	–	–
MIC-3396MIL	RIO-3396MIL-A1E	4	2	1	–	1	1	VGA	–	4

Main board	Model	On-board Header / Socket / Connector								
		VGA	USB2.0	USB3.0	COM	SATA II	SATA III	GPIO	MiniSAS	SAS (SATA Interface)
MIC-3395	RIO-3315-A1E	1	2	–	1	2	–	–	1	4
	RIO-3315-B1E	1	2	–	–	2	–	–	–	–
	RIO-3315-C1E	1	2	–	1	2	–	–	–	–
MIC-3396	RIO-3316-C1E	–	4	1	2	2	–	–	–	–
MIC-3396MIL	RIO-3396MIL-A1E	–	4	–	4	2	2	8	–	–

# MIC-3328

## 3U CompactPCI® PlusIO Intel® 3rd Gen. Core™ Processor Blade



### Features

- Supports 3rd Generation Intel® Core™ processor
- Intel® QM77 Platform Controller Hub
- 4 or 8GB DDR3-1600 soldered SDRAM with ECC
- Triple independent display support
- Optional 8GB SATA NAND Flash on board
- 2.5" SATA-III SSD, CFast, XMC on 8HP version
- Two 10/100/1000 Mbps ports, 2 USB 3.0 ports, 1 VGA port on front panel (4HP)
- Two COM ports, 2 Display ports, 1 PS/2 port (8HP-1)
- 4 x M12 1GbE Ethernet (8HP-4)
- Supports CompactPCI PlusIO
- PICMG2.0, R3.0 , PICMG2.1, R2.0, PICMG2.30 compliant

### Introduction

Advantech's MIC-3328 is a 3U CompactPCI PlusIO CPU blade based on the Intel® 3rd generation Core™ processor family. Based on latest 22nm process technology these processors support up to four cores / eight threads at up to 2.5GHz and up to 6M last level cache. With Intel® HD Graphics(Gen7,DX11,OCL1.1) integrated into the CPU, the MIC-3328 can serve applications demanding high performance, high resolution video output on up to three independent display interfaces. Latest DDR3 DRAM up to 8GB running at 1600MT/s complement the powerful processor with high performance, ECC protected onboard memory.

MIC-3328's design for reliability includes using a soldered processor, DRAM and flash storage for enhanced shock and vibration tolerance make it an ideal choice for workstation workloads in harsh environments and mission/business-critical applications such as military, transportation, test & measurement and traffic control.

MIC-3328 uses the Intel® QM77 PCH, which provides extensive I/O support such as USB3.0, PCI Express gen.2 and SATA-III ports.

The MIC-3328 PlusIO J2 supports interfaces such as 4 PCI Express x1 gen. 2 links for IO extension, one GbE for computer to computer multiprocessing, three SATA for Hard drives and RAID systems as well as 4 USB ports for wireless interfaces and legacy interface replacement.

For more information about CompactPCI PlusIO and Serial offerings from Advantech or information on how this new platform can help you to gain competitive advantages, please contact your Advantech representative.

### Specifications

Processor System	CPU	Intel® 3 <sup>rd</sup> Generation Core™ i7 up to 2.5 GHz (6MB L2 cache) 2.5G,3555LE, 25w/ 2.1G, 3612QE, 35w
	Platform Controller Hub	Intel® QM77
	BIOS	Customized AMI Aptio UEFI BIOS
CompactPCI Interface	J1 Connector	32-bit PCI local bus (33MHz)
	J2 Connector	CompactPCI PlusIO / RTM
Memory	Technology	DDR3-1600MHz SDRAM, dual channel with ECC support
	Max. Capacity	8GB
	Soldered/socket	Soldered
Graphics	Chipset	Integrated in Intel® CPU
	Resolution	VGA 2048 x 1536 pixels with 32-bit color at 75 Hz Display port 2560 x 1600 at 60 Hz
Ethernet	Controller	3 x i210AT
	Interface	10/100/1000 Mbps
	I/O Connector	RJ-45 x 2 (front panel), RJ-45 x 1 (RTM / PlusIO)
Storage	IDE	1 x CFast Socket on 8HP
	SATA	1 x optional SATA NAND Flash on 4HP,1x Internal SATA connector on 8HP version
Front I/O	VGA	DB15 Port
	Ethernet	2 x 10/100/1000 Mbps RJ-45
	USB 3.0	2 x Type A
	8HP XTM	8HP-1: 2x RJ45 RS232, 2x Display port, 1x PS/2 port 8HP-4: 4 x M12 1GbE Ethernet
PlusIO / RTM interface (4HPJ2 interface)	PCIE	4 x PCIe1 Gen 2
	SATA	2 x SATA-II, 1 x SATA-III
	Internet	1 GbE based on i210AT
	USB 2.0	4 ports

## Specifications (Cont.)

RIO (8HP)	8HP-1 J2 interface (BOM Optional)	1 x PS/2 is mutually exclusive with PS/2 on 8HP front panel by BOM control. It required a special 8HP board to work. The special 8HP board is on request by customer 2 x COM default setting is RS232, RS422/485 could be set by the switch on 8HP board (Total 4 COM ports on 8HP and its RIO) 2 x DisplayPort is switchable from front panel by switch on 8HP board	
	8HP-4 J2 Interface	1 x PCIe x 8 Gen3 or 2x PCIe x 4 Gen3, 6 x Fan Control	
Watchdog Timer	Supervision	0 ~ 255s, 1s step, generate reset signal	
Operating System	Compatibility	Microsoft Windows XP Professional, Windows 7, Windows server 2008, VxWorks 6.9, Linux Redhat 6.1	
Power Requirement	Configuration	CPU TDP 25w/35w, 8HP with RIO	
	Consumption	33.12W /43.91W	
Physical	PCB Dimensions (L x H)	4HP or 8HP, 160.00 x 100.00 mm (6.30" x 3.95")	
	Weight	0.62kg w. AL Heatsink ,0.9kg w. Cu Heatsink including XTM	
Environment		Operating	Non-operating
	Temperature	0 ~ 60 °C (32 ~ 140 °F)	- 40 ~ 85 °C (-40 ~ 185 °F)
	Humidity	95% @ 40 °C (non condensing)	95% @ 60 °C (non-condensing)
	Shock	10 G, 11ms, each axis three times	30 G, 11ms, each axis three times
	Vibration	2Grms (5~500Hz, with CFast on 8HP)	Sine 2 Grms, 30mins each axis (5 ~ 500 Hz)
Regulatory	Conformance	FCC, Class A, CE, RoHS	
Compliance	Standard	PICMG 2.0 Rev. 3.0, PICMG 2.1 R2.0, PICMG2.30 PlusIO compatible	

## Supported CPU Configurations

Intel® CPU Model Number	# Cores	Freq.	Cache	Memory Types	CPU TDP
I3 3120ME	2	2.4GHz	3 MB L2 Cache	DDR3-1600	35W
I7 3555LE	2	2.5GHz	4 MB L2 Cache	DDR3-1600	25W
I7 3612QE	4	2.1GHz	6 MB L2 Cache	DDR3-1600	35W

## Ordering Information

System board	Front panel							On board Features					Other Plus IO <sup>1</sup>
	LAN (RJ45)	LAN (M12)	USB3.0	VGA	COM RJ45	Displayport	PS/2	CPU	Memory	SATA CFast/HDD	Slot Width		
MIC-3328B1-D1E	2	-	2	1	2	2	1	I7 3555LE	8GB	2	2	Yes	
MIC-3328C2-D2E	2	4	2	1	-	-	-	I7 3612QE	8GB	2	2	Yes	
MIC-3328D1-D1E	2	-	2	1	2	2	1	I3 3120ME	4GB	2	2	No	
MIC-3328B1-D3E	2	-	2	1	2	2	1	I7 3555LE	8GB	2	2	No	

## Ordering Information

Model Number	Configuration
MIC-3328B1-D1E	MIC-3328, 3555LE, 8G RAM, w/ 8HP-1, 2 DP, 2 COM, PS/2, Support PlusIO
MIC-3328C2-D2E	MIC-3328 3612QE 8G VGA USB3.0 x 2, RJ45 x 2, M12 x 4 CFast/SSD PlusIO
MIC-3328D1-D1E	MIC-3328, i3-3120ME, 4G RAM, w/8HP-1, 2DP, 2COM,PS/2
MIC-3328B1-D3E	MIC-3328, 3555LE, 8G RAM, w/8HP-1, 2DP, 2COM, PS/2

For other CPU blade SKU, chassis and RIO, please contact your Advantech sales representative.

## Related Products

Peripheral board	Description
MIC-3955	4 or 8-port RS232/422/485 communication card, with RIO support
MIC-3958	3U CPCI 4/2 port RJ45 or M12 X-Code Gigabit Ethernet Card, with RIO support
MIC-3022	3U or 4U enclosure for 3U cards, with RIO support

Note1: 4HP J2 supports 4 x PCIe1,4 x USB2.0, 1 x Ethernet (Ethernet1), 3 x SATA (SATA2, SATA3, SATA4), According to PICMG2.3 D0.30 CompactPCI PlusIO Specification.

# MIC-3329

## 3U CompactPCI® Intel® Quad-Core Atom™ Processor Blade



### Features

- Supports Intel® Atom™ Processor E3826/E3827/E3845
- Supports up to 4GB DDR3L-1333 soldered ECC memory
- Optional extension module on 8HP and RIO for VGA, LAN, USB, PS/2, Audio, COM ports
- Supports fanless application with optimized heatsink design
- Designed to meet EN50121-4 and EN50155 for railway applications
- PICMG2.0 R3.0, PICMG2.1 R.0 Compliant

Fully Compliant with  
**EN 50121-4**

Fully Certified with  
**EN 50155**

RoHS  
Compliant  
Product

**CE FCC**

### Introduction

The Advantech MIC-3329 is based on Intel® Atom™ technology, previously codenamed Baytrail and is designed to provide balanced performance and power efficiency. The MIC-3329 is a 3U CompactPCI® processor blade designed for dual-core Intel® Atom E3826/E3827 and quad-core Intel® Atom E3845 processors, and up to 4GB soldered DDR3L-1066/1333 ECC memory. It is available in single and dual slot form factor, offering a range of I/O functionality by XTM (8HP) & Rear I/O extensions.

Front panel I/O on the single slot (4HP) provides 2 x RJ45 GbE ports (Switchable with RIO 4HP), 1 x VGA port (Switchable with RIO 4HP), 1 x USB2.0 port and 1 x USB3.0 port.

Front panel I/O on the second layer (XTM) provides 2 x COM ports (RS232/422/485), 1 x PS/2 KB/MS and 1 x Audio ports or 2 x M12 GbE ports, 1 x COM ports (RS232/422/485).

The MIC-3329 provides an ideal solution for transportation, railway and factory automation applications. Its robust design from a layout and thermals perspective allows it to meet or exceed EN50155 and EN50121-4 using a very low TDP selection of 7W/8W/10W processors.

Its low power consumption and industrial SoC features make the MIC-3329 a perfect fit for all fanless system applications.

### Specifications

Processor System	CPU	Intel® Atom™ Processor E3826/E3827/E3845
	Max Speed	Up to 2MB L2 Cache, 1.91 GHz
	BIOS	2 x AMI 8 MByte SPI flash
Memory	Technology	Single Channel DDR3L 1066/1333 MHz with ECC
	Max. Capacity	Up to 4GB on board
Compact PCI Interface	J1 Connectors	32bit/33MHz PCI local bus
	J2 Connector	RTM
	Mode	System Master/Drone (Stand alone)
Ethernet	Controller	Intel® WG1210 SLJXR Gigabit Ethernet Controller
	Interface	PCIe 1.0 x 1, 10/100/1000 Base TX Ethernet
	I/O Connector	2 x RJ45 to 4HP front (Switchable with RIO 4HP); 2 x M12 Coded to 8HP front
Graphics	Chipset	Integrated in processor
	I/O Connector	1 x VGA to 4HP front (Switchable with RIO 4HP)
	Resolution	1 x VGA 2560 x 1600, 60Hz
Storage	Mode	SATA-II
	Channels	Option 1: 1 x SATA connector and 1x Cfast connector on 8HP Option 2: 1 x SATA connector on 8HP and 1 x Cfast socket on RTM (Switchable with NAND flash, upon request)
Front I/O	USB	1 x US2.0 type A, 1 x USB3.0 type A
	VGA	1 x VGA (Switchable with RIO)
	LAN	2 x 10/100/1000Mbps on RJ45 (Switchable with RIO)
	Front Panel LEDs	x 1 blue/yellow for Hot Swap/HDD, x 1 green for Power, and x 1 green for Master/Drone mode
	8HP (XTM)	Option 1: 2 x DB9 COM; 1 x PS/2; 1 x Audio Line in/out Option 2: 1 x DB9 COM; 2 x M12 X-coded GbE
	Buttons	System reset button

## Specifications (Cont.)

To RTM	USB	2 x US2.0 type A,	
	VGA	1 x VGA (Switchable with front)	
	LAN	2 x 10/100/1000Mbps on RJ45 (Switchable with front)	
	8HP (XTM)	2 x COM port on DB9 (RS232/422/485)	
BIOS	Boot Options	SATA, USB, network (PXE)	
Watchdog Timer	Output	Local reset	
	Interval	Programmable 1s ~ 255s	
Operating System	Compatibility	Windows7, Windows 10, Linux, CentOS6.6	
Physical	Dimension & Weight	3U/ 4HP&8HP: 100mm x 160 mm	
Environment		Operating	Non-operating
	Temperature	-40 ~ 70 °C (-40 ~ 158 °F) Fanless	-40 ~ 85 °C (-40 ~ 185 °F)
	Humidity	95 % @ 40 °C, non-condensing	95 % @ 60 °C, non-condensing
	Vibration	2Grms (X,Y,Z 1H/axis, w/o HDD)	2G
	Shock	30 G, 11ms, each axis three times	
Regulatory	Conformance	FCC Class A, CE, RoHS EN50121-4, EN50155	
Compliance	Standards	PICMG2.0 R3.0, PICMG2.1 R.0	

## Supported CPU Configurations

Intel® CPU Model Number	# Cores	Freq.	Cache	Memory Types	CPU TDP
Intel® Atom™ Processor E3845	4	1.91GHz	2 MB L2 Cache	DDR3L-1333	10W

## Ordering Information

P/N List	Front/Rear Panel						On Board Features				
	4HP			8HP XTM			PS/2	SATA Conn.	Cfast Socket <sup>(3)</sup>		
	RJ45 LAN <sup>(1)</sup>	USB2.0	USB3.0	VGA <sup>(2)</sup>	CPU	M12 LAN					
MIC-3329C1-D2E	2	1	1	1	E3845	2	1	NA	NA	1	1
MIC-3329C1-D1E	2	1	1	1	E3845	NA	2	1	1	1	NA
MIC-3329R1-D1E	2	2	NA	1	NA	NA	2	NA	NA	NA	1

Notes:

\*(1)(2) are switchable between front and rear boards.\*On board NAND flash is requested by customer.

(3): MIC-3329R1-D1E Cfast socket is only active in MIC-3329C1-D1E

## Related Products

Peripheral board	Description
MIC-3955	4 or 8-port RS232/422/485 communication card, with RIO support
MIC-3958	3U CPCI 4/2 port RJ45 or M12 X-Xcode Gigabit Ethernet Card, with RIO support
MIC-3022	3U or 4U enclosure for 3U cards, with RIO support

Front Board



RIO Board



# MIC-3332

## 3U CompactPCI PlusIO Intel® 6th Gen. Quad-Core™ Processor Blade

Preliminary



### Features

- Intel® latest 6th Gen 14nm Xeon®/Core™ processor with CM236 PCH
- Up to 16GB DDR4-2133 soldered memory with ECC or Non-ECC
- Multi-option storage as 2.5" SATA, Cfast, Mirco SD, etc
- 2 RJ45 GbE LAN, 2 USB3.0, 1VGA on front 4HP panel
- 4 M12 X-Coding or 4 RJ45 GbE LAN on 8HP XTM-2 front panel
- Design to meet EN50121-4 & EN50155 for railway application
- PICMG2.0 R3.0, PICMG2.1 R.0, PICMG2.3 Compliant

Fully Compliant with  
EN 50121-4

Fully Certified with  
EN 50155

CE FCC

RoHS  
Compliant  
Product

## Introduction

Advantech MIC-3332 Series, using Intel® latest 14nm technology (code name: Skylake) to provide significant performance and power efficiency.

MIC-3332 series, as a 3U CompactPCI® processor blade, is featured with a 4 cores/8 threads Core™ i7 Processors i7-6822EQ, i7-6820EQ, Xeon® Processor E3 v5 Family as E3-1505M v5 and E3-1505L v5, mating with Intel® CM236 platform Chipset Hub to support single channel up to 8GB or 16GB soldered DDR4@2133MHz memory. The graphics is embedded in processor to offer up to three independent displays per request. It is available in single and dual slots width form factors, to offer various I/O connectivity by XTM (8HP), Rear IO extensions and PlusIO.

Front panel I/O on the single slot (4HP) provides 2xRJ45 GbE ports, 1xVGA port and 2xUSB3.0 port. Front panel I/O on the second layer (XTM-2) provides 4xGbE port by M12 X-coding or RJ45 connectors, there are various types of storage as on board 2.5" SATA connector, Cfast socket. Additional 1x Micro-SD slot is as extension options based on user request.

MIC-3332 provides an ideal solution for railway rolling stock, high-performance computing and military application. With its optimized design on EMC & thermal, it is available to meet or exceed EN50155 and EN50121-4.

## Specifications

Processor System	CPU	Intel® E3-1505LV5, 4C/8T, 2.0GHz, ECC, TDP 25W Intel® E3-1505MV5, 4C/8T, 2.8GHz, ECC, TDP 45W Intel® Core i7-6822EQ, 4C/8T, 2.0GHz, w/o ECC, TDP 25W Intel® Core i7-6820EQ, 4C/8T, 2.8GHz, w/o ECC, TDP 45W
	BIOS	Dual AMI 16 MB SPI flash
Memory	Technology	Single Channel DDR4@2133 MHz with ECC or Non-ECC
	Max. Capacity	Up to 8GB or 16GB soldered on board memory
Compact PCI Interface	J1 Connectors	32bit/33MHz PCI local bus
	J2 Connector	RTM
	Mode	System Master/Drone
Graphics	Chipset	Integrated in processor
	Resolution	1920 x 1200 @ 60Hz
Ethernet	Controller	Intel® WGI210 Gigabit Ethernet Controller
	Interface	PCIe 1.0x1, 10/100/1000 Base T Ethernet
	I/O Connector	2 x RJ45 GbE LAN port to 4HP front panel 4 x RJ45 or 4 x M12 GbE LAN port to 8HP front panel 2 x RJ45 to RIO (more ethernet to RIO per request)
Storage	Mode	SATAIII
	On board Connector	1 Channel to XTM on board 2.5" SATA connector 1 Channel to XTM on board Cfast socket 3 Channels to RTM
	Mode	USB2.0
	On board Connector	1 x Micro SD socket
Front I/O	USB	2 x USB3.0 TypeA
	VGA	1 x VGA
	LAN	4HP with 2 x 10/100/1000Mbps on RJ45, 8HP with 4 x 10/100/1000Mbps on M12 X-coding or RJ45
	Front Panel LEDs	x1 blue/Orange for Hot Swap/HDD, x1 green for Power/Master/Drone mode
	Buttons	System reset button
	Plus IO or RTM interface (4HP J2)	USB
Plus IO or RTM interface (4HP J2)	SATAIII	2 x SATAIII (1 x SATAIII option)
	LAN	2 x 10/100/1000BASE-T Ethernet
	PCIe	4 x PCIe1 Gen2 (1 x eDP option)

## Specifications (Cont.)

RIO (4HP)	USB	2 x USB2.0 TypeA	
	VGA	1 x VGA	
	LAN	2 x 10/100/1000Mbps on RJ45	
	Others	2 x SATA2.0 interface to M.2 B key Connector (22*42mm)	
Watchdog Timer	Output	Local reset & interrupt	
	Interval	Programmable 1s ~ 255s	
Operating System	Compatibility	Windows10, windows7, Ubuntu 18.04, Centos7.5	
Power Requirement	Configuration	CPU TDP 25W/45W, 8HP	
	Consumption	30W/50W	
Physical	Dimensions (W x D)	3U/ 4HP&8HP: 100 x 160 mm (front board)	
	Operating	Non-operating	
Environment	Temperature	0 ~ 55 °C (32 ~ 122 °F)	-40 ~ 85 °C (-40 ~ 185 °F)
	Humidity	95 % @ 40 °C, non-condensing	
	Vibration	2 Grms (with SSD or Cfast)	
	Shock	10 G, 11ms, each axis three times	
	2Grms		
Regulatory	Conformance	FCC Class A, CE, RoHS,	
Compliance	Standards	PICMG2.0 R3.0, PICMG2.1 R.0, PICMG2.30 PlusIO Compliance	

## Supported CPU Configurations

Intel® CPU Model Number	# Cores	Freq.	Smart Cache	Memory Types	CPU TDP
Intel® Core™ i7-6822EQ	4	2.0GHz	8 MB	DDR4-2133, Non-ECC	25W
Intel® Core™ i7-6820EQ	4	2.8GHz	8 MB	DDR4-2133, Non-ECC	45W
Intel® Xeon® E3-1505M v5	4	2.8GHz	8 MB	DDR4-2133, ECC	45W
Intel® Xeon® E3-1505L v5	4	2.0GHz	8 MB	DDR4-2133, ECC	25W

## Ordering Information

Single board	Front Panel					Main On board Features						
	4HP			XTM		4HP		XTM			Others	
	LAN (RJ45)	USB3.0	VGA	LAN (M12)	LAN (RJ45)	CPU	Memory <sup>(1)</sup>	SATA Conn.	Cfast Socket	Micro-SD Socket	Slot Width	PlusIO
MIC-3332C1-D1E	2	2	1	-	4	i7-6822EQ	8GB	1	1	1	2	No
MIC-3332C2-D1E	2	2	1	-	4	i7-6822EQ	8GB	1	1	1	2	Yes
MIC-3332C3-D1E	2	2	1	4	-	i7-6822EQ	8GB	1	1	1	2	Yes
MIC-3332D1-D1E	2	2	1	4	-	i7-6820EQ	16GB	1	1	1	2	No
MIC-3332D2-D1E	2	2	1	4	-	i7-6820EQ	16GB	1	1	1	2	Yes

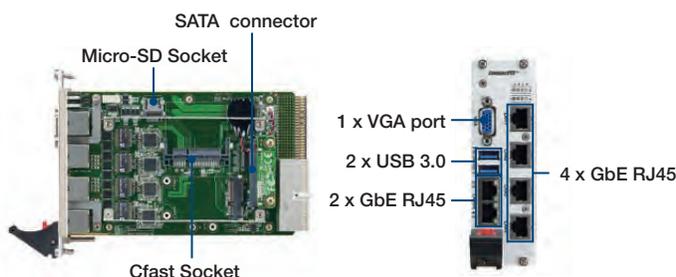
Notes: 1. Intel® Xeon® E3-1505L v5 and E3-1505M v5 with ECC support per request

## Related Products

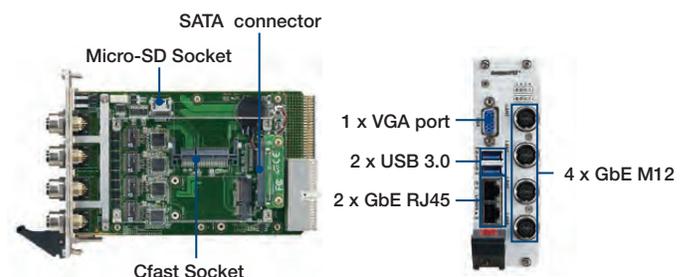
Peripheral board	Description
MIC-3955	3U CPCI 4 or 8-port RS232/422/485 communication card, with RIO support
MIC-3958	3U CPCI 4/2 port RJ45 or M12 X-code Gigabit Ethernet Card, with RIO support
MIC-3022	3U or 4U enclosure for 3U cards, with RIO support
MIC-3954	3U CPCI-S SSD carrier card/miniPCIe card
MIC-3332 RIO Board	3U CPCI MIC-3332 RIO Board with 2 x USB2.0, 1 x VGA, 2 x RJ45 IO ports

## Storage/IO

### MIC-3332C series with 4 RJ45



### MIC-3332D series with 4 M12



Packetarium XL Blade Servers 1

High Performance Servers 2

Network Appliances 3

PCI Express Adapters 4

Network Switches 5

ATCA Blades & Integrated Systems 6

CPCI Boards & Enclosures 7

VPX Blades 8

Video Processing & IP Media Platforms 9

# MIC-3396

## 6U CompactPCI Intel® 4th Gen. Core™ i3/i5/i7 Processor Blade with ECC support



### Features

- Supports 4<sup>th</sup> Generation Intel® Core™ i3/i5/i7 processors and Intel® QM87 PCH with embedded graphic (up to 3 independent displays)
- Up to 16GB (DDR3 1600) low voltage ECC memory (max 8GB on board, socket SO-UDIMM x1, max 8GB)
- Optimized single-slot SBC with 2.5" SATA-III HDD/CFast socket/ on-board flash (optional)
- Two SATA ports, two USB 3.0, six USB 2.0 ports, two DVI ports, two RS-232 ports, one PS/2 connector, and PCIe x8 interfaces to the Rear Transition Module (RTM)
- Five Gigabit Ethernet ports including two PICMG 2.16 for front and rear connectivity
- PICMG 2.16 R1.0, PICMG 2.1 R2.0, PICMG 2.6 R1.0 compliant

CE FCC

### Introduction

Using 4<sup>th</sup> generation Intel® Core™ i3/i5/i7 processors based on 22nm process technology supporting up to four cores / eight threads at 2.4GHz and 6MB last level cache, the MIC-3396 blade boosts computing performance deploying the latest virtualization, techniques and CPU enhancements. Onboard soldered low voltage DRAM (1.35V) with ECC support and optional memory expansion via an SODIMM socket extend the memory to a maximum of 16GB supporting the most demanding applications in high performance or virtualized environments. Dual channel design and memory speeds up to 1600MT/s along with increased cache size and cache algorithms guarantee maximum memory performance. Combined with the powerful Intel® QM87 chipset, the 4<sup>th</sup> generation Intel® Core™ processors offer improved I/O performance by leveraging 5GT/s DMI and 3<sup>rd</sup> generation PCIe interfaces. An onboard XMC/PMC site, and XMC with PCIe x8 gen.3 connectivity can host high speed offload or I/O mezzanines such as the MIC-3666 dual 10GE XMC card. With SATA-III support and up to 7Gbps I/O, the latest enhancements in storage technology such as high speed SSDs or traditional HDDs can be used on the MIC-3396. Five gigabit Ethernet ports based on Intel® GbE controllers for front and rear, including two PICMG 2.16, ensure best in class network connectivity.

The processor's integrated enhanced graphics engine (Iris) offers twice the performance over previous generations. With triple independent display support, the MIC-3396 is an ideal fit for demanding workstation applications.

RASUM features integrated in the CPU and chipset combined with PICMG 2.9, IPMI-based management make the MIC-3396 a highly available and reliable computing engine.

The RIO-3316 RTM module supports PS/2 connector with both keyboard and mouse ports, USB 3.0, USB 2.0 ports, RS-232 ports, SATA ports, DVI ports, and Gigabit Ethernet ports. Detail please refer to RIO-3316 datasheet. In case of the SATA disk drives and SATA RAID support of the QM87 do not meet performance and reliability requirements, the RIO-3315 SAS version supports a 4-port SAS controller with RAID and fail over support.

### Specifications

Processor System	CPU	4th Generation Intel® Core™ i3/i5/i7 mobile processors up to 2.4 GHz (6MB LLC)
	Platform Controller Hub	Intel® QM87
	BIOS	Redundant AMI 8MByte SPI flash
CompactPCI Interface	J1 Connector	32-bit PCI local bus
	J2 Connector	64-bit PCI local bus
	J3 Connector	PICMG2.16 + RTM area, 1x PCIe x8
	J4-J5 Connectors	RTM area
XMC/PMC Socket	PClex8	Gen3 (7GT/s)
	PCI	64-bit/66 MHz
Memory	Technology	DDR3 1600 MHz, dual channel with low voltage and ECC support
	Max. Capacity	Up to 16GB (max. 8GB on-board, max. 8GB SODIMM)
	Socket	SODIMM x1
Graphics	Controller	Intel® embedded graphic controller Iris (triple independent display)
	VRAM	Dynamic
	Resolution	Up to 2048 x 1536, 64k colors at 75Hz
Ethernet	Controller	4 Intel® I210AT single-port Gigabit Ethernet controllers (on PCIe x1 channel)
	Interface	10/100/1000Base-TX Ethernet
	I/O Connector	PICMG 2.16 and RJ-45 x2 (RTM rear panel), RJ-45 x1 (front panel)
	Controller	1 Intel® I217LM single-port Gigabit Ethernet controller
	Interface	10/100/1000Base-TX Ethernet
Storage	I/O Connector	RJ-45 (front panel)
	Onboard HDD/SSD	1 2.5" (SATA-III)
	Channels	Onboard SATA-III connector
	Onboard Flash	SATA-II
	Channels	1 CFast socket (SATA-II) 1 on-board flash (SATA-II optional)
	RTM	SATA-III
Channels	2 SATA-III connectors	

## Specifications (Cont.)

Front I/O	USB3.0	2 type A
	USB2.0	1 type A
	VGA	1
	COM	1 RS-232 on RJ-45
	LAN	2 10/100/1000 Mbps on RJ-45
	Front Panel LEDs	x1 blue for Hot Swap, 1x yellow for HDD, x1 green for Master/Drone mode, x1 green BMC Heartbeat, and x1 green for Power
	Buttons	CPU reset button and BMC reset button
Rear I/O	USB2.0	6 ports
	USB3.0	2 ports
	COM	2 ports
	LAN	4 ports, one connectivity with front port
	SATA	2 SATA-III
	PCIe	1 PCIe x8 Gen3 7GT/s
	Display	1 DVI-I and 1 DVI-D
	Others	PS/2 for keyboard & mouse
Watchdog Timer	Output	Local Rest and Interrupt
	Interval	Programmable 1s ~ 255s
Hardware Monitor	HWM	NCT7904
BMC	Controller	LPC1768, IPMI v2.0 compliant
	Configuration	4HP
Operating System	Compatibility	Win7, Linux, VxWorks 6.x (on request)
	Configuration	4HP
Power Requirement	TDP	Maximum: up to 80W (quad core), 50W (dual core) or less, depending on CPU type
	Dimensions (W x D)	233.35 x 160.0 mm
Environment	Operating Temperature	0 ~ 55 °C (32 ~ 122 °F)
	Non-operating Temperature	-40 ~ 85 °C (-40 ~ 185 °F)
	Humidity	95 % @ 40 °C, non-condensing
	95 % @ 60 °C, non-condensing	
	Vibration (5-500 Hz)	3.5Grms (without on-board 2.5" SATA HDD)
	Bump	25G, 6ms
Regulatory	Altitude	15000ft, 55 °C above sea level
	40000 ft, -40 °C above sea level	
Compliance	Conformance	FCC Class A, CE, RoHS
Standards	PICMG2.0 R3.0, PICMG2.1 R.0, PICMG2.9 R1.0, PICMG2.16 R1.0.	

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Ordering Information

System Board Model Number	Front Panel					Main On-board Features							
	VGA	USB3.0 (type A)	USB2.0 (type A)	Ethernet (RJ-45)	Console (RJ45)	CPU	Onboard Memory	Cfast Socket	Storage Channel	SODIMM Socket	BMC	PCIex8	XMC/PMC
MIC-3396HB-M8E	1	2	1	2	1	i5-4400E	8GB	1	1 SATA-III	1	No	Yes	Yes
MIC-3396HC-M8E	1	2	1	2	1	i7-4700EQ	8GB	1	1 SATA-III	1	Yes	Yes	Yes
MIC-3396HD-M8E	1	2	1	2	1	i7-4700EQ	8GB	1	1 SATA-III	1	Yes	No	No
MIC-3396HE-M8E	1	2	1	2	1	i7-4700EQ	8GB	1	1 SATA-III	1	No	Yes	Yes

\*Note: For i3 CPU, 4GB on-board memory and on-board flash available by request, please contact your local sales office.

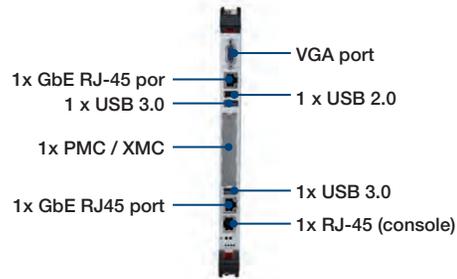
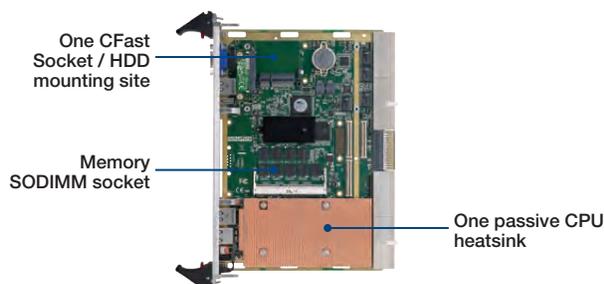
## CPU Configurations

Intel® CPU Model Number	CPU Architecture	# Cores	# Threads	Freq.	Cache	CPU TDP	ECC
i3-4100E	22 nm	2	4	2.4 GHz	3 MB	37W	Yes
i5-4400E	22 nm	2	4	2.7 GHz	3 MB	37W	Yes
i7-4700EQ	22 nm	4	8	2.4 GHz	6 MB	47W	Yes

## Related Products

Model number	Configuration
RIO-3316-C1E	RTM Module with 4 LAN ports and USB 3.0 for MIC-3396
MIC-3666-AE	Dual 10 Gigabit Ethernet XMC
MIC-3665-AE	CompactPCI PMC with dual copper (RJ-45) Gigabit Ethernet interfaces
MIC-3665-BE	CompactPCI PMC with dual fiber Gigabit Ethernet interfaces
MIC-3667-AE	Quad copper (RJ-45) Gigabit Ethernet XMC

### MIC-3396x-MxE Series



# MIC-3396MIL

## 6U CompactPCI Intel® 4th/5th Gen. Core™ i5/i7 Processor Blade with ECC support



### Features

- Supports 4th /5th Generation Intel® Core™ i5/i7 processors and Intel® QM87 PCH with embedded graphic (up to 3independent displays)
- Up to 16 GB (DDR3 1600) low voltage ECC memory (max 8GB on board, socket SO-UDIMM x1, max 8GB)
- Optimized single-slot SBC with 2.5" SATA-III HDD/CFast socket
- Two SATAIII and two SATAII ports, two USB 3.0, four USB 2.0 ports, two DVI ports, four RS-232 ports, one PS/2 connector, and PCIe x16 interfaces to the Rear Transition Module (RTM)
- Four gigabit Ethernet ports for PICMG 2.16, front and rear connectivity
- PICMG 2.16 R1.0, PICMG 2.1 R2.0, PICMG 2.6 R1.0 compliant



### Introduction

The MIC-3396MIL is specially design for ruggedized applications, and offers three different configurations that meet a wide range of environment requirements.

Using 4th and 5th generation Intel® Core™ i5/i7 and Intel® Xeon® processors, it supports up to four cores / eight threads at 2.7GHz and 6MB last level cache. Ruggedized requirements are addressed by a conduction cooled design an extended operation temperature range (-40 ~ 85 °C measured at wedge lock). Shock and vibration resistances of the board are increased by using wedge locks and a single-piece CNC-milled aluminum alloy plate that conforms to the major IC packages.

With highly integrated functional capabilities, the MIC-3396MIL fully utilizes the I/O features of the Intel® chipsets. It supports maximum 16GB of 1600 MHz DDR3L RAM, an onboard 2.5" Serial ATA HDD or SSD, a CFast slot, one PCIe x16 and a set of I/O functions brought through the backplane to a unique rear transition module, which contains eight GPIOs, four USB2.0 and four RS-232/422/485 console ports as pin headers, two SATA Gen III and two SATA Gen II as connectors, two/four LAN ports (two LAN ports are switchable form front panel to RTM), one DVI-D port, one VGA port, two USB 3.0, one P/S2 port and one RS-232/422/485 port on the front panel.

### Specifications

Processor System	CPU	4th/5th Generation Intel® Core™ i5/i7 mobile and Xeon® processors up to 2.7 GHz (6MB LLC )
	Platform Controller Hub	Intel® QM87
	BIOS	Redundant AMI 16MByte SPI flash
CompactPCI Interface	J1 Connector	32-bit PCI local bus
	J2 Connector	64-bit PCI local bus
	J3 Connector	PICMG2.16 + RTM area
	J4-J5 Connectors	RTM area
Memory	Technology	DDR3L 1600 MHz, dual channel with low voltage and ECC support
	Max. Capacity	Up to 16GB (max. 8GB on-board, max. 8GB SODIMM)
	Socket	SODIMM x1
Graphic	Controller	Intel® embedded graphic controller (triple independent display)
	VRAM	Dynamic
	Resolution	Up to 2048 x 1536, 64k colors at 75Hz
Ethernet	Controller	1 Intel® I350 four-ports Gigabit Ethernet controllers (on PCIe x4 channel)
	Interface	10/100/1000Base-TX Ethernet
	I/O Connector	PICMG 2.16 and RJ-45 x2 (switchable from front panel to RTM)
Storage	Onboard HDD/SSD	1 2.5" (SATA-III)
	Channels	Onboard SATA-III connector
	Onboard Flash	SATA-III
	Channels	1 CFast socket (SATA-II)
	RTM	SATA-III and SATA-II
	Channels	2 x SATA-III connectors 2 x SATA-II connectors
Front I/O	USB3.0	2 type A
	USB2.0	2 type A
	VGA	1, optional
	DVI-I	1
	COM	2 RS232 D-Sub9
	LAN	2 10/100/1000 Mbps on RJ45
	Front Panel LEDs	x1 blue for Hot Swap, 1x yellow for HDD, x1 green for Master/Drone mode, x1 green BMC Heartbeat, and x1 green for Power
	Buttons	CPU reset button and BMC reset button

## Specifications (Cont.)

Rear I/O	USB2.0	6 ports	
	USB3.0	2 port	
	COM	4 ports (two ports for front and rear connectivity)	
	LAN	4 ports (2x PICMG 2.16, 2x GbE switchable from front panel)	
	SATA	2 SATA-III and 2 SATA-II	
	PCIe	1 PCIe16 Gen3 7GT/s	
	Display	1 DVI-I and 1 DVI-D	
	Others	PS/2 for keyboard & mouse	
Watchdog Timer	Output	Local Rest and Interrupt	
	Interval	Programmable 1s ~ 255s	
Hardware Monitor	HWM	NCT7904	
BMC	Controller	LPC1768, IPMI v2.0 compliant	
Operating System	Compatibility	Win7/8.1/10, Linux, VxWorks 6.x (on request)	
Power Requirement	Configuration	4HP	
	TDP (estimate)	Maximum: up to 80W (quad core), 50W (dual core) or less, depending on CPU type	
Physical	Dimension (W x D)	233.35 x 160.0 mm	
		Operating	Non-operating
	Temperature	-40 ~ 85 °C (measured at wedge lock)	-50 ~ 100 °C (measured at wedge lock )
	Humidity	95 % @ 40 °C, non-condensing	95 % @ 60 °C, non-condensing
	Vibration (5-500 Hz)	3.5Grms (without on-board 2.5" SATA HDD)	
	Bump		25G, 6ms
Regulatory	Altitude	15000ft, 55 °C, above sea level	40000 ft, -40 °C, above sea level
	Conformance	FCC Class A, CE, RoHS, CCC	
Compliance	Standards	PICMG2.0 R3.0, PICMG2.1 R.0, PICMG2.9 R1.0, PICMG2.16 R1.0.	

## Ordering Information

System Board Model Number	Front Panel						Main On-board Features					Other Coating
	DVI-I	USB3.0 (type A)	USB2.0 (type A)	Ethernet (RJ45)	COM (DB-9)	Conduction Cool	CPU	Onboard Memory	CFast Socket	Storage Channel	SODIMM Socket	
MIC-3396MILS-P8E	1	2	2	2	2	-	I5-4402E	DDR3L-8GB	1	1 SATA-III	1	-
MIC-3396MILS1-P8E	1	2	2	2	2	-	I7-5850EQ	DDR3L-8GB	1	1 SATA-III	1	-
MIC-3396MILB-P8E*	-	-	-	-	-	Available	I5-4402E	DDR3L-8GB	1	-	-	Yes

Note: For CPU, on-board memory and other feature availability request, please connect your local sales office.  
 \* Bare board w. CPU and on-board memory w/o conduction cool

Part Number	Rear Panel						On-board Header / Socket / Connector					
	LAN	PS/2*	COM (RJ45)	USB 3.0	DVI-D	VGA	Audio	USB 2.0	COM	SATA	Slot Width	Conn.
RIO-3396MIL-A1E	4	1	1*	2	1	1	1	2 (4 ports)	4*	4	1	J1, J3, J4, J5

\*Note: One PS/2 port carries the signals for keyboard and mouse. Y cable is included. There are four RS-232/485/422 ports max, including from rear panel and on-board header.

