

Industrial Platform Solution Guide



Ver.213A



About Portwell

Portwell, Inc. was founded in 1993 and entered the Industrial PC market in 1995 by developing single-board computers. Today, our continuous development of leading-edge products has resulted in strong growth in market shares and revenue, a firm place on the Taipei stock exchange (TAISDAQ), and has established Portwell as a major worldwide supplier of specialty computing application platforms and services. Portwell, Inc. is a Premier member of the Intel® Intelligent Systems Alliance. From modular components to market-ready systems, Intel and the 200+ global member

companies of the Alliance provide the performance, connectivity, manageability, and security developers need to create smart, connected systems. Close collaboration with Intel and each other enables Alliance members to innovate with the latest technologies, helping developers deliver first-in-market solutions. Portwell, Inc. is also a member of the selected group of Intel® Applied Computing Platform Providers (IACPP), as well as Advanced Telecom Computing Architecture (ATCA) and an executive member of PCI Industrial Computer Manufacturing group (PICMG).



Portwell Engine (PE) Building

Portwell, Inc. has worldwide operations in the U.S.A., Taiwan, Japan, China, Netherlands, United Kingdom, and India. Whether you are working on a computer board or turnkey system, Portwell is the perfect partner to help you deliver your products to the market on time as well as maintain longevity of product. With 18 years experience in the design and manufacturing of specialty computer boards and systems, Portwell not only provides a one-stop resource for off-the-shelf products, but also supplies custom-built solutions and a global logistics services to suit your needs.

Portwell OEM and ODM solutions satisfy your needs in retail automation, medical equipment, industrial automation, infotainment, communication, and network security markets. Encouraged by our flexible business support, manufacturing excellence, and compliance with high quality and environmental

standards such as ISO 9001/14000/13485, OHSAS and RoHS, customers have taken advantage of our dedicated and sophisticated engineering resource to satisfy their requirements for the design, manufacturing and logistics of application-specific computer boards, customized computer chassis, and specific computer system configurations. Whether you are working on a Medical Single Board Computer or Internet Security Appliance, Portwell is, again, the perfect partner to help you deliver your products to the market on time and stay one step ahead of the competition.



Portwell is famous for her platform service that could offer the following benefits to customers.

■ Complete Product Portfolio

Select from our full range of both off-the-shelf and versatile custom solutions to scale your products. Portwell provides not only board-level products but also peripheral-level and complete system solutions.

■ Implement Latest Intel Technology

Portwell delivers cutting-edge solutions not only to meet and exceed the demand for the newest technologies, but also the need for greater product life cycles. Since partnering with Intel in 1999, and with streamline access to the latest Intel technologies and roadmaps, Portwell delivers superior products to meet your needs.

■ Faster Time-to-Market

Portwell's experienced engineers, complete product solutions,

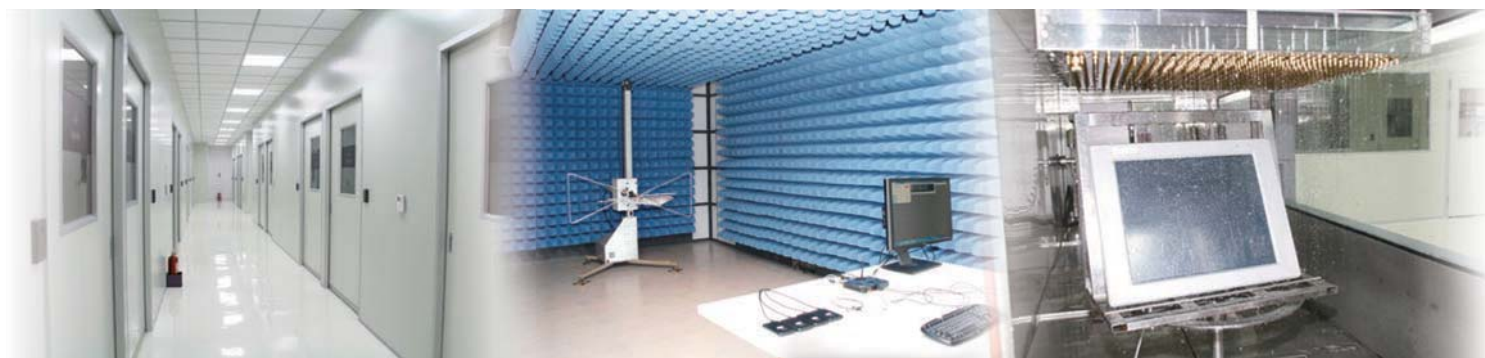
global operation and flexible business service help you meet the time-to-market requirement and reduce your new product introduction cycles as well as the costs of conducting business.

■ Leading Edge Innovator

Portwell is committed to product and solution innovation. We have a complete variety of proof-of-concept designs with Intel and we are also a leader in offering the latest technologies to the market.

■ Committed to Customer Satisfaction

Portwell maintains high expectations in a determined pursuit of commitment to continuously improve our products and services in order to satisfy and exceed our customers' needs.



Consulting • Design • Product • Manufacturing • Logistics



Portwell is proud of the technology service it provides to our partners. These services include complete service-demand consulting, product development, advanced design, quality production and global logistics.

Share for Success

Portwell is eager to share its industrial know-how with customers via our online consulting. This feature enables customers to obtain suitable or customized solutions quickly and efficiently.

Design, Develop, and Deliver

- We design, develop and deliver our customer requirements, such as production, reliability, stability, cost-effectiveness, and longevity of product.
- Our experienced and sophisticated engineering capabilities include electronic, mechanical, firmware and system integration expertise.

Portwell Manufacturing Excellence

- We supply component inventory management with automation.

- In-house SMT lines and PCB assembly and functional testing.
- In-house system integration and testing.
- ISO 14001 and ISO 9001 certified manufacturing facilities (89,000 sq. ft. in Taipei).
- Flexible production capability.

Portwell Global Presence

- Single contact window, global support.
- Sales and technical support teams are available through Portwell worldwide offices in the U.S.A., Taiwan, Japan, China, Netherland, United Kingdom, and India.
- Customer-centric service and support.

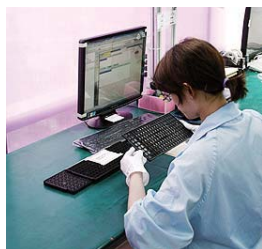


Board Production Flow - SMT



Material Baking

The SMD components tend to be thin, hence, can't endure high temperature.



Raw Material Inspection

Materials in the production line are prepared based on the packing list provided by the warehouse staff and are stored in the WIP buffer area.



IPQC

Our IPQC personnel examine all products according to the IPC-610D magnifying glass standards to determine and confirmed ECO, BOM and assure the production contents are without defects.



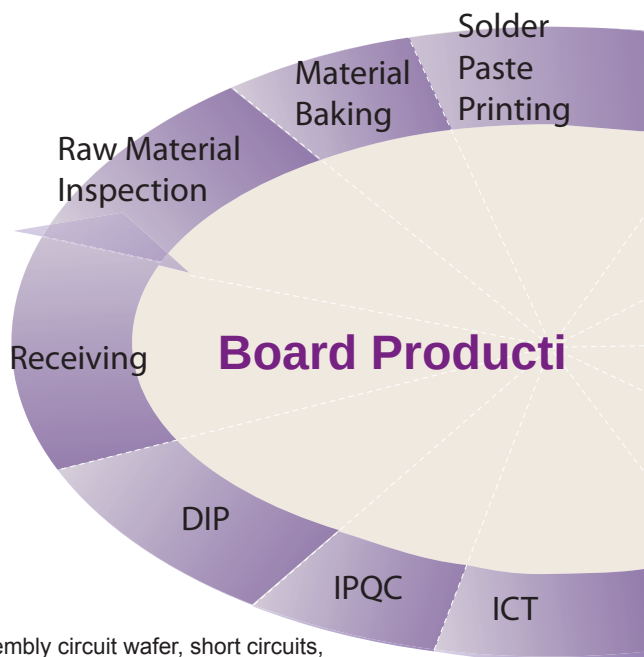
In-Circuit Testing (ICT)

The ICT automated test system can check the assembly circuit wafer, short circuits, abrupts, resistors, capacitors, inductor components values, as well as diode, transistor, FET, SCR, TRIAC, IC for anomalies. Upon completion, reports regarding production and statistics aid in identifying errors in the production process and ensure product quality.



Visual Inspection

Visual inspection stations are equipped with computers with Standard Operating Procedures (SOP) for each product. The SOPs are composed of diagrams which allow our technicians to run their inspection effortlessly and efficiently.



Certifications

Portwell has been certified with ISO 9001 and TAF compliance by TUV NORD and UCS organizations since 2006. This certifies that Portwell implements an ISO-9001 quality system and is committed to continuous improvement.



Certifications

Portwell has been certified with ISO 14001 compliance by TUV NORD since 2010. Portwell follows the ISO 14001 standard as a fundamental principle. The overall goal is the concept of continuous improvement as well as commitment to the Plan-Do-Check-Act methodology.

Solder Paste Printing

A stencil plate is used to print the soldering paste thru the plate holes onto the PCB.



AOI - Soldering Paste

One-hundred percent automatic inspection of the PCB after solder paste printing detects defects and improves quality the first time.



Chips Mounting

High Speed Mounting pertains to different tiny components such as resistors, capacitors and ICs. This is a widely used procedure to achieve high precision production.



Visual Inspection & Repair

Our visual technicians utilize magnifying glass examination to check for material flaws that causes undesirable tendency.



Reflow Soldering

Reflow utilization uses an internal heat cycle system which allows the soldered components on the PCB to be soldered after cooling.



AOI - Mounting

The AOI machine uses an optical inspection method to verify that the printing, mounting, and reflow processes were completed without defects.



Certifications

Portwell has been ISO 13485 certified by TUV NORD since 2010. In addition to Portwell's headquarters in Taiwan, her branch office in the U.S has also achieved the same certification which reflects Portwell's dedication to continuous improvement in the design and manufacturing of medical computing devices.



Certifications

Portwell is applying for ISO 14064-1:2006 certification which specifies the principles and requirements necessary at the organization level for quantification and reporting of greenhouse gas (GHG) emissions and removals. This includes requirements for the design, development, management, reporting and verification of an organization's GHG inventory.





System Production Flow



Visual Inspection

Once systems have been assembled, they will have already been visually inspected. Our inspectors ensure all components and accessories are assembled properly and follow MFG before testing.



IPQC

Verifies that all the production processes are completed correctly and accordingly to specification.



Assembly

Makes certain that all the system components were assembled properly (Main board, Cable, Fan, HDD, etc.)

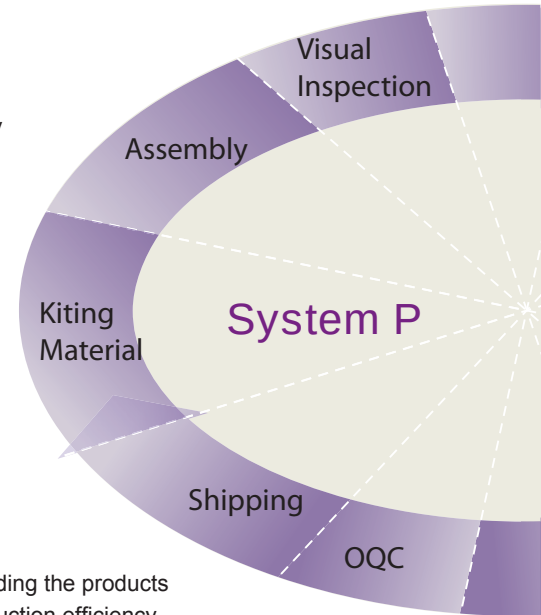
Shipping

In order to meet the demands of storage, transportation, loading and unloading the products mechanically, our pallet stretch wrap machine is designed to enhance production efficiency and prevent damage to the products during transportation.



OQC

To implement QC inspection procedure on packaged and finished goods, OQC has the MIL-STD 105E Table. QC staff conducts sampling according to required sampling by quantity.



■ Certification--RoHS



The directive that restricts the use of certain hazardous substances in electrical and electronic equipment (commonly referred to as the Restriction of Hazardous Substances Directive 2002/95/EC or RoHS) was adopted in February 2003 by the European Union. This directive restricts the use of six hazardous materials in the manufacture of various types of electronic and electrical equipment:

1. Lead (Pb)
2. Mercury (Hg)
3. Cadmium (Cd)
4. Hexavalent Chromium (Cr6+)
5. Polybrominated Biphenyls (PBB)
6. Polybrominated Diphenyl Ether (PBDE)

In July of 2004, Portwell became RoHS and Lead-free compliant. Portwell teamed with their industry peers and suppliers to ensure standards and processes to eliminate lead were met. Furthermore, by May 2005, Portwell was recognized by the Republic of China Industrial Development Bureau and Ministry of Economic Affairs as a proactive industry leader and was first to receive government funding to implement the cleaner production project in the industrial computer industry. While working closely with industry consortia through WEEE and RoHS transformation, Portwell established the best administration, R&D team and production process to include a fastidious commitment to quality. The "green" supply chain is well established at Portwell and develops green products that meet or exceed expected requirements.



Basic Function Test

In order to ensure the system product is able to boot up by Dynamic Burn-In, 100% of the system products are tested for electronic functionality via a Basic Function Testing after assembly.



Dynamic Burn In Test

DBI is the test used before the product is shipped out. The purpose is to screen possible weaknesses and failures which affect its reliability under different environments.



Advanced Function Test

This procedure is to ensure the quality and functionality of the system product after the Burn-in test.



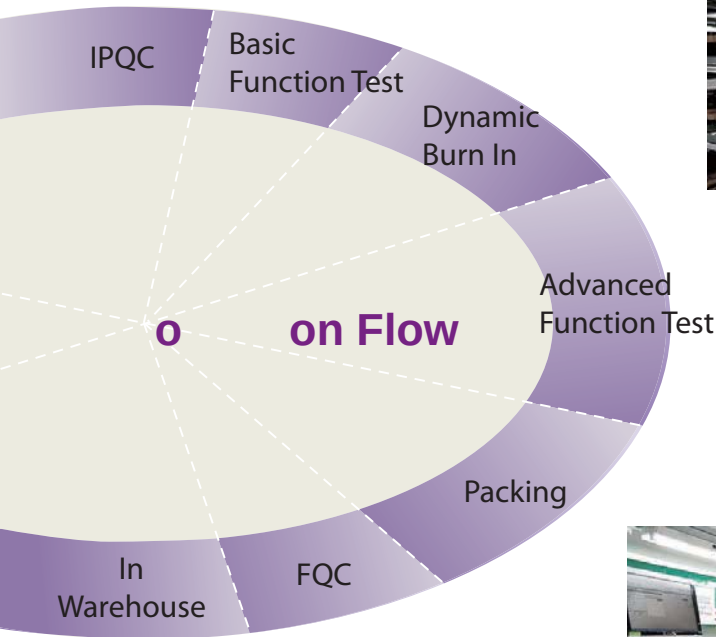
Packing

We inspect the product for external defectiveness. Once they have passed, we then collocate all accessories into plastic bags then proceed with boxing and labeling.



FQC

Finished and packed goods are placed in this area for inspection; the FQC department will inspect finished goods based on standard procedures.



■ Certification--OHSAS



Certifications

Portwell achieved OHSAS 18001:2007 certification by the OHSAS organization in 2010 and also TOSHMS: 2007 during the same year. Both certifications represent a high regard for labor safety, commitment to employees' health management and continuous improvement for the company and society.

OHSAS (Occupational Health and Safety Assessment Series) 18001 is a standard which defines a set of requirements for a safety management system.

OHSAS 18001 is compatible with ISO 9001 and ISO 14001. It covers issues such as:

1. Planning for hazard identification
2. Risk assessment/control
3. OHS (Occupational Health and Safety) management, awareness and competence, training, communication, emergency preparedness and response, performance measuring and improvement.

OHSAS 18001 is compatible with ISO 9001 and ISO 14001. It covers issues such as:

1. Planning for hazard identification
2. Risk assessment/control
3. OHS (Occupational Health and Safety) management, awareness and competence, training, communication, emergency preparedness and response, performance measuring and improvement.



What We Focus on

■ ESD Protection

ESD is usually caused by HBM (Human-Body Model), MM (Machine Model), CDM (Charged-Device Model) and FIM (Field-Induced Model). The advantages of preventing ESD in the factory include better product reliability, extended usage life, cost savings and increased yields.

In order to ensure that the products will not be affected by ESD during production, an ESD control procedure is in place to meet standards.

For operator:

Wear anti-static suits and wrist straps in the factory.

For equipment:

Each device and working area is grounded and tested periodically to confirm that the ESD measurement is normal.

For ESD Area:

- (1) Cover the anti-static tape on cables and test tools which are used in board functional testing.
- (2) Use acrylic shelves which may prevent electrostatic charge build-up.
- (3) Cover keyboards with an anti-static membrane to protect units under test from electrostatic damage.

For component:

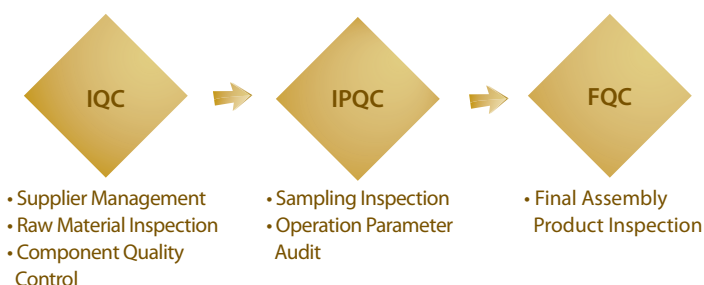
- (1) Suppliers of ESD sensitive components are required to handle and ship them in a protective manner.
- (2) Anti-static packaging is designed to prevent failures due to electrostatic charge build-up.

■ Quality Control

As an integral part of the overall quality system, Portwell emphasizes quality during the entire manufacturing process, from the acquisition of material to the delivery of finished goods.

In practice, documents are attached with materials from the Receiving department to IQC inspection or to IQC return if rejected. The internal audit checklist ensures that requirements are met for each process. In addition, Portwell periodically maintains and calibrates equipment. Per the standard process, if any equipment is found out of specification, the last three lots of products will be re-tested using confirmed calibrated equipment. Most importantly for quality control, all procedures include a checklist for inspection within incoming, in-process, and final out-going QC to ensure that correct documents and revisions are in place before assembly. MES software is used to ensure that each assembly station and process step is completed before moving to next step.

Quality Assurance
Flow Chart



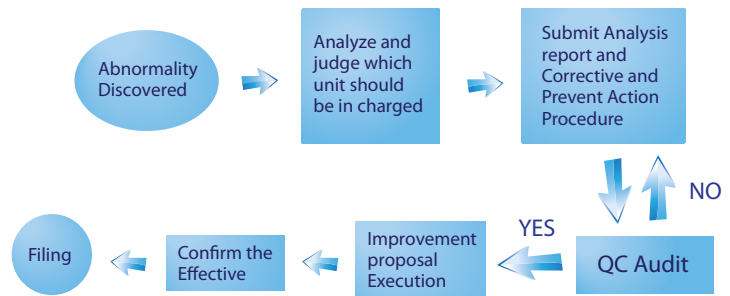
■ Corrective and Preventive Action (CAPA)

In order to ensure Portwell offers world-class manufacturing services, the corrective and preventive processes are implemented to manage abnormalities and potential problems.

The QA member in charge of a quality issue involves the supplier to provide corrective actions upon discovering issues. A Supplier Corrective Action form is sent to the supplier to document the root cause, corrective action and Portwell's approval. Once the supplier's corrective actions are returned and approved by the QA team, the document is signed which closes the request in Portwell's quality system.

Portwell reviews open issues monthly to track issues in order to resolve and provide closure. We provide a complete check on all of unresolved issues and establish a time line to close them.

Portwell ensures customer care by identifying and communicating abnormalities. It is for this reason that corrective and preventive action is taken – to find out the root cause and continuously monitor the effectiveness of the quality system after solutions are implemented to ensure issues do not recur.



■ Employee Training

In Portwell MOC, each operator's professional skills are improved by training before jobs and re-training periodically as necessary. By paying particular attention to the human aspects of production, MOC ensures stable and reliable quality which directly decreases the costs of poor quality and increase customer satisfaction.

Individual training needs to be established based upon job requirements, and re-established whenever new equipment, processes or products are introduced. Training ensures that employees understand the consequences of performing their jobs incorrectly, and is conducted prior to assigning employees, contractors, or temporary personnel to a new task. Training records are maintained according to the quality system.

In the meantime, competency is measured relative to quality trends and retraining is provided where necessary.





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ROBO-8120VG2R

19 ROBO-8120VG2R

Intel® Xeon® C5500/C3500 series processor based on PICMG 1.3 SHB with DDR3 SDRAM, VGA, Dual Gigabit Ethernet and USB



ROBO-8912VG2AR

27 ROBO-8912VG2AR

Intel® Core™ 2 Duo processor based on PICMG 1.3 SHB with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



ROBO-8921VG2R

20 ROBO-8921VG2R

Dual/Quad Core™ Xeon® processor based on PICMG 1.3 SHB with DDR2 ECC SDRAM, VGA & Dual Gigabit Ethernet



ROBO-8210VG2AR

28 ROBO-8210VG2AR

Intel® Core™ i7/i5 processor based on PICMG 1.3 SHB with DDR3 SDRAM, DVI-I, Dual Gigabit Ethernet, Audio and USB



ROBO-8111VG2AR

21 ROBO-8111VG2AR

Intel® Xeon® C5500/C3500 series processor based on PICMG 1.3 SHB with DDR3 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



ROBO-8780VG2A

29 ROBO-8780VG2A

Intel® Core™ i3/i5/i7 processor based on PICMG 1.0 SBC with DDR3 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



ROBO-8111VG2AR-Q77

22 ROBO-8111VG2AR-Q77

Intel® Core™ i7/i5 processor based on PICMG 1.3 SHB with DDR3 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB3.0



ROBO-8779VG2AR

30 ROBO-8779VG2AR

Intel® Core™ 2 Quad processor based on PICMG 1.0 SBC with DDR3 SDRAM, VGA, DVI, Dual Gigabit Ethernet, Audio and USB



ROBO-8110VG2AR

23 ROBO-8110VG2AR

Intel® Xeon® and Core™ i3 processor based on PICMG 1.3 SHB with DDR3 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



ROBO-8777VG2A

31 ROBO-8777VG2A

Intel® Core™ 2 Duo processor based on PICMG 1.0 SBC with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



ROBO-8110VG2AR-Q67

24 ROBO-8110VG2AR-Q67

Intel® Core™ i7 and i5 processor based on PICMG 1.3 SHB with DDR3 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



ROBO-8719VG2AR

32 ROBO-8719VG2AR

Intel® latest 45nm Core™ 2 Duo or Celeron® M processor based on PICMG 1.0 SBC with DDR2 SDRAM, VGA, Dual Gigabit Ethernet and Audio



ROBO-8914VG2AR

25 ROBO-8914VG2AR

Intel® Core™ 2 Quad processor based on PICMG 1.3 SHB with DDR3 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



ROBO-6712VGA

33 ROBO-6712VGA

Intel® Atom™ D525 processor based on PICMG 1.0 half size SBC with DDR3 SODIMM, VGA, single Gigabit Ethernet, Audio and USB



ROBO-8913VG2AR

26 ROBO-8913VG2AR

Intel® Core™ 2 Quad processor based on PICMG 1.3 SHB with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



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INDUSTRIAL MAIN BOARD

PAGE 39-41 IMB Reference Table



RUBY-M710VG2AR

42 RUBY-M710VG2AR

Intel® Core™ i5/i7/P4500 processor based ATX with DDR3 SDRAM, Dual Display, Dual Gigabit Ethernet and USB Ports



RUBY-D714VG2AR

43 RUBY-D714VG2AR

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



RUBY-D715VG2AR

44 RUBY-D715VG2AR

Intel® Core™ i3 and Xeon® processor based ATX with DDR3 SDRAM, Dual Display, Dual Gigabit Ethernet and USB Ports



RUBY-D712VG2AR

45 RUBY-D712VG2AR

Intel® Core™ i5 and i7 processor based ATX with DDR3 SDRAM, Dual Display, Dual Gigabit Ethernet and USB Ports



RUBY-D711VG2AR

46 RUBY-D711VG2AR

Intel® Core™ i3 and Xeon® processor based ATX with DDR3 SDRAM, Dual Display, Dual Gigabit Ethernet and USB Ports



RUBY-9911

47 RUBY-9911

Leading Intel® Core™ 2 Quad / Core™ 2 Duo processor based ATX motherboard with Dual Display, Dual Gigabit Ethernet, Four SATA Ports, Four COM Ports, and Eight USB Ports



RUBY-9719VG2AR

48 RUBY-9719VG2AR

Intel® Core™ 2 Duo/Core™ 2 Quad processor based ATX Motherboard with DDR2, VGA, Dual Gigabit Ethernet, Audio and USB



RUBY-9718VG2AR

49 RUBY-9718VG2AR

Intel® Core™ 2 Quad processor based ATX Industrial Mainboard with onboard DVI/VGA Dual-Display, DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



RUBY-9717VGAR

50 RUBY-9717VGAR

Intel® Core™ 2 Quad processor based Micro-ATX Industrial Mainboard with onboard DVI/VGA Dual-display, DDR2 SDRAM, Gigabit Ethernet, Audio and USB



RUBY-9716VG2AR

51 RUBY-9716VG2AR

Intel® Core™ 2 Quad processor based ATX Industrial Mainboard with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



RUBY-9716VGAR

52 RUBY-9716VGAR

Intel® Core™ 2 Quad processor based ATX Motherboard with DDR2 SDRAM, VGA, Gigabit Ethernet, Audio and USB

INDUSTRIAL CHASSIS

PAGE 53 About Chassis



RPC-500NC/L

54 RPC-500NC/L

19" 4U industrial rack-mount chassis



AREMO-4196

56 AREMO-4196

The Best Cost-Performance 19" 4U Height Pentium® 4 processor Based Rack-mount Computer



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AREMO-3194

- 59 AREMO-3194**
19" 3U rack-mount chassis for ATX M/B platform



AREMO-8164

- 68 AREMO-8164**
8-slot full-sized industrial node chassis(Shoe-box)



AREMO-2173P

- 61 AREMO-2173P**
19" 2U industrial rack-mount chassis for PICMG backplane



AREMO-4184

- 70 AREMO-4184**
19" 4U Height rack-mount chassis with dual AREMO-6182 node chassis



AREMO-2173MX

- 63 AREMO-2173MX**
19" 2U industrial rack-mount chassis for Micro-ATX or mini-ITX mother board



AREMO-6182

- 72 AREMO-6182**
6-slot full-size industrial node chassis (Shoe-box)



PRC-1194

- 65 PRC-1194**
19" 1U Height industrial rack-mount P4 chassis



EZDRV-400

- 74 EZDRV-400**
5.25" compact drive set with slim type DVD-ROM, SD/CF card reader, 2 USB ports and space for 2.5" HDD



AREMO-6163

- 66 AREMO-6163**
6-slot full-sized industrial node chassis(Shoe-box)

75-76 Chassis Reference Table

3.5" & ECX FORM FACTOR

PAGE 77 ESB Reference Table



PEB-2772

- 78 PEB-2772**
Intel® Cedar Trail Atom™ processor based 3.5" embedded Board with DDR3 SDRAM, Gigabit Ethernet, Two SATA Ports, Four COM ports and 12V DC input



PEB-2738I

- 82 PEB-2738I**
Intel® 45nm Ultra Low Power Menlow-XL processor and chipset based 3.5" embedded board with dual display, Audio, USB and SDIO



PEB-2771/2781

- 79 PEB-2771/2781**
3.5" Embedded size, based on Intel® 45nm Low Power Pineview processor with DDR3 SODIMM, dual display by VGA/LVDS, Dual GbE, Audio, COM and USB



PEB-2737VLA

- 83 PEB-2737VLA**
Intel® 45nm Ultra Low Power Atom™ processor based 3.5" embedded board with VGA, LVDS, Gigabit Ethernet, Audio, USB and SDIO



PEB-2770/2780

- 80 PEB-2770/2780**
3.5" Embedded size, based on Intel® 45nm Low Power Pineview processor with DDR2 SODIMM, dual display by VGA/LVDS, Dual GbE, Audio, COM and USB



PEB-2131VG2A

- 84 PEB-2131VG2A**
3.5" Embedded size, based on Intel® Atom™ N270 processor with DDR2 SDRAM, Dual Display by VGA/LVDS, Gigabit Ethernet, Four Power COM Ports and Audio



PEB-2739I

- 81 PEB-2739I**
Intel® 45nm Ultra Low Power Menlow-XL processor and chipset based 3.5" embedded board with dual display, Audio, USB, SDIO and SATA

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NANO-ITX FORM FACTOR

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NANO-5050

86 NANO-5050

Intel® Atom™ D2550 processor based NANO-ITX Board with dual display, Gigabit Ethernet, Audio, USB, CF-SATA and SATA



NANO-6040

88 NANO-8050

Leading Intel® latest ULV Mobile SFF 45nm Core™ 2 Duo or Celeron® M processor based NANO-ITX with DDR2 SODIMM, Dual Displays, Gigabit Ethernet, Audio, USB



NANO-8050

87 NANO-6040

Intel® Atom™ E6X0T processor based NANO-ITX Board with dual display, Gigabit Ethernet, Audio, USB, CAN, SD and SATA

MINI-ITX FORM FACTOR

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WADE-8020

94 WADE-8020

Intel® Core™ i5/i7 processor based Mini-ITX with DDR3 SDRAM, Dual Display, Dual Gigabit Ethernet and USB Ports



WADE-8067

95 WADE-8067

Leading Intel® 45nm Core™ 2 Duo processor or Celeron® M processor based Mini-ITX with DDR3 SDRAM, HDMI, Dual Gigabit Ethernet, Audio and USB



WADE-8066

96 WADE-8066

Leading Intel® Core™ 2 Duo processor based Mini-ITX Board with DDR2 SDRAM, Dual Displays, Two GbE LAN ports, Audio and USB



WADE-8068

97 WADE-8068

Leading Mobile Intel® Core™ 2 Duo processor Mini-ITX with DDR2 SDRAM, Dual Displays, Two GbE LAN ports, Four COM Ports, LPT and USB



WADE-8077

98 WADE-8077

Intel® Next-Gen Atom™ processor based Mini-ITX Board with dual display, dual Gigabit Ethernet, Two SATA Ports, Two COM Ports (optional up to 4 COM ports) and Six USB Ports



WADE-8075/76

99 WADE-8075/76

Intel® Dual Core™ Atom™ D525 1.8GHz/N455 1.67GHz processor based Mini-ITX with DC12V input, DDR3 SDRAM, Dual Display, Dual Gigabit Ethernet, Three SATA, Four COM and Six USB



WADE-8071

100 WADE-8071

Intel® Low Power Atom™ N270 1.6GHz processor based Mini-ITX Board with DC12V input, dual display, Gigabit Ethernet, Two SATA Ports, Two COM ports and Six USB Ports support thin client application

90-93 Mini-ITX Reference Table



WADE-8070

101 WADE-8070

Intel® Low Power Atom™ N270 1.6GHz processor based Mini-ITX Board with dual display, Gigabit Ethernet, Two SATA Ports, Four COM Ports and Six USB Ports



WADE-8072

102 WADE-8072

Intel® Low Power Atom™ N270 1.6GHz processor based Mini-ITX Board with dual display, Gigabit Ethernet, Two SATA Ports, Four COM ports and Six USB Ports



WADE-8170

103 WADE-8170

Intel® Atom™ N270 processor based Mini-ITX Board with Dual Display, Dual Gigabit Ethernet, Two SATA Ports, Two COM ports and Eight USB Ports



WADE-8013

104 WADE-8013

Intel® Next-Gen Dual/Quad processor based Mini-ITX Board with dual Gigabit Ethernet, Four SATA Ports, Six COM Ports, One PCI-Express x16 expansion slot and one Mini-PCIe slot support mSATA interface



WADE-8014

105 WADE-8014

Intel® Next-Gen Dual/Quad processor based Mini-ITX Board with dual Gigabit Ethernet, Four SATA Ports, Six COM Ports, One PCI-Express x16 expansion slot and one Mini-PCIe slot support mSATA interface



WADE-8012

106 WADE-8012

Intel® Core™ i5/ i7 processor based Mini-ITX with dual displays, DDR3 SDRAM, Two COM Ports and Eight USB Ports



WADE-8011

107 WADE-8011

Intel® i3 and Xeon® processor based Mini-ITX with dual displays, DDR3 SDRAM, Two COM Ports and Eight USB Ports



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Leading Intel® Core™ 2 Quad/Core™ 2 Duo processor based Mini-ITX embedded board with Dual Display, Dual Gigabit Ethernet, SATA, COM and USB



- 109 WADE-8056**
Leading Intel® Core™ 2 Quad processor based Mini-ITX Board with Dual Displays and One GbE



- 110 WADE-8556**
Leading Intel® Core™ 2 Quad processor based Mini-ITX Board with Dual Displays and One GbE



- 111 WADE-8656**
Leading Intel® Core™ 2 Quad processor based Mini-ITX Board with PCIe expansion and Two GbE



- 112 WADE-2221A**
Rugged and Stylish Industrial Mini-ITX Bare Bone Chassis



- 113 WADE-1120A**
The fan-less compact Mini-ITX Bare Bone Chassis



- 114 WADE-2231Q**
Rugged and Stylish Industrial Mini-ITX Bare-Bones Chassis



- 115 WADE-2232Q**
Rugged and Stylish Industrial Mini-ITX Bare-Bones Chassis



- 116 ARTO-220-ITX**
1.5U Advanced, Stylish and Compact Mini-ITX Bare-Bones Chassis



- 117 WADE-1042**
1U Height Bare Bone server with four drive bays for RAID and two expansion slots

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- 125 WEBS-1320**
Embedded compact fan-less system with Intel® Atom™ Z510/Z530 based 3.5" ECX board



- 126 WEBS-2121**
Embedded compact fan-less system with Intel® Atom™ Z510/Z530 based NANO-ITX board



- 127 WEBS-3330**
Embedded compact fan-less system with Intel® Atom™ N270 based MINI-ITX board



- 128 WEBS-3331**
Embedded slim fan-less system with Intel® Atom™ N270 based MINI-ITX board



- 129 WEBS-1312**
Embedded rugged fan-less system with Intel® Atom™ Z510PT/Z520PT based 3.5" ECX board

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- 130 WEBS-1330**
Embedded rugged fan-less system with Intel® Atom™ N270 based 3.5" ECX board



- 131 WEBS-1341**
Embedded rugged fan-less system with Intel® Atom™ N455/D525 based 3.5" ECX board



- 132 WEBS-3332**
Embedded rugged fan-less system with Intel® Atom™ N270 based MINI-ITX board



- 133 WEBS-3560B**
Embedded rugged fan-less system with Intel® i7/i5 based MINI-ITX board



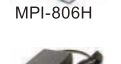
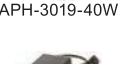
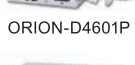
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Embedded rugged fan-less system with Intel® Atom™ N270 based MINI-ITX board

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Portwell Embedded Solutions meet your demand perfectly



Portwell Embedded product lines provide a wide range of selections from server grade to energy efficiency scale including Modules, 3.5", NANO-ITX, Mini-ITX, µATX, ATX, SBC, and Backplane. According to the form factors listed below, Portwell offers diverse products from high computing power to low power consumption devices. Products with high performance are equipped with not only the latest design but also various features which can precisely fulfill standard and customized demands. In another way, when energy-saving is the primary concern, energy efficiency is always the first target we are dedicated to. Therefore, in terms of power budget and green technology, Portwell's designs are still able to perform with a minimum of power consumption suitable for numerous fields.

Due to our experience with customized projects, our reliable solutions can be adopted and applied to multiple applications such as ATM, Kiosk, Digital Signage, POS (Point-Of-Sale), Lottery, Vending, Gaming, Factory automation, Industrial control, Transportation, Medical and Energy.

