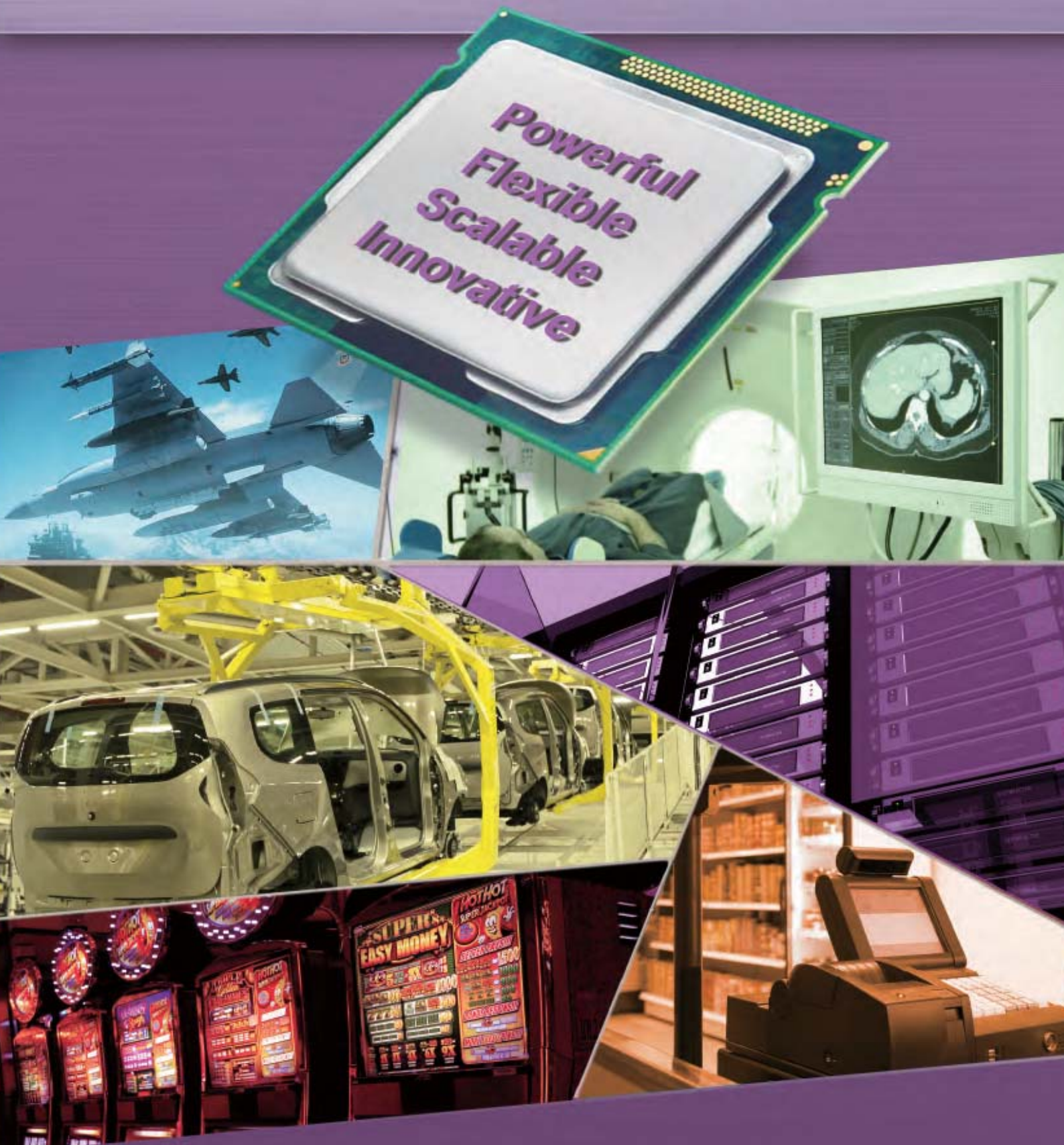
4th Generation Computing Solution



About the 4th Generation New Technology

The latest Intel® platform provides some major improvements on power and time responsiveness, creating driving innovations on form factor and delivering more excellent media capabilities than the 3rd generation platform. Here are the key messages for the latest generation new technologies:

GREEN, NEW ADVANCED POWER-SAVING SYSTEM

The Intel® 4th generation platform provides power improvements of around 50% compared to the former one. One of the major reasons is that the 4th generation moves the CPU voltage regulator off of the motherboard and into the CPU package, creating a Fully Integrated Voltage Regulator or FIVR. Secondly, this is a far more efficient design with the use of "enhanced" tri-gate transistors, current leakage has been reduced by 2 to 3 times versus the 3rd generation.

CPPM, a new framework which reduces platform idle power, allows safe usage of deep, long latency platform power management states by new bus extensions. The 4th generation processor and PCH will include embedded power control modules, which promises that the architecture would deliver a 30% reduction in processor power consumption compared to the 2nd generation CPU. Moreover, new power management framework that extends beyond the processor itself promises a twenty-fold reduction in overall platform power consumption. For the ULT sku, Intel® would permit ten days of idle, but connected usage, on a single charge, potentially making the generation a turning point for Intel® on more power saving related applications.

OVERCLOCKING ON the 4th Generation Platform

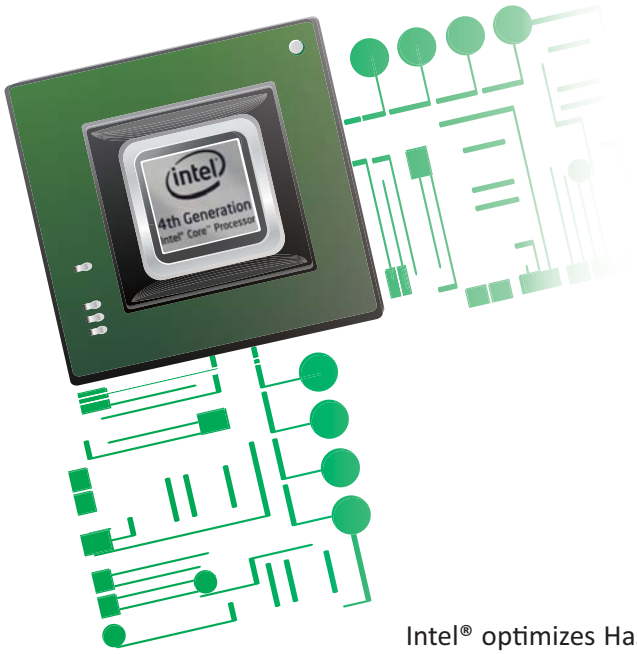
Intel® provides all new overclocking features on the 4th generation processors. These new overclocking features give users the most stable and highest overclocks achievable on their hardware. An overclock usually takes a user to reboot his system and to make specific adjustments through the BIOS in able to achieve a stable overclock. With previous generation, users can change CPU and iGPU frequencies and settings from within Windows in real-time. However, the BCLK ratio can only be configured to around 7%, which makes the enthusiast switch back to the good old BIOS/UEFI interface.