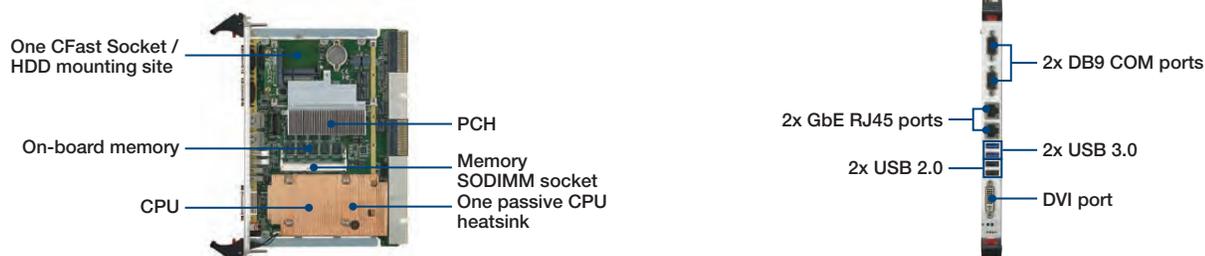
## CPU Information

CPU Type	# of Core	# of Thread	DMI	Frequency	Turbo Frequency	Cache	TDP	Graphics	Graphic Frequency	PCIe
I5-4402E	2	4	5 GT	1.6 GHz	2.7 GHz	3 MB	25W	HD4600	400-900MHz	Gen 3
I7-5700EQ	4	8	5 GT	2.6 GHz	3.4 GHz	6 MB	47W	GT2	300MHz-1GHz	Gen 3
I7-5850EQ	4	8	5 GT	2.7 GHz	3.4 GHz	6 MB	47W	GT3e	300MHz-1GHz	Gen 3
E3-1258Lv4	4	8	5 GT	1.8 GHz	3.2 GHz	6 MB	47W	GT2	700MHz-1GHz	Gen 3
E3-1278Lv4	4	8	5 GT	2 GHz	3.3 GHz	6 MB	47W	GT3e	800MHz-1GHz	Gen 3

## Related Products

Model number	Configuration
RIO-3396MIL-A1E	RTM Module with 4 LAN ports, USB3.0/2.0, DVI, PS2 and COM ports for MIC-3396MIL
MIC-3396MIL-1960E	Conduction Cool cold blade metal parts for MIC-3396MILB-P8E
MIC-3396MIL-1961E	Conduction Cool cold blade metal parts w/ SSD & CFast slot support

### MIC-3396MIL-PxE Series



# MIC-3397

## 6U CompactPCI Quad Core Intel® Xeon® Processor E3 & Dual Core Intel® Pentium® Processor Blade



### Features

- Supports 22nm Intel® Xeon® & Pentium® low voltage processor
- Intel® DH8900 chipset supports DM1.0 x 4
- Up to 16GB DDR3-1333/1600 ECC memory
- Optional extension module on 8HP version supports high-end discrete graphics, up to four display output ports
- Supports up to five GbE ports, six USB2.0 ports, two VGA ports, three COM ports, one PS/2 connector, three 2.5" SATA connector (one SATA HDD is optional with 8GB NAND flash), one Cfast, one PCIe 2.0x4 interface to the Rear Transition Module (RTM)
- PICMG2.0 R3.0, PICMG2.1 R.0, PICMG2.16 R1.0 Compliant



### Introduction

Advantech's MIC-3397 is a 6U CompactPCI single board computer with a choice of server class or low power processors based on the Quad-Core Intel® Xeon® E3-1125C v2(40W) or Dual-Core Intel® Pentium® B925C(15W), with DH8900 chipset. The processor is based on Intel® 22nm 64 bit process technology, with up to 2.5GHz clock speeds 8MB L3 cache, Intel® Hyper-Threading, Virtualization, and Trusted Execution Technology, all of which enable the board for applications requiring higher levels of performance and security. The MIC-3397 supports dual channel ECC memory, up to 16GB DDR3 at 1333/1600MHz with max 8GB on board and 8GB SO-DIMM memory, three 2.5" Serial ATA interfaces (one on board optional with one 8 GB NAND flash, two to RTM), one Cfast slot, five Gigabit Ethernet ports (two on front panel, two to PCIMG2.16, two to RTM with one optional on the front panel), six USB2.0 ports (three on front panel, three to RTM), two VGA ports (one on front panel, one to RTM) on the 4HP model, three COM ports (one to front panel, two to RTM), one PS/2 port, and one PCIe2.0 x4 interface reserved for user define extensions on the rear transition module.

The MIC-3397, is designed in single slot (4HP) and dual slots (8HP) form factor. The 8HP version provides extensive & rich IO support, and features high-performance discrete graphics, using an AMD Radeon E8860 GPU, supports 2GB GDDR5 at PCIe x1, x2, x4, x8, and x16 lane widths, 2.5 GT/s and 5.0 GT/s link-data rates, up to four display outputs including one DVI-I, one DVI-D port and two DP 1.1 or 1.2 port in a MXM 3.0 type A form factor.

MIC-3397 Series can be installed in a standard CompactPCI system slot as system master, or peripheral slot as stand-alone server blade without CompactPCI bus communication, it meets the needs of applications operating in harsh environments and is ideally suited for datacom, telecom and military applications. Its outstanding graphics capabilities make it a good choice for image-processing in medical, defense system and many other vertical segments applications.

### Specifications

Processor System	CPU	Quad-Core Intel® Xeon® Processor E3-1125C v2; Dual-Core Intel® Pentium® Processor B925C
	Max Speed	Up to 8MB L3 Cache, 2.5 GHz
	Chipset	Intel® DH8900 PCH (Cave creek)
	BIOS	Redundant AMI 8 MByte SPI flash
Memory	Technology	Dual Channel DDR3 1333/1600 MHz with ECC
	Max. Capacity	8GB on board
	Socket	SO-DIMM x1, up to 8GB
Compact PCI Interface	J1 ~ J2 Connectors	64bit/66MHz PCI local bus
	J3 Connector	PICMG2.16 + RTM
	J5 Connector	RTM
	Bridge	Pericom PI7C9X130DNDE
	Mode	System Master/Drone
Ethernet	PHY	4 Marvel I 88E1112-C2-NNC1000 Gigabit Ethernet PHY
	Interface	SGMII, 10/100/1000 Base TX Ethernet
	I/O Connector	PICMG2.16 x 2 to J3, RTM x2 or RJ45 x1 to front
	Controller	Intel® WG1210AT SLJXR Gigabit Ethernet Controller
	Interface	PCIe 1.0x1, 10/100/1000 Base TX Ethernet
Graphics	I/O Connector	RJ45 x1 to front
	Controller	SM750GX160000-AC ,265P, 16Mbytes of embedded 32-bit DDR memory
	Resolution	Dual display: 1360 x 768 (Clone & extended mode) Single display:1920 x 1080 (16bit, clone mode only)
	Controller (on MIC-3314)	AMD Radeon E8860, 128-bit wide, 2 GB, GDDR5
	Resolution	DP: 3840 x 2160; Dual Link DVI-D: 2560 x 1600; Single Link DVI-I: 1920 x 1080
Storage	Multi-display	Max up to 4 multidisplays:(Clone mode/extended): Config 1: 1xDP+1xDP+1xDVI-D+1xDVI-I Config 2: 1xDP+1xDP+1xDVI-D+1xVGA
	Mode	SATA-II
	Channels	1 channel to on board SATA carrier or on board NAND flash 1 channel to on board cfast socket 2 channels to RTM

## Specifications (Cont.)

Front I/O	USB2.0	3 type A
	COM	1 RS232/422 on RJ45
	LAN	2 10/100/1000Mbps on RJ45
	Graphics	1 VGA port on 4HP 2 DP port, 1 DVI-D and 1 DVI-I port on extension board
	Front Panel LEDs Buttons	x1 blue/yellow for Hot Swap/HDD, x1 green for Power, and x1 green for Master/Drone mode System reset button
To RTM	USB2.0	3 ports
	COM	2 RS232/422/485 on RJ45 or DB9
	LAN	PICMG2.16 x2 to J3, RTM x2 (1 mux to front)
	SATA	2 ports
	PCIe	PCIe2.0 x4
	Graphics	1 VGA port
	Others	PS/2 for KB & Mouse
BIOS	Boot Options	SATA,USB port, USB disk, network (PXE)
Watchdog Timer	Output	Local reset & interrupt
	Interval	Programmable 1s ~ 255s
Hardware Monitor	Controller	NCT6776D
Operating System	Compatibility	Windows7, Windows7 Embedded, Linux
Power Requirement	TDP (max./typ.)	4HP:80W (MIC-3397)
		8HP:115W (MIC-3397 + MIC-3314)
Physical	Dimension & Weight	6U/1 slot width (4HP): 233.35 x 160 x 20 mm (9.2" x 6.3" x 0.8")
		6U/2 slot width (8HP): 233.35 x 160 x 40 mm (9.2" x 6.3" x 1.6")
Environment	Temperature	Operating: 0 ~ 55 °C (32 ~ 122 °F) Non-operating: -40 ~ 85 °C (-40 ~ 185 °F)
	Humidity	95 % @ 40 °C, non-condensing 95 % @ 60 °C, non-condensing
	Vibration	2.0G Grms (Single slot, without on-board 2.5" SATA HDD) 1.06 Grms (Dual slot, without on-board 2.5" SATA HDD)
	Shock	10G (Without on-board 2.5" SATA HDD) 2Grms
	Altitude	15000 feet above sea level 30G (Single slot, without on-board 2.5" SATA HDD)
	Altitude	15000 feet above sea level 40000 feet above sea level
Regulatory	Conformance	FCC Class A, CE, RoHS
	NEBS Level 3	Designed to meet GR-63-Core and GR-1089-Core
Compliance	Standards	PICMG2.0 R3.0, PICMG2.1 R.0, PICMG2.16 R1.0,

- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

## Supported CPU Configurations

Intel® CPU Model Number	# Cores	Freq.	Cache	Memory Types	CPU TDP
Intel® Pentium® Processor B925C	2	2.0GHz	4 MB L3 Cache	DDR3/3-1333	15W
Intel® Xeon® Processor E3-1125C v2	4	2.5GHz	8 MB L3 Cache	DDR3/3-1333/1600	40W

## Ordering Information

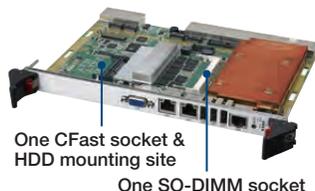
CPU Board	Front panel						CPU	On board Features					
	LAN (1)	COM (RJ45) (2)	USB	VGA	DVI	DP		Memory (Up to 8GB) (3)	SO-DIMM (Up to 8G)(4)	SATA HDD Socket	Cfast Socket	Slot Width	Conn.
MIC-3397A2-M8E	2	1	3	1	NA	NA	Pentium B925C	8 GB	NA	1	1	1	J3/J5
MIC-3397C2-M8E	2	1	3	1	NA	NA	Xeon® E3-1125C v2	8 GB	1	1	1	1	J3/J5
MIC-3397C1-M8E	2	1	3	1	2	2	Xeon® E3-1125C v2	8 GB	1	1	1	2	J3/J5

- Note:
- LAN2 on front is switchable with RIO LAN1 which can be set in BIOS
  - COM support RS232/422 mode only
  - Total memory capacity is up to 16GB, 8GB on board, 8GB on SO-DIMM
  - Pentium B925C SKU w/o SO-DIMM socket

## Recommended Configurations

CPU board	Extension Module	Rear I/O Board
MIC-3397x-MxE Series	MIC-3314	RIO-3317-XXX

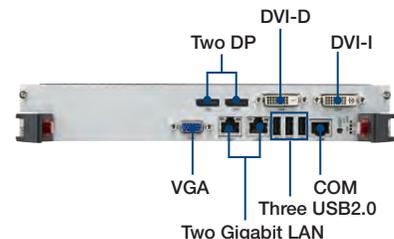
MIC-3397 4HP



MIC-3314



MIC-3397 + MIC-3314



# MIC-3398

## 6U CompactPCI Intel® Atom™ Processor Blade



### Features

- Supports Intel® Atom™ E38xx, Celeron N2930 and J1900 processors, up to quad-core at 2 GHz
- Up to 8GB of 1333MHz DDR3L memory
- 2.5" SATA-II HDD/SSD mounting site
- Comprehensive I/O capabilities: DVI, USB 3.0/USB 2.0, Gigabit Ethernet, Serial Ports, SATA-II/CFast
- 4HP single slot high with dual GbE interfaces or 8HP dual slot high with quad GbE interfaces
- PICMG 2.1 R2.0, PICMG 2.6 R1.0 compliant

CE FCC

### Introduction

The MIC-3398 is a Low-Power 6U CompactPCI® CPU blade with best in class price/performance ratio tailored for applications that require a state of the art processor platform based on Intel® Architecture with full IO capability at an attractive cost point.

The MIC-3398 supports Intel® Atom™ E3845 and Celeron N2930, J1900 SoC (system on a chip) family previously codenamed Bay trail with a maximum of quad-core 2.00 GHz processing performance.

Intel® Atom™ technology provides significant increases in performance and energy efficiency by using the 22nm Intel® manufacturing process making it an ideal choice for control and workstation applications that require passive cooling with a power dissipation as low as 10W.

Up to 8GB, dual channel 1333 MHz DDR3L memory with ECC support provide a high performance and robust memory interface for demanding applications. With built-in graphics based on Intel® HD Graphics Technology this blade offers a significant improvement in graphics performance compared to previous generation platforms. Support for an onboard 2.5" SATA-II drive as well as CFast SSDs adds comprehensive mass storage support.

On the system side, the MIC-3398 supports 32-bit, 33MHz and 64-bit, 66MHz PCI bus interfaces to a CompactPCI backplane.

A rich set of I/O interfaces such as DVI-D, USB3.0/2.0, Gigabit Ethernet and RS-232/422/485 ports round off the feature set. In addition to the single slot wide (4HP) board offering, a dual slot wide (8HP) version of the blade offers additional network connectivity by increasing Gigabit Ethernet port count from two to four.

### Specifications

Processor System	CPU	Intel® Atom™ SoC (22nm) E38xx and Celeron N2930 and J1900, up to quad core 2.00 GHz
	BIOS	AMI 8MByte SPI flash
CompactPCI Interface	J1 Connector	32-bit PCI local bus
	J2 Connector	64-bit PCI local bus
Memory	Technology	DDR3L 1333 MHz, dual channel without ECC support
	Max. Capacity	Up to 8GB
	Socket	SODIMM x2
Graphic	Controller	Intel® Gen 7 Graphics Engines and media encode/decode engine; GPU Frequency 750MHz
	VRAM	Shared memory up to 224 MB SDRAM
	Resolution	High resolution display up to 2560 x 1600 @ 60Hz
Ethernet	Controller	2 or 4 Intel® I210AT single-port Gigabit Ethernet controllers (on PCIe x1 channel)
	Interface	10/100/1000Base-T Ethernet
	I/O Connector	2 RJ45 (4HP), 4 RJ45 (8HP)
Storage	Onboard HDD/SSD	1 2.5" mounting site (SATA-II)
	Channels	1 CFast socket (SATA-II)
Front I/O	USB3.0	1 type A
	USB2.0	3 type A
	DVI-D	1
	COM	2 RS232/422/485 on D-Sub-9
	LAN	2 10/100/1000 Mbps on RJ45 (4HP) 4 10/100/1000 Mbps on RJ45 (8HP)
	Front Panel LEDs	1x yellow for HDD, x1 green for Master/Drone mode, and x1 green for Power
Hardware Monitor	Buttons	CPU reset button and power button
	HWM	NCT7904

## Specifications (Cont.)

Operating System	Compatibility	Win7/WES7, Win8/WES8, Linux, VxWorks 6.x(on request)			
Power Requirement	CPU	J1900	E3845		
	Voltage	+3.3 V	+5 V	+3.3 V	+5 V
	Current	0.02 A	3.91 A	0.02 A	4.02 A
	Maximum	0.07 W	20.41 W	0.07 W	20.94 W
Physical	Dimension (W x D)	233.35 x 160.0 mm			
Environment	Temperature	Operating 0 ~ 55 °C (32 ~ 122 °F)		Non-operating -40 ~ 85 °C (-40 ~ 185 °F)	
	Humidity	95 % @ 40 °C, non-condensing		95 % @ 60 °C, non-condensing	
	Vibration (5-500 Hz)	2 Grms (without on-board 2.5" SATA HDD)		3.5 Grms	
	Shock	10G 11ms			
	Altitude	15000ft, 55 °C, above sea level		40000 ft, -40 °C, above sea level	
Regulatory	Conformance	FCC Class A, CE, RoHS			
Compliance	Standards	PICMG2.0 R3.0, PICMG2.1 R.0, PICMG2.9 R1.0			

## Ordering Information

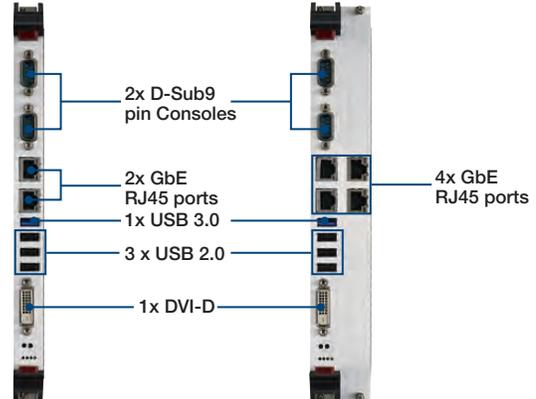
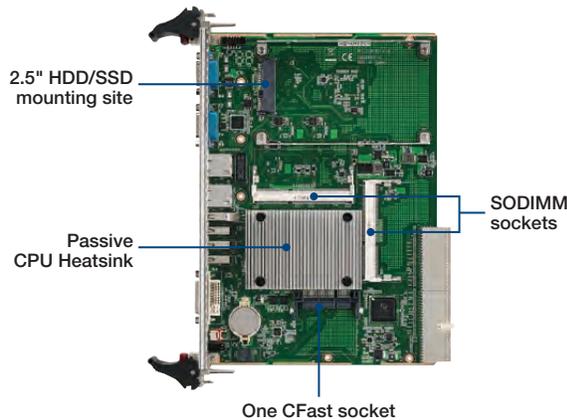
System Board Model Number	Front I/O					Main On-board Features						
	DVI-D	USB3.0 (type A)	USB2.0 (type A)	Ethernet (RJ45)	Console (D-Sub9)	CPU	Installed SODIMM	ECC Support	CFast Socket	Storage Channel	SODIMM Sockets	Front Panel
MIC-3398A-M2E	1	1	3	2	2	J1900	1x 2GB	No	1	1 SATA II	2	4HP
MIC-3398B-M4E	1	1	3	4	2	J1900	1x 4GB	No	1	1 SATA II	2	8HP

For availability of other configurations please contact your Advantech representative.

## CPU Configuration

Intel® CPU Model Number	# Cores	Freq.	Turbo Freq.	Cache	CPU TDP	ECC
E3845	4	1.91 GHz	Na	2 MB	10 W	Yes
N2930	4	1.83 GHz	2.16 GHz	2 MB	7.5 W	Yes
J1900	4	2.00 GHz	2.42 GHz	2 MB	10 W	No

## MIC-3398x-Mx E Series



- 1 Packetarium XL Blade Servers
- 2 High Performance Servers
- 3 Network Appliances
- 4 PCI Express Adapters
- 5 Network Switches
- 6 ATCA Blades & Integrated Systems
- 7 CPCI Boards & Enclosures
- 8 VPX Blades
- 9 Video Processing & IP Media Platforms

# MIC-3500

## 6U CompactPCI 8HP Intel® Xeon® D-1500 Processor Blade with ECC support



### Features

- Supports the Intel® Xeon® processor D-1500 product family, up to 16 cores
- Up to 128GB (DDR4 2400) ECC memory (4 DIMM sockets on board)
- One PCIe x8, two SATA-III, two USB 2.0 ports, two USB 3.0 ports and one VGA to the rear
- Four gigabit Ethernet ports for PICMG 2.16, front and rear connectivity
- Optimized 2x M.2 2280 storage
- PICMG 2.16 R1.0, PICMG 2.1 R2.0, PICMG 2.0 R3.0, PICMG2.9 for IPMI compliant



### Introduction

Advantech MIC-3500 is a 6U CompactPCI single board computer with a choice of server class, high performance and low power processors based on the Intel® Xeon® D-1500, up to 16 cores and 32 threads. The processor is based on Intel® 64-bit system-on-a-chip with 14nm silicon technology, with up to 2.2GHz clock speeds 12MB of last-level cache. The Intel® Xeon® D-1500 product family offers industrial application in virtualized environments with its scalability from two to eight cores.

With highly integrated functional capabilities, the MIC-3500 fully utilizes the I/O features. It supports maximum 128GB of 2400 MHz DDR4, two onboard M.2 2280 storage, two Ethernet ports for PICMG 2.16 and two LAN ports (switchable from front panel to RTM), one COM port, two 10G SFP+ ports, two USB 3.0/2.0 ports, one VGA and LEDs on the front panel, one PCIe x8, two SATA-III and a set of I/O functions brought through the backplane to the rear, including two USB 3.0, two USB 2.0, one RS232 and one VGA port. The MIC-3500 also reserves for extended I/O possibility with an onboard XTM, supporting one PCIe x2 and two SATA-III interfaces.

Advantech MIC-3500 CompactPCI® is designed in dual slots (8HP) form factor and can be installed in a standard CompactPCI® system slot as system master, or peripheral slot as stand-alone server blade without CompactPCI® bus communication. The MIC-3500 is an ideal platform that meets industrial application that addressing workload consolidation and virtualization. It also meets the needs of applications operating in harsh environments.

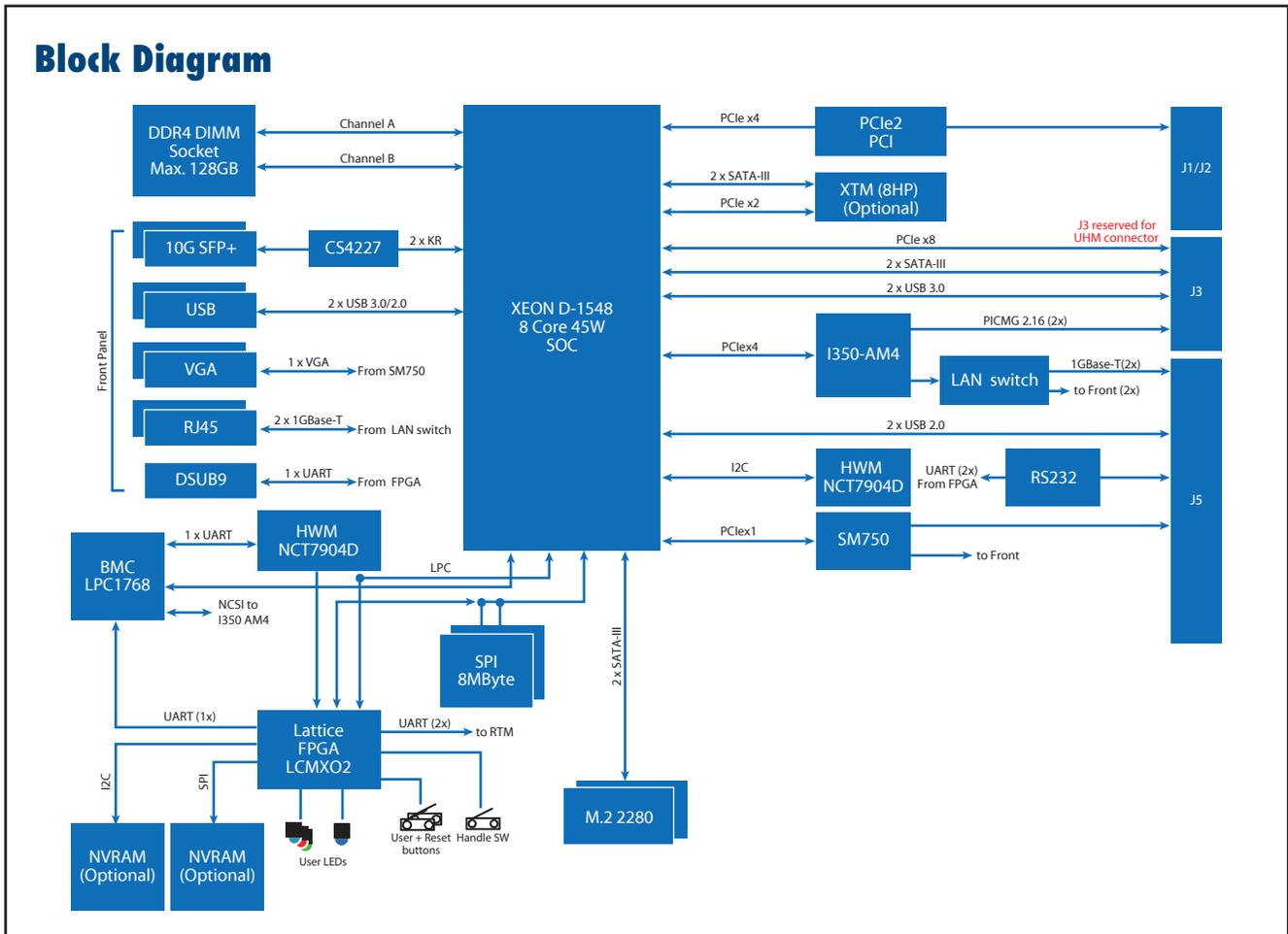
### Specifications

Processor System	CPU	Intel® Xeon D-1500 Processor, 64-bit SoC
	Max Speed	Up to 12MB of last-level cache, 2.2GHz
	BIOS	Redundant AMI UEFI based 8MByte SPI flash
Memory	Technology	Dual channel DDR4 2400MHz w/ ECC
	Max. Capacity	DDR4 RDIMM up to 128GB
	Socket	DIMM x4
CompactPCI Interface	J1	32-bit PCI local bus
	J2	64-bit PCI local bus
	J3	2x PICMG 2.16, PCIe x8, 2x SATA-III (UHM opt.), 2x USB 3.0 (UHM opt.)
	J5	2x USB 2.0, 2x RS232, 1x VGA (switchable to the front), 2x 1GBase-T (switchable to the front)
XTM Socket	PCIe	1x PCIe x2 Gen3
	SATA	2x SATA-III
Ethernet	Controller	Intel® I350-AM4, four-port Gigabit Ethernet controllers
	Interface	10/100/1000Base-TX Ethernet
	I/O Connector	PICMG 2.16 and RJ-45 x2 (switchable from front panel to RTM)
Front I/O	COM	1 DSUB9 RS232
	SFP+	2 x 10G
	LAN	2 x RJ-45 1GBASE-T
	USB	2 x USB 3.0/2.0
	VGA	1 x DSUB
LEDs		1 x blue for hot swap, 1 x yellow for HDD, 1 x green for master/drone mode, 1 x green BMC heartbeat, 1 x green for power
Operation System	Compatibility	CentOS 7.4 (Kernel 3.10.0-693.el7.x86_84)
		Red Hat Enterprise Linux Server release 7.2 (Maipo) (Kernel: 3.10.0-327.el7.x86_64)
		DOS
		Windows 2012 R2 x64 Datacenter Build 9600
Storage	SATA-III	2 x M.2 2280
Power Requirement	Configuration	8HP
	TDP	Maximum up to 90W (8-core)

## Specifications (Cont.)

Physical	Dimensions (WxD)	6U CPCI, 233.35 x 160 mm	
Environment	Operating Temperature	0 ~ 55 °C	Non-operating -40 ~ 85 °C
	Humidity	95% @ 40 °C, non-condensing	95% @ 60 °C, non-condensing
	Vibration	2Grms (without on-board M.2 2280 SSD)	
	Bump	10G 11ms	
Regulatory	Conformance	FCC Class A, CE, RoHS, CCC	
Compliance	Standards	PICMG2.0 R3.0, PICMG2.1 R.0, PICMG2.9 R1.0, PICMG2.16 R1.0	

## Block Diagram



## Ordering Information

Model number	Configuration
MIC3500-ES*	MIC-3500 CPCI blade with D-1548 processor

\*: Please contact your Advantech representative for different Intel® Xeon D-1500 family or configuration.

- 1 Packetarium XL Blade Servers
- 2 High Performance Servers
- 3 Network Appliances
- 4 PCI Express Adapters
- 5 Network Switches
- 6 ATCA Blades & Integrated Systems
- 7 CPCI Boards & Enclosures
- 8 VPX Blades
- 9 Video Processing & IP Media Platforms

# MIC-3666

## Dual 10 Gigabit Ethernet XMC



### Features

- Intel® 82599 Dual Port 10 Gigabit Ethernet Controller
- PCIe x8 Gen.2 host interface
- Dual SFP+ connectors
- Compliant with VITA 42.0-2005, 42.3-2006 XMC specifications



### Introduction

The MIC-3666 is a low power, dual-port 10 GbE XMC, with SFP+ pluggable modules for multi-mode and single-mode fiber media and is based on the Intel® 82599ES 10 Gigabit Ethernet controller. The XMC provides a high performance PCIe x8 interface at 5 Gb/s per lane at an outstanding low power dissipation of less than 10W. Support for Intel®'s offloading and platform enhancement features yields maximum network throughput while preserving valuable CPU cycles for application processing.

The MIC-3666 features an Intel® 82599 which provides Intel® Virtualization Technology for Connectivity (VT-c) including Virtual Machine Device Queues (VMDq) and PCI\_SIG compliant Single Root I/O Virtualization (SR-IOV), helping to reduce I/O bottlenecks, boost throughput, and reduce latency. Where virtualization is required, VMDqs improve performance by offloading the data-sorting burden from the virtual machine manager (VMM) to the network controller. The MIC-3666's specialized features include Layer 2 & 3 security with IPSec & LinkSec; Intel® I/OAT Acceleration Technology v3.0; VLAN tagging, stripping and packet filtering; and TCP, iSCSI, and Fiber Channel over Ethernet (FCoE) offload.

### Specifications

XMC Connectivity	Connector	P15 assembled,	
	Host interface	PCIe x8 gen.2 @ 5Gbps/lane	
Controller	Controller	Intel® 82599ES dual 10GbE MAC/PHY	
	Virtualization Technologies	VMDq, VMD, SR-IOV	
	IP	IPv4, IPv6	
	Queues	128RX, 128TX per port	
	Offloading	TCP, UDP, SCTP, FCoE	
	Security Acceleration	Linksec IEEE802.1ae (AES-128 Authorization./Encryption) IPSec (AES-128, 1024 SA's)	
I/O	SFP+	2 sites with support for presence detect, status and ID EEPROM	
	LEDs	Network Link, Activity	
Software	Linux	X86 Kernel 2.6.x	
	Windows	Server2008	
	Boot	PXE, iSCSI	
Power	Power Consumption	+3.3V	VPWR (+5V)
	Does not include FOT Transceivers	0.25A max	1.5A max
Environment	Temperature	Operating 0 ~ 60 °C (32 ~ 140 °F)	Non-Operating -40 ~ 80 °C (-40 ~ 176 °F)
	Humidity	95 % @ 40 °C, non-condensing	95 % @ 60 °C, non-condensing
Physical Characteristics	Dimensions (W x D)	74 x 149 mm (2.9" x 5.78")	
	Weight	0.104 kg (0.23 lbs)	
Compliance	IEEE Std 1386.1-2001 PMC specification		
	VITA 42.0-2005, 42.3-2006 XMC specifications		

### Recommended Configurations

XMC Extension Board	CPU Board
MIC-3312-A1E	MIC-3395, MIC-3396

### Ordering Information

Part Number	Description
MIC-3666-AE	XMC with dual SFP+ 10GbE interfaces



MIC-3666-AE

# MIC-3667

## Quad Ports Gigabit Ethernet XMC



### Features

- Intel® Ethernet Controller I350-AM4
- Four 10 / 100 / 1000Base-T Ethernet ports (RJ45 connectors)
- PCIe4 gen2 host interface
- UDP, TCP and IP Checksum Offload
- UDP and TDP Transmit Segmentation Offload
- VMDq and SR-IOV Support with 8 RX and 8TX queues per port
- Parity or ECC protected buffers
- Fully Integrated to comply with IEEE802.3u
- Compliant with VITA 42.0-2005, 42.3-2006 XMC specifications



### Introduction

The MIC-3667 is a low power, quad-port Gigabit Ethernet XMC based on the Intel® Ethernet Controller I350-AM4. It provides four copper Gigabit Ethernet interfaces at the front panel on RJ45 connectors. With a PCIe4 gen2 host interface, the MIC-3667 can support line rate traffic on all ports. Using intel's latest controller technology, the card provides a wealth of offload and virtualization support capabilities to minimize the burden of handling network traffic on the hosting platform.

With a power dissipation as low as 4W, the MIC-3667 is perfectly suited for use in rugged requirements and applications with passive cooling. The board is prepared for conformal coating required for harsh environments.

### Specifications

XMC Connectivity	Connector	P15	
	Host interface	Gen.2 @ 5Gbps/lane	
Ethernet	Interface	IEEE 802.3x Ethernet interface four 10/100/1000Base-T interfaces	
	Controller	Intel® I350 quad GbE MAC/PHY	
	LED	4x2 status LEDs to signal link status and activity	
	Connector	Four standard 8-pin RJ45 connectors	
Power	Power Consumption	4 W	
Environment	Temperature	Operating 0 ~ 60 °C (32 ~ 140 °F)	Non-Operating -40 ~ 85 °C (-40 ~ 185 °F)
	Humidity	95% @ 40 °C, non-condensing	95% @ 60 °C, non-condensing
	Vibration	2.0 Grms	
	Software Support	Windows®, Linux	
Physical Characteristics	Dimensions (W x D)	74 x 139 mm (2.9" x 5.39"), 1-slot width	
	Weight	0.240 kg (0.529 lbs) with heat sink	
Compliance		IEEE Std 1386.1-2001 PMC specification VITA 42.0-2005, 42.3-2006 XMC specifications	

### Related Products

#### CPU Board

MIC-3395, MIC-3396, MIC-3397, MIC-3328, MIC-3329, MIC-6311, MIC-6313, MIC-6314 series

### Ordering Information

Part Number	Description
MIC-3667-AE	XMC with quad Gigabit Ethernet interfaces

Note: For ruggedized options including conformal coating, please contact your Advantech representative.

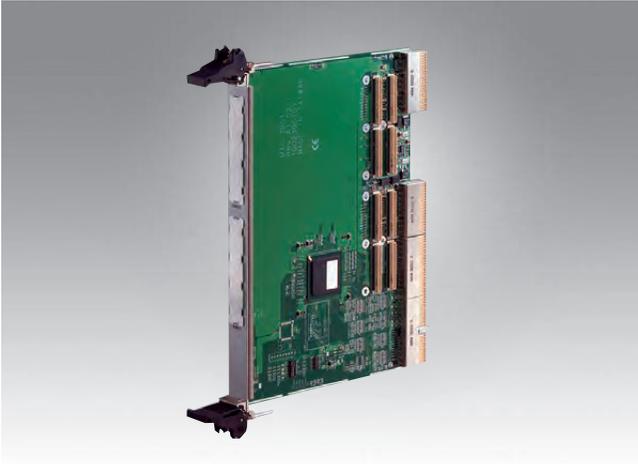


MIC-3667-AE

- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

# MIC-3951

## 6U CompactPCI® Dual PMC or CMC Carrier Board (64-bit/66 MHz)



### Features

- 64-bit, 66 MHz CompactPCI® interface
- Supports dual PMC module
- Onboard PCI-to-PCI bridge
- Compliant with CMC specification



### Introduction

The MIC-3951 is a 6U CompactPCI carrier board for PCI Mezzanine Cards (PMC) modules. It provides two 64-bit PMC sites for easy CompactPCI system expansion through different PMC modules. An Intel® 21154 PCI-to-PCI bridge chip is used in the MIC-3951 for CompactPCI bus expansion and decreases the CompactPCI bus loading to one, in addition to meeting industry requirements. Advantech provides several PMC modules that work in conjunction with the MIC-3951, such as the inclusive 10/100 Ethernet module and Gigabit module. In addition to being compatible with Advantech CompactPCI products, the MIC-3951 can also be used with other standardized, off-the-shelf modules from other manufacturers.

### Specifications

Bus	PCI	From 32-bit/33 MHz up to 64-bit/66 MHz	
	PCI-to-PCI Bridge	Intel® 21154	
Power	Power Consumption	2.2 W @ 64 bit/66 MHz (670 mA @ +3.3 V)	
Environment	Temperature	Operating 0 ~ 60 °C (32 ~ 140 °F)	Non-Operating -20 ~ 80 °C (-4 ~ 176 °F)
	Humidity	-	5 ~ 95 % @ 60 C, non-condensing
	Vibration (5 ~ 500 Hz)	1.0 Grms	2.0 G
Physical Characteristics	Dimensions (W x D)	233.35 x 160 mm (9.2" x 6.3"), 1-slot width	
	Weight	0.5 kg (1.10 lb)	
Reliability	Mean-Time-To-Repair (MTTR)	5 minutes	
Compliance		PICMG 2.0 R3.0 CompactPCI Specification PICMG 2.3 R1.0 CompactPCI PMC I/O Mapping Specification IEEE P1386.1 R2.3 PMC Specification	

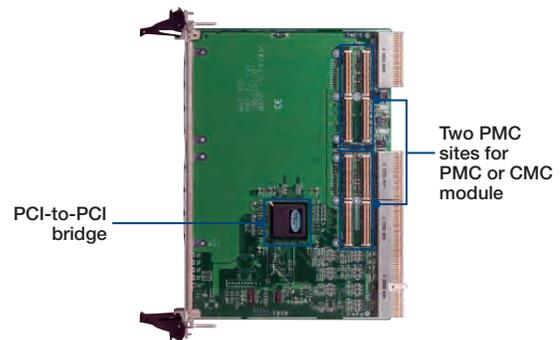
### Recommended Configurations

PMC Carrier Board	PMC Module
MIC-3951	MIC-3665-AE MIC-3665-BE

### Ordering Information

Part Number	Description
MIC-3951-AE	6U CompactPCI dual PMC carrier board (64-bit/66 MHz)

Note: Please contact your local distributor for more information on CMC solution



# MIC-3953

## Single PMC Slot Carrier 3U CompactPCI® Card



### Features

- Up to 64-bit/66 MHz CompactPCI® Interface
- Supports one single-size PMC site in 4HP width
- Comprehensive EMC shielding



### Introduction

The MIC-3953 is a 3U CompactPCI carrier board for PCI Mezzanine Cards (PMC) modules. It provides one 32,64-bit/33,66 MHz PMC site in 4HP width for system expansion through different PMC modules. Advantech provides several PMC modules that work with MIC-3953, such as the 10/100 Ethernet module and Gigabit module. It is also compatible with other standardized modules from other manufacturers.

### Specifications

Bus	PCI	32/64-bit/33MHz, up to 32/64-bit/66MHz	
Environment	Temperature	Operating 0 ~ 60 °C (32 ~ 140 °F)	Non-Operating -40 ~ 85 °C (-40 ~ 185 °F)
	Humidity	95% @ 40 °C, non-condensing	95% @ 60 °C, non-condensing
	Vibration (5-500 Hz)	2.0 Grms	-
Physical Characteristics	Dimensions (W x D)	160.00 x 100.00 mm (6.30" x 3.95")	
	Weight	0.5kg	
Compliance		PICMG 2.0 R3.0 CompactPCI Specification PICMG 2.3 R1.0 CompactPCI PMC I/O Mapping Specification IEEE P1386.1 R2.3 PMC Specification	

### Recommended Configurations

Carrier Board	PMC Module
MIC-3953-AE	MIC-3665-AE MIC-3665-BE

### Ordering Information

Part Number	Description
MIC-3953-AE	3U CompactPCI single PMC carrier board

Packetarium  
XL Blade  
Servers **1**

High  
Performance  
Servers **2**

Network  
Appliances **3**

PCI Express  
Adapters **4**

Network  
Switches **5**

ATCA Blades  
& Integrated  
Systems **6**

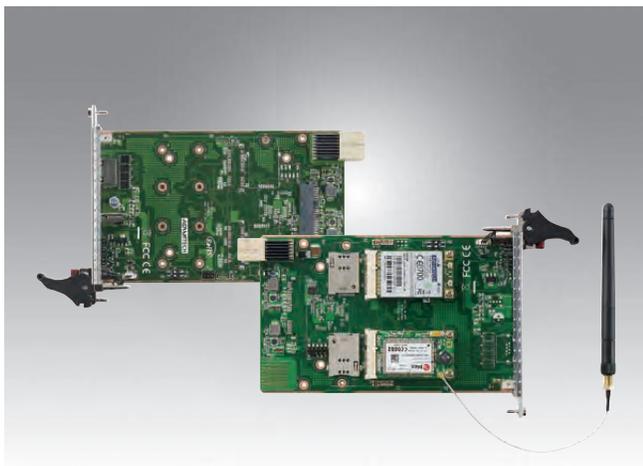
CPCI Boards  
& Enclosures **7**

VPX Blades **8**

Video  
Processing  
& IP Media  
Platforms **9**

# MIC-3954

## PCIe® Mini or Storage Carrier 3U CompactPCI® Serial Card



### Features

- For card 1 with internal PCIe and USB interface
- For card 2 with SATA interface
- PICMG CPCI-S.0 CompactPCI® Serial

**CompactPCI® Serial**  

### Introduction

The MIC-3954 is a rugged single Eurocard CompactPCI® Serial carrier board with two function options; Option 1: Supports the PCI Express® Mini Card, which offers two standard PCI Express® Mini Card slots, with dual on-board SIM slots for 3G module. It allows to use all types of cards for HF applications, for example GPS, WLAN, UMTS, GSM, or HSDPA which is connected to two external SMA antenna connectors; Option 2: Supports the hard disk drive carrier board and one USB connector on front panel. It is designed to carry a 2.5" SATA hard disk drive or a solid state drive.

### Specifications

		MIC-3954 PCIe Mini Card Carrier Board	MIC-3954 Storage Carrier Board
Interface		PCIex1 and USB2.0	SATA2.0 and USB2.0
Power		+12 V, power consumption depending on plugged card, 0.1A max. w/o card	+12 V, power consumption depending on plugged HDD/SSD
Environment	Temperature	Operating 0 ~ 60 °C (32 ~ 140 °F)	Non-Operating -40 ~ 85 °C (-40 ~ 185 °F)
	Humidity	95% @ 40 °C, non-condensing	95% @ 60 °C, non-condensing
	Vibration (5-500 Hz)	2.0 Grms (With SSD)	-
Physical Characteristics	Dimensions (L x H)	160.00 x 100.00 mm (6.30" x 3.95")	
	Weight	0.5 kg	
Compliance		PICMG CPCI-S.0 CompactPCI® Serial peripheral card	

### Recommended Configurations

Carrier Board	CPU Board	Enclosure
MIC-3954-AE	MIC-3328 series	MIC-3022PAE
MIC-3954-BE		MIC-3022PCE

### Ordering Information

Part Number	Description
MIC-3954-AE	3U CompactPCI® Serial PCIe® Mini Card Carrier Board for Wireless Functions
MIC-3954-BE	3U CompactPCI® Serial SATA HDD/SSD Carrier board

Note: Please contact Advantech sales representative for recommended wireless modules.