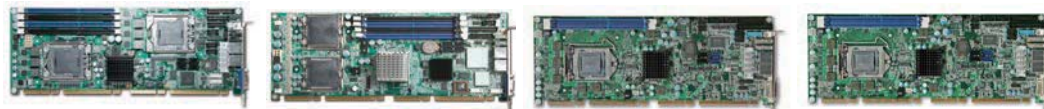
Form factor comparison of embedded computer boards

Form Factor	Board Size (inch/mm)				Expansion	Board Size (inch ²)
	L (inch)	W (inch)	L (mm)	W (mm)		
PC/104	3.55	3.78	90.17	95.89	Module	13.42
PC/104+	3.55	3.78	90.17	95.89	Module	13.42
STX	3.78	3.55	95.89	90.17	Carrier Board	13.42
ETX	4.49	3.74	114.00	95.00	Carrier Board	16.79
COM Express	4.92	3.74	125.00	95.00	Carrier Board	18.40
NANO-ITX	4.72	4.72	120.00	120.00	On Board	22.28
3.5" Embedded	5.75	4.02	146.00	102.00	Cables	23.12
3.5" ECX	5.75	4.13	146.00	105.00	Module	23.75
EPIC	6.50	4.53	165.00	115.00	Module	29.45
PICMG 1.3 Half-size	6.60	4.98	167.64	126.39	Backplane	32.87
PCI Half-size	7.28	4.80	185.00	122.00	Backplane	34.94
ISA Half-size	7.28	4.80	185.00	122.00	Backplane	34.94
PICMG 1.2 Half-size	7.52	4.80	191.03	121.92	Backplane	36.10
Mini-ITX	6.69	6.69	170.00	170.00	On Board	44.76
5.25"Embedded	5.75	8.00	146.05	203.20	Cables	46.00
EBX	5.75	8.00	146.05	203.20	Module	46.00
PICMG 1.0 Full-size	13.33	4.80	338.58	121.92	Backplane	63.98
PICMG 1.2 Full-size	13.33	4.80	338.58	121.92	Backplane	63.98
PICMG 1.3 Full-size	13.33	4.98	338.58	126.39	Backplane	66.38
Flex ATX	9.00	7.50	228.60	190.50	On Board	67.50
Micro-ATX	9.60	9.60	243.84	243.84	On Board	92.16
Embedded ATX	9.60	9.60	243.84	243.84	On Board	92.16
ATX	12.00	9.60	304.80	243.84	On Board	115.20



SBC Reference Table

FULL-SIZE SINGLE BOARD COMPUTER



MODEL	ROBO-8120VG2R	ROBO-8921VG2R	ROBO-8111VG2AR	ROBO-8111VG2AR-Q77
Form Factor	PICMG 1.3	PICMG 1.3	PICMG 1.3	PICMG 1.3
CPU	Intel® Dual/Quad Core™ Xeon®	Intel® Dual/Quad Core™ Xeon®	Intel® Xeon® E3-1200v2/ Core™ i3	Intel® Core™ i5/i7
Chipset	Intel® 3420	Intel® 5100	Intel® C216 PCH	Intel® Q77
BIOS	AMI UEFI	AMI Core 8	Phoenix UEFI	Phoenix UEFI
Memory	4x DDR3 ECC, REG DIMM up to 32GB	4x DDR2 ECC, REG DIMM up to 32GB	2x DDR3 ECC DIMM up to 16GB	2x DDR3 DIMM up to 16GB
Expansion	4x PCI slots 1x PCIe x16 slot 2x PCIe x8 slots 4x PCIe x4 slots	4x PCI slots 1x PCIe x16 slot 1x PCIe x8 slot 3x PCIe x4 slots	4x PCI slots 1x PCIe x16 slot 1x PCIe x4 slot 1x PCIe x1 slot	4x PCI slots 1x PCIe x16 slot 2x PCIe x8 slots 1x PCIe x8 slot+2x PCIe x4 slots
Display	VGA/DVI-D	VGA/DVI-D	VGA/DVI-D/HDMI	VGA/DVI-D/HDMI
Audio	No	No	Realtek ALC 886-GR HD Audio codec	Realtek ALC 886-GR HD Audio codec
LAN	2x GbE	2x GbE	2x GbE	2x GbE
Serial Port	1x RS232 1x RS232/422/485	1x RS232 1x RS232/422/485	1x RS232 1x RS232/422/485	1x RS232 1x RS232/422/485
USB	12x USB 2.0	10x USB 2.0	10x USB 2.0 4x USB 3.0	10x USB 2.0 4x USB 3.0
Storage Devices	6x SATA 1x FDD	6x SATA 1x FDD	6x SATA 1x FDD	6x SATA 1x FDD
GPIO	8-bit	8-bit	8-bit	8-bit
Others	PS/2 KB&MS	1x Parallel PS/2 KB&MS	1x Parallel PS/2 KB&MS	1x Parallel PS/2 KB&MS
Dimension	338.5 x 126.39mm	338.5 x 126.39mm	338.5 x 126.39mm	338.5 x 126.39mm
Page	19	20	21	22



SBC Reference Table

FULL-SIZE SINGLE BOARD COMPUTER



MODEL	ROBO-8110VG2AR	ROBO-8110VG2AR-Q67	ROBO-8914VG2AR	ROBO-8913VG2AR
Form Factor	PICMG 1.3	PICMG 1.3	PICMG 1.3	PICMG 1.3
CPU	Intel® Xeon® E3-1200/ Intel® Core™ i3	Intel® Core™ i5/i7	Intel® Core™ 2 Quad/Core™ 2 Duo/Celeron®	Intel® Core™ 2 Quad/ Core™ 2 Duo/Celeron®
Chipset	Intel® C206 PCH	Intel® Q67 PCH	Intel® Q45+ICH10DO	Intel® Q35+ICH9DO
BIOS	AMI UEFI	AMI UEFI	AMI Core 8	AMI Core 8
Memory	2x DDR3 ECC DIMM up to 16GB	2x DDR3 DIMM up to 16GB	4x DDR3 DIMM up to 8GB	2x DDR2 DIMM up to 4GB
Expansion	4x PCI slots 1x PCIe x16 slot 1x PCIe x4 slot 1x PCIe x1 slot	4x PCI slots 1x PCIe x16 slot 4x PCIe x1 slots	4x PCI slots 1x PCIe x16 slot 4x PCIe x1 slots	4x PCI slots 1x PCIe x16 slot 4x PCIe x1 slots
Display	DVI-I/HDMI	DVI-I/HDMI	VGA	VGA
Audio	Realtek ALC 662 HD Audio codec	Realtek ALC 662 HD Audio codec	Realtek ALC 662 HD Audio codec	Realtek ALC 262 HD Audio codec
LAN	2x GbE	2x GbE	2x GbE	2x GbE
Serial Port	1x RS232 1x RS232/422/485	1x RS232 1x RS232/422/485	1x RS232 1x RS232/422/485	1x RS232 1x RS232/422/485
USB	14x USB 2.0	14x USB 2.0	12x USB 2.0	12x USB 2.0
Storage Devices	6x SATA 1x FDD	6x SATA 1x FDD	6x SATA 1x FDD	6x SATA 1x FDD
GPIO	8-bit	8-bit	8-bit	8-bit
Others	1x Parallel PS/2 KB&MS	1x Parallel PS/2 KB&MS	1x Parallel PS/2 KB&MS	1x Parallel PS/2 KB&MS IrDA 1.0
Dimension	338.5 x 126.39mm	338.5 x 126.39mm	338.5 x 126.39mm	338.5 x 126.39mm
Page	23	24	25	26



SBC Reference Table

FULL-SIZE SINGLE BOARD COMPUTER



MODEL	ROBO-8912VG2AR	ROBO-8210VG2AR	ROBO-8780VG2A	ROBO-8779VG2AR
Form Factor	PICMG 1.3	PICMG 1.3	PICMG 1.0	PICMG 1.0
CPU	Intel® Core™ 2 Duo/ Pentium® D/Pentium® 4/ Celeron® D	Intel® Core™ 2 Duo/ Celeron®	Intel® Dual Core™	Intel® Core™ 2 Quad/Core™ 2 Duo/Celeron®
Chipset	Intel® Q965+ICH8DO	Intel® QM57	Intel® H61	Intel® G41+ICH7R
BIOS	AMI Core 8	AMI UEFI	AMI UEFI	AMI Core 8
Memory	2x DDR2 DIMM up to 4GB	2x DDR3 DIMM up to 8GB	2x DDR3 DIMM up to 16GB	2x DDR3 DIMM up to 4GB
Expansion	4x PCI slots 1x PCIe x16 slot 4x PCIe x1 slots	4x PCI slots 1x PCIe x16 slot 2x PCIe x8 slots 1x Mini-PCIe socket	4x PCI slots	4x PCI slots 1x ISA
Display	VGA	DVI-I	DVI-D	VGA/ DVI-D
Audio	Realtek ALC 262 HD Audio codec	Realtek ALC 662 HD Audio codec	Realtek ALC 886-GR HD Audio codec	Realtek ALC 662 HD Audio codec
LAN	2x GbE	2x GbE	2x GbE	2x GbE
Serial Port	1x RS232 1x RS232/422/485	1x RS232 1x RS232/422/485	1x RS232 1x RS232/422/485	1x RS232 1x RS232/422/485
USB	10x USB 2.0	12x USB 2.0	2x USB 3.0 10x USB 2.0	8x USB 2.0
Storage Devices	6x SATA 1x FDD	6x SATA 1x FDD	4x SATA 1x FDD	6x SATA 1x CF 1x FDD
GPIO	8-bit	8-bit	8-bit	8-bit
Others	1x Parallel PS/2 KB&MS	1x Parallel PS/2 KB&MS	1x Parallel PS/2 KB&MS	1x Parallel PS/2 KB&MS
Dimension	338.5 x 126.39mm	338.5 x 126.39mm	338.5 x 122mm	338.5 x 122mm
Page	27	28	29	30



SBC Reference Table

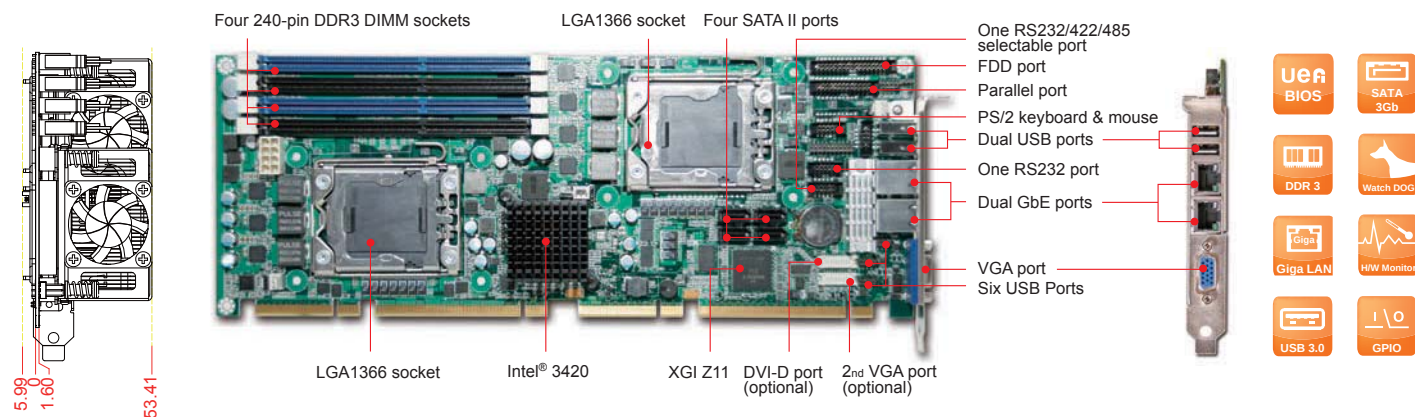
FULL-SIZE SINGLE BOARD COMPUTER



MODEL	ROBO-8777VG2A	ROBO-8719VG2AR	ROBO-6712VGA
Form Factor	PICMG 1.0	PICMG 1.0	PICMG 1.0 half size
CPU	Intel® Core™ 2 Duo/ Pentium® D/Pentium® 4/ Celeron® D	Intel® Mobile Core™ 2 Quad/ Core™ 2 Duo/ Celeron® M	Intel® Atom™ D525
Chipset	Intel® Q965+ICH8	Intel® GM45+ICH9ME	ICH8M
BIOS	Award	Award	Phoenix UEFI
Memory	2x DDR2 DIMM up to 4GB	2x DDR2 DIMM up to 4GB	1x DDR3 SODIMM up to 2GB
Expansion	4x PCI slots 1x ISA	4x PCI slots 1x ISA	4x PCI slots
Display	VGA	VGA/LVDS	VGA/LVDS
Audio	Realtek ALC 262 HD Audio codec	Realtek ALC 262 HD Audio codec	Realtek ALC 662 HD Audio codec
LAN	2x GbE	2x GbE	1x GbE
Serial Port	1x RS232 1x RS232/422/485	1x RS232 1x RS232/422/485	1x RS232 1x RS232/422/485
USB	6x USB 2.0	6x USB 2.0	6x USB 2.0
Storage Devices	4x SATA 1x FDD	3x SATA 1x CF 1x FDD	3x SATA 1x IDE 1x CF 1x FDD
GPIO	8-bit	8-bit	8-bit
Others	1x Parallel PS/2 KB&MS	1x Parallel PS/2 KB&MS	1x Parallel PS/2 KB&MS
Dimension	338.5 x 122mm	338.5 x 122mm	185 x 122mm
Page	31	32	33

ROBO-8120VG2R

Intel® Xeon® C5500/C3500 series processor
based on PICMG 1.3 SHB with DDR3 SDRAM,
VGA, Dual Gigabit Ethernet, Audio and US



ROBO-8120VG2R is based on Intel® 3420 chipset and dual Xeon® processors. It's a server grade SHB built with high computing power and flexible PCI express expansion support, it's suitable for military, industrial automation, and digital signage applications.

FEATURES

- Supports Intel® Dual/Quad Core™ Xeon® processors with LGA1366 package
- Delivers up to 32GB DDR3 maximum ECC registered memory assured the computer reliability and benefited the data swapping process
- Adopts the XGI Z11 graphics engine and offers solid 2D performance
- Supports VGA display on bracket and optional 2nd VGA or DVI-D interface
- Rich & powerful I/O expansion covers PCIe Gen 2.0 for one PCI Express x16 or two PCI Express x8 or four PCI Express x4
- High speed dual Gigabit Ethernet based on PCI Express x1 interface provides Wake-On-LAN function
- Rich I/O connectors such as FDD, two Gigabit Ethernet, serial ports, parallel port, USB 2.0, and SATA ports

ORDERING GUIDE

AB1-3479	ROBO-8120VG2R PICMG 1.3(PCI-E+PCI). LGA1366.Jasper Forest Single/Dual/Quad Core processors.SHB.w/VGA/ Dual GbE
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PACKING LIST

Standard	B6900960 cable kit for 1 serial + 1 parallel port w/ bracket
	B6900074 FDD Cable
	B6901990 SATA II cable
	B8981980 PICMG SBC Handling and Installation Notice
	B3751380 Installation CD
Optional	B8303921 single processor cooler
	B6901970 two USB port cable w/bracket
	B6901610 one DVI-D + one VGA cable with bracket

GENERAL

Processor	- Intel® Single/Dual/Quad Core™ Xeon® C5500/C3500 series processor up to 2.53 GHz (23~85W) with 2~8MB LLC Cache in LGA1366 package (Only support single processor on C3500 series)
	- Intel® QPI transfer rates: 4.8 and 5.87 GT/s (depends on CPU sku)
Chipset	- Intel® 3420 (4.8W)
	- Supports Intel® Rapid Storage Technology
BIOS	AMI UEFI BIOS
Memory	Supports up to 32GB DDR3 1333/1066/800 SDRAM on four 240-pin DIMM sockets, support ECC, registered
Storage Devices	- 6x SATA II drivers (Dual SATA ports via Backplane)
	- RAID 0, 1, 5, 10
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	- 1x PCI Express x16 Gen 1 up to 2.5 GT/s
	- 2x PCI Express x8 Gen 1 up to 2.5 GT/s
	- 4x PCI Express x4 Gen 1 up to 2.5 GT/s
	- 4x PCI devices at 32-bit 33 MHz (Optional for PCI Express Gen 2 support)

I/O INTERFACE

Super I/O	Winbond W83627DHG
Audio	N/A
Ethernet	- Intel® WG82574L gigabit ethernet controller x2 - Dual RJ-45 connector with two LED indicators on bracket
Serial Port	- 1x RS232 port on rear I/O - 1x Selectable RS232/422/485 on board box header
USB	- 12x USB 2.0 ports (Four ports through backplane) - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	2x USB 2.0 ports on bracket dedicated to keyboard & mouse
GPIO	On board programmable 8-bit Digital I/Os
Others	1x parallel port on board box header

DISPLAY

Graphic Controller	XGI Z11
Display Interface	- VGA on bracket: Resolution up to 1600x1200 @16M colours 70Hz - Optional second VGA or DVI-D display interface

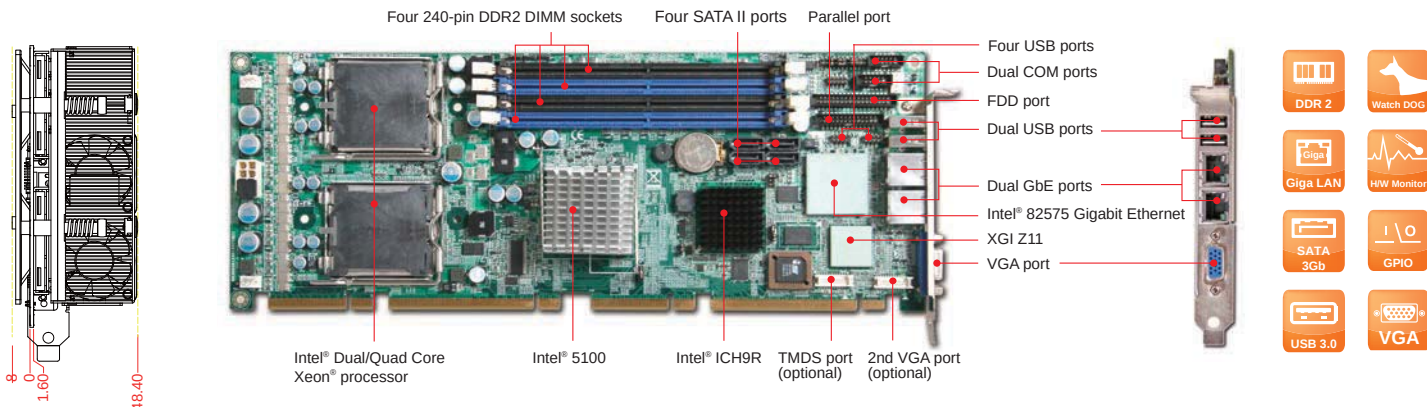
Mechanical & Environment

Dimension	- 338.5(L) x 126.39(W)mm; 13.33"(L) x 4.98"(W) - PCB: 12 layers
Power Supply	- Typical: +12V@6.96A; +5V@0.32A - Supports ATX mode
Environment	- Operation Temperature: 0~60 °C (For 80W CPU limitation) - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 100,000 hours at 40°C



ROBO-8921VG2R

Dual/Quad Core™ Xeon® processor
based on PICMG 1.3 SHB with DDR2 ECC
SDRAM, VGA & Dual Gigabit Ethernet



ROBO-8921VG2R has adopted the 5100 chipset and dual Xeon® processors. By high computing power and a flexible PCI express expansion support, it's suitable for military, industrial automation, and digital signage applications.

FEATURES

- ROBO-8921 offers flexible 1333/1066 MHz selection of Intel® Dual/Quad Core™ Xeon® processors with LGA771 package
- Flexible design of dual PCI Express x8 could be aggregated as one PCI Express x16 for Graphic card
- Rich & powerful I/O expansion covers dual PCI Express x8, one PCI Express x4 and four PCI devices
- Up to 32GB, ECC registered memory ensure the computer's reliability and benefited the data swapping process
- Relative high performance graphic engine, XGI Z11 provides solid 2D for the server grade market
- Dual PCI Express x4 based Gigabit Ethernet support IPv4, IPv6 offloading, VLAN, Wake-On-LAN functions

ORDERING GUIDE

AB1-3147	ROBO-8921VG2R PICMG 1.3(PCI-E+PCI).Socket 771.Xeon LV.SHB.w/VGA/Dual GB LAN
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PACKING LIST

Standard	B6900960 cable kit for 1 serial + 1 parallel port w/ bracket B6900074 FDD cable B6901990 SATA II cable B8301761 2 in 1 CPU cooler B8981980 PICMG SBC Handling and Installation Notice B3751110 Installation CD
Optional	B6901620 keyboard and mouse cable with bracket B6901610 one DVI +one VGA cable with bracket B6901970 two USB port cable with bracket B6902000 two serial port cable with bracket

GENERAL

Processor	- Intel® Dual/Quad Core™ Xeon® 5000 series processor up to 3 GHz (35~80W) with 4MB~12MB L2 Cache (depends on CPU sku) in LGA771 package - FSB: 1333/1066MHz - DMI x4 Link: 2.5 GT/s - Supports Intel® Hyper-Threading, Virtualization, and SpeedStep Technology
Chipset	- Intel® 5100 (27.5W) - ICH9R (4.2W) - Supports Intel® Virtualization Technology
BIOS	AMI Core 8 BIOS
Memory	Supports up to 32GB DDR2 533/667 SDRAM on four 240-pin DIMM sockets, supports ECC, registered
Storage Devices	- 6x SATA II drivers (Dual SATA ports via Backplane) - RAID 0,1,5,10 - 1x FDD channel on board box header
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	- 1x PCI Express x16 Gen 1 up to 2.5 GT/s - 1x PCI Express x8 Gen 1 up to 2.5 GT/s - 3x PCI Express x4 Gen 1 up to 2.5 GT/s - 4x PCI devices at 32-bit 33 MHz

I/O INTERFACE

Super I/O	Winbond W83627DHG
Audio	N/A
Ethernet	- Intel® JL82575EB dual port gigabit ethernet controller - Dual 10BASE-T/100BASE-TX/1000BASE-T Ethernet - PCI Express x4 interface based on Gigabit Ethernet - Dual RJ-45 connector with two LED indicators on bracket
Serial Port	- 1x RS232 on board box header - 1x Selectable RS232/422/485 on board box header
USB	- 10x USB 2.0 ports (Four ports through backplane) - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	2x USB 2.0 ports on bracket dedicated to keyboard & mouse
GPIO	On board programmable 8-bit Digital I/Os
Others	1x parallel port on board box header

DISPLAY

Graphic Controller	XGI Z11
Display Interface	- VGA on bracket: Resolution up to 1600x1200 @16M colours 70Hz - Optional second VGA or DVI-D display interface

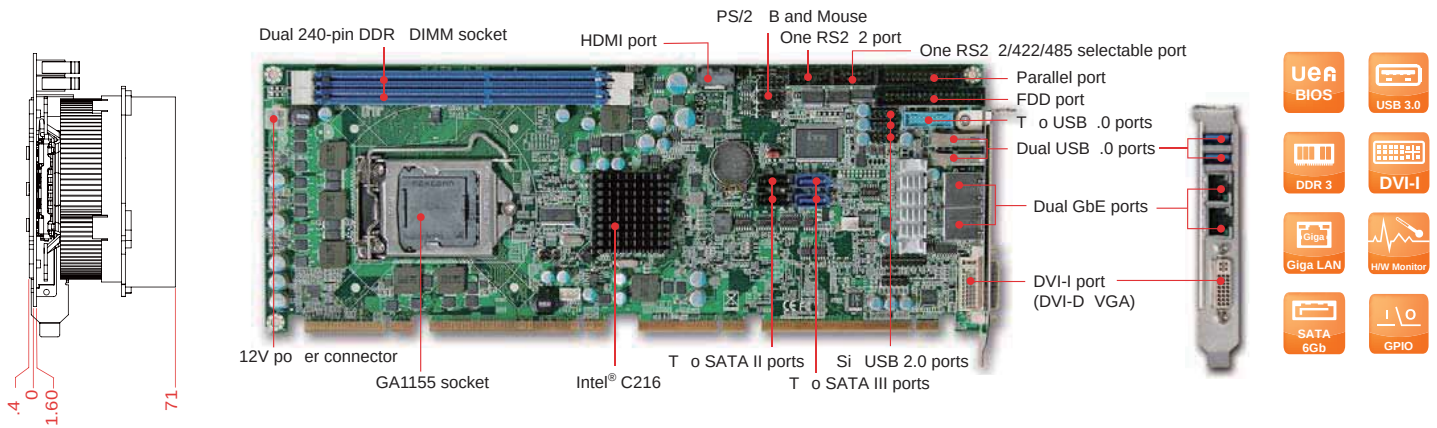
Mechanical & Environment

Dimension	- 338.5(L) x 126.39(W)mm; 13.33"(L) x 4.98"(W) - PCB: 12 layers
Power Supply	- Typical: +12V@3.74A; +5V@7.01A - Supports ATX mode
Environment	- Operation Temperature: 0~60 °C (For 80W CPU limitation) - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 100,000 hours at 40°C



ROBO-8111VG2AR

Intel® Xeon® E3-1200v2/Core™ i3 series processor based on PICMG 1.3 SHB with DDR3 SDRAM, VGA, Dual Gigabit Ethernet, Audio and U



ROBO-8111VG2AR is based on the Intel® C216 chipset and workstation processor sku. Built with flexible PCI express expansion, it's suitable for medical, Factory Automation, and Digital Signage applications.

FEATURES

- Supports Intel® Xeon® E3-1200v2 series/ Core™ i3 processors in LGA1155 package
- Delivers up to 16GB maximum DDR3 1333/1600 ECC SDRAM on two DIMM sockets
- Supports multiple display by DVI-I (DVI-D+VGA) and HDMI
- Supports iAMT 8.0 on Intel® Xeon® E3-1200v2 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 two SATA II and two SATA III ports support RAID 0,1,5,10

ORDERING GUIDE

AB1-2329	ROBO-8111VG2AR PICMG 1.3(PCI-E+PCI).LGA1155. Xeon /i3 processors.SHB.w/VGA/Dual GbE/Audio
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PACKING LIST

Standard	B6901990 SATA II cable
	B6902930 SATA III cable (Black)
	B690021S cable kit for FDD+PRN with bracket
	B6900270 dule head COM port cable with bracket
	B6902890 DVI-D + VGA cable with bracket
	B8981980 PICMG SBC Handling and Installation Notice
	B3751500 Installation CD
Optional	B6902980 PS/2 Keyboard / Mouse Cable with bracket
	B6902230 USB port cable with bracket
	AB9-2066 PA-M1AU Multiple Media kit

GENERAL

Processor	- Intel® Xeon® E3-1200v2 series and Core™ i3 processor in LGA1155 package - IDMI x4 Link: 5.0 GT/s - Supports Intel® Turbo Boost, Hyper-Threading, Virtualization, Thermal Monitoring, Trusted Execution and SpeedStep Technology (depends on CPU sku)
Chipset	Intel® C216 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 2x SATA III drives and 4x SATA II drives (Dual SATA II 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 - From PCH: 1x PCI Express x4 or 4x PCI Express x1 by different bios support - 4x PCI devices at 32 bit 33 MHz

I/O INTERFACE

Super I/O	ITE IT8728F
Audio	- Intel® BD82C216 PCH built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC886-GR HDA codec, 7.1 channels
Ethernet	- Intel® 82579LM+82574L gigabit ethernet controller - Dual 10BASE-T/100BASE-TX/1000BASE-T Ethernet - PCI Express x1 interface based on gigabit ethernet - Dual RJ-45 connector with two LED indicators
Serial Port	- 1x RS232 and 1x selectable RS232/422/485 on board
USB	- 10x USB 2.0 ports (four ports through backplane) - 480Mb/s bus capable of high-speed/full-speed/low-speed data ranges - 4x USB 3.0 ports on board (two ports on board, two 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
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, Shader Model 4.0, MPEG-2 and OpenGL 3.1
Display Interface	- CRT on bracket: Resolution up to 2048x1536 @75Hz - DVI-D: up to 1920x1200 @60Hz - HDMI: up to 1920x1200 @60Hz (CRT+DVI-D on bracket by DVI-I port)

Mechanical & Environment

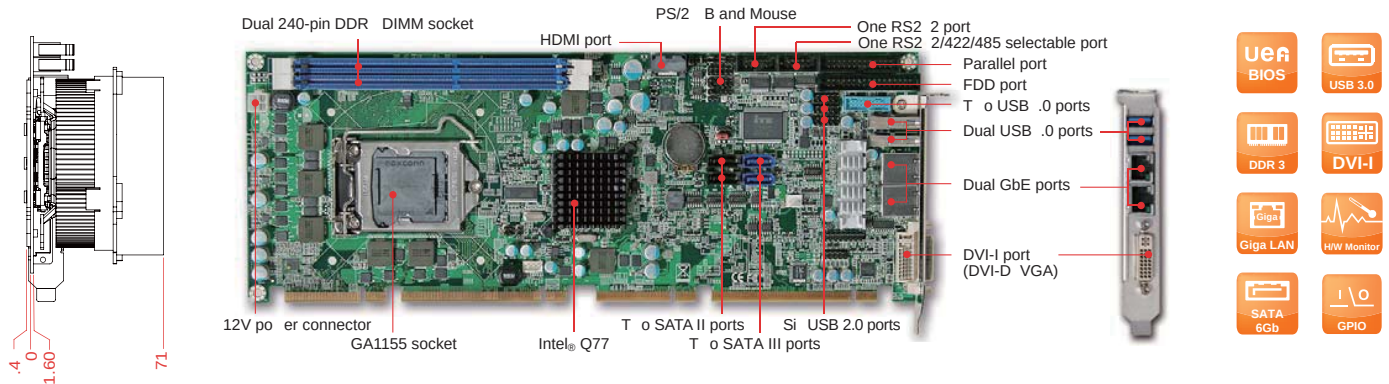
Dimension	- 338.5(L) x 126.39(W)mm; 13.33"(L) x 4.98"(W) - PCB: 12 layers
Power Supply	- Typical: +12V@6.96A; +5V@0.32A - Supports ATX mode
Environment	- Operation Temperature: 0~60 °C (For 80W CPU limitation) - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 100,000 hours at 40°C





ROBO-8111VG2AR-Q77

Intel® Core™ i7/i5 processor based on PICMG 1.3 SHB with DDR3 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB3.0



ROBO-8111VG2AR-Q77 is based on Intel® Q77 chipset and Core™ i7/i5 sku processor. It's suitable for Medical, Factory Automation, and Digital Signage applications.

FEATURES

- Supports Intel® Core™ i7/i5 processors in LGA1155 package
- Delivers up to 16GB maximum DDR3 1333/1600 SDRAM on two DIMM sockets
- Supports multiple display by DVI-I (DVI-D+VGA) and HDMI
- Supports iAMT 8.0 on Intel® Core™ i7/i5 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 two SATA II and two SATA III ports support RAID 0,1,5,10

ORDERING GUIDE

AB1-2330	ROBO-8111VG2AR-Q77 PICMG 1.3(PCI-E+PCI),LGA1155. i7/i5 processors.SHB.w/VGA/Dual GbE/Audio
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PACKING LIST

Standard	B6901990 SATA II cable
	B6902930 SATA III cable (Black)
	B690021S cable kit for FDD+PRN with bracket
	B6900270 dule head COM port cable with bracket
	B6902890 DVI-D + VGA cable with bracket
	B8981980 PICMG SBC Handling and Installation Notice
Optional	B3751500 Installation CD
	B6902980 PS/2 Keyboard / Mouse Cable with bracket
	B6902230 USB port cable with bracket
	AB9-2066 PA-M1AU Multiple Media kit

GENERAL

Processor	- Intel® Core™ i7/i5 processor in LGA1155 package - IDMI x4 Link: 5.0 GT/s - Supports Intel® Turbo Boost, Hyper-Threading, Virtualization, Thermal Monitoring, Trusted Execution and SpeedStep® Technology (depends on CPU sku)
Chipset	Intel® Q77 PCH
BIOS	Phoenix UEFI BIOS
Memory	- Supports up to 16GB DDR3 1333/1600 SDRAM on two 240-pin DIMM sockets
Storage Devices	- Supports 2x SATA III drives and 4x SATA II drives (Dual SATA II 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: 1x PCI Express x16 - From PCH: 1x PCI Express x4 or 4x PCI Express x1 by different bios support - 4x PCI devices at 32 bit 33 MHz

I/O INTERFACE

Super I/O	ITE IT8728F
Audio	- Intel® BD82C216 PCH built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC886-GR HDA codec, 7.1 channels
Ethernet	- Intel® 82579LM+82574L gigabit ethernet controller - Dual 10BASE-T/100BASE-TX/1000BASE-T Ethernet - PCI Express x1 interface based on gigabit ethernet - Dual RJ-45 connector with two LED indicators
Serial Port	- 1x RS232 and 1x selectable RS232/422/485 on board
USB	- 10x USB 2.0 ports (four ports through backplane) - 480Mb/s bus capable of high-speed/full-speed/low-speed data ranges - 4x USB 3.0 ports pn board (two ports on board, two 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
GPIO	On board programmable 8-bit Digital I/Os
Others	1x parallel port

DISPLAY

Graphic Controller	- Intel® Core™ i7/i5 processors integrated graphics engine - Provides improved 3D multimedia capabilities including Microsoft DirectX 11, Shader Model 4.0, MPEG-2 and OpenGL 3.1
Display Interface	- CRT on bracket: Resolution up to 2048x1536 @75Hz - DVI-D: up to 1920x1200 @60Hz - HDMI: up to 1920x1200 @60Hz(CRT+DVI-D on bracket by DVI-I port)

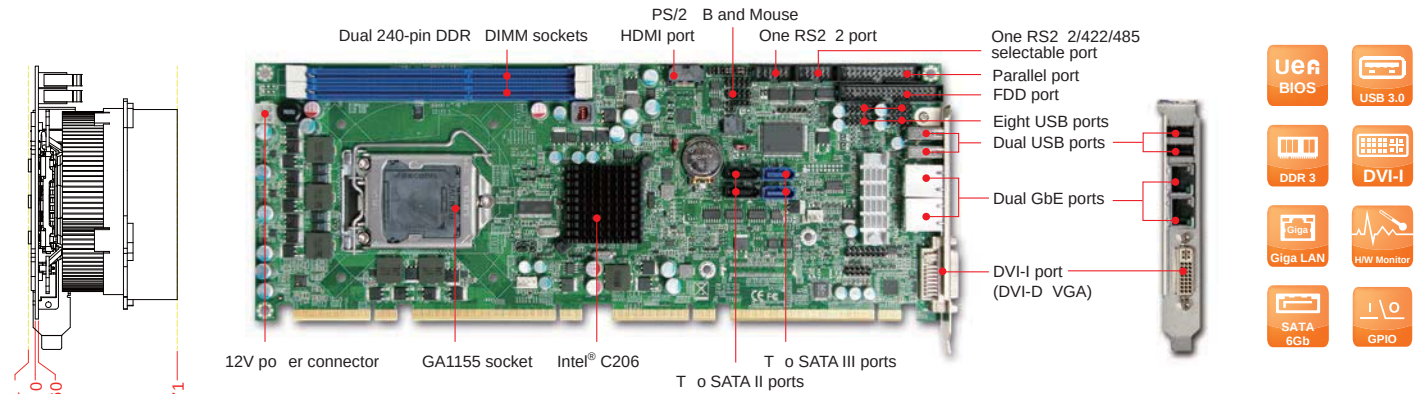
Mechanical & Environment

Dimension	- 338.5(L) x 126.39(W)mm; 13.33"(L) x 4.98"(W) - PCB: 12 layers
Power Supply	- Typical: +12V@4.85A; +5V@3.4A - Supports ATX mode
Environment	- Operation Temperature: 0~60 °C (with highest performance on 50 °C) - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 100,000 hours at 40°C



ROBO-8110VG2AR

Intel® Xeon® and Core™ i3 processor based on PICMG 1.3 SHB with DDR3 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



ROBO-8110VG2AR is based upon the Intel® C206 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® E3-1200 series and Core™ i3 processors in LGA1155 package
- Delivers up to 16GB maximum DDR3 1333/1066 ECC SDRAM on two DIMM sockets
- Supports multiple display with DVI-I (DVI-D+VGA) and HDMI
- Supports iAMT 7.0 on Xeon® E3-1200 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
- On-board two SATA II and two SATA III ports support RAID 0,1,5,10