Since the 4th generation platform offers significant improvements in real-time overclocking,while the configurations and features which allow higher BCLK ratio adjustments do exist but only on the high end 3rd generation platform, mainstream 4th generation processors would get these features out of box. With BCLK ratios of 100MHz, 125MHz and 166MHz available on the 4th generation processor, users would get unprecedented overclock levels by only adjusting the multiplier value in real-time.

Feature and performance

CORE TECHNOLOGY AND BENEFIT

The 4th generation Intel® Xeon® and Core™ microprocessor family built on 22nm process technology drives Portwell's boards and systems to higher performance and more functional expansion flexibility.



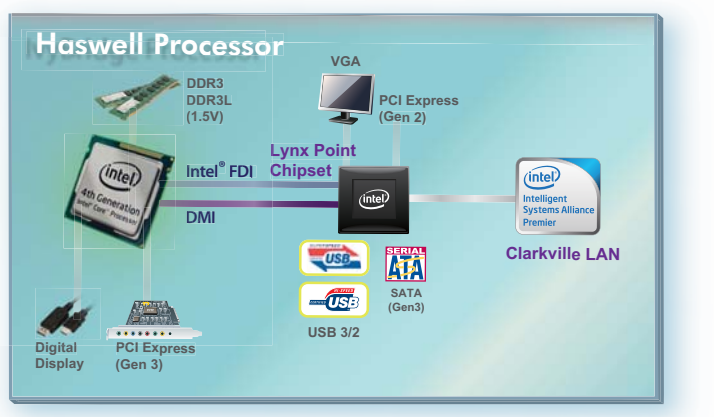
Intel® optimizes Haswell architecture to deliver great CPU computing power up to 15% and graphic performance up to 30%. It also implements flexible input/output to improve connected capabilities. This next generation powerful CPU supports Microsoft® DirectX® 11.1, OpenGL® 4.0 and OpenCL™ 1.2. For multi-display, Haswell also supports three simultaneous displays, HDMI and 2 DisplayPorts, with high resolution up to 4K x 2K.

The Intel® C226/Q87/QM87/H81 chipset continues to work on the edge of innovation with a new architecture to deliver quality, performance, and industry-leading I/O technologies on most of the platforms powered by the 4th generation Intel® Core™ processor family. The processors in an LGA1150 socket supporting two-channel DDR3 long DIMM sockets and PCI Express Gen 3 provide great data transferring bandwidth for improving graphics performance. The PCI Express 3.0 from the Intel® Xeon® processors provides three flexible options, one PCIe x16, two PCIe x8 or one PCIe x8 plus two PCIe x4 lanes for versatile applications.

Moreover, the enhancement in flash playback, rich 2D/3D graphics quality, security and power efficiency enables a fascinating visual experience in a variety of industrial market segments such as Retail, Military, Medical, Factory Automation, Digital Security Surveillance, Network Management and Gateway Solution. These incredible technologies have already implemented in Portwell's latest board level and system products.

PERFORMANCE AND DISPLAY

The 4th generation Intel® Core™ microprocessors implemented new 22nm processes with tri-gate architecture for improving CPU performance up to 5% to 15%. It is the first time Intel® provides Fully Integration Voltage Regulator (FIVR) into this latest generation circuit design that decreases the complexity of the power module and makes power management more stable. In the new processors, Intel® adds several new Haswell instructions with advanced vector extension (AVX) to improve Intel® Advanced Encryption Standard Instructions (AES-NI). AES-NI instructions can be used in any application that uses AES for encryption. AES is very widely used in several appli-



cations such as network encryption, and disk and file encryption applications. Networking applications use encryption to protect dat,a and file-level and disk encryption applications use AES to protect data stored on a disk.

Every year, there is expected to be one tick or tock, and Haswell is a "tock" with new microarchitecture to improve graphic performance. The enhanced graphic engine provides up to 30% performance increase with GT3. In this generation, Intel® processor supports DirectX® 11.1, OpenGL® 4.0 and OpenCL™ 1.2, providing significant 3D and media performance. The 4th generation Intel® microprocessors implemented internal VGA via Lynx Point chipset for most legacy industrial systems to multiply display applications of up to 3 independent displays, including HDMI 1.4, DVI, DisplayPort and VGA. HDMI also supports the highest resolution 4K x 2K. Following the triple display combination table, the processor and PCH can provide specific display and resolution, supporting both clone and extension modes.

Introduction

Triple Display Combination Table

Display 1		Display 2		Display 3	
HDMI/ DP	4096x2160@24Hz/ 3840x2160@60Hz	HDMI/ DP	4096x2160@24Hz/ 3840x2160@60Hz	DP/eDP	3840x2160@60Hz
DP/eDP	3840x2160@60Hz	DVI/WiDi	1920x1200@60Hz/ 1920x1080@30Hz	DVI	1920x1200@60Hz
VGA/ WiDi	1920x1200@60Hz/ 1920x1080@30Hz	DP/eDP/ HDMI	3840x2160@60Hz/ 3840x2160@60Hz/ 4096x2160@24Hz	HDMI/DP	4096x2160@24Hz/ 3840x2160@60Hz
DP/eDP	3840x2160@60Hz	DP	3840x2160@60Hz	DVI	1920x1200@60Hz
VGA	1920x1200@60Hz	DVI	1920x1200@60Hz	DVI/WiDi	1920x1200@60Hz/ 1920x1080@30Hz
VGA	1920x1200@60Hz	DP/eDP/ HDMI	3840x2160@60Hz/ 3840x2160@60Hz/ 4096x2160@24Hz	DVI/WiDi	1920x1200@60Hz/ 1920x1080@30Hz
DVI	1920x1200@60Hz	DVI	1920x1200@60Hz	DVI	1920x1080@30Hz