# MIC-3955 MIC-3527

## 3U CompactPCI® RS-232/422/485 Serial Communication Card



### Features

- 4-Port/8-Port RS-232/422/485 isolated
- 32bit 33MHz PCI bus backplane
- Speed up to 921600bps
- UART 16C550 Compatible 5G Register Set
- 2KV Surge protection
- Support 5V only power input
- Support Front Line out & Rear Line out
- PICMG 2.0 Rev. 3.0 compatible



- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

### Introduction

The MIC-3955 is a low power 4-port or 8-port RS232/RS422/RS485 serial board with 3U CPCI form factor and is based on the EXAR PCI controller. MIC-3955 is PICMG 2.0 Rev. 3.0 compatible. Rear board module are named MIC-3527XX. The MIC-3955 supports front IO or rear IO with 4-port and 8-port, and every channel is independent.

### Specifications

Speeds	115200bps and 921600bps (Conditional)	
UART	64-Byte Transmit and Receive FIFO, 16C550 Compatible 5G Register Set	
I/O Address	automatically assigned by PCI Plug & Play	
Data flow	Automatic RS-422/485 data flow control	
IRQ	All ports use the same IRQ assigned by PCI Plug & Play	
Data Bits/Stop Bits	Data Bits: 5, 6, 7, 8; Stop Bits: 1, 1.5, 2	
OS support	Win XP / 7 / 8 / 10 ,CentOS 6.xCentOS 7.3,Neokylin 6	
Power Consumption	3.5W/5V Only or 5W/5V Only	
Isolation Protection	Board Isolation Protection 2500V RMS, D-SUB Cable protection is AC 1KV Isolation Protection	
Environment	Temperature	Operating: -40 ~ 70 °C (-40 ~ 184 °F) Non-Operating: -40 ~ 80 °C (-40 ~ 176 °F)
	Humidity	10 ~ 95% @ 40 °C, non-condensing 10 ~ 95% @ 60 °C, non-condensing
	Shock	30 G, 11ms, each axis three times
	Vibration	2G rms

### Ordering Information

PN	On board Type	Front Panel Interface		Rear Panel Interface		Function			Accessory Cable	Note
		Interface	LED	Interface	LED	RS232	RS422	RS485		
MIC-3955A1-S1E	4-port	DB44(F)	Yes	No Rear Board	Yes	Yes	Yes	Yes <sup>3</sup>	Yes <sup>3</sup>	-
MIC-3955B1-S2E	8-port	DB62(F)	-	No Rear Board	Yes <sup>1</sup>	Yes	Yes	Yes <sup>4</sup>	Yes <sup>4</sup>	-
MIC-3955A2-S1E	4-port	-	Yes	-	-	-	-	-	-	work together
MIC-3527A2-S2E		-	-	DB44(F)	Yes	Yes	Yes	Yes	Yes <sup>3</sup>	
MIC-3955B2-S1E	8-port	-	Yes	-	-	-	-	-	-	work together
MIC-3527B2-S2E		-	-	DB62(F)	-	Yes <sup>2</sup>	Yes	Yes	Yes <sup>4</sup>	

Note:

1. RS232 Signal: without RI
2. RS232 Signal: TX,RX,CTS,RTS
3. Cable is 30cm with 1 x D-Sub 44(M) to 4 x D-Sub9(M)
4. Cable is 55cm with 1 x D-Sub 62(M) to 8 x D-Sub9(M)

**Related Products**

CPU board	Description
MIC-3328 Series	3U CompactPCI 3rd generation Ivy bridge Intel® Core™ i3/ i7 Processor Blades
MIC-3329 Series	3U CompactPCI Baytrial Intel® Atom™ Low power Processor Blades
MIC-3332 Series	3U CompactPCI 5rd generation Skylake Intel® Core™ i7/ Xeon E3 Processor Blades

**Products Picture**

**4-Port Front Line out**



MIC-3955A1-S1E

**4-Port Rear Line out**



MIC-3955A2-S1E



MIC-3527A2-S2E

**8-Port Front Line out**



MIC-3955B1-S2E

**8-Port Rear Line out**



MIC-3955B2-S1E



MIC-3527B2-S2E

# MIC-3957

## GPS Communication 3U CompactPCI® Card



### Features

- GPS based on 50 channel u-blox lea-6s module
- 32bit 33/66MHz PCI bus backplane
- UART interface for GPS module
- Accuracy 2.5 m CEP
- PICMG 2.0 Rev. 3.0 compatible



### Introduction

The MIC-3957 is a 3U CompactPCI GPS Communication Card. It supports working with 32bit 33MHz or 66MHz PCI frequency. MIC-3957 is designed with u-blox lea-6s GPS module via UART interface. MIC-3957 is capable of massive parallel time/frequency space searches, enabling it to find satellites instantly. Innovative design and technology suppress interference sources and mitigate multipath effects, providing excellent navigation performance even in the most challenging environments in automotive and industrial applications.

### Specifications

GPS Interface	UART		
Main chip	u-blox lea-6s		
Antenna	GPS antenna 1575MHz		
Receiver Type	50 Channels		
	GPS L1 frequency, C/A code GALILEO Open Service capable SBAS:WAAS,EGNOS, MSAS, GAGAN		
Time-To-First-Fix	Cold Start: 29 s		
	Warm Start: 29 s		
	Hot Start: < 1 s		
Sensitivity	Tracking & Navigation: -160 dBm		
	Reacquisition: -160 dBm		
	Cold Start: -147 dBm		
Horizontal Position Accuracy	Autonomous: < 2.5 m SBAS: < 2.0 m		
Max Navigation Update Rate	< 5 Hz		
Velocity Accuracy	0.1 m/s		
Heading Accuracy	0.5 degrees		
Operational Limits	Dynamics	< 4 g	
	Altitude	50,000m	
	Velocity	515 m/s	
OS support	Windows XP, Windows 7, Linux CentOS6.6		
Power consumption	2.5W		
Environment	Temperature	-25 ~ 55 °C (-13 ~ 131 °F)	-40 ~ 80 °C (-40 ~ 176 °F)
	Humidity	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing
	Shock	10 G	20 G
	Vibration (5 ~ 500 Hz)	1.06 Grms	2 Grms
Physical Characteristics	PCB Dimensions (L x H)	160 x 100 mm (6.3" x 3.9")	
	Weight	0.4 kg	
Reliability	MTBF	-	

### Related Products

Part Number	Description
MIC-3328	3U CompactPCI Intel® third generation Ivy bridge™ Processor Blade
MIC-3023D1-A1E	3U CPCI fanless enclosure dual system with 2 backplane, 2 AC-In panel
MIC-3023S1-D1E	3U CPCI fanless enclosure single system with 1 back plane, 2 CPCI power connector for DC-Input power

### Ordering Information

Part Number	PCI	PICMG 2.0	Description
MIC-3957A1-S1E	Yes	Yes	3U CPCI GPS communication board

### Accessories

Part Number	Description
1750006432	GPS antenna 5000mm AG1575-0250SM-UL

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# MIC-3958 Ethernet Card

## 3U CompactPCI® 4 Ports Gigabit Ethernet Card



### Features

- Up to 4x i210 or 1xi350-AM4 Intel Ethernet Controller
- 32bit 33/66MHz PCI or PCIe bus
- Up to 4x RJ45 or X-code M12 connector on front panel
- LAN Bypass and RIO spec reserved per request
- Support 5V power input only
- PICMG 2.0 Rev. 3.0 , PICMG EXP.0 R.94 compatible

Fully Compliant with  
**EN 50121-4**

Fully Certified with  
**EN 50155**

**CE FCC**



### Introduction

The MIC-3958 series, 3U/4HP CompactPCI form factor, is a Gigabit ethernet peripheral card equipped with Intel i210 or i350-AM4 controllers in different SKUs. 3 different kinds of features as MIC-3958A and MIC-3958B series provides four RJ45 or four X-code M12 Gigabit Ethernet ports with two switchable to the rear transition module, both SKUs are routed PCI bus to backplane; MIC-3958C series provides four X-code M12 Gigabit Ethernet ports but is routed PCIe bus to backplane, higher bandwidth than MIC-3958A and MIC-3958B.

MIC-3958 is designed to meet EN50155 and EN50121-4, with its high capabilities on mechanical, EMC, safety and wide range of environment requirements, it is especially suited for applications in harsh environment like railway and military.

### Specifications

Ethernet Interface	<ul style="list-style-type: none"> <li>▪ Four 10/100/1000 Base-T interface</li> <li>▪ IEEE802.3x Support</li> <li>▪ MIC-3958A/MIC-3958B: 32bit,33/66MHz PCI bus, PCI to PCIe bridge: PI7C9X130, PCIe to i210 chipset</li> <li>▪ MIC-3958C: One PCIe4 link, PCIe to i350-AM4 chipset.</li> </ul>		
Front Panel	<ul style="list-style-type: none"> <li>▪ Four standard RJ45 or Four X-code M12 connectors (2 or 4 ethernet interfaces are shared between front and rear board)</li> <li>▪ LED indicators: LNK:(100Mb/s:Green, 1000Mb/s:Orange); ACT: Green Blink</li> </ul>		
Dimension	<ul style="list-style-type: none"> <li>▪ 3U/4HP, 100x160mm</li> <li>▪ Weight:200g</li> </ul>		
OS support	Windows7/10, Linux Centos6.5/6.6		
Power Consumption	Test Environment: windows OS run Passmark burn in 10min <ul style="list-style-type: none"> <li>▪ MIC-3958A/MIC-3958B: 5V/10W</li> <li>▪ MIC-3958C: 5V/6W</li> </ul>		
Isolation Protection	<ul style="list-style-type: none"> <li>▪ MIC-3958A: 1KV AC( ethernet signal to chassis ground); 1.5KV AC( ethernet signal to digital ground)</li> <li>▪ MIC-3958B: 1KV AC( ethernet signal to chassis ground); 1 KV AC( ethernet signal to digital ground)</li> <li>▪ MIC-3958C: 1.2KV AC( ethernet signal to chassis ground); 1.5KV AC( ethernet signal to digital ground)</li> </ul> Note: Test <20mA		
Dielectric Withstanding Voltage	<ul style="list-style-type: none"> <li>▪ MIC-3958A: 840V AC, chassis ground to digital ground</li> <li>▪ MIC-3958B:1KV AC, chassis ground to digital ground</li> <li>▪ MIC-3958C: 1.5KV AC, chassis ground to digital ground</li> </ul> Note: Test chassis ground to digital ground,<20mA		
Environment	Operating	Non-Operating	
	Temperature	-40 ~ 70 °C (-40 ~ 184 °F)	-40 ~ 80 °C (-40 ~ 176 °F)
	Humidity	10 ~ 95% @ 40 °C, non-condensing	10 ~ 95% @ 60 °C, non-condensing
	Shock	30 G, 11ms, each axis three times	
	Vibration	2G rms	

## Ordering Information

	Front Board <sup>7</sup>					Rear Board <sup>7</sup>
	Front Panel	Controller	Bus interface	On Board Features	RTM	Rear Panel
MIC-3958A1-S1E <sup>1</sup>	4 x RJ45 Connector, LAN LED <sup>5</sup>	i210	PCI	-	Yes	
MIC-3958B1-S1E <sup>1</sup>	4 x M12 Connector, LAN LED	i210	PCI	2 x Pair LAN Bypass <sup>3</sup>	By Request <sup>4</sup>	
MIC-3958C1-S1E <sup>2</sup>	4 x M12 Connector, LAN LED	i350-AM4	PCI Express <sup>6</sup>	-	-	
MIC-3958R1-S1E	-					2 x RJ45 Connector, LAN LED <sup>5</sup>

Note:

1. 4 ethernet interfaces share 1 Gbit/s data transfer rate.
2. 1 Gbit/s data transfer rate for each interface when 4 interfaces are used simultaneously.
3. LAN bypass LED Connect: ACT(Green), Link (Off); Disconnect: ACT(Green Blink), Link (Off).
4. RTM board is based on customer request, 1 pair LAN Bypass reserved to RIO.
5. MIC-3958A1-S1E's compatible RIO is MIC-3958R1-S1E, they share two Ethernet interfaces, switchable by on front board jumper "SW1"; The default setting of "SW1" is for 4 ports RJ45 on front board.
6. MIC-3958C's connector is not legacy 2mm HM, need consult sales for compatible backplane.
7. No accessory M12 cable, please contact local sales for cable spec.

## Related Products

CPU board	Description
MIC-3328 Series	3U CompactPCI 3rd generation Ivy bridge Intel® Core™ i3/i7 Processor Blades
MIC-3329 Series	3U CompactPCI Baytrail Intel® Atom™ Low power Processor Blades
MIC-3332 Series	3U CompactPCI 5rd generation Skylake Intel® Core™ i7/Xeon E3 Processor Blades

## Products Picture



MIC-3958A1-S1E



MIC-3958R1-S1E



MIC-3958B1-S1E



MIC-3958C1-S1E

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# MIC-3961

## 6U CompactPCI® PCI Carrier Board



### Features

- 64-bit PCI interface
- 5 V only
- 33/66 MHz PCI clock selectable
- Hold-down bracket to secure PCI board



### Introduction

The MIC-3961 is a 6U CompactPCI® PCI carrier board that allows users to attach a 32/64-bit PCI card via a J1/J2 connector to a CompactPCI platform. The hold-down bracket secures the PCI card onto the carrier board and protects it against vibration and shock. In addition, the bracket allows a cable to be routed through the front slot panel.

### Specifications

Bus	PCI	32-bit/33 MHz, 64-bit/66 MHz	
Power	Power Consumption	1 W @ 33 MHz	
Environment	Temperature	Operating 0 ~ 60 °C (32 ~ 140 °F)	Non-Operating -20 ~ 80 °C (-4 ~ 176 °F)
	Humidity	-	5 ~ 95 % @ 60 °C, non-condensing
	Vibration (5 ~ 500 Hz)	1.0 Grms	2.0 G
Physical Characteristics	Dimensions (W x D)	233.35 x 160 mm (9.2" x 6.3"), 1-slot width	
	Weight	0.6 kg (1.32 lb)	
Reliability	Mean-Time-To-Repair (MTTR)	5 minutes	
Compliance	PICMG 2.0 R3.0 CompactPCI Specification		

### Recommended Configurations

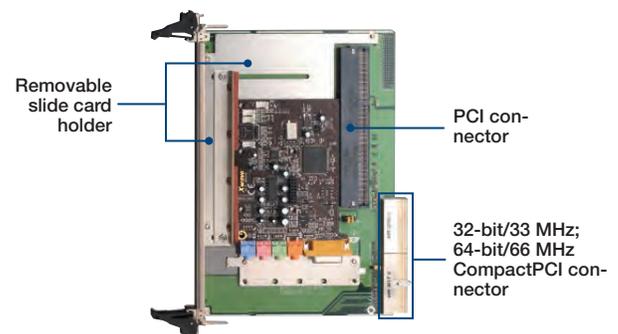
PCI Carrier Board	Enclosure
MIC-3961-AE	MIC-3042, MIC-3043 series

Note: Because of the PCI slot form factor, it can not support 3.3 V PCI card.

### Ordering Information

Part Number	Description
MIC-3961-AE	6U CompactPCI PCI carrier board

Note: Please contact your sales distributor for the optional internal-to-panel cable adaptation assembly set.



# RIO-3315

## 6U CompactPCI® Rear Transition Board for MIC-3395



### Features

- External rear-panel interface connector for the MIC-3395 CPU board
- Supports SAS, SATA, USB 2.0, COM and PS/2 interfaces
- One USB header for USB NAND flash module
- Two RJ-45 GbE ports on the rear panel
- One Digital and One analog DVI port on the rear panel
- One MiniSAS port on the rear panel (for RIO-3315-A1E)
- Two PICMG 2.16 LAN ports on the rear panel (for RIO-3315-C1E)



### Introduction

The RIO-3315 is the first Rear Transition Module (RTM) supporting PCIe connectivity to the main CPCI board enabling significant value-added features and extensions to next generation CPCI blades such as MIC-3395. The RIO-3315 supports: one PS/2 port, six USB ports, two RS-232 ports, two SATA ports, two Gigabit Ethernet ports, one digital and one integrated (digital/analog) DVI port. Three versions of RIO-3315 provide a choice of storage and LAN options. The RIO-3315-A1E with LSI1064E SAS controller supports a 4-port SAS controller with RAID, which allows switching between four internal SAS/SATA or four external MiniSAS ports. The RIO-3315-B1E supports SATA disk drives and SATA RAID via the QM67 PCH. An additional DSUB COM port is placed on rear panel. The RIO-3315-C1E provides two GbE LAN ports and two PICMG 2.16 LAN ports on the rear panel.

The RIO-3395MIL-A1E provides D-SUB9 COM port, one DVI-D, one VGA on rear panel and can carry two SATA HDD/SSD.

### Specifications

CompactPCI Connector	J3 / J4 / J5		
SAS Controller	LSI1064E SAS Controller chip supports 3 Gb/s SAS/SATA data transfer and RAID		
Power	Power Consumption	+3.3 V	+5 V
		3 A	2 A
Environment		Operating	Non-Operating
	Temperature	0 ~ 60 °C (32 ~ 140 °F) -40 ~ 70 °C (-40 ~ 158 °F) (for RIO-3395MIL)	-40 ~ 85 °C (-40 ~ 185 °F)
	Humidity	95 % @ 40 °C, non-condensing	95 % @ 60 °C, non-condensing
Physical Characteristics	Dimensions (W x D)	233.35 x 80 mm (9.2" x 3.15"), 1-slot width	
	Weight	0.3 kg (0.66 lbs)	

### Ordering Information

Part Number	Rear Panel								On-board Header/Socket/Connector						
	LAN	PS/2*	COM (RJ-45)	COM (DB9)	USB	DVI-D	DVI-I	MiniSAS	USB	VGA	COM	SATA	SAS (SATA Interface)	Slot Width	Conn.
RIO-3315-A1E	2	1	1	-	2	1	1	1	2	-	1	2	4	1	J3, J4, J5
RIO-3315-B1E	2	1	1	1	2	1	1	-	2	1	-	2	-	1	J3, J4, J5
RIO-3315-C1E	4	1	1	-	2	1	1	-	2	-	1	2	-	1	J3, J4, J5

\*Note: One PS/2 port carries the signals for keyboard and mouse. A "Y" cable is included.

\*\*Note: The use of Advantech's EmbCore USB 2.0 Disk Module (Type C) is recommended.

### Recommended Configurations

Rear I/O Board	CPU Board
RIO-3315-A1E	MIC-3395 Series
RIO-3315-B1E	MIC-3395 Series
RIO-3315-C1E	MIC-3395 Series

### I/O View (RIO-3315-A1E)



- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

# RIO-3316

## 6U CompactPCI® Rear Transition Board for MIC-3396



### Features

- External rear-panel interface connector for the MIC-3396 CPU board
- Supports SATA Gen III, USB 2.0, USB 3.0, GbE, PS/2, COM and DVI, interface
- 2x SATA pin headers
- 2x RJ45 GbE and 2x PICMG 2.16 LAN ports on the rear panel
- 1x digital and 1x analogue DVI ports on the rear panel
- 1x UHM connector to support USB 3.0 and SATA Gen III signal



### Introduction

The RIO-3316 is the first Rear Transition Module (RTM) supporting PCIe connectivity to the main CPCI board enabling significant value-added features and extensions to next generation CPCI blades such as MIC-3396.

The RIO-3316 supports: one PS/2 port, one USB 3.0 and one USB 2.0 ports, one RS-232/485/422 ports, two Gigabit Ethernet ports, two PICMG 2.16 LAN ports, one digital and one integrated (digital/analogue) DVI port on the rear panel.

One UHM connector on J3 provides PCIe bus and allows supporting USB 3.0 and SATA Gen III (6 Gb/s).

### Specifications

CompactPCI Connector	J3 / J4 / J5		
Power	Power Consumption	+3.3 V 3 A	+5 V 2 A
		Operating	Non-Operating
Environment	Temperature	0 ~ 60 °C (32 ~ 140 °F)	-40 ~ 85 °C (-40 ~ 185 °F)
	Humidity	95% @ 40 °C, non-condensing	95% @ 60 °C, non-condensing
Physical Characteristics	Dimensions (WxD)	233.35 x 80 mm (9.2" x 1.5"), 1-slot width	
	Weight	0.3 kg (0.66 lbs)	

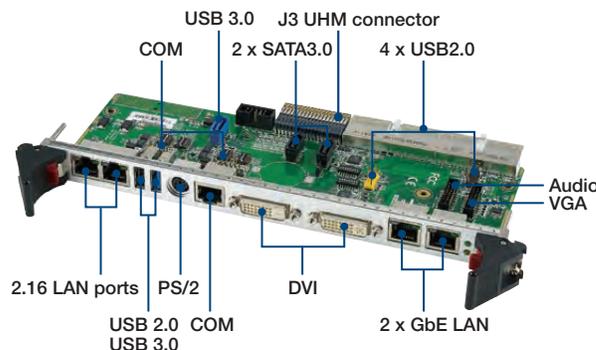
### Ordering Information

Part Number	Rear Panel							On-board Header / Socket / Connector							
	LAN	PS/2*	COM (RJ45)	USB 2.0	USB 3.0	DVI-D	DVI-I	USB 3.0	COM	SATA	Slot Width	USB 2.0	VGA	Audio	Conn.
RIO-3316-C1E	4	1	1	1	1	1	1	1	2	2	1	4	1	1	J3, J4, J5

Note: One PS/2 port carries the signals for keyboard and mouse. Y cable is included.

### Recommended Configurations

Rear I/O Board	CPU Board
RIO-3316-C1E	MIC-3396 Series



# RIO-3396MIL

## 6U CompactPCI® Rear Transition Board for MIC-3396MIL

Preliminary



### Features

- External rear-panel interface connector for MIC-3396MIL CPU board
- Supports SATA Gen II & III, USB 3.0, GbE, PS/2, COM and DVI interface
- 2x SATA II and 2x SATA III pin headers
- 2x RJ45 GbE and 2x PICMG 2.16 LAN ports on the rear panel
- 1x digital DVI port and 1x VGA port on the rear panel
- 1x UHM connector to support USB 3.0 and SATA Gen III signal



- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

### Introduction

The RIO-3396MIL is the Rear Transition Module (RTM) supporting SATAII/III, USB3.0 connectivity to the main CPCI board enabling significant value-added features and extensions to next generation CPCI blades such as MIC-3396MIL. The RIO-3396MIL supports: one PS/2 port, two USB 3.0 ports, four RS-232/485/422 ports, one VGA, two Gigabit Ethernet ports, two PICMG 2.16 LAN ports, one digital DVI port on the rear panel. One UHM connector on J5 allows supporting USB 3.0 and SATA Gen III (6 Gb/s).

### Specifications

CompactPCI Connector	J1 / J3 / J4 / J5		
Power	Power Input	+5 V	
Environment	Temperature	Operating -40 ~ 85 °C (32 ~ 140 °F)	Non-Operating -40 ~ 85 °C (-40 ~ 185 °F)
	Humidity	95% @ 40 °C, non-condensing	95% @ 60 °C, non-condensing
	Physical Characteristics	Dimensions (W x D)	233.35 x 80 mm (9.2" x 1.5"), 1-slot width
	Weight	0.3 kg (0.66 lbs)	

### Ordering Information

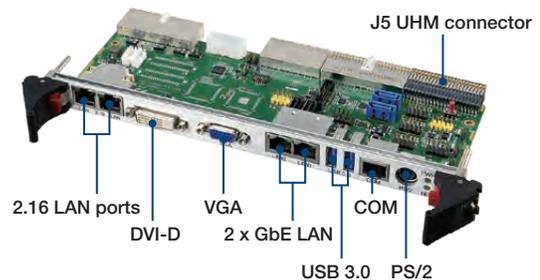
Part Number	Rear Panel						On-board Header / Socket / Connector					
	LAN	PS/2*	COM (RJ45)	USB 3.0	DVI-D	VGA	Audio	USB 2.0	COM	SATA	Slot Width	Conn.
RIO-3396MIL-A1E	4	1	1*	2	1	1	1	2 (4 ports)	4*	4	1	J1, J3, J4, J5

\*Note: One PS/2 port carries the signals for keyboard and mouse. Y cable is included. There are four RS-232/485/422 ports max, including from rear panel and on-board header.

### Recommended Configurations

Rear I/O Board	CPU Board
RIO-3396MIL-A1E	MIC-3396MIL Series

#### RIO-3396MIL-A1E



# MIC-3022

## 4U Height CompactPCI® Enclosure for 3U Cards



### Features

- Hosts up to eight 3U Eurocard boards
- CompactPCI® Legacy or Plus IO Hybrid backplane
- PICMG 2.11 power supplies
- ATX power supply option for cost sensitive applications
- Dual-system ready



### Introduction

MIC-3022 is a 4U enclosure designed to host up to 8 CompactPCI 3U cards connected via a 32bit 33MHz or 66MHz PCI bus or serial bus. The chassis can be powered by PICMG2.11 CPCI power supplies or an ATX 400W power supply for cost sensitive applications. A CPCI power supply supports a wide range of applications in the industrial market requiring a robust, compact and reliable platform. Rear transition modules can be installed for each of the 8 slots to support I/O extension.

The MIC-3022 enclosure is available for two kinds of backplanes; Legacy backplane provides up to 8 peripheral PCI slot while the hybrid backplane offers three PCI slots and four serial slots. Being a hybrid system, it offers an uncomplicated and cost effective migration solution from parallel 3U CompactPCI® to serial CompactPCI® via the CompactPCI PlusIO standard instead of a bridge or an active logic.

The chassis can be powered by PICMG2.11 CPCI power supplies or an ATX 400W power supply for cost sensitive applications. Four high performance fans provide adequate air flow to all slots, enabling system configurations which can be used in extended temperature environments. With the support of front swappable power supplies and add-in cards as well as a simplified fan replacement mechanism built in, systems based on the MIC-3022 can support a MTTR of 5 minutes or less.

### Specifications

Backplane	Legacy backplane	System x 1, Peripheral x 7, Rear transition x 8 (80 mm, IEEE1101.11 compliant) 32-bit/33 MHz/66 MHz PCI bus				
	PlusIO Hybrid backplane	System x 1, Peripheral x 7 (80 mm, IEEE1101.11 compliant) 32-bit/33 MHz/66 MHz PCI bus, serial bus				
	V (I/O)	+3.3 V/+5 V (selectable)				
Cooling	Fan	2 Blowers ;up to 4 Blowers for dual system				
Power Supply	Legacy chassis: CPCI PSU 250W	Input	AC 100 ~ 240 V @ 50 ~ 60 Hz, full range			
			+3.3V	+5V	+12V	-12V
		Max. Load	18A	25A	5A	0.5A
		Min. Load	0A	1A	0A	0A
	PlusIO Hybrid Chassis: CPCI PSU 300W		+3.3V	+5V	+12V	-12V
		Max. Load	40A	40A	10A	2A
		Min. Load	0A	1A	0A	0A
		Input	AC 100 ~ 240 V @ 50 ~ 60 Hz, full range			
Legacy/PlusIO Hybrid Chassis: ATX PSU 400W		+3.3V	+5V	+12V	-12V	
	Max. Load	11.6A	12.89A	11.74A	0.37A	
	Min. Load	0.3A	0.3A	0.5A	0A	
	Input	AC 100 ~ 240 V @ 50 ~ 60 Hz, full range				
Environment	Temperature	Operation: 0 ~ 50 °C (32 ~ 122 °F); Storage: -40 ~ 70 °C (-40 ~ 158 °F)				
	Humidity	10 ~ 95% @ 40 °C, non-condensing 10 ~ 95% @ 60 °C, non-condensing				
	Shock	Operation: 10G; Non Operation 30G				
	Vibration	Random: Operating: 2G Sine: Non-operating: 2G				
Physical Characteristics	Dimensions (W x H x D)	440 x 177 x 295 mm (17.3" x 7" x 11.6")				
	Weight	11 kg				
Reliability	MTBF	Backplane	Fan module	Power supply		
		800, 000 hours	50, 000 hours @25 °C	100, 000 hours @ 70% load		
Compliance		PICMG 2.0 R3.0 CompactPCI Specification PICMG 2.1 R2.0 CompactPCI Hot Swap Specification PICMG 2.11 R3.0 Front-Access Power Connectors Specification RoHS, CE, FCC, UL, CCC				

## Backplane Information

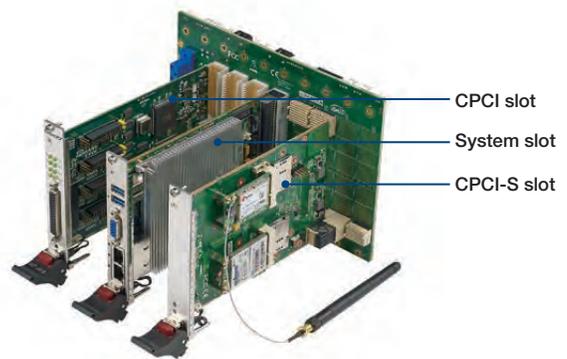
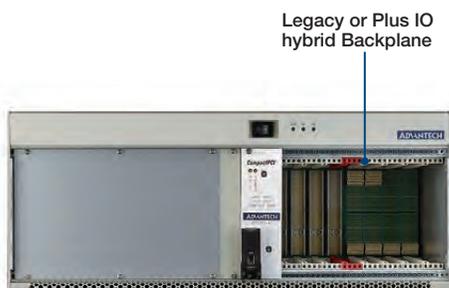
MIC-3022PCE PlusIO Hybrid backplane			MIC-3022AE & MIC-3022CE Legacy backplane	
Slot NO.	Slot Function	Remark	Function	Remark
1	CPCI I/O slot	RIO support	System Slot	RIO support
2	CPCI I/O slot	RIO support	CPCI I/O slot	
3	CPCI I/O slot	RIO support	CPCI I/O slot	
4	Plus IO System slot	NA	CPCI I/O slot	
5	CPCI-Serial I/O Slot	Ethernet signal x1; USB signal x1 PCIe signal x1	CPCI I/O slot	
6	CPCI-Serial I/O Slot	Ethernet signal x1; USB signal x1 PCIe signal x1	CPCI I/O slot	
7	CPCI-Serial I/O Slot	USB signal x1 PCIe signal x1 SATA signal x1	CPCI I/O slot	
8	CPCI-Serial I/O Slot	USB signal x1 PCIe signal x1 SATA signal x1	CPCI I/O slot	

## Recommended Configurations

Enclosure	CPU Board	Front I/O Board
MIC-3022AE	MIC-3329	MIC-3953;MIC-3954; MIC-3955; MIC-3957;MIC-3958
MIC-3022CE	MIC-3328	
MIC-3022PCE	MIC-3332	

## Ordering Information

Part Number	PCI/Serial	PICMG 2.11	ATX power SPEC	Description
MIC-3022AE	Yes	-	Yes	3U CPCI enclosure with 400W ATX PSU, single legacy backplane
MIC-3022CE	Yes	Yes	-	3U CPCI enclosure with 250W CPCI PSU, single legacy backplane
MIC-3022PCE	Yes	Yes	-	3U CPCI Plus IO enclosure with 300W CPCI PSU, single plusIO backplane



CPCI PSU Rear side



ATX PSU Rear side

- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

# MIC-3022 Plus IO

## 4U CompactPCI® Plus IO Enclosure for 3U Cards

Preliminary



### Features

- Hosts up to eight 3U Eurocard boards
- CompactPCI® Plus IO Hybrid backplane
- PICMG 2.11 power supplies
- ATX power supply option for cost sensitive applications
- Dual system ready



### Introduction

The MIC-3022 is a 4U enclosure designed to host up to 8 slots 3U Eurocard boards. It is assembled by hybrid backplane, with three CompactPCI® peripheral slots and four CompactPCI® Serial slots, connected via a 32bit 33MHz / 66MHz PCI bus and serial bus. Being a hybrid system, it offers an uncomplicated and cost effective migration solution from parallel 3U CompactPCI® to serial CompactPCI® via the CompactPCI PlusIO standard instead of a bridge or an active logic. To save peripheral slot, there is two SATA connectors reserved on hybrid backplane by cable connection for storage extension.

The chassis can be powered by PICMG2.11 CPCI power supplies or an ATX 400W power supply for cost sensitive applications. Four high performance fans provide adequate air flow to all slots, enabling system configurations which can be used in extended temperature environments. With the support of front swappable power supplies and add-in cards as well as a simplified fan replacement mechanism built in, systems based on the MIC-3022 can support a MTTR of 5 minutes or less.

### Specifications

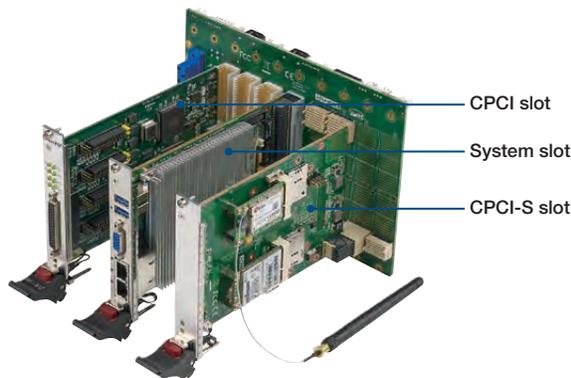
Backplane	3U slots	System x 1, Peripheral x 7 (80 mm, IEEE1101.11 compliant) CompactPCI® PlusIO system slot x1, on the fourth slot from the left CompactPCI® peripheral slots x3, left CompactPCI® Serial peripheral slots x4, right				
	Bus Interface	PCI bus, up to 32-bit/33 MHz/66 MHz Serial bus, up to 5.0 Gb/s				
	V (I/O)	+3.3 V/+5 V (selectable)				
Cooling	Fan	2 Blowers (Max 45.6CFM/FAN)				
Power Supply	Standard CPCI 300W power supply	Input	AC 100 – 240 V @ 50 – 60 Hz, full range			
			+3.3 V	+5 V	+12 V	-12 V
		Max. Load	40 A	40 A	10 A	2 A
	Min. Load	0 A	1 A	0 A	0 A	
	ATX 400W power supply	Input	AC 100 – 240 V @ 50 – 60 Hz, full range			
			+3.3 V	+5 V	+12 V	-12 V
Max. Load		11.6A	12.89A	11.74A	0.37A	
Min. Load	0.3A	0.3A	0.5A	0A		
Environment	Temperature	Operating	0 ~ 50 °C (32 ~ 122 °F)			
		Non-Operating	-40 ~ 70 °C (-40 ~ 158 °F)			
	Humidity		10 ~ 95% @ 40 °C, non-condensing			
			10 ~ 95% @ 60 °C, non-condensing			
	Shock		10 G			
			30 G			
Vibration	Random: Operating, 2G	Frequency range (Hz)	Test Severity PSD Value			
			5 ~ 10	12 B/Octave		
	Non-operating, 2G		10 ~ 50	0.02 g <sup>2</sup> /Hz		
			50 ~ 100	-12 B/Octave		
Physical Characteristics	Dimensions (W x H x D)	440 x 177 x 295 mm (17.3" x 7" x 11.6")				
	Weight	11 kg				
Reliability	MTBF	Backplane	Fan module	Power supply		
		800,000 hours	50,000 hours @ 25 °C	100,000 hours @ 70% load		
Compliance		PICMG 2.0 R3.0 CompactPCI Specification PICMG 2.1 R2.0 CompactPCI Hot Swap Specification PICMG 2.11 R3.0 Front-Access Power Connectors Specification RoHS, CE, FCC, UL, CCC				

## Backplane Information

Physical Number	Function	Rear I/O
1	CPCI I/O slot	Yes
2	CPCI I/O slot	Yes
3	CPCI I/O slot	Yes
4	Plus IO System slot	-
5	CPCI-Serial I/O slot	-
6	CPCI-Serial I/O slot	-
7	CPCI-Serial I/O slot	-
8	CPCI-Serial I/O slot	-

## Ordering Information

Part Number	PCI/Serial	PICMG 2.11	ATX power SPEC	Description
MIC-3022PAE	Yes	-	Yes	3U CPCI Plus IO enclosure with 400W ATX PSU, single system
MIC-3022PCE	Yes	Yes	-	3U CPCI Plus IO enclosure with 300W CPCI PSU, single system



## Recommended Configurations

Enclosure	CPU Board	Front IO Board
MIC-3022PAE MIC-3022PCE	MIC-3328	MIC-3954-AE MIC-3954-BE MIC-3953-AE

## Optional Accessories

Part Number	Description
96PS-A300WCPC-1	CPCI 300W Power Supply Unit
1757004391-01	ATX 400W Power Supply Unit

## Rear Side



## Front Side



- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

# MIC-3023

## 3U CompactPCI® Enclosure for 3U Cards



### Features

- Hosts up to twelve 3U CompactPCI® boards
- 32bit 33/66MHz PCI bus backplane
- Two 50W low power PICMG2.11 power supplies
- Dual system ready
- Fanless design

### Introduction

The MIC-3023 is a space and cost optimized 3U CompactPCI enclosure which is designed to host up to two 6-slot CompactPCI 3U backplanes. Each backplane supports 32bit 33MHz or 66MHz PCI add in cards. The chassis can be powered by two PICMG2.11 CPCI power supplies for two individual systems, which is suitable for redundant, room less and high density application. MIC-3023 provides for a wide range of applications in the industrial market requiring a robust, compact and reliable platform such as in transportation.

With fanless design and the support of front swappable power supplies, systems based on the MIC-3023 can support a Mean Time To Repair (MTTR) of 5 minutes or less.

### Specifications

		MIC-3023	
Backplane	Backplane	Up to two backplanes. Each backplane supports 1 System slot left and 5 Peripheral slots, 2 PSU slots	
	Bus Interface	32-bit/33 MHz/66 MHz PCI bus	
	V (I/O)	+3.3 V/+5 V (selectable)	
Cooling	Natural convection	Fanless design	
Power Supply	MIC-3956-50AE CPCI 50W PSU	Input	AC 100 ~ 240 V @ 50 ~ 60 Hz, full range, DC power is under development
			+5 V
		Max. Load	10 A
		Min. Load	0.1 A
Environment	Temperature	Operating	Non-Operating
		-25 ~ 55 °C (-13 ~ 131 °F)	-40 ~ 80 °C (-40 ~ 176 °F)
	Humidity	10 ~ 95% @ 40 °C, non-condensing	
	Shock	10 G	30 G
	Vibration (5 ~ 500 Hz)	1.06 Grms	2 Grms
Physical Characteristics	Dimensions (W x H x D)	436.8 x 133.3 x 252 mm (17.2" x 5.25" x 9.92")	
	Weight	4.76kg (10.5 lb)	
Reliability	MTBF at 25 °C ambient	Backplane	Power supply
		147,077 hours	746,880 hours @ 100% load
Compliance		PICMG 2.0 R3.0 CompactPCI Specification PICMG 2.1 R2.0 CompactPCI Hot Swap Specification PICMG 2.11 R3.0 Front-Access Power Connectors Specification RoHS, CE, FCC GB/T 17626	

### Related Products

CPU Board	Description
MIC-3329B1-D1E	MIC-3329 w/ E3827 4G RAM dual slot
MIC-3329C1-D1E	MIC-3329 w/ E3845 4G RAM dual slot

### Ordering Information

Part Number	Description
MIC-3023D1-A1E	3U CPCI fanless enclosure dual system with 2 backplane, 2 AC-In panel
MIC-3023S1-D1E	3U CPCI fanless enclosure single system with 1 back plane, 2 CPCI power connector for DC-Input power

# MIC-3042

## 4U CompactPCI® Enclosure with cPCI Power Supply (non-CT Bus)



### Features

- 8-slot 6U CompactPCI® backplane
- AC cPCI 500 W + 250 W redundant (2+1) power supplies



### Introduction

The MIC-3042 is a 4U enclosure designed for standard cPCI power supplies. It is equipped with a cPCI 500 W redundant 2+1 power supply with hot-swap support. The system has 8 slots for CompactPCI boards and 6 slots for IEEE 1101.11 rear I/O transition boards. The MIC-3042 comes with a built-in high quality backplane that supports 64-bit / 66 MHz PCI cards.