ORDERING GUIDE

AB1-3600	ROBO-8110VG2AR PICMG 1.3(PCI-E+PCI), LGA1155,Core 2 Quad, SHB.w/VGA/Dual GbE/Audio
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PACKING LIST

Standard	B6901990 SATA II cable B6902930 SATA III cable (Black) B690021S cable kit for FDD+PRN with bracket B6900270 dual head COM port cable with bracket B6902890 DVI-D + VGA cable with bracket B8981980 PICMG SBC Handling and Installation Notice B3751400 Installation CD
Optional	B6902980 PS/2 Keyboard/Mouse Cable with bracket B6902230 USB port cable with bracket AB9-2066 PA-M1AU Multiple Media kit

GENERAL

Processor	- Intel® Core™ i3 and Xeon® E3-1200 series processor up to 3.4 GHz (65~95W) with (3~8MB) Cache in LGA1155 package - DMI x4 Link: 5.0 GT/s - Supports Intel® Turbo Boost, Hyper-Threading, Virtualization, Thermal Monitoring, Trusted Execution and SpeedStep Technology (depends on CPU sku)
Chipset	Intel® C206 PCH (6.6W)
BIOS	AMI UEFI BIOS
Memory	- Supports up to 16GB DDR3 1066/1333 SDRAM on two 240-pin ECC DIMM sockets
Storage Devices	- 2x SATA III drives and 4x SATA II drives (Dual SATA II ports via Backplane) - RAID 0,1,5,10 - 1x FDD channel on board box header
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 - From PCH: 1x PCI Express x4 or 4x PCI Express x1 by different bios support - 4x PCI devices at 32 bit 33 MHz

I/O INTERFACE

Super I/O	ITE IT8728F
Audio	- Intel® BD82C206 PCH built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC662-GR HDA codec, 5.1 channels
Ethernet	- Intel® 82579LM+82574L gigabit ethernet controller - Dual RJ-45 connector with two LED indicators
Serial Port	- 1x RS232 on bracket - 1x Selectable RS232/422/485 on bracket
USB	- 14x USB 2.0 ports (Four ports through backplane) - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	2x USB 2.0 ports on bracket dedicated to keyboard & mouse
GPIO	On board programmable 8-bit Digital I/Os
Others	1x parallel port on board box header

DISPLAY

Graphic Controller	- Intel® Xeon® and Core™ i3 processors integrated graphic engine P3000 - Provided improved 3D multimedia capabilities including Microsoft DirectX 10.1, Shader Model 4.0, MPEG-2 and OpenGL 3.0"
Display Interface	- VGA on bracket: Resolution up to 2048x1536 @ 75Hz - DVI-D: up to 1920x1200 @60Hz - HDMI: up to 1920x1200 @60Hz (VGA + DVI-D on bracket by DVI-I port)

Mechanical & Environment

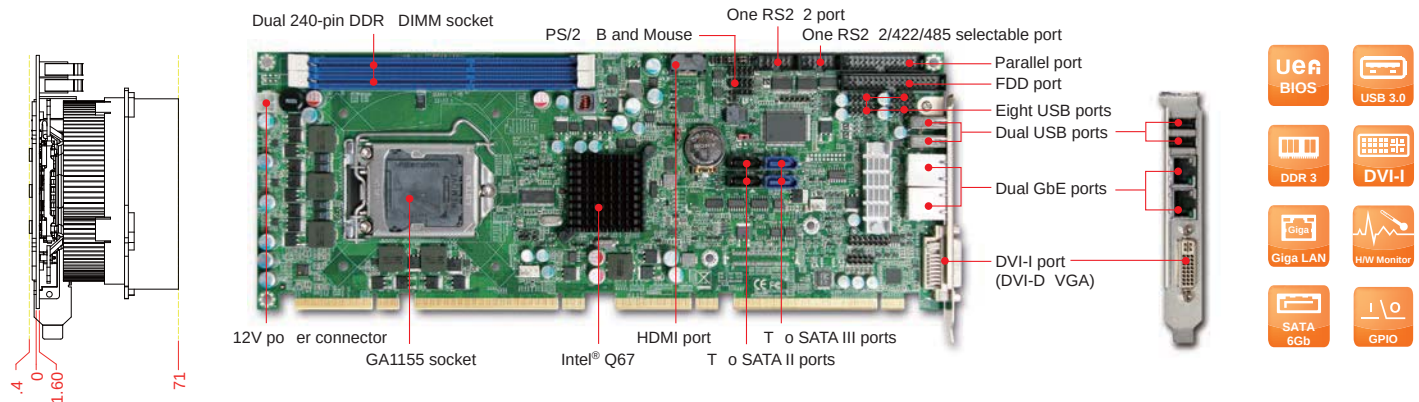
Dimension	- 338.5(L) x 126.39(W)mm; 13.33"(L) x 4.98"(W) - PCB: 8 layers
Power Supply	- Typical: +12V@4.85A; +5V@3.4A - Supports ATX mode
Environment	- Operation Temperature: 0~60 °C (with better performance on 50 °C) - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 100,000 hours at 40°C





ROBO-8110VG2AR-Q67

Intel® Core™ i7 and i5 processor based on PICMG 1.3 SHB with DDR3 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



ROBO-8110VG2AR-Q67 is based on the Intel® Q67 chipset and desktop processor sku like Intel® Core™ i7 and i5. Built with flexible PCI express expansion, it's suitable for Medical, Industrial Automation, and Digital Signage applications.

FEATURES

- Supports Intel® Core™ i7 and i5 processors in LGA1155 package
- Delivers up to 16GB maximum DDR3 1333/1066 SDRAM on two DIMM sockets
- Supports multiple display with DVI-I (DVI-D+VGA) and HDMI
- Supports iAMT 7.0 on Core™ i7 and i5 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
- On-board two SATA II and two SATA III ports support RAID 0,1,5,10

ORDERING GUIDE

AB1-3774	ROBO-8110VG2AR-Q67 PICMG 1.3(PCI-E+PCI),LGA1155,Core 2 Quad, SHB.w/VGA/Dual GbE/Audio
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PACKING LIST

Standard	B6901990 SATA II cable
	B6902930 SATA III cable (Black)
	B690021S cable kit for FDD+PRN with bracket
	B6900270 dual head COM port cable with bracket
	B6902890 DVI-D + VGA cable with bracket
	B8981980 PICMG SBC Handling and Installation Notice
Optional	B3751400 Installation CD
	B6902980 PS/2 Keyboard / Mouse Cable with bracket
	B6902230 USB port cable with bracket
	AB9-2066 PA-M1AU Multiple Media kit

GENERAL

Processor	- Intel® Core™ i7 and i5 processor up to 3.4 GHz (65~95W) with (3~8MB) Cache in LGA1155 package - DMI x4 Link: 5.0 GT/s - Supports Intel® Turbo Boost, Hyper-Threading, Virtualization, Thermal Monitoring, Trusted Execution and SpeedStep® Technology (depends on CPU sku)
Chipset	Intel® Q67 PCH (6.1W)
BIOS	AMI UEFI BIOS
Memory	- Supports up to 16GB DDR3 1066/1333 SDRAM on two 240-pin DIMM sockets - 2x SATA III drives and 4x SATA II drives (Dual SATA II ports via Backplane) - RAID 0,1,5,10
Storage Devices	- 1x FDD channel on board box header
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: 1x PCI Express x16 - From PCH: 1x PCI Express x4 or 4x PCI Express x1 by different bios support - 4x PCI devices at 32 bit 33 MHz

I/O INTERFACE

Super I/O	ITE IT8728F
Audio	- Intel® BD82Q67 PCH built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC662-GR HDA codec, 5.1 channels
Ethernet	- Intel® 82579LM+82574L gigabit ethernet controller - Dual RJ-45 connector with two LED indicators
Serial Port	- 1x RS232 on bracket - 1x Selectable RS232/422/485 on bracket
USB	- 14x USB 2.0 ports (four ports through backplane) - 480 Mb/s bus capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	2x USB 2.0 ports on bracket dedicated to keyboard & mouse
GPIO	On board programmable 8-bit Digital I/Os
Others	1x parallel port on board box header

DISPLAY

Graphic Controller	- Intel® Core™ i7 and i5 processors integrated graphic engine P3000 - Improved 3D multimedia capabilities including Microsoft DirectX 10.1, Shader Model 4.0, MPEG-2 and OpenGL 3.0*
Display Interface	- VGA on bracket: Resolution up to 2048x1536 @ 75Hz - DVI-D: up to 1920x1200 @60Hz - HDMI: up to 1920x1200 @60Hz (VGA + DVI-D on bracket by DVI-I port)

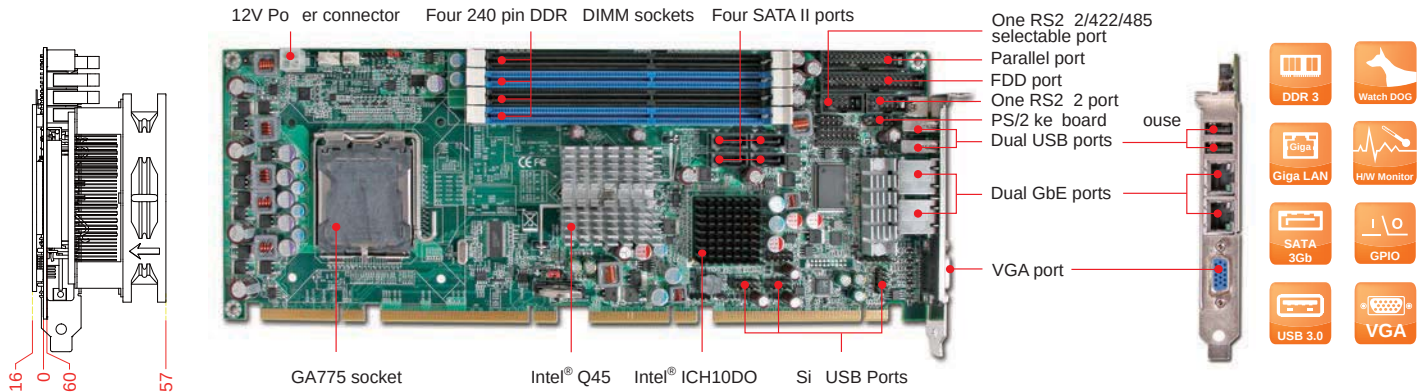
Mechanical & Environment

Dimension	- 338.5(L) x 126.39(W)mm; 13.33"(L) x 4.98"(W) - PCB: 8 layers
Power Supply	- Typical: +12V@4.85A ;+5V@3.4A - Supports ATX mode
Environment	- Operation Temperature: 0~60 °C (with better performance on 50 °C) - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 100,000 hours at 40 °C



ROBO-8914VG2AR

Intel® Core™ 2 Quad processor based on PICMG 1.3 SHB with DDR3 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



ROBO-8914VG2AR is based on Intel® 82Q45 GMCH and ICH10DO. It supports four DDR3 memory for higher capacity. By supporting PCI-Express x16, it's applied more faster rate to Image Processing and Industrial Automation.

FEATURES

- Supports Intel® Core™ 2 Duo and Core™ 2 Quad processors and offers flexible 1333/1066/800 MHz FSB selection
- Delivers up to 8GB maximum DDR3 1066/800 on four long DIMM sockets
- Supports Intel® Q45 integrated GMA 4500 graphic engine delivers optimized 3D graphics performance
- Supports iAMT 5.0 and iTPM function
- 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
- Four on-board SATA ports support RAID 0,1,5,10

ORDERING GUIDE

AB1-3486	ROBO-8914VG2AR PICMG 1.3(PCI-E+PCI).LGA775.Core 2 Quad. SHB.w/VGA/Dual GbE/Audio
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PACKING LIST

Standard	B690021S cable kit for FDD+PRN with bracket B6900270 dual head COM port cable with bracket B6901990 SATA II cable B8981980 PICMG SBC Handling and Installation Notice B3751250 Installation CD
Optional	B6902230 USB port cable with bracket B6901442 PS/2 Keyboard/Mouse Cable with bracket AB9-2066 PA-M1AU Multiple Media kit

GENERAL

Processor	- Intel® Core™ 2 Quad/Core™ 2 Duo/Celeron® Processor up to 3G (65W~95W) with 512K~6MB L2 Cache in LGA775 package - FSB: 1333/1066/800MHz - DMI x4 Link: 2.5 GT/s - Supports Intel® Virtualization Technology (VT-x)
Chipset	- Intel® 82Q45 Graphics and Memory Controller Hub (23.4W) - ICH10DO (5W) - Supports Intel® Virtualization Technology for Directed I/O (VT-d)
BIOS	AMI Core 8 BIOS
Memory	Supports up to 8GB DDR3 1066/800 SDRAM on four 240-pin DIMM sockets
Storage Devices	- 6x SATA II drivers (Dual SATA ports via Backplane) - RAID 0,1,5,10 - 1x FDD channel on board box header
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	- 1x PCI Express x16 Gen 1 up to 2.5 GT/s - 4x PCI Express x1 Gen 1 up to 2.5 GT/s - 4x PCI devices at 32-bit 33 MHz

I/O INTERFACE

Super I/O	Winbond W83627THG (R0 version)/W83627DHG-PT (R2 version)
Audio	- Intel® 82Q45 built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC662-GR HDA codec, 5.1 channels
Ethernet	- Intel® 82567LM+82574L gigabit ethernet controller - Dual RJ-45 connector with two LED indicators on bracket
Serial Port	- 1x RS232 on board box header - 1x Selectable RS232/422/485 on board box header
USB	- 12x USB 2.0 ports (Four ports through backplane) - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	2x USB 2.0 ports on bracket dedicated to keyboard & mouse
GPIO	On board programmable 8-bit Digital I/Os
Others	1x parallel port on board box header

DISPLAY

Graphic Controller	- GMCH integrated Intel Graphic Media Accelerator (GMA) 4500 - Provided improved 3D multimedia capabilities including Microsoft DirectX 10, Shader Model 4.0, MPEG-2 and OpenGL 2.1 - Intel Dynamic Video Memory Technology (DVMT) 5.0 shares system memory up to 1GB
Display Interface	VGA on bracket: Resolution up to 2048x1536 @75Hz

Mechanical & Environment

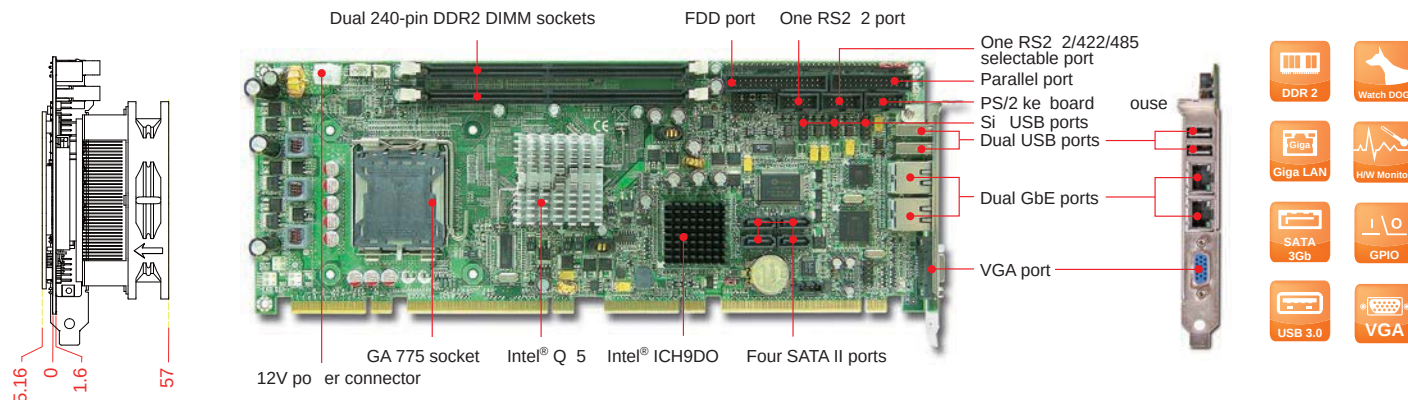
Dimension	- 338.5(L) x 126.39(W)mm; 13.33"(L) x 4.98"(W) - PCB: 8 layers
Power Supply	- Typical: +12V@3.86A; +5V@6.44A - Supports ATX mode
Environment	- Operation Temperature: 0~55 °C - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 120,000 hours at 40°C





ROBO-8913VG2AR

Intel® Core™ 2 Quad processor based on PICMG 1.3 SHB with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



ROBO-8913VG2AR is built with the Intel® Q35, ICH9DO chipset up to Core™ 2 Quad processors. It supports DDR2 memory, and two Intel® Gigabit Ethernet. It's an ideal solution for Image Processing and Industrial Automation applications.

FEATURES

- Supports Intel® Core™ 2 Quad processor up to FSB 1333MHz
- Low profile processor improves stability and reliability of whole system
- Supports eSATA that can communicate with multiple drives via port multiplier
- Lockable cable-latched notches of SATA connector secure connection in vibration condition
- Embedded Intel® Active Management Technology (iAMT) remotely locates, repairs and protects networked computing assets using third-party management and security applications
- System noise and heat are reduced through more intelligent fan speed control algorithms by integrated Intel® Quiet System Technology
- Flexible design of four external PCI Express x1 could aggregate as one PCI Express x4 for storage device through backplane

ORDERING GUIDE

AB1-3072	ROBO-8913VG2AR PICMG 1.3(PCI-E+PCI).Socket T.Core 2 Duo. SBC.w/VGA/Dual GbE/Audio
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PACKING LIST

Standard	B690021S cable kit for FDD+PRN with bracket B6900270 dual head COM port cable with bracket B6901990 SATA II cable B8981980 PICMG SBC Handling and Installation Notice B3751110 Installation CD
Optional	B6902230 USB port cable with bracket B6901442 PS/2 Keyboard/Mouse Cable with bracket AB9-2066 PA-M1AU Multiple Media kit

GENERAL

Processor	- Intel® Core™ 2 Quad/Core™ 2 Duo/Celeron® Processor up to 3G (35W~95W) with 512K~6MB L2 Cache in LGA775 package - FSB: 1333/1066/800MHz - DMI x4 Link: 2.5 GT/s - Supports Intel® Virtualization Technology (VT-x)
Chipset	- Intel® 82Q35 Graphics and Memory Controller Hub (22W) - ICH9DO (3.5W) - Supports Intel® Virtualization Technology for Directed I/O (VT-d)
BIOS	AMI Core 8 BIOS
Memory	Supports up to 4GB DDR2 800/667 SDRAM on dual 240-pin DIMM sockets
Storage Devices	- 6x SATA II drivers (Dual SATA ports via Backplane) - RAID 0,1,5,10 - 1x FDD channel on board box header
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	- 1x PCI Express x16 Gen 1 up to 2.5 GT/s - 4x PCI Express x1 Gen 1 up to 2.5 GT/s - 4x PCI devices at 32-bit 33MHz

I/O INTERFACE

Super I/O	Winbond W83627HG-AW
Audio	- Intel® 82Q35 built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC262-VC2 LQFP48 codec, 2.1 channels
Ethernet	- Intel® 82566DM+82573L gigabit ethernet controller - Dual RJ-45 connector with two LED indicators on bracket
Serial Port	- 1x RS232 on board box header - 1x Selectable RS232/422/485 on board box header
USB	- 12x USB 2.0 ports (Four ports through backplane) - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	2x USB 2.0 ports on bracket dedicated to keyboard & mouse
GPIO	On board programmable 8-bit Digital I/Os
Others	1x parallel port on board box header, IrDA 1.0

DISPLAY

Graphic Controller	- GMCH integrated Intel Graphic Media Accelerator (GMA) 3100 - Provides improved 3D multimedia capabilities including Microsoft DirectX 9, Shader Model 2.0, MPEG-2 hardware acceleration - Intel Dynamic Video Memory Technology (DVMT) 4.0 shares system memory up to 256MB
Display Interface	VGA on bracket: Resolution up to 2048x1536 @75Hz

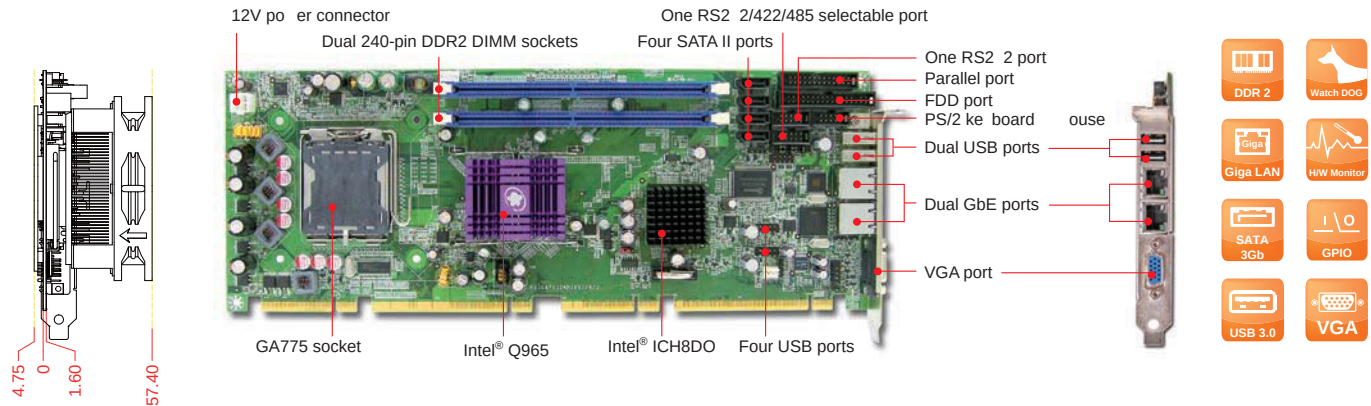
Mechanical & Environment

Dimension	- 338.5(L) x 126.39(W)mm; 13.33"(L) x 4.98"(W) - PCB: 8 layers
Power Supply	- Typical: +12V@2.7A; +5V@6.7A - Supports ATX mode
Environment	- Operation Temperature: 0~60 °C - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 110,000 hours at 40°C



ROBO-8912VG2AR

Intel® Core™ 2 Duo processor based on PICMG 1.3 SHB with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



ROBO-8912VG2AR is based on the Intel® Q965, ICH8DO chipset. It supports DDR2 memory, and two Gigabit Ethernet. With PCI-Express, Image Processing, Industrial Automation, and Digital Signage applications are able to run at faster rates.

FEATURES

- Supports 45nm Intel® Core™ 2 Duo processor that generates a maximum 65W TDP. Lower TDP than socket 775 Pentium® 4 processor makes the vertical mount slot board more reliable
- More features, such as EM64T, EIST, XD & VT, can be easily applied to system by changing processors
- Integrated Intel® GMA 3000 graphics engine built with high grade display capability
- Flexible design of four external PCI Express x1 can aggregate as one PCI Express x4 for storage device through backplane

ORDERING GUIDE

AB1-3042	ROBO-8912VG2AR PICMG 1.3(PCI-E+PCI).Socket T.P4.SBC.w/VGA/ Dual GbE/Audio
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PACKING LIST

Standard	B6900270 dual head COM port cable with bracket B6900643 PRN cable B6901990 SATA II cable B6900600 FDD cable B8981980 PICMG SBC Handling and Installation Notice B3751110 Installation CD
Optional	B6901442 PS/2 Keyboard/Mouse Cable with bracket AB9-2066 PA-M1AU Multiple Media kit B6902230 USB port cable with bracket B6901870 PS/2 Keyboard/Mouse Cable and one USB with bracket

GENERAL

Processor	- Intel® Core™ 2 Duo/Pentium D/Pentium 4/Celeron® Processor up to 2.93G (35W~95W) with 512K~2MB L2 Cache in LGA775 package - FSB: 1066/800/533MHz - DMI x4 Link: 2.5 GT/s - Supports Intel® Virtualization Technology (VT-x)
Chipset	- Intel® Q965 Graphics and Memory Controller Hub (28W) - ICH8DO (3.3W)
BIOS	AMI Core 8 BIOS
Memory	Supports up to 4GB DDR2 800/667/533 SDRAM on dual 240-pin DIMM sockets
Storage Devices	- 6x SATA II drivers (Dual SATA ports via Backplane) - RAID 0,1,5,10 - 1x FDD channel on board box header
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	- 1x PCI Express x16 Gen 1 up to 2.5 GT/s - 4x PCI Express x1 Gen 1 up to 2.5 GT/s - 4x PCI devices at 32-bit 33MHz

I/O INTERFACE

Super I/O	Winbond W83627EHG-AC
Audio	- Intel® 82Q965 built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC262-VC2 LQFP48 codec, 2.1 channels
Ethernet	- Intel® 82566DM+82573L gigabit ethernet controller - Dual RJ-45 connector with two LED indicators on bracket
Serial Port	- 1x RS232 on board box header - 1x Selectable RS232/422/485 on board box header
USB	- 10x USB 2.0 ports (Four ports through backplane) - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	2x USB 2.0 ports on bracket dedicated to keyboard & mouse
GPIO	On board programmable 8-bit Digital I/Os
Others	1x parallel port on board box header

DISPLAY

Graphic Controller	- GMCH integrated Intel Graphic Media Accelerator (GMA) 3000 - Provides improved 3D multimedia capabilities including Microsoft DirectX 9, Shader Model 3.0,OpenGL 1.5, Advanced De-interlacing, MPEG-2 hardware acceleration - Intel Dynamic Video Memory Technology (DVMT) 4.0 shares system memory up to 256MB
Display Interface	VGA on bracket: Resolution up to 2048x1536 @75Hz

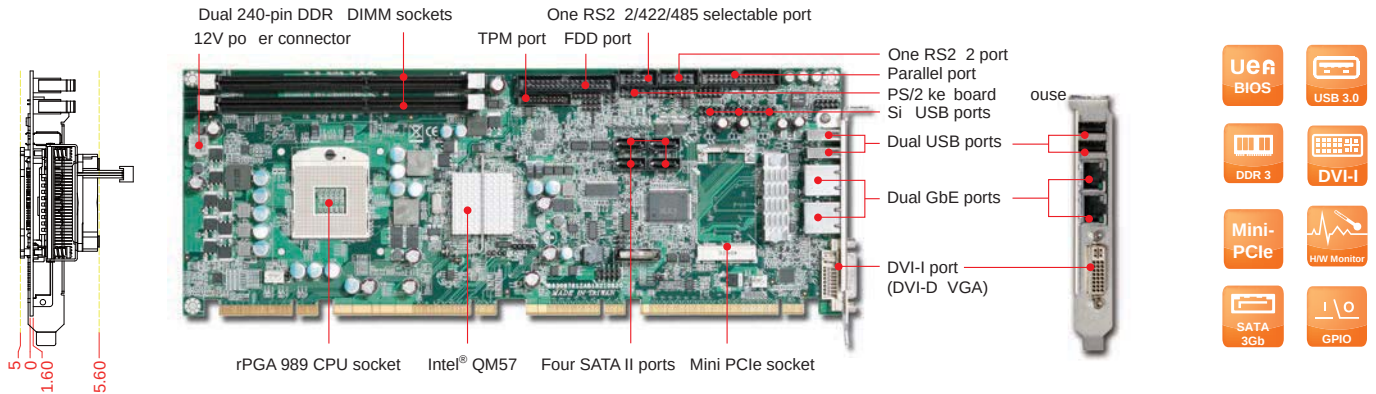
Mechanical & Environment

Dimension	- 338.5(L) x 126.39(W)mm; 13.33"(L) x 4.98"(W) - PCB: 6 layers
Power Supply	- Typical: +12V@6.3A; +5V@4.5A - Supports ATX mode
Environment	- Operation Temperature: 0~60 °C - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 90,000 hours at 40°C



ROBO-8210VG2AR

Intel® Core™ i7/i5 processor based on PICMG 1.3 SHB with DDR3 SDRAM, DVI-I, Dual Gigabit Ethernet, Audio and USB



ROBO-8210VG2AR adopts the QM57 chipset and Intel® Core™ i7/i5 and Celeron® processors. Built with high performance and lower power consumption than desktop platform, it's suitable for Medical, Industrial Automation and Kiosk applications.

FEATURES

- Supports Intel® i7-620M/i5-520M/P4500 processors in rPGA988 package
- Delivers up to 8GB maximum DDR3 1066/800 on two DIMM sockets
- Supports dual display by DVI-I port on bracket
- Supports iAMT 6.0 and external TPM via TPM module
- 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
- Four on-board SATA ports support RAID 0,1,5,10

ORDERING GUIDE

AB1-3521	ROBO-8210VG2AR PICMG 1.3(PCI-E+PCI),rPGA988A package. Intel QM57 w/ PGA type Core i7/i5 processors.SHB.w/ VGA/Dual GbE/Audio
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PACKING LIST

Standard	B690021S cable kit for FDD+PRN with bracket B6900270 dual head COM port cable with bracket B6901990 SATA II cable B8981980 PICMG SBC Handling and Installation Notice B6902890 DVI-D + VGA cable with bracket B8303170 CPU cooler (up to 35W) B3751340 Installation CD
Optional	B6901442 PS/2 Keyboard/Mouse Cable with bracket AB9-2066 PA-M1AU Multiple Media kit B6902230 USB port cable with bracket

GENERAL

Processor	- Intel® Core™ i7-620M/i5-520M/P4500 Processors up to 3.33G (35W) with 2MB~4MB Cache in rPGA989 package - DMI x4 Link: 2.5 GT/s - Supports Intel® Hyper-Threading, Virtualization Technology (VT-x)
Chipset	Intel® BD82QM57 PCH (3.5W)
BIOS	AMI UEFI BIOS
Memory	Supports up to 8GB DDR3 1066/800 SDRAM on dual 240-pin DIMM sockets
Storage Devices	- 6x SATA II drivers (Dual SATA ports via Backplane) - RAID 0,1,5,10 - 1x FDD channel on board box header
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	- 1x PCI Express x16 Gen 1 up to 2.5 GT/s - 2x PCI Express x8 Gen 1 up to 2.5 GT/s - 4x PCI devices at 32-bit 33MHz (Option for PCI Express Gen 2 support) - 1x Mini-PCIe socket

I/O INTERFACE

Super I/O	ITE IT8721F
Audio	- Intel® BD82QM57 built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC662-GR HDA codec, 5.1 channels
Ethernet	- Intel® 82577LM + 82583V gigabit ethernet controller - Dual RJ-45 connector with two LED indicators on bracket
Serial Port	- 1x RS232 on board box header - 1x Selectable RS232/422/485 on board box header
USB	- 12x USB 2.0 ports (Four ports through backplane) - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	2x USB 2.0 ports on bracket dedicated to keyboard & mouse
GPIO	On board programmable 8-bit Digital I/Os
Others	1x parallel port on board box header

DISPLAY

Graphic Controller	- GMCH integrated Intel Graphic Media Accelerator (GMA) HD - Provides improved 3D multimedia capabilities including Microsoft DirectX 10, Shader Model 4.0, OpenGL 2.1, MPEG-2 hardware acceleration - Intel Dynamic Video Memory Technology (DVMT) 5.0 shares system memory up to 1Gb
Display Interface	- VGA on bracket: Resolution up to 2048x1536 @75Hz - DVI-D: Resolution up to 1920x1200 @60Hz

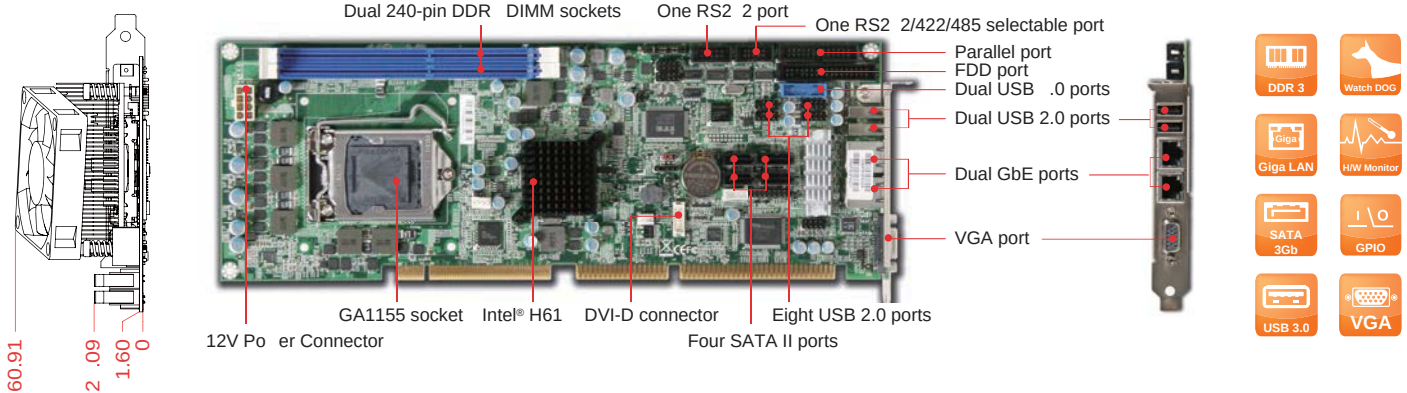
Mechanical & Environment

Dimension	- 338.5(L) x 126.39(W)mm; 13.33"(L) x 4.98"(W) - PCB: 8 layers
Power Supply	- Typical: +12V@3.86A; +5V@6.44A - Supports ATX mode
Environment	- Operation Temperature: 0~55 °C - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 120,000 hours at 40°C



ROBO-8780VG2A

Intel® Core™ i7/i5/i3 processor based on PICMG 1.0 SBC with DDR3 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



ROBO-8780VG2A is based on Intel® H61 chipset and Intel® Core™ i3/i5/i7 processors. It supports VGA and on board DVI-D display. It's suitable for Medical, Industrial automation, and digital signage applications.