Flexible I/O

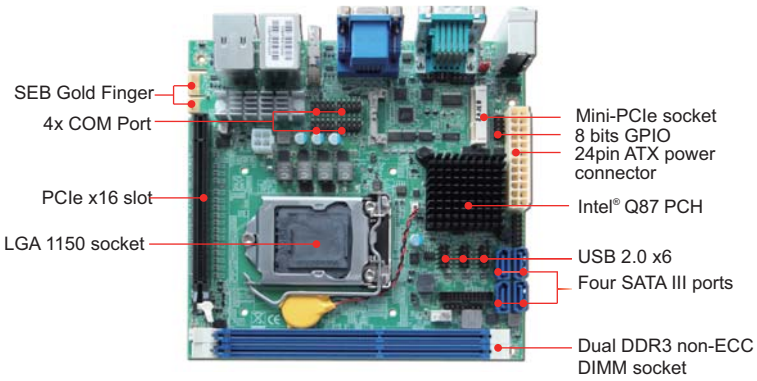
Fixed Signals				Mixed		Fixed Signals						Mixed		Fixed Signals			
USB 31	USB 32	USB 35	USB 36	USBE 1 / USB 33	PCIE 2 / USB 34	PCIE 3	PCIE 4	PCIE 5	PCIE 6	PCIE 7	PCIE 8	SATA 4 / PCIE 1	SATA 5 / PCIE 2	SATA 0	SATA 1	SATA 2	SATA 3
I/O 1	I/O 2	I/O 3	I/O 4	I/O 5	I/O 6	I/O 7	I/O 8	I/O 9	I/O 10	I/O 11	I/O 12	I/O 13	I/O 14	I/O 15	I/O 16	I/O 17	I/O 18

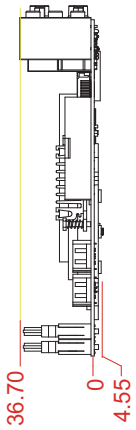
	MAX Possible perinterface	Default Config	ALT Config # 1	ALT Config # 2	ALT Config # 3	ALT Config # 4	ALT Config # 5
USB 3.0	6	4	6	6	5	5	6
PCI Express 2.0(5GB)	8	8	6	8	8	7	7
SATA 3 (6 Gb)	6	6	6	4	5	6	5

With exceptional new architecture of instruction and graphics, the Intel® Lynx Point chipset implements new design of input and output, called Flexible I/O which allows some I/O ports to be configured at the time of system design. There are a total of 18 differential signal pairs, splitting between SATA III, USB 3.0 and PCIe Gen2. The mixed signals that can be selected are either USB/PCIe or SATA/PCIe, with two signal pairs for both. That means the system can implement up to 6 USB 3.0 ports, 6 SATA III ports and 8 PCIe ports. Based on the definition of flexible I/O, feature configuration of system can be various. For network storage applications, the design of the system can implement 8 PCIe and 6 SATA with 4 USB ports remaining. Intel's latest chipset improves the connective abilities to fit various requirements and different applications.

WADE-8015

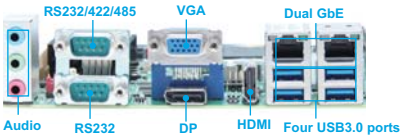
Intel® 4th Dual/Quad processor based Mini-ITX Board with dual Gigabit Ethernet, four SATA III ports, six COM ports, one PCIe x16 expansion slot and one Mini-PCIe slot with mSATA interface





WADE-8015 is based on Intel® Q87 chipset and desktop processor sku like Core™ i7 and i5. Built with PCI and PCI Express expansions. It is suitable for Medical, Industrial automation and digital signage applications.

REAR I/O



FEATURES

- Supports Intel® 4th Dual/Quad processor in LGA1150
- Intel® Q87 PCH
- Two DDR3 Long-DIMM slots up to 16GB (supports 1600/1333)
- One PCIe x16 slot (Gen3 support)
- One Mini-PCIe slot (supports mSATA)
- One PCIe x1 Gold Finger (PCIe x2 signal)
- Audio Jack (supports Line-in / Line-out / Mic-in)
- Six COM ports (2pcs on rear I/O, 4pcs on board header)
- Four SATA III Ports (supports RAID 0,1,5,10)
- Total Ten USB ports (4x USB3.0 Ports & 6x USB2.0 Ports)
- Support Triple Display function (DP/VGA/HDMI)

ORDERING GUIDE

AB1-3910	(R).WADE-8015.Mini-ITX ESB.Q87 w/o ECC LGA1150.w/DDR3 SDRAM /VGA/DP/HDMI/Dual GbE/COM/Audio/USB

PACKING LIST

One WADE-8015 Mini-ITX Motherboard
One installation DVD
One SATA III cable
One I/O shield

GENERAL

Processor	- Intel® Core™ i5/i7 processor in LGA1150 package - DMI x4 Link: 5.0GT/s - Supports Intel® Turbo Boost , Hyper-Threading, Virtualization, Thermal Monitoring, Trusted Execution and SpeedStep Technology (depends on CPU sku)
Chipset	- Intel® Q87 PCH
BIOS	- Pheonix UEFI BIOS
Memory	- Supports up to 16GB DDR3 1333/1600 SDRAM on two 240-pin DIMM sockets
Storage Devices	- 4x SATA III support up to 6.0 Gb/s data transfer rate
Watchdog Timer	- Programmable via S/W from 0.5 sec. to 254.5 sec.
Hardware Monitoring	- FAN Speed (CPU & System), Temperature (CPU & System) - Beep alarms for field fan out, over/under voltage of DC voltages and over temperature threshold
Expansion Interface	- 1x PCI Express x16 Gen3 up to 8.0 GT/s - 1x Mini-PCIe slot - 1x PCI Express x1 Gold Finger

I/O INTERFACE

Super I/O	- ITE IT8728F
Audio	- Intel® Q87 PCH built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC886-GR HDA codec, 5.1 channels
Ethernet	- Intel® WGI217LM + WGI210AT gigabit ethernet controller - Dual 10BASE-T / 100BASE-TX / 1000BASE-T Ethernet - PCI Express x1 interface based on gigabit ethernet - Dual RJ-45 connectors with two LED indicators
Serial Port	- 1x RS232 port on rear I/O - 1x RS232/422/485 selectable port on rear I/O - 3x RS232 with header - 1x RS232/422/485 with header
USB	- 4x USB3.0 Ports on rear I/O - 6x USB2.0 Ports on board
Keyboard & Mouse	- PS/2 on board dedicated to Keyboard & Mouse
GPIO	- On board programmable 8bit Digital I/O