### Specifications

		MIC-3042C			
Backplane	6U Slot	System x 1, Peripheral x 7, Rear transition x 8 (80 mm, IEEE1101.11 compliant)			
Cooling	Fan	2 (front: 193 CFM, rear: 61.3 CFM)			
Power Supply	Input	AC 100 ~ 254 V @ 50 ~ 60 Hz, full range (MIC-3042X-A)			
	Output	AC cPCI 250 W redundant power module			
		+3.3 V	+5 V	+12 V	-12 V
	Max. Load	36 A	50 A	10 A	1 A
	Min. Load	0 A	2.0 A	0 A	0 A
Environment	Temperature	Operating 0 ~ 45 °C (32 ~ 113 °F)		Non-Operating -20 ~ 60 °C (-4 ~ 140 °F)	
	Humidity	20 ~ 90% @ 40 °C, non-condensing		10 ~ 95% @ 40 °C, non-condensing	
	Shock	10 G		30 G	
	Vibration (5 ~ 500 Hz)	1.0 Grms		2.0 G	
Physical Characteristics	Dimensions (W x H x D)	440 x 177 x 320 mm (17.3" x 7" x 12.6")			
	Weight	18 kg (39.7 lb)			
Reliability	MTBF	Backplane	Fan module	Power supply	
		800,000 hours	50,000 hours @ 25 °C	100,000 hours @ 70% load	
Serviceability	MTTR	5 minutes			
Compliance	PICMG 2.0 R3.0 CompactPCI Specification				
	PICMG 2.1 R2.0 CompactPCI Hot Swap Specification				
	PICMG 2.5 R1.0 CompactPCI Computer Telephony Specification				
	PICMG 2.11 R3.0 Front-Access Power Connectors Specification				
	PICMG 2.16 R1.0 CompactPCI Packet Switching Backplane Specification (non-standard offering, available upon request)				
RoHS, CE, FCC, UL, CCC					

Packetarium XL Blade Servers 1

High Performance Servers 2

Network Appliances 3

PCI Express Adapters 4

Network Switches 5

ATCA Blades & Integrated Systems 6

cPCI Boards & Enclosures 7

VPX Blades 8

Video Processing & IP Media Platforms 9

## Backplane Information

Physical Number	Function
8	I/O slot
7	I/O slot
6	I/O slot
5	I/O slot
4	I/O slot
3	I/O slot
2	I/O slot
1	System slot

MIC-3042C, non-CT backplane (for MIC-3042C series)

## Recommended Configurations

Enclosure	CPU Board	Rear I/O Board	Chassis Management Module	
MIC-3042CE MIC-3042C-AE	MIC-3395A1-M4E, MIC-3395A2-M4E, MIC-3395C1-M4E MIC-3396HA-M8E, MIC-3396HB-M8E, MIC-3396HC-M8E, MIC-3396HD-M8E, MIC-3396HE-M8E MIC-3397A2-M8E, MIC-3397C2-M8E MIC-3397B1-M8E, MIC-3397C1-M8E	RIO-3315-A1E, RIO-3315-B1E, RIO-3315-C1E, RIO-3316-C1E, RIO-3317	Included MIC-3924L-AE	or Optional MIC-3927CE

## Ordering Information

Part Number	PICMG 2.16	PICMG 2.5	PCI	Switch Board Support	Media Blade Support	Chassis Management Module	cPCI Power Supply
MIC-3042CE	-	-	Yes	-	-	MIC-3924L-AE	-
MIC-3042C-AE	-	-	Yes	-	-	MIC-3924L-AE	AC cPCI 500 W + 250 W redundant (2+1)

For PICMG 2.16 support inquiry, please contact your Advantech local representative

## Optional Accessories

Part Number	Description
1757004516-01	One AC cPCI 250 W redundant power module
MIC-3927CE	MIC-3927 Intel®igent chassis management module (IPMI)



LED board

Hot-swappable 193-CFM fan module



Built-in alarm board (MIC-3924L-AE)

Supports IEEE 1101.11 rear I/O transition boards

## VPX Blades

<b>Overview</b>		<i>8-1</i>
<b>Selection Guide</b>		<i>8-2</i>
<b>MIC-6030</b>	3U OpenVPX PCIe/ Ethernet hybrid switch	<i>8-3</i>
<b>MIC-6110</b>	6U OpenVPX MXM carrier	<i>8-5</i>
<b>MIC-6130</b>	3U OpenVPX PCIe/ SATA M.2 carrier	<i>8-7</i>
<b>MIC-6131</b>	3U OpenVPX XMC carrier	<i>8-8</i>
<b>MIC-6311</b>	OpenVPX CPU Blade with 4th Generation Intel® Core™ Processor	<i>8-9</i>
<b>MIC-6313</b>	OpenVPX CPU Blade with 4th/ 5th Generation Intel® Core™ Processor	<i>8-11</i>
<b>MIC-6314</b>	OpenVPX CPU Blade with 4th/ 5th Generation Intel® Core™ Processor	<i>8-13</i>
<b>MIC-6315</b>	OpenVPX CPU Blade with Intel® Xeon® D-1500 family Processor	<i>8-15</i>
<b>MIC-6330</b>	3U OpenVPX CPU Blade with Intel® Xeon® Processor E3v5 and E3v6 family	<i>8-17</i>

To view all of Advantech's VPX Blades, please visit [www.advantech.com/products](http://www.advantech.com/products).





# VPX Blades

Advantech's growing range of 3U and 6U VPX blades has been designed to serve compute intensive, data and signal processing applications in rugged military and aerospace environments. Their server-grade performance and proven reliability along with Advantech's customization, software and long lifecycle support provide equipment manufacturers maximum flexibility and confidence to focus their efforts on mission-critical application development.



## OpenVPX

OpenVPX makes the development and deployment of solutions based on VPX more efficient in terms of customization, testing, cost, time-to-market, quality, and repeatability while mitigating risk. Advantech's VPX blades are VITA 46 and VITA 65 compliant commercial-off-the-shelf modules that can be integrated into standard OpenVPX backplanes with guaranteed interoperability between modules, and from module to backplane and chassis as well as backward compatibility of PMC/XMC mezzanines.



## Intel® Inside

Advantech has been a long term Intel® partner for over 30 years and our VPX blades are all based on state-of-the-art Intel® processor technology developed in close collaboration with our R&D teams. We help speed OEMs to market and accelerate time to revenue by timely introductions of the latest silicon on each of our VPX products. We enable customers with greater longevity by developing form fit and function follow-ons that allowing them to take advantage of the latest processor enhancements while extending the lifecycle of their products in the field.



## Designed for Performance

Our OpenVPX blades support all the major fabric protocols from Serial RapidIO to PCI Express and Ethernet for the highest speed data throughput across the backplane. With onboard PCI Express Gen. 3 and 10GbE support developers are ensured that their applications are running on bare-metal platforms optimized for the highest performance. Local PMC/XMC slot breakout offers an extension to acceleration and FPGA based mezzanines providing even broader options for high performance data preprocessing and offload.



## Rugged & Robust

Advantech VPX products come with the durability and ruggedness you can expect from an OpenVPX product line. Designed exclusively using low voltage processors and chipsets from the Intel® embedded range, every blade goes through a rigorous design cycle from the start of its product life with strict design quality assurance procedures and on to extensive production testing. With onboard ECC memory for high reliability and convection cooled technology for optimum power dissipation, Advantech VPX products are designed for the most demanding mission critical applications.



## Enhanced Software Features

Our VPX blades support Linux, Windows and VxWorks operating systems for maximum development flexibility. Customers can leverage Advantech's pre-built Linux image including Serial RapidIO drivers and sample utilities to streamline integration. VxWorks users can shorten time to market with Advantech developed drivers, tools and samples. Additional advanced features include carrier-grade IPMI v2.0 compliant baseboard management control (BMC) providing health monitoring, remote control as well as fail-safe local and remote BMC and BIOS updates with redundant FLASH chips for improved availability solutions.



## Customization & Design Services

Advantech gives VPX integrators the advantages of its Customized COTS framework, enabling varying levels of customization to standard product. This offers much more flexibility over a "standard-product-only" roadmap by supporting changes ranging from branding, cost optimization, mechanical changes as well as the integration of a customer's proprietary IP. It allows also us to deliver VPX products uniquely tailored to meet customer needs without sacrificing the economy of scale offered by standard off-the-shelf. If your product is unique and you need full ODM design support, our VPX team is also ready to help.



## Long Life Cycle

Advantech VPX products are designed with industrial lifecycles in mind and as such make exclusive use of embedded Intel® Architecture chipsets and processors. This ensures five-year availability of the most critical parts from Intel®. Ownership of our own production facilities gives us to better control over resources during the phase-in of new products and phase-out of older products that have reached end-of-life (EOL). This gives our customers an advantage when we schedule the production of large, last-time-buy orders. This typically allows lifecycles of 7 years or more depending on negotiated last time contracts.

Packetarium XL Blade Servers	1
High Performance Servers	2
Network Appliances	3
PCI Express Adapters	4
Network Switches	5
ATCA Blades & Integrated Systems	6
CPCI Boards & Enclosures	7
<b>VPX Blades</b>	<b>8</b>
Video Processing & IP Media Platforms	9

# Selection Guide



Model		MIC-6311	MIC-6313	MIC-6314	MIC-6315	MIC-6330		
Form Factor		6U					3U	
Processor System	CPU	i5-4402E / i7-4700QE	i5-4402E / Xeon E3-1278L	i5-4402E / i7-5850EQ	D-1559/ D1539	E3-1505 Lv5	E3-1505 Lv6	
	Chipset	Intel® QM87 PCH	Intel® QM87 PCH	Intel® QM87 PCH	N/A	CM236	CM238	
Memory	Technology	Onboard and SO-DIMM DDR3-1600 with ECC	Onboard and SO-DIMM DDR3L-1600,ECC	Onboard and SO-DIMM DDR3-1600 ,ECC	DDR4 @ 2133 MHz w/ ECC	DDR4 @ 2133 MHz w/ ECC		
	Max. Capacity	Up to 16GB (onboard 8G + 8G SODIMM)	Up to 16GB (onboard 8G + 8G SODIMM)	Up to 16GB (onboard 8G + 8G SODIMM)	Up to 32GB (Standard product) Up to 64GB (on request)	16GB	16GB	
VPX Interface	P1	2 for SRIIO Gen2 x4 (default speed 5G)	4 for SRIIO Gen2 x4 (default speed 3.125G)	2 for PCIe Gen3 x8 (1 port NT capable)	2 for SRIIO Gen2 x4 2 for 40GBBase-KR4	1 for PCIe Gen3 x8; 1 x USB 3.0; 2 x USB 2.0; 2 x 100Base-T 1350; 2 x Serdes I350;	1 for PCIe Gen3 x8; 1 x USB 3.0; 2 x USB 2.0; 2 x 100Base-T 1350; 2 x Serdes I350;	
	P2	2 for PCIe Gen 3 x8 (1 port NT Capable)					Configuration 1: 2 x SATA-III; 1 x DP; 2 x USB 2.0; 2 x COM (RS-232/ 422 / 485); 1 x Audio (HDA); 1 x DP + 2 x UART Configuration 2: 2 x SATA-III; 1 x DP; 2 x USB 2.0; 2 x COM (RS-232/ 422 / 485); 1 x Audio (HDA); x8D	Configuration 1: 2 x SATA-III; 1 x DP; 2 x USB 2.0; 2 x COM (RS-232/ 422 / 485); 1 x DP + 2 x UART Configuration 2: 2 x SATA-III; 1 x DP; 2 x USB 2.0; 2 x COM (RS-232/ 422 / 485); 1 x Audio (HDA); x8D
	P3	64s PMC IO	N/A	PCIe Gen3 x8 + PCIe Gen3 x4 2 for SERDES				
	P4	12d XMC IO; 2 for 1000Base-T I350	8d+12d XMC IO; 2 for 1000Base-T I350	8d+12d XMC IO; 2 for 1000Base-T I350	2 for SERDES			
	P5	2 x USB 3.0; 2 x USB 2.0; 3 x SATA-III; DisplayPort x2; 2 x COM; Audio; PS2 KB/MS	2 x USB 3.0; 2 x USB 2.0; 3 x SATA-III; DVI x2; 4 x COM (RS-232 / 422 / 485 switchable)	2 x USB 3.0; 2 x USB 2.0; 3 x SATA-III; DVI x2; 4 x COM (RS-232 / 422 / 485 switchable)	2 x USB 2.0 VGA	N/A		
	P6	NA	2 x 10/100/1000BT; Audio; 2 x USB 2.0; 1 x SATA II; PS2 KB/MS;	2 x 10/100/1000BT; Audio; 2 x USB 2.0; 1 x SATA II; PS2 KB/MS;	4 x SATA 1 x RS232 1 x RS422			
Front I/O	Display	1 x VGA	1 x DVI / 1x VGA	DVI / VGA	VGA	VGA (Opt.)	N/A	
	USB3.0 (type A)	2	2	2	N/A	1 (Opt.)	N/A	
	USB2.0 (type A)	1	1	1	2	N/A	N/A	
	LAN (RJ45)	2	2	2	1	1 (Opt.)	N/A	
	COM (RJ45)	1 RS-232	1 RS-232	1 RS-232	N/A	N/A	N/A	
	Front Panel LEDs	HDD/Hot Swap LED (yellow/blue) HDD (yellow) Power LED (green) BMC LED (green)	Hot Swap LED (blue) HDD (yellow) Power LED (green) BMC LED (green)	Hot Swap LED (blue) HDD (yellow) Power LED (green) BMC LED (green)	Hot Swap LED (green) HDD (green) Power LED (green) BMC LED (green)	Hot Swap LED (blue) HDD (yellow) Power LED (green) BMC LED (green)		
	Others	BMC Reset Button Platform Reset Button	BMC Reset Button Platform Reset Button	BMC Reset Button Platform Reset Button	Platform Reset Button 10G SFP+ x 1	BMC Reset Button Platform Reset Button		
Storage	2.5" HDD/SSD	SATA-III	SATA-III on daughter board (Opt.)	SATA-III (Opt.)	N/A	N/A	N/A	
	CFast	SATA-II	SATA-III	SATA-III (Opt.)	N/A	N/A	N/A	
	onboard flash	SATA-I 8G	SATA-I 64G	SATA-I 64G	SATA-III 64G	SATA-I 64G	SATA-I 64G	
XMC/PMC Socket	M.2	N/A	N/A	PCIe Gen2 x1	PCIe Gen3x2 SATA III x1	N/A	N/A	
	PCIe x8	Gen2 (5GT/s)	Gen3 (8GT/s)		N/A			
BMC	Support	Option, Available on MIC-6311 B series	Yes	Yes	Yes	Yes	Yes	
	NC-SI	Front	RTM (P6)	RTM (P6)	Front	RTM	RTM	
	SOL (default)	1st link up as NC-SI						
	COM2	COM2	COM2	COM2	COM4			
Operating System	Compatibility	Windows 7, Fedora 17 and Red Hat Enterprise Linux, VxWorks6.9 Linux (kernel > 3.10*)	Windows 7, and Red Hat Enterprise Linux, VxWorks6.9 Linux (kernel > 3.10*)	Windows 7 VxWorks 6.9 Linux (kernel > 3.10*)	Windows 7 Windows 10 Linux	Windows 7 Windows 10 Linux	Windows 7 Windows 10 Linux	
Input Power	Voltage	5V & 12V	5V & 12V	5V & 12V 12V only (Opt.)	12V only	5V & 12V	5V & 12V	
Power Consumption	TDP	66.3W total power envelope with 47W CPU	91 W total power envelope with 25W CPU 117 W total power envelope with 47W CPU	59 W total power envelope with 47W CPU	90W total power envelope with 45W CPU	45W total power envelope with 25W CPU		
Physical Characteristics	Dimensions (W x D)	233.35 x 160 mm (9.2' x 6.3')					160 x 100 mm	
Environment	Operating Temperature	Grade 1: 0 ~ 55 °C Grade 2: -25 ~ 70 °C (on request)	-40 ~ 85 °C	-40 ~ 85 °C	-40 ~ 60 °C	-40 ~ 85 °C	-40 ~ 85 °C	
	non-operating temperature	-40 ~ 85 °C (-40~ 185 °F)	-55 ~ 105 °C					
	Humidity	Operating:95% @ 40 °C, non-condensing Non-operating:95% @ 60 °C, non-condensing	95% @ 60 °C, non-condensing	95% @ 60 °C, non-condensing	95% @ 60 °C, non-condensing (tentative)	95% @ 60 °C, non-condensing	95% @ 60 °C, non-condensing	
	Vibration	Operating:3.5Grms (without onboard HDD)	VITA 47, V2 (conduction cooled)	VITA 47, V2 (conduction cooled)	VITA 47, V2 (reinforced convection cooled) (tentative)	VITA 47, V2 (conduction cooled)	VITA 47, V2 (conduction cooled)	
	Shock	20 G (without on-board 2.5 SATA HDD)	VITA 47, OS2 (conduction cooled)	VITA 47, OS2 (conduction cooled)	VITA 47, OS2 (reinforced convection cooled) (tentative)	VITA 47, OS2 (conduction cooled)	VITA 47, OS2 (conduction cooled)	
Regulatory	Altitude	4,000 m above sea level	50,000ft @ -40 °C above sea level	50,000ft @ -40 °C above sea level	50,000ft @ -40 °C above sea level	50,000ft @ -40 °C above sea level	50,000ft @ -40 °C above sea level	
	Conformance	Safety:FCC class A, CE, RoHS EMC:FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/ EN300386)	Safety:FCC class A, CE, RoHS EMC:FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/ EN300386)	Safety:FCC class A, CE, RoHS EMC:FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/ EN300386)	Safety:FCC class A, CE, RoHS EMC:FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/ EN300386)	Safety:FCC class A, CE, RoHS EMC:FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/ EN300386)	Safety:FCC class A, CE, RoHS EMC:FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/ EN300386)	
Compliance	Standards	OpenVPX (VITA 65)	OpenVPX (VITA 65), REDI (VITA 48), IPMI 2.0	OpenVPX (VITA 65), REDI (VITA 48), IPMI 2.0	OpenVPX (VITA 65), REDI (VITA 48), IPMI 2.0	OpenVPX (VITA 65), REDI (VITA 48), IPMI 2.0	OpenVPX (VITA 65), REDI (VITA 48), IPMI 2.0	
GPIO	Default setting	N/A	13 GPO Low (could be changed by BIOS)	13 GPO Low (could be changed by BIOS)	6 GPO Low (could be changed by BIOS) (tentative)	7 GPI	7 GPI	
Reset	P0 system reset # P1 SYS_CO#n	Send Reset	Send Reset	Send Reset	Send Reset (tentative)	Send Reset		
	P0 system Reset #	N/A	Receive (BIOS default setting)	Receive (BIOS default setting)	Receive (tentative) (BIOS default setting)	N/A		
	P6 reset_sys#	N/A	CPU board reset	CPU board reset	CPU board reset (tentative)	N/A		

# MIC-6030

## 3U OpenVPX PCIe/ Ethernet hybrid switch

Preliminary



### Features

- OpenVPX MOD3-SWH-6F6U-16.4.1-2 profile compliant
- PCIe fabric interface switch
- 6 ports Gigabit layer 2 Ethernet switch with VLAN support
- Host to host communication over fabric interface
- Air and conduction cooled thermal solutions
- Advantech code based IPMI 2.0 compliant BMC
- Optional I/O for front panel access



### Introduction

The MIC-6030 is a ruggedized single-slot 3U OpenVPX switch providing high-speed, low-latency interconnects between VPX blades connected to PCI Express and Ethernet backplane fabrics. An ExpressLane™ PEX8733 PCIe Gen3 switch connects to six PCIe Gen3 x4 ports enabling non-transparent and transparent bridging of processor blades for highly flexible multi-host and legacy configurations.

A Marvell® Link Street® 88E6390X Ethernet layer 2 switch with VLAN support switches gigabit Ethernet traffic between VPX blades connected to the Ethernet fabric enabling a line-rate control plane.

When configured with optional Mellanox ConnectX®-4 Multi-Host™ Technology and drivers, the MIC-6030 enables high speed communication of up to 10Gbps bandwidth between up to 4 processor VPX blades VPX by transforming the PCIe bus into a programmable network interface, facilitating the development of data communication between boards and eliminating the need to program a more complex DMA interface.

The onboard BMC firmware based on Advantech's IPMI core technology brings an advanced set of system management features and can be customized when unique features are required. Lightweight switch management is available via the BMC, supporting tagged and untagged VLANs, port-based VLAN, and port status reporting.

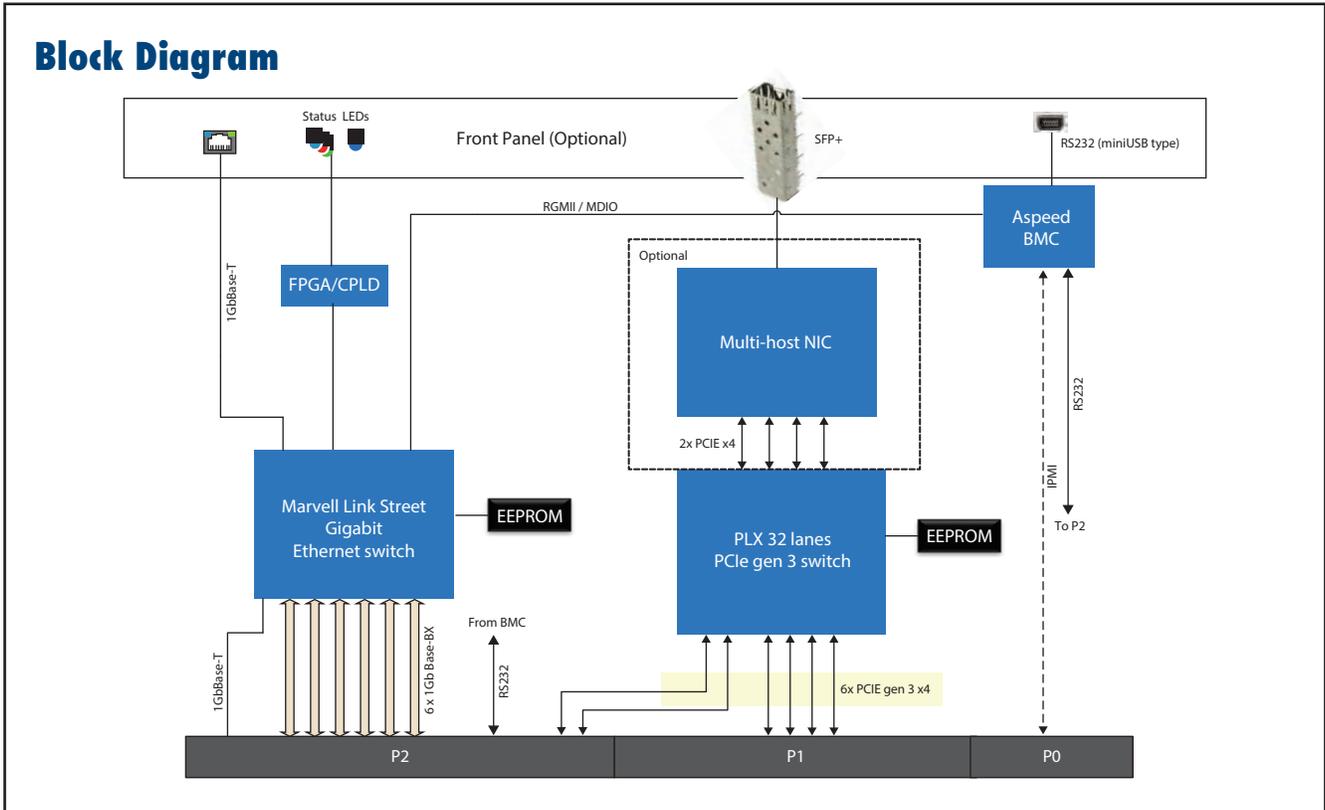
Advantech offers standard designs with either convection or conduction-cooling. A conduction-cooled heatsink ensures operation in harsher environments, providing a reliable solution for operation in extended temperatures, and where extreme shock and vibration requirements must be met. The MIC-6030 is compact, light and robust, meeting stringent size, weight, and power (SWAP) demands.

### Specifications

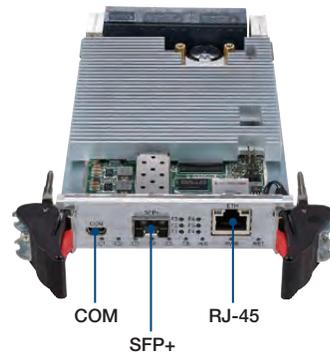
Data Plane	32 lanes PCIe Gen. 3 switch. 6 ports of PCIe x 4 to Data Plane Virtual Ethernet switch for host-to-host communication <sup>1</sup>	
Control Plane	Layer 2 unmanaged switch. Feature support: Switch setup and configuration display; Ethernet port status display; VLAN setup and display (Tag, untag VLAN, port based VLAN) I/O: 1x 10/100/1000Base-T to front panel; 1x 10/100/1000Base-T to backplane. 6 x 1000Base-BX to Control Plane	
IPMI	Advantech code based VPX IPMI 2.0 compliant BMC	
VPX Interface	P0	IPMB; Power: 12V only (default) or 5V only <sup>2</sup>
	P1	4 x PCIe x4
	P2	2 x PCIe x4; 6 x 1000Base-BX; 1 x 10/100/1000Base-T; RS-232
Front panel I/O ports (Available for air-cooled model only)	Ethernet	1 x RJ-45, 10/100/1000BASE-T
	COM	1 x miniUSB connector (BMC RS232 console redirection port)
	SPF+	10G (available on the multiple-host SKU only)
Operating System	Compatibility	Linux <sup>3</sup> and Windows 8.1, Windows 10, Windows Server 2012, Windows Server 2016
Power Requirement	SKU1	29 W total power envelope with multi-host NIC
Physical Characteristics	Dimensions (W x D)	160.00 x 100.00 mm (6.3" x 3.95"), 5HP (H)
	Weight	0.37 kg
Environment (POR)	Temperature	Operating: -40 ~ +85 °C Non-operating: -55 ~ +105 °C
	Humidity	95% @ 40 °C, non-condensing 95% @ 60 °C, non-condensing
	Operation Shock	VITA 47, OS2
	Vibration	VITA 47, V3
	Altitude	50,00ft above sea level 60,000ft, -40 °C above sea level
Compliance	VPX	OpenVPX (VITA 65), REDI (VITA 48)
	Safety	FCC class A, CE, RoHS
	EMC	FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386)

- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

## Block Diagram



Part Number	Front panel I/O Ethernet (RJ-45)	SFP+	COM	Status LED Control Plane	Fabric	Heatsink	Max. host <sup>4</sup>	Virtual Ethernet switch on
MIC-6030-A1A1E	Yes	--	Yes	Yes	Yes	Air cooled	1	--
MIC-6030-A1A2E	Yes	Yes	Yes	Yes	Yes	Air cooled	2	Yes
MIC-6030-A1C1E	--	--	--	Yes	--	Conduction cooled	1	--
MIC-6030-A1C2E	--	--	--	Yes	--	Conduction cooled	2	Yes



## Ordering Information\*\*

Model Number	Configuration
MIC-6030-A1A1E	Air cooled MIC-6030 supporting single host
MIC-6030-A1A2E	Air cooled MIC-6030 supporting dual hosts
MIC-6030-A1C1E	Conduction cooled MIC-6030 supporting single host
MIC-6030-A1C2E	Conduction MIC-6030 supporting dual hosts

<sup>1</sup> Only supported on the SKU's with multiple hosts  
<sup>2</sup> Please contact the Advantech representative for the availability  
<sup>3</sup> Please refer to Mellanox website for detailed distribution and kernel information  
<sup>4</sup> Please contact the Advantech representative for the 4 hosts model availability  
 VITA and OpenVPX Logo are trademarks of VITA

# MIC-6110

## 6U OpenVPX MXM carrier

Preliminary



### Features

- OpenVPX MOD6-PER-4F-12.3.1-3 profile compliant
- MXM 3.1 type A/type B compliant
- Up to 4 independent outputs
- PCIe fabric interface
- Ruggedized convection cooled thermal solution



### Introduction

MIC-6110 is a 6U OpenVPX MXM carrier. MIC-6110 complies with the MOD6-PER-4F-12.3.1-3 profile, and the newest MXM specification rev. 3.1. Connecting to the Dataplane by the PCIe fabric x 16, MIC-6110 is capable to leverage the advantages of the MXM module with the optimized performance.

Offering up to four independent display outputs, MIC-6110 can auto-select the outputs between the backplane and the front panel I/O to fulfill the requirement of the multiple displays. With the selected MXM, MIC-6110 offers the great computing ability for assisting the main processor board computation.

With the native design for the maximum compatibility of mechanical structures, MIC-6110 can be adapted to all sorts of 6U OpenVPX chassis, and is reliable to bear the harsh operational conditions such as the extreme temperature, shock, and vibration.

### Specifications

VPX Interface	P0	Power: 12V	
	P1	1 x PCIe x16	
	P5	4 x Displayport	
MXM interface		MXM 3.1 Type A/ Type B	
Power output	MXM	12V@10A	
Front panel I/O ports (Available for air-cooled model only)		2 x DVI; 1 x Displayport (Output capability depends on the MXM selected)	
Operating System	Compatibility	Windows 7 or above; Linux (Depends on the selected MXM module)	
Power Requirement	SKU1	71 W total power envelope with GTX 1060 MXM module	
Physical Characteristics	Dimensions	160.00 x 100.00 mm (6.3" x 3.95") (W x D), 5HP (H)	
	Weight	0.8 kg without peripherals	
Environment (POR)	Temperature	Operating	Non-operating
		-30 – +85 °C (Depends on the selected MXM module)	-55 – +105 °C
	Humidity	95%@40°C, non-condensing	95%@60°C, non-condensing
	Operation Shock	VITA 47, OS2	
	Vibration	VITA 47, V3	
Compliance	Altitude	50,00ft above sea level,	60,000ft, -40°C above sea level
	VPX	OpenVPX (VITA 65), REDI (VITA 48)	

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

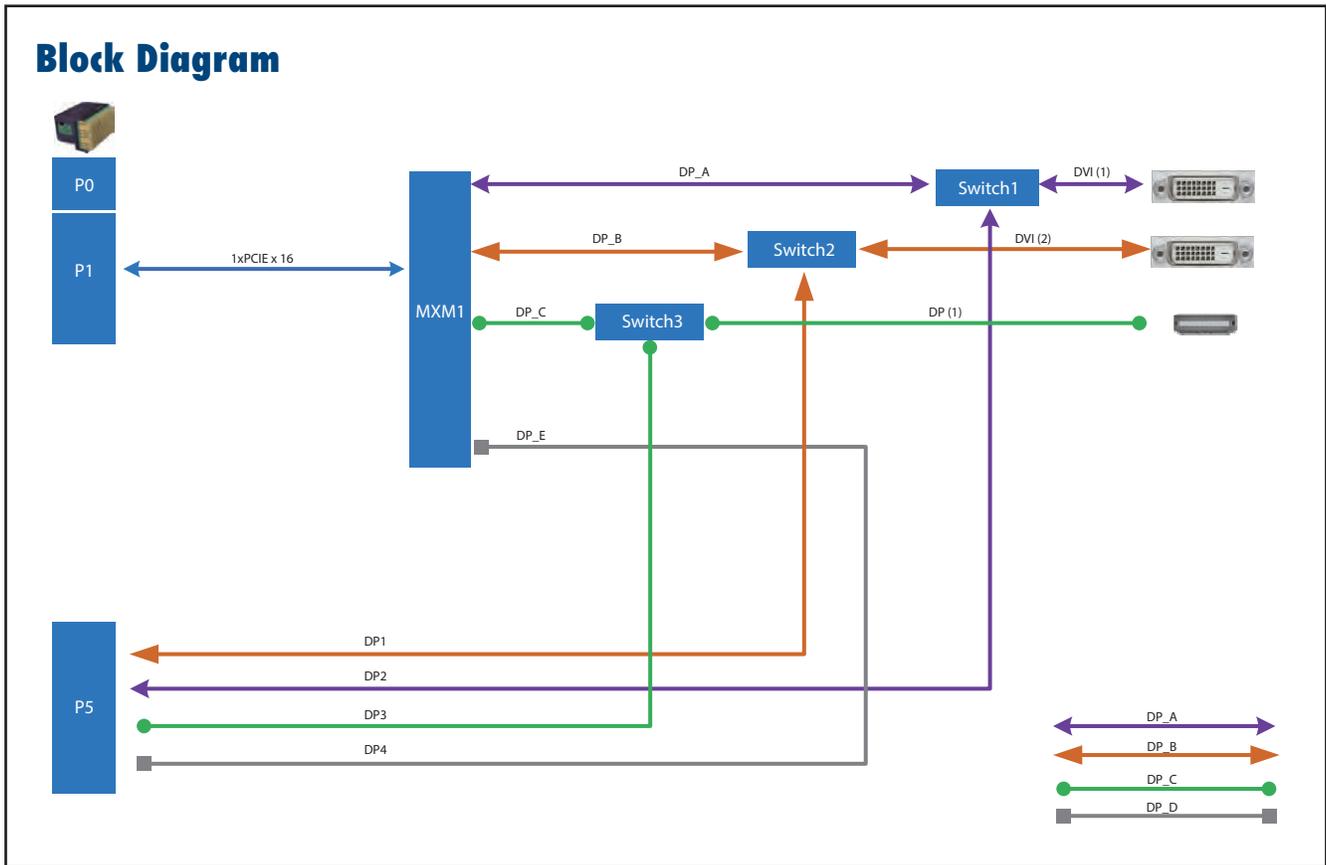
ATCA Blades  
& Integrated  
Systems 6

CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

## Block Diagram



## Related Products

Product	Description
MIC-6314	OpenVPX CPU Blade with 4th/ 5th Generation Intel® Core™ Processor

## Configuration

Part number	MXM module	GPU	Heatsink	Other mechanical parts
MIC-6110-C1APE	Aetina M3N1060-MN	NVidia GTX1060	Ruggedized convection cooled	Front panel; handles
MIC-6110-C1CPE	Aetina M3N1060-MN	NVidia GTX1060	Ruggedized convection cooled	Wedglock; handles
MIC-6110-B0NOE	None	None	None	None

## Ordering Information

Model number	Configuration
MIC-6110-C1APE	MIC-6110 with Aetina M3N1060-MN
MIC-6110-C1CPE	MIC-6110 with Aetina M3N1060-MN for reinforced chassis
MIC-6110-B000E	MIC-6110 bare board

\* Please contact the Advantech representative for the availability  
 VITA and OpenVPX Logo are trademarks of VITA

# MIC-6130

## 3U OpenVPX PCIe/ SATA M.2 carrier

Preliminary



### Features

- OpenVPX MOD3-PER-1F-16.3.2-3 profile compliant
- High speed PCIe/ SATA III interface
- Support up to 3x M.2 device



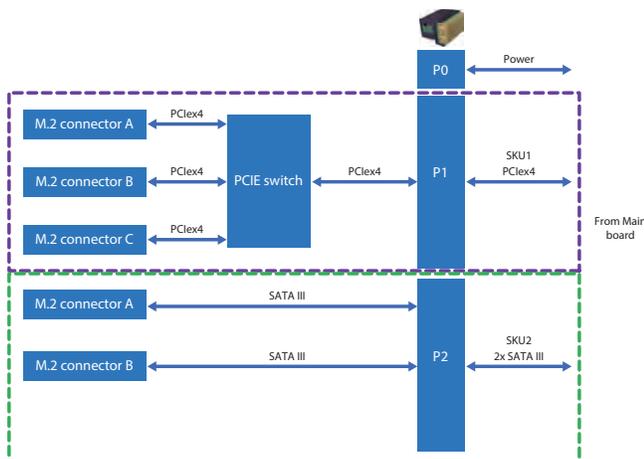
### Introduction

MIC-6130 is a 3U OpenVPX M.2 carrier. MIC-6110 complies with the MOD3-PER-1F-16.3.2-3 profile, and the newest PCI Express M.2 Specification Revision 1.1. Advantech provides MIC-6130 with either the PCIe Gen.3 interface or SATA III interface, and various physical device sizes for the different usages.

### Specifications

VPX Interface	P0	Power: 5V
	P1	1x PCIe x4
	P2	2x SATA III
M.2 keying		M-key
M.2 physical size		PCIe SKU: 2280; SATA SKU: 2242, 2260, 2280
Front panel LED		Hot-Swap, Power, SSD1_active, SSD2_active, SSD3_active
Operating System	Compatibility	Windows 7 or above; Linux (Depends on the selected M.2 module)
Physical Characteristics	Dimensions	160.00 x 100.00 mm (6.3" x 3.95") (W x D), 5HP (H)
	Weight	0.23 kg without peripherals
Compliance	VPX	OpenVPX (VITA 65), REDI (VITA 48)

### Block Diagram



### Related products

Product	Description
MIC-6330	3U OpenVPX CPU Blade with Intel® Xeon® Processor E3v5 and E3v6 family

### Ordering Information

Model number	Configuration
MIC-6130-A100E	MIC-6130 with PCIe interface
MIC-6130-B100E	MIC-6130 with SATA interface

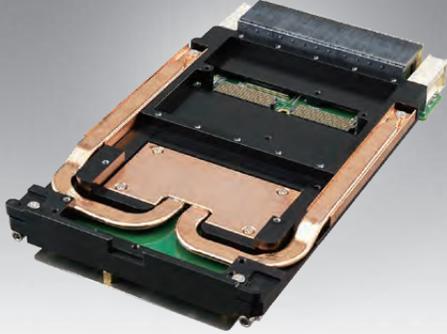
\* Please contact the Advantech representative for the availability.

VITA and OpenVPX Logo are trademarks of VITA

# MIC-6131

## 3U OpenVPX XMC carrier

Preliminary



### Features

- OpenVPX MOD3-PER-1F-16.3.2-3 profile compliant
- Comply with VPX VITA 46.0, 46.4, 46.9 and VITA 48 spec
- High speed Data Plane interface up to PCIe gen.3 x8
- Optional PCIe output up to gen. 3 x8
- XMC interface with X24S+X8D+X12D pin field
- Design to support the XMC card with 75W power consumption\*



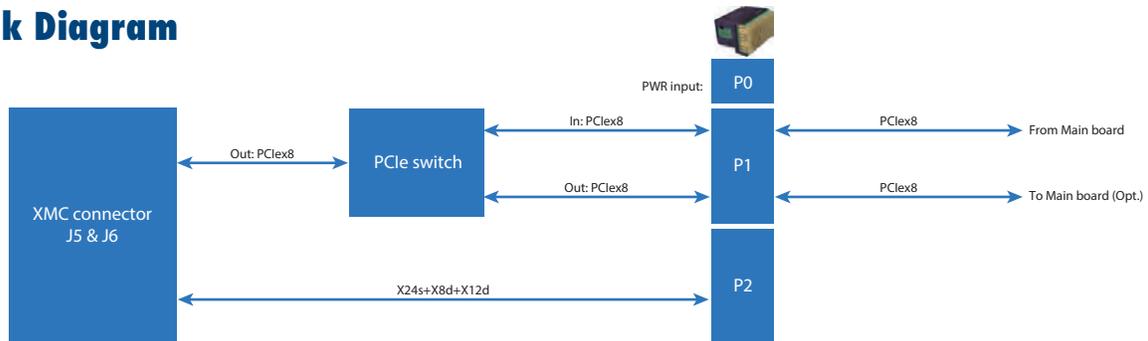
### Introduction

MIC-6131 is a 3U OpenVPX XMC carrier. MIC-6131 complies with the MOD3-PER-1F-16.3.2-3 profile, and the VITA 46.0, 46.4, 46.9 and VITA 48 specification. The MIC-6131 Data Plane has the PCIe Gen 3. Input, up to x8 lanes, and provides the optional PCIe gen. 3 output with another x8 lanes. With this design, MIC-6131 is able to support the most powerful XMC with the 75W power consumption\*, and doesn't sacrifice the full fabric bandwidth from the main board. For the XMC pin out, MIC-6131 has the X24S+X8D+X12D pin field on the VPX connector P2, and enables the vast capability of customization of the customer.

### Specifications

VPX Interface	P0	Power: 12V only (default)
	P1	Data Plane 1x PCIe x 8 + optional PCIe output 1 x PCIe x8
	P2	Optional X24S+X8D+X12D pin out
Front panel LED		Hot-Swap, Power
Power Requirement		Depends on the actual XMC power consumption
Physical Characteristics	Dimensions	160.00 x 100.00 mm (6.3" x 3.95") (W x D), 5HP (H)
	Weight	To-be-measured kg without peripherals
Compliance	VPX	OpenVPX (VITA 65), REDI (VITA 48)
	Safety	FCC class A, CE, RoHS
	EMC	FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386)

### Block Diagram



### Related products

Product	Description
MIC-6330	3U OpenVPX CPU Blade with Intel® Xeon® Processor E3v5 and E3v6 family

### Ordering Information

Model number	Configuration
MIC6131A000E-ES	MIC-6131 for convection cooled chassis
MIC6131C000E-ES	MIC-6131 with conduction cooled heatsink

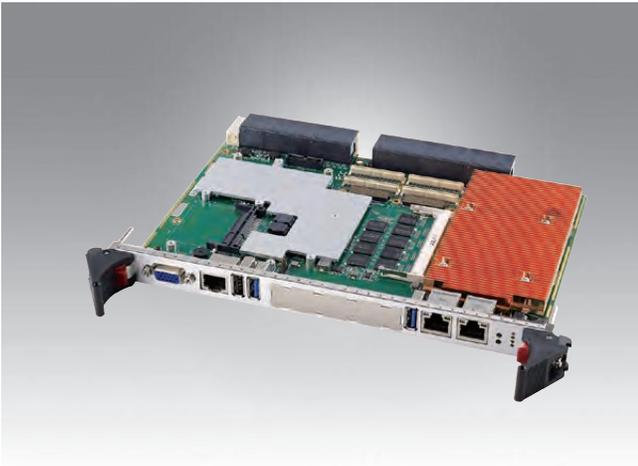
\*The heat dissipation capacity depends on the actual chassis used.

\*\* Please contact the Advantech representative for the availability.

VITA and OpenVPX Logo are trademarks of VITA

# MIC-6311

## OpenVPX CPU Blade with 4th Generation Intel® Core™ Processor



### Features

- 4th Generation Intel® Core™ processor up to 4 cores / 8 threads
- Intel® QM87 PCH
- Triple independent display support
- OpenVPX MOD6-PAY-4F1Q2U2T-12.2.1-2 profile compliant
- Onboard and SO-DIMM DDR3-1600 up to 16GB with ECC support
- Two SRIOx4 ports and two PCIe x8 ports on Fabric interface
- Two 1000BASE-T ports on Base interface
- Two 1000BASE-T front panel ports
- One CFast / one 2.5" SSD storage Device



### Introduction

Advantech's MIC-6311 is a single processor VPX blade based on the 4th generation Intel® Core™ i3/i5/i7 platform. It enables the highest performance available in 6U VPX form factor with two SRIOx4 ports in the VPX data plane and two PCI Express x8 gen. 3 lanes in the VPX expansion plane for workstation and compute intense applications. The two Serial RapidIO ports offer the possibility to interface the MIC-6311 to digital front ends such as DSP and FPGA cards via a high speed, low latency deterministic interconnect. In addition, PCI Express ports with up to 8GB/s throughput offer a high performance interface to mainstream peripherals and IO cards. With a SO-DIMM socket and additional soldered, onboard DRAM with ECC in a dual channel design running up to 1600MT/s, the MIC-6311 offers the ability to fit harsh environments while maintaining maximum memory throughput and supporting memory expansion using the latest SO DIMM technology. Moreover, the 4th generation Intel® Core™ processors offer increased cache size and efficiency as well as instruction set improvements which make the MIC-6311 a high performance compute engine with outstanding floating point and vector processing performance.