FEATURES

- Supports Intel® Core™ i7/i5/i3 processors in LGA1155 package
- Delivers up to 16GB maximum DDR3 1333/1066 non-ECC SDRAM on two DIMM sockets
- Supports dual display by VGA and on board DVI-D
- Supports two USB 3.0 ports on board
- High speed Intel® Dual Gigabit Ethernet 82579LM and 82583V based on PCI Express x1, high bandwidth I/O interface
- Rich I/O connections such as FDD, two Gigabit Ethernet, serial ports, parallel port
- On-board four SATA II ports and ten USB 2.0 ports (dual ports on bracket)

ORDERING GUIDE

AB1-3798	ROBO-8780VG2A PICMG 1.0(PCI+ISA).LGA1155.SBC.up to Core™ i7 processors. w/VGA/Dual GbE/Audio/USB 3.0
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PACKING LIST

Standard	B6901990 SATA II cable
	B690021S cable kit for FDD+PRN with bracket
	B6900270 dual head COM port cable with bracket
	B8981980 PICMG SBC Handling and Installation Notice
	B3751540 Installation CD
Optional	B6902980 PS/2 Keyboard/Mouse Cable with bracket
	B6903090 USB 3.0 port cable with bracket
	AB9-2066 PA-M1AU Multiple Media kit

GENERAL

Processor	- Intel® Core™ i3/i5/i7 processor up to 3.4GHz (65~95W) with (3~8MB) Cache in LGA1155 package - DMI x4 Link: 5.0 GT/s
Chipset	- Intel® BD82H61 PCH (6.1W)
BIOS	AMI EFI BIOS
Memory	- Supports up to 16GB DDR3 1333/1066 MT/s SDRAM on 2x 240-pin non-ECC DIMM sockets (dual channel)
Storage Devices	- 4x SATA support 3Gb/s data transfer rate on board - Supports 16-bit ISA via golden finger
Watchdog Timer	Programmable via S/W from 0.5 sec. to 255 min.
Hardware Monitoring	System monitor (fan, temperature, voltage)
Expansion Interface	4x PCI devices at 32-bit 33MHz

I/O INTERFACE

Super I/O	ITE IT8728F
Audio	- Intel® BD82H61 PCH built-in High Definition Audio up to 192-kHz 24-bit - Realtek ALC886-GR HDA codec
Ethernet	- Intel® 82579LM and Intel® 82583V dual gigabit ethernet controllers - Dual RJ-45 connectors with two LED indicators on bracket
Serial Port	- 1x RS232 on board box header - 1x RS232/422/485 on board box header - 1x internal FDD connector
USB	- 2x USB 3.0 ports on board (5Gbps) - 10x USB 2.0 ports on board (480 Mb/s) - Capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	Two USB 2.0 on bracket dedicated to keyboard & mouse
GPIO	One 10-pin header for 8 programmable input/output
Others	- 1x parallel port on board box header

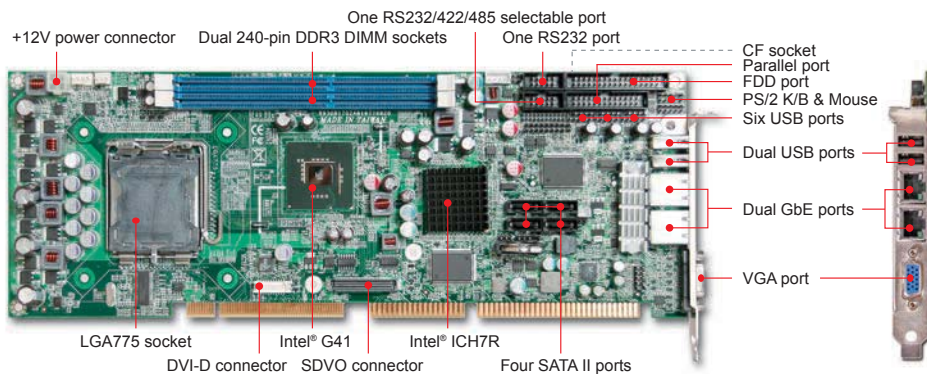
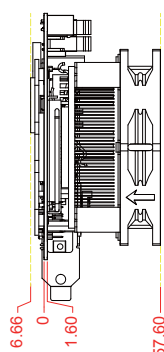
DISPLAY

Graphic Controller	- Intel® Core™ i processors integrated Graphics Engine - Providing delivers optimized 3D graphics performance and support for Microsoft DirectX 10.1, Shader Model 4.0, MPEG-2 and OpenGL 3.0
Display Interface	- VGA on bracket: Resolution up to 2048x1536 @75Hz - DVI-D on board: Resolution up to 1920x1200 @60Hz

Mechanical & Environment

Dimension	- 338.5(L) x 122(W)mm; 13.33"(L) x 4.8"(W) - PCB: 8 layers
Power Supply	- +12V@4.6A; +5V@3.8A - Supports ATX mode
Environment	- Operation Temperature: 0°C to 60°C (with better performance on 50°C) - Storage Temperature: -20°C to 80°C - Relative Humidity: 5% to 90%, non-condensing
MTBF	Over 100,000 hours at 40°C





ROBO-8779VG2AR is based on the Intel® G41, ICH7R chipset and supports Core™ 2 Quad sku processors. It supports DDR3 memory up to 4GB. It's the entry level product and suitable for Digital Signage, Kiosk, and Multimedia applications.

FEATURES

- Supports Intel® Core™ 2 Duo and Core™ 2 Quad processors and offers flexible 1333/1066/800Mhz FSB selection
- Deliver up to 4GB maximum DDR3 1066/800 on two DIMM sockets
- Supports Intel® G41 integrated GMA X4500 graphic engine delivers optimized 3D graphics performance
- Supports dual display VGA and DVI-D interface, and SDVO connector for other types display by project
- Supports one CF socket up to UDMA5 mode
- Equipped with I/O connections such as FDD, two Gigabit Ethernet, serial ports, parallel port, USB 2.0, and SATA ports

ORDERING GUIDE

AB1-3349	(R).ROBO-8779VG2AR PICMG 1.0(PCI+ISA),LGA775,Core 2 Quad. SBC.w/VGA/Dual GbE/Audio
AB1-3428	(R).ROBO-8779VG2A PICMG 1.0(PCI+ISA),LGA775,Core 2 Quad. SBC.w/VGA/Dual GbE/Audio. w/o RAID

PACKING LIST

Standard	B690021S cable kit for FDD+PRN with bracket B6900270 dual head COM port cable with bracket B6901990 SATA II cable B690003S Cable Assy 4F-4F B8981980 PICMG SBC Handling and Installation Notice B3751250 Installation CD
Optional	B6901442 PS/2 Keyboard/Mouse Cable with bracket AB9-2066 PA-M1AU Multiple Media kit AB9-3076 PA-G1D SDVO to DVI-D Output Accessory Board B6902230 USB port cable with bracket B6902300 Audio cable with line in/out/Mic in

GENERAL

Processor	- Intel® Core™ 2 Quad/Core™ 2 Duo/Celeron® Processor up to 2.93G (35W~95W) with 512K~2MB L2 Cache in LGA775 package - FSB: 1333/1066/800MHz - DMI x4 Link: 2.5 GT/s - Support Intel® Virtualization Technology (VT-x)
Chipset	- Intel® 82G41 Graphics and Memory Controller Hub (25W) - ICH7R (3.3W)
BIOS	AMI Core 8 BIOS
Memory	Supports up to 4GB DDR3 1066/800 SDRAM on dual 240-pin DIMM sockets
Storage Devices	- 6x SATA II drivers (RAID 0,1,5,10) - With RAID on ROBO-8779VG2AR, w/o RAID on ROBO-8779VG2A - 1x Type II CompactFlash® socket supports Ultra DMA133/100/66/33 MB/s - 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	- 4x PCI devices at 32-bit 33MHz

I/O INTERFACE

Super I/O	Winbond W83627THG
Audio	- Intel® 82G41 built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC662-GR HDA codec, 5.1 channels
Ethernet	- Intel® 82574L gigabit ethernet controller x2 - Dual RJ-45 connector with two LED indicators on bracket
Serial Port	- 1x RS232 on board box header - 1x Selectable RS232/422/485 on board box header
USB	- 8x USB 2.0 ports - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	2x USB 2.0 ports on bracket dedicated to keyboard & mouse
GPIO	On board programmable 8-bit Digital I/Os
Others	1x parallel port on board box header

DISPLAY

Graphic Controller	- GMCH integrated Intel Graphic Media Accelerator (GMA) x4500 - Provides improved 3D multimedia capabilities including Microsoft DirectX 10, Shader Model 4.0, OpenGL 2.0 - Intel Dynamic Video Memory Technology (DVMT) 5.0 shares system memory up to 1GB
Display Interface	- VGA on bracket: Resolution up to 2048x1536 - DVI-D: up to 2048x1536 - SDVO: Optional DVI-D output card via SDVO

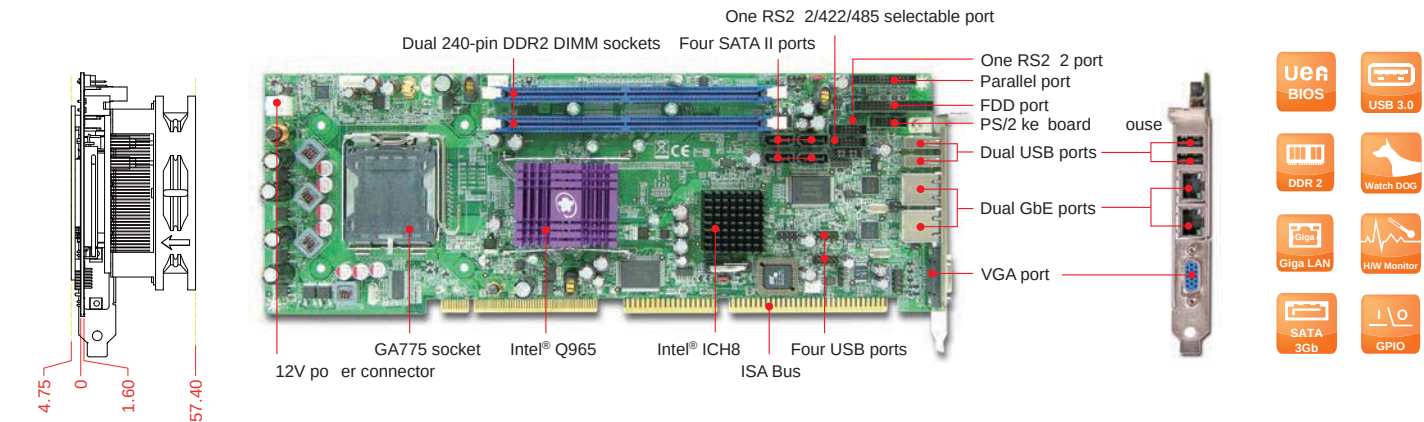
Mechanical & Environment

Dimension	- 338.5(L) x 122(W)mm; 13.33"(L) x 4.8"(W) - PCB: 8 layers
Power Supply	- Typical: +12V@4.48A; +5V@6.54A - Supports ATX mode
Environment	- Operation Temperature: 0~60 °C - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 110,000 hours at 40°C



ROBO-8777VG2A

Intel® Core™ 2 Duo processor based on PICMG SBC with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



ROBO-8777VG2A adopts the Intel® Q965, ICH8 chipset and Intel® Core™ 2 Duo technologies. It supports DDR2 memory and two Gigabit Ethernet. It's suitable for Digital Signage, Kiosk, and Multimedia applications.

FEATURES

- Supports Intel® Core™ 2 Duo processor that generates a maximum 65W TDP. Lower TDP than socket 478 Pentium® 4 processor makes the vertical mount slot board more reliable
- Low profile processor cooler improves stability and reliability of whole system
- More features, such as EM64T, EIST, XD & VT, can be easily applied to system by changing processor
- Integrated Intel® GMA 3000 graphics engine built with high grade display capability
- Lockable cable-latched notches of SATA connector secure connection in vibration condition
- Supports ISA expansion

ORDERING GUIDE

AB1-3057	ROBO-8777VG2A PICMG 1.0(PCI/ISA), Socket T.P4.SBC.w/VGA/ Dual GbE/Audio
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PACKING LIST

Standard	B6900074 FDD Cable
	B6901990 SATA II cable
	B690003S Cable Assy 4F-4F
	B8981980 PICMG SBC Handling and Installation Notice
	B3751110 Installation CD
Optional	B7869400 One COM Port Cabel
	B6900643 PRN cable
	B6902000 dual serial port cable with bracket
	B6901090 USB cable
	B6902300 Audio cable with line in/out/Mic in
	B6902010 PS/2 Keyboard/Mouse Cable with bracket
	AB9-2066 PA-M1AU Multiple Media kit

GENERAL

Processor	- Intel® Core™ 2 Duo/Pentium D/Pentium 4/Celeron® Processor up to 2.93G (35W~95W) with 512K~2MB L2 Cache in LGA775 package - FSB: 1066/800/533MHz - DMI x4 Link: 2.5 GT/s - Supports Intel® Virtualization Technology (VT-x)
Chipset	- Intel® Q965 Graphics and Memory Controller Hub (28W) - ICH8 (3.3W)
BIOS	Award BIOS
Memory	Supports up to 4GB DDR2 800/667/533 SDRAM on dual 240-pin DIMM sockets
Storage Devices	- 4x SATA II drivers - 1x FDD channel on board box header
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	- 4x PCI devices at 32-bit 33MHz

I/O INTERFACE

Super I/O	Winbond W83627DHG
Audio	- 82Q965 built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC262-VC2 LQFP48 codec, 2 channels
Ethernet	- Intel® Realtek 8111B gigabit ethernet controller x2 - Dual RJ-45 connector with two LED indicators on bracket
Serial Port	- 1x RS232 on board box header - 1x Selectable RS232/422/485 on board box header
USB	- 6x USB 2.0 ports - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	2x USB 2.0 ports on bracket dedicated to keyboard & mouse
GPIO	On board programmable 8-bit Digital I/Os
Others	1x parallel port on board box header

DISPLAY

Graphic Controller	- GMCH integrated Intel Graphic Media Accelerator (GMA) 3000 - Provided improved 3D multimedia capabilities including Microsoft DirectX 9, Shader Model 3.0, OpenGL 1.5, Advanced De-interlacing, MPEG-2 hardware acceleration - Intel Dynamic Video Memory Technology (DVMT) 4.0 shares system memory up to 256MB
Display Interface	VGA on bracket: Resolution up to 2048x1536 @75Hz

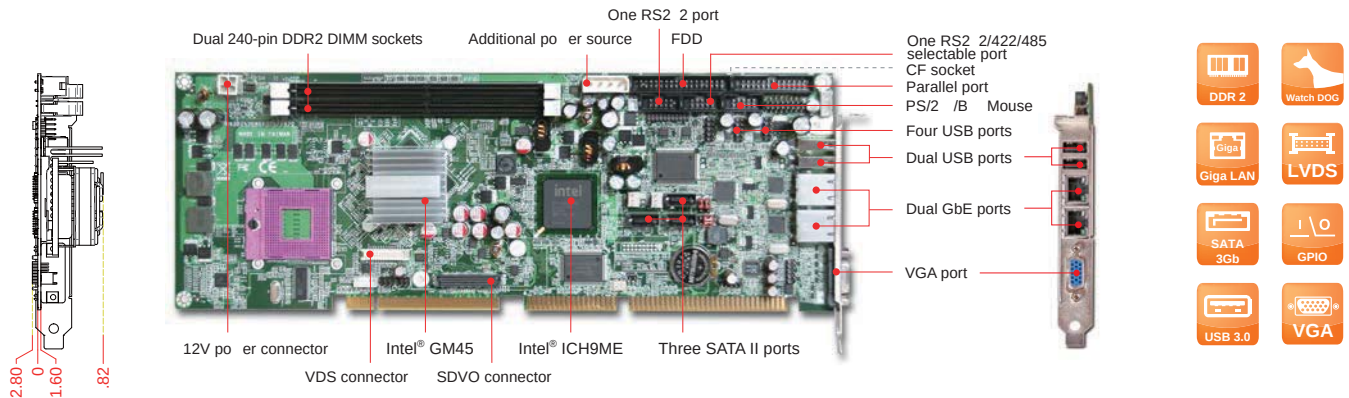
Mechanical & Environment

Dimension	- 338.5(L) x 122(W)mm; 13.33"(L) x 4.8"(W) - PCB: 6 layers
Power Supply	- Typical: +12V@1.3A; +5V@5.6A - Supports ATX mode
Environment	- Operation Temperature: 0~60 °C - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 90,000 hours at 40°C



ROBO-8719VG2AR

Intel® latest 45nm Core™ 2 Duo or Celeron® M processor based on PICMG SBC with DDR2 SDRAM, VGA, Dual Gigabit Ethernet and Audio



ROBO-8719VG2AR is based on GM45 and ICH9ME chipset, supporting mobile processors up to Core™ 2 Quad sku. It's the ideal solution for Medical, Industrial Automation and Kiosk applications.

FEATURES

- ROBO-8719VG2AR offers flexible FSB up to 1066MHz selection of Intel® 45nm Mobile Core™ 2 Quad, Core™ 2 Duo or Celeron® M processor that features high computing power with low heat
- Integrated 5th generation graphic engine Mobile Intel® GMA 4500MHD built with max. graphics core speeds up to 533MHz to improve graphics and 3D rendering performance
- Supports two on-board display output options, including VGA and 24-bit LVDS for flexible display choice. An optional DVI-D output card supports via board to board SDVO connector by project
- Supports integrated Intel® Trusted Platform Module (iTPM) for more secure platforms

ORDERING GUIDE

AB1-3252	ROBO-8719VG2AR PICMG 1.0(PCI+ISA).Socket mPGA479M.SBC.w/ VGA/Dual GbE/Audio
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PACKING LIST

Standard	B6900600 FDD Cable
	B6900064 PRN cable
	B6901990 SATA II cable
	B690027S serial port cable
	B690003S Cable Assy 4F-4F
	B3751110 Installation CD
	B9970542 CPU cooler (up to 35W)
	B6902230 USB port cable with bracket
	B6902300 Audio cable with line in/out/Mic in
	AB9-2066 PA-M1AU Multiple Media kit
Optional	AB9-3076 PA-G1D SDVO to DVI-D Output Accessory Board
	B6901442 PS2 Keyboard and Mouse cable with bracket

GENERAL

Processor	- Intel® Mobile Core™ 2 Quad/Core™ 2 Duo/Celeron® M Processor up to 2.53G (35W) with 1MB~6MB L2 Cache in mFCPGA package - FSB: 1066/800/667MHz - DMI x4 Link: 2.5 GT/s - Supports Intel® Virtualization Technology (VT-x)
Chipset	- Intel® 82GM45 Graphics and Memory Controller Hub (12W) - ICH9ME (3.3W)
BIOS	Award BIOS
Memory	Support up to 4GB DDR2 800/667 SDRAM on dual 240-pin DIMM sockets - 3x SATA II drivers (RAID 0,1)
Storage Devices	- 1x Type II CompactFlash socket supports Ultra DMA133/100/66/33 MB/s - 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	- 4x PCI devices at 32-bit 33MHz

I/O INTERFACE

Super I/O	Winbond W83627DHG
Audio	- Intel® 82GM45 built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC262-VC2 LQFP48 codec, 2 channels
Ethernet	- Intel® 82567LM+82574L gigabit ethernet controller - Dual RJ-45 connector with two LED indicators on bracket
Serial Port	- 1x RS232 on board box header - 1x Selectable RS232/422/485 on board box header
USB	- 6x USB 2.0 ports - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	2x USB 2.0 ports on bracket dedicated to keyboard & mouse
GPIO	On board programmable 8-bit Digital I/Os
Others	1x parallel port on board box header

DISPLAY

Graphic Controller	- GMCH integrated Intel Graphic Media Accelerator (GMA) 4500MHD - Provided improved 3D multimedia capabilities including Microsoft DirectX 10, OpenGL 2.0, MPEG-2 hardware acceleration - Intel Dynamic Video Memory Technology (DVMT) 5.0 shares system memory up to 256MB
Display Interface	- VGA on bracket: Resolution up to 2048x1536 - LVDS: Dual channel 24-bit LVDS - SDVO: Optional DVI-D output card via SDVO (Two display streams supported in above combination)

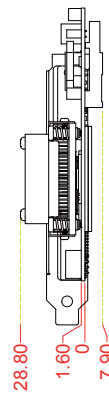
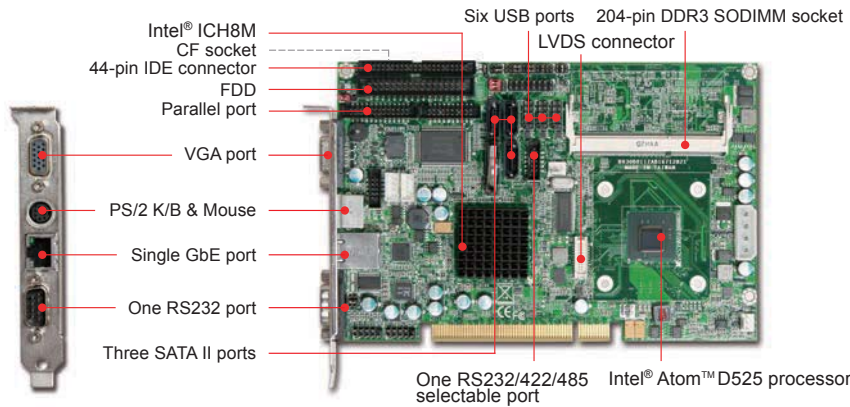
Mechanical & Environment

Dimension	- 338.5(L) x 122(W)mm; 13.33"(L) x 4.8"(W) - PCB: 8 layers
Power Supply	- Typical: +12V@2A; +5V@5.4A - Supports ATX mode
Environment	- Operation Temperature: 0~60 °C - Storage Temperature: -20~80 °C - Relative Humidity: 5~90%, non-condensing
MTBF	Over 111,000 hours at 40°C



ROBO-6712VGA

Intel® Atom™ D525 processor based on
PICMG 1.0 half size SBC with DDR3 SODIMM,
VGA, single Gigabit Ethernet, Audio and USB



ROBO-6712VGA has a built in Intel® Atom™ D525 and ICH8M chipset which enhances performance and supports a better graphics engine, making it most suitable for Industrial Automation, Lottery, and Digital Signage applications.

FEATURES

- Supports Intel® Atom™ D525 processor and ICH8M chipset
- One 204-pin SODIMM support DDR3 800 SDRAM up to 2GB
- Supports Dual independent display: VGA/18-bit LVDS
- High speed single Gigabit Ethernet based on PCI Express x1, high bandwidth I/O interface
- Equipped with I/O connections such as FDD, two serial ports, parallel port, USB 2.0, three SATA II and one CF socket

ORDERING GUIDE

AB1-3684Z	ROBO-6712VGA Half-sized PCI SBC, Intel ATOM D525 processor, DDR3, w/LVDS/VGA/GbE/Audio
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PACKING LIST

Standard	B6900600 FDD Cable
	B6900224 IDE cable
	B6901990 SATA II cable
	B6900960 cable kit for 1 serial + 1 parallel port w/ bracket
	B690003S Cable Assy 4F-4F
	B3751460 Installation CD
Optional	B8304630 CPU cooler
	B6902230 USB port cable with bracket
	AB9-2066 PA-M1AU Multiple Media kit

GENERAL

Processor	- Intel® Atom™ D525 up to 1.8GHz (35W) with 1MB L2 Cache in FCBGA package
	- DMI x4 Link: 2.5 GT/s
	- Supports Intel® Hyper-Threading Technology
Chipset	Intel® ICH8M (3.3W)
BIOS	Phoenix UEFI BIOS
Memory	Supports up to 2GB DDR3 800 SDRAM on one 204-pin SODIMM sockets
Storage Devices	- 3x SATA II drivers
	- 1x 44-pin IDE device
	- 1x Type II CompactFlash® socket supports Ultra DMA133/100/66/33 MB/s
	- 1x FDD channel on board box header
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	4x PCI devices at 32-bit 33MHz

I/O INTERFACE

Super I/O	Winbond W83627UHG
Audio	- Intel® ICH8M built-in High Definition Audio up to 192-kHz 32-bit
	- Realtek ALC662-VC2 LQFP48 codec, 5.1 channels
Ethernet	- Intel® 82567V gigabit ethernet controller
	- One RJ-45 connector with two LED indicators on bracket
Serial Port	- 1x RS232 on bracket
	- 1x RS232/422/485 selectable on board box header
USB	- 6x USB 2.0 ports
	- 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	One 6-pin mini-DIN connector for keyboard & mouse on bracket
GPIO	On board programmable 8-bit Digital I/Os
Others	1x parallel port on board box header

DISPLAY

Graphic Controller	- Intel® ICH8M Integrated GMA 3150 Graphics supports full hardware acceleration of video decode standards MPEG-2
	- Intel® Dynamic Video Memory Technology (Intel® DVM 4.0)
Display Interface	- VGA on bracket: Resolution up to 2048x1536 (QXGA)
	- LVDS: One channel 18-bit LVDS

Mechanical & Environment

Dimension	- 185(L) x 122(W)mm; 7.3"(L) x 4.8"(W)
	- PCB: 8 layers
Power Supply	- Typical: +12V@2A; +5V@5.4A
	- Supports AT, ATX mode
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





PICMG 1.0 Backplane

PICMG GENERAL DESCRIPTION

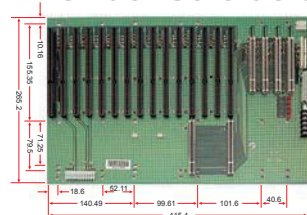
PICMG Backplanes in this section are Single Board Computers (SBCs) and Single Host Board (SHB) companions that feature expansion slots such as ISA, PCI, PCI-X or PCI Express interface. In addition, the backplane also features several power connectors that draw power from power supply to devices on it. Some LEDs are designed on board to indicate status of each power rail.

PICMG 1.0 supports both ISA & PCI, PICMG 1.2 supports dual PCI or PCI-X, and PICMG 1.3 supports PCI Express and PCI expansion. Some bridges or switches can be applied to the backplane to support more devices or different kinds of expansion interfaces. However, PICMG 1.0, 1.2, and 1.3 are not compatible with each other.

PICMG 1.0 BACKPLANE

Passive Backplane: Backplane that only support up to four PCI master

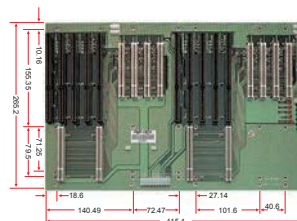
■ 32-bit PCI/16-bit ISA



PBP-19P4

19-slot (4x PCI) PICMG Backplane

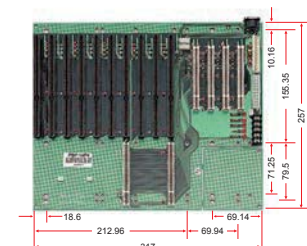
- Fit for 20-slot chassis
- ATX power connector support
- Sufficient ISA slots for CTI application



PBP-18D4

18-slot Dual-system PICMG Backplane

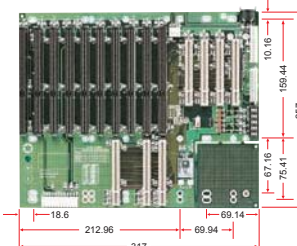
- Fit for 20-slot chassis
- Designed for fault-tolerant computing
- ATX power connector support



PBP-14P4

14-slot (4x PCI) PICMG Backplane

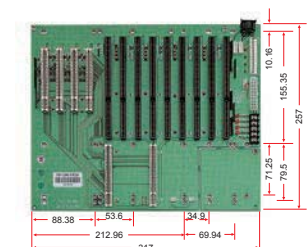
- Fit for 14-slot chassis
- ATX power connector support
- The most popular and reliable PICMG backplane



ACTI-14P4

14-slot (4x PCI) Active PICMG Backplane

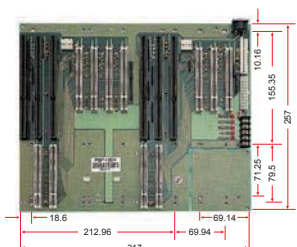
- Fit for 14-slot chassis
- 2.4 mm PCB thickness
- ATX power connector support



PBP-13R4

13-slot (4x PCI) PICMG Backplane

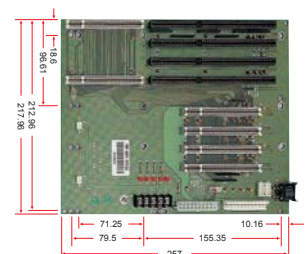
- Fit for 14-slot chassis
- Special design for full-length PCI cards
- ATX power connector support



PBP-13D4

13-slot Dual-system PICMG Backplane

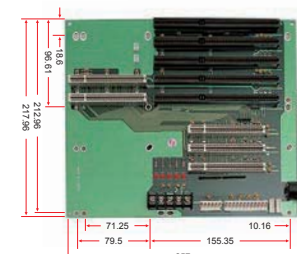
- Fit for 14-slot chassis
- Design for fault-tolerant computing
- ATX power connector support



PBP-08P4

8-slot (4x PCI) PICMG Backplane

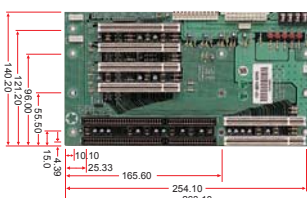
- Fit for node chassis and desktop case
- ATX power connector support



PBP-08P3

8-slot (3x PCI) PICMG Backplane

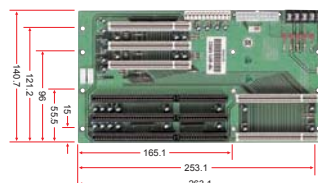
- Fit for node chassis and desktop case



PBP-06P4

6-slot (4x PCI) PICMG Backplane

- Fit for node chassis
- ATX power connector support



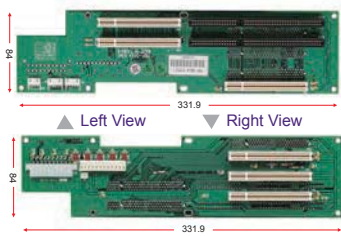
PBP-06P3

6-slot (3x PCI) PICMG Backplane

- Fit for node chassis
- ATX power connector support



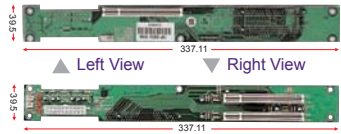
PICMG 1.0 Backplane



PBP-06V4

Vertical 6-slot (4x PCI) PICMG Backplane

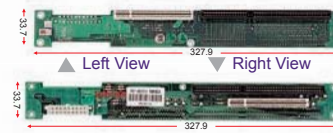
- Fit for 2U chassis
- ATX and AT power connector support



PBP-03P2X

Vertical 3-slot (2x PCI) PICMG Backplane

- Fit for Portwell's 1U chassis
- ATX power connector support

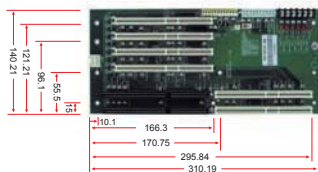


PBP-02V1X

Vertical 2-slot (1x PCI) PICMG Backplane

- Fit for 1U chassis
- ATX power connector support

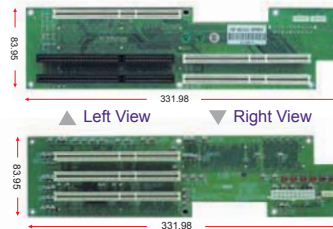
64-bit PCI/16-bit ISA



PBP-06P464

6-slot (4x 64-bit PCI) PICMG Backplane

- Fit for node chassis
- ATX and AT power connector support

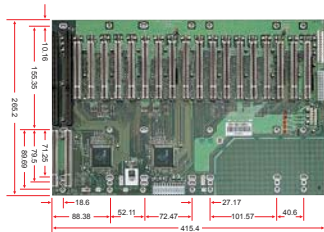


PBP-06V464

Vertical 6-slot (4x 64-bit PCI) PICMG Backplane

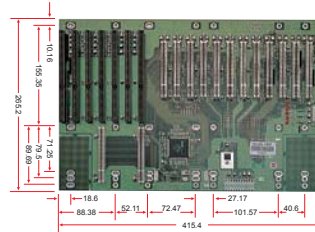
- Fit for 2U chassis
- ATX power connector

Active Backplane: Backplane that utilizes a bridge to support PCI master beyond four



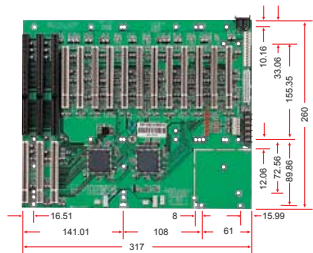
PBP-19AI

19-slot (18x PCI) Active PICMG Backplane



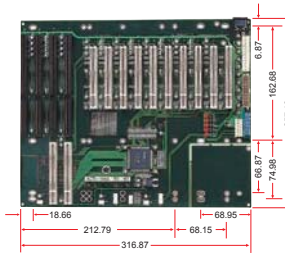
PBP-19AC

19-slot (12x PCI) Active PICMG Backplane



PBP-14AC-B

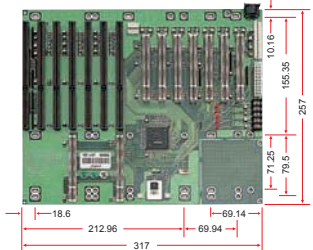
14-slot (12x PCI) Active PICMG Backplane



ACTI-14AA

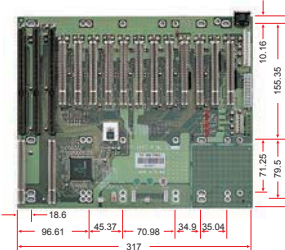
14-slot (10x PCI) Active PICMG Backplane

- Fit for 14-slot chassis
- 2.4 mm PCB thickness
- ATX power connector support



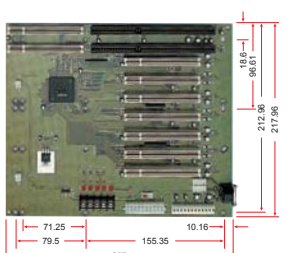
PBP-14A7

14-slot (7x PCI) Active PICMG Backplane



PBP-14AC

14-slot (12x PCI) Active PICMG Backplane



PBP-08A7

8-slot (7x PCI) Active PICMG Backplane

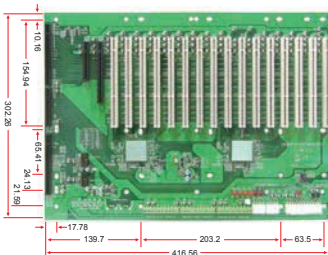
PICMG 1.3 Backplane

PICMG 1.3 Selection Guide

Model		PCIEx16	PCIEx8	PCIEx4	PCIEx1	PCI-X	PCI	ROBO-8921VG2R	ROBO-8914VG2AR	ROBO-8913VG2AR	ROBO-8912VG2AR
Server Grade	PBPE-19AG64	1 (x8 signal)	1 (x4 signal)			16		★			
	PBPE-14AD64		1	1		8	3	★			
	PBPE-06V464			1		4		★			
	PBPE-08P41	2 (x8 signal)	1 (x4 signal)				4	★			
	PBPE-06A364	2 (x8 signal)				2	1	★			
	PBPE-06P2	2 (x8 signal)	1 (x4 signal)				2	★			
Non-Server Grade	PBPE-13A8	1			3		8	★	★	★	★
	PBPE-12A9	1	1 (x4 signal)				9	★	★	★	★
	PBPE-12AA64	1				8	2	★	★	★	★
	PBPE-06V3	1	1 (x4 signal)				3	★	★	★	★
	PBPE-06V	1			4			★	★	★	★
	PBPE-07P4	1		1			4	★	★	★	★
	PBPE-05A364	1				2	1	★	★	★	★
	PBPE-06P4		1 (x4 signal)				4	★	★	★	★
	PBPE-06P3	1		1			3	★	★	★	★

PICMG 1.3 BACKPLANE

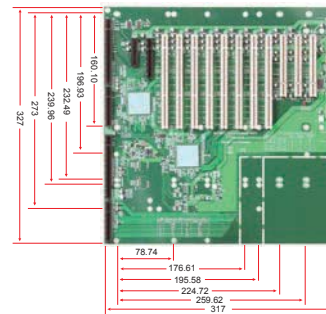
Server Grade Backplane



PBPE-19AG64

19-slot [PCIe x16 (1, x8 signal), PCIe x8 (1, x4 signal), PCI-X (16)]

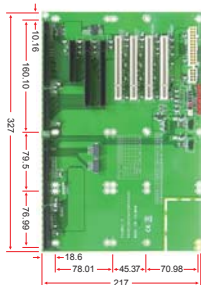
- Fit for 4U up chassis
- Four PCI-X buses support 16 PCI-X expansion slots



PBPE-14AD64

14-slot [PCIe x4 (1), PCIe x8 (1), PCI-X (8), PCI (3)]

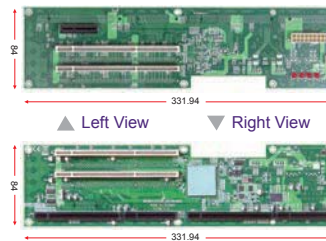
- Fit for 4U chassis
- Four PCI-X buses support eight PCI-X expansion slots



PBPE-08P41

8-slot [PCIe x8 (1, x4 signal), PCIe x16 (2, x8 signal), PCI (4)]

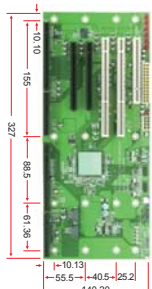
- Fit for Node chassis
- Four USB ports



PBPE-06V464

Vertical 6-slot [PCIe x4 (1), PCI-X (4)]

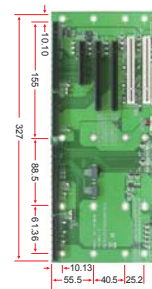
- Fit for 2U chassis
- Dual PCI-X buses support four PCI-X slots



PBPE-06A364

6-slot [PCIe x16 (2, x8 signal), PCI-X (2), PCI (1)]

- Fit for Node chassis
- Four USB ports
- Dual SATA ports
- Two PCI-X buses support two PCI-X expansion slot



PBPE-06P2

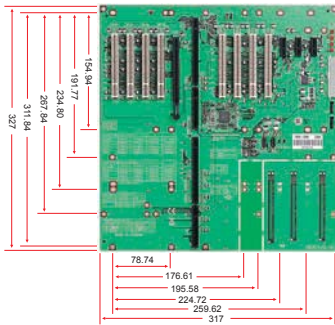
6-slot [PCIe x8 (1, x4 signal), PCIe x16 (2, x8 signal), PCI (2)]