DISPLAY

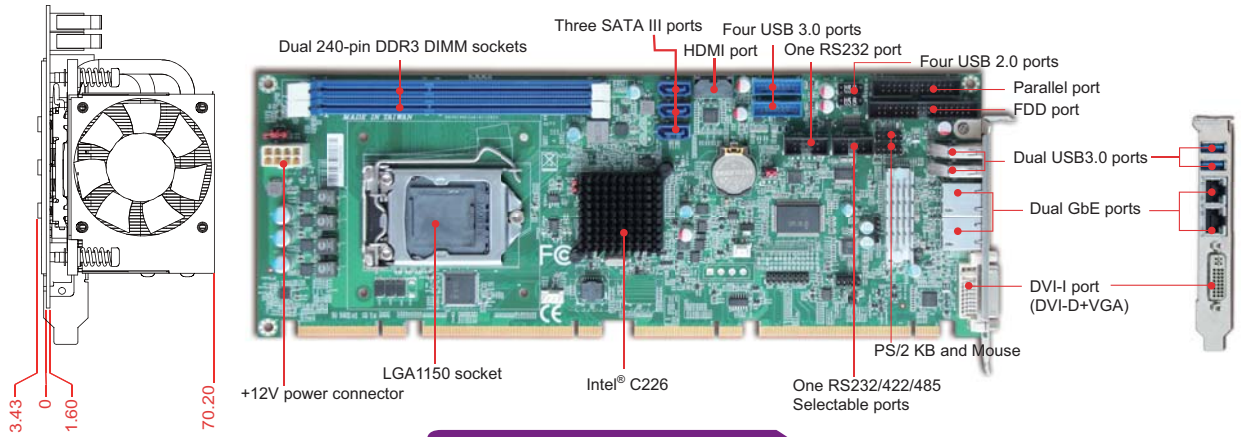
Graphic Controller	- Intel® Core™ i5/i7 processors integrated graphic engine - Provided improved 3D multimedia capabilities including Microsoft DirectX 11.1, Shader Model 4.0, MPEG-2 and OpenGL 3.2
Display Interface	- VGA: one connector DB-15 on rear I/O,analog resolution up to 1920x1200 - DP : one connector on rear I/O,supports up to 3200x2000 resolution - HDMI : one connector on rear I/O,supports up to 4096x2304 resolution

Mechanical & Environment

Dimension	-170(L) x 170mm(W); 6.69"(L) x 6.69"(W)
Power Supply	- ATX 24-pin power input
Environment	- Operation Temperature: 0~60 °C - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 120,000 hours at 40°C

ROBO-8112VG2AR

Intel® Xeon® E3-1200v3/Core™ i3 series processor based on PICMG 1.3 SHB with DDR3 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



ROBO-8112VG2AR is based on Intel® C226 chipset and workstation processor sku like Xeon® and Core™ i3. Built with flexible PCI express expansion, it's suitable for Medical, Industrial automation, and digital signage applications.

FEATURES

- Supports Intel® Xeon® E3-1200v3 series/Core™ i3 processors in LGA1150 package
- Delivers up to 16GB maximum DDR3 1333/1600 ECC SDRAM on two DIMM sockets
- Supports triple display by DVI-I (DVI-D+VGA) and HDMI
- Supports iAMT 9.0 on Intel® Xeon® E3-1200v3 series processors
- High speed dual Gigabit Ethernet based on PCI Express x1, high bandwidth I/O interface
- Rich I/O connections such as FDD, two Gigabit Ethernet, serial ports, parallel port, USB 2.0/3.0
- On-board five SATA III ports support RAID 0,1,5,10 (dual ports on backplane)

ORDERING GUIDE

AB1-3954	**ROBO-8112VG2AR** PICMG 1.3(PCI-E+PCI).LGA1150. Intel Xeon/Core i3 processors.SHB.w/VGA/Dual GbE/Audio

PACKING LIST

Standard	B6902930 SATA III cable (Black)
	B690021S Cable kit for FDD+PRN with bracket
	B8981980 PICMG SBC Handling and Installation Notice
	B6902890 DVI-D + VGA cable with bracket
	B6903240 dual head COM port cable with bracket
	B3751640 Installation DVD
Option	B6902980 PS/2 Keyboard / Mouse Cable with bracket
	B6902230 USB port cable with bracket
	AB9-2066 PA-M1AU Multiple Media kit
	B6903090 USB 3.0 cable with bracket

GENERAL

Processor	- Intel® Core™ i3 and Xeon® E3-1200v3 series processor up to 3.5 GHz (45~95W) with (8MB) Cache in LGA1150 package - DMI x4 Link: 5.0GT/s - Supports Intel® Turbo Boost , Hyper-Threading, Virtualization, Thermal Monitoring, Trusted Execution and SpeedStep Technology (depends on CPU sku)
Chipset	Intel® C226 PCH
BIOS	Phoenix UEFI BIOS
Memory	- Supports up to 16GB DDR3 1333/1600 SDRAM on two 240-pin ECC DIMM sockets - Supports ECC
Storage Devices	- Supports 5x SATA III drive (Dual ports via Backplane) - RAID 0,1,5,10 - 1x FDD channel
Watchdog Timer	Programmable via S/W from 0.5 sec. to 254.5 sec.
Hardware Monitoring	System monitor (Voltage, Fan speed and Temperature)
Expansion Interface	- From CPU (Xeon®/Core™ i3): 1x PCI Express x16 or 2x PCI Express x8 or 1x PCI Express x8 + 2x PCI Express x4 by jumper setting (Gen 3 up to 8.0 GT/s) - From PCH: 1x PCI Express x4 or 4x PCI Express x1 by different bios support (Gen2 up to 5.0 GT/s) - 4x PCI devices at 32 bits 33 MHz

I/O INTERFACE

Super I/O	ITE IT8728F
Audio	- Intel® BD82C226 PCH built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC886-GR HDA codec, 7.1 channels
Ethernet	- Intel® WGI217LM + WGI210AT gigabit ethernet controller - Dual 10BASE-T / 100BASE-TX / 1000BASE-T Ethernet - PCI Express x1 interface based on gigabit ethernet - Dual RJ-45 connectors with two LED indicators
Serial Port	- 1x RS232 and 1x selectable RS232/422/485 on board
USB	- 8x USB 2.0 ports (four ports through backplane) - 480Mb/s bus capable of high-speed/full-speed/low-speed data ranges - 6x USB 3.0 ports on board (four ports on board, dual ports on bracket) - 5Gbps bus capable of high-speed/ full-speed/low-speed data ranges
Keyboard & Mouse	- 2x USB 3.0 ports on bracket dedicated to keyboard & mouse (on bracket) - 1x 10 pin box header for external PS/2 keyboard/mouse
GPIO	On board programmable 8-bit Digital I/Os
Others	1x Parallel port