Tailored for rugged environments, MIC-6311 has been designed to support ruggedized convection cooled heat sinks. Additionally, it implements an onboard soldered, industrial SSD for maximum reliability. By using the latest powerful PCH (Lynx Point) from Intel®, with its advanced SATA controller advanced storage options are supported such as a 2.5" SATA III HDD/SSD socket offering high storage capacity with up to 6Gbps transfer speed. A CFast socket provides an alternative for implementing a cost efficient, pluggable SSD. An onboard XMC/PMC site with PCIe x8 gen.3 connectivity can host high speed offload or I/O mezzanines. Two USB 3.0 ports in front panel can connect to the external devices with up to 5Gbps data rate. Network and remote connectivity can be achieved via a RS232 console (RJ45) and two GbE RJ45 ports, powered by Intel®'s latest Gigabit Ethernet Controller, the i350.

The processor's integrated enhanced graphics engine Iris offers up to 2x the graphic performance compared to previous generation solutions. Triple independent display support can be implemented by using the MIC-6311's VGA front panel port and two Display port / HDMI interfaces on rear transition modules. Audio port support via the backplane interface enhances media support. Three SATA ports (SATAIII) and four USB ports (2x USB 3.0, 2x USB 3.0) are also connected to backplane to fulfill the demand for extra IO ports or storage. Two GbE/ SERDES ports support system level IP connectivity and two UART interfaces can be leveraged to interface to legacy devices and consoles.

### Specifications

Processor System	CPU	4th Generation Intel® Core™ i3/i5/i7 mobile processors up to 2.4 GHz (6MB L2 cache)
	Max. Speed	2.4 GHz
	Chipset	Intel® QM87
	BIOS	Redundant AMI UEFI based 8MByte SPI flash
Memory	Technology	Dual channel DDR3 1600MHz w/ ECC
	Max. Capacity	Configurable up to 16GB
	Socket	1 bank soldered onboard, 1x 204-pin SODIMM
VPX Interface	P1	2x SRIOx4 Gen2
	P2	2x PCIe x8 (1 port NT Capable)
	P3	64s PMC IO
	P4	12d XMC IO; 2x 10/100/1000BT or 2x SerDes (on request) from I350
	P5	2x USB3.0; 2x USB 2.0; 3x SATA-III; DisplayPort x2; UART(2x); Audio; KB/Mouse from SIO
Graphics	Controller	Intel® embedded graphic controller Iris (3 independent displays)
Ethernet	Controller	Intel® I350-AM4 Quad Port Gigabit Ethernet Controller
Front I/O Interface	Serial (COM)	1 RS-232 on RJ-45 connector
	Ethernet	2 x RJ-45 10/100/1000BASE-T
	USB	2x USB 3.0, 1x USB2.0
	Miscellaneous	XMC/PMC, VGA
Operating System	Compatibility	Linux; Windows7; VxWorks6.x (on request)

- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

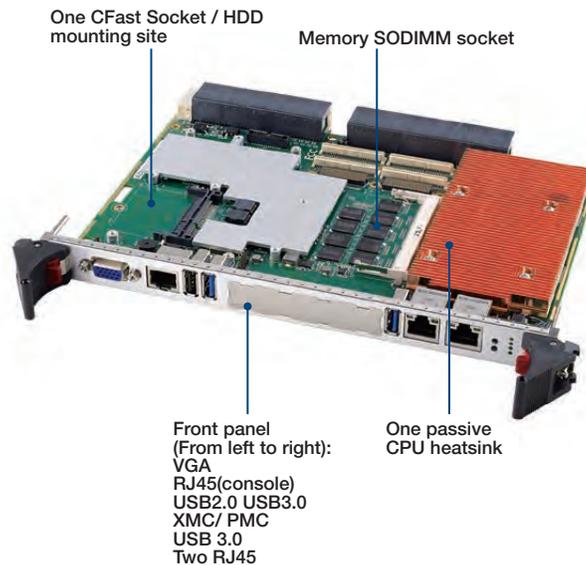
## Specifications (Cont.)

Storage	2.5" SSD/SATA	SATA III
	CFast	SATA II
	Onboard Flash	8G
Power Requirement	Consumption	56.3W total power envelope with 37W CPU (on request) 66.3W total power envelope with 47W CPU
	PCB Dimensions	4HP, 160.00 x 233.35 mm (6.30" x 9.19") (W x D)
Physical Characteristics	Weight	0.95kg without peripherals
	Operating	Non-operating
Environment	Temperature	Grade 1: 0 ~ 55°C Grade 2: -25 ~ 70 °C (on request)
	Humidity	95% @ 40 °C, non-condensing
	Bump	25G, 6ms
	Vibration (5 ~ 500 Hz)	3.5Grms (without onboard HDD)
Compliance	Altitude	15,000ft, 55 °C above sea level 40,000ft, -40 °C above sea level
	VPX	OpenVPX (VITA 65)
	Safety	FCC class A, CE, RoHS
	EMC	FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386)

Note: 1. CFast and 2.5" SSD are mutually exclusive.

## Ordering Information

System Board Model Number	Front Panel						Main On-board Features					
	VGA	USB3.0 (type A)	USB2.0 (type A)	Ethernet (RJ-45)	Console (RJ-45)	XMC / PMC	CPU	Onboard Memory	CFast Socket	Storage Channel	SODIMM Socket	BMC
MIC-6311-A1I8E	1	2	1	2	1	1	i7-4700QE	8GB	1	1 SATA-III	1	No



# MIC-6313

## OpenVPX CPU Blade with 4th/ 5th Generation Intel® Core™ Processor



### Features

- 4th/ 5th Generation Intel® Core™ processor, up to 4 cores / 8 threads
- Intel® QM87 PCH
- Triple independent display support
- OpenVPX MOD6-PAY-4F1Q2U2T-12.2.1-2 profile compliant
- Onboard and SO-DIMM DDR3L-1600, up to 16 GB, with ECC support
- Four SRIOx4 ports and two PCIe8 ports on Fabric interface
- Four 1000BASE-T ports on Base interface (two configurable to SERDES)
- Two 1000BASE-T front panel ports
- One CFast and one onboard flash storage device



### Introduction

The MIC-6313 is Advantech's next generation single processor 6U VPX blade, based on the 4th/ 5th Generation Intel® Core™ and Intel® Xeon® Processor E3 Lv4 embedded platform. To enable the highest performance available in the 6U VPX form factor for workstation and compute intense applications, the four Serial RapidIO ports in the VPX data plane offer high speed up to 5Gb/s, low latency, scalable, error recoverable deterministic interconnectivity to digital front ends such as DSP and FPGA cards. In addition, two PCI Express ports x8 lanes in the VPX expansion plane, with up to PCI Express gen. 2 (5Gb/s) throughput offer a high performance interface to mainstream peripherals and I/O cards. With a SO-DIMM socket and additional soldered, onboard DRAM with ECC in a dual channel design running up to 1600MT/s, the MIC-6313 can be integrated into various harsh environments while maintaining maximum memory throughput, and supports memory expansion by using the latest SO-DIMM technology simultaneously. In addition, the 4th/ 5th generation Intel® Core™ and Xeon® E3 Lv4 embedded processors offer increased cache size and efficiency, as well as instruction set improvements, which make the MIC-6313 a high performance compute engine with outstanding floating point and vector processing performance.

Tailored for harsh environments, the MIC-6313 has a native ruggedized convection cooled heat sink adaptable to various chassis environments; with the alternative optional air cooled heat sink, additional I/O is provided on the front panel. An onboard soldered, industrial SSD is included for maximum reliability, and a CFast/ SSD socket is also available for a cost-efficient, modular storage. By using Intel®'s powerful PCH (Lynx Point) with its advanced SATA controller, the MIC-6313 offers high storage capacity at up to 6Gbps transfer speed. An onboard XMC site with PCIe x8 gen.3 connectivity can host high speed offload or I/O mezzanines. Two USB 3.0 ports on the front panel can connect to external devices with up to 5Gbps data rate. Network and remote connectivity can be achieved via a RS-232 console (RJ-45) and two GbE RJ-45 ports, powered by Intel®'s latest Gigabit Ethernet controller.

The next generation graphics engine Intel® Iris Pro offers up to 2x the graphic performance compared to previous generation solutions. Triple independent display support can be implemented by using the MIC-6313's DVI front panel port and two DVI interfaces on rear transition modules. Audio is powered by a ALC892 controller via the backplane interface, and provides media support. Four SATA ports (SATAIII) and four USB ports (2x USB 3.0, 2x USB 2.0) are also connected to the backplane to fulfill the demand for extra IO ports or storage. Four GbE ports (two SERDES selectable) support system level IP connectivity, and four UART interfaces (RS232/422/485 selectable) can be leveraged to interface to legacy devices and consoles.

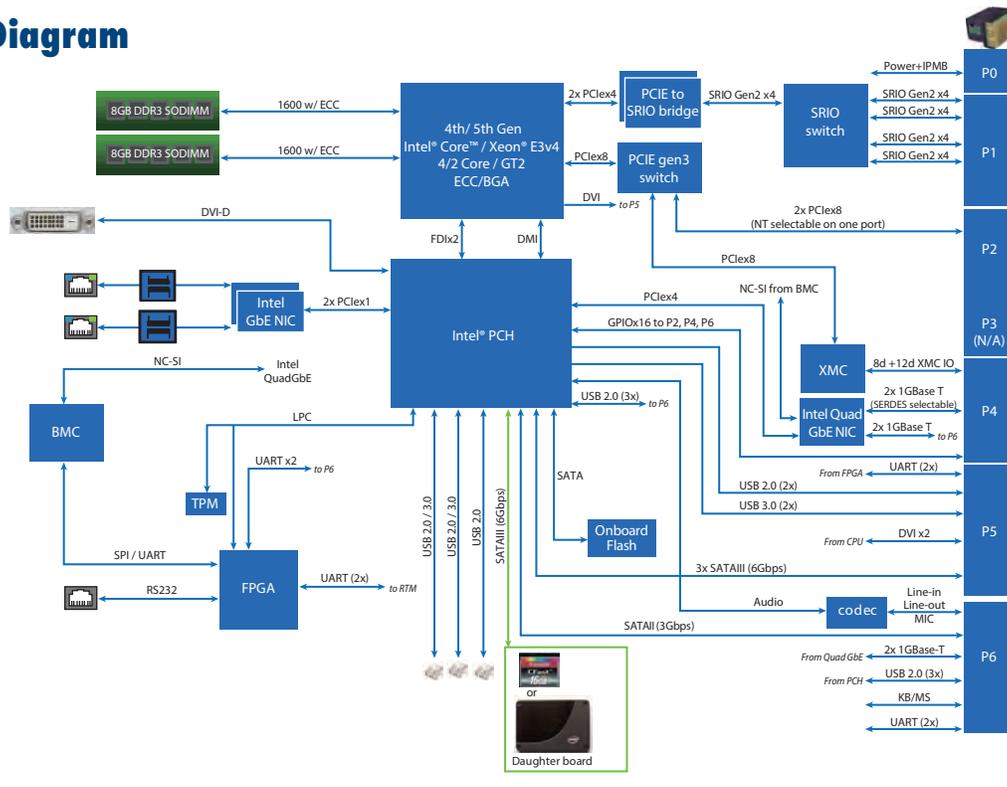
### Specifications

Processor System	CPU	Intel® Xeon® Processor E3-1278L/i5-4402E*
	Max. Speed	3.3 GHz
	Chipset	Intel® Lynx Point (QM87)
	BIOS	Redundant AMI UEFI based 8MByte SPI flash
Memory	Technology	Dual channel DDR3L 1600MHz w/ ECC
	Max. Capacity	Configurable up to 16GB
	Socket	8GB memory soldered onboard, 1x 204-pin SODIMM socket max. to 8GB
VPX Interface	P1	4x SRIOx4 Gen2
	P2	2x PCIe8 (1 port NT Capable)
	P4	8d+12d XMC IO.; 2x 10/100/1000BT (alternative of SerDes) from I350
	P5	2x USB3.0; 2x USB 2.0; 3x SATA-III; DVI x2; 2x UART(RS-232/422/485 switchable)
	P6	2x 10/100/1000BT; Audio from ALC892; 2x USB 2.0; KB/Mouse from SIO;1x SATA II
	Graphics	Controller
Ethernet	Controller	Intel® I350-AM4 Quad Port Gigabit Ethernet Controller to backplane; 2x I210 to front panel
	Serial (COM)	1 RS-232 on RJ-45 connector,
Front I/O Interface	Ethernet	2 x RJ-45 10/100/1000BASE-T
	USB	2x USB 3.0, 1x USB2.0
	Miscellaneous	XMC, DVI
	Operating System	Compatibility
Storage	CFast	SATA III
	Onboard Flash	64G SATA
Power Requirement	Consumption	117 W total power envelope with 47W CPU 91W with 25W CPU
	PCB Dimensions	4HP, 233.35 x 160 mm (9.2" x 6.3") (W x D)
Physical Characteristics	Weight	0.95kg without peripherals

## Specifications (Cont.)

Environment	Temperature	Operating (with 30 CFM airflow) -40 ~ 70 °C	Non-operating -40 ~ 85 °C
	Humidity	95% @ 40 °C, non-condensing	95% @ 60 °C, non-condensing
	Shock	VITA 47, OS2 VITA 47, OS1 (ruggedized convection cooled)	
	Vibration	VITA 47, V2 (Convection cooled with 2.5" SSD; Ruggedized convection cooled with CFast) 0.008 g <sup>2</sup> /Hz, 2 Grms, 5-500Hz (convection cooled)	
	Altitude	50,000ft @ -40 °C above sea level	
Compliance	VPX	OpenVPX (VITA 65), REDI (VITA 48), IPMI 2.0	
	Safety	FCC class A, CE, RoHS	
	EMC	FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386)	

## Block Diagram



Part Number	Front Panel				Main On-board Features					
	Display	USB	Ethernet (RJ45)	Console (RJ45)	CPU	Onboard Memory	Onboard Flash	External storage	SODIMM Socket	IPMI management
MIC-6313-A1A4E	DVI x1	2.0x1; 3.0x2	2	1	E3-1278Lv4	8GB	64GB	CFast Socket	Yes	Yes
MIC-6313-B1C4E	VGA x1	3.0x2	0	0	i5-4402E	8GB	64GB	CFast Socket	No	Yes

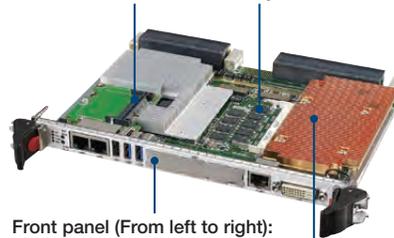
## Ordering Information\*\*

Model number	Configuration
MIC-6313-A1A4E	MIC-6313 with E3-12x8Lv4, Air-cooled heat sink, 64G onboard flash
MIC-6313-B1C4E	MIC-6313 with i5-4402E, ruggedized convection cooled heat sink, 64G onboard flash

\*: For the other Intel® 4th/5th generation Core family CPU availability, please contact your local sales office.

VITA and OpenVPX Logo are trademarks of VITA

One CFast Socket    Memory SODIMM socket



Front panel (From left to right):  
Two RJ-45 (GbE)  
USB2.0  
Two USB3.0  
XMC  
RJ-45 (console)  
DVI

One passive CPU heat sink

# MIC-6314

## OpenVPX CPU Blade with 4th/ 5th Generation Intel® Core™ Processor



### Features

- 4th/ 5th Generation Intel® Core™ processor, up to 4 cores / 8 threads
- Intel® QM87 PCH
- Triple independent display support
- OpenVPX MOD6-PAY-4F1Q2U2T-12.2.1-2 profile compliant
- Onboard and SO-DIMM DDR3L-1600, up to 16 GB, with ECC support
- Two PCIe x8 ports on the data plane and two PCIe x8 ports on the extension plane
- Four 1000BASE-T ports on Base interface (two configurable to SERDES)
- Two 1000BASE-T front panel ports
- One SSD and one onboard flash storage device



### Introduction

The MIC-6314 is Advantech's next generation single processor 6U VPX blade, based on the 4th/5th Generation Intel® Core™ embedded platform with increased cache size and efficiency, as well as instruction set improvements. The MIC-6314 provides two configurable PCIe x 8 ports in the VPX data plane and two PCI Express ports x8 lanes in the VPX expansion plane to enable the highest performance available in the 6U VPX form factor compute intense applications. These PCIe interfaces offer high speed up to PCIe gen. 2 (5Gb/s) throughput, low latency, scalable, error recoverable deterministic interconnectivity to the mainstream peripherals and I/O cards such as DSP and FPGA cards. The PCIe widths and ports on the data plane and the extension plane of MIC-6314 is user configurable, which make MIC-6314 capable to replace the PCIe switch blade in a small system.

With a SO-DIMM socket and additional soldered, onboard DRAM with ECC in a dual channel design running up to 1600MT/s, the MIC-6314 can be integrated into various harsh environments while maintaining maximum memory throughput, and supports memory expansion by using the latest SO-DIMM technology simultaneously.

Tailored for harsh environments, the MIC-6314 has a native ruggedized convection cooled heat sink adaptable to various chassis environments; with the alternated optional air cooled heat sink, additional I/O is provided on the front panel. An onboard soldered, industrial SSD is included for maximum reliability, and a SSD socket is also available for a cost-efficient, modular storage. By using Intel®'s powerful PCH (Lynx Point) with its advanced SATA controller, the MIC-6314 offers high storage capacity at up to 6Gbps transfer speed. An onboard XMC site with PCIe x8 gen.3 connectivity can host high speed offload or I/O mezzanines. Two USB 3.0 ports on the front panel can connect to external devices with up to 5Gbps data rate. Network and remote connectivity can be achieved via a RS-232 console (RJ-45) and two GbE RJ-45 ports, powered by Intel®'s latest Gigabit Ethernet controller.

The Intel® next generation graphics engine Iris Pro offers up to 2x the graphic performance compared to previous generation solutions. Triple independent display support can be implemented by using VGA and 2 DVI ports on MIC6314. Audio is powered by a ALC892 controller via the backplane interface, and provides media support. A PCIe interface is reserved for the optional M.2 high speed storage. Besides the modern M.2 storage, three SATA III one SATA II and four USB ports (2x USB 3.0, 2x USB 3.0) are also connected to the backplane to fulfill the demand for extra I/O ports or storage. Four GbE ports (two SERDES selectable) support system level IP connectivity, and four UART interfaces (RS232/422/485 selectable) can be leveraged to interface to legacy devices and consoles.

### Specifications

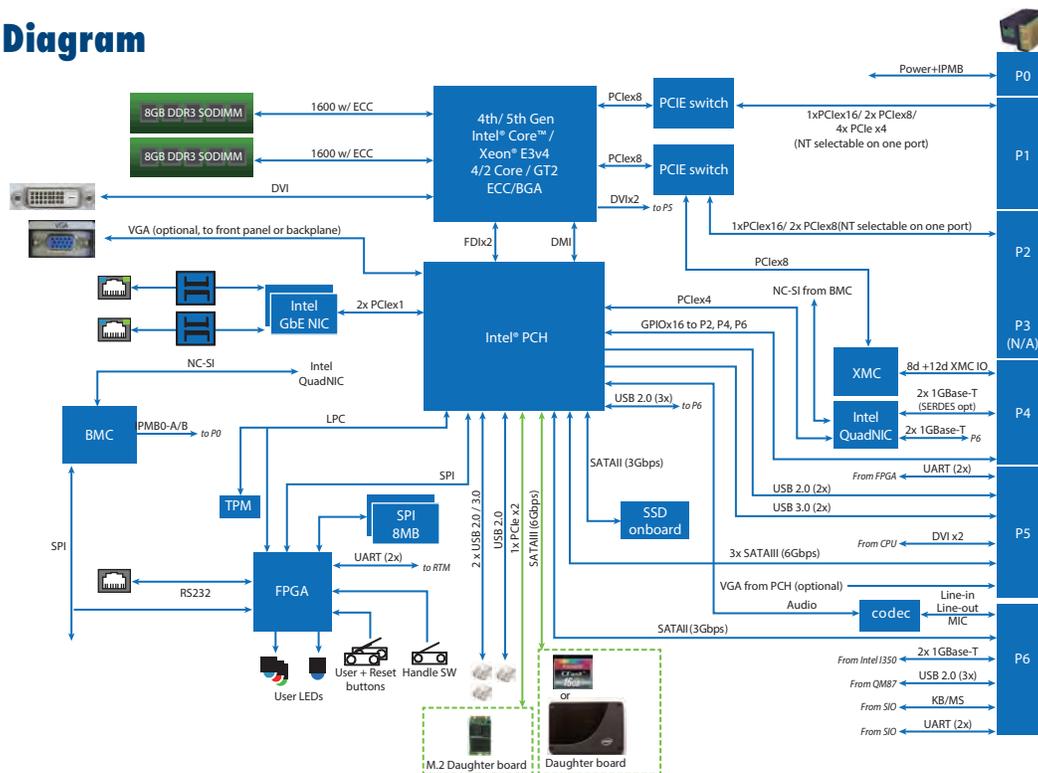
Processor System	CPU	Intel® Core™ i7-5850EQ/i5-4402E*
	Max. Speed	3.4 GHz
	Chipset	Intel® QM87
	BIOS	Redundant AMI UEFI based 8MByte SPI flash
Memory	Technology	Dual channel DDR3L 1600MHz w/ ECC
	Max. Capacity	Configurable up to 16GB
	Socket	8GB memory soldered onboard, 1x 204-pin SODIMM socket max. to 8GB
VPX Interface	P1	2x PCIe8 Gen2 configurable to 1 x 16 or 4 x 4
	P2	2x PCIe8 (1 port NT Capable)
	P4	8d+12d XMC IO.; 2x 10/100/1000BT (alternative of SerDes) from I350
	P5	2x USB3.0; 2x USB 2.0; 3x SATA-III; DVI x2; 2x UART(RS-232/422/485 switchable)
	P6	2x 10/100/1000BT; Audio from ALC892; 2x USB 2.0; KB/Mouse from SIO; 1x SATA II
	Graphics	Controller
Ethernet	Controller	Intel® I350-AM4 Quad Port Gigabit Ethernet Controller to backplane; 2x I210 to front panel
	Serial (COM)	1 RS-232 on RJ-45 connector,
Front I/O Interface	Ethernet	2 x RJ-45 10/100/1000BASE-T
	USB	2x USB 3.0, 1x USB2.0
	Miscellaneous	XMC, DVI
	Operating System	Compatibility
Storage	Onboard Flash	64G SATA
Power Requirement	Consumption	59 W total power envelope with 47W CPU
	PCB Dimensions	4HP, 233.35 x 160 mm (9.2" x 6.3") (W x D)
Physical Characteristics	Weight	0.95kg without peripherals

- 1 Packetarium XL Blade Servers
- 2 High Performance Servers
- 3 Network Appliances
- 4 PCI Express Adapters
- 5 Network Switches
- 6 ATCA Blades & Integrated Systems
- 7 PCI Boards & Enclosures
- 8 VPX Blades
- 9 Video Processing & IP Media Platforms

## Specifications (Cont.)

Environment	Operating (with 30 CFM airflow)	Non-operating	
	Temperature	-40 ~ 70 °C	-50 ~ 100 °C
	Humidity	95% @ 40 °C, non-condensing	95% @ 60 °C, non-condensing
	Shock	VITA 47, OS2 VITA 47, OS1 (ruggedized convection cooled)	
	Vibration	VITA 47, V2 (ruggedized convection cooled) 0.008 g <sup>2</sup> /Hz, 2 Grms, 5-500Hz (convection cooled)	
Compliance	Altitude	50,000ft @ -40 °C above sea level	
	VPX	OpenVPX (VITA 65), REDI (VITA 48), IPMI 2.0	
	Safety	FCC class A, CE, RoHS	
EMC		FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386)	

## Block Diagram



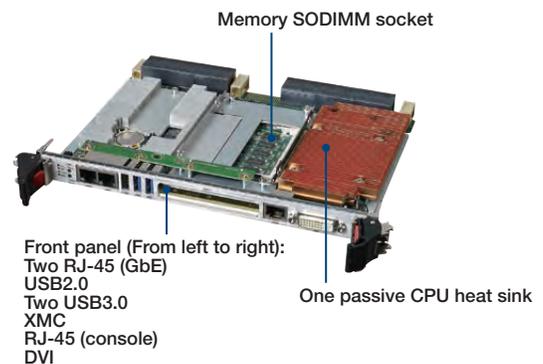
Part Number	Front Panel				Main On-board Features					
	Display	USB	Ethernet (RJ45)	Console (RJ45)	CPU	Onboard Memory	Onboard Flash	External storage	SODIMM Socket	XMC site
MIC-6314-A1A4E	DVI x1	2.0x1; 3.0x2	2	1	i7-5850EQ	8GB	64GB	SSD site	Yes	No
MIC-6314-A2A4E	DVI x1	2.0x1; 3.0x2	2	1	i7-5850EQ	8GB	64GB	M.2 site	Yes	Yes
MIC-6314-B1C4E	VGA x1	3.0x2	0	0	i5-4402E	8GB	64GB	SSD site	No	No

## Ordering Information\*\*

Model number	Configuration
MIC-6314-A1A4E	MIC-6314 with i7-5850EQ, convection heat sink, SSD site
MIC-6314-A2A4E	MIC-6314 with i7-5850EQ, convection heat sink, XMC & M.2 site
MIC-6314-B1C4E	MIC-6314 with i5-4402E, ruggedized convection cooled heat sink, SSD site

\*: For the other Intel® 4th/5th generation Core family CPU availability, please contact your local sales office.

VITA and OpenVPX Logo are trademarks of VITA



# MIC-6315

## OpenVPX CPU Blade with Intel® Xeon® D-1500 family Processor

Preliminary



### Features

- 5th Generation Intel® Xeon® processor, up to 12 cores / 24 threads
- Customized from the OpenVPX MOD6-PAY-4F1Q profile
- Default 32GB/16GB DDR4 2133 onboard memory with ECC support, up to 64GB\*
- High speed interfaces: Data Plane: Dual SRIIO up to 5Gbps, Expansion plane: PCIe Gen3, and dual 40GBase-KR4 on user-define plane
- Two ruggedized connectors and common I/O port connectors available on the front panel
- 64GB onboard NAND flash, and 1x SATA M.2, 2x NVME M.2 storage options available



### Introduction

The MIC-6315 is the 6U OpenVPX processor blade echoing to the customer's requirements. Based on the Intel® Xeon® D-1500 processor family, the MIC-6315 supports to 12 cores/24 threads, to fulfill the computing requirements from the customer. The MIC-6315 provides various high speed interfaces to communicate with the system: dual Serial Rapid I/O on the Data Plane, a configurable PCIe gen. 3 x 16 port on the Expansion Plane, with another x8 and x4 PCIe ports on the user-define plane, and there are two 40GBase-KR4 ports available on the user-define plane. These interfaces enable the possibility of high speed data communication to optimize the performance of the product. Serial Rapid I/O and PCI express have low latency, scalable, error recoverable deterministic interconnectivity to the mainstream peripherals and I/O cards to create a system with vast functions.

To maintain the maximum memory throughput in the different harsh environments, the Advantech R&D teams dedicate themselves to optimize the layout of the product. The MIC-6315 is capable to support ECC in a dual channel design running up to 2133MT/s with 64GB capacity\*, and has the default capacity of the onboard DDR4 with 32GB or 16GB. The MIC-6315 offers three types of the storage options: A 64GB onboard NAND flash as the native storage, and three M.2 sites with 1x SATA M.2, 2x NVME M.2 interfaces are supported at the same time.

The MIC-6315 has a reinforced convection-cooled heatsink as the thermal solution. Two native ruggedized connectors are available on the front panel, and several common I/O port connectors can be used for debugging purpose at the same time.

Compliant with the IPMI 2.0, the MIC-6315 uses Advantech-code-based board management solution, and supports iKVM, remote control and upgrade. This Advantech BMC code uses the LTS kernel for stability and security, and enables the possibility of customization. The user can setup the PCIe switch configuration in the BIOS menu without any firmware or hardware modification.

### Specifications

Processor System	CPU	Intel® XEON® D-1559
	Max. Speed	2.1 GHz
	BIOS	Redundant AMI UEFI based 16MByte SPI flash
Memory	Technology	Dual channel DDR4 2133MHz w/ ECC
	Capacity	Default 32GB, up to 64GB with customized BOM*
VPX Interface	P1	2 x Serial Rapid I/O Gen2 x 4, and 2 x 40GBase-KR4
	P2	1 x PCIe x16 (configurable to 2x 8, 4x4; 1x 8 + 2x 4; 1x 8 + 4x 2)
	P3	1 x PCIe x 8 + 1 x PCIe x 4 (configurable to 3x4, 1x8 + 2x2, 2x4 + 2x2, 6x2), 2 x SERDES
	P4	2 x SERDES
	P5	2 x USB2.0; 1 x VGA
	P6	4 x SATA3, 1 x RS232, 1 x RS422
Ethernet	Controller	Intel® I350-AM4, Intel® XL710BM2 to backplane; 1 x Intel® I210 to front panel
Front I/O Interface	Ruggedized connector	Jonhon HJ30J-36ZKWP7 (36 pins) & HJ30J-18ZKWP7(18 pins)
	Serial (COM)	1 console (Tx, Rx) to BMC, 1 console (Tx, Rx) to x86 (in the ruggedized connectors)
	Ethernet	1 x RJ-45 10/100/1000BASE-T
	USB	2x USB 2.0, + 2x USB2.0 in the ruggedized connectors
	Miscellaneous	1x SFP+ and 1x VGA, the VGA signals are also available in a ruggedized connector in the ruggedized connector
Operating System	Compatibility	Linux (distribution & Kernel to be confirmed); Windows7, partially support Widows 10
Storage	Traditional storage	1x SATA III to external M.2, 4x SATA III to backplane
	High speed storage	2x external NVME M.2
	Onboard Flash	64G SATA
Power Requirement	Consumption	90 W total power envelope with D-1559 CPU
Physical Characteristics	PCB Dimensions	5HP, 233.35 x 160 mm (9.2" x 6.3") (W x D)
	Weight	0.95kg without peripherals

Packetarium XL Blade Servers 1

High Performance Servers 2

Network Appliances 3

PCI Express Adapters 4

Network Switches 5

ATCA Blades & Integrated Systems 6

CPCI Boards & Enclosures 7

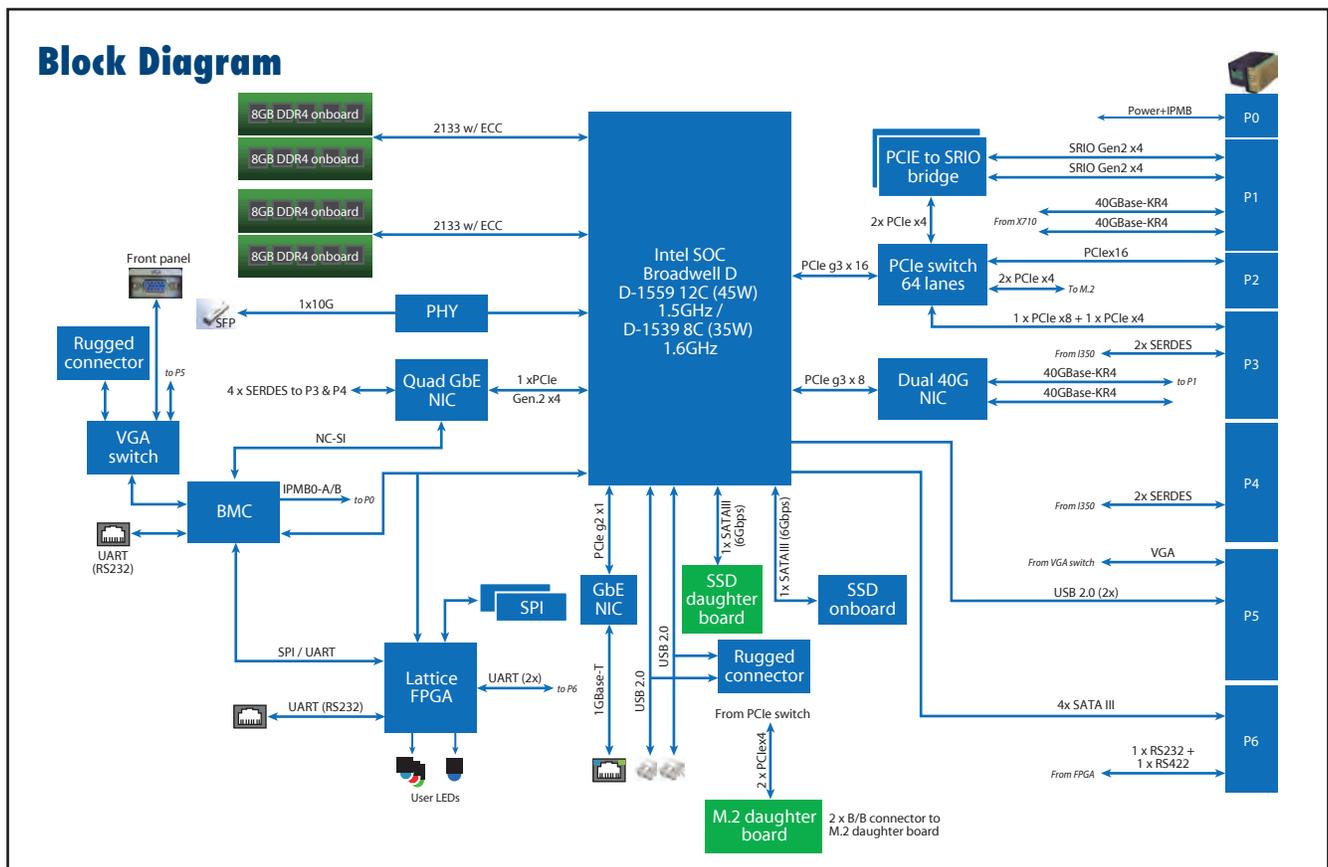
VPX Blades 8

Video Processing & IP Media Platforms 9

## Specifications (Cont.)

Environment	Operating (with 30 CFM airflow)		Non-operating
	Temperature	-40 ~ 55 °C	-55 ~ 105 °C
	Humidity	95% @ 40 °C, non-condensing	95% @ 60 °C, non-condensing
Compliance	Shock	VITA 47, OS2 VITA 47, OS1 (convection cooled)	
	Vibration	VITA 47, V2 (conduction cooled) 0.008 g <sup>2</sup> /Hz, 2 Grms, 5-500Hz (convection cooled)	
	Altitude	50,000ft @ -40 °C above sea level	
	VPX	OpenVPX (VITA 65), REDI (VITA 48), IPMI 2.0	
	Safety	FCC class A, CE, RoHS	
	EMC	FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386)	

## Block Diagram



Part Number	Ruggedized connector		Front panel				Main On-board Features	
	Pins	Function	Common connector		SFP+	VGA	CPU	Memory
MIC6315H1A4E-ES	36 (Default) 18 (Reserved)	UART; J-tag; VGA; 2 x USB2.0 UART; J-tag	2 x USB2.0	1 x RJ-45	1	1	Intel® XEON D-1559	32GB

## Ordering Information\*\*

Model number	Configuration
MIC6315H1A4E-ES	MIC-6315 high density computing blade with D-1559

\*: For the other configuration availability, please contact your local sales office.

\*\* : All specification listed above are preliminary, Advantech may modify them without notification because of the test result or business plan

VITA and OpenVPX Logo are trademarks of VITA

# MIC-6330

## 3U OpenVPX CPU Blade with Intel® Xeon® Processor E3v5 and E3v6 family



### Features

- Intel® Xeon® E3v5 and E3v6 Processor family
- Intel® CM236/ CM238 PCH
- Multiple display support
- OpenVPX MOD3-PAY-2F2U-16.2.3-3 profile compliant
- Onboard 16GB DDR4-2133 with ECC support
- Configurable PCIe x8 ports on Data Plane
- Two 1000Base-BX ports on Control Plane
- Optional I/O module for front panel access
- Onboard flash storage device



### Introduction

Based on the Intel® Xeon® E3 Lv5 and Lv6 embedded platform, the MIC-6330 builds on the success of Advantech's 6U VPX boards, and is the first 3U VPX product launched by Advantech. Together with the Intel® processor, the MIC-6330 offers intense computational ability in a very compact form factor. The MIC-6330 provides configurable connectivity (up to four ports) of PCI Express via the backplane to the highest performance mainstream peripherals and I/O cards, and vast I/O functions for extended interconnectivity and controllability. The MIC-6330 meets various computing needs, including vPro™ and workstation capabilities, by using the Intel® CM236/CM238 PCH. The MIC-6330 offers high storage capacity at up to SATA 6Gbps transfer speed. Four USB2.0 ports and one USB 3.0 port to the backplane fulfill requirements for extra I/O ports or storage, up to 5Gbps data rate. Four GbE ports (two ports configurable as SERDES) support system level IP connectivity, and the UART interfaces (RS-232/422/485 selectable) can be leveraged as an interface to legacy devices and consoles. Like Advantech's 6U VPX products, the MIC-6330 supports multiple displays, and the maximum resolution of the MIC-6330 is 4K, empowered by the Intel® integrated graphics engine. The MIC-6330 also offers a High Definition Audio to the backplane interface for media demands.

With the standard ruggedized convection cooled heatsink or the optional air-cooled heatsink, the MIC-6330 is tailored for harsh environmental applications and adaptable to various chassis designs. The industrial NAND Flash, and the soldered onboard DDR4 ECC memory chips are appropriate for a variety of vehicle applications for the maximum reliability.

The MIC-6330 is sophisticated and suitable for various purposes. An onboard X8D XMC site with PCIe x8 gen.3 connectivity can host high speed offload or I/O mezzanines for project-specific applications. For applications that need the maximum expandability, the XMC interface can be modified to add another DisplayPort and the 2 more UART. The optional front I/O module facilitates the development and qualification process, and also enables the possibility of the front panel access.