- Fit for Node chassis
- Four USB ports



PICMG 1.3 Backplane

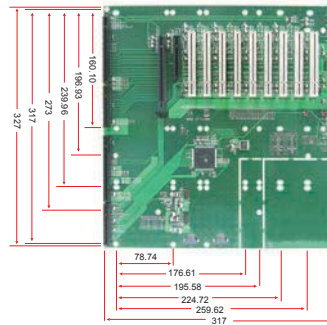
Non-Server Grade Backplane



PBPE-13A8

13-slot [PCIe x1 (3), PCIe x16 (1), PCI (8)]

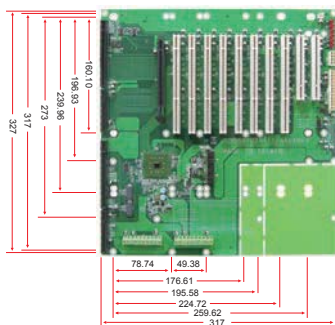
- Fit for 4U chassis
- Four USB ports
- Dual SATA ports
- 24-pin ESP12V power connector



PBPE-12A9

12-slot [PCIe x16 (1), PCIe x8 (1, x4 signal), PCI (9)]

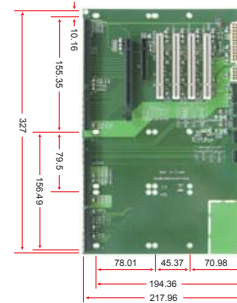
- Fit for 4U chassis
- Four USB ports
- Dual SATA ports



PBPE-12AA64

12-slot [PCI-X (8), PCIe x16 (1), PCI (2)]

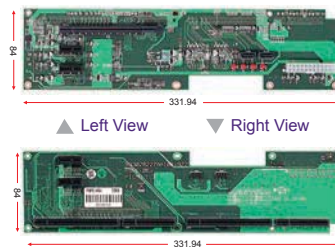
- Fit for 4U chassis
- Four USB ports
- Dual SATA ports
- Two PCI-X buses support eight PCI-X expansion slot



PBPE-07P4

7-slot [PCIe x4 (1), PCIe x16 (1), PCI (4)]

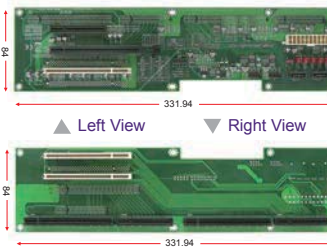
- Fit for Node chassis
- Four USB ports
- Dual SATA ports



PBPE-06V

Vertical 6-slot [PCIe x1 (4), PCIe x16 (1)]

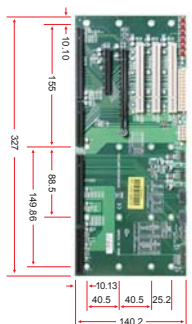
- Fit for 2U chassis
- Four USB ports
- Dual SATA ports
- 24-pin ESP 12V power connector



PBPE-06V3

Vertical 6-slot [PCIe x8 (1, x4 signal), PCIe x16 (1), PCI (3)]

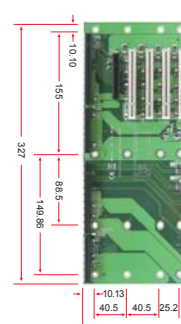
- Fit for 2U chassis
- Four USB ports
- Dual SATA ports



PBPE-06P3

6-slot [PCIe x16 (1), PCIe x4 (1), PCI (3)]

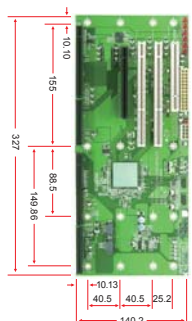
- Fit for Node chassis
- Four USB ports
- Dual SATA ports



PBPE-06P4

6-slot [PCIe x8 (1, x4 signal), PCI (4)]

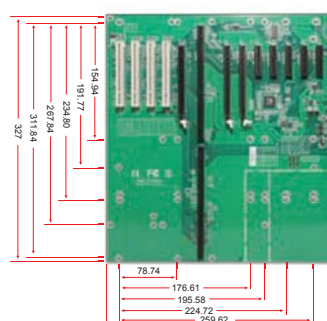
- Fit for Node chassis
- Four USB ports
- Dual SATA ports



PBPE-05A364

5-slot [PCIe x16 (1), PCI-X (2), PCI (1)]

- Fit for Node chassis
- Four USB ports
- Dual SATA ports
- Two PCI-X buses support two PCI-X expansion slot



PBPE-13A4

13-slot [PCIe x16(1), PCIe x16(2, x1 signal), PCIe x4(5, x1 signal), PCI(4)]

- Fit for 4U chassis
- Four USB 2.0 ports
- Dual SATA II ports



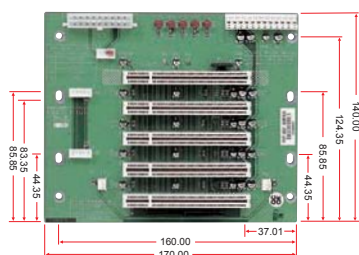
PCI & ISA Backplane

PCI GENERAL DESCRIPTION

- Compact size backplane for half size PCI SBC
- PICMG 1.0 Rev 2.1 Compliant (PCI golden finger only)
- Support AT or ATX type power connector
- 4-layer PCB with power and ground planes to reduce power noise and maintain a lower impedance
- Frame rated PCB at 94-V0
- User friendly design supports external K/B connector, power for chassis fan and power indicator

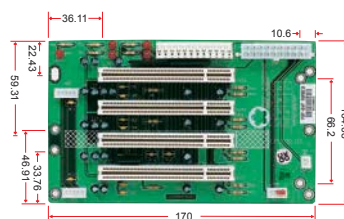
PBP-05P

5-slot Passive PCI Backplane



PBP-04P

4-slot Passive PCI Backplane



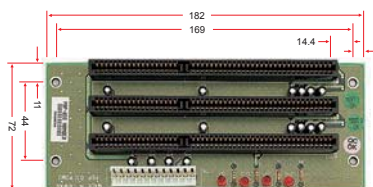
ISA GENERAL DESCRIPTION

- 4-layer PCB with ground and power planes for reducing noise and keeping lower impedance
- Frame Rated PCB at 94-V0
- LED power indicator for +5V, +12V, -5V and 12V
- Heavy duty terminal block connector for industrial power supply wiring(*)
- Equipped with gold-plated socket for good contact
- Easy cut for dual or multi systems(*)
- Plug-in sockets of termination resistors for high-speed signal.(*)

“(*)” means for most part of products

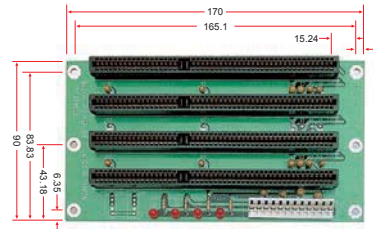
PBP-03I

3-slot Passive ISA Backplane



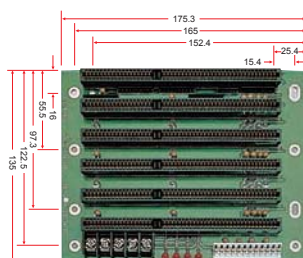
PBP-04I

4-slot Passive ISA Backplane



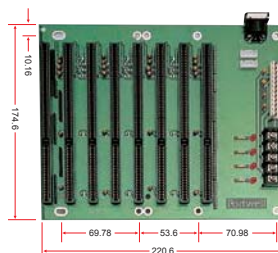
PBP-06I

6-slot Passive ISA Backplane



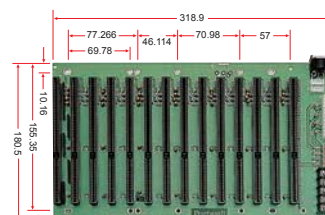
PBP-08I

8-slot Passive ISA Backplane



PBP-14I

14-slot Passive ISA Backplane





IMB Reference Table



MODEL	RUBY-M710VG2AR	RUBY-D714VG2AR	RUBY-D715VG2AR	RUBY-D712VG2AR
Form Factor	ATX	ATX	ATX	ATX
CPU	Intel® Core i5/i7	Intel® Core i5/i7	Intel® Core i3/Xeon® E3 series	Intel® Core i5/i7
Chipset	Intel® QM57 PCH	Intel® Q77 PCH	Intel® C216 PCH	Intel® Q67 PCH
BIOS	AMI UEFI	Phoenix UEFI	Phoenix BIOS	AMI UEFI
Memory	2x DDR3 DIMM up to 8GB	4x DDR3 DIMM up to 32GB	4x DDR3 DIMM up to 32GB	4x DDR3 DIMM up to 32GB
Expansion	4x PCI slots 1x PCIe x16 slot 1x PCIe x4 slot 1x PCIe x1 slot 1x Mini-PCIe socket	4x PCI slots 2x PCIe x16 slots 1x PCIe x4 slot	4x PCI slots 2x PCIe x16 slots, Gen3.0 1x PCIe x4 slot	4x PCI slots 1x PCIe x16 slot 1x PCIe x4 slot 1x PCIe x1 slot
Display	VGA/ DVI-D/ LVDS/ HDMI	VGA/DVI-D/HDMI	VGA/DVI-D/HDMI support triple display	VGA/DVI-D/HDMI
Audio	Realtek ALC888-GR HD Audio codec	Realtek ALC886-GR HD Audio codec	Realtek ALC886-GR HD Audio codec	Realtek ALC662-GR HD Audio codec
LAN	2x GbE	2x GbE	2x GbE	2x GbE
Serial Port	5x RS232 1x RS232/422/485	4x RS232 2x RS232/422/485	4x RS232 2x RS232/422/485	4x RS232 2x RS232/422/485
USB	8x USB 2.0	4x USB 3.0 6x USB 2.0	4x USB 3.0 6x USB 2.0	8x USB 2.0
Storage Devices	6x SATA	5x SATA 1x CFEX	3x SATA II 2x SATA III 1x CFEX	6x SATA
GPIO	16-bit	8-bit	8-bit	16-bit
Others	PS/2 KB&MS	PS/2 KB&MS	PS/2 KB&MS	PS/2 KB&MS
Dimension	304.8 x 243.8mm	304.8 x 243.8mm	304.8 x 243.8mm	304.8 x 243.8mm
Page	42	43	44	45



IMB Reference Table



MODEL	RUBY-D711VG2AR	RUBY-9911	RUBY-9719VG2AR	RUBY-9718VG2AR
Form Factor	ATX	ATX	ATX	ATX
CPU	Intel® Core i3/Xeon® E3 series	Intel® Core™ 2 Quad/ Core™ 2 Duo	Intel® Core™ 2 Quad/ Core™ 2 Duo	Intel® Core™ 2 Quad/ Core™ 2 Duo/Pentium® D/ Pentium® 4/Celeron® D
Chipset	Intel® C206 PCH	Intel® Q45+ICH10DO	Intel® G41+ICH7R	Intel® Q965+ICH8DO
BIOS	AMI UEFI	AMI Core 8	AMI Core 8	Award
Memory	4x DDR3 ECC DIMM up to 16GB	2x DDR3 DIMM up to 4GB	2x DDR2 DIMM up to 4GB	4x DDR2 DIMM up to 8GB
Expansion	4x PCI slots 1x PCIe x16 slot 1x PCIe x4 slot 1x PCIe x1 slot	4x PCI slots 1x PCIe x16 slot 1x PCIe x4 slot	6x PCI slots 1x PCIe x16 slot	4x PCI slots 2x PCIe x1 slots 1x ADD2 slot
Display	VGA/DVI-D/HDMI	VGA/ DVI-D	VGA	VGA/DVI-D
Audio	Realtek ALC662-GR HD Audio codec	Realtek ALC888-GR HD Audio codec	Realtek ALC662-GR HD Audio codec	Realtek ALC262-VC2 HD Audio codec
LAN	2x GbE	2x GbE	2x GbE	2x GbE
Serial Port	4x RS232 2x RS232/422/485	3x RS232 1x RS232/422/485	5x RS232 1x RS232/422/485	3x RS232 1x RS232/422/485
USB	8x USB 2.0	8x USB 2.0	8x USB 2.0	10x USB 2.0
Storage Devices	6x SATA	4x SATA 1x IDE 1x FDD	4x SATA 1x IDE 1x FDD	6x SATA 1x FDD
GPIO	16-bit	8-bit	8-bit	12-bit
Others	PS/2 KB&MS	1x Parallel PS/2 KB&MS	1x Parallel PS/2 KB&MS	1x Parallel PS/2 KB&MS
Dimension	304.8 x 243.8mm	304.8 x 243.8mm	304.8 x 243.8mm	304.8 x 243.8mm
Page	46	47	48	49



IMB Reference Table



MODEL	RUBY-9717VGAR	RUBY-9716VG2AR	RUBY-9716VGAR
Form Factor	µATX	ATX	ATX
CPU	Intel® Core™ 2 Quad/ Core™ 2 Duo/Pentium® D/ Pentium® 4/Celeron® D	Intel® Core™ 2 Quad/ Core™ 2 Duo/Pentium® D/ Pentium® 4/Celeron® D	Intel® Core™ 2 Quad/ Core™ 2 Duo/Pentium® D/ Pentium® 4/Celeron® D
Chipset	Intel® Q965+ICH8DO	Intel® Q965+ICH8DO	Intel® Q965+ICH8DO
BIOS	Award	Award	Award
Memory	4x DDR2 DIMM up to 8GB	4x DDR2 DIMM up to 8GB	4x DDR2 DIMM up to 8GB
Expansion	2x PCI slots 1x PCIe x4 slot 1x ADD2 slot	4x PCI slots 1x PCIe x16 slot 1x PCIe x4 slot	4x PCI slots 1x PCIe x16 slot 1x PCIe x4 slot 1x PCIe x1 slot
Display	VGA/DVI-D	VGA	VGA
Audio	Realtek ALC262-VC2 HD Audio codec	Realtek ALC262-VC2 HD Audio codec	Realtek ALC262-VC2 HD Audio codec
LAN	1x GbE	2x GbE	1x GbE
Serial Port	3x RS232 1x RS232/422/485	3x RS232 1x RS232/422/485	3x RS232 1x RS232/422/485
USB	10x USB 2.0	8x USB 2.0	8x USB 2.0
Storage Devices	6x SATA 1x FDD	5x SATA 1x IDE 1x CF 1x FDD	5x SATA 1x IDE 1x CF 1x FDD
GPIO	12-bit	10-bit	10-bit
Others	1x Parallel PS/2 KB&MS	1x Parallel IrDA 1.0 PS/2 KB&MS	1x Parallel IrDA 1.0 PS/2 KB&MS
Dimension	243.8 x 243.8mm	304.8 x 243.8mm	304.8 x 243.8mm
Page	50	51	52

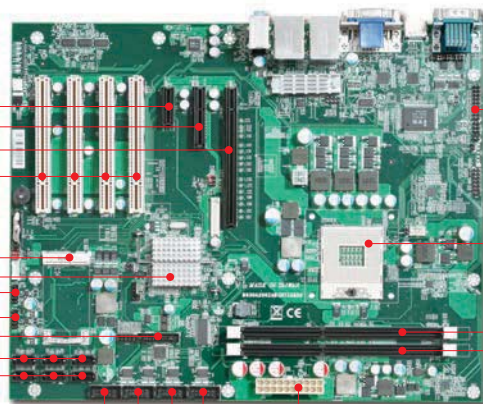
RUBY-M710VG2AR

Intel® Core™ i5/i7/P4500 processor based
ATX with DDR3 SDRAM, Dual Display,
Dual Gigabit Ethernet and USB Ports

One PCIe x1 slot
One PCIe x4 slot
One PCIe x16 slot
Four PCIe slots

Mini-PCIe Socket
Intel® QM57
Four USB ports
LPC pin header
Six SATA II ports

Four RS232 ports

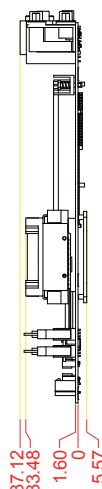


16 bits GPIO

CPU socket 989

Two 240-pin
DDR3 DIMM sockets

ATX 24P power connector

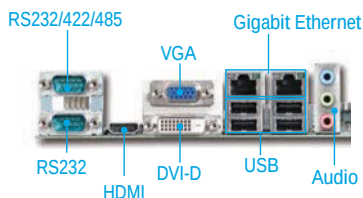


Built with latest mobile Intel® QM57 Express chipset which supports Intel® Core™ i5/ i7 processor, RUBY-M710VG2AR is based on the industrial ATX mother board making it the ideal solution for a Green PC. It can also be adopted in POS, medical, gaming, lottery, digital signage, surveillance security monitoring and kiosk.

FEATURES

- Intel® Core™ i7/i5/P4500 Processor (Quad Core CPU support)
- Intel® QM57 Chipset
- Two Long-DIMMs support dual channel DDR3 SDRAM up to 8GB
- Dual Display by VGA/DVI/HDMI/LVDS
- Intel® Active Management Technology (Intel® AMT 6.0)

REAR I/O



ORDERING GUIDE

AB1-3586	RUBY-M710VG2AR.ATX IMB.QM57 w/o ECC PGA989.w/DDR3 DIMMs/VGA/LVDS/DVI/HDMI/Dual GbE/COM/Audio/USB
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PACKING LIST

One RUBY-M710VG2AR ATX Main Board
One SATA II Cable
One Installation CD



GENERAL

Processor	- Intel® Core™ i7/i5/P4500 (1.6GHz/35W) Processor with 4/3/2MB L2 Cache in socket 989 - Supports Intel® Virtualization Technology (VT-x), Enhanced Intel SpeedStep® Technology, Thermal Monitoring Technologies, Intel® Fast/Flex Memory Access (P4500 only), Execute Disable Bit, Intel® HT Technology (i7/ i5 only)
Chipset	Intel® QM57 PCH (3.5W)
BIOS	AMI UEFI BIOS
Memory	Supports up to 8GB DDR3 800/1066 MHz SDRAM on two 240-pin DIMM sockets with dual channel mode
Storage Devices	- 6x SATA support 3Gb/s data transfer rate - RAID 0,1,5,10
Watchdog Timer	Programmable via S/W from 0.5 sec. to 254.5 min.
Hardware Monitoring	- System monitor (fan, temperature, voltage) - Temperature (CPU & System) - Voltage (CPU Vcore, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	- 1x PCI Express x16 slot (Gen1, 2.5 GT/s) - 1x PCI Express x4 slot (Gen1, 2.5 GT/s) - 1x PCI Express x1 slot (Gen1, 2.5 GT/s) - 1x Mini-PCI Expressx1 socket (Gen1, 2.5 GT/s) - 4x PCI 32-bit slots

I/O INTERFACE

Super I/O	ITF IT8721F
Audio	- Intel® QM57 built-in High Definition Audio up to 192-kHz 24-bit - Realtek ALC888-GR LQFP48 codec, 7.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue"
Ethernet	- Intel® 82574L&82577LM dual Gigabyte Ethernet Controller Intel® 82574L & 82577LM - 2X RJ-45 connectors with two LED indicators
Serial Port	- 1x RS232/422/485 port on rear I/O - 1x RS232 on rear I/O and 4x RS232 on board
USB	- 4x USB 2.0 ports on rear I/O - 4x USB 2.0 ports on board with pitch 2.0 header - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on board
GPIO	On board programmable 16-bit Digital I/Os

DISPLAY

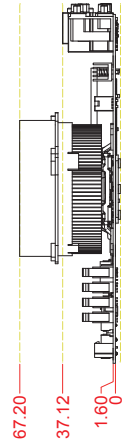
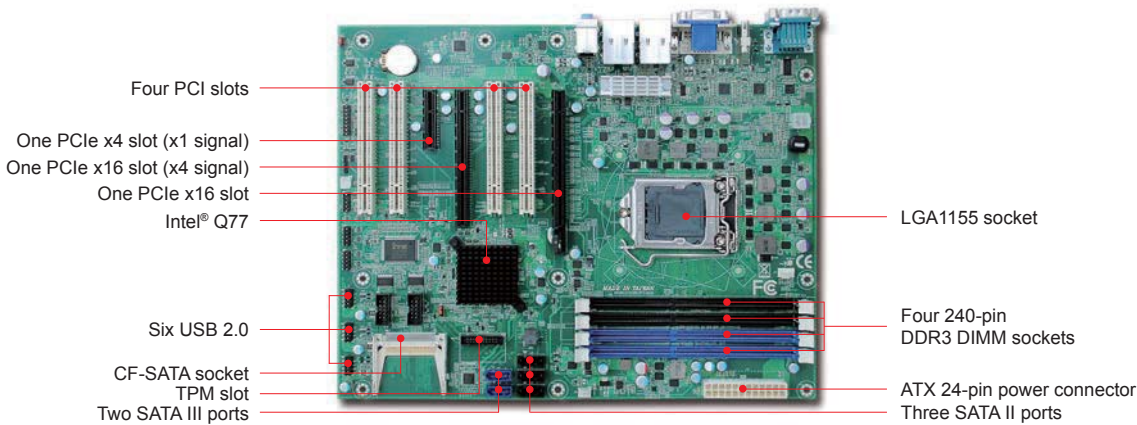
Graphic Controller	- Intel® QM57 Graphics and Memory Controller Hub integrated Intel® Gen 6.0 integrated Graphics - Chronitel: HDMI level shifter
Display Interface	- VGA: Resolution up to 2048x1536 @75Hz - DVI-D: up to 1920x1200 @60Hz - LVDS: up to 1600x1200 @66Hz - HDMI: up to 1920x1200 @60Hz

Mechanical & Environment

Dimension	305(L) x 244(W)mm; 12"(L) x 9.6"(W)
Power Supply	- Typical: +12V(CPU)@3.5A; +12V(System)@2A; +5V@4A; +3.3V@1.5A - Supports ATX mode
Environment	- Operation Temperature: 0°C to 60°C - Storage Temperature: -20°C to 80°C - Relative Humidity: 5% to 90%, non-condensing
MTBF	Over 80,000 hours at 40°C

RUBY-D714VG2AR

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

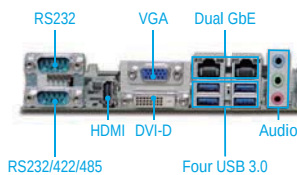


RUBY-D714VG2AR is based on Intel Q77 chipset and desktop processor sku like Core™ i7 and i5. Built with flexible PCI express expansion and bifurcation feature, it can support two I/O interface cards and can also suitable for Medical, Industrial Automation, and Digital Signage applications.

FEATURES

- Intel® Core™ i7 and i5 Processors support
- Four Long-DIMMs support dual channel DDR3 non-ECC SDRAM up to 32 GB
- Triple display by VGA/DVI-D/HDMI
- Rich I/O, USB 2.0/3.0, dual Gigabit Ethernet, COM ports and SATA II/III ports support Intel® RAID 0,1,5,10
- One PCIe x16 (Gen 3), one PCIe x16 (Gen 2, x4 signal), one PCIe x4 (Gen 2, x1 signal), and four PCI slots
- One CF-SATA slot (supports both CF and CF-SATA card)
- Intel® Active Management Technology 8.0

REAR I/O



ORDERING GUIDE

AB1-3847	RUBY-D714VG2AR, ATX IMB, LGA1155 CPU, Q77, DDR3/VGA/DVI/HDMI/Dual GbE/COM/Audio/USB
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PACKING LIST

One RUBY-D714VG2AR ATX Industrial Main Board
One SATA III Cable
One Installation CD
One I/O shield

GENERAL

Processor	- Intel® Core™ i7/i5 processor up to 3.4GHz (65~95W) with (3~8MB) Cache in LGA1155 package - DMI x4 Link: 5.0 GT/s - Supports Intel® Turbo Boost, Hyper-Threading, Virtualization, Thermal Monitoring and Trusted Execution (depend on CPU sku)"
Chipset	Intel® Q77 PCH chipset
BIOS	Phoenix UEFI BIOS
Memory	Supports up to 32GB DDR3 1333/1600 SDRAM on four 240-pin DIMM sockets (dual channel)
Storage Devices	- 2x SATA support 6Gb/s data transfer rate - 3x SATA support 3Gb/s data transfer rate - Supports RAID 0,1,5,10 - 1x CF-SATA (support CF and CF-SATA card)
Watchdog Timer	Programmable via S/W from 0.5 sec. to 255 sec.
Hardware Monitoring	On board fan connector (CPU Cooler x1, System Fan x1); temperature and voltages monitoring
Expansion Interface	- 1x PCI Express x16 slot (Gen3, 8.0 GT/s) - 1x PCI Express x16 slot (with x4 signal Gen 2, 5.0 GT/s) - 1x PCI Express x4 slot (with x1 signal Gen 2, 5.0 GT/s) - 4x PCI devices at 32-bit 33 MHz

I/O INTERFACE

Super I/O	ITE IT8783F
Audio	- Intel® Q77 PCH built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC886-GR HDA codec, 5.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	- Intel® 82579LM and 82583V dual gigabit ethernet controllers - PCI Express x1 interface based on gigabit ethernet - Dual RJ-45 connectors with two LED indicators at rear I/O panel
Serial Port	- 3x RS232 and 1x Selectable RS232/422/485 on board - 1x RS232 and 1x Selectable RS232/422/485 on rear I/O
USB	- 4x USB 3.0 ports on rear I/O (5 Gbps) - 6x USB 2.0 ports on board (480 Mb/s)
Keyboard & Mouse	PS/2 on board dedicated to keyboard & mouse
GPIO	On board programmable 8-bit Digital I/Os

DISPLAY

Graphic Controller	- Quad Core™ Processor with Intel® HD Graphics 4000 and Integrated Memory Controller - Provided improved 3D multimedia capabilities including Microsoft DirectX 11, Shader Model 4.0, MPEG-2 and OpenGL 3.1
Display Interface	- VGA: Resolution up to 2560x1600 @60Hz - DVI-D: up to 1920x1200 @60Hz - HDMI: up to 1920x1200 @60Hz

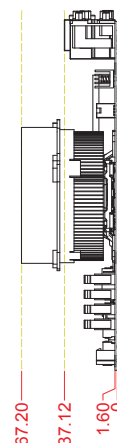
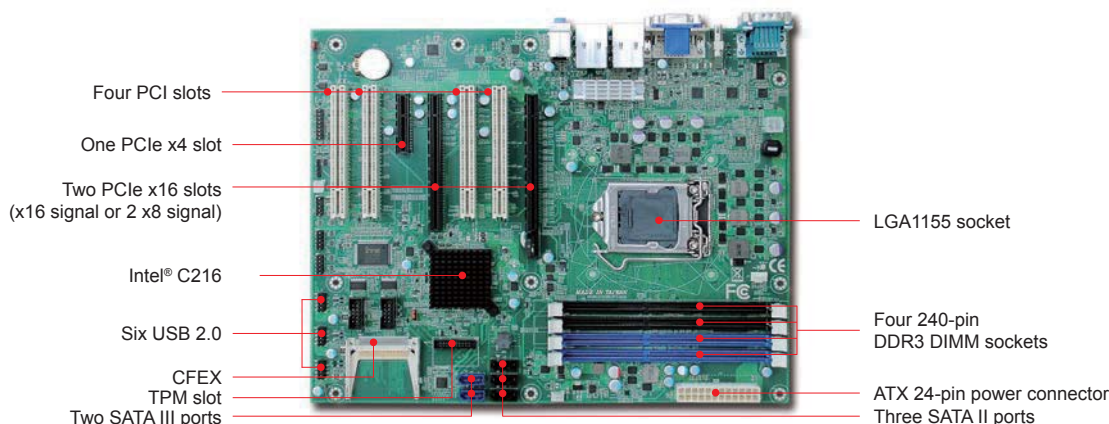
Mechanical & Environment

Dimension	- 304.8(L) x 243.8(W)mm; 12"(L) x 9.6"(W) - PCB: 6 layers
Power Supply	ATX 24-pin power input
Environment	- Operation Temperature: 0~60 °C (with highest performance on 50 °C) - Storage Temperature: -20~80 °C - Relative Humidity: 5~95%, non-condensing
MTBF	Over 120,000 hours at 40 °C



RUBY-D715VG2AR

Intel® Core™ i3 and Xeon® processor based
ATX with DDR3 SDRAM, Dual display, Dual
Gigabit Ethernet, and USB Ports

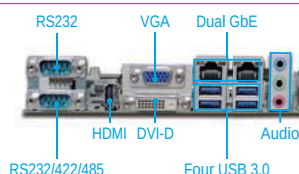


RUBY-D715VG2AR is based on Intel® C216 chip-set and workstation sku like Core™ i3 and Xeon® E3-1200 series processors. Built with flexible PCI express expansion and bifurcation feature, it can support two I/O interface cards and can also suitable for Medical, Industrial Automation, and Digital Signage applications.

FEATURES

- Intel® Core™ i3 and Xeon® E3-1200 series processors support
- Four Long-DIMMs support dual channel DDR3 ECC and non-ECC SDRAM up to 32 GB
- Dual display by VGA/DVI-D/HDMI
- Rich I/O, USB 2.0/3.0, dual Gigabit Ethernet, COM ports and SATA II/III ports support Intel® RAID 0,1,5,10
- Two PCIe x16 slots (Gen 3, x16 signal or 2 x8 signal), one PCIe x4 (Gen 2), and four PCI slots
- One CFEX socket (supports CFEX card)
- Intel® Active Management Technology 8.0

REAR I/O

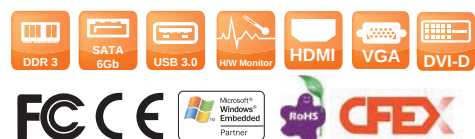


ORDERING GUIDE

AB1-3925	RUBY-D715VG2AR. ATX IMB. LGA1155 CPU. C216 DDR3/VGA/DVI/HDMI/Dual GbE/COM/Audio/USB
Standard	One SATA II cable One SATA III cable (Black) One Installation CD One I/O shield DVI-D + VGA cable with bracket PICMG SBC Handling and Installation Notice Installation CD

PACKING LIST

One RUBY-D715VG2AR ATX Industrial Main Board
One SATA III Cable
One Installation CD
One I/O shield



GENERAL

Processor	- Intel® Core™ i3 and Xeon® E3-1200 series processor up to 3.4GHz (65~95W) with (3~8MB) Cache in LGA1155 package - DMI x4 Link: 5.0 GT/s - Supports Intel® Turbo Boost, Hyper-Threading, Virtualization, Thermal Monitoring and Trusted Execution (depend on CPU sku)"
Chipset	Intel® C216 PCH chipset
BIOS	Phoenix UEFI BIOS
Memory	Supports up to 32GB DDR3 ECC and non-ECC 1333/1600 SDRAM on four 240-pin DIMM sockets (dual channel)
Storage Devices	- 2x SATA support 6Gb/s data transfer rate - 3x SATA support 3Gb/s data transfer rate - Supports RAID 0,1,5,10 - 1x CFEX (supports CFEX card)
Watchdog Timer	Programmable via S/W from 0.5 sec. to 255 sec.
Hardware Monitoring	On board fan connector (CPU Cooler x1, System Fan x1); temperature and voltages monitoring
Expansion Interface	- 2x PCI Express x16 slots (Gen 3, 8.0 GT/s, x16 signal or 2 x8 signal) - 1x PCI Express x4 slot (Gen 2, 5.0 GT/s) - 4x PCI devices at 32-bit 33 MHz

I/O INTERFACE

Super I/O	ITE IT8783F
Audio	- Intel® C216 PCH built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC886-GR HDA codec, 5.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	- Intel® 82579LM and 82583V dual gigabit ethernet controllers - PCI Express x1 interface based on gigabit ethernet - Dual RJ-45 connectors with two LED indicators at rear I/O panel
Serial Port	- 3x RS232 and 1x Selectable RS232/422/485 on board - 1x RS232 and 1x Selectable RS232/422/485 on rear I/O
USB	- 4x USB 3.0 ports on rear I/O (5 Gbps) - 6x USB 2.0 ports on board (480 Mb/s)
Keyboard & Mouse	PS/2 on board dedicated to keyboard & mouse
GPIO	On board programmable 8-bit Digital I/Os

DISPLAY

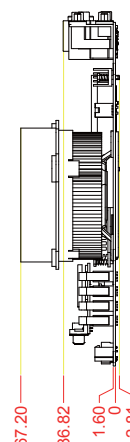
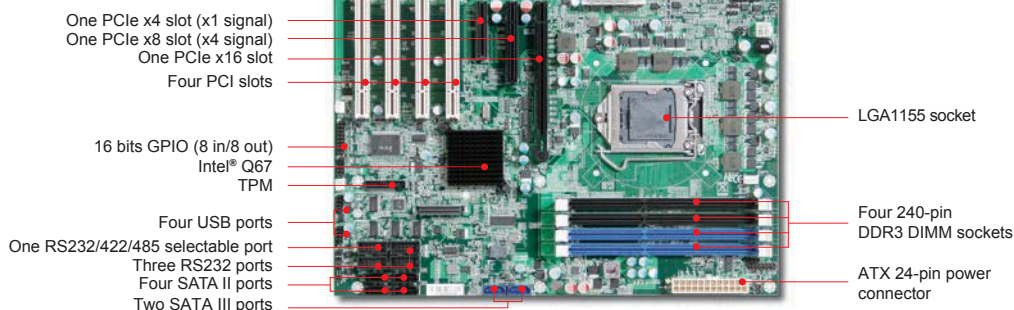
Graphic Controller	- Quad Core™ Processor with Intel® HD Graphics 4000 and Integrated Memory Controller - Provided improved 3D multimedia capabilities including Microsoft DirectX 11, Shader Model 4.0, MPEG-2 and OpenGL 3.1
Display Interface	- VGA: Resolution up to 2560x1600 @60Hz - DVI-D: up to 1920x1200 @60Hz - HDMI: up to 1920x1200 @60Hz

Mechanical & Environment

Dimension	- 304.8(L) x 243.8(W)mm; 12"(L) x 9.6"(W) - PCB: 6 layers
Power Supply	ATX 24-pin power input
Environment	- Operation Temperature: 0~60 °C (with highest performance on 50 °C) - Storage Temperature: -20~80 °C - Relative Humidity: 5~95%, non-condensing
MTBF	Over 120,000 hours at 40°C

RUBY-D712VG2AR

Intel® Core™ i5 and i7 processor based
ATX with DDR3 SDRAM, Dual Display,
Dual Gigabit Ethernet and USB Ports

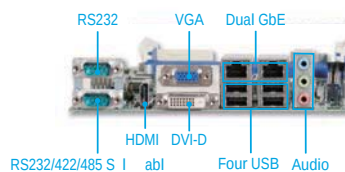


With the Intel® Q67 chipset on board, the RUBY-D712VG2AR supports the latest quad-core 2nd Generation Intel® Core™ i7 and Core™ i5 processors. This model is also ideal for Factory Automation, Medical, Gaming, Digital Signage, Surveillance Security Monitoring and Kiosk with high performance requiring various I/O connectors.