DISPLAY

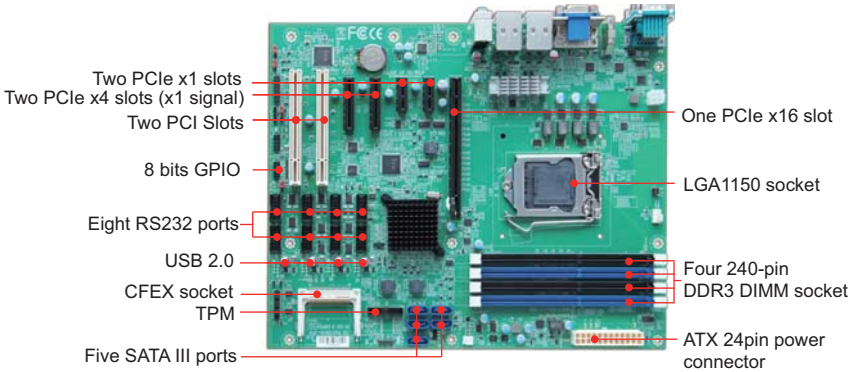
Graphic Controller	- Intel® Xeon® and Core™ i3 processors integrated graphics engine - Provides improved 3D multimedia capabilities including Microsoft DirectX 11.1, Shader Model 4.0, MPEG-2 and OpenGL 3.2
Display Interface	- VGA on bracket: Resolution up to 1920x1200 @ 60Hz - DVI-D on bracket: up to 1920x1200 @ 60Hz (VGA + DVI-D on bracket by DVI-I port) - HDMI: up to 4096x2160 @ 24Hz

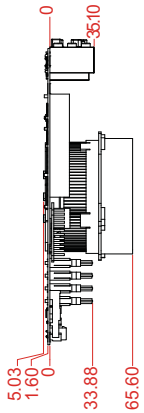
Mechanical & Environment

Dimension	- 338.5mm(L) x 126.39mm(W), 13.33"(L) x 4.98"(W) - PCB: 8 layers
Power Supply	- Typical: +12V@5.29A;+5V@4.94A - Supports ATX mode
Environment	- Operation Temperature: 0~60 °C - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 100,000 hours at 40°C

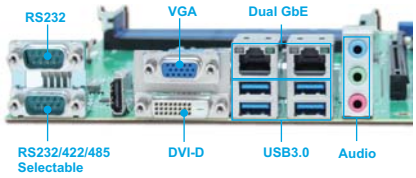
RUBY-D716VG2AR

Intel Core™ i5/i7 processor based ATX with DDR3 SDRAM, Triple display, Dual Gigabit Ethernet, and USB Ports





RUBY-D716VG2AR is based on Intel® Q87 chipset and desktop processor sku, like Core™ i7 and i5. Built with PCI and PCI Express expansions, it can support Medical, Industrial automation and digital signage applications.



FEATURES

- Supports Intel® Core™ i5 and i7 processor
- Four Long-DIMMs support dual channel DDR3 non-ECC SDRAM up to 32GB
- Triple display by VGA/DVI-D/HDMI
- Rich I/O, USB2.0/3.0, dual Gigabit Ethernet, COM Port and SATA III ports support Intel RAID 0, 1, 5, 10.
- One PCIe x16 (Gen3), Two PCIe x4 (Gen2, x1 signal), Two PCIe x1 (Gen2), and two PCI slots.
- Intel® Active Management Technology 9.0

ORDERING GUIDE

AB1-3941	RUBY-RUBY-D716VG2AR ATX IMB. LGA1150 CPU. Q87. DDR3/VGA/DVI-D/HDMI/Dual GbE/COM/Audio/USB

PACKING LIST

One RUBY-D716VG2AR ATX Industrial Main Board
One SATA III Cable
One Installation DVD
One I/O shield

GENERAL

Processor	- Intel® Core™ i5/i7 processor up to 3.4 GHz (65~95W) with (3~8MB) Cache in LGA1150 package - DMI x4 Link: 5.0GT/s - Supports Intel® Turbo Boost , Hyper-Threading, Virtualization, Thermal Monitoring, Trusted Execution and SpeedStep Technology (depends on CPU sku)
Chipset	Intel® Q87 PCH
BIOS	Pheonix UEFI BIOS
Memory	Supports up to 32GB DDR3 1333/1600 SDRAM on four 240-pin DIMM sockets(dual channel)
Storage Devices	Supports 5x SATA drives Supports 1x CFEX slot Supports RAID 0,1,5,10
Watchdog Timer	Programmable via S/W from 0.5 sec. to 254.5 sec.
Expansion Interface	- 1x PCI Express x16 Gen3 up to 8.0 GT/s - 2x PCI Express x4 (PCIe x1signal Gen2 up to 5.0 GT/s) - 2x PCI Express x1 (Gen2 up to 5.0 GT/s) - 2x PCI devices at 32 bit 33 MHz

I/O INTERFACE

Embedded Controller	ITE IT8518
Audio	Intel® Q87 PCH built-in High Definition Audio up to 192-kHz 32-bit Realtek ALC886-GR HDA codec, 5.1 channels
Ethernet	- Intel® WG1218LM + WG1210AT gigabit ethernet controller - Dual 10BASE-T / 100BASE-TX / 1000BASE-T Ethernet - PCI Express x1 interface based on gigabit ethernet - Dual RJ-45 connectors with two LED indicators
Serial Port	- 4x RS232 - 2x RS232/422/485 (supports BIOS switch) - 4x RS232 optional (up to total 10 COM ports)
USB	4x USB3.0 Ports on rear IO 8x USB2.0 Ports on board
Keyboard & Mouse	PS/2 on board dedicated to Keyboard & Mouse
GPIO	on board programmable 8-bit Digital I/Os

DISPLAY

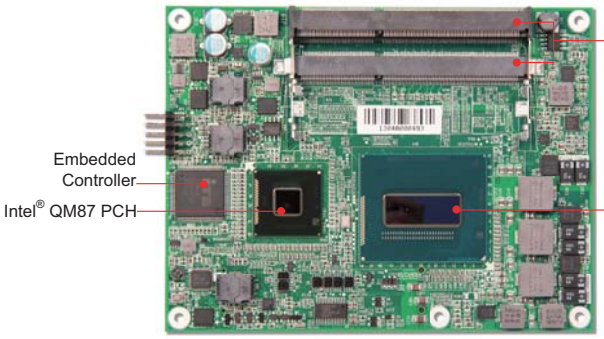
Graphic Controller	- Intel® Core™ i5/i7 processors integrated graphic engine - Provided improved 3D multimedia capabilities including Microsoft DirectX 11.1, Shader Model 4.0, MPEG-2 and OpenGL 3.2
Display Interface	- VGA: Resolution up to 2560x1600 @ 60Hz - DVI-D: up to 1920x1200 @ 60Hz - HDMI: up to 1920x1200 @ 60Hz Supports Triple Display