### Specifications

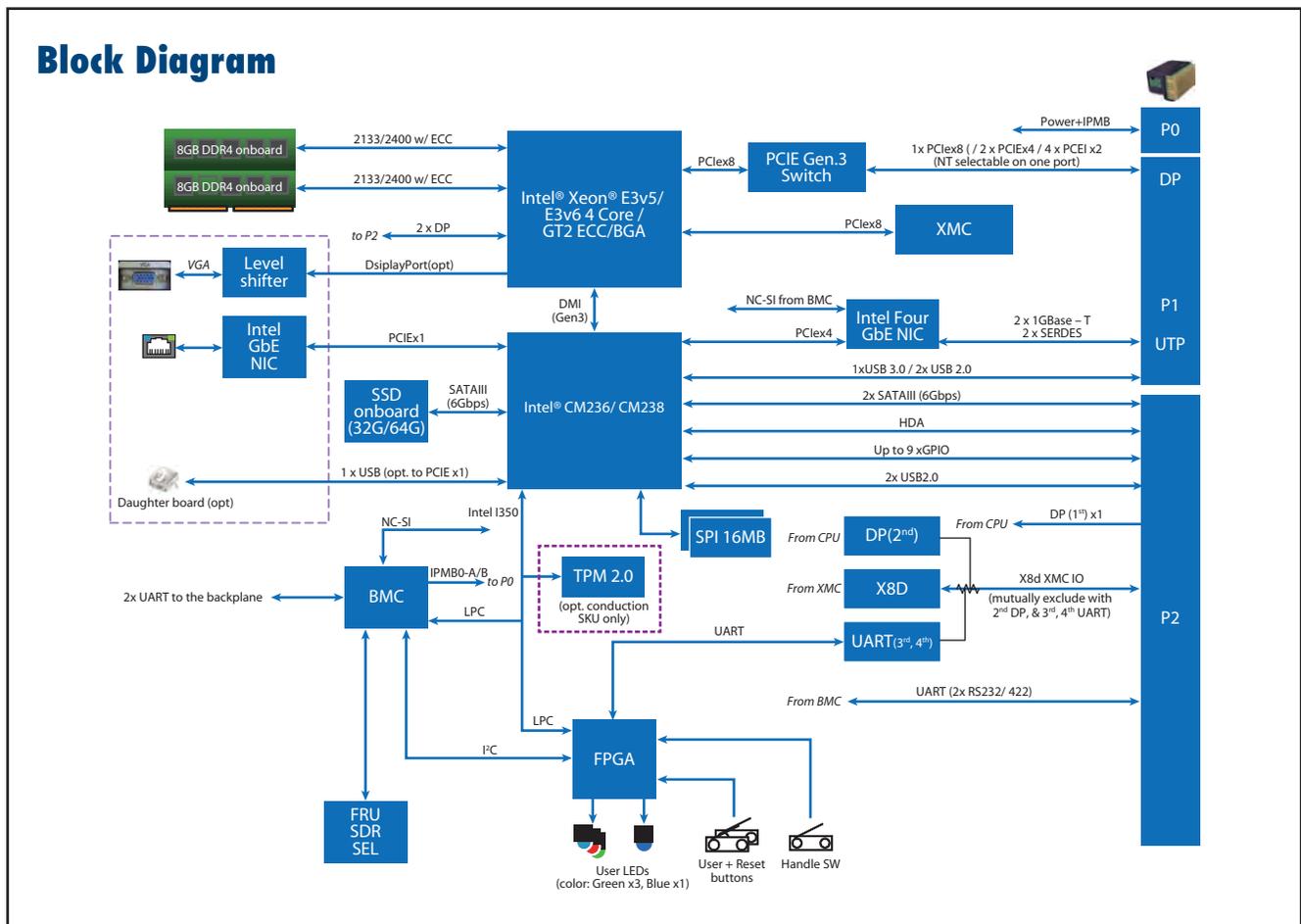
Processor System	CPU	Intel® E3-1505L v5/ v6
	Max. Speed	2.8 GHz
	Chipset	Intel® CM236/ CM238
	BIOS	Redundant AMI UEFI based 16MByte SPI flash
Memory	Technology	Dual bank DDR4 2133MHz w/ ECC/ 2400MHz w/ ECC (E3v6 family only)
	Capacity	16GB
VPX Interface	P1	1x PCIe x8 (NT Capable, configurable to 2 x PCIe x 4 or 4x PCIe x 2 from Gen.3 switch); 1 x USB 3.0; 2 x USB 2.0
	P2	2x 10/100/1000Base-T; 2x 1000Base-BX
	Option 1	2x SATA-III; DPx1; 2x USB 2.0; 2x UART (mode selectable via FPGA setting); 1 x HDA
	Option 2	2nd DisplayPort, 3rd, 4th UART
Graphics	Controller	X8D
Ethernet	Controller	Intel® HD Graphics P530/ P630
	Controller	Intel® i350-AM4 Quad Port Gigabit Ethernet Controller to backplane Intel® i210AT Single Port Gigabit Ethernet Controller to front panel
Front panel I/O module	Ethernet	1 x RJ-45 10/100/1000BASE-T
	USB	1x USB 2.0/3.0
	Display	VGA
Operating System	Compatibility	Linux (with the kernel 3.10 or above); Windows10, Windows 7*
Storage	Onboard Flash	64 GB SATA
Security	Trusted Platform Module	2.0
Power Requirement	Consumption	45W total power envelope with 25W CPU
Physical Characteristics	Dimensions	160.00 x 100.00 mm (6.3" x 3.95") (W x D), 5HP (H)
	Weight	0.54 kg without peripherals

- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- PCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

## Specifications (Cont.)

Environment (POR)	Operating		Non-operating
	Temperature	-40 ~ 70 °C (convection cooled) -40 ~ 85 °C (card edge, conduction cooled)	-55 ~ 105 °C
	Humidity	95%@40°C, non-condensing	95%@60°C, non-condensing
	Operation Shock	VITA 47, OS2	
	Vibration	VITA 47, V3	
	Altitude	50,00ft above sea level	60,000ft, -40°C above sea level
Compliance	VPX	OpenVPX (VITA 65), REDI (VITA 46.2)	
	Safety	FCC class A, CE, RoHS	
	EMC	FCC47 CFR Part15, Class A, CE Mark (EN55022/EN55024/EN300386)	

\*Will need to patch the proper driver



## Ordering Information

Model number	Configuration
MIC-6330-A1A4E	MIC-6330 with Intel® E3-1505Lv5, 64GB onboard flash, front I/O module
MIC-6330-A1C4E	MIC-6330 with Intel® E3-1505Lv5, 64GB onboard flash and TPM
MIC-6330-B2C4E	MIC-6330 with Intel® E3-1505Lv6, 64GB onboard flash, TPM and XMC site
MIC-6330-B3C4E	MIC-6330 with Intel® E3-1505Lv6, 64GB onboard flash, TPM and XMC site



VITA and OpenVPX Logo are trademarks of VITA

## Video Processing & IP Media Platforms

<b>Overview</b>		<b>9-1</b>
<b>Selection Guide</b>		<b>9-2</b>
<b>Video Servers &amp; Appliance</b>		
<b>VEGA-6301</b>	For 4K HEVC encoding and streaming applications	<b>9-6</b>
<b>VEGA-6304</b>	8Kp60 HEVC Broadcast Video Encoder	<b>9-8</b>
<b>VEGA-6311</b>	4K/UHD Professional Video Network Solutions	<b>9-9</b>
<b>VEGA-7000</b>	High Density 1RU Video Server: Multi-channel 4K acquisition with HEVC encode and Video over IP solution	<b>9-11</b>
<b>VEGA-7010</b>	1U High Density Video Server for Multi-channel 4K/8K HEVC Encoding and Decoding	<b>9-13</b>
<b>PCI Express Adapters</b>		
<b>VEGA-3300</b>	4Kp60 HEVC Broadcast Video Encoder Card	<b>9-14</b>
<b>VEGA-3301</b>	4Kp60 HEVC Broadcast Video Encoder Card	<b>9-15</b>
<b>VEGA-3304</b>	8Kp60 Real-time HEVC Encoder Card	<b>9-17</b>
<b>VEGA-3310</b>	4K HEVC/AVC Broadcast Video Encoding/Decoding/Transcoding Card	<b>9-19</b>
<b>VEGA-3311</b>	4K HEVC/AVC Broadcast Video Encoding/Decoding/Transcoding Card	<b>9-21</b>
<b>VEGA-3318</b>	8-ch 4K HEVC/AVC Transcoding Accelerator	<b>9-24</b>
<b>VEGA-4000</b>	Reconfigurable Video Content Intelligence Accelerator	<b>9-26</b>
<b>VEGA-4001</b>	Dual Xilinx Ultrascale+ FPGA Accelerator for Machine Learning and Artificial Intelligence	<b>9-27</b>
<b>VEGA-4002</b>	Dual Xilinx Ultrascale+ FPGA Accelerator for OTT Transcoding and Video Processing	<b>9-28</b>
<b>VEGA-550</b>	Reconfigurable Video Content Intelligence Accelerator	<b>9-29</b>
<b>Video Modules</b>		
<b>VEGA-2000</b>	1-Ch HEVC/H.264 Video Capture & Encode Module	<b>9-30</b>
<b>VEGA-2001</b>	4K HEVC/AVC Real-Time Encoder and Streaming Module	<b>9-31</b>

Please visit [www.advantech.com/networks-telecom/video](http://www.advantech.com/networks-telecom/video) for the latest product updates.





# Video Solutions

Advantech's Video Solutions Division develops broadcast quality, scalable video platforms for the top OEMs in the media industry. From ultra-light modules that can be embedded into portable cameras to high-density architectures for cloud media services, our VEGA video platforms provide an easy-to-use software framework supported by our software engineering team that simplifies their integration into your next generation video products.

## Unrivaled HEVC Performance

The new HEVC standard can bring many benefits to the media industry, reducing bit rates by 50% in average when compared to an equivalent quality stream encoded using AVC, but these improvements are achieved at the penalty of much higher computation complexity. Advantech's ultra-low power VEGA platforms enable real-time HEVC processing at up to 20x less power consumption than a software-only solution helping OEMs successfully address the challenges of 4K/8K media processing in a cost-effective manner.

### Choose Your Platform



**Application-Ready Server**

The VEGA 7000 Series of highly configurable video servers combines best video and IT practices within optimized density, power consumption, and functionality, off-the-shelf platforms that have been designed to efficiently scale throughput of high-density encoding and transcoding applications in live broadcast, OTT or cloud workflows.



**Compact All-in-One Appliance**

The VEGA 6000 4K HEVC and IP encoder and decoder appliances target power and space contained scenarios that still require best quality such as outside broadcasting or medical operating rooms. The appliances are 1U high, less than 270mm deep, and two can fit side by side in a standard 19" rack.



**Plug-and-Play PCI Express Accelerator**

The VEGA 3300 Series of 4K/8K encoding, decoding and transcoding cards enable real-time UHD HEVC processing in an ultra-low-power PCI Express format. Driven by the convergence of IT and media technologies, these compact plug-in adapters accelerate the heavy-lifting part of the media workflow significantly improving density, costs and time-to-market of a wide range of live UHD video solutions.



**Small Module for Portable Solutions**

The VEGA 2000 Series of HEVC encoder modules enable UHD live streaming over mobile networks and can be embedded into different portable solutions from self-broadcasting devices to professional camera systems. Measuring only 90mm by 100mm, the modules still pack in SDI and HDMI interfaces for video capture, an SD Card slot for local file storage, and streaming outputs via Ethernet or using a USB dongle.

## Flexible Video Acceleration

Advantech's VEGA 4000 Series of FPGA PCI Express cards have been designed to accelerate heavy-lifting video workloads that require a massive scale of parallel computing. The VEGA 4000 range of low latency, low power and programmable adapters are based on Xilinx's Virtix UltraScale+ FPGAs which have been widely chosen by developers to accelerate workflows such as video transcoding, deep learning, big data analytics and genomics thanks to their great signal processing bandwidth and breakthrough speeds.

Live OTT services leveraging Advantech VEGA 4000 re-programmable accelerators can optimize the use of compute resources pushing their performance-per-watt ratio while addressing evolving multi-codec needs as the demand for online streamed video content grows. Cloud-based Artificial Intelligence built on Advantech VEGA accelerators can leverage FPGA-as-a-Service models where machine learning architectures such as deep neural networks are trained in the cloud and trained models are deployed closer to end-users on accelerated AI edge platforms for real-time inferencing.

Packetarium XL Blade Servers	1
High Performance Servers	2
Network Appliances	3
PCI Express Adapters	4
Network Switches	5
ATCA Blades & Integrated Systems	6
CPCI Boards & Enclosures	7
VPX Blades	8
Video Processing & IP Media Platforms	9

# Selection Guide



Model		VEGA-2000	VEGA-2001	
Life Cycle		2020, Q4	2020, Q4	
Platform		Module	Module	
Video Inputs and Outputs	Channels (Max.)	1 (up to 1080p60)	1 (up to 4Kp60)/ 4 (up to 1080p60)	
	Video formats	Resolution	1920x1080 / 1280x720 / 720x576 / 720x480	3840x2160 / 1920x1080 / 1280x720
		Frame rate	60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p	60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p
	Chroma Sampling Format		4:2:2 / 4:2:0	4:2:2 / 4:2:0
	Bit Depth		8 bit	8 bit
	Input Interface		1x HDMI 1.4/ 1x SDI-3G	4 x SDI-3G or 1 x SDI-12G/ 1 x HDMI 2.0
	Output Interface		1x 1GbE ports / USB	1x 1GbE ports / USB
Video Coding	Video Encoding	Standard	H.265(HEVC)/H.264(AVC)	H.265(HEVC)/H.264(AVC)
		Bit Depth	8 bit	8 bit
		Chroma Subsampling	4:2:0	4:2:0
	Video Decoding	Standard	-	-
		Bit Depth	-	-
		Chroma Subsampling	-	-
VoIP	Connectivity	-	-	
	Standard Supported	-	-	
Audio	Channels (Max.)	-	-	
	Formats	AAC	AAC	
	Sampling Frequency	48K Hz	48K Hz	
	Sampling Bit Depth	16 bit	16 bit	
	Audio Connectors	Embedded from HDMI or SDI /Line-In	Embedded from HDMI or SDI /Line-In	
Feature	Operation System	Standalone with Embedded Linux	Standalone with Embedded Linux	
	Streaming Protocol	RTSP/RTMP/HLS/TS over IP	RTSP/RTMP/HLS/TS over IP	
	Management & Control Interface	Remote Web GUI interface	Remote Web GUI interface	
	Development Kits	-	-	
Module/ Card/System Characteristic	System Processor	-	-	
	System Memory	-	-	
	Storage	Micro SD card	-	
	Local Video Output	--	1x HDMI 2.0	
	Network Interface	1x GigE	1x GigE	
Power	USB Port	1x USB 2.0	2x USB 2.0	
	Power Input	DC 12V	DC 12V	
Mechanical	Power Consumption	<5W	<15W	
	Dimensions	Small form-factor (90 x 100 mm <sup>2</sup> )	90 x 100 x 16 mm	



Model	VEGA-550	VEGA-4000	VEGA-4001	VEGA-4002
Life Cycle	5 Years		5 Years	
Platform	4 x Xilinx Zynq® UltraScale+ ZU7EV MPSoC FPGA	Xilinx Virtex® UltraScale+ XCVU9P FPGA	2 x Xilinx Virtex® UltraScale+ XCVU9P FPGA	
DDR	8GB/64bit DDR4 2400 (PS side) and 8GB/64bit DDR4-2666 (PL side) per ZU7EV	4-ch of 4GB DDR4-2400 64b w/ECC	4-ch of 4GB DDR4-2400 64b w/ECC per FPGA device	
Programmable Functionality	System Logic Cells (K)	504 per FPGA device	2, 586 per FPGA device	
	CLB Flip-Flops (K)	461 per FPGA device	2, 364 per FPGA device	
	CLB LUTs (K)	230 per FPGA device	1, 182 per FPGA device	
	DSP Slices	1, 728 per FPGA device	6, 840 per FPGA device	
	Memory	Total Block RAM / URAM(Mb) : 11.0 / 27.0	N/A	
I/O Interface	PCIe Gen 3 x16, 1 xRJ45 GbE port to FPGAO	PCIe Gen 3 x16		
Feature	Integrated video codec unit(VCU) up to 4-ch 4Kp60	-	-	-
power consumption	<150W	< 75W	< 225W	< 150W
Mechanical	Full height, 10.5" length form-factor	Low Profile form-factor	Full height, 10.5" length form-factor	Full height, 10.5" length form-factor

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

# Selection Guide



Model		VEGA-3300	VEGA-3301	VEGA-3304	VEGA-3310	VEGA-3311	
Life Cycle		-	-	-	-	-	
Platform		PCI Express Card	PCI Express Card	PCI Express Card	PCI Express Card	PCI Express Card	
Video Inputs and Outputs	Channels (Max.)	1 (up to 4Kp60)/ 4 (up to 1080p60)	1 (up to 4Kp60)/ 4 (up to 1080p60)	1 (up to 8Kp60) or 4 (up to 4Kp60) / 16 (up to 1080p60)	2 (Up to 4Kp60) / 8 (Up to 1080p60)	1 (up to 4Kp60)/ 4 (up to 1080p60)	
	Video formats	Resolution	3840x2160/1920x1080/ 1280x720	3840x2160/1920x1080/ 1280x720	7680x 4320 or 3840x2160/1920x1080/ 1280x720/720x480	3840x2160/1920x1080/ 1280x720/720x480	3840x2160/1920x1080/ 1280x720/720x480
		Frame rate	60p/59.94p/50p/30p/ 29.97p/25p/24p	60p/59.94p/50p/30p/ 29.97p/25p/24p	60p/59.94p/50p/30p/ 29.97p/25p/24p	60p/59.94p/50p/30p/ 29.97p/25p/24p/59.94i/ 50i	60p/59.94p/50p/30p/ 29.97p/25p/24p/59.94i/ 50i
	Chroma Sampling Format		4:2:2/4:2:0	4:2:2/4:2:0	4:2:2/4:2:0	4:2:2/4:2:0	4:2:2/4:2:0
	Bit Depth		8bit/10bit	8bit/10bit	8bit/10bit	8bit/10bit	8bit/10bit
	Input Interface		-	1 x HDMI 2.0/ 1 x Display Port 1.2/ 4 x SDI-3G	16 x SDI-3G	-	4x SDI-3G or 1x SDI-12G 2x 10GbE (VEGA-3311-I)
	Output Interface		-	-	-	-	4x SDI-3G or 1x SDI-12G (VEGA-3311-S)
Video Coding	Video Encoding	PCle	PCle Gen2 x8	PCle Gen2 x8	PCle Gen3 x16	PCle Gen3 x8	
		Standard	H.265(HEVC)	H.265(HEVC)	H.265(HEVC)	H.265(HEVC)/ H.264 (AVC)	H.265(HEVC)/ H.264 (AVC)
		Bit Depth	8bit/10bit	8bit/10bit	8bit/10bit	8bit/10bit	8bit/10bit
	Video Decoding	Chroma Subsampling	4:2:2 / 4:2:0	4:2:2 / 4:2:0	4:2:2 / 4:2:0	4:2:2 / 4:2:0	4:2:2 / 4:2:0
		Standard	-	-	-	H.265(HEVC)/ H.264 (AVC)	H.265(HEVC)/ H.264 (AVC)
		Bit Depth	-	-	-	8bit/10bit	8bit/10bit
Chroma Subsampling		-	-	-	4:2:2 / 4:2:0	4:2:2 / 4:2:0	
VoIP	Connectivity	-	-	-	-	2x 10GbE (SFP+ cages)	
	Standard Supported	-	-	-	-	SMPTE 2022-6/-7 & VSF TR-03-04 w/ AES67 audio & SMPTE 2059 sync	
Audio	Channels (Max.)	-	4	-	-	8-ch / 16-ch	
	Formats	-	PCM	-	-	-	
	Sampling Frequency	-	48K Hz	-	-	48KHz / 96KHz	
	Sampling Bit Depth	-	16 bit	-	-	16 bit	
Audio Connectors		-	-	-	-	-	
Feature	Operation System	Windows/ Linux	Windows/ Linux	Linux	Windows/ Linux	Windows/ Linux	
	Streaming Protocol	-	-	-	-	RTSP/RTP/RTCP over UDP	
	Management & Control Interface	-	-	-	-	-	
	Development Kits	FFmpeg, Microsoft DirectShow	FFmpeg, Microsoft DirectShow	FFmpeg	FFmpeg, Microsoft DirectShow	FFmpeg, Microsoft DirectShow	
Module/ Card/System Characteristic	System Processor	-	-	-	-	-	
	System Memory	-	-	-	-	-	
	Storage	-	-	-	-	-	
	Local Video Output	-	-	-	-	-	
	Network Interface	-	-	-	-	-	
USB Port		-	-	-	-	-	
Power	Power Input	-	-	-	-	-	
	Power Consumption	<15W	<35W	<70W	<21W	<21W	
Mechanical	Dimensions	PCI Express Half Length Half Height 167.65 x 56 mm	PCI Express Half Length Full Height 167.65 x 111.15 mm	PCI Express 3/4 length Full Height 234 x 111.15 x 41.19 mm	PCI Express Half Length Full Height 167.65 x 111.15 mm	PCI Express Half Length Full Height 167.65 x 111.15 mm	



VEAG-3318	VEGA-6301	VEGA-6304	VEGA-6311	VEGA-7000 2020, Q4	VEGA-7010 2023, Q4
PCI Express Card	Appliance	Appliance	Appliance	High-Density HEVC Contribution or Distribution Encoder/ Transcoder	High-Density HEVC Contribution or Distribution Encoder/ Transcoder
8 (up to 4Kp60)/ 32 (up to 1080p60)	1 (up to 4Kp60)/ 4 (up to 1080p60)	1 (Up to 8Kp60)	1 (up to 4Kp60)	Up to 8-ch 4Kp60 AVC/ HEVC Video Transcode/ 4-ch 4Kp60 HEVC Video Encode	1-ch 8Kp60 HEVC encoding / 4-ch 4Kp60 HEVC/AVC transcoding
3840x2160/1920x1080/ 1280x720/720x480	3840x2160/1920x1080/ 1280x720	7680x4320	3840x2160/1920x1080/ 1280x720/720x480/ 720x576	3840x2160/1920x1080/1280x720/720x480	7680x4320 or 3840x2160/1920x1080/ 1280x720/720x480
60p/59.94p/50p/ 30p/29.97p/25p/ 24p/59.94i/50i 4:2:2/4:2:0 8bit/10bit	60p/59.94p/50p/ 30p/29.97p/25p 4:2:2/4:2:0 8bit/10bit	60p/59.94p/50p/30p/ 29.97p/25p/24p 4:2:2/4:2:0 8bit/10bit	50/59.94Hz 4:2:2/4:2:0 8bit/10bit	60p/59.94p/50p/30p/ 29.97p/25p/24p 4:2:2/4:2:0 8bit/10bit	60p/59.94p/50p/30p/ 29.97p/25p/24p 4:2:2/4:2:0 8bit/10bit
-	1x SDI-12G or 1x HDMI2.0 or 4x SDI-3G	4 x SDI-12G	1 x SDI-12G/3G, 3 x SDI-3G, 1 x HDMI output	16x SDI-3G, 4x HDMI 2.0, 4x SDI -12G, File-based SATA III SSDs	8x SDI-3G, 2x HDMI 2.0, 2x SDI -12G, 2x 10GbE
PCIe Gen3 x16	-	-	-	-	-
-	-	2 x GbE	4 x 3G/HD/SD-SDI (or 1 x 12G SDI), 1 x HDMI output, 2 x GbE RJ45 port, 2 x 10GbE SFP+ modules	2x 10GbE/ 4x 1GbE ports, File-based storage	4x 1GbE ports/ 4x 10GbE ports
PCIe Gen3 x16	-	PCIe Gen3 x16	-	-	-
H.265(HEVC)/ H.264(AVC) 8bit/10bit 4:2:2 / 4:2:0	H.265(HEVC) 8bit/10bit 4:2:2 / 4:2:0	H.265(HEVC) 8bit/10bit 4:2:2 / 4:2:0	H.265(HEVC)/ H.264 (AVC)/ MPEG-2 10bit 4:2:2	H.265(HEVC) 8bit/10bit 4:2:2 / 4:2:0	H.265(HEVC) 8bit/10bit 4:2:2 / 4:2:0
H.265(HEVC)/ H.264 (AVC) 8bit/10bit 4:2:2 / 4:2:0	-	-	H.265(HEVC)/ H.264 (AVC)/ MPEG-2 10bit 4:2:2	-	-
-	2x 10GbE (SFP+ cages)	-	2x 10GbE (SFP+ cages)	-	2x 10GbE (SFP+ cages)
-	ST 2022-5/6/7, ST 2059	-	ST 2022-5/6/7, ST 2059	-	SMPTE 2022-5/-6/-7 & VSF TR-03-04 w/ AES67 audio & SMPTE 2059 sync, Optional TICO or Sony LLVC compression
-	16	22.2	8	16	8
-	PCM	PCM	MPEG-2 AAC LC, MPEG-4 AAC LC, MPEG-4 HE-AAC V2, MPEG-4 AAC-ELD	PCM/ MPEG1 Layer2 / AAC-LC / HE-AAC v1, v2	PCM/ MPEG1 Layer2/ AAC-LC / HE-AAC v1, v2
-	48KHz / 96KHz 16 bit	48K Hz	-	48KHz / 96KHz 16-bit	48KHz / 96KHz 16-bit
-	Embedded from HDMI or SDI	Embedded from SDI	Embedded from HDMI or SDI	Embedded from HDMI or SDI	Embedded from HDMI or SDI
Linux	Linux	Linux	Linux	Windows/ Linux	Windows/ Linux
-	RTP/MPEG/JDP/IP	Streaming Protocol HLS/RTP/TS/RTMP over TCP,UDP	RTP, UDP, Unicast, Multicast (IGMPv3/IPv4, MLDv2/IPv6)	SPTS (Single Program Transport Stream), UDP / RTP / RTSP / RTMP / HLS / MPEG-DASH	SPTS (Single Program Transport Stream), UDP / RTP / RTSP / RTMP / HLS / MPEG-DASH
-	Local or remote Control GUI interface	-	Local or remote Control GUI interface	GUI for video workflow control	GUI for video workflow control
FFmpeg	FFmpeg, Microsoft DirectShow	FFmpeg	FFmpeg, Microsoft DirectShow	FFmpeg	FFmpeg
-	i7-6820EQ, i5-6440EQ, i3-6100E	i7-7700	i7-6820EQ, i5-6440EQ, i3-6100E	Broadwell D-1548	E3-1245v6
-	8GB Standard, up to 16Gb on request	16Gb Standard	8GB Standard, up to 16GB	4 x DDR4 R-DIMM up to 64GB	2 x DDR4 w/ ECC up to 32GB
-	32GB mSATA	2 x 1T Swappable HDD	M.2 SSD	4 bays of SATA III SSD, RAID 0 (option)	4 bays of SATA III SSD, RAID 0 (option)
-	1 x HDMI 2.0	VGA	1 x HDMI 2.0	1 x DisplayPort	1 x VGA port
-	2 x GigE port	2 x 1GbE port	2 x GigE port	2 x 10GbE SFP+ port / 4 x 1GbE RJ45 port	2 x 1 GbE RJ45 port
-	2 x USB3.0 port	2 x USB 3.0 port	2 x USB3.0 port	4 x USB 3.0 port	4 x USB 3.0 port
-	DC12V	AC Input (100-240V)	DC12V	AC 120-240V/ 5.0A-2.5A/50-60Hz	AC 100-240V/8-4A/ 50-60HZ
<65W	75W based on Intel® Core™ i3 SOM	<270W for 8K encoding	-	< 400W for 4-ch 4K Acquisition & HEVC Encode	< 400W for 4-ch 4K Acquisition & HEVC Encode
PCI Express 10.5" Length Full Height, double-deck / 266.7 x 111.15 mm	214 x 289.7 x 42.8 mm	370 x 350 x 70 mm	214 x 300 x 42.8 mm	1U standard 19 wide 445 x 500 x 44 mm	1U standard 19 wide 445 x 550 x 44 mm

- Packetarium XL Blade Servers 1
- High Performance Servers 2
- Network Appliances 3
- PCI Express Adapters 4
- Network Switches 5
- ATCA Blades & Integrated Systems 6
- CPCI Boards & Enclosures 7
- VPX Blades 8
- Video Processing & IP Media Platforms 9

# VEGA-6301

For 4K HEVC encoding and streaming applications



## Features

- Compact Video Appliance with real-time HEVC 4Kp60 encoding capabilities
- 1U high & half rack mountable / standalone design allow easy user mounting different combinations of appliance in a small space
- Range of UHD-ready video input formats such as quad 3G-SDI, high speed 12G-SDI, and HDMI 2.0
- UHD-ready Video over IP connections in addition to standard video connectivity
- HEVC Encoder supports high quality 10bit 4:2:2 modes @ 4Kp60 or 4 x 1080p60
- Low power consumption
- Easy to use SDKs and remote web based configuration interface

## Introduction

The VEGA-6301 application ready appliance is a small, low power video processing platform, cramming professional video acquisition and capture interfaces, optional Video over IP terminations, a real-time 4Kp60 10bit HEVC encoder, and a full capability Intel® Core™ series processing host into a half rack-width, short depth enclosure. It allows users to capture and adapt live video at up to 4K/UHD resolution from SDI or HDMI feeds and then encode for streaming to content delivery or distribution networks by using the latest hardware HEVC compression technology. A software upgrade option can enable live Video over IP capture and playout, allowing users to support standards like SMPTE 2022-6, Sony IP Live Production System, and AIMS/VSF recommendations with the TICO mezzanine codec. Compressed video can be streamed over a redundant Gigabit Ethernet connection, or a USB connected wireless access dongle. The application development environment is the same Linux or Windows based SDK supported by the VEGA 3000 series PCI Express adapter range, allowing extra deployment scalability options.

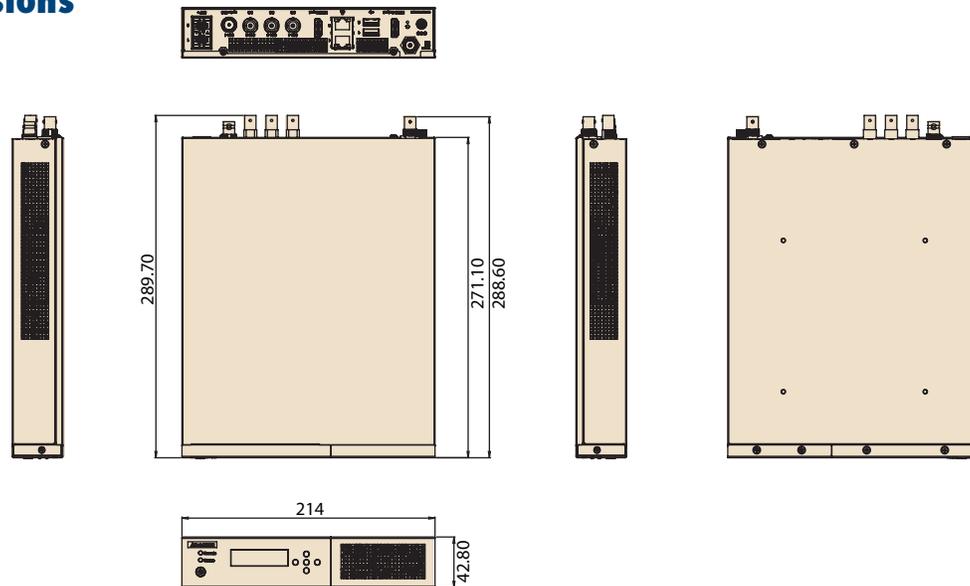
## Specification

		VEGA-6301
Video Inputs/Output	Channels/interface	1x 12G-SDI or 1x HDMI2.0, up to 4Kp60 10bit YUV Or 4x 3G-SDI, each up to 1080p60 10bit YUV
	SDI Video formats	4K / 3840x2160: 60p / 59.94p / 50p / 30p / 29.97p / 25p 1920x1080: 60p / 59.94p / 50p / 30p / 29.97p / 25p and 60i / 59.94i / 50i 1280x720: 60p / 59.94p / 50p / 30p / 29.97p / 25p 720x576: 50i and 25p 720x486: 59.94i and 29.97p
Hardware Video Compression	Compression	HEVC (H.265)
	HEVC profile	Main / Main 10
	HEVC Tier	Main / High
	HEVC Level	HEVC Level 5.1
	Bitrate in 4K format	3Mbps ~ 300Mbps
	Bit Depth	8 / 10 bits
	Chroma Sampling Format	4:2:2 & 4:2:0
	Bit Rate Control	CBR / VBR
Video-Over-IP option	Elementary Stream	Yes
	Connectivity	Redundant 10GbE (SFP+ cages)
	Standards Supported*	ST 2022-5/6/7, ST 2059
Audio	Channels	16
	Format	PCM
	Operation mode	Stereo
	Sampling Frequency	48KHz
	Sampling Bit Depth	16 bits
	Connectors	Embedded from HDMI or SDI

- Packetarium XL Blade Servers **1**
- High Performance Servers **2**
- Network Appliances **3**
- PCI Express Adapters **4**
- Network Switches **5**
- ATCA Blades & Integrated Systems **6**
- CPCI Boards & Enclosures **7**
- VPX Blades **8**
- Video Processing & IP Media Platforms **9**

## Dimensions

Unit: mm



## Specifications (Cont.)

Other Features	Frame Rate & Resolution Control	Yes	
	Encoding Control & Manipulation	Yes	
	Full-feature API available	Yes – local using FFMPEG or low level SDK	
	Dual Encoding	Yes	
	GOP Definition	I, IP, IPB, IBBP, IBBBP	
	Ancillary Data & VBI	Yes	
	Operating System	Linux Kernel 4.4.0 (64-bit) – Ubuntu 16.04LTS	
	Development Assistance	FFmpeg plugins Microsoft DirectShow support	
Management & Control Interface	Local or remote Control GUI interface		
System Characteristics	System Processor	(6 <sup>th</sup> Gen. Intel®) i7-6820EQ, i5-6440EQ, i3-6100E	
	Memory	8GB Standard, up to 16GB on request	
	Storage	32GB mSATA for OS, program, local data and cache	
	Local Video Output	1x HDMI 2.0 (from CPU)	
	Network Interface	2x GigE port with separate NICs	
	USB port	2x USB3.0 port	
	Power & Reset Buttons	Yes (with power on Indicator)	
	LCM & LED Indicators	Configurable 2x LED indicators Configurable LCD display with 5-way control button	
	Power Consumption	75W based on Intel® Core™ i3 SOM	
	Power Input	DC12V	
System Dimension	(W) x (H) x (D): 214 x 42.8 x 289.7 mm		

\* Video over IP support can be added as a firmware upgrade to the standard platform. Not all standards will be supported at first release. Contact your Advantech representative to confirm.

## Ordering Information

Model	Description
VEGA-6301E3-3EAE	VEGA-6301 Encoder with SOM-5897C3-U7A1E, i3-6100E, 32GB mSATA, 8GB DDR3 RAM, AC/DC power adaptor without Video-over-IP features
VEGA-6301E5-3EAE	VEGA-6301 Encoder with SOM-5897C5-U7A1E, i5-6440EQ, 32GB mSATA, 8GB DDR3 RAM, AC/DC power adaptor without Video-over-IP features

# VEGA-6304

## 8Kp60 HEVC Broadcast Video Encoder

Preliminary



### Features

- 8Kp60 HEVC real-time encode compact encoder platform
- I, P & B-frame, 4:2:2 sampling & 10-bit color
- 2SI & slice-mode encoding support
- 4-ch SDI-12G inputs with 22.2-ch audio support
- Intel i7-7700 CPU with DDR4-2400 16GB memory
- 2 x hot swappable SATA3 HDD storage bays
- Portable size with flexibility for rack-mount

### Introduction

The VEGA-6304 is the first 8Kp60 Real Time HEVC Encoder enable real-time, professional-grade HEVC video processing at much less power consumption than a software-only solution. This application ready appliance is a portable size system with flexibility for rack-mount. VEGA-6304 equipped with user friendly application and interface so it allows users easy to capture and operate 8K encoding and streaming. 1-ch 8K Video input are supported to real time encoding at 10 bit colour depth with HDR support and 4:2:2 chroma subsampling. Aside from video compression, VEGA-6304 offers 22.2 audio channels acquisition by SDI interface.

### Specifications

Video Input	Channel	1 (up to 8Kp60, 8bit/10bit, YUV)	
	Video Formats	8K	
	Frame Rate	BNC (12G-SDI) Interface	8K / 7680x4320: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p
		PCI Express Interface	8K / 7680x4320: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p
	Chroma Sampling Format	4:2:2 / 4:2:0	
Interfaces	PCI express Gen3 x16 / SDI-12G		
Video Compression	HEVC Profile	Main / Main 10	
	HEVC Tier	Main / High	
	HEVC Level	HEVC Level 5.1	
	Bitrate 8K format	60 Mbps~300 Mbps	
	Bit Depth	8 / 10	
	Bit Rate Control	CBR / VBR	
	Elementary Stream	Yes	
Audio	Audio Interface	SDI	
	Audio Channel	22.2	
	Format	PCM	
	Audio Frequency	48KHz	
Other Features	Streaming Protocol	Streaming Protocol HLS/RTP/TS/RTMP over TCP, UDP	
	Operating System	Linux Kernel 4.4.0 (64-bit) – Ubuntu 16.04LTS	
	Management & Control Interface	Management & Control Interface	
	GOP Structure	Hierarchical IBFF	
Physical Features	Network Interface	2 x GigE port (10/100/1000 Mbps)	
	USB port	2 x USB3.0 port	
	LCM& LED Indicator	Yes	
	Power Consumption	270W	
	Power Input	AC Input (100-240V)	
	Dimension	370 x 350 x 70 mm	

### Ordering Information

Part Number	Description
	Not available for order now

# VEGA-6311

## 4K/UHD Professional Video Network Solutions

Preliminary



### Features

- 4K/uhd multi-format codec
- Contribution grade performance
- Flexible video connectivity
- Small form factor
- Ready for the ip-connected future

### Introduction

The VEGA-6311 is a video encoder/decoder platform that uses H.265/HEVC high-efficiency video encoding technology to enable high quality 4K/UHD signal transmission in professional contribution applications, and all in a low-power half-1U chassis.

### Features

#### 4K/UHD MULTI-FORMAT CODEC

VEGA-6311 features the latest technology from Socionext capable of real-time encoding and decoding of H.265/HEVC, H.264/AVC and MPEG2 video and audio at up to 4K/UHD resolution and 60fps.

#### POWERFUL LOCAL CPU

A COM Express Module with a choice of 6th Generation Intel® Core™ CPUs provides intense graphics performance and multitasking capabilities with HDMI display output and 2 x USB connections.

#### CONTRIBUTION GRADE PERFORMANCE

The encoder/decoder subsystem supports HEVC Main 10 and Main 422 10 profiles (10bit depth 4:2:2 chroma subsampling) for the best possible video quality on the streaming link. Low latency modes add to the appeal for real-time sports action at 60fps.

#### FLEXIBLE VIDEO CONNECTIVITY

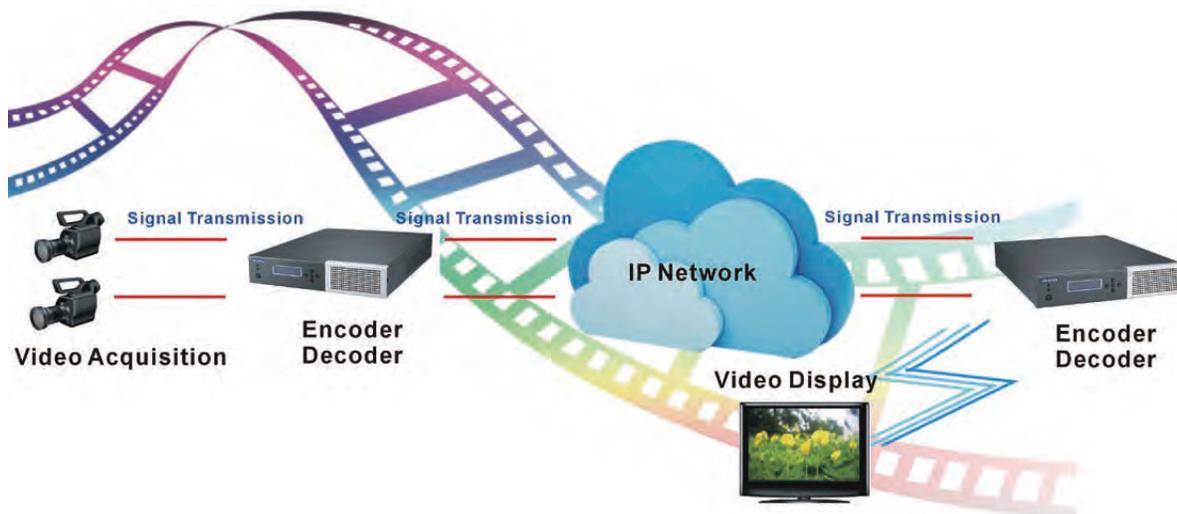
The VEGA-6311 offers the latest in video connectivity. In addition to quad 3G-SDI video inputs and ASI connections, it supports a single 12G-SDI input for latest professional 4K/UHD cameras and accessories.

#### SMALL FORM FACTOR

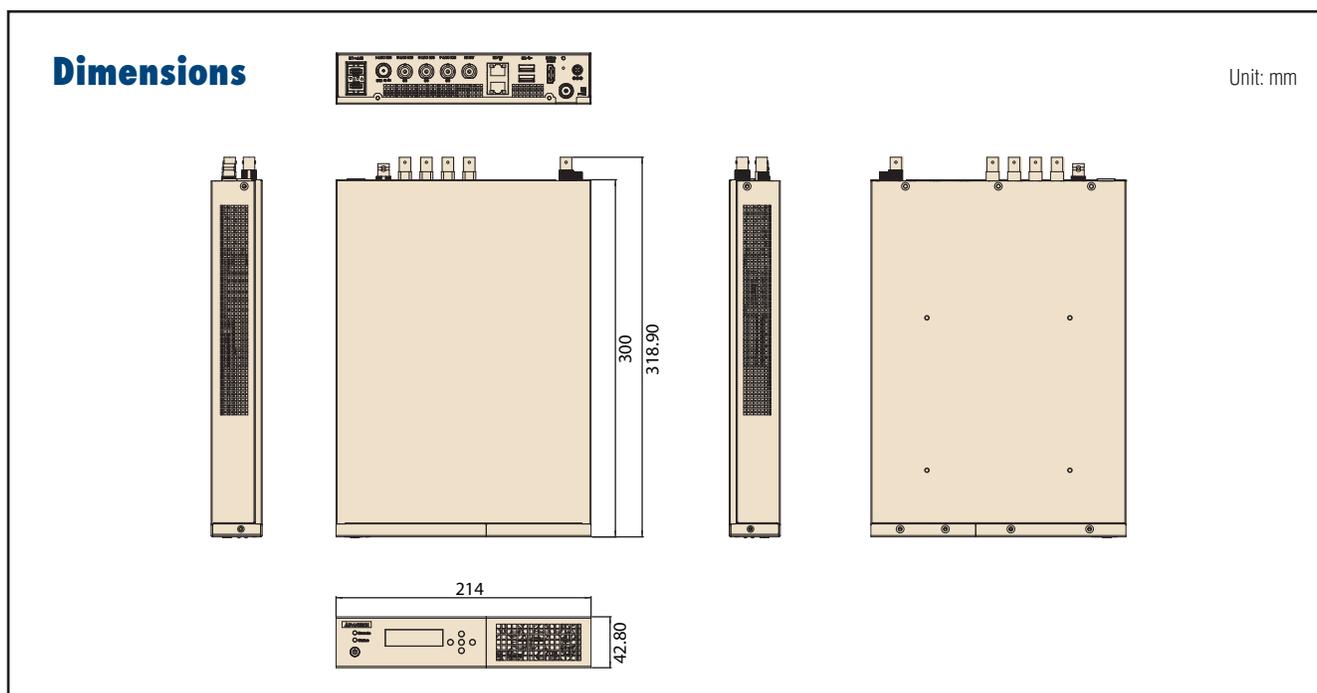
The Half-1U chassis is designed to support flexible operational deployment. Only half the width of a standard rack mount 1U chassis and consuming less than 100W power, VEGA-6311 can bring 4K/UHD performance into many space and power constrained applications.

#### READY FOR THE IP-CONNECTED FUTURE

The move to IP is a significant trend in the broadcast industry and VEGA-6311 is ready! It is capable of supporting the latest Video over IP streaming standards with dual 10Gigabit Ethernet links for SMPTE 2022/2110 Media over IP terminations.



- 1 Packetarium XL Blade Servers
- 2 High Performance Servers
- 3 Network Appliances
- 4 PCI Express Adapters
- 5 Network Switches
- 6 ATCA Blades & Integrated Systems
- 7 CPCI Boards & Enclosures
- 8 VPX Blades
- 9 Video Processing & IP Media Platforms



## Specifications

System Processor	i7-6820EQ, i5-6440EQ, i3-6100E
Operating System	Windows, Linux
Video Coding	<p>H.265/HEVC</p> <ul style="list-style-type: none"> <li>Profile: Main422 10, Main 10, Main</li> <li>Level: 5.1, 4.1, 4.0, 3.0</li> <li>Resolution (Frequency): 2160p x 4096 (50/59.94Hz), 1080p x 1920 (50/59.94Hz), 1080i x 1920 (50/59.94Hz), 720p x 1280 (50/59.94Hz), 480i x 720 (59.94Hz), 576i x 720 (50Hz)</li> </ul> <p>H.264/MPEG-4 AVC</p> <ul style="list-style-type: none"> <li>Profile: High422, High, Main</li> <li>Level: 4.2, 4.0, 3.0</li> <li>Resolution (Frequency): 1080p x 1920 (50/59.94Hz), 1080i x 1920 (50/59.94Hz), 720p x 1280 (50/59.94Hz), 480i x 720 (59.94Hz), 576i x 720 (50Hz)</li> </ul> <p>MPEG-2</p> <ul style="list-style-type: none"> <li>Profile: 422, High</li> <li>Level: High, Main</li> <li>Resolution (Frequency): 1080i x 1920 (50/59.94Hz), 720p x 1280 (50/59.94Hz), 480i x 720 (59.94Hz), 576i x 720 (50Hz)</li> </ul>
Audio Coding	MPEG-2 AAC LC, MPEG-4 AAC LC, MPEG-4 HE-AAC V2, MPEG-4 AAC-ELD 8ch, 5.1ch
Ancillary Data	SMPTE 2038, SMPTE 334, SMPTE RD 11, CEA-608/708, ARIB STD-B40
Streaming Protocol	RTP, UDP, Unicast, Multicast (IGMPv3/IPv4, MLDv2/IPv6)
Error Correction (IP)	FEC, ARQ, SMPTE 2022-1
Audio & Video I/F	4 x 3G/HD/SD-SDI (or 1 x 12G SDI) 1 x HDMI output 2 x GbE RJ45 port 2 x 10GbE SFP+ modules for ST2022/ST2110 I/F
Streaming I/F	2 x 10BASE-T/100BASE-TX/1000BASE-T (Stream & Control) 1 x DVB-ASI input
Time Sync.	Bi-level or Tri-level
USB Port	2 x USB3.0 port
PCIe Bus	Gen3 x 8
Storage	M.2 SSD
Misc. Functions	File reproduction
Dimensions/Weight	214 (W) x 281 (D) x 42.8 (H) mm/Approx. 1.8kg
Temp/Humidity	0 ~ 45°C/20 ~ 90RH (No condensation)

\* The specifications are subject to change without notice.