FEATURES

- Intel® Core™ i7 and i5 Processors (Quad Core CPU support)
- Four Long-DIMMs support dual channel DDR3 non-ECC SDRAM up to 32GB
- Dual Display by VGA/DVI/ HDMI
- SATA ports support Intel® RAID 0,1,5,10
- One PCIe x16, one PCIe x8 (x4 signal), one PCIe x4 (x1 signal) and four PCI slots
- Intel® Active Management Technology 7.0

REAR I/O



ORDERING GUIDE

AB1-3634	RUBY-D712VG2AR. ATX IMB. LGA1155 CPU. Q67. DDR3/VGA/DVI/HDMI/Dual GbE/COM/Audio/USB
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PACKING LIST

One RUBY-D712VG2AR ATX Industrial Main Board
One SATA II Cable
One Installation CD
One I/O shield



GENERAL

Processor	- Intel® Core™ i7/i5 processor up to 3.4GHz (65~95W) with (3~8MB) Cache in LGA1155 package - DMI x4 Link: 5.0 GT/s - Supports Intel® Turbo Boost, Hyper-Threading, Virtualization, Thermal Monitoring and Trusted Execution (depend on CPU sku)*
Chipset	Intel® Q67 PCH chipset (6.1W)
BIOS	AMI UEFI BIOS
Memory	Supports up to 32GB DDR3 1333/1066 MT/s SDRAM on 4x 240-pin non-ECC DIMM sockets (dual channel)
Storage Devices	- 2x SATA support 6Gb/s data transfer rate - 4x SATA support 3Gb/s data transfer rate - RAID 0,1,5,10
Watchdog Timer	Programmable via S/W from 0.5 sec. to 255 min.
Hardware Monitoring	- System monitor (fan, temperature, voltage) - Temperature (CPU & System) - Voltage (CPU Vcore, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	- 1x PCI Express x4 slot (Gen2, 5.0 GT/s) - 1x PCI Express x8 slot (Gen2, 5.0 GT/s) - 1x PCI Express x16 slot (Gen2, 5.0 GT/s) - 4x PCI 32-bit slots

I/O INTERFACE

Super I/O	ITE IT8728F
Audio	- Intel® BD82Q67 PCH built-in High Definition Audio up to 96-kHz 24-bit - Realtek ALC662-GR 5.1 Channel High Definition Audio Codec - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	- Intel® 82574L and Intel® 82579LM dual gigabit ethernet controllers - 2x RJ-45 connectors with two LED indicators at rear I/O panel
Serial Port	- 3x RS232 on board and 1x RS232/422/485 selectable on board - 1x RS232 on rear I/O and 1x RS232/422/485 selectable on rear I/O
USB	- 4x USB 2.0 ports on rear I/O 4x USB 2.0 ports on board with pitch 2.54 header - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	PS/2 on board dedicated to keyboard & mouse
GPIO	On board programmable 16-bit Digital I/Os

DISPLAY

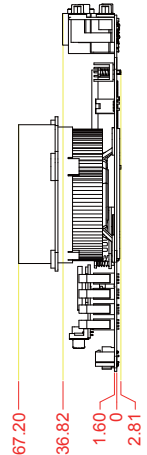
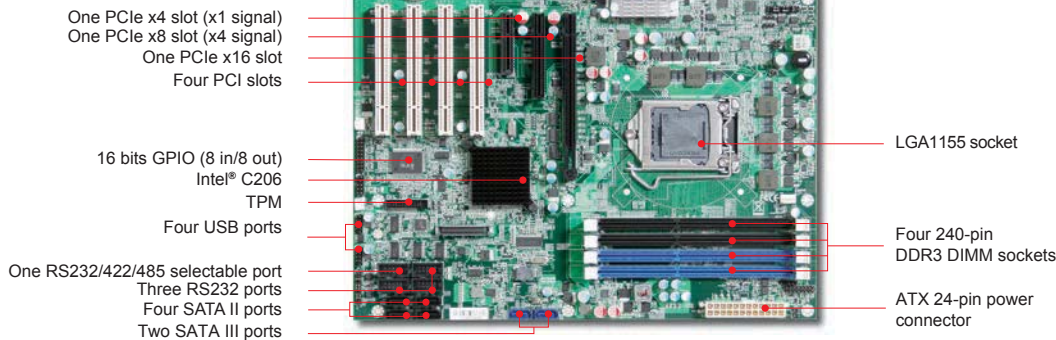
Graphic Controller	- Intel® HD Graphics 2000/3000 integrated Graphics Engine, provides a visually stunning experience optimized for Blu-ray and HD video HDMI - Chronitel: CH7318B QFN-48
Display Interface	- VGA: Resolution up to 2048x1536 @75Hz - DVI-D: up to 1920x1200 @60Hz - HDMI: up to 1920x1200 @60Hz

Mechanical & Environment

Dimension	243.8(L) x 304.8(W)mm; 9.6"(L) x 12"(W)
Power Supply	- Typical: +12V(CPU)@3.81A; +12V(System)@2.21A; +5V@2.3A; +3.3V@1.15A - Supports ATX mode
Environment	- Operation Temperature: 0°C to 60°C - Storage Temperature: -20°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 120,000 hours at 40°C

RUBY-D711VG2AR

Intel® Core™ i3 and Xeon® processor based
ATX with DDR3 SDRAM, Dual Display, Dual
Gigabit Ethernet and USB Ports

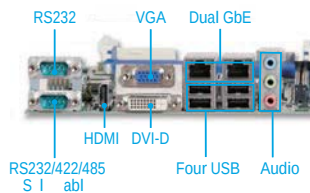


On the basis of Intel® C206 Chipset, RUBY-D711VG2AR supports the latest quad-core 2nd Generation Intel® Core™ i3 and Xeon® processors and provides numerous I/O connectors and also applies high performance in such areas as factory automation, medical, gaming, digital signage, surveillance security monitoring and kiosk.

FEATURES

- Intel® Core™ i3 and Xeon® E3-1200 series Processors (Quad Core CPU support)
- Four Long-DIMMs support dual channel DDR3 ECC SDRAM up to 32GB
- Dual Display by VGA/DVI/HDMI
- SATA ports support Intel® RAID 0,1,5,10
- One PCIe x16, one PCIe x8 (x4 signal), one PCIe x4 (x1 signal) and four PCI slots
- Intel® Active Management Technology 7.0

REAR I/O



ORDERING GUIDE

AB1-3633	RUBY-D711VG2AR. ATX IMB. C206 w/ECC LGA1155.w/DDR3 DIMMs/ VGA/LVDS/DVI/HDMI/Dual GbE/COM/Audio/USB
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PACKING LIST

One RUBY-D711VG2AR ATX Industrial Main Board
One SATA II Cable
One Installation CD
One I/O shield



GENERAL

Processor	- Intel® Core™ i3 and Xeon® E3-1200 series processor up to 3.4GHz (65~95W) with (3~8MB) Cache in LGA1155 package - DMI x4 Link: 5.0 GT/s - Supports Intel® Turbo Boost, Hyper-Threading, Virtualization, Thermal Monitoring and Trusted Execution (depend on CPU sku)
Chipset	Intel® C206 PCH chipset (6.6W)
BIOS	AMI UEFI BIOS
Memory	Supports up to 32GB DDR3 1333/1066 MT/s SDRAM on 4x 240-pin ECC/non-ECC DIMM sockets (dual channel)
Storage Devices	- 2x SATA support 6Gb/s data transfer rate - 4x SATA support 3Gb/s data transfer rate - RAID 0,1,5,10
Watchdog Timer	Programmable via S/W from 0.5 sec. to 255 min.
Hardware Monitoring	- System monitor (fan, temperature, voltage) - Temperature (CPU & System) - Voltage (CPU Vcore, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	- 1x PCI Express x4 slot (Gen2, 5.0 GT/s) - 1x PCI Express x8 slot (Gen2, 5.0 GT/s) - 1x PCI Express x16 slot (Gen2, 5.0 GT/s) - 4x PCI 32-bit slots

I/O INTERFACE

Super I/O	ITE IT8728F
Audio	- Intel® BD82C206 built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC662-GR 5.1 Channel High Definition Audio Codec - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	- Intel® 82574L and Intel® 82579LM dual gigabit ethernet controllers - 2x RJ-45 connectors with one LED indicators at rear I/O panel
Serial Port	- 3x RS232 on board and 1x RS-232/422/485 selectable on board - 1x RS232 on rear I/O and 1x RS-232/422/485 selectable on rear I/O
USB	- 4x USB 2.0 ports on rear I/O and 4x USB 2.0 ports on board with pitch 2.54 header - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	PS/2 on board dedicated to keyboard & mouse
GPIO	On board programmable 16-bit Digital I/Os

DISPLAY

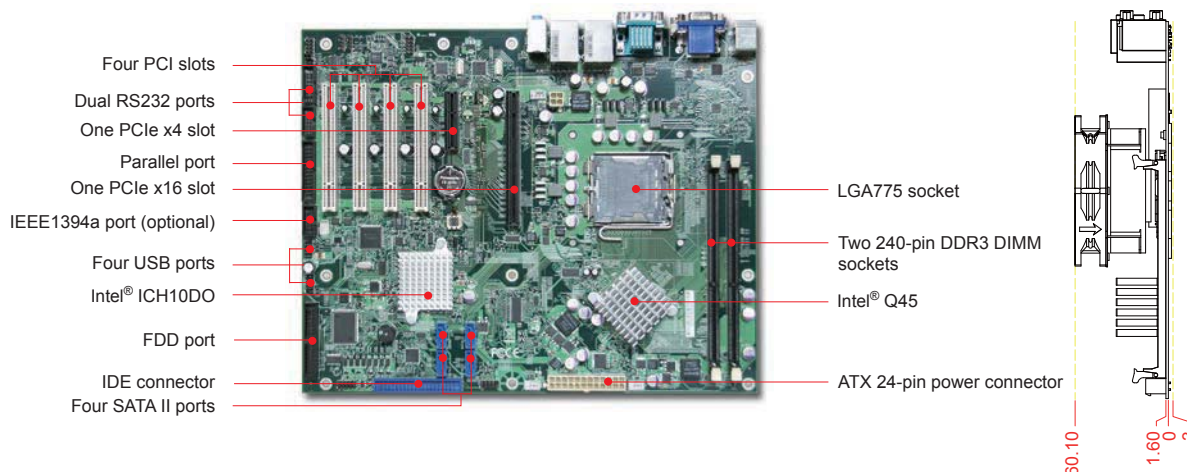
Graphic Controller	- Intel® HD Graphics 2000/3000 integrated Graphics Engine provides a visually stunning experience optimized for Blu-ray* and HD video HDMI - Chronitel: CH7318B QFN-48
Display Interface	- VGA: Resolution up to 2048x1536 @75Hz - DVI-D: up to 1920x1200 @60Hz - HDMI: up to 1920x1200 @60Hz

Mechanical & Environment

Dimension	243.8(L) x 304.8(W)mm; 9.6"(L) x 12"(W)
Power Supply	- Typical: +12V(CPU)@3.81A; +12V(System)@2.21A; +5V@2.3A; +3.3V@1.15A - Supports ATX mode
Environment	- Operation Temperature: 0°C to 60°C - Storage Temperature: -20°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 120,000 hours at 40°C

RUBY-9911

Leading Intel® Core™ 2 Quad/Core™ 2 Duo Processor based ATX motherboard with Dual Display, Dual Gigabit Ethernet, Four SATA Ports, Four COM Ports, and Eight USB Ports

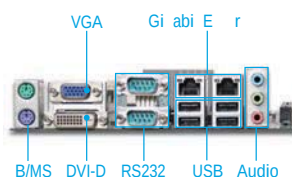


The RUBY-9911 is based on the industrial ATX motherboard and can be used in applications such as Automation, Multimedia, Kiosk and industrial controls that require a variety of I/O connectors.

FEATURES

- Intel® Core™ 2 Quad/Core™ 2 Duo processor
- Intel® Q45 Express and ICH10DO chipsets
- Two 240-pin DIMM sockets support dual channel DDR3 SDRAM up to 4GB
- Dual display: VGA/DVI-D, 3rd display via PCI or PCI-Express expansion slot
- Four SATA ports and One IDE connector
- Supports RAID 0,1,5,10 function
- One PCI-Express x16, One PCI-Express x4 and Four PCI slots
- TPM 1.2 and iAMT 5.0 supported

REAR I/O



ORDERING GUIDE

AB1-3256	RUBY-9911VGA.ATX.LGA775.SingleCore2Quad/Duo.w/DVI-D/VGA/DualGbE/Audio
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PACKING LIST

One RUBY-9911 ATX Main Board
One LGA775 Cooler
One Installation CD



GENERAL

Processor	- Intel® Core™ 2 Quad/Core™ 2 Duo Processor with 2MB L2 Cache in LGA775 package - FSB:1333/1066/800MHz - Supports Enhanced Intel SpeedStep® Technology, Intel® 64 architecture, Execute Disable Bit (Core™ 2 Duo only)
Chipset	Intel® Q45 Graphics and Memory Controller Hub (17W) and ICH10DO
BIOS	AMI Core 8 BIOS
Memory	Supports up to 4GB DDR3 800/1066 MHz SDRAM on two 240-pin DIMM sockets with dual channel mode
Storage Devices	- 4x SATA support 3Gb/s data transfer rate - 1x EIDE supports Ultra DMA100/66/33MB/s - RAID 0,1,5,10 - 1x FDD channel
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	- System monitor (fan,temperature,voltage) - Temperature (CPU & System) - Voltage (CPU Vcore, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	- 1x PCI Express x16 slot (Gen1, 2.5 GT/s) - 1x PCI Express x4 slot (Gen1, 2.5 GT/s) - 4x PCI 32-bit slots

I/O INTERFACE

Super I/O	Winbond 83627UHG
Audio	- Intel® Q45 built-in High Definition Audio up to 192-kHz 24-bit - Realtek ALC888-GR LQFP48 codec, 7.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	- Intel® 82567LM and Intel® 82574L dual gigabit ethernet controllers - Dual RJ-45 connectors with two LED indicators at rear I/O panel
Serial Port	- 2x RS232 on rear I/O and 1x RS232 on board - 1x RS232/422/485 selectable on board and 1x IEEE1394a port on board
USB	- 4x USB 2.0 ports on rear I/O and 4x USB 2.0 ports on board - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 8-bit Digital I/Os
Other	1x parallel port on board box header

DISPLAY

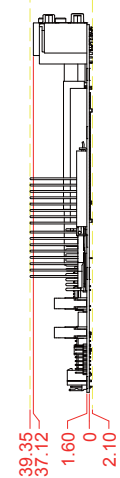
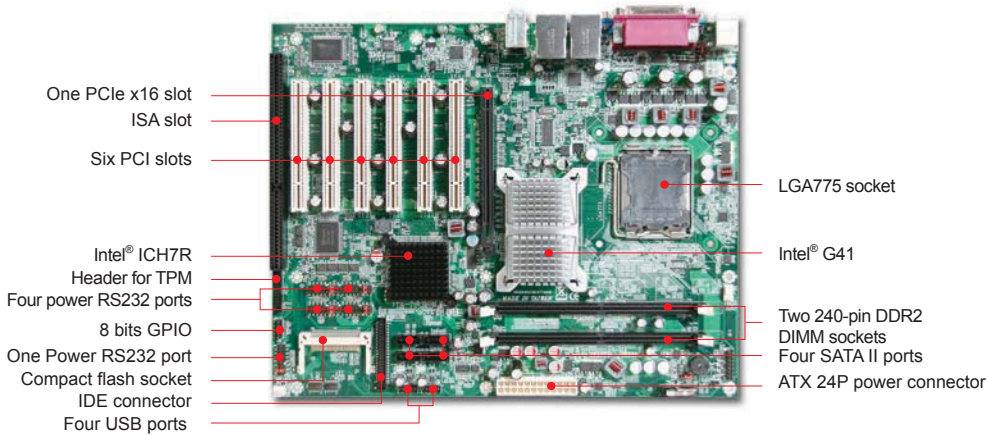
Graphic Controller	- Intel® Q45 Graphics and Memory Controller Hub integrated Intel® GMA 4500 delivers Microsoft DirectX 10 and Shader Model 4.0and OpenGL 1.5, enabling support for the highest levels of the Windows Vista experience - Intel® Dynamic Video Memory Technology (Intel® DVM 5.0)
Display Interface	- VGA: Resolution up to 2048x1536 (QXGA) @75Hz - DVI-D: up to 2560x1600 @60Hz

Mechanical & Environment

Dimension	304.8(L) x 243.8(W)mm; 12"(L) x 9.6"(W)
Power Supply	- Typical: +12V(CPU)@9.25A; +12V(System)@3.68A; +5V@10.72A; +3.3V@16.51A - Supports ATX mode
Environment	- Operation Temperature: 0°C to 60°C - Storage Temperature: -20°C to 80°C - Relative Humidity: 10% to 90%, non-condensing
MTBF	Over 170,000 hours at 40°C

RUBY-9719VG2AR

Intel® Core™ 2 Duo/Core™ 2 Quad Processor based ATX Motherboard with DDR2, VGA, Dual Gigabit Ethernet, Audio and USB

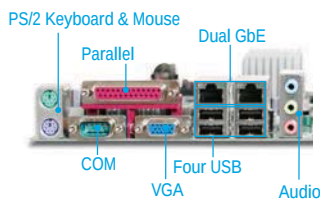


Equipped with the Intel® G41 and ICH7R chip-set, RUBY-9719VG2AR supports a wide range of Intel processors including Core™ 2 Quad, Core™ 2 Duo, Pentium® and Celeron®. In addition, this model is based on the industrial ATX motherboard and particularly designed for multiple applications such as Industrial control and Automation, Multimedia, Gaming, Kiosk, Digital Signage, Print Imaging, Digital Surveillance and Network Security.

FEATURES

- Intel® Core™ 2 Quad/Core™ 2 Duo Processor and Intel® G41 Chipset, FSB up to 1333MHz
- Two 240-pin DIMMs support dual channel DDR2 SDRAM up to 4GB
- Dual Gigabit Ethernet port
- Six 32-bit PCI slots/Five PCI slots and One ISA slot
- Four SATA II ports support Intel® Matrix Storage Technology with RAID 0,1,5,10
- One 44-pin IDE and one CompactFlash share the same channel
- PCIe x16 slot can support x1, x4, x8 or x16 cards

REAR I/O



ORDERING GUIDE

AB1-3364	RUBY-9719VG2AR.ATX.LGA775.Intel Core 2 Quad/ Duo.G41 w/VGA/Dual GbE/Audio
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PACKING LIST

One RUBY-9719VG2AR ATX Main Board
One SATA II Cable
One Installation CD



GENERAL

Processor	- Intel® Core™ 2 Quad/Core™ 2 Duo Processor with 2MB L2 Cache in LGA775 package - FSB:1333/1066/800MHz - Supports Enhanced Intel SpeedStep® Technology, Intel® 64 architecture, Execute Disable Bit (Core™ 2 Duo only)
Chipset	Intel® G41 Graphics and Memory Controller Hub (25W)+ICH7R
BIOS	AMI Core 8 BIOS
Memory	Supports up to 4GB DDR2 667/800MHz SDRAM on two 240-pin DIMM sockets with dual channel mode
Storage Devices	- 4x SATA support 3Gb/s data transfer rate - 1x IDE 44-pin connector supports Ultra DMA100/66/33MB/s - 1x CompactFlash connector supports Ultra DMA100/66/33MB/s (share with IDE channel) - RAID 0,1,5,10
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	- System monitor (fan, temperature, voltage) - Temperature (CPU & System) - Voltage (CPU Vcore, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	- 1x PCI Expressx16 slot (Gen1, 2.5 GT/s) - 5x PCI 32-bit slots and 1x ISA slot or 6x PCI 32-bit slots

I/O INTERFACE

Super I/O	Winbond W83627UHG
Audio	- Intel® G41 built-in High Definition Audio up to 96-kHz 24-bit - Realtek ALC662-GR LQFP48 codec, 5.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	- Intel® 82583x2 dual gigabit ethernet controllers - 2x RJ-45 connectors with two LED indicators at rear I/O panel
Serial Port	- 5x RS232 (5V/12V) on board - 1x RS232/422/485 selectable on rear I/O
USB	- 4x USB 2.0 ports on rear I/O and 4x USB 2.0 ports on board - 480 Mb/s bus encompasses the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 8-bit Digital I/Os
Other	1x parallel port on rear I/O

DISPLAY

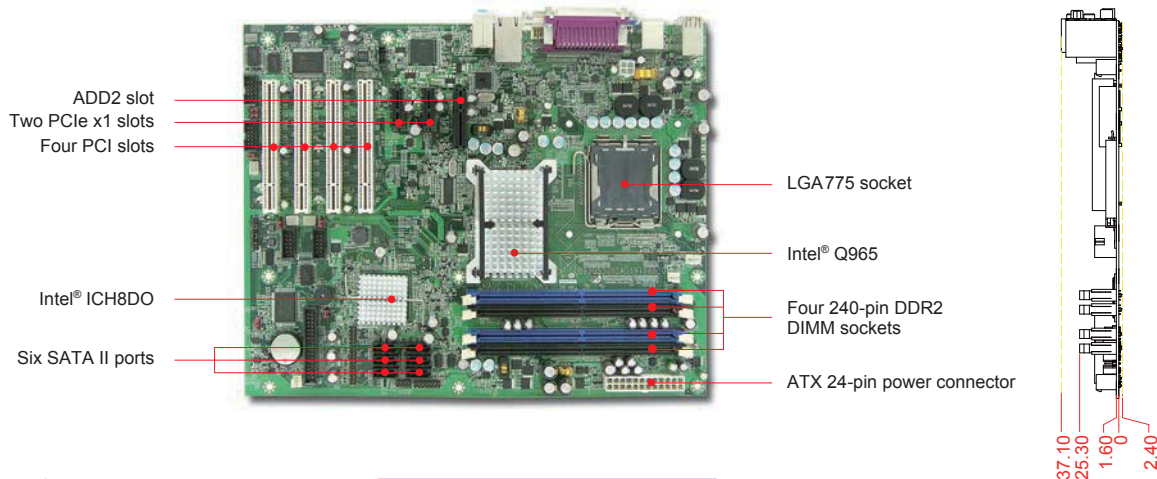
Graphic Controller	- Intel® G41 Graphics and Memory Controller Hub integrated Intel GMA 4500 delivers Microsoft DirectX 10, Shader Model 4.0, and OpenGL 1.5 - Intel® Dynamic Video Memory Technology (Intel® DVMT 5.0)
Display Interface	VGA: Resolution up to 2048x1536(QXGA) @75Hz

Mechanical & Environment

Dimension	305(L) x 244(W)mm; 12"(L) x 9.6"(W)
Power Supply	- Typical: +12V(CPU)@3.57A; +12V(System)@0.63A; +5V@5.25A; +3.3V@1.47A - Supports ATX mode
Environment	- Operation Temperature: 0°C to 60°C - Storage Temperature: -20°C to 80°C - Relative Humidity: 10% to 95%, non-condensing
MTBF	Over 120,000 hours at 40°C

RUBY-9718VG2AR

Intel® Core™ 2 Quad processor based ATX Industrial Mainboard with onboard DVI/VGA Dual-Display, DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB

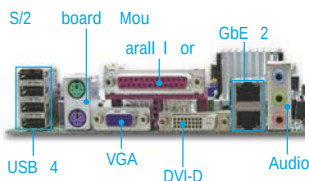


On the basis of Intel® Q965 chipset, RUBY-9718VG2AR supports the Intel® Core™ 2 Quad processor that provides the ideal solution for multiple applications such as Industrial control and Automation, Multimedia, Gaming, Kiosk, Digital Signage, Print Imaging, Digital Surveillance and Network Security.

FEATURES

- Core™ 2 Quad, Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in LGA775 package
- Benefits such as Hyper-Threading, EM64T, dual-core, EIST, XD & VT of processor can be easily applied to system by changing processor
- Onboard dual independent display: VGA and DVI-D
- One ADD2 graphics slot for ADD2 card
- Two PCI Express x1 slots and four 32-bit PCI expansion slots
- Six SATA II ports, Intel® Matrix Storage Technology with RAID 0,1,5,10 support

REAR I/O

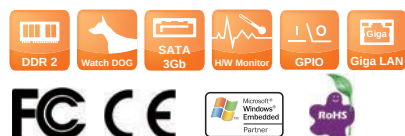


ORDERING GUIDE

AB1-3064	RUBY-9718VG2AR.ATX.LGA775.Single P4.SBC.w/ DVI/CRT VGA/Dual Giga LAN
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PACKING LIST

One RUBY-9718VG2AR ATX Industrial Main Board
One SATA II Cable
One Installation CD
One I/O shield



GENERAL

Processor	- Intel® Core™ 2 Quad/Core™ 2 Duo/Pentium® D/Pentium® 4/Celeron® D Processor with 2MB L2 Cache in LGA775 package - FSB:1066/800MHz - Supports Enhanced Intel SpeedStep® Technology, Intel® 64 architecture, Execute Disable Bit (Core™ 2 Duo only)
Chipset	Intel® Q965 Graphics and Memory Controller Hub (28W)+ICH8DO
BIOS	Award BIOS
Memory	Supports up to 8GB DDR2 533/667/800MHz SDRAM on four 240-pin DIMM sockets
Storage Devices	- 6x SATA support 3Gb/s data transfer rate - RAID 0,1,5,10 (supported by Intel® Matrix Storage Technology) - 1x FDD channel
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	- System monitor (fan, temperature, voltage) - Temperature (CPU & System) - Voltage (CPU Vcore, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	- 1x ADD2 slot (single SDVO bus) - 2x PCI Express x1 slots (Gen1, 2.5 GT/s) - 4x PCI 32-bit slots

I/O INTERFACE

Super I/O	Winbond W83627HG-AW
Audio	- Intel® Q965 built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC262-VC2 LQFP48 codec, 2+2 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	- Intel® 82573L and Intel® 82566DM dual gigabit ethernet controllers - 2x RJ-45 connectors with two LED indicators at rear I/O panel - PCI Express x1 interface based Gigabit Ethernet
Serial Port	- 2x RS232 power selectable on board - 1x RS232/422/485 selectable on board and 1x RS232 on board
USB	- 4x USB 2.0 ports on rear I/O and 6x USB 2.0 ports on board - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 12-bit Digital I/Os
Other	1x parallel port on rear I/O

DISPLAY

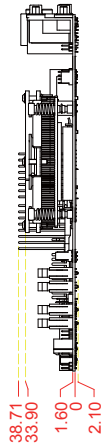
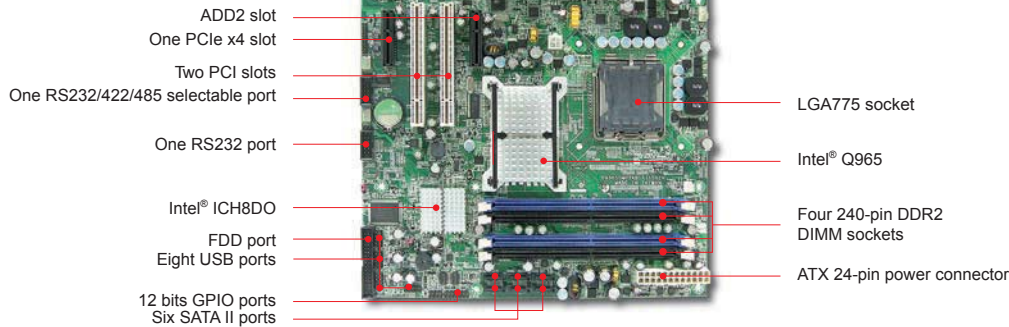
Graphic Controller	- Intel® Q965 Graphics and Memory Controller Hub integrated Intel Graphics Media Accelerator 3000 (Intel GMA 3000), providing a visually stunning experience optimized for Blu-ray and HD video - ADD2 graphic slot for ADD2 card
Display Interface	- VGA: Resolution up to 2048x1536 @75Hz - DVI-D: up to 1600x1200 @60Hz

Mechanical & Environment

Dimension	304.8(L) x 243.8(W)mm; 12"(L) x 9.6"(W)
Power Supply	- Typical: +12V(CPU)@8.75A; +12V(System)@3.6A; +5V@5.6A; +3.3V@2.81A - Supports ATX mode
Environment	- Operation Temperature: 0°C to 55°C - Storage Temperature: -20°C to 80°C - Relative Humidity: 5% to 90%, non-condensing
MTBF	Over 70,000 hours at 40°C

RUBY-9717VGAR

Intel® Core™ 2 Quad processor based Micro-ATX Industrial Mainboard with onboard DVI/VGA Dual-display, DDR2 SDRAM, Gigabit Ethernet, Audio and USB

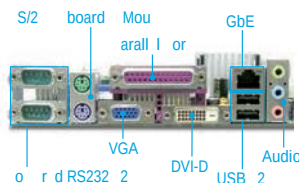


Supported by the Intel® Q965, the RUBY-9717VGAR is based on industrial uATX motherboard provides multiple I/O connectors and applies high performance in the Medical ultrasound equipment, Data Communications, Multimedia, POS and Gaming markets.

FEATURES

- Industrial mainboard with a µATX form factor that supports all Intel® mainstream desk top processors - Core™ 2 Quad, Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in LGA775 package
- Onboard dual independent display: VGA and DVI-D
- One ADD2 graphics slot for ADD2 card
- One PCI Express x4 slot and two 32-bit PCI expansion slots
- Six 32-bit PCI expansion slots for most industrial I/O cards
- Six SATA II ports support Intel® Matrix Storage Technology with RAID 0, 1, 5, 10

REAR I/O



ORDERING GUIDE

AB1-3055	RUBY-9717VGAR.Micro-ATX.LGA775.Single P4.w/ VGA/GbE/Audio/RAID
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PACKING LIST

One RUBY-9717VGAR Micro-ATX Industrial Main Board
One SATA II Cable
One Installation CD
One I/O shield



GENERAL

Processor	- Intel® Core™ 2 Quad/Core™ 2 Duo Pentium® D/Pentium® 4/Celeron® D Processor with 2MB L2 Cache in LGA775 package - FSB: 1066/800MHz - Supports Enhanced Intel SpeedStep® Technology, Intel® 64 architecture, Execute Disable Bit (Core™ 2 Duo only)
Chipset	Intel® Q965 Graphics and Memory Controller Hub (28W)+ICH8DO
BIOS	Award BIOS
Memory	Supports up to 8GB DDR2 533/667/800MHz SDRAM on four 240-pin DIMM sockets
Storage Devices	- 6x SATA support 3Gb/s data transfer rate - RAID 0,1,5,10 (supported by Intel® Matrix Storage Technology) - 1x FDD channel
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	- System monitor (fan, temperature, voltage) - Temperature (CPU & System) - Voltage (CPU Vcore, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	- 1x ADD2 slot(single SDVO bus) - 1x PCI Express x4 slot (Gen1, 2.5 GT/s) - 2x PCI 32-bit slots

I/O INTERFACE

Super I/O	Winbond W83627HG-AW
Audio	- Intel® Q965 built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC262-VC2 LQFP48 codec, 2+2 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	- Intel® 82566DM single gigabit ethernet controller - 1x RJ-45 connectors with two LED indicators at rear I/O panel - PCI Express x1 interface based Gigabit Ethernet
Serial Port	- 2x RS232 Power selectable on rear I/O - 1x RS232/422/485 selectable on board and 1x RS232 on board
USB	- 2x USB 2.0 ports on rear I/O and 8x USB 2.0 ports on board - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 12-bit Digital I/Os
Other	1x parallel port on rear I/O

DISPLAY

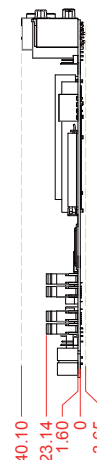
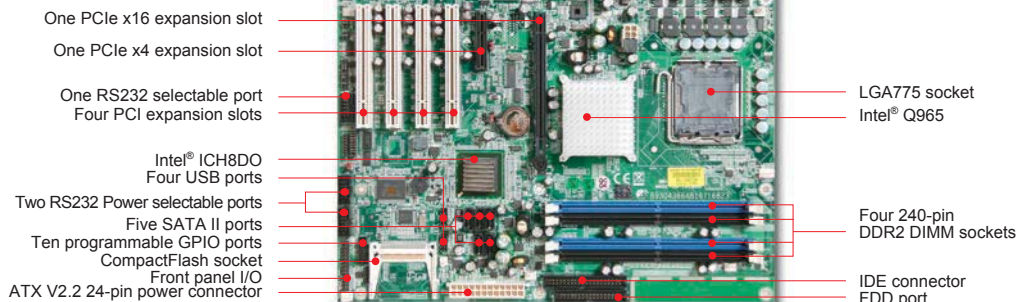
Graphic Controller	- Intel® Q965 Graphics and Memory Controller Hub integrated Intel® Graphics Media Accelerator 3000 (Intel® GMA 3000), providing a visually stunning experience optimized for Blu-ray and HD video - ADD2 graphic slot for ADD2 card
Display Interface	- VGA: Resolution up to 2048x1536 @75Hz - DVI-D: up to 1600x1200 @60Hz

Mechanical & Environment

Dimension	243.8(L) x 243.8(W)mm; 9.6"(L) x 9.6"(W)
Power Supply	- Typical: +12V(CPU)@3.31A; +12V(System)@5.82A; +5V@5.95A - Supports ATX mode
Environment	- Operation Temperature: 0°C to 55°C - Storage Temperature: -20°C to 80°C - Relative Humidity: 5% to 90%, non-condensing
MTBF	Over 100,000 hours at 40°C

RUBY-9716VG2AR

Intel® Core™ 2 Quad processor based ATX Industrial Mainboard with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB

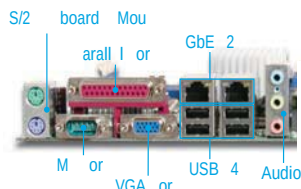


RUBY-9716VG2AR is based upon the Intel® Q965 chipset with five SATA II ports together, one IDE channel and CF socket which is a perfect combination for storage interfaces for kinds of applications; supports Intel® Matrix Storage Technology.

FEATURES

- Intel® mainstream desktop processors - Core™ 2 Quad, Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in LGA775 package
- One PCI Express x16 slot features high-end graphics card connection interface or dual independent display with ADD2+ media card that provides TV tuner, video capture in and DVI, TV-out
- One PCI Express x4 slot for storage add-in card which provides reliable and safer data storage with adequate I/O throughput
- Five SATA II ports together with one IDE channel and CF socket are perfect combination

REAR I/O

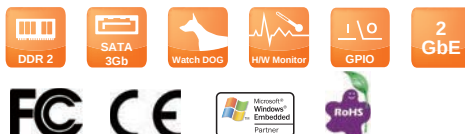


ORDERING GUIDE

AB1-3041	RUBY-9716VG2AR.Socket LGA775.Intel Q965.Core 2 Duo.IMB w/VGA/2xGbE/Audio
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PACKING LIST

One RUBY-9716VG2AR ATX Industrial Main Board
One SATA II Cable
One Installation CD
One I/O shield



GENERAL

Processor	- Intel® Core™ 2 Quad/Core™ 2 Duo Pentium® D/Pentium® 4/Celeron® D Processor with 2MB L2 Cache in LGA775 package - FSB: 1066/800MHz - Supports Enhanced Intel® SpeedStep® Technology, Intel® 64 architecture, Execute Disable Bit (Core™ 2 Duo only)
Chipset	Intel® Q965 Graphics and Memory Controller Hub (28W)+ICH8DO
BIOS	Award BIOS
Memory	Supports up to 8GB DDR2 533/667/800MHz SDRAM on four 240-pin DIMM sockets
Storage Devices	- 1x EIDE connector supports Ultra DMA100/66/33MB/s - 5x SATA support 3Gb/s data transfer rate and 1x FDD channel - 1x CompactFlash connector supports Ultra DMA100/66/33MB/s (share with IDE channel)
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	- System monitor (fan, temperature, voltage) and Temperature (CPU & System) - Voltage (CPU Vcore, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	- 1x PCI Express x4 slot for x1 or x4 card (Gen 1, 2.5 GT/s) - 1x PCI Express x16 slot for PCIe x16 or PCIe x1 or ADD2/+ card (Gen 1, 2.5 GT/s) - 4x PCI 32-bit slots

I/O INTERFACE

Super I/O	Winbond W83627HG-AW
Audio	- Intel® Q965 built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC262-VC2 LQFP48 codec, 2+2 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	- Intel® 82573L and Intel® 82566DM dual gigabit ethernet controllers - 2x RJ-45 connectors with two LED indicators at rear I/O panel - PCI Express x1 interface based Gigabit Ethernet
Serial Port	- 1x RS232/TTL selectable on rear I/O panel - 2x RS232 Power selectable on board and 1x RS232/422/485 selectable on board
USB	- 4x USB 2.0 ports on rear I/O and 4x USB 2.0 ports on board - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 10-bit Digital I/Os
Other	1x parallel port on rear I/O

DISPLAY

Graphic Controller	- Intel® Q965 Graphics and Memory Controller Hub integrated Intel® Graphics Media Accelerator 3000 (Intel GMA 3000), providing a visually stunning experience optimized for Blu-ray and HD video - Supports dual independent display with ADD2/+ card
Display Interface	- VGA: Resolution up to 2048x1536 @75Hz - DVI-D: up to 1600x1200 @60Hz

Mechanical & Environment

Dimension	304.8(L) x 243.8(W)mm; 12"(L) x 9.6"(W)
Power Supply	- Typical: +12V@6.5A; +5V@5.95A; +3.3V@3A - Supports ATX mode
Environment	- Operation Temperature: 0°C to 55°C - Storage Temperature: -20°C to 80°C - Relative Humidity: 5% to 90%, non-condensing
MTBF	Over 150,000 hours at 40°C



RUBY-9716VGAR

Intel® Core™ 2 Quad processor based ATX
Motherboard with DDR2 SDRAM, VGA, Gigabit
Ethernet, Audio and USB

One PCIe x16 expansion slot
One PCIe x1 expansion slot
One PCIe x4 expansion slot

One RS232 selectable port
Four PCI expansion slots

Intel® ICH8DO
Four USB ports

Two RS232 power selectable ports

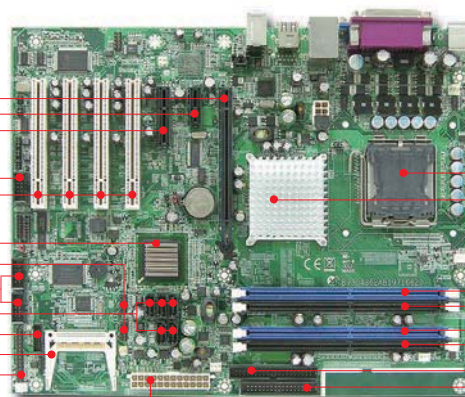
Five SATA II ports

Ten programmable GPIO ports

CompactFlash socket

Front panel I/O

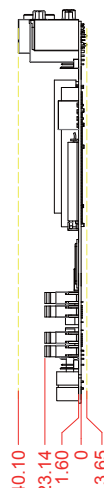
ATX V2.2 24-pin power connector



LGA775 socket
Intel® Q965

Four 240-pin
DDR2 DIMM
sockets

IDE connector
FDD port



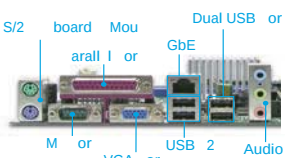
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Built with Intel® Q965 chipset, RUBY-9716VGAR supports Intel® Core™ 2 Duo processor based ATX Industrial Mainboard with DDR2 SDRAM, VGA, Gigabit Ethernet, Audio and USB. In addition, five SATA II ports, one IDE channel and CF socket are perfect storage interfaces for all kinds of applications; supports Intel® Matrix Storage Technology.