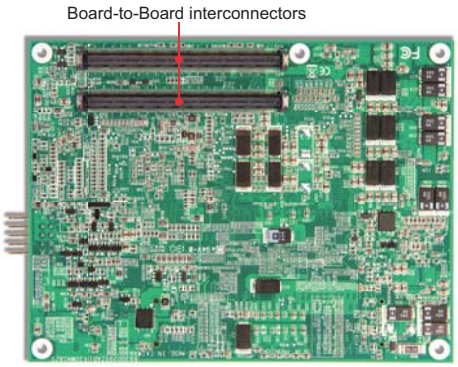
Mechanical & Environment

Dimension	304.8(L) x 243.8mm(W); 12"(L) x 9.6"(W) PCB: 6 layers
Power Supply	ATX 24-pin power input
Environment	- Operation Temperature: 0~60 °C - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 120,000 hours at 40°C

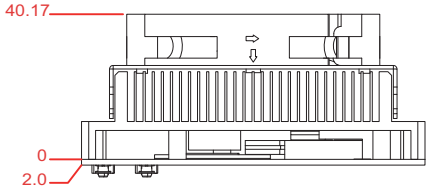
PCOM-B630VG

Intel® 4th Generation Core™ i7 Processor based on Type VI COM Express module with DDR3L SDRAM, VGA, LVDS, Gigabit Ethernet, SATA III and USB





PCOM-B630VG can offer high computing power by Shark Bay processor brings quad core technology and provides significant performance improvement. 6GT/s SATA performance is supported by PCOM-B630VG. It supports storage back-up function and enhances performance ability. We also provide SOL, IDER, Serial over Lan and Remote control functions in PCOM-B630VG by Intel® iAMT 9.0 support.



FEATURES

- The Intel® Shark Bay processor brings Quad-core technology and provides significant performance improvement
- The Intel® QM87 integrated GMA graphic provides better performance and variable display interfaces
- Design to comply with both socket type and BGA type Core™ i7 processor for intensive computing
- Architecture of module and carrier boards speeds up time-to-market of tailor-made equipment
- Supports smart computing and power gear by cTDP (Configurable TDP)
- Follow PICMG COM-Express R2.1 Standard (Type6)
- More Reliable, Rugged & Expandable Design

ORDERING GUIDE

AB1-3920	(R).PCOM-B630VG.TYPE VI. Compact Form Factor.COM Express Module.Haswell/PCH

PACKING LIST

One PCOM-B630VG COM-Express module
One Driver CD

GENERAL

Processor	- Intel® Core™ i5/i7 processor in BGA package - DMI x4 link: 5.0GT/s - Supports Intel® Turbo boost, hyper-threading and configurable cTDP (on 17watts/25watts CPU SKUs)
Chipset	Intel® QM87 PCH
BIOS	Phoenix uEFI BIOS
Memory	- Pheonix UEFI BIOS - AMI UEFI BIOS
Storage Devices	Supports up to 16GB DDR 1333/1600 SDRAM on two 204pin SO-DIMM
Watchdog Timer	6x SATA ports (up to 6GT/s)
Hardware Monitoring	Programmable by embedded controller
Expansion Interface	1x PCI-Express x16 Gen 3, up to 8GT/s

I/O INTERFACE

Super I/O	N/A
Audio	HDA controller integraded in QM87
Ethernet	Onboard Intel® I217LM
Serial Port	One series RX/TX supported from onboard EC (embedded controller)
USB	- 8 ports USB2.0 - 4 ports USB3.0
Keyboard & Mouse	KBC controller integrated in embedded controller
GPIO	8 bits congfigurable controlled by embedded controller

DISPLAY

Graphic Controller	Intel® HD Graphics 4600 supports DX11.1, OpenGL 3.2
Display Interface	- VGA: resolution up to 1920x1200 - 3x Display Ports: resolution up to 4K x 2K

Mechanical & Environment

Dimension	125mm (L) x 95mm (W) x 2.0mm (H)
Power Supply	- Supports 8V~18V DC input - Power saving that interoperable with carriers: 1) provide only 5V standby in power saving modes. 2) provide only the 12V primary power with no 5V standby source
Environment	- Operation temperature: 0~60°C - Storage temperature: -20~80°C - Relative humidity : 5~95%, non-condensing
MTBF	Over 120000 at 55°C

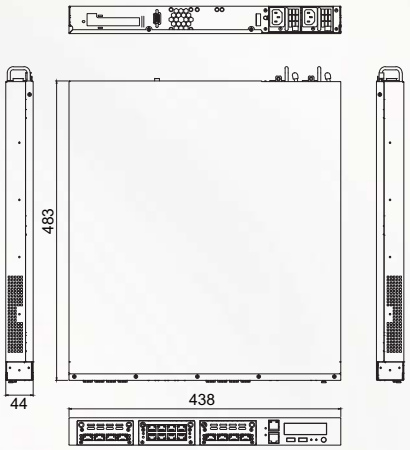
CAR-4020

The 1U Network Appliance with support for Intel® 4th Gen. Xeon® Processor and C226 Chipset which Scales up to 24GbE.

Key Features

- 4th Generation Intel® Core™ Processor w/ Intel® C226 Chipset Platform
- High Scalability with 3 Expansion Slots
- Provide Maximum 24 GbE ports or Maximum 4 x 2.5" swappable HDD or SSD
- 1 GbE ,10 GbE, CASwell NIC modules or Intel Cave Creek, Tilera Gx36 Acceleration modules supported
- Modularized IPMI function supported
- Integrated LCM control button

CASwell Inc. introduced the CAR-4020 rackmount network security appliance. The CAR-4020 features the Intel® C226 chipset, dual-channel DDR3 1600 memory (up to 32GB), up to four removable 2.5" SATA HDD or SSD, and three removable CASwell NIC modules in front. We design all I/O in front such as NIC, USB, IPMI/LOM, management port, and LCD module with 5 direction switch. The CASwell CAR-4020 1U communication appliance is ideal for network security applications (such as firewall, VPN, IDS/IPS, anti-spam, anti-virus, and UTM), and network management applications (such as routers, WAN optimization, RAS gateways, QoS, server load-balance, wireless controllers, medical DICOM and PACS, and industrial automation control via Ethernet TCP/IP). High density and flexibility meet your hardware requirements.



High Scalability- Scales up to 24GbE or 4x SSD

CAR-4020 modular designed with 3 slots expansion allow you to mix and match your network and storage purpose with up to 24GbE or 4x 2.5" removable HDD/SSD. CASwell's modular designed with diversified network adapter from copper to fiber, Dual ports to 8 ports, non-Bypass to Bypass, 1GbE to 40GbE options. And network acceleration modular such as Intel Cave Creek, Tilera 36cores solutions to suit your needs.