# VEGA-7000

## High Density 1RU Video Server: Multi-channel 4K acquisition with HEVC encode and Video over IP solution



### Features

- 1U scalable & versatile video server w/ optional support for:
  - Multi-channel UltraHD real-time HEVC, AVC & MPEG-2 encode, decode & transcode
  - Wide range of resolutions from SD to UltraHD (4K/8K) & High Frame Rate
  - Video-over-IP SMPTE-2022, Sony IP Live & TICO technology, w/ SMPTE-2059 synchronization
  - SDI-3G/12G, HDMI 2.0 & DP 1.2 video inputs
  - Multiple 10Gb & 1Gb IP Ethernet ports for streaming
- VEGA Media Flow SDK Package:
  - GUI for video workflow control
  - RESTful API
- Robust and low power host system:
  - Redundant system image, fan, and PSU
  - 4 SATA3 storage bays & 4 USB3 ports
  - DP & console port

### Introduction

A highly scalable and flexible video server platform for enabling multi-channel UltraHD, FullHD and mobile video acquisition, processing, recording and streaming, VEGA-7000 delivers unprecedented superiority of broadcasting quality and channel-density within a standard IT 1U rack-mount system with low power budget.

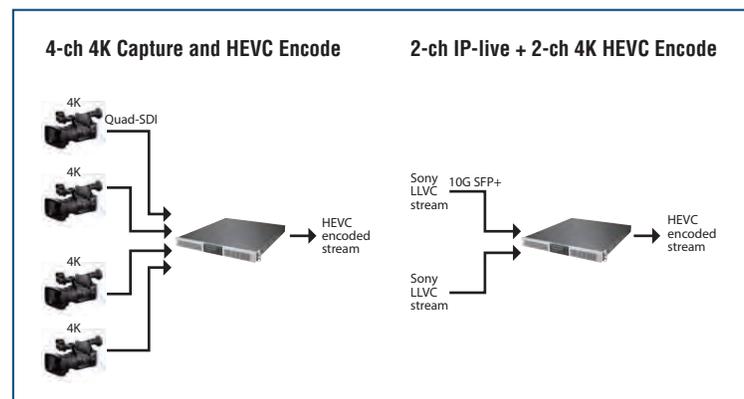
VEGA-7000 supports advanced video codecs including HEVC/H.265, AVC/H.264 and MPEG-2 for various video processing applications such as encoding, decoding and transcoding. The acquisition option in VEGA-7000 also possesses the capability to sink the video source from SDI-3G, HDMI and DisplayPort inputs for real-time video content capture. As the emerging transition from existing SDI cable to IP network infrastructure is well received in broadcasting industry for video transport, VEGA-7000 is equipped with the configurations for supporting video-over-IP functions via SMPTE-2022, Sony IP Live and intoPIX TICO standards for streaming video content in raw or lightweight compression format with low-latency delay. The broadcasting quality of sampling scheme (ex. 4:2:2) and the deep-color (ex. 10-bit) picture can be manipulated by VEGA-7000 with 60 frames per second for resolutions ranging from low 480p to UltraHD 4K.

The future 8K, HFR and HDR preprocessing configurations will also be available later for system upgrade. With the graphic and web based user interface, VEGA-7000 offers friendly and efficiently management and control of the video flows to accommodate various usage models for maximum flexibility and productivity. The RESTful software application interface from VEGA-7000 also facilitates the system integration with other functions in user site. The IT based system architecture in VEGA-7000 ensures the leverage of open and most up-to-date technology and expansion being effortless and seamless.

### Application

- Live UltraHD Content Creation, Processing, Recording & Streaming
- Over-the-Top (OTT) Video
- LTE/5G Broadcast & Mobile Video
- CDN (Content Delivery Network)
- Video-on-Demand (VOD)
- IPTV
- Web Content Provider
- Web Video Social Media
- Medical Imaging

### Suggested Configurations



Packetarium XL Blade Servers	1
High Performance Servers	2
Network Appliances	3
PCI Express Adapters	4
Network Switches	5
ATCA Blades & Integrated Systems	6
CPCI Boards & Enclosures	7
VPX Blades	8
Video Processing & IP Media Platforms	9

## Preliminary Specification

Specification	Suggested Config. Models	4-ch 4K Acquisition & HEVC Encode/Transcoder	2-ch 4K Video over IP and 2-ch 4K Acquisition & HEVC Encode/Transcoder
Video Inputs and Outputs	Channel Counts (Max.)	Up to 8-ch 4Kp60 AVC/HEVC Video Transcode/4-ch 4Kp60 HEVC Video Encode	2-channel LLVC 4Kp60, 10bit, 2-channel 4Kp60 acquisition, 8bit/10bit, and 4-channel TICO 4Kp60
	Inputs (Max.)	16x 3G-SDI 4x HDMI 2.0 4x SDI 1.2 - File-based SATA III SSDs	8x 3G-SDI 2x DisplayPort 1.2 DisplayPort 1.2 2x 10GbE ports
	Outputs (Max.)	SPTS (Single Program Transport Stream) UDP / RTP / RTSP / RTMP / HLS / MPEG-DASH 2x 10GbE ports, 4x 1GbE ports File-based storage	4x 1GbE ports, 4x 10GbE ports
Audio Inputs	Channel Counts (Max.)	up to 16	up to 8
	Format	PCM SDI Embedded	
	Sampling Frequency	48KHz / 96KHz	
	Sampling Bit Depth	16-bit	16-bit / 24-bit / 20-bit
Video Encoding	Compression	AVC/HEVC	
	HEVC Profile	Main / Main 10	
	HEVC Tier	Main / High	
	HEVC Level	Up to 5.1	
	4K Bitrate Per-Channel	Up to 200 Mbps	
	Color Depth	8 / 10	
	Bitrate Control	CBR / VBR / ABR	
Audio Encoding	Codec	MPEG1 Layer2 / AAC-LC / HE-AAC v1, v2	
	Format	Stereo	
Features	Redundancy for System Reliability	Redundant system image 1+1 power supply unit N+1 fan module redundancy	
	Operating System	Windows, Linux	
	Development Kits	FFmpeg	
	Storage	4 bays of SATA III SSD, RAID 0 (option)	
Chassis	Form Factor	1U standard 19" wide	
	Power Consumption	< 400W for 4-ch 4K Acquisition & HEVC Encode	
	Redundant Power Supply	Option	
	Dimensions	445 x 500 x 44 mm (W x D x H)	
Environment	Operating	Temperature: 0 to 40 °C Humidity: 20% to 90% RH	
	Storage	Temperature: -20 to 70 °C Humidity: 5% to 95% RH	
Compliance	Safety	EN 60950 2014/35/EC and UL 60950	
	EMC	EN 55011/22 2014/30/EC, FCC PART 15 CLASS (A)	

## Ordering Information

Part Number	Description
VEGA-7000-DDDDA0E	4-ch 4K Capture and HEVC Encode
VEGA-7000-BDBDA0E	2-ch IP-live + 2-ch 4K HEVC Encode

# VEGA-7010

## 1U High Density Video Server for Multi-channel 4K/8K HEVC Encoding and Decoding



### Features

- 1U scalable & versatile accelerated video server w/ support for:
  - Multi-channel UHD, HD & SD low-latency HEVC, AVC & MPEG-2 encode, decode & transcode
  - Broadcast-quality video @ 60 fps including 10-bit profiles & 4:2:2 chroma sub-sampling
  - Industry-standard Media-over-IP protocols including SMPTE 2110, SMPTE 2022 & Sony IP Live with optional TICO or LLVC lightweight compression
  - SDI-3G/12G, HDMI 2.0 & DP 1.2 video inputs
  - Multiple redundant 10GbE & 1GbE ports
- Robust & low-power Intel(R) Xeon(R) Processor based host system:
  - Redundant system image, and PSU
  - 4 USB3 ports & console port

### Introduction

The VEGA-7010 is a highly configurable, 1U, short depth video server based on the Intel® Xeon® Processor E3-1200 v6 Product Family that integrates on-chip graphics engine to improve performance of UHD HEVC developments. Its four PCI Express slots provide high flexibility to fit a wide range of video accelerators such as FPGA or GPU cards supporting up to 300W PCIe power in total. When integrating Advantech's VEGA 3300 accelerators, the VEGA-7010 can perform multi-channel 4Kp60 HEVC 10-bit encoding, decoding or transcoding, including SDI and IP media capture. It supports dual redundant power supply units for high availability in a variety of edge media processing scenarios. The application-ready VEGA-7010 streamlines product development and shortens time-to-market providing equipment manufacturers with a comprehensive software package that supports Linux and Windows operating systems.

### Specifications

System type		1U Server
Processor System	Intel CPU name	Intel Kabylake Xeon E3-1245v6 LGA1151(up to 73W)
	Cache	8 MB
	Intel chipset name	C236
Graphics	Controller	Intel GPU P630
Memory	Memory channels	2 channels DDR4-2400 UDIMM (w/ ECC)
Storage	mSATA/m.2 slot	2 x M.2 2280
	2.5 SATA	2 x 2.5" (optional)
Physical Characteristics	Rackmount/Tabletop/Others	1U rackmount
	Height x Width x Depth	44.4 x 438 x 550 mm
Power Supply	System PSU	Redundant AC/550W
PCIe Expansion Slots	PCIe slot qty for Add on card	2 x PCIe Gen 3 x8 FH/FL (x16 + x8 physical) 2 x PCIe Gen 3 x4 FH/HL (x8 + x8 physical)
	Front I/O Interface	USB 2 x USB3.0 ports
Rear I/O Interface	1GbE RJ-45	2 x 1GbE ports
	Display	1 x VGA
	Serial port	1 x RJ45 in rear side
	USB	2 x USB 3.0 ports
Security	TPM	TPM2.0 (Optional)
Environment	Humidity operational (non-condensing)	10 ~ 85% @ 40 °C non-condensing
	Storage	-20 to 70 °C
	Humidity Storage	5% to 95% RH
	RoHS6 Compliant	RoHS 5/6
	Operation Temperature	0 to 50 °C

### Ordering Information

Part Number	Description
VEGA-7010-0A00E	VEGA-7010 Kabylake-S 2-PSU Standard Server
VEGA-7010-0A01E	VEGA-7010 Kabylake-S 1-PSU Standard Server



Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# VEGA-3300

## 4Kp60 HEVC Broadcast Video Encoder Card

NEW



### Features

- 1-ch 4K (2160p) or 4-ch FHD (1080p) @ 60 fps real-time encoding in Main 8, Main 10 or Main 10 4:2:2 modes
- Less than 15W power consumption
- Simple-to-use API and example code for FFmpeg and GStreamer multimedia frameworks

### Introduction

VEGA-3300 enables real-time 4K UltraHD (2160p60) HEVC encoding at up to 20x less power consumption than a software-only solution. The HEVC/H.265 codec is gaining momentum because it reduces bit rates by approximately 50% when compared to an equivalent quality video stream encoded using H.264, enabling more channels or higher resolution video delivery over the same infrastructure. It is particularly relevant for 4K UltraHD transmission which requires a much higher stream capacity. These improvements are achieved at the penalty of much higher computation complexity, with up to four general purpose server class processors required to perform a 4K 60fps software-based broadcast quality HEVC encoding in real time.

VEGA-3300 is tailored for professional media processing and are capable of performing professional grade 4Kp60 Main10 profile HEVC encoding at less than 15W power consumption. The VEGA-3300 targets file or stream-based encoding workflows in a low profile PCIe adapter format to facilitate the integration of multiple accelerators in a range of servers and appliances. This card feature a simple-to-use API and example code for FFmpeg and GStreamer multimedia frameworks to streamline product development and their integration into existing applications.

### Specification

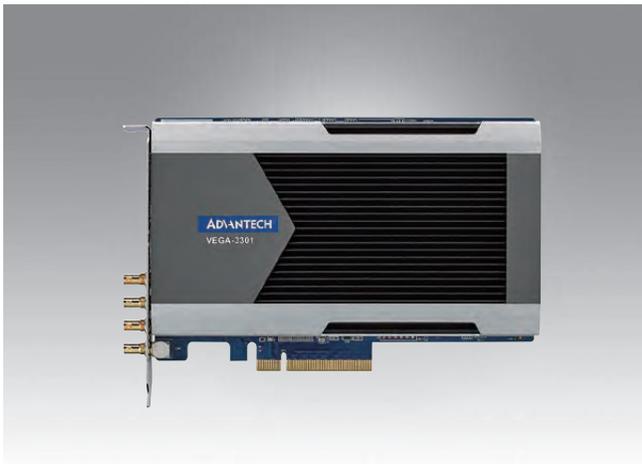
Video Input	Channels	1 (up to 4Kp60, 8bit/10bit, YUV) / 4 (up to 1080p60, 8bit/10bit, YUV)
	Video Formats	4K, HD, SD
	Frame Rate /s	PCI Express Interface 4K / 4096x2160: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 4K / 3840x2160: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 1920x1080: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 1280x720: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 720x480: 60p / 59.94p
	Chroma Sampling Format	4:2:2 / 4:2:0
Video Compression	Interfaces	PCI express Gen2 x4
	Compression	H.265
	HEVC Profile	Main / Main 10
	HEVC Tier	Main / High
	HEVC Level	1.0 / 2.0 / 2.1 / 3.0 / 3.1 / 4.0 / 4.1 / 5.0 / 5.1
	Bit Depth	8 / 10
	Bitrate 4K format	3 Mbps ~ 300 Mbps
	Bit Rate Control	CBR / VBR
	Elementary Stream	Yes
Feature	Frame rate and resolution control	Yes
	Encoding control and manipulation	Yes
	Full-feature API available	Yes
	Dual encoding (4 file from a unique video source)	Yes
	GOP definition	I, IP, IBBB
	Operating System	Windows 8 & 8.1(64-bit) Windows 7(64-bit) Windows Server 2012 & 2012 R2 (64-bit) Windows Server 2008 R2 (64-bit) Linux Kernel 3.13.0 (64-bit)
Physical Characteristic	Development Kits	FFmpeg Microsoft DirectShow
	Power Consumption	< 15W
	Dimensions	PCI Express Half Length Half Height 167.65 x 56 mm

### Ordering Information

Part number	Description
VEGA-3300-A0E0	4Kp60 HEVC Broadcast Video Encoder Card (M31)

# VEGA-3301

## 4Kp60 HEVC Broadcast Video Encoder Card



### Features

- 1-ch 4K (2160p) or 4-ch FHD (1080p) @ 60 fps real-time encoding in Main 8, Main 10 or Main 10 4:2:2 modes
- Less than 35W power consumption
- 4K video capture over built-in HDMI 2.0, Display Port 1.2 or 4-ch SDI-3G video inputs
- Simple-to-use API and example code for FFmpeg and GStreamer multimedia frameworks

### Introduction

VEGA-3301 enables real-time 4K UltraHD (2160p60) HEVC encoding at up to 20x less power consumption than a software-only solution. The HEVC/H.265 codec is gaining momentum because it reduces bit rates by approximately 50% when compared to an equivalent quality video stream encoded using H.264, enabling more channels or higher resolution video delivery over the same infrastructure. It is particularly relevant for 4K UltraHD transmission which requires a much higher stream capacity. These improvements are achieved at the penalty of much higher computation complexity, with up to four general purpose server class processors required to perform a 4K 60fps software-based broadcast quality HEVC encoding in real time.

VEGA-3301 is tailored for professional media processing and are capable of performing professional grade 4Kp60 Main10 profile HEVC encoding at less than 35W power consumption. The VEGA-3301 adapter additionally features 4K video capture over built-in HDMI 2.0, Display Port or 4-ch SDI-3G video inputs for acquisition-based encoding in contribution workflows. This card feature a simple-to-use API and example code for FFmpeg and GStreamer multimedia frameworks to streamline product development and their integration into existing applications.

### Specification

Video Input	Channels	1 (up to 4Kp60, 8bit/10bit, YUV) / 4 (up to 1080p60, 8bit/10bit, YUV)	
	Video Formats	4K, HD, SD	
	Frame Rate	HDMI 2.0 / Display Port 1.2 Interface*	4K / 3840x2160: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 1920x1080: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 1280x720: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p
		BNC (3G-SDI) Interface	4K / 3840x2160: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 1920x1080: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 1280x720: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p
		PCI Express Interface	4K / 4096x2160: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 4K / 3840x2160: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 1920x1080: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 1280x720: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 720x480: 60p / 59.94p
		Chroma Sampling Format	4:2:2 / 4:2:0
Interfaces	PCI express Gen2 x8 / HDMI 2.0 / SDI-3G / Display Port 1.2		
Video Compression	Compression	H.265	
	HEVC Profile	Main / Main 10	
	HEVC Tier	Main / High	
	HEVC Level	1.0 / 2.0 / 2.1 / 3.0 / 3.1 / 4.0 / 4.1 / 5.0 / 5.1	
	Bitrate 4K format	3 Mbps ~ 300 Mbps	
	Bit Depth	8 / 10	
	Bit Rate Control	CBR / VBR	
	Elementary Stream	Yes	

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

## Specifications (Cont.)

Audio	Channels	4
	Format	PCM
	Operation Mode	Stereo
	Sampling Frequency	48Khz
	Sampling Bit Depth	16-bit
	Connectors	HDMI 2.0 / SDI-3G / Display Port 1.2
Feature	Frame rate and resolution control	Yes
	Encoding control and manipulation	Yes
	Full-feature API available	Yes
	Dual encoding (4 file from a unique video source)	Yes
	GOP definition	I, IP, IPB, IBBB
	Ancillary data and VBI	Yes
	Operating System	Windows 8 & 8.1(64-bit), Windows 7(64-bit) Windows Server 2012 & 2012 R2 (64-bit), Windows Server 2008 R2 (64-bit) Linux Kernel 3.13.0 (64-bit)
Development Kits	FFmpeg, Microsoft DirectShow	
Physical Characteristic	Power Consumption	< 35W
	Dimensions	PCI Express Half Length Full Height 167.65 x 111.15 mm

\*Output: Auto scale to 4K/3840x2160p60

## Ordering Information

Part Number	Description
VEGA-3301E	4Kp60 HEVC Broadcast Video Encoder Card (M31)
VEGA-3301-A0E0	4Kp60 HEVC Broadcast Video Encoder Card (file base)

# VEGA-3304

## 8Kp60 Real-time HEVC Encoder Card

**NEW**



### Features

- 1-ch 8Kp60, 4-ch 4Kp60 or 16-ch 1080p60 real-time HEVC encoding
- Main or Main 10 HEVC profiles with 8 or 10 bit depth and 4:2:0 or 4:2:2 chroma subsampling
- Video acquisition over built-in 16-ch 3G-SDI inputs
- Support for High Dynamic Range (HDR) Video
- Linux and Windows SDK including simple-to-use API and example code for FFmpeg and GStreamer multimedia frameworks
- Double width, 3/4 length PCI Express Gen3 x16, compatible with server GPU slots

### Introduction

Advantech's VEGA-3304 is the first 8K video accelerator able to perform real time, professional grade 8Kp60 HEVC encoding in an ultra-low-power PCI Express format. The new VEGA-3304 helps video equipment manufacturers efficiently cope with the processing complexity of UHD and HEVC enabling them with a powerful tool to accelerate their next-generation 4K, 8K, Virtual Reality and 360 degree video solutions. Its impressive quality, density and cost benefits can bring a competitive advantaged to a wide range of media processing applications for the broadcasting, mobile, gaming and medical markets.

Supporting 10 bit colour depth HDR and 4:2:2 chroma subsampling, the VEGA-3304 is a commercial-off-the-shelf add-in accelerator compatible with standard GPU slots that can be easily integrated into IT-based server applications. It features sixteen 3G-SDI inputs to maximize the PCI Express slot usage and can be configured for multi-channel operation. Developers can leverage Advantech's video processing SDK for Linux and Windows that includes an FFmpeg plug-in to reduce in-house development efforts and time to market.

### Specification

		VEGA-3304-S0E0 (Not including 8K SDK, which is by request)		
Video Input	Channels	1 (up to 8Kp60, 8bit/10bit, YUV)	4 (up to 4Kp60, 8bit/10bit, YUV) /16 (up to 1080p60, 8bit/10bit, YUV)	
	Video Formats	8K	4K, HD	
	Video Input	BNC (3G-SDI) Interface	8K / 7680 x 4320: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p	BNC (3G-SDI) Interface 4K / 3840 x 2160: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p
		PCI Express Interface	8K / 7680 x 4320: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p	PCI Express Interface 1920 x 1080: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 1280 x 720: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p
	Frame Rate		PCI Express Interface 4K / 4096 x 2160: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 4K / 3840 x 2160: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 1920 x 1080: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 1280 x 720: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p 720 x 480: 60p / 59.94p	
	Chroma Sampling Format		4:2:2	
Interfaces		PCI express Gen3 x16 / SDI-3G		
Video Compression	Compression		H.265	
	HEVC Profile		Main / Main 10	
	HEVC Tier		Main / High	
	HEVC Level		1.0 / 2.0 / 2.1 / 3.0 / 3.1 / 4.0 / 4.1 / 5.0 / 5.1	
	Bitrate 4K format		3 Mbps ~ 300 Mbps	
	Bitrate 8K format		12 Mbps ~ 1.2 Gbps	
	Bit Depth		8 / 10	
	Bit Rate Control		CBR / VBR	
	Elementary Stream		Yes	

Packetarium XL Blade Servers 1

High Performance Servers 2

Network Appliances 3

PCI Express Adapters 4

Network Switches 5

ATCA Blades & Integrated Systems 6

CPCI Boards & Enclosures 7

VPX Blades 8

Video Processing & IP Media Platforms 9

## Specifications (Cont.)

Feature	Frame rate and resolution control	Yes
	Encoding control and manipulation	Yes
	Full-feature API available	Yes
	Dual encoding (4 file from a unique video source)	Yes
	GOP definition	I, IP, IPB, IBPP
	Ancillary data and VBI	Yes
	Operating System	Linux Kernel 3.13.0 (32-bit, 64-bit)
Development Kits	FFmpeg (Optional)	
Physical Characteristic	Power Consumption	< 70W
	Dimensions	PCI Express 3/4 length Full Height 234 x 111.15 x 41.19 mm

\*Output: Auto scale to 4K/3840 x 2160p60

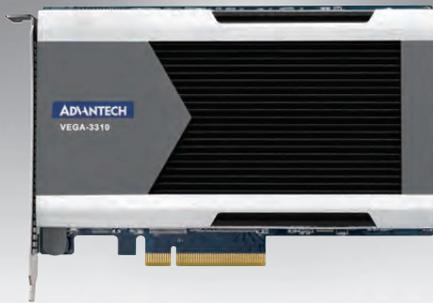
## Ordering Information

Part Number	Description
VEGA-3304-S0E0	8Kp60/4-ch 4Kp60 HEVC Encoder Accelerator

# VEGA-3310

## 4K HEVC/AVC Broadcast Video Encoding/Decoding/Transcoding Card

Preliminary



### Features

- 2-ch 4Kp60 or 8-ch real-time 4:2:2 10bit HEVC, AVC encode, decode & transcode
- Ultra-low latency support
- Less than 35W power consumption
- Simple-to-use API and example code for FFmpeg and GStreamer multimedia frameworks

### Introduction

VEGA-3310 is a high performance video processing accelerator card supporting professional grade 4K/UHD encoding, decoding and transcoding at a very low power consumption. It allows these features to be added to systems that support a standard PCI Express architecture such as PC/IT server based video applications.

The technology underlying VEGA-3310 is the latest encoding/decoding SoC. Each device supports HEVC, AVC, and MPEG2 real-time encoding, decoding, and transcoding at up to 4Kp60 with 10 bit colour depth and 4:2:2 chroma sampling. HEVC compression is particularly relevant for 4K UltraHD transmission which requires a much higher stream capacity. These bandwidth reduction improvements are achieved at the penalty of much higher computation complexity, with two general purpose server class processors required to perform a 4K 60fps software-based broadcast quality HEVC encoding in real time. The technology behind VEGA-3310 can do the same task in under 35W, and VEGA-3310 can also support up to 4Kp120 high frame rate for next generation sports broadcasts and 360 degree VR applications.

This card feature a simple-to-use API and example code for FFmpeg and GStreamer multimedia frameworks to streamline product development and integration into existing applications.

### Specification

File Based Video Input (PCI Express)	Video Encoding	H.265/HEVC	Channel	2 (up to 4Kp60, 8bit/10bit, YUV) 8 (up to 1080p60, 8bit/10bit, YUV)
			Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480
Resolution (Multi-channel more than x2ch)	1920x1080 /1280x720 /720x480			
Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i			
Bit depth	8, 10 bits			
8-bit encoding from 10-bit raw data	Supported			
Chroma Sampling	4:2:0 / 4:2:2			
Rate control	CBR/ Capped VBR			
GOP length	One Picture (I only) / 0.5sec / 1 sec			
GOP structure	I picture only/IPPP/IBB /Closed GOP/Open GOP/ Adaptive GOP (Scene change)			
CPB delay control	3s, 1s, 0.5s			
Filter	De-blocking filter/ Fixed strength			
Low latency	5, 6 frame (GOP=IBBB)			
Ultra low-latency	< 1 frame			
HDR	supported			
		H.264/AVC	Channel	2 (up to 4Kp60, 8bit/10bit, YUV) 8 (up to 1080p60, 8bit/10bit, YUV)
			Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480
			Resolution (Multi-channel more than x2ch)	1920x1080 /1280x720 /720x480
			Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i
			Bit depth	8, 10 bits
			8-bit encoding from 10-bit raw data	Supported
			Chroma Sampling	4:2:0 / 4:2:2
			Rate control	CBR/ Capped VBR
			GOP structure	I picture only/IPPP/IBB /Closed GOP/Open GOP/ Adaptive GOP (Scene change)
			CPB delay control	1s, 0.5s
			Filter	De-blocking filter / Fixed strength
			Low latency	5, 6 frame (with IPPP)

## Specifications (Cont.)

File Based Video Input (PCI Express)	Video Decoding	H.265/HEVC	Channel	2 (up to 4Kp60, 8bit/10bit, YUV) 4 (up to 1080p60, 8bit/10bit, YUV)
			Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480
			Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i
			Bit depth	8, 10 bits
			Chroma Sampling	4:2:0 / 4:2:2
			H.264/AVC	Channel
	Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480		
	Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i		
	Bit depth	8, 10 bits		
	Chroma Sampling	4:2:0 / 4:2:2		
	Audio Encoding	Control		Single ch
	Audio Decoding	Control	Single ch	Supported
Video Transcoding (PCIe in / PCIe out)	N:N	HEVC to HEVC	Supported	
		HEVC to AVC	Supported	
		AVC to HEVC	Supported	
		AVC to AVC	Supported	
	N:M	HEVC to HEVC	Supported	
		HEVC to AVC	Supported	
Feature	Operating System	Windows Server 2012 & 2012 R2 (64-bit), Windows Server 2008 R2 (64-bit) / Linux Kernel 3.13.0 (64-bit)		
	Streaming Protocol (input)	RTMP/RTP/TS over IP(UDP)/HTTP		
	Streaming Protocol (output)	description: RTMP/RTP/TS over IP(UDP)/HTTP		
	Development Kits	FFmpeg 3.4.1, Microsoft DirectShow		
Physical Characteristic	Video Input/Output Interfaces	PCI express Gen3 x8		
	Power Consumption	<21W		
	Dimensions	PCI Express Half Length Full Height / 167.65 x 111.15 mm		
Environmental	Operating Temperature	-10 to 70 degrees Celsius		
	Non-operating Temperature	-40 to 85 degrees Celsius		
	Operating Humidity	50 to 95% (non-condensing)		
	Non-operating Humidity	50 to 95% (non-condensing)		

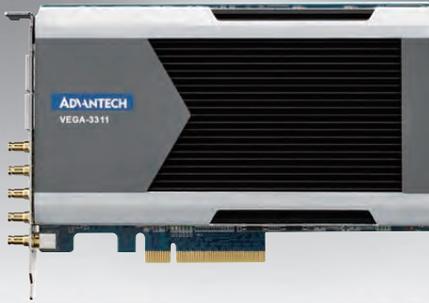
## Ordering Information

Part number	Description
VEGA-3310-A0	4K HEVC & AVC Broadcast Video Encoding/Decoding/Transcoding Card

# VEGA-3311

## 4K HEVC/AVC Broadcast Video Encoding/Decoding/Transcoding Card

Preliminary



### Features

- 1-ch 4Kp60 or 4-ch 1080p60 real-time 4:2:2 10-bit HEVC, AVC encode & decode
- AIMS roadmap support including SMPTE 2022 or SMPTE 2110 & VSF TR-03/-04 w/ AES67 audio & SMPTE 2059 sync
- 4K video capture over built-in, 4-ch SDI-3G or 1-ch SDI-12G (SDI only, VEGA-3311-S)
- 4K video capture over built-in, 4-ch SDI-3G or 1-ch SDI-12G and 2x 10GbE (VEGA-3311-I)
- Simple-to-use API and example code for FFmpeg and GStreamer multimedia frameworks

### Introduction

VEGA-3311 enables HEVC, AVC, real-time 1-ch 4K UltraHD (2160p60) and 4-ch FHD (1080p60) encode and decode. It is particularly relevant for 4K UltraHD transmission which requires a much higher stream capacity.

VEGA-3311 is tailored for professional media processing and are capable of performing professional grade 4Kp60 Main10 profile HEVC encoding and decoding at less than 35W power consumption. The VEGA-3311 adapter additionally features 4K video capture over built-in 4-ch SDI-3G or 1-ch SDI-12G video inputs for acquisition-based encoding and 4-ch SDI-3G video outputs for acquisition-based decoding in contribution workflows. VEGA-3311 can also support low latency transmission of uncompressed or lightly compressed video over standard IP networks according to industry agreed standards. This card feature a simple-to-use API and example code for FFmpeg and GStreamer multimedia frameworks to streamline product development and their integration into existing applications.

### Specification

Live Video Input/Output - SDI-3G/SDI-12G & 10G	Video Encoding	H.265/HEVC	Resolution (x1ch)	3840x2160 / 1920x1080 / 1280x720 / 720x480
			Resolution (Multi-channel more than x2ch)	1920x1080 / 1280x720 / 720x480
			Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i
			Bit depth	8, 10 bits
			8-bit encoding from 10-bit raw data	Supported
			Chroma Sampling	4:2:0 / 4:2:2
			Rate control	CBR / Capped VBR
			GOP structure	I picture only / IPPP / Closed GOP/Open GOP / Adaptive GOP (Scene change)
			CPB delay control	3s, 1s, 0.5s
			Filter	De-blocking filter / Fixed strength
			Low latency	5, 6 frame (GOP = IBBB)
			Ultra low-latency	< 1 frame
			HDR	Supported
		H.264/AVC	Resolution (x1ch)	3840x2160 / 1920x1080 / 1280x720 / 720x480
			Resolution (Multi-channel more than x2ch)	1920x1080 / 1280x720 / 720x480
			Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i
			Bit depth	8, 10 bits
			8-bit encoding from 10-bit raw data	Supported
			Chroma Sampling	4:2:0 / 4:2:2
			Rate control	CBR / Capped VBR
			GOP length	One Picture (I only) / 0.5sec / 1 sec
			GOP structure	I picture only / IPPP / IBB/IBBB / Closed GOP/Open GOP / Adaptive GOP (Scene change)
			CPB delay control	1s, 0.5s
			Filter	De-blocking filter / Fixed strength
			Low latency	5, 6 frame (GOP = IPPP)

Packetarium XL Blade Servers 1

High Performance Servers 2

Network Appliances 3

PCI Express Adapters 4

Network Switches 5

ATCA Blades & Integrated Systems 6

CPCI Boards & Enclosures 7

VPX Blades 8

Video Processing & IP Media Platforms 9

## Specifications (Cont.)

Live Video Input/ Output - SDI-3G/SDI- 12G & 10G	Video Decoding	H.265/HEVC	Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480		
			Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i		
			Bit depth	8 / 10 bits		
			Chroma Sampling	4:2:0 / 4:2:2		
	Video Decoding	H.264/AVC	Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480		
			Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i		
			Bit depth	8, 10 bits		
			Chroma Sampling	4:2:0 / 4:2:2		
	Audio Encoding	Control	Single ch	Supported		
	Audio Decoding	Control	Single ch	Supported		
Video Capture	Control	Pixel Format	NV12 / YV12 / I420 / P010 / NV16 / YV16 / YUY2/ P210			
		Resolution	3840x2160 /1920x1080 / 1280x720 /720x480			
		Frame Rate	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i			
		Sample Frequency	48KHz / 96KHz			
Audio Capture	Control	Sampling Depth	16 bit / 24 bit			
		Channel Layouts	8-ch / 16-ch			
File Based Video Input (PCI Express)	Video Encoding	H.265/HEVC	Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480		
			Resolution (Multi-channel more than x2ch)	1920x1080 /1280x720 /720x480		
			Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i		
			Bit depth	8, 10 bits		
			8-bit encoding from 10-bit raw data	Supported		
			Chroma Sampling	4:2:0 / 4:2:2		
			Rate control	CBR / Capped VBR		
			GOP structure	I picture only / IPPP / Closed GOP/Open GOP / Adaptive GOP (Scene change)		
			CPB delay control	3s, 1s, 0.5s		
			Filter	De-blocking filter / Fixed strength		
			Low latency	5, 6 frame (GOP = IBBB)		
			Ultra low-latency	< 1 frame		
			HDR	Supported		
			Video Encoding	H.264/AVC	Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480
	Resolution (Multi-channel more than x2ch)	1920x1080 /1280x720 /720x480				
	Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i				
	Bit depth	8, 10 bits				
	8-bit encoding from 10-bit raw data	Supported				
	Chroma Sampling	4:2:0 / 4:2:2				
	Rate control	CBR / VBR / Capped VBR				
	GOP structure	I picture only / IPPP /IBB/BBBB / Closed GOP/Open GOP / Adaptive GOP (Scene change)				
	CPB delay control	1s, 0.5s				
	Filter	De-blocking filter / Fixed strength				
	Low latency	5, 6 frame (GOP = IPPP)				
	Video Decoding	H.265/HEVC			Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480
					Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i
					Bit depth	8, 10 bits
			Chroma Sampling	4:2:0 / 4:2:2		
Video Decoding	H.264/AVC	Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480			
		Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i			
		Bit depth	8, 10 bits			
		Chroma Sampling	4:2:0 / 4:2:2			
Audio Encoding	Control	Single ch	Supported			
Audio Decoding	Control	Single ch	Supported			
Feature	Operating System	Windows Server 2012 & 2012 R2 (64-bit), Windows Server 2008 R2 (64-bit) Linux Kernel 3.13.0 (64-bit)				
	Development Kits	Ffmpeg 3.4.1, Microsoft DirectShow				

Physical Characteristic	Networking Interface	2x 10Gbps Ethernet port (VEGA-3311-I)
	Forward Error Correction	Level A and Level B FEC (steam basis)
	Connectors	SFP+ Module
	Internet protocol	Support IPV4 static IP setting
	Streaming Protocols Input	RTSP/RTMP/RTP/TS over IP (UDP) / HTTP
	Streaming Protocol (output)	RTSP/RTMP/RTP/TS over IP (UDP)/HTTP
	Video-over-IP	SMPTE 2110 & VSF TR-03/-04 w/ AES67 audio & SMPTE 2059 sync Optional TICO compression
	Video Input Interfaces	PCIexpressGen3 x8 4x SDI-3G (Level A/B) or 1x SDI-12G 1x Tri-sync 2x 10Gbps Ethernet port (Rx, VEGA-3311-I)
	Video Output Interface	PCI express Gen3 x8 4x SDI-3G (VIF) / (PCIe--> SDI) or 1x SDI-12G (VIF) / (PCIe)
	Power Consumption	<21W
Environmental	Dimensions	PCI Express Half Length Full Height 167.65 x 111.15 mm
	Operating Temperature	-10 to 70 degrees Celsius
	Non-operating Temperature	-40 to 85 degrees Celsius
	Operating Humidity	50 to 95% (non-condensing)
	Non-operating Humidity	50 to 95% (non-condensing)

## Ordering Information

Part number	Description
VEGA-3311-S0M0	4Kp60 HEVC/AVC Broadcast Video Encoding / Decoding Card w/ SDI only
VEGA-3311-A0M0	4Kp60 HEVC/AVC Broadcast Video Encoding / Decoding Card, File base
VEGA-3311-I0F0	4Kp60 HEVC/AVC Broadcast Video Encoding / Decoding Card w/ SDI, 10GbE, VOIP support SMPTE 2022

Packetarium XL Blade Servers **1**

High Performance Servers **2**

Network Appliances **3**

PCI Express Adapters **4**

Network Switches **5**

ATCA Blades & Integrated Systems **6**

CPCI Boards & Enclosures **7**

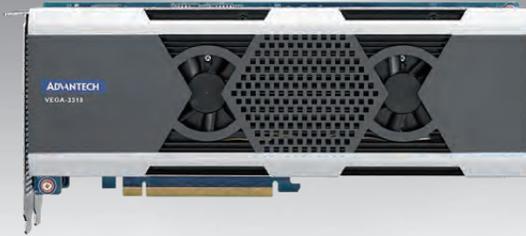
VPX Blades **8**

Video Processing & IP Media Platforms **9**

# VEGA-3318

## 8-ch 4K HEVC/AVC Transcoding Accelerator

Preliminary



### Features

- 8-ch 4Kp60 or 32-ch 1080p60 low-latency HEVC, AVC encode, decode & transcode
- Support for adaptive bitrate (ABR) streaming, 10-bit profiles and 4:2:2 chroma subsampling
- Less than 65W power consumption
- Comprehensive developer tools including Linux, FFmpeg and GStreamer plug-ins, and virtualization-friendly drivers

### Introduction

The VEGA-3318 is the world's first commercial-off-the-shelf video accelerator able to perform low-latency, professional-grade 8-ch 4Kp60 HEVC transcoding in an ultra-low power PCI Express format that can be integrated into standard servers via Linux API. Up to four VEGA-3318 accelerators can be integrated into a 1U server supporting up to 32 live UHD HEVC ABR streams per rack unit - the highest density available in the market. This enables agile, scalable, energy and cost efficient data center deployments to address the growing demand of live UHD OTT video streaming in the cloud. The CAPEX and OPEX savings are significant. VEGA-3318 accelerated solutions benefit from an up to 30x performance boost and up to a 20X reduction in power consumption and rack space when compared to non-accelerated solutions.

The VEGA-3318 supports UHD, HD and SD formats and HEVC, AVC codecs including 10-bit profiles, 4:2:2 chroma subsampling and ABR streaming. Developers can leverage Advantech's SDK which supports Linux operating systems, FFmpeg and GStreamer. In addition, Advantech has created software drivers that are virtualization friendly and support OpenStack. Advantech also offers hardware and software design and customization services for maximum deployment flexibility.