FEATURES

- Intel® mainstream desktop processors - Core™ 2 Quad, Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in LGA775 package
- One PCI Express x16 slot features high-end graphics card connection interface or dual independent display with ADD2+ media card that provides TV tuner, video capture in and DVI, TV-out
- One PCI Express x4 slot for storage add-in card which provides reliable and safer data storage with adequate I/O throughput
- Five SATA II ports together with one IDE channel and CF socket are perfect combination

REAR I/O



ORDERING GUIDE

AB1-3018	RUBY-9716VGAR.Socket LGA775.Intel Q965.Core 2 Duo.IMB.w/VGA/GbE/Audio
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PACKING LIST

One RUBY-9716VGAR ATX Industrial Main Board
One SATA II Cable
One Installation CD
One I/O shield
One IDE cable



GENERAL

Processor	- Intel® Core™ 2 Quad/Core™ 2 Duo Pentium® D/Pentium® 4/Celeron® D Processor with 2MB L2 Cache in LGA775 package - FSB: 1066/800MHz - Supports Enhanced Intel SpeedStep® Technology, Intel® 64 architecture, Execute Disable Bit (Core™ 2 Duo only)
Chipset	Intel® Q965 Graphics and Memory Controller Hub (28W)+ICH8DO
BIOS	Award BIOS
Memory	Supports up to 8GB DDR2 533/667/800MHz SDRAM on four 240-pin DIMM sockets
Storage Devices	- 1x EIDE connector supports Ultra DMA100/66/33MB/s - 5x SATA support 3Gb/s data transfer rate and 1x FDD channel - 1x CompactFlash connector supports Ultra DMA100/66/33MB/s (share with IDE channel)
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	- System monitor (fan, temperature, voltage) and Temperature (CPU & System) - Voltage (CPU Vcore, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	- 1x PCI Express x4 slot for x1 or x4 card (Gen 1, 2.5 GT/s) - 1x PCI Express x1 slot (Gen 1, 2.5 GT/s) - 1x PCI Express x16 slot for PCIe x16 or PCIe x1 or ADD2+ card (Gen 1, 2.5 GT/s) - 4x PCI 32-bit slots

I/O INTERFACE

Super I/O	Winbond W83627HG-AW
Audio	- Intel® Q965 built-in High Definition Audio up to 92-kHz 32-bit - Realtek ALC262-VC2 LQFP48 codec, 2+2 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	- Intel® 82566DM single gigabit ethernet controller - 1x RJ-45 connectors with two LED indicators at rear I/O panel - PCI Expressx1 interface based Gigabit Ethernet
Serial Port	- 1x RS232/TTL selectable on rear I/O panel - 2x RS232 Power selectable on board and 1x RS232/422/485 selectable on board
USB	- 4x USB 2.0 ports on rear I/O and 4x USB 2.0 ports on board - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 10-bit Digital I/Os
Other	1x parallel port on rear I/O

DISPLAY

Graphic Controller	- Intel® Q965 Graphics and Memory Controller Hub integrated Intel Graphics Media Accelerator 3000 (Intel GMA 3000), provides a visually stunning experience optimized for Blu-ray and HD video - Supports dual independent display with ADD2+ card
Display Interface	- VGA: Resolution up to 2048x1536 @75Hz - DVI-D: up to 1600x1200 @60Hz

Mechanical & Environment

Dimension	304.8(L) x 243.8(W)mm; 12"(L) x 9.6"(W)
Power Supply	- Typical: +12V@6.5A; +5V@5.95A; +3.3V@3A - Supports ATX mode
Environment	- Operation Temperature: 0°C to 55°C - Storage Temperature: -20°C to 80°C - Relative Humidity: 5% to 90%, non-condensing
MTBF	Over 100,000 hours at 40°C



About Chassis

↓ FLEXIBLE AND UNIQUE

At Portwell, we take care of our customers' needs. Portwell has pledged to remain customer centric -- even amid the relative challenges of the rack-mount chassis market. Unlike most chassis suppliers, whose focus is cost-down, our priority is quality, and this is reflected in the concepts of our newly developed chassis designs.

1. NEW INDUSTRIAL DESIGN (ID)

Our new industrial design is definitely an eye-catcher, and the chassis has lines that make it easy to work with. We have invested heavily in our industrial design. Consequently, our rack-mount chassis is not just attractive, it is also built practically. This enhances the product outlook and strengthens the unity of our customers' systems.

2. ADVANCED FUNCTIONALITY INSIDE

Since they first evolved from the PC, the growing new technologies have changed the applications of the rack-mount chassis tremendously. New devices, such as USB and IEEE1394, have been completely adopted in the market. The advanced functionality inside of a Portwell chassis is consistently updated in order to meet changing trends, and assures Portwell of a position as a market leader.

3. MODULIZED DESIGN TO ENABLE SYSTEM DIFFERENTIATION AND SUITABILITY FOR FUTURE DEMANDS

The modularized, state-of-the-art design of our chassis enables Portwell to meet system differentiation and the suitability for future demands. At Portwell, we understand that our rack-mount chassis are not for use by application controllers alone. They could also be fault-tolerant systems. Therefore, some hot-swappable devices, such as Mirror or RAID disks, might be integrated into the system. Portwell keeps an eye on future demands to build the capability inside the chassis to work with your system now and in the future.

Contact your local Portwell office for more information on the state-of-the-art design of all new Portwell chassis

↓ AREMO® -The First Priority for Customers

Advanced
Ruggedized
Enhanced
Modulized
Optimized

PORTWELL engineers custom-make products for customers quickly and efficiently.

Our Expertise:

- Experienced and well-trained design team.
- Integration of Industrial Design (ID), flexibility, and functionality.
- Fast sample offering for customer classification and approval.
- Collaborative design with customers.
- Fast response to customers' urgent demands:

Concept Design (3D): 2 working days

Mechanical Design: 5 working days

Samples Building: 14 working days

AREMO® An outstanding chassis for all your needs.



FEATURES

- 5.25" x3 + 3.5" x2 drive bays for RAID 0, 1, 5 & CD-ROM
- Two ball-bearing cooling fans for better ventilation
- Traditional rack-mount handles
- Two card retainer positions
- Two USB ports on the control panel
- One PS/2 K/B connector cap included
- One modularized function panel for single (default) and dual (optional) systems
- ATX M/B applicable, especially for big-AT sized M/B (RPC-500L)
- PS/2 redundant power supply installable



RPC-500NC/L

Except the rack-mount handle, RPC-500N is the same as RPC-500NC. It's the best selling 4U rack-mount chassis for CTI, industrial, scientific, engineering and server applications.

ORDERING GUIDE

- **RPC-500NC**
19" 4U rack-mount chassis for PICMG backplane
- **RPC-500NC-MX**
19" 4U rack-mount chassis for ATX M/B
- **RPC-500L**
19" 4U rack-mount chassis for PICMG backplane (Long size)
- **RPC-500L-MX**
19" 4U rack-mount chassis for server board (Long size)

GENERAL

Construction	Heavy-duty steel with aluminum front panel
Drive Bay	External: 5.25" x3, 3.5" FDD x1 Internal: 3.5" HDD x1
Card Retainer	Two locations for one card retainer
Air Filter	One replaceable filter
Cooling Fan	One 12cm and one 8cm ball-bearing cooling fans
Indicator	Power on/off x1, HDD x1
Switch	Power on/off x1, System reset x1, K/B lock x1
Connector	2 USB ports on the front panel
Standard Color	Beige, Black
Dimension	RPC-500NC: 482(W) x 450(D) x 177(H) mm; 19"(W) x 17.7"(D) x 7"(H) RPC-500L: 482(W) x 515(D) x 177(H) mm; 19"(W) x 20.3"(D) x 7"(H)
Weight	RPC-500NC: Net: 14 kg (30.9 lb); Gross: 15 kg (33.1 lb) RPC-500L: Net: 17.5 kg (38.6 lb); Gross: 18.5 kg (40.8 lb)
Backplane	PBP-14I: 14-slot ISA backplane PBP-14AC: 14-slot (12xPCI) active PICMG backplane PBP-14A7: 14-slot (7xPCI) active PICMG backplane PBP-14P4: 14-slot (4xPCI) PICMG backplane PBP-13D4: 13-slot dual-system PICMG backplane

POWER SUPPLY

ORION-D3501P optional

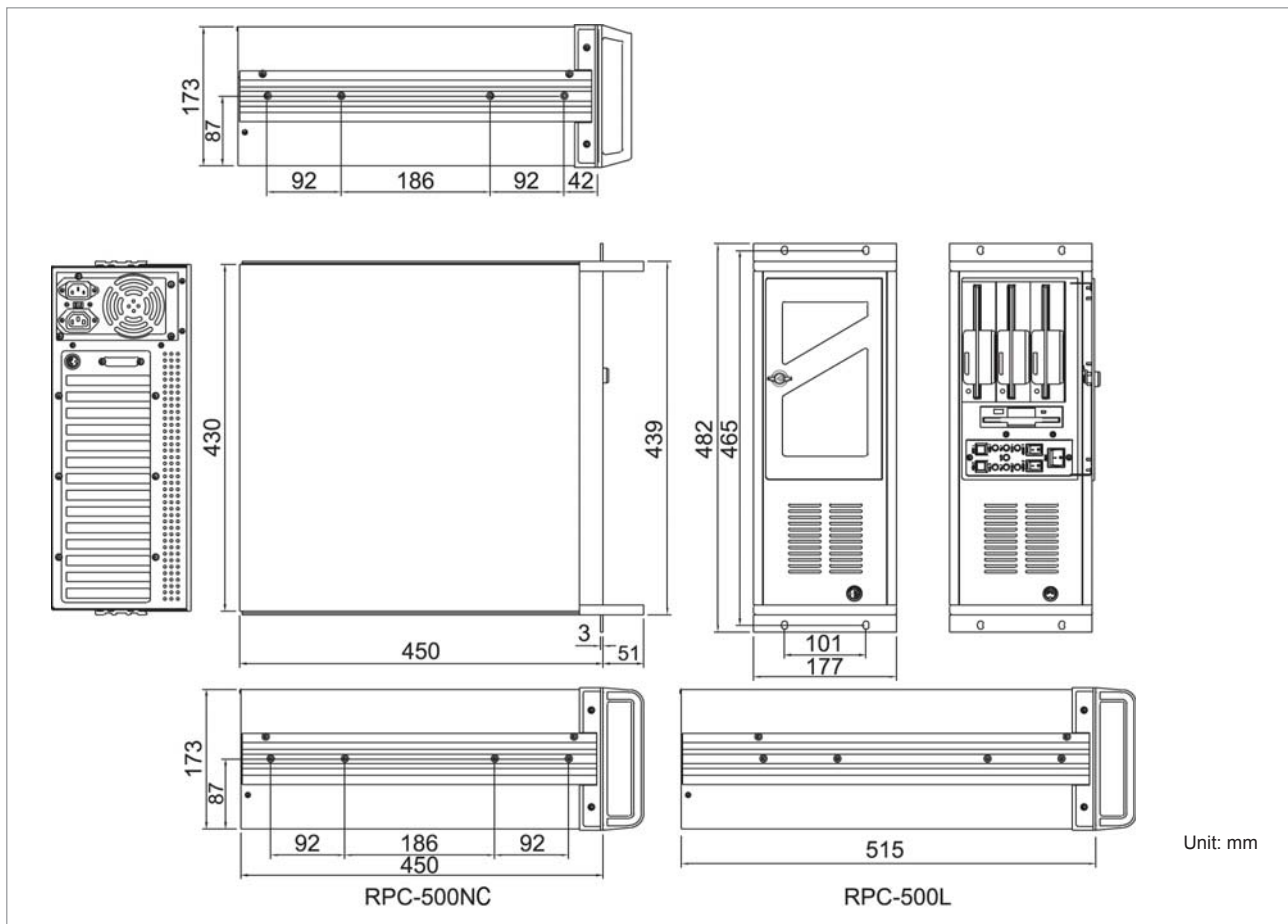
Maximum output	350W active PFC
Output Voltage & Current	+5V@18A; +12V@18A; +3.3V@20A; -5V@0.3A, -12V@0.5A, +5Vsb@2.5A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63Hz
Input Current	6.3A@115V, 6.3A@230V
Efficiency	> 68%
MTBF	75,145 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, CSA, SEMKO, FIMKO, NEMCO, DIMCO
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -40 ~ 70°C, 10 ~ 90%RH
Dimension (WxDxH)	150 x 140 x 86 mm; 5.9" x 5.5" x 3.4"

ENVIRONMENT

Operating Temperature Range	0 to +55°C
Storage Temperature Range	0 to +70°C
Relative Humidity	5% to 95%, non-condensing
Vibration	5~7 Hz: 0.5" double amplitude displacement 7~2000 Hz: 1.5g acceleration

FEATURE	BENEFITS
■ A lockable front door with thumb lock	■ Good for dust-proof & Running status visible
■ One power on/off switch with LED indicator, one reset and one K/B lock switches inside the lockable door	■ Avoid accidental reset for better running security
■ Front replaceable air filter	■ For installing dual systems and redundant power supplies more easily
■ Two USB ports on the front panel	■ For easy access
■ One PS/2 K/B connector on the front panel	■ Convenient to connect to the keyboard
■ One K/B connector cap	■ Good for dust-proof for the front accessible K/B connector
■ Two ball-bearing cooling fans	■ Better ventilation to provide the system with higher reliability
■ Enhanced drive bracket to hold 3 x 5.25" + 1 x 3.5" (external) and 1 x 3.5" drives (internal)	■ For integrating varied systems with higher flexibility
■ Shock-resistant cushion for the drive bracket	■ Suitable for installing RAID and CD-ROM drive
■ Two adjustable positions for hold-down card retainers	■ For fixing all the cards more flexibly and tightly
■ Changeable modularized back panel for 14-slot ISA/PICMG backplane or ATX M/B	■ Only one minutes to change the back panel ■ Easy to change to different backplanes and keep stock
■ Field replaceable power supply bracket for both normal PS/2 power supply and PS/2 type redundant power supply	■ Only three minutes to change defective power supply ■ Only 30 seconds to change the defective PSU module

ENGINEERING DRAWING





FEATURES

- Three 5.25" and one external 3.5" HDD drive bays for RAID 0, 1, 5 & CD-ROM
- Two USB ports on the front panel
- Dual 12cm ball-bearing cooling fans for better ventilation
- Two card retainer positions
- PS/2 or redundant power supply installable
- ATX M/B applicable, especially for big-ATX size M/B
- Easily detached and washable air filter
- Equipped with fan control card to detect fan failure

ORDERING GUIDE

- **AREMO-4196**
19" 4U rack-mount chassis for PICMG version
- **AREMO-4196-MX**
19" 4U rack-mount chassis for M/B version
- **AREMO-4196-MX-D3501P**
19" 4U rack-mount chassis for ATX motherboard with active 350W ATX, Active PFC power supply
- **AREMO-4196-00-D3501P**
19" 4U rack-mount chassis for PICMG version and 350w ATX, Active PFC power supply Hot Swap SA/A Mobil Rack
Note: 3-in-2 mobile rack Drive is optional

GENERAL

Construction	Heavy-duty steel with aluminum front panel
Drive Bay	Internal: 5.25" x3, 3.5" HDD x1 Internal: 3.5" x2
Card Retainer	Three locations for one card retainer
Air Filter	Two replaceable air filter
Cooling Fan	Two 12cm ball-bearing cooling fans
Indicator	Power on/off x1, HDD x1
Switch	Power on/off x1, System reset x1
Speaker	One 8Ω speaker
Connector	Two USB ports on the front panel
Standard Color	Silver, Black
Dimension	482(W) x 481(D) x 177(H) mm; 19"(W) x 18.1"(D) x 7"(H)
Weight	Net: 13.5 kg (29.8 lb); Gross: 14.5 kg (32 lb)
Backplane	PBP-14I: 14-slot ISA backplane PBP-14AC: 14-slot (12xPCI) active PICMG backplane PBP-14A7: 14-slot (7xPCI) active PICMG backplane PBP-14P4: 14-slot (4xPCI) PICMG backplane PBP-13D4: 13-slot dual-system PICMG backplane

POWER SUPPLY

ORION-D3501P optional

Maximum output	350W active PFC
Output Voltage & Current	+5V@18A; +12V@18A; +3.3V@20A; -5V@0.3A, -12V@0.5A, +5Vsb@2.5A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63Hz
Input Current	6.3A@115V, 6.3A@230V
Efficiency	> 68%
MTBF	75,145 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, CSA, SEMKO, FIMKO, NEMCO, DIMCO
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -40 ~ 70°C, 10 ~ 90%RH
Dimension (WxDxH)	150 x 140 x 86 mm; 5.9" x 5.5" x 3.4"

ENVIRONMENT

Operating Temperature Range	0 to +55°C
Storage Temperature Range	-20 to +80°C
Relative Humidity	5% to 95%, non-condensing
Vibration	5~7 Hz: 0.5" double amplitude displacement 7~2000 Hz: 1.5g acceleration

FEATURE	BENEFITS
■ A lockable front door with thumb lock	■ Good for dust-proof & security
■ One power on/off switch and one system reset button on the front panel behind the lockable door	■ Avoid accidental reset for better running security
■ Fan control board	■ Detect fan fail and Alarm
■ Front replaceable air filter	■ For easy cleaning and install
■ Equipped two USB ports	■ Efficient Access
■ Dual 12cm ball-bearing cooling fans	■ Better ventilation to provide the system with higher reliability
■ Enhanced drive bracket to hold three 5.25" and two 3.5" HDD drives (internal)	■ For integrating varied systems with higher flexibility
■ Shock-resistant cushion for the drive bracket	■ Suitable for installing RAID and CD-ROM drive
■ Two adjustable positions for hold-down card retainers	■ Suitable for harsh industrial environment
■ Changeable modularized back panel for 14-slot ISA/PICMG backplane or ATX motherboard	■ For fixing all the cards more flexibly and tightly
■ Field replaceable power supply bracket for both normal PS/2 power supply and PS/2 type redundant power supply	■ Only one minute to change the back panel
	■ Easy to change to different backplanes and keep stock
	■ Only three minutes to change the defective power supply
	■ Only thirty seconds to change the defective PSU module

WHAT'S NEW



PCI based RAID kits, supporting up to three SATA HDDs with RAID 0, 1, 5 selections. The Disk bus is E-IDE with Ultra DMA support. The RAID kits provide a GUI manager for installation and maintenance. Hot-swap and hot-spare capabilities are also supported.



Friendly design of handles, you can lift and uninstall AREMO-4196 comfortably and easily.



Power switch, RESET switch, HDD / Power / Fan-fail / LAN LEDs and two USB 2.0 ports are on the front panel.



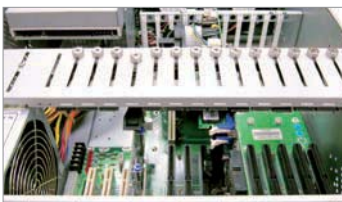
Flexible design to install power supply, the bracket can be adapt to PS/2 type or mini-redundant power supply.



AREMO-4196 enhances the drive bracket to integrate up to three 5.25" and one 3.5" disk drives within a limited space. (extra two 3.5" HDD drives for AREMO-4196-MX)



Equipped with dual 12cm ball bearing fans, AREMO-4196 provides the best ventilation up to 208CFM to expel heat from the system.



AREMO-4196 adopts the newly designed card retainer to hold both the PCI and ISA type add-on-cards more tightly.



AREMO-4196 is equipped with two USB 2.0 connectors on the front panel to have a better security control.



The washable fan filter can be easily taken off to make an easier maintenance.



LED indicators include power, HDD, Fan-fail and LAN functions.



The thumb lock offers easy operation. Users can choose to lock it or not.



The washable fan filter can be easily taken out for easier maintenance.

AREMO-4196

The Best Cost-Performance 19" 4U
Height Pentium® 4 Processor Based
Rack-mount Computer



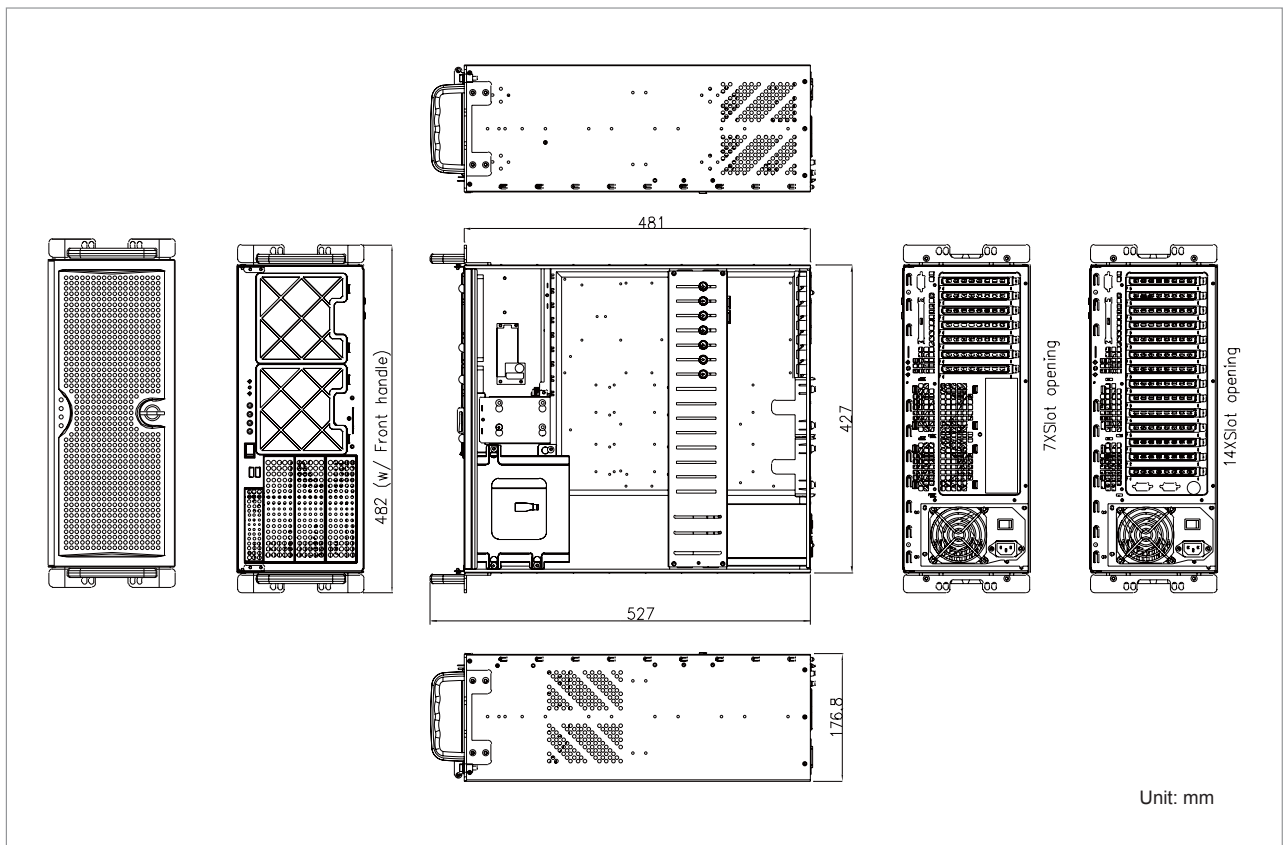
AREMO-4196



AREMO-4196-MX



ENGINEERING DRAWING





AREMO-3194

19" 3U rack-mount chassis for
ATX M/B platform



FEATURES

- IEEE 1394 port and two USB ports on the front panel
- Dedicated cooling fans for expiring the heat on the hot spots within the chassis
- Dustproof front-access air filter for easy cleaning and replacing
- Lockable front door provides greater security
- Thumb lock for greater security and to operate system more easily

ORDERING GUIDE

- **AREMO-3194-MX-B3501P**
19" 3U rack-mount chassis with 2U 350W ATX, W/active PFC power supply for ATX M/B
- **AREMO-3194E-MX-D3501P**
19" 3U rack-mount chassis with PS/2 350W ATX, with active PFC power supply for ATX M/B

GENERAL

Construction	Heavy-duty steel
Drive Bay	External: 5.25"x2+3.5"x1; Internal: 3.5"x1
Air Filter	Two replaceable air filters at the front
Cooling Fan	Two 8 cm ball-bearing cooling fans
Indicator	Power on/off x1, HDD x1
Switch	Power on/off x1, System reset x1
Speaker	One 8Ω speaker
Connector	Two USB ports and 1 IEEE 1394 port on the front panel
Standard Color	Silver, Black
Dimension	481.6(W) x 487.8(D) x 132.6(H) mm ; 19"(W) x 19.2"(D) x 5.22"(H)
Weight	Net: 16 kg (35.3 lb) ; Gross: 18 kg (39.7 lb)
M/B	Micro-ATX, ATX

POWER SUPPLY

ORION-B3501P optional

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	10A@115V, 6A@230V
Efficiency	> 68%
Holdup Time	16 ms. at full load
Over Voltage Protection	+3.3V:4.5V; +5V:6.5V; 12V:14.5V
Over Power/Load Protection	Output power over 110%~150%
MTBF	100,000 hrs
EMI & Safety Approval	UL, cUL, TUV, CCC, CB, CE, FCC, BSMI
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	100x200x70 mm; 3.94"x8.3"x2.8"

ENVIRONMENT

Operating Temperature Range	0 to +55°C
Storage Temperature Range	-20 to +80°C
Relative Humidity	5% to 95%, non-condensing
Vibration	5~7 Hz: 0.5" double amplitude displacement 7~2000 Hz: 1.5g acceleration

FEATURE	BENEFITS
■ 350W Active PFC power supply	■ Sufficient power source for Intel® Pentium® 4 processor
■ Cooling tunnel design	■ Better ventilation to enhance system reliability
■ More expansion slots	■ Support up to six expansion and one AGP slots for higher expansibility
■ Two USB and one IEEE 1394 ports on the front panel	■ Easy to operate the system
■ Lockable front door	■ Provide better security
■ Front replaceable air filters	■ For easy cleaning

WHAT'S NEW



Excellent In-System Cooling

Two 8cm ball-bearing fans provide better ventilation and keep smooth airflow



PCI and AGP Expansion

Six PCI and one AGP expansion slots for adding more functions to the system



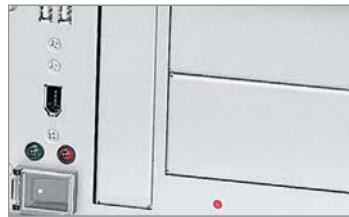
Front Replaceable Air Filters

Convenient to change air filters when needed



Lockable Front Door and Thumb Lock

Provide better security and operate the system more easily



Protection Cap and Touch-Free Reset Switch

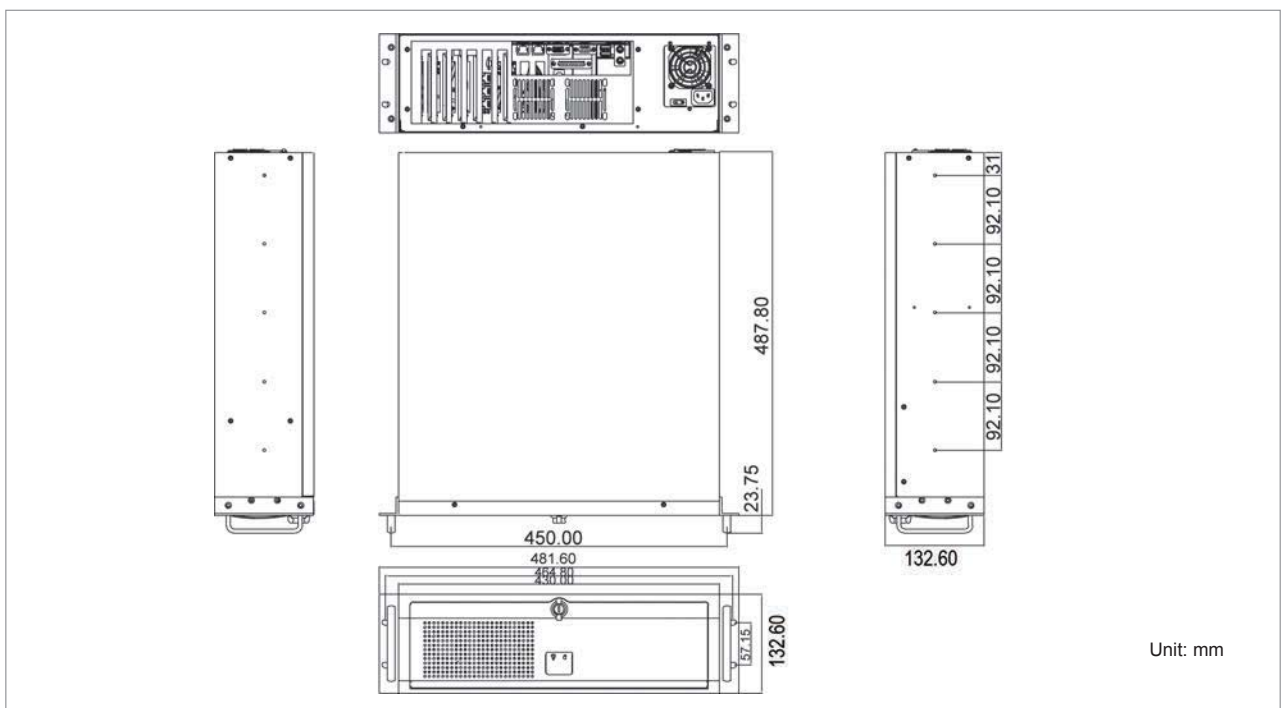
Avoid abnormal operation and increase system reliability



Excellent Cooling System

New slot cover and air holes for better ventilation

ENGINEERING DRAWING





FEATURES

- One slim CD-ROM and two hot-swap 3.5" HDD (SATA) Drive bays
- Two USB ports on the front panel
- Two 7cm ball-bearing cooling fans for better ventilation
- One power On/Off switch with protection cap and one touch free reset for secure access

ORDERING GUIDE

- **AREMO-2173P-06V4-D3501P**
19" 2U rack-mount chassis with vertical 6-slot (4x PCI) PICMG backplane and 350W ATX, active PFC power supply
- **AREMO-2173P-06V4**
19" 2U rack-mount chassis with vertical 6-slot (4x PCI) PICMG backplane
- **AREMO-2173P-06V4-3502P**
19" 2U rack-mount chassis with vertical 6-slot (4x PCI) PICMG backplane and 350W active PFC redundant power supply

GENERAL

Construction	Heavy-duty steel
Drive Bay	External: Slim type CD-ROM x1, Hot-swap 3.5" HDD x2
Air Filter	One external replaceable air filter
Cooling Fan	Two 7cm ball-bearing fans
Indicator	HDD x1+ Power on/off x1
Switch	Power on/off (with a protection cap) x1, System reset x1
Speaker	One 8Ω speaker
Connector	Two USB ports equipped on the front panel
Standard Color	Silver, Black
Dimension	482(W) x 429.2(D) x 88.6(H) mm; 19"(W) x 16.9"(D) x 3.5"(H)
Weight	Net: 11.0 kg (23.1 lb); Gross: 12.0 kg (25.3 lb)

POWER SUPPLY

ORION-D3501P optional

Maximum output	350W active PFC
Output Voltage & Current	+5V@18A; +12V@18A; +3.3V@20A; -5V@0.3A, -12V@0.5A, +5Vsb@2.5A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63Hz
Input Current	6.3A@115V, 6.3A@230V
Efficiency	> 68%
MTBF	75,145 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, CSA, SEMKO, FIMKO, NEMCO, DIMCO
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -40 ~ 70°C, 10 ~ 90%RH
Dimension (WxDxH)	150 x 140 x 86 mm; 5.9" x 5.5" x 3.4"

ENVIRONMENT

Operating Temperature Range	0 to +55°C
Storage Temperature Range	-20 to +80°C
Relative Humidity	5% to 95%, non-condensing
Vibration	5~7 Hz: 0.5" double amplitude displacement 7~2000 Hz: 1.5g acceleration

AREMO-2173P

19" 2U industrial rack-mount chassis
for PICMG backplane

FEATURE	BENEFITS
■ 350W Active PFC power supply	■ Sufficient power source for Intel® Pentium® 4 processor
■ Two 7cm high speed fans	■ Better ventilation to enhance system reliability
■ Two swappable SATA HDD drive bays	■ Easy to access HDD drives
■ Four Low profile PCI expansion slots	■ For system function expansion
■ Front replaceable air filters	■ Easy cleaning

WHAT'S NEW



Thumb Lock

Convenient to operate or protect the system



Two Swappable SATA HDD Drives

Easy to access HDD drives



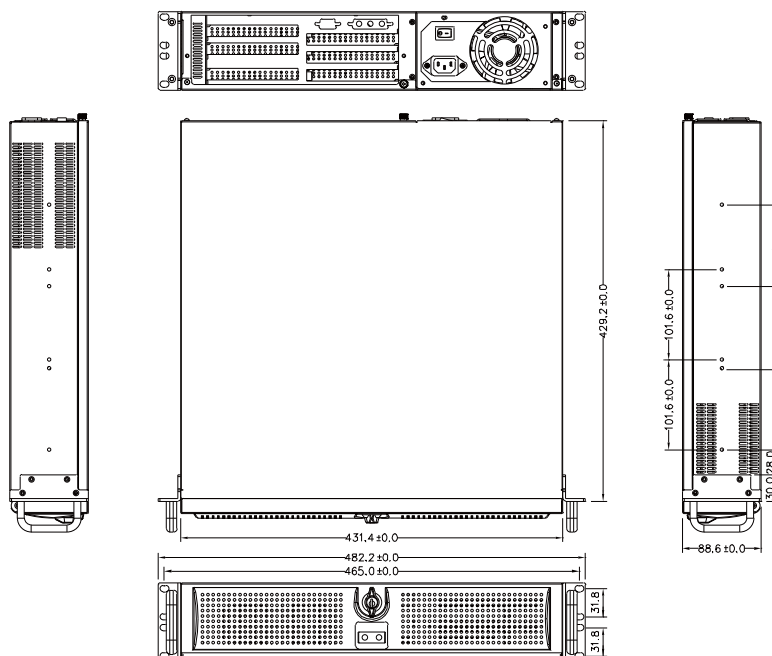
Front Replaceable Air Filters/Fans

Convenient to change air filters or fans when needed



Rear View

ENGINEERING DRAWING



Unit: mm



FEATURES

- One slim CD-ROM and two hot-swap 3.5" HDD (SATA) Drive bays
- Two USB ports on the front panel
- Two 7cm ball-bearing cooling fans for better ventilation
- One power On/Off switch with protection cap and one touch free reset for secure access