High Availability-IPMI, Redundant PSU

IPMI modularized on CAR-4020 supports remote management for system hardware health monitoring, event log checking, sensors/components alerting, and system power on/off/reset controls for sensitive network reliability. Redundant Power Supplies provide redundancy power protection connect to different power source of wall socket and UPS.

Design by Subtraction - You Pay, You Need

CAR-4020 designed by subtraction for you to add the components you actually need on your application. From network speed and density to storage capacity and from Single PSU to Redundant PSU, CAR4020 can fit your budget.

All is just beginning – Solution Customization

CASwell, the network solution provider, completes your solution to design and customize all network appliances you need in hardware, software, hub service…etc fields as your best partner.

Ordering Guide

Model	Part Number	Description
CAR-4020-4300-000	AI2-5114	(R).CAR-4020-000. 1U. Denlow Platform. CAPB-4020-000.

H/W specification

Main Board	4th Generation Intel® Core™ Processor w/ Intel® C226 Chipset Platform
System Memory	4x DDR3 /1600 ECC DIMMs, up to 32GB
Ethernet Port	Dependant by CASwell NIC
Bypass	Dependant by CASwell NIC
Expansion	Three PCIe x8 for CASwell NIC Module One PCIe x8 for Standard add-on card
Storage Device	4x 2.5" Swappable SATA HDD/SSD CF Socket
LCD Panel	2x16 Characters
LOM	IPMI 2.0 w/ GbE speed (Optional)
Power	280W Single Flex ATX/ Redundant PSU/DC48V
Dimension	438(W) x 483(D) x 44(H)mm 17.24"(W) x 19.02"(D) x 3.5"(H)
Certification	CE/FCC
OS Support	Linux Kernel, Windows

CAR-3040 Best Value for LAN Capacity and Performance

Key Features

- Intel® 4th Generation Core™ Processors
- Two DIMMs DDR3 up to 16GB
- Up to 18 GbE ports
- One expandable CASwell NIP card support
- One 3.5" or two 2.5" internal SATA HDD

The CAR-3040 is a 1U rackmount network security appliance that supports Intel® 4th generation Core i7/i5/i3 processor with Intel® H81/Q87 PCH. The CAR-3040 1U network security appliance also features dual-channel 1066/1333 MHz DDR3 memory modules up to 16GB, PCIe x8 expansion (with up to two generation 3.0 bypass segments), LGA-1150 socket, up to 18 gigabit Ethernet ports, optional dual 10G SFP+LAN module, 80 Plus power supply, and 6 onboard Ethernet ports with 2 bypass segments. Design tests have shown that CASwell's CAR-3040 network security appliance is capable of increasing LAN throughput by an average of 30 percent when compared with previous generation platforms. CASwell CAR-3040 series keep high quality, flexibility, and affordable pricing just like this family's best tradition.

Support Intel® H81 and Q87 Express Chipset

The CAR-3040 is built with the latest Intel® 8 series chipset. It supports a maximum of 16GB of unbuffered/non-ECC DDR3 memory, dual USB 3.0 ports and SATA 3 ports.

Up to 18 GbE LAN Ports

The CAR-3040 is designed for scalability and value optimization. In a 1U rackmount space, there are 6 onboard GbE ports with users can add up to 18 GbE ports via a CASwell innovative extension board design and CASwell NIP modules.

Appliance Form Factor

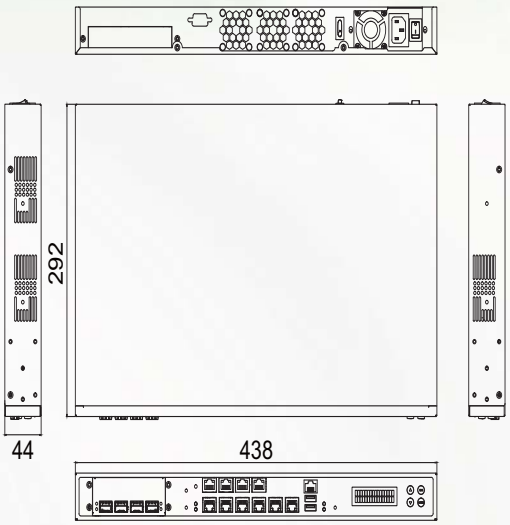
The length of CAR-3040 is only 292 mm, shorter than other 1U rackmount network appliances in the market.

A Wide Variety of Expansion Cards

The CAR-3040 have an expansion slot for either standard PCIe interface add-on card or CASwell network modules, such as 4 ports 10GbE fiber module NIP-53040, 8 ports 1GbE copper module NIP-51080, or 8 ports 1GbE fiber module NIP-52080.

CASwell Generation 3 Bypass

The bypass function ensures important networking tasks never stop working even when the appliance experiences a software crash or power failure. The CAR-3040 comes with CASwell's latest Generation 3 Bypass. It supports several operation modes, such as Normal mode, Bypass mode, and Open mode, allowing users to adjust the Bypass setting either in BIOS or OS.



Ordering Guide

Model	Part Number	Description
CAR-3040-4620-000	AI2-5135	(R).CAR-3040-4620-000.1U.CAPB-3040VR-4620-000. 6 RJ45 GbE ports. 2 BP. ATX PSU.
CAR-3040-4621-000	AI2-5150	(R).CAR-3040-4621-000.1U.CAPB-3040VR-4621-000. 10 RJ45 GbE ports. 2 BP. ATX PSU.

H/W specification

CPU Board	Intel® LGA 1150 Intel® H81/Q87 PCH
System Memory	2 DDR3 Long DIMMs, up to 16GB
Ethernet Port	Up to 18 GbE RJ45
Bypass feature	4 Segments
Expansion	One PCIe x8 for CASwell NIC Module or Standard add-on card
Storage Device	Optional one 3.5" or two 2.5" SATA HDD CFEX
Serial Port	One front-access RJ45 for system console One 2x5 pin-header for EZIO
LCD Panel	2x16 characters or 128x32 graphic LCD module with 4 buttons
USB	Dual USB 3.0
Power	80Plus 250W full-range ATX
Dimension	438(W) x 292.1(D) x 44(H) mm 17.25"(W) x 11.5"(D) x 1.73"(H)
Operating Environment	Temperature: 0 to 40°C (32 to 104°F) Humidity 20% to 90%RH @ 55°C
Storage Environment	Temperature: -10 to 70°C (14 to 158°F) Humidity 5% to 95%RH @ 55°C
Certification	CE/FCC