### Specification

File Based Video Input (PCI Express)	Video Encoding	H.265/HEVC	Channels	8 (up to 4Kp60, 8bit/10bit, YUV) / 32 (up to 1080p60, 8bit/10bit, YUV)
			Resolution (x1ch)	3840x2160 / 1920x1080 / 1280x720 / 720x480
			Resolution (Multi-channel more than x2ch)	1920x1080 / 1280x720 / 720x480
			Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i
			Bit depth	8, 10 bits
			8-bit encoding from 10-bit raw data	Supported
			Chroma Sampling	4:2:0 / 4:2:2
			Rate control	CBR / Capped VBR
			GOP structure	I picture only / IPPP / IBB / Closed GOP / Open GOP / Adaptive GOP (Scene change)
			CPB delay control	3s, 1s, 0.5s
	Filter	De-blocking filter / Fixed strength		
	Low latency	5, 6 frame (GOP = IBBB)		
	Ultra low-latency	< 1 frame		
	HDR	Supported		
	Video Encoding	H.264/AVC	Channels	8 (up to 4Kp60, 8bit/10bit, YUV) / 32 (up to 1080p60, 8bit/10bit, YUV)
			Resolution (x1ch)	3840x2160 / 1920x1080 / 1280x720 / 720x480
			Resolution (Multi-channel more than x2ch)	1920x1080 / 1280x720 / 720x480
			Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i
			Bit depth	8, 10 bits
			8-bit encoding from 10-bit raw data	Supported
Chroma Sampling			4:2:0 / 4:2:2	
Rate control			CBR / Capped VBR	
GOP structure			I picture only / IPPP / IBB / IBBB / Closed GOP / Open GOP / Adaptive GOP (Scene change)	
CPB delay control			1s, 0.5s	
Filter	De-blocking filter / Fixed strength			
Low latency	5, 6 frame (GOP = IPPP)			

## Specifications (Cont.)

File Based Video Input (PCI Express)	Video Decoding	H.265/HEVC	Channels	8 (up to 4Kp60, 8bit/10bit, YUV) / 16 (up to 1080p60, 8bit/10bit, YUV)
			Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480
			Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i
			Bit depth	8, 10 bits
			Chroma Sampling	4:2:0 / 4:2:2
	Video Decoding	H.264/AVC	Channels	8 (up to 4Kp60, 8bit/10bit, YUV) / 16 (up to 1080p60, 8bit/10bit, YUV)
			Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480
			Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i
			Bit depth	8, 10 bits
			Chroma Sampling	4:2:0 / 4:2:2
Audio Encoding	Control	Single ch	Supported	
Audio Decoding	Control	Single ch	Supported	
Video Transcoding (PCIe in / PCIe out)	N:N	HEVC to HEVC	Supported	
		HEVC to AVC	Supported	
	N:M	AVC to HEVC	Supported	
		AVC to AVC	Supported	
Feature	Operating System	Linux Kernel 3.13.0 (64-bit)		
	Development Kits	Ffmpeg 3.4.1		
	Streaming Protocol (input)	RTSP/RTMP/RTP/TS over IP (UDP)/HTTP		
	Streaming Protocol (output)	RTSP/RTMP/RTP/TS over IP (UDP)/HTTP		
	System Application	WEB GUI		
Physical Characteristic	Video Input/Output Interfaces	PCI express Gen3 x16		
	Power Consumption	<65W		
	Dimensions	PCI Express 10.5" Length Full Height, double-deck / 266.7 x 111.15 mm		
Environmental	Operating Temperature	-10 to 70 degrees Celsius		
	Non-operating Temperature	-40 to 85 degrees Celsius		
	Operating Humidity	50 to 95% (non-condensing)		
	Non-operating Humidity	50 to 95% (non-condensing)		

## Ordering Information

Part number	Description
VEGA-3318-A0T0	8-ch 4K HEVC/AVC Real-time Transcoding Card

Packetarium XL Blade Servers 1

High Performance Servers 2

Network Appliances 3

PCI Express Adapters 4

Network Switches 5

ATCA Blades & Integrated Systems 6

CPCI Boards & Enclosures 7

VPX Blades 8

Video Processing & IP Media Platforms 9

# VEGA-4000

## Reconfigurable Video Content Intelligence Accelerator



### Features

- High performance Xilinx Ultrascale+ FPGA (XCVU9P)
- 16GB DDR4 memory in 4-Ch configuration w/ ECC support
- PCIe Gen-3 x16 host interface
- Low Profile form factor
- Up to 75W slot power consumption
- Fully Xilinx SDAccel supported

### Introduction

VEGA-4000 is a FPGA-based low profile PCI Express card which is ideal for accelerating machine learning, data analytics and live video processing applications both in appliances and in scale-out data center servers.

As user-generated video content streaming becomes more and more pervasive, there is a corresponding service demand to analyze and classify this content in real time to ensure compliance to rules and to allow further innovative applications to be developed. The resulting processing workloads are both rapidly escalating and rapidly evolving, so the need of processing acceleration and flexibility is crucial. The latest generation of Field Programmable Gate Arrays (FPGAs) from Xilinx offers this acceleration while retaining future-proof reconfigurable capability; and Advantech's new VEGA-4000 can provide access to this technology in a deployable PCI Express form factor, reducing development risk and gaining a time-to-market advantage. The VEGA-4000 is fully supported by the Xilinx SDAccel development environment with FFmpeg integration, and Xilinx also offers optimized support libraries for several Deep Neural Network frameworks including Caffe and Mxnet, with support for TensorFlow coming soon.

Advantech can also offer custom development support services for VEGA-4000 including FPGA IP provision and system integration, and the board can be delivered already pre-integrated in a range of server platforms. Please contact your Advantech representative for more details.

### Specifications

Feature	Operating System	Linux Drivers Support
	Development Kits	SDAccel Support FFmpeg, 3rd party Intellectual Property Blocks
Physical Characteristic	Interface	PCI Express Gen3 x16
	Power Consumption	Up to 75W
	Dimensions	PCI Express Half Length Half Height 167.65 x 56 mm
Environmental	Operating Temperature	0 to 40 degrees Celsius
	Non-operating Temperature	-40 to 75 degrees Celsius
	Operating Humidity	50 to 90% (non-condensing)
	Non-operating Humidity	50 to 95% (non-condensing)

### Applications

- Video Transcoding
- Social Media Video Analytics
- Machine Learning
- Cloud-based Surveillance Analytics

### Ordering Information

Part Number	Description
VEGA-4000-X0A0	Low Profile Video Intelligence PCIe Card (w/ Passive Heatsink)
VEGA-4000-X0A1	Low Profile Video Intelligence PCIe Card (w/ Active Heatsink)

# VEGA-4001

## Dual Xilinx Ultrascale+ FPGA Accelerator for Machine Learning and Artificial Intelligence

Preliminary



### Features

- Dual Xilinx Ultrascale+ FPGA (XC7VU9P)
- 16GB DDR4-2400 memory per FPGA in 4-ch ECC configuration
- On-board PCIe switch supporting FPGA peer to peer data link
- Additional Aurora Link (GTyX2) interconnect
- PCIe Gen-3 x16 host interface
- Full height, GPU length (10.5"/267mm) form factor
- Up to 225W power consumption
- Double-slot heatsink
- Fully supported by Xilinx SDAccel and Vivado toolchain

### Introduction

VEGA-4001 is a FPGA-based full height GPU length double deck PCI Express card which is ideal for accelerating machine learning, and video and data analytics both in appliances and in scale-out data center servers.

Video intelligence is changing the way we interact with the world around us enabling smarter cities, transportation and communication systems. Behind this new intelligent world, machine learning, big data and artificial intelligent algorithms work to analyze and classify locally generated video content in real time. The resulting processing workloads are not only immense, but rapidly evolving, so the need for both processing acceleration and flexibility is critical. The latest generation of Field Programmable Gate Arrays (FPGAs) from Xilinx offers this acceleration in a power efficient manner while retaining future-proof reconfigurable capability; and Advantech's new VEGA-4001, a dual Xilinx XC7VU9P configuration, can provide access to this technology in a deployable PCI Express form factor, reducing development risk and gaining time-to-market advantages. The VEGA-4001 is fully supported by the Xilinx SDAccel development environment with FFmpeg integration, and Xilinx also offers optimized support libraries for several Deep Neural Network frameworks including Caffe and Mxnet, with support for TensorFlow.

Advantech can also provide custom development support services for VEGA-4001 including FPGA IP provision and system integration, and the board can be delivered already pre-integrated in a range of server platforms. Please contact your Advantech representative for more details.

### Specifications

Feature	Operating System	Linux Drivers Support
	Development Kits	SDAccel Support FFmpeg, 3rd party Intellectual Property Blocks
Physical Characteristic	Interface	PCI Express Gen3 x16
	Power Consumption	Up to 225W
	Dimensions	PCI Express 10.5" Length Full Height, double-deck 266.7 x 111.15 mm
Environmental	Operating Temperature	0 to 40 degrees Celsius
	Non-operating Temperature	-40 to 75 degrees Celsius
	Operating Humidity	50 to 95% (non-condensing)
	Non-operating Humidity	50 to 95% (non-condensing)

### Applications

- Machine Learning
- Social Media Video Analytics
- Autonomous Driving
- Cloud-based Surveillance Analytics
- Video Transcoding

### Ordering Information

Part Number	Description
VEGA4001X0A0-ES	GPU size Video Intelligence PCIe Card

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# VEGA-4002

## Dual Xilinx Ultrascale+ FPGA Accelerator for OTT Transcoding and Video Processing

Preliminary



### Features

- Dual Xilinx Ultrascale+ FPGA (XCVU9P)
- 16GB DDR4-2400 memory per FPGA in 4-ch ECC configuration
- On-board PCIe switch supporting FPGA peer to peer data link
- Additional Aurora Link (GTy2) interconnect
- PCIe Gen-3 x16 host interface
- Full height, GPU length (10.5"/267mm) form factor
- Up to 150W power consumption
- Single-slot passive or double-slot active heatsink options
- Fully supported by Xilinx SDAccel and Vivado toolchain.

## Introduction

VEGA-4002 is a FPGA-based full height GPU length single deck PCI Express card which is ideal for live video processing applications both in appliances and in scale-out data center servers.

Reconfigurable FPGA-based video processing addresses OTT infrastructure users needs for evolving multi-codec encoding and transcoding as the demand for online streamed video content grows. On top of the established video codec standards like AVC(H.264) and HEVC(H.265), OTT service providers would also consider additional use cases for other codecs like VP9 and even AV1 in the near future, so the need of processing acceleration and flexibility is crucial. The latest generation of Field Programmable Gate Arrays (FPGAs) from Xilinx offers this acceleration while retaining future-proof reconfigurable capability; and Advantech's new VEGA-4002, a dual Xilinx XCVU9P configuration, can provide access to this technology. Due to their implementation architectures, the majority of video processing applications do not make full use of the power envelope of an FPGA, so the VEGA-4002 board infrastructure is optimized for lower power operation. Consequently, the VEGA-4002 offers a higher density, more power efficient implementation for encoding and transcoding applications. For servers with efficient airflow, the VEGA-4002 can be supplied with a single slot heatsink configuration, potentially quadrupling the processing density compared to other general-purpose single chip double-width implementations. The VEGA-4002 is fully supported by the Xilinx SDAccel development environment with FFmpeg integration.

Advantech can also provide custom development support services for VEGA-4002 including FPGA IP provision and system integration, and the board can be delivered already pre-integrated in a range of server platforms. Please contact your Advantech representative for more details.

## Specifications

Feature	Operating System	Linux Drivers Support
	Development Kits	SDAccel Support FFmpeg, 3rd party Intellectual Property Blocks
Physical Characteristic	Interface	PCI Express Gen3 x16
	Power Consumption	Up to 150W
	Dimensions	PCI Express 10.5" Length Full Height, single-deck 266.7 x 111.15 mm
Environmental	Operating Temperature	0 to 40 degrees Celsius
	Non-operating Temperature	-40 to 75 degrees Celsius
	Operating Humidity	50 to 95% (non-condensing)
	Non-operating Humidity	50 to 95% (non-condensing)

## Applications

- Video Encoding
- Video Transcoding
- Social Media Video Analytics
- Autonomous Driving
- Cloud-based Surveillance Analytics

## Ordering Information

Part Number	Description
VEGA4002X0A0-ES	GPU size Video Intelligence PCIe Card

# VEGA-550

## Reconfigurable Video Content Intelligence Accelerator



### Features

- Four high flexibility Xilinx Zynq Ultrascale+ FPGA (ZU7EV)
- 8GB+8GB DDR4 w/ ECC for each FPGA device
- PCIe Gen-3 x16 host interface
- GPU card size form factor
- Upto 150W slot power consumption

### Introduction

As more and more video analytics solutions has been used in different application.

Advantech VEGA-500 series product provides an ideal platform with video codec and programmable logics integrated for video intelligence applications. VEGA-550 can decode/encode up to 32-ch 1080p30 video streams simultaneously and pass the decoded video to programmable logic for further video intelligence applications.

### Specification

	Device	Description
FPGA	Zynq UltraScale+ XCZU7EV MPSoC	4 FPGA devices
Memory	DDR4	8GB DDR4-2400 64-bit + ECC to processing system(PS) per FPGA 8GB DDR4-2666 64-bit + ECC to programmable logic(PL) per FPGA
Storage	eMMC	8GB x 1 per FPGA
I/O	QSPI	32MB x 1 per FPGA
	Ethernet port (RJ45)	1 to FPGA0
	USB 3.0	1 to each FPGA
	USB console (UART to USB)	1 per FPGA
	JTAG	1 per FPGA
	PCIe	Gen 3 x 16 to host <b>VEGA-550-S (More PCIe to PS side):</b> PCIe Gen 3 x 4 to PL side in FPGA 0 & 1 PCIe Gen 3 x 2 to PL side in FPGA 2 & 3 PCIe Gen 2 x 4 to PS side per FPGA <b>VEGA-550-L (More PCIe to PL side):</b> PCIe Gen 3 x 4 to PL side per FPGA PCIe Gen 2 x 4 to PS side in FPGA 0 & 1
Integrated IP	Video Codec Unit (VCU)	4:2:2 10-bit 4Kp60 per FPGA
Power	Power consumption	<150W
	Ext. power connector	2x3 pin
Physical Dimensions	FH/FL double slots	111 x 267 mm

### Applications

- Video Analytics
- Video Transcoding
- Surveillance Video Analytics

### Ordering Information

Part Number	Description
VEGA-550S-I2A0	VEGA-550 with x4 PCIe lanes to PS side
VEGA-550L-I2A0	VEGA-550 with x4 PCIe lanes to PL side

Packetarium  
XL Blade  
Servers 1

High  
Performance  
Servers 2

Network  
Appliances 3

PCI Express  
Adapters 4

Network  
Switches 5

ATCA Blades  
& Integrated  
Systems 6

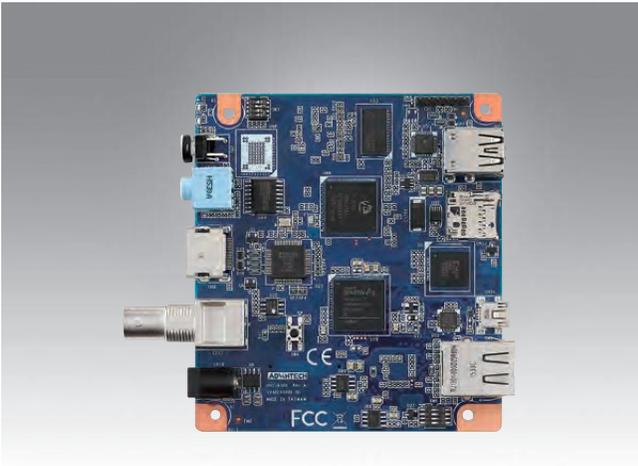
CPCI Boards  
& Enclosures 7

VPX Blades 8

Video  
Processing  
& IP Media  
Platforms 9

# VEGA-2000

## HD H.265/H.264 Video Capture & Encode Module



### Features

- 1080p60 audio/video capture over built-in 3G-SDI or HDMI 1.4 video input
- Real-time 1080p60 HEVC or AVC 8-bit encode
- Streaming output via Gigabit Ethernet or USB wireless dongle
- Video Record to USB or Micro SD Storage
- Optional audio capture by phone jack input
- WIFI and LTE dongle support by USB
- Small form-factor (90 x 100mm<sup>2</sup>) and low power consumption(<5W) for portable video device
- Build-in Remote control UI and CGI command support for easy management and development

### Introduction

VEGA-2000 is a small form-factor module designed for encoding live video using either advanced HEVC (High Efficiency Video Coding) Main Profile or H.264 BP/MP/HP video compression up to 1080p resolution at 60 frames per second, with CBR (Constant Bit Rate) & VBR (Variable Bit Rate) support from 64kbps ~ 32Mbps. The single SDI-3G or HDMI video inputs provide video capture capability in convenient formats for professional video feeds while the onboard USB 2.0 and gigabit Ethernet ports offer great flexibility in transporting the compressed video stream through wireless (such as WiFi, LTE, etc.) and wireline interconnections to remote and cloud side for archiving or further processing. The micro SD memory card interface can also be used for local storage. The module also features audio encoding from either embedded SDI/HDMI audio channels or a separate 3.5mm audio jack socket.

The module is supplied with a bundled software package that demonstrates a streamlined workflow from video acquisition, encoding, streaming to archiving in a hassle-free approach for simplifying system adoption and integration effort. The well-defined web-based software APIs open the possibilities for customization based on the final usage cases.

With a small physical dimension and low power dissipation characteristics, VEGA-2000 can be easily applied to portable and mobile broadcasting, medical imaging, UAV (Unmanned Aerial Vehicle) applications, etc. where real-time and high-quality video content needs to be captured and transported in an efficient way using the latest HEVC compression standard.

### Specification

Video Input Format	Channels	1 (up to 1080p60, 8bit, YUV by 3G-SDI or HDMI 1.4)	
	Video Formats	HD, SD	
	Frame Rates	HDMI 1.4 Interface	1920x1080: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p / 60i / 50i 1280x720: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p / 60i / 50i
		BNC (3G-SDI) Interface	1920x1080: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p / 60i / 50i 1280x720: 60p / 59.94p / 50p / 30p / 29.97p / 25p / 24p / 60i / 50i
	Chroma Sampling Format	4:2:2 / 4:2:0	
Interfaces	HDMI 1.4		
	3G-SDI BNC (SMPTE424M Level A)		
Video Compression	Compression	H.265/H.264	
	HEVC Profile	Main	
	HEVC Tier	Main	
	HEVC Level	1.0 / 2.0 / 2.1 / 3.0 / 3.1 / 4.0 / 4.1	
	Bitrate 1080P Format	64Kbps - 32Mbps	
	Bit Depth / Chroma Subsampling	8 bit / 4:2:0	
	Bit Rate Control	CBR/VBR	
	Output Format	RTSP/MP4	
Audio Input & Compression	Channels	Up to 2	
	Audio Compressing Format	AAC encoding	
	Sampling Rates	48KHz/16bit	
	Input channel	HDMI 1.4 / SDI-3G / Line-In	
Management	PC/Mobile Phone	IE/Chrome/FireFox	
Environmental	Operating Temperature	-10 to 50 degrees Celsius	
	Non-operating Temperature	-40 to 85 degrees Celsius	
	Operating Humidity	50 to 95% (non-condensing)	
	Non-operating Humidity	50 to 95% (non-condensing)	

### Ordering Information

Part Number	Description
VEGA-2000-00ME	FHD HEVC/H.264 Video Capture & Encoder Module
VEGA-2000-00SE	FHD HEVC/H.264 Video Capture & Encode Module with chassis

# VEGA-2001

## 4K UHD H.265/H.264 Real-Time Encoder and Streaming Module

Preliminary



### Features

- 4Kp60 audio/video capture over built in 4 x 3G-SDI or 1 x 12G(3G)-SDI or HDMI 2.0 inputs
- Real-time 4Kp30 H.265 8-bit encode
- Real-time 4Kp60 H.264 8-bit encode
- Streaming output via Gigabit Ethernet or USB wireless dongle
- Video Record to USB Storage
- WIFI and LTE dongle support by USB
- Self View by HDMI 2.0 output
- Small form-factor (90x100 mm<sup>2</sup>) and low power consumption for easy adoption in portable applications
- Build-in Remote control UI and CGI command support for easy management and development

### Introduction

With more and more viewers turning to online video, new concepts such as social media and anywhere broadcasting are gaining popularity among video professionals. The VEGA-2001 helps leveraging the ubiquity of mobile networks and the flexibility of over-the-top delivery without jeopardizing video quality by providing a professional-grade 4K HEVC engine that can be easily integrated into portable broadcasting solutions. The VEGA-2001 is a powerful tool that opens new online media opportunities enabling live event streaming even in the most challenging scenarios where a traditional outside broadcasting setup is not feasible.

The VEGA-2001 is a small, low power, real-time encoding module based on Ambarella's video compression technology which supports UHD resolution and HEVC and AVC codecs. It features 4K video acquisition through built-in SDI or HDMI inputs and encoded video can be streamed to mobile or Wi-Fi networks by connecting an USB wireless adapter. The VEGA-2001 can create multiple output streams from a single video input and encode each one using different codecs with different parameters.

The VEGA-2001 offers a user-friendly HTTP interface and can be remotely controlled using a web-based CGI interface. It supports streaming protocols commonly used by CDNs, making it easier for users to deliver video over-the-top.

### Specification



		VEGA-2001 3G-SDI	VEGA-2001 12G-SDI/HDMI
Video Input Format	Channels/interface	4 x 3G-SDI, each up to 1080p60	1 x 12G-SDI or HDMI2.0, up to 4Kp60 8bit 4:2:2 HDMI 2.0 Interface
	Video formats	BNC (3GS-SDI) Interface 3840x2160: 60P/59.94p/30p/29.97p 1920x1080: 60p/59.94p/50p/30p/29.97p/25p 1920x1080: 60i/59.94i/50i 1280x720: 60p/59.94p/50p/30p/29.97p/25p (Note: 3840x2160 support by 4 x 3G-SDI Quad Link)	3840x2160: 60p/59.94p/50p/30p/29.97p/25p 1920x1080: 60p/59.94p/50p/30p/29.97p/25p/24p 1920x1080: 60i/59.94i/50i 1280x720: 60p/59.94p/50p BNC (12G-SDI) Interface 3840x2160: 60P/59.94p/30p/29.97p 1920x1080: 60p/59.94p/50p/30p/29.97p/25p 1920x1080: 60i/59.94i/50i 1280x720: 60p/59.94p/50p/30p/29.97p/25p
Video Compression	Compression	AVC (H.264) up to 4Kp60 HEVC (H.265) up to 4Kp30	
	AVC or HEVC profile	AVC BP/MP/HP Level 5.1 HEVC Main Level 5.1	
	HEVC Tier	Main	
	Bitrate in 4K format	512kbps~150Mbps	
	Bit Depth	8 bits	
	Chroma Sampling Format	4:2:0	
	Bit Rate Control	CBR / VBR	

Packetarium XL Blade Servers 1

High Performance Servers 2

Network Appliances 3

PCI Express Adapters 4

Network Switches 5

ATCA Blades & Integrated Systems 6

CPCI Boards & Enclosures 7

VPX Blades 8

Video Processing & IP Media Platforms 9

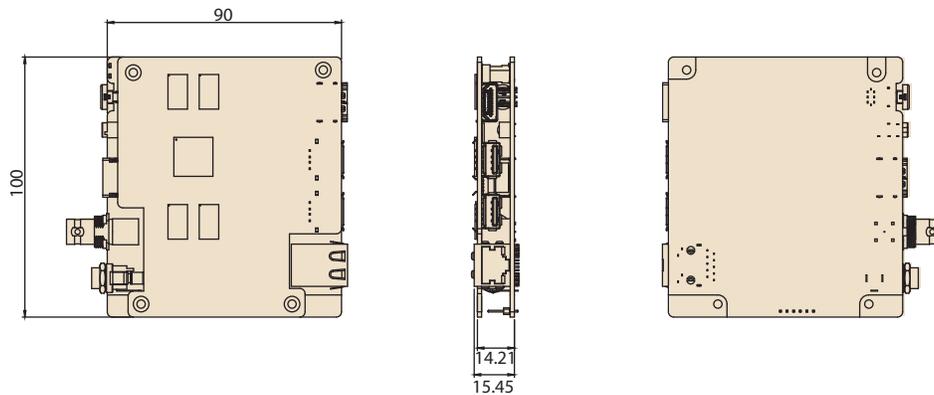
## Specifications (Cont.)

Audio Input & Compression	Channels	Line-In: up to 2 3G-SDI: up to 2	Line-In: up to 2 12G(3G)-SDI: up to 2 HDMI: up to 2
	Audio Compressing Format	AAC	
	Sampling Rates	48Khz/16bit	
Self View	Video Output Frame	NTSC/PAL	
Video Stream Features	Dynamic Video Stream Resolution Change	Yes	
	Streaming Protocol	RTSP/RTMP/HLS/TS over IP	
	GOP Definition	I, IP, IPB, IBBP	
	Ancillary Data Capture	Option	
Module Characteristic	Operation System	Embedded Linux	
	Management & Control Interface	Remote Web GUI interface	
	Power Consumption	Less than 12.5W(Base on 4Kp30 Video Encoding)	
	Power Input	DC12V	
Environmental	Module Dimension	(L) x (W) x (H): 90 x 100 x 16 mm	
	Operating Temperature	-10 to 50 degrees Celsius	
	Non-operating Temperature	-40 to 85 degrees Celsius	
	Operating Humidity	50 to 95% (non-condensing)	
	Non-operating Humidity	50 to 95% (non-condensing)	

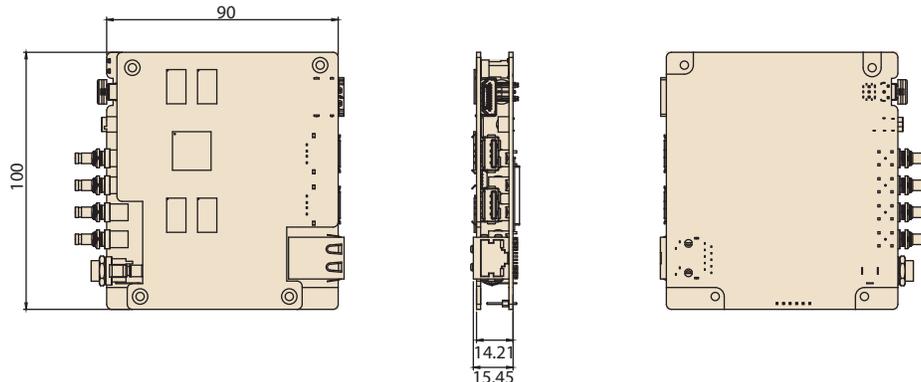
## Dimensions

Unit: mm

### 12G-SDI/HDMI Type



### 3G-SDI Type



# Product Index

## A

ATCA-9112	40 GbE Switch Blade Supports Up to 16 Slots .....	6-13
-----------	---	------

## E

ESP-2120	High Performance 10/25GbE connectivity SmartNIC.....	5-3
ESP-9002C	Advantech Switch Blade for Packetarium XLc.....	1-17
ESP-9210	High Performance 10/40GbE Top of Rack Ethernet Switch .....	5-4
ESP-9230	High Performance 10/25/40/50/100GbE Top of Rack Ethernet Switch .....	5-5
ESP-9400	High Performance 10/40GbE Top of Rack Ethernet Switch .....	5-6

## F

FMM Series	Extension Modules for Advantech CPU Boards .....	6-10
FWA-1010VC	Tabletop Network Appliance with Intel® Atom™ Processor C2000 for universal vCPE and SD-WAN .....	3-22
FWA-1011	Tabletop Network Appliance with Intel Celeron® J3455/J3355 processor Platform with 6GbE LAN Ports .....	3-24
FWA-1012VC	Universal Network Appliance with Intel® Atom™ Processor C3000 for vE-CPE and SD-WAN .....	3-26
FWA-1211	Industrial Grade Cyber Security Appliance based on Intel® Atom™ x5-E3940/ x5-E3930 Processor .....	3-28
FWA-1330	Tabletop Network Appliance with Intel® Celeron® Processor J1900/ N2807 and 4 GbE ports .....	3-30
FWA-2011	1U Rackmount Network Appliance with Intel® Atom™ X5-E3930&3940 Processor and 6 GbE ports .....	3-32
FWA-2012	Rackmount Platform for Network Application with Intel® Atom™ C3000 Processor .....	3-34
FWA-3033	1U Rackmount Network appliance with 10 Gb LAN ports and 2NMC Slots Based on Intel Coffee lake CPU Xeon® E family and 8th/9th gen. Intel® Core™ i7/i5/i3 processors .....	3-36
FWA-3050	Remote manageable 1U network appliance for uCPE and Next-Generation Firewall with Intel® Xeon D-2100 series processor .....	3-38
FWA-3260	1U Rackmount Network Appliance with Intel® Xeon® Processor D Family for vE-CPE and Network Applications, 2 NMC slots .....	3-40
FWA-3270	1U Rackmount Network Appliance with Intel® Xeon® Processor E3 series and 6th gen. Intel® Core™ i7/ i5/ i3 Processor, up to 2 NMC slots .....	3-42
FWA-4000	2U Rackmount Platform based on ZhaoXin ZX-C C4711 Processor.....	3-44
FWA-4030	2U Rackmount Network Appliance Platform based on Intel® Xeon® E3 series and 6th/7th generation Intel® Core™i7/i5/i3 Processors, up to 4NMC slots .....	3-46
FWA-4130	2U Rackmount Network Appliance Platform based on Intel® Xeon® E3 series and 6th/7th generation Intel® Core™i7/i5/i3 Processors.....	3-48
FWA-5020	1U Rackmount Network Appliance with Intel® Xeon® Processor E5-2600 v4 series, up to 4 NMC slots .....	3-50
FWA-5070	1U Rackmount Network Appliance with Intel® Xeon® Processor Scalable Family, up to 4 NMC Slots .....	3-52
FWA-6070	2U Rackmount Network Appliance with single Intel® Xeon® Processor Scalable Family .....	3-54
FWA-6170	2U Rackmount Network Appliance with Intel® Xeon® Processor Scalable Family, up to 8 NMC slots .....	3-56
FWA-6520	2U Rackmount Network Appliance with Intel® Xeon® Processor E5-2600 v3/v4 series, up to 4 NMC slots .....	3-58
FWA-6520L	Intel® Xeon® E5-2600/E5-1600 v3/v4 Processor-based 2U Network Application Platform .....	3-60

## M

MIC-3022	4U Height CompactPCI® Enclosure for 3U Cards.....	7-41
MIC-3022 Plus IO	4U CompactPCI® Plus IO Enclosure for 3U Cards .....	7-43
MIC-3023	3U CompactPCI® Enclosure for 3U Cards.....	7-44
MIC-3042	4U CompactPCI® Enclosure with cPCI Power Supply (non-CT Bus).....	7-45
MIC-3328	3U CompactPCI® PlusIO Intel® 3rd Gen. Core™ Processor Blade .....	7-10
MIC-3329	3U CompactPCI® Intel® Quad-Core Atom™ Processor Blade .....	7-12
MIC-3332	3U CompactPCI PlusIO Intel® 6th Gen. Quad- Core™ Processor Blade.....	7-14
MIC-3396	6U CompactPCI Intel® 4th Gen. Core™ i3/i5/i7 Processor Blade with ECC support .....	7-16
MIC-3396MIL	6U CompactPCI Intel® 4th/5th Gen. Core™ i5/i7 Processor Blade with ECC support .....	7-18
MIC-3397	6U CompactPCI Quad Core Intel® Xeon® Processor E3 & Dual Core Intel® Pentium® Processor Blade .....	7-20
MIC-3398	6U CompactPCI Intel® Atom™ Processor Blade.....	7-22
MIC-3500	6U CompactPCI 8HP Intel® Xeon® D-1500 Processor Blade with ECC support.....	7-24
MIC-3666	Dual 10 Gigabit Ethernet XMC .....	7-26
MIC-3667	Quad Ports Gigabit Ethernet XMC .....	7-27
MIC-3951	6U CompactPCI® Dual PMC or CMC Carrier Board (64-bit/66 MHz).....	7-28

# Product Index

MIC-3953	3U CompactPCI® Single PMC Slot Carrier Card.....	7-29
MIC-3954	3U CompactPCI® Serial MiniPCIe® or Storage Carrier Card.....	7-30
MIC-3955	3U CompactPCI® RS-232/422/485 Serial Communication Card.....	7-31
MIC-3957	3U CompactPCI® GPS Communication Card.....	7-33
MIC-3958 Ethernet Card	3U CompactPCI® Card 4 Port RJ45/M12 X-code Gigabit Ethernet.....	7-34
MIC-3961	6U CompactPCI® PCI Carrier Board.....	7-36
MIC-5342	AdvancedTCA, Dual Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Series Processors for Telecom Applications.....	6-4
MIC-5345	AdvancedTCA, Dual/Single Socket CPU Blade with Intel® Xeon® E5-2600 v3/v4 Series Processors for Server and NFV Applications.....	6-6
MIC-5604	Advanced Mezzanine Card based on Intel® Xeon® D Processors with DDR4 ECC.....	6-8
MIC-6030	3U OpenVPX PCIe/ Ethernet hybrid switch.....	8-3
MIC-6110	6U OpenVPX MXM carrier.....	8-5
MIC-6130	3U OpenVPX PCIe/ SATA M.2 carrier.....	8-7
MIC-6131	3U OpenVPX XMC carrier.....	8-8
MIC-6311	OpenVPX CPU Blade with 4th Generation Intel® Core™ Processor.....	8-9
MIC-6313	OpenVPX CPU Blade with 4th/ 5th Generation Intel® Core™ Processor.....	8-11
MIC-6314	OpenVPX CPU Blade with 4th/ 5th Generation Intel® Core™ Processor.....	8-13
MIC-6315	OpenVPX CPU Blade with Intel® Xeon® D-1500 family Processor.....	8-15
MIC-6330	3U OpenVPX CPU Blade with Intel® Xeon® Processor E3v5 and E3v6 family.....	8-17
MIC-8301	Packetarium XLe Single Socket CPU Blade with Intel® Xeon® Processor E5-2600 v3/v4.....	1-10
MIC-8303C	Packetarium XLe Dual Node Blade with Intel® Xeon® D-1500 series SoCs.....	1-12
MIC-8304C	Packetarium XLe Intel® Xeon® D-1500 series Blade with additional on-board storage.....	1-14
MIC-8304S	A new cloud controller blade for Packetarium XLe with massive on-board storage capacity.....	1-16

## N

Netarium-14	14U 14-Slot AdvancedTCA Reference Systems.....	6-24
Netarium-2	3U 2-Slot AdvancedTCA Reference Platform.....	6-16
Netarium-2v2	3U 2-Slot AdvancedTCA Reference Platform with Advantech Shelf Manager support.....	6-18
Netarium-6	6U 6-Slot AdvancedTCA Reference Systems.....	6-20
Netarium-6v2	6U 6-Slot AdvancedTCA Reference Systems with Advantech Shelf Manager support.....	6-22
NMC-0120	4ports 1GbE FiberBypass Network Management Card.....	3-62
NMC-0121	4ports 1GbE RJ45 Network Management Card (Optional Advanced LAN Bypass).....	3-63
NMC-0806	8ports 1GbE RJ45 Network Management Card (Optional Advanced LAN Bypass).....	3-64
NMC-1001	4ports 10GbE SFP+ Network Management Card.....	3-65
NMC-1010	2ports 10GbE FiberBypass Network Management Card.....	3-66
NMC-2501	2ports 25GbE SFP28 Network Management Card.....	3-67
NMC-4006	2ports 40GbE QSFP+ Network Management Card.....	3-68
NMC-4007	4ports 10GbE FiberBypass Network Management Card.....	3-69
NMC-6002	2ports 100GbE QSFP28 Network Management Card.....	3-70

## P

PAC-4010	Packetarium XLe Ultra High Performance Blade Server with 100G Switched Midplane.....	1-5
PAC-6009	6U Carrier Grade Blade Server for Edge Computing and NFV.....	1-8
PCIE-2130	Quad Port Fiber Gigabit Ethernet PCI Express Server Adapter with Intel® I350.....	4-5
PCIE-2131	Quad Port/Dual port Copper Gigabit Ethernet PCI Express Server Adapter with Intel® I350.....	4-6
PCIE-2220	Dual Port Fiber 10GbE Ethernet PCI Express Server Adapter with Intel® 82599ES.....	4-7
PCIE-2221BP	Dual Port Fiber 10GbE Ethernet PCI Express Server Adapter with Intel® X710-BM2.....	4-10
PCIE-2221NP	Dual Port Copper 10GbE Ethernet PCI Express Server Adapter with Intel® X550-AT2.....	4-9
PCIE-2230	Quad Port Fiber 10GbE Ethernet PCI Express Server Adapter with Intel® XL710-BM1.....	4-8
PCIE-2231	Quad Port Copper 10GBase-T Ethernet PCI Express Server Adapter with Intel® XL710-BM1.....	4-11
PCIE-2320	Dual Port Fiber 40GbE Ethernet PCI Express Server Adapter with Intel® XL710-BM2.....	4-12
PCIE-2410/PCIE-2420	Single/Dual Port Fiber 100GbE PCIe Adapter with Mellanox® ConnectX-5 Ethernet Controller.....	4-13
PCIE-3030	PCIe 3.0, x8 Crypto/ Compression LBG Server Adapter.....	4-14
PCIE-3031	PCIe 3.0, x16 Crypto/ Compression LBG Server Adapter.....	4-15

PMM Modules	Packetarium XLe Series PHY Mezzanine Modules .....	1-7
-------------	--	-----

## R

RIO-3315	6U CompactPCI® Rear Transition Board for MIC-3395 .....	7-37
RIO-3316	6U CompactPCI® Rear Transition Board for MIC-3396 .....	7-38
RIO-3396MIL	6U CompactPCI® Rear Transition Board for MIC-3396MIL .....	7-39
RTM-5107	AdvancedTCA® Rear Transition Module for MIC-5333 and MIC-5342 .....	6-12

## S

SKY-7210	2U Rackmount Hybrid Network Server with Intel® Xeon® Processor Scalable Family, up to 3 NMC slots .....	2-8
SKY-8100	1U Carrier Grade Server based on Intel® Pentium® Processor D and Intel® Xeon® Processor D series .....	2-10
SKY-8101	Compact 1U High Performance Server based on Intel® Xeon® Processor Scalable Family .....	2-12
SKY-8101D	Compact 1U High Performance Server based on Intel® Xeon® Processor Scalable Family .....	2-14
SKY-8101L	Compact 1U High Capacity Storage Server based on Intel® Xeon® Processor Scalable Family .....	2-16
SKY-8200	2U Carrier Grade Server based on Dual Intel® Xeon® Processor E5-2600 v3 v4 Series .....	2-18
SKY-8201	Compact 2U Carrier Grade, High Performance Server based on Intel® Xeon® Processor Scalable Family .....	2-20
SKY-8201L	Compact 2U High Capacity Storage Server based on Intel® Xeon® Processor Scalable Family .....	2-22
SKY-8211	2U High Performance Edge Server based on Intel® Xeon® Processor Scalable Family .....	2-24
SKY-9240	2U4N Rackmount Server, Designed for Hyper-converged and HPC Application .....	2-26
SKY-9340	High Performance Multi-node Server with Integrated Data Plane Fabric .....	2-29
SMM-5060	Netarium™ System Management Module .....	6-14

## V

VEGA-2000	1-Ch HEVC/H.264 Video Capture & Encode Module .....	9-30
VEGA-2001	4K HEVC/AVC Real-Time Encoder and Streaming Module .....	9-31
VEGA-3300	4Kp60 HEVC Broadcast Video Encoder Card .....	9-14
VEGA-3301	4Kp60 HEVC Broadcast Video Encoder Card .....	9-15
VEGA-3304	8Kp60 Real-time HEVC Encoder Card .....	9-17
VEGA-3310	4K HEVC/AVC Broadcast Video Encoding/Decoding/Transcoding Card .....	9-19
VEGA-3311	4K HEVC/AVC Broadcast Video Encoding/Decoding/Transcoding Card .....	9-21
VEGA-3318	8-ch 4K HEVC/AVC Transcoding Accelerator .....	9-24
VEGA-4000	Reconfigurable Video Content Intelligence Accelerator .....	9-26
VEGA-4001	Dual Xilinx Ultrascale+ FPGA Accelerator for Machine Learning and Artificial Intelligence .....	9-27
VEGA-4002	Dual Xilinx Ultrascale+ FPGA Accelerator for OTT Transcoding and Video Processing .....	9-28
VEGA-550	Reconfigurable Video Content Intelligence Accelerator .....	9-29
VEGA-6301	For 4K HEVC encoding and streaming applications .....	9-6
VEGA-6304	8Kp60 HEVC Broadcast Video Encoder .....	9-8
VEGA-6311	4K/UHD Professional Video Network Solutions .....	9-9
VEGA-7000	High Density 1RU Video Server: Multi-channel 4K acquisition with HEVC encode and Video over IP solution .....	9-11
VEGA-7010	1U High Density Video Server for Multi-channel 4K/8K HEVC Encoding and Decoding .....	9-13





## Mission

Enabling an Intelligent Planet

## Growth Model

Segmented Business Units  
Powered by Global Trusted Brand

## Focus & Goal

The Global Leader of  
Embedded & Automation Solutions  
for iWorld System Integrators

[www.advantech.com](http://www.advantech.com)

## Regional Service & Customization Centers

### China

Kunshan  
86-512-5777-5666

### Taiwan

Taipei  
886-2-2792-7818

### Netherlands

Eindhoven  
31-40-267-7000

### Poland

Warsaw  
00800-2426-8080

### USA

Milpitas, CA  
1-408-519-3898

## Worldwide Offices

### Greater China

#### China

Toll Free 800-810-0345  
Beijing 86-10-6298-4346  
Shanghai 86-21-3632-1616  
Shenzhen 86-755-8212-4222  
Chengdu 86-28-8545-0198  
Hong Kong 852-2720-5118

#### Taiwan

Toll Free 0800-777-111  
Neilhu 886-2-2792-7818  
Xindian 886-2-2218-4567  
Taichung 886-4-2329-0371  
Kaohsiung 886-7-229-3600

### Asia Pacific

#### Japan

Toll Free 0800-500-1055  
Tokyo 81-3-6802-1021  
Osaka 81-3-6802-1021

#### Korea

Toll Free 080-363-9494  
Seoul 82-2-3663-9494

#### Singapore

Singapore 65-6442-1000

#### Malaysia

Kuala Lumpur 60-3-7725-4188  
Penang 60-4-537-9188

#### Thailand

Bangkok 66-2-248-3140

#### India

Bangalore 91-80-2545-0206  
Pune 91-20-3948-2075

#### Indonesia

Jakarta 62-21-751-1939

#### Australia

Toll Free 1300-308-531  
Melbourne 61-3-9797-0100  
Sydney 61-2-9476-9300

### Europe

#### Germany

Toll Free 00800-2426-8080  
Munich 49-89-12599-0  
Düsseldorf 49-2103-97-855-0

#### France

Paris 33-1-4119-4666

#### Italy

Milano 39-02-9544-961

#### Benelux & Nordics

Breda 31-76-523-3100

#### UK

Reading 44-0-118-929-4540  
Newcastle 44-0-191-262-4844  
London 44-0-870-493-1433

#### Poland

Warsaw 48-22-31-51-100

#### Russia

Moscow 8-800-555-01-50  
St. Petersburg 8-800-555-81-20

### Americas

#### North America

Toll Free 1-888-576-9668  
Cincinnati 1-513-742-8895  
Milpitas 1-408-519-3898  
Irvine 1-949-420-2500

#### Brazil

Toll Free 0800-770-5355  
São Paulo 55-11-5592-5355

#### Mexico

Toll Free 1-800-467-2415  
Mexico City 52-55-6275-2727

# ADVANTECH

Enabling an Intelligent Planet

[www.advantech.com](http://www.advantech.com)

Please verify specifications before quoting. This guide is intended for reference purposes only. All product specifications are subject to change without notice.

No part of this publication may be reproduced in any form or by any means, electronic, photocopying, recording or otherwise, without prior written permission of the publisher.

All brand and product names are trademarks or registered trademarks of their respective companies. © Advantech Co., Ltd. 2015

V01201905



860000349