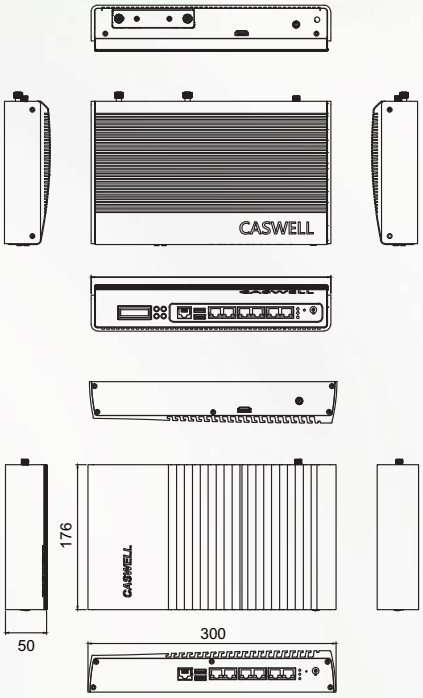
CASWELL Complete Your Solution

CAF-2000 The New Fan-less Desktop Networking Appliance with Intel® 4th Gen. Core™ U Processor.

Key Features

- 4th Generation Intel® Core™ U Processor Platform.
- Fan-less improvements to long MTBF and Low Noise.
- 3G/ wifi module support
- 2.5" swappable HDD or SSD and CFex support.
- Integrated LCM with 4 control button (option)

CAF-2000, a fan-less embedded network appliance with the new generation of CASwell's proprietary powerful thermal design, ensuring maximum heat dissipation and a true fan-less system, utilizing Intel's latest Shark bay-ULT platform embedded mobile CPUs (i3/i5/i7). The system provides redundant network con-nectivity, up to 6 ports with WiFi or 3G support. One internal SIM slot offers system rich expansions. The HDMI display output also makes it a great choice for system maintenance. This fan-less system also supports one small 16x2 LCD module with four buttons and a removable 2.5" HDD tray for SSD. Whatever the applications are - network security, management, automation, or informa-tion control - this fan-less Intel mobile Lynx Point-ULT based system is designed to be high performance, robust, reliable, secure, and easy to manage, while enabling further power reductions, smaller systems and performance improve-ments, and providing customers a high performance embedded design platform that requires low power operation.



CASwell Next Generation, High performance desktop System.

Fully compliant with Intel® 4th Generation Core™ U Processor. Support non-ECC DDR3L 1.35V DIMM Sockets, maximum 16GB memory supported.

Power Efficiency

Modular design with 4th Generation Intel® Core™ U Processor.
11% better performance but 25% more efficiency power consumption.

All-inclusive Specification – 2.5"SSD,CFex,3G/WIFI/LCM Module

CAF-2000 comes with adorable size with huge capacity, A4 size but all-inclusive capability; support 2.5" SSD/HDD with CFex, 3G/Wifi/LCM Module all in one shop.

No cable, No Trouble – Fan-less, Cable-less design

The creativity by CAF-2000 comes from cable-less and Fan-less design.
Effetely improve the system MTBF also with significantly noise reduction.
Better your work environmental quality.

All is just beginning – Solution Customization

CASwell the network solution provider, complete your solution to design and customize all network appliances you need in hardware, software, hub service…etc fields as your best partner.

Ordering Guide

Model	Part Number	Description
CAF-2000-4610-000	AI1-5035	(CAF-2000-4610-000. Lynx Point-LP, 1BP, w/SIM Socket Mini PCIe, Fanless EZIO w/ 4 buttons.2.5" HDD,3G.WAN.

H/W specification

Main Board	4th Generation Intel Haswell Mobile ULT SoC include Linx-point LP PCH 15W
System Memory	1x DDR3L SO-DIMM up to 16GB
Ethernet Port	6 x GbE RJ45
Bypass	1
Expansion	N/A
Storage Device	2.5" Swappable SATA HDD/SSD CFex Socket
LCD Panel	Character or Graphics
Power	60 W 12 V Adapter
Dimension	280(W) x 175(D) x 44(H)mm 11.02''(W) x 6.89''(D) x 1.73''(H)
Certification	CE/FCC/UL
OS Support	Linux Kernel, Windows

Reference Table

Model	Dimension	Form Factor	PCH	Key Feature	Target Applications
 WADE-8015	170(L) x 170(W)mm	Mini-ITX	Q87	· Expansion: 1*PCIe x16(Gen3)、1*Mini-PCIe slot 1*PCIe x1 Gold Finger (2*PCIex1 signal) · Triple display: DP/VGA/HDMI · 2*DDR3 Long-DIMM slot up to 16GB (1333/1600 MT/s) · 4*SATA III Ports(support RAID 0,1,5,10)	Gaming Digital Signage POS Industrial Automation Embedded Control
 ROBO-8112VG2AR	338.5(L) x 126.39(W) mm	PICMG 1.3	C226/ Q87	· Supports ECC (C226) and non-ECC (Q87) · Support Intel® Xeon® E3-1200v3 series, Core™ i7/i5/i3 processors · Flexible PCI Express configuration (C226) · Supports RAID 0,1,5, 10 · Triple display: DVI-I and HDMI	Factory Automation Digital Signage Storage Image Processing Military Medical
 RUBY-D716VG2AR	243.8(L) x 304.8(W)mm	ATX	Q87	· Triple display: VGA/DVI-D/HDMI · 4*DDR3 Long-DIMM slot up to 32GB (1333/1600 MT/s) · SATA 6.0Gb/s x5 (RAID 0,1,5,10) · CFEX Support · 6*COM Port (10*COM Port optional)	Medical Kiosk Industrial Automation and Control
 PCOM-B630	125(L) x 95 (W)mm	COM Express	QM87	· Wide-Voltage input – 8V ~ 18V · AT/ATX auto-detection · DDR3L (1.35V) 1333/1600 MT/s · Gigabit LAN x 1 I217LM · Intel® HD Graphics 4000 supports DX11.1, OpenGL 3.2 · SATA 6.0Gb/s x 6 · cTDP support smart computing & performance	Networking Defense Medical IVI
 CAR-4020	435(W) x 448(D) x 44(H) mm	1U	C226	· Up to 24x GbE ports · 3x Removable NIC module w/ PCIe Gen3 · Extension PCIex8 Add-on card slot · AT/Redundant/DC solution ready · GbE IPMI/LOM with dedicate RJ45 · All I/O in front design	Network Security Network Management
 CAR-3040	435(W) x 448(D) x 44(H) mm	1U	H81/ B85	· Up to 18x GbE ports · 1x Removable NIC module · H81/B85 flexibility co-design · AT/Redundant/DC solution ready	Network Security Network Management

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