ORDERING GUIDE

- **AREMO-2173MX-D3501P**
19" 2U rack-mount chassis for micro-ATX or mini-ITX M/B with 350W ATX, active PFC power supply
- **AREMO-2173MX**
19" 2U rack-mount chassis for micro-ATX or mini-ITX M/B
- **AREMO-2173MX-3502P**
19" 2U rack-mount chassis for micro-ATX or mini-ITX M/B and 350W active PFC redundant power supply

GENERAL

Construction	Heavy-duty steel
Drive Bay	External: Slim type CD-ROM x1, Hot-swap 3.5" HDD x2
Air Filter	One external replaceable air filter
Cooling Fan	Two 7cm ball-bearing fans
Indicator	HDD x1+ Power on/off x1
Switch	Power on/off (with a protection cap) x1, System reset x1
Speaker	One 8 Ω speaker
Connector	Two USB ports equipped on the front panel
Standard Color	Silver, Black
Dimension	482(W) x 429.2(D) x 88.6(H) mm; 19"(W) x 16.9"(D) x 3.5"(H)
Weight	Net: 11.0 kg (23.1 lb); Gross: 12.0 kg (25.3 lb)

POWER SUPPLY

ORION-D3501P optional

Maximum output	350W active PFC
Output Voltage & Current	+5V@18A; +12V@18A; +3.3V@20A; -5V@0.3A, -12V@0.5A, +5Vsb@2.5A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63Hz
Input Current	6.3A@115V, 6.3A@230V
Efficiency	> 68%
MTBF	75,145 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, CSA, SEMKO, FIMKO, NEMCO, DIMCO
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -40 ~ 70°C, 10 ~ 90%RH
Dimension (WxDxH)	150 x 140 x 86 mm; 5.9" x 5.5" x 3.4"

ENVIRONMENT

Operating Temperature Range	0 to +55°C
Storage Temperature Range	-20 to +80°C
Relative Humidity	5% to 95%, non-condensing
Vibration	5~7 Hz: 0.5" double amplitude displacement 7~2000 Hz: 1.5g acceleration

AREMO-2173MX

19" 2U industrial rack-mount chassis for Micro-ATX or mini-ITX mother board

FEATURE	BENEFITS
■ 350W Active PFC power supply	■ Sufficient power source for Intel® Pentium® 4 processor
■ Two 7cm high speed fans	■ Better ventilation to enhance system reliability
■ Two swappable SATA HDD drive bays	■ Easy to access HDD drives
■ Four Low profile PCI expansion slots	■ For system function expansion
■ Front replaceable air filters	■ Easy cleaning

WHAT'S NEW



Thumb Lock

Convenient to operate or protect the system



Two Swappable SATA HDD Drives

Easy to access HDD drives



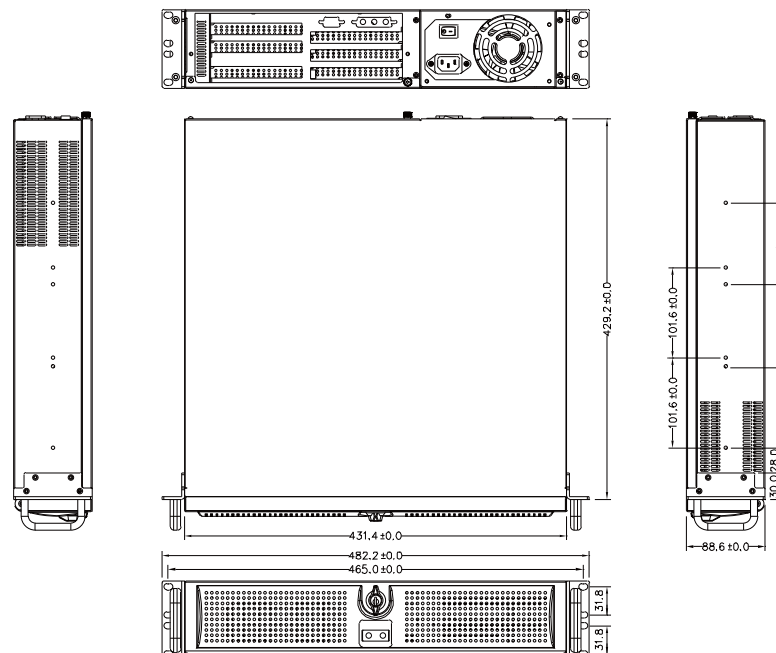
Front Replaceable Air Filters/Fans

Convenient to change air filters or fans when needed



Rear View

ENGINEERING DRAWING



Unit: mm



PRC-1194

19" 1U Height industrial rack-mount P4 chassis



FEATURES

- Single power supply with higher +12V output for Pentium® 4 processor
- Cooling tunnel design for expiring heat generated by CPU
- Power cable routed beneath the cooling tunnel to avoid disturbance of air path
- Two PCI expansion slots for adding more functions to system

ORDERING GUIDE

- **PRC-1194-03P2X-2501**
19" 1U rack-mount chassis with 3-slot (2xPCI) PICMG backplane and 250W PFC power supply

GENERAL

Construction	Heavy-duty steel
Drive Bay	External: NB CD-ROM x1 (or equivalent CD-RW / DVD-ROM) + NB FDD x1 Internal: 3.5" HDD x2
Air Filter	N/A
Cooling Fan	One 12cm ball-bearing fan
Indicator	Power on/off x1, HDD x1
Switch	Power on/off x1, System reset x1
Speaker	N/A
Connector	Two USB connectors on the front panel, reserved one COM port cutout
Standard Color	Black
Dimension	481(W) x 429(D) x 44(H) mm; 19"(W) x 18.7"(D) x 1.7"(H)
Weight	Net: 10 kg (22.05 lb); Gross: 13 kg (28.67 lb)
Backplane	PBP-03P2X: 3-slot (2xPCI) PICMG backplane

POWER SUPPLY

ORION-A2501 optional

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	6A@115V, 3A@230V
Efficiency	> 65%
Holdup Time	16 ms. at full load @25°C
Over Voltage Protection	+5V@5.4~6.5A; +3.3V@3.9~4.4V; +12V@13.6~15.6V
Over Power/Load Protection	Output power over to 110%~160%
MTBF	105,405 hrs
EMI & Safety Approval	UL, cUL, TVU, CE, FCC
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -20 ~ 70°C, 10 ~ 90%RH
Dimension (WxDxH)	100x190x40.5 mm; 5.9"x5.5"x3.4"

ENVIRONMENT

Operating Temperature Range	0 to +55°C
Storage Temperature Range	-20 to +80°C
Relative Humidity	5% to 95%, non-condensing
Vibration	5~7 Hz: 0.5" double amplitude displacement 7~2000 Hz: 1.5g acceleration



FEATURES

- One external 5.25" and two internal 3.5" HDD drive bays
- Two USB ports on the front panel
- Can be vertically or horizontally mounted, easy to fit into space limited environment
- One 12cm ball-bearing cooling fan for better ventilation
- One replaceable air filter for easy cleaning
- Two adjustable positions for hold-down card retainers provide better protection from vibration
- Wall-mounting bracket equipped
- Both 6-slot ISA and PICMG 1.0 or 1.3 backplane applicable; easy to change different backplanes
- Field replaceable power supply bracket for both normal PS/2 and PS/2 redundant power supply, easy for changing defected power supply

ORDERING GUIDE

- **AREMO-6163-06P3-D3501P**
6-slot full-size industrial node chassis with 6-slot (3xPCI) PICMG backplane and 350W active PFC ATX power supply
- **AREMO-6163-06P4-D3501P**
6-slot full-size industrial node chassis with 6-slot (4xPCI) PICMG backplane and 350W active PFC ATX power supply

GENERAL

Construction	Heavy-duty steel
Drive Bay	External: 5.25" x1 Internal: 3.5" HDD x2
Card Retainer	Two locations for one card retainer
Air Filter	One replaceable air filter at the front door
Cooling Fan	One 12cm ball-bearing fan
Indicator	Power on/off x1, HDD x1
Switch	Power on/off x1, System reset x1
Speaker	One 8Ω speaker
Connector	Two USB ports on the front panel
Standard Color	Silver, Black
Dimension	260(W) x 420.5(D) x 172(H) mm; 10.24"(W) x 16.56"(D) x 6.77"(H)
Weight	Net: 8.5 kg (18.7 lb); Gross: 9.5 kg (20.9 lb)
Backplane	PBP-06I: 6-slot ISA bus PICMG backplane PBP-06P4: 6-slot (4xPCI) PICMG backplane PBP-06P3: 6-slot (3xPCI) PICMG backplane

POWER SUPPLY

ORION-D3501P optional

Maximum output	350W active PFC
Output Voltage & Current	+5V@18A; +12V@18A; +3.3V@20A; -5V@0.3A, -12V@0.5A, +5Vsb@2.5A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63Hz
Input Current	6.3A@115V, 6.3A@230V
Efficiency	> 68%
MTBF	75,145 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, CSA, SEMKO, FIMKO, NEMCO, DIMCO
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -40 ~ 70°C, 10 ~ 90%RH
Dimension (WxDxH)	150 x 140 x 86 mm; 5.9" x 5.5" x 3.4"

ENVIRONMENT

Operating Temperature Range	0 to +55°C
Storage Temperature Range	-20 to +80°C
Relative Humidity	5% to 95%, non-condensing
Vibration	5~7 Hz: 0.5" double amplitude displacement 7~2000 Hz: 1.5g acceleration

FEATURE	BENEFITS
■ 5.25" drive space for CD-ROM or mobile rack	■ Easy to install software
■ Two USB ports at the front	■ Easy to operate the system
■ One replaceable air filter	■ Easy cleaning
	■ Two USB ports equipped
■ Can be vertically or horizontally mounted	■ Easy to fit into different space limited environments
■ Two adjustable positions for hold-down card retainer	■ For fixing all the cards more flexibly and tightly
■ Both 6-slot ISA and PICMG backplane applicable	■ Easy to change to different backplane and keep in stock
■ Field replaceable power supply bracket for both normal PS/2 power supply and PS/2 type redundant power supply	■ Easy maintenance

WHAT'S NEW



Two Adjustable Card Retainer Positions
For fixing all the cards more flexibly and tightly

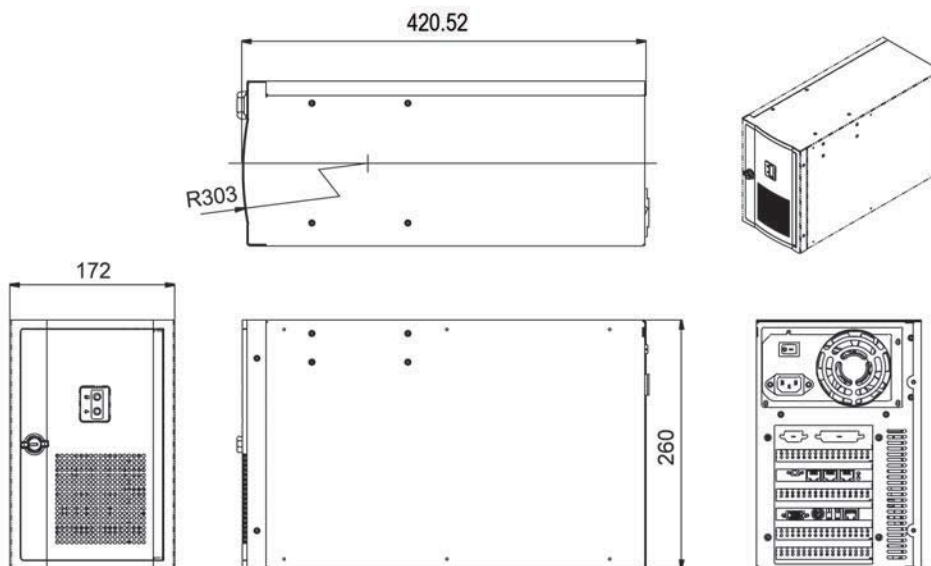


Plastic Fan Filter
For easy cleaning and replace



New HDD Drive Design
Easy to install HDD drives

ENGINEERING DRAWING



Unit: mm



FEATURES

- Two 5.25" and two internal 3.5" HDD drive bays for CD-ROM or mobile rack, easy to install software and mirror disk (RAID1)
- Two USB ports on the front panel
- Can be vertically or horizontally mounted, easy to fit into space limited environment
- One 12cm ball-bearing cooling fan for better ventilation
- One replaceable air filter for easy cleaning
- Two adjustable positions for hold-down card retainers provide better protection from vibration
- Wall-mounting bracket equipped
- Both 8-slot ISA and PICMG 1.0 or 1.3 backplane applicable; easy to change different backplanes
- Field replaceable power supply bracket for both normal PS/2 and PS/2 redundant power supply, easy for changing defected power supply

ORDERING GUIDE

- **AREMO-8164**
8-slot full-size industrial node chassis
- **AREMO-8164-08P4-00**
8-slot full-size industrial node chassis with 8-slot (4xPCI) PICMG backplane
- **AREMO-8164-08P4-D3501P**
8-slot full-size industrial node chassis with 8-slot (4xPCI) PICMG backplane and 350W active PFC ATX power supply

GENERAL

Construction	Heavy-duty steel
Drive Bay	External: 5.25" x2 Internal: 3.5" HDD x2
Card Retainer	Two locations for one card retainer
Air Filter	One replaceable air filter at the front door
Cooling Fan	One 12cm ball-bearing fan
Indicator	Power on/off x1, HDD x1
Switch	Power on/off x1, System reset x1
Speaker	One 8Ω speaker
Connector	2 USB ports on the front panel
Standard Color	Silver, Black
Dimension	330(W) x 420.8(D) x 172(H) mm; 12.99"(W) x 16.56"(D) x 6.77"(H)
Weight	Net: 10 kg (22.1 lb); Gross: 9.5 kg (20.9 lb)
Backplane	PBP-08I: 8-slot ISA backplane PBP-08P4: 8-slot (4xPCI) PICMG backplane PBP-08P3 : 8-slot (3xPCI) PICMG backplane

POWER SUPPLY

ORION-D3501P optional

Maximum output	350W active PFC
Output Voltage & Current	+5V@18A; +12V@18A; +3.3V@20A; -5V@0.3A, -12V@0.5A, +5Vsb@2.5A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63Hz
Input Current	6.3A@115V, 6.3A@230V
Efficiency	> 68%
MTBF	75,145 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, CSA, SEMKO, FIMKO, NEMCO, DIMCO
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -40 ~ 70°C, 10 ~ 90%RH
Dimension (WxDxH)	150 x 140 x 86 mm; 5.9" x 5.5" x 3.4"

ENVIRONMENT

Operating Temperature Range	0 to +55°C
Storage Temperature Range	-20 to +80°C
Relative Humidity	5% to 95%, non-condensing
Vibration	5~7 Hz: 0.5" double amplitude displacement 7~2000 Hz: 1.5g acceleration

FEATURE	BENEFITS
■ 5.25" drive bays for CD-ROM or mobile rack	■ Easy to install software and mirror disk (RAID 1)
■ Two USB ports on the front panel	■ Easy to operate the system
■ One replaceable air filter	■ Easy cleaning
■ Can be vertically or horizontally mounted	■ Easy to fit into different space limited environments
■ Two adjustable positions for hold-down card retainer	■ For fixing all the cards more flexibly and tightly
■ Both 8-slot ISA and PICMG backplane applicable	■ Easy to change to different backplane and keep in stock
■ Field replaceable power supply bracket for both normal PS/2 power supply and PS/2 type redundant power supply	■ Easy maintenance

WHAT'S NEW



Two Adjustable Card Retainer Positions
For fixing all the cards more flexibly and tightly

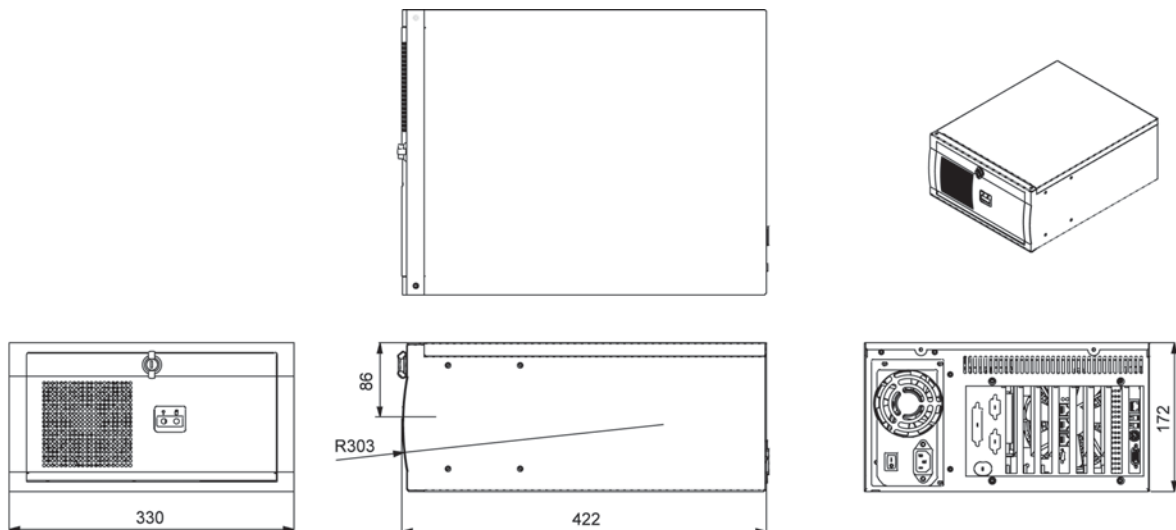


Plastic Fan Filter
For easy cleaning and replacing



Excellent Cooling System
New slot cover for better ventilation

ENGINEERING DRAWING



Unit: mm

AREMO-4184

19" 4U Height rack-mount chassis with dual AREMO-6182 node chassis



FEATURES

- Magic design for wall-mount, desk-top and rack-mount application
- Ruggedized steel node chassis suitable for harsh environment
- One built-in 12cm ball-bearing fan for better ventilation
- Built-in 1U ATX type power supply
- Support one external 5.25" and one internal 3.5" disk drive
- Optional one external 5.25" and one internal 3.5" disk drive
- Optional kit to combine two AREMO-6182 for the rack-mount application, AREMO-4184



AREMO-6182

ORDERING GUIDE

- **AREMO-4184-06P3-350X**
Two sets of AREMO-6182 with rack-mount kit, 6-slot (3xPCI) PICMG backplane and 350W 1U ATX, active PFC power supply
- **AREMO-6182-06P3-350X**
6-slot node chassis with 6-slot (3xPCI) PICMG backplane and 350W 1U ATX, active PFC power supply

GENERAL

Construction	Heavy-duty steel
Drive Bay	External: 5.25" x1 * Internal: 3.5" x1 *
Card Retainer	Two locations for one card retainer *
Air Filter	One replaceable air filter at the front door *
Cooling Fan	One 12cm ball-bearing fan *
Indicator	Power on/off x1, HDD x1 *
Switch	Power on/off (with a protection cap) x1, System reset x1 *
Speaker	One 8 Ω speaker *
Connector	2 USB ports *
Standard Color	Black, Silver
Dimension	AREMO-4184: 482(W) x 448(D) x 177(H) mm; 19"(W) x 17.6"(D) x 7"(H)
Weight	AREMO-6182: Net: 6.5 kg (14.3 lb); Gross: 8.0 kg (17.6 lb) AREMO-4184: Net: 15.5 kg (34.2 lb); Gross: 17.5 kg (38.6 lb)
Backplane	PBP-06P3: 6-slot (3xPCI) PICMG backplane PBP-06P4: 6-slot (4xPCI) PICMG backplane PBP-06I: 6-slot (6xISA) PICMG backplane

* each system

POWER SUPPLY

FSP350-601UA optional

Input Voltage	90V ~ 135V, 180V ~ 265V AC
Input Frequency	47 ~ 63 Hz
Input Current	6A@115V, 3A@230V
Efficiency	> 70%
Holdup Time	18m Sec
Over Voltage Protection	+3.3V: 4.5V; +5V: 6.5V; +12V: 15.6V
Over Power/Load Protection	+3.3V: 45A; +5V: 45A; +12V: 20A
MTBF	100,000 hrs
EMI & Safety Approval	UL, CSA, VDE, FCC, CE, NEMKO
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 80%RH Storage: -40 ~ 70°C, 10 ~ 90%RH
Dimension (WxDxH)	100x190x40 mm; 3.9"x7.5"x1.6"

ENVIRONMENT

Operating Temperature Range	0 to +50°C
Storage Temperature Range	-20 to +80°C
Relative Humidity	5% to 95%, non-condensing
Vibration	5~7 Hz: 0.5" double amplitude displacement 7~2000 Hz: 1.5g acceleration

AREMO-4184

19" 4U Height rack-mount chassis with dual AREMO-6182 node chassis

FEATURE	BENEFITS
■ One 5.25" drive bay for EZDRV	■ For both CD-ROM and FDD support or Hot-swappable HDD
■ Front replaceable air filter	■ Easy cleaning & replacing
■ Two adjustable positions for hold-down card retainer	■ For fixing all the cards more flexibly and tightly
■ Both 6-slot ISA and PICMG backplane applicable	■ Easy to change to different backplane and keep in stock
■ 1U 350W ATX power supply	■ Save the space inside the chassis
■ Special kit to combine dual systems into 4U space	■ Can be integrated as a fault tolerant system

WHAT'S NEW



Special Configuration with EZDRV

AREMO-6182 adopts EZDRV-300NCF or mobile rack for 3.5" HDD



Easy to Mount

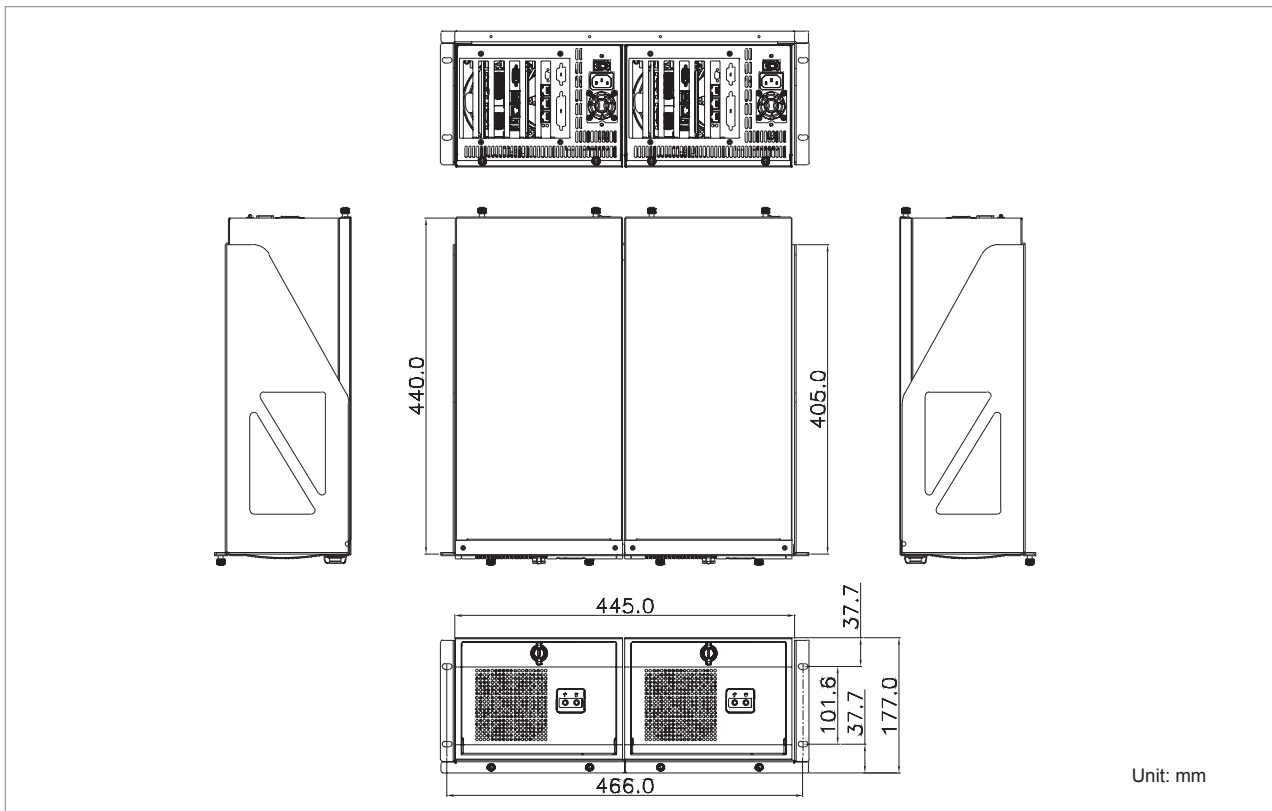
AREMO-6182 can be easily mounted on the supporter



Two become One

Combine two AREMO-6182 as a dual system 4U chassis

ENGINEERING DRAWING





FEATURES

- One external 5.25" and one internal HDD drive bay
- One replaceable air filter for easy cleaning
- Can be vertically or horizontally mounted, easy to fit into space limited environment
- One 12cm ball-bearing cooling fan for better ventilation
- The fan filter panel can be installed in different directions
- Two adjustable positions for hold-down card retainers provide better protection from vibration
- Wall-mounting bracket equipped
- Both 6-slot ISA and PICMG 1.0 or 1.3 backplane applicable; easy to change different backplanes

ORDERING GUIDE

- **AREMO-6182-06P3-350X**
6-slot full-size industrial node chassis with 6-slot (3xPCI) PICMG backplane and 1U 350W ATX, Active PFC power supply
- **AREMO-6182-06P4-350X**
6-slot full-size industrial node chassis with 6-slot (4xPCI) PICMG backplane and 350W active PFC ATX power supply

GENERAL

Construction	Heavy-duty steel
Drive Bay	External: 5.25" x1 Internal: 3.5" HDD x1
Card Retainer	Two locations for one card retainer
Air Filter	One replaceable air filter at the front door
Cooling Fan	One 12cm ball-bearing fan
Indicator	Power on/off x1, HDD x1
Switch	Power on/off x1, System reset x1
Speaker	One 8 Ω speaker
Connector	2 USB ports
Standard Color	Black, Silver
Dimension	219(W) x 448(D) x 160(H) mm; 8.6"(W) x 17.6"(D) x 6.3"(H)
Weight	Net: 6.5 kg (14.3 lb); Gross: 8.0 kg (17.6 lb)
Backplane	PBP-06P3: 6-slot (3xPCI) PICMG backplane PBP-06P4: 6-slot (4xPCI) PICMG backplane PBP-06I: 6-slot (6xISA) PICMG backplane

POWER SUPPLY

FSP350-601UA optional

Input Voltage	90V ~ 135V, 180V ~ 265V AC
Input Frequency	47 ~ 63 Hz
Input Current	6A@115V, 3A@230V
Efficiency	> 70%
Holdup Time	18m Sec
Over Voltage Protection	+3.3V: 4.5V; +5V: 6.5V; +12V: 15.6V
Over Power/Load Protection	+3.3V: 45A; +5V: 45A; +12V: 20A
MTBF	100,000 hrs
EMI & Safety Approval	UL, CSA, VDE, FCC, CE, NEMKO
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 80%RH Storage: -40 ~ 70°C, 10 ~ 90%RH
Dimension (WxDxH)	100x190x40 mm; 3.9"x7.5"x1.6"

ENVIRONMENT

Operating Temperature Range	0 to +50°C
Storage Temperature Range	-20 to +80°C
Relative Humidity	5% to 95%, non-condensing
Vibration	5~7 Hz: 0.5" double amplitude displacement 7~2000 Hz: 1.5g acceleration

FEATURE	BENEFITS
■ One 5.25" drive bay for EZDRV	■ For both CD-ROM and FDD support or Hot-swappable HDD
■ One replaceable air filter	■ For easy cleaning
■ Can be vertically or horizontally mounted	■ Easy to fit into different space limited environment
■ Two adjustable positions for hold-down card retainer	■ For fixing all the cards more flexibly and tightly
■ Both 6-slot ISA and PICMG backplane applicable	■ Easy to change to different backplane and keep stock
■ Field replaceable power supply bracket for both normal PS/2 power supply and PS/2 type redundant power supply	■ For ease of maintenance
■ Removable fan kit	■ Easy to replace the broken fan

WHAT'S NEW



Plastic Fan Filter

For easy cleaning and replacing



Can be Mounted in Different Styles

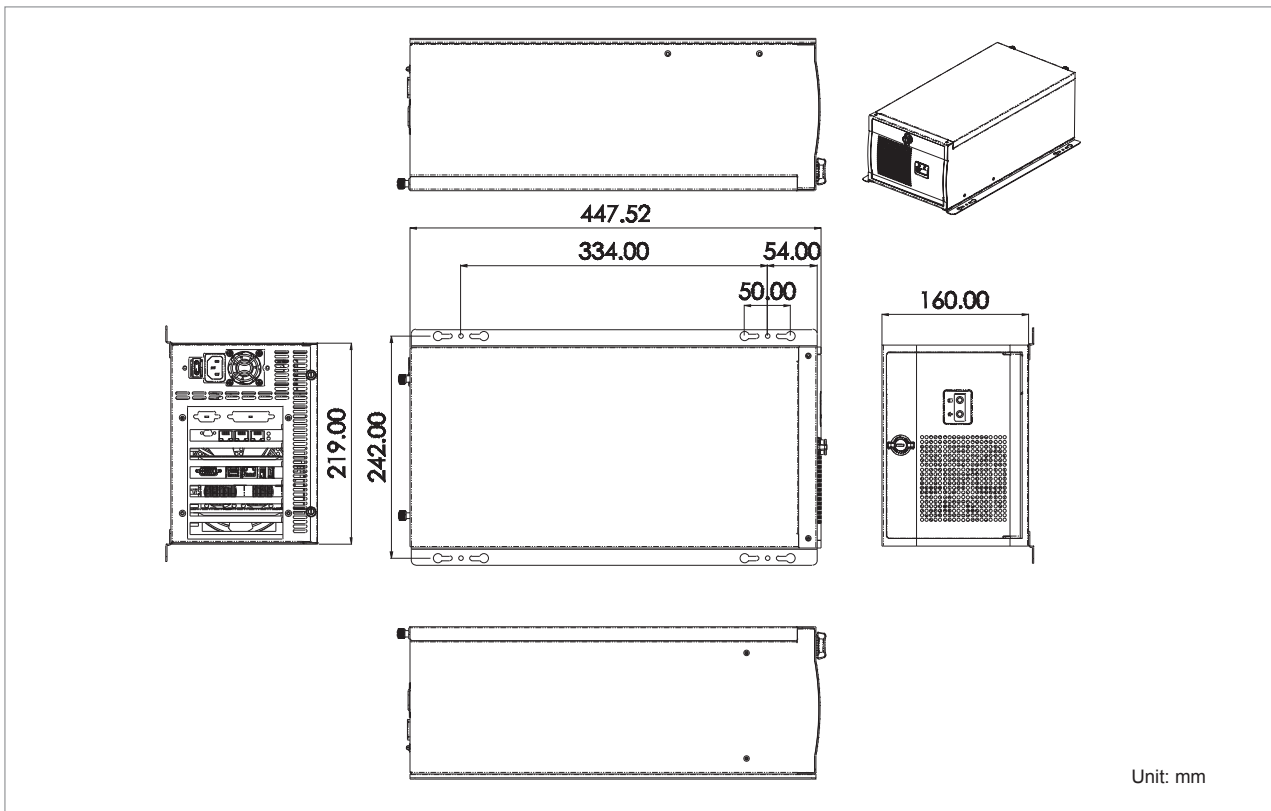
AREMO-6182 can be either vertically or horizontally installed



Dual Card Retainers

It has two positions for card clamps to hold both PCI and ISA cards tightly

ENGINEERING DRAWING



EZDRV-400

5.25" compact drive set with slim type DVD-ROM, SD/CF card reader, 2 USB ports and space for 2.5" HDD

External: 1x slim type DVD-ROM



Internal: 1x NB 2.5" HDD



SD Reader and 2 USB ports



CF Reader and LED for HDD

FEATURES

- All-in-one drive set can hold:
 - one slim type DVD-ROM
 - SD card reader
 - CF card reader
 - 2 USB ports
 - 2.5" HDD (internal)
- One LED for internal HDD

GENERAL

Construction	Heavy-duty steel with plastic front cover
Drive Bay	-External: Slim type DVD-ROM x1 + 2-in-1 reader + USB ports x2 -Internal: NB 2.5" HDD x1
Indicator	HDD x1
Standard Color	Black
Dimension	149(W) x 185(D) x 43(H) mm; 5.9"(W) x 7.3"(D) x 1.7"(H)
Weight	Net: 0.9 kg (2 lb); Gross: 1.3 kg (2.9 lb)

ORDERING GUIDE

- **EZDRV-400DR**
5.25" compact drive bracket with slim type DVD-ROM, SD/CF reader, 2 USB ports and space for 2.5" HDD
- **EZDRV-400DRW**
5.25" compact drive bracket with slim type DVD-RW, SD/CF reader, 2 USB ports and space for 2.5" HDD

ENVIRONMENT

Operating Temperature Range	0 to +55°C
Storage Temperature Range	0 to +70°C
Relative Humidity	5% to 95%, non-condensing



Chassis Reference Table



AREMO-4196



AREMO-3194



AREMO-2173P



RPC-500NC/L

TYPE	SLOT	MODEL	ORDERING INFO	BACKPLANE			
				Model Name	ISA	PCI/PCI-X	PICMG
4U	14-slot	RPC-500NC	RPC-500NC-14P4-3501P	PBP-14P4	9	4	1
4U	ATX M/B	RPC-500NC-MX	RPC-500NC-MX-D3501P	--	--	7	--
4U	14-slot	AREMO-4196	AREMO-4196-14P4-D3501P	PBP-14P4	9	4	1
	ATX M/B	AREMO-4196-MX	AREMO-4196-MX-D3501P	--	--	7	--
3U	ATX M/B	AREMO-3194	AREMO-3194-MX-350X	--	--	7	--
			AREMO-3194E-BX-D3501P	--	--	7	--
2U	6-slot	AREMO-2173P	AREMO-2173P-06V4-D3501P AREMO-2173P-06V4-D3502P	PBP-06V4	1	4	1
2U	uATX M/B	AREMO-2173MX	AREMO-2173MX-D3501P AREMO-2173MX-3502P	--	--	4	--
1U	3-slot	RPC-1194	RPC-1194-03P2X-2501	PBP-03P2X	--	2	1
Node	6-slot	AREMO-6163	AREMO-6163-06P3-D3501P	PBP-06P3	2	3	1
			AREMO-6163-06P4-D3501P	PBP-06P4	1	4	1
Node	8-slot	AREMO-8164	AREMO-8164-08P4-D3501P	PBP-08P4	3	4	1
Node /4U	12-slot	AREMO-4184	AREMO-4184-06P3-350X	PBP-06P3	2	3	1
Node	6-slot	SREMO96182	AREMO-6182-06P3-350X	PBP-06P3	2	3	1
			AREMO-6182-06P4-350X	PBP-06P4	1	4	1



Chassis Reference Table



AREMO-6163



AREMO-8164



AREMO-4184



AREMO-6182



PRS-1174

TYPE	SLOT	MODEL	PSU		Dimension (W)x (D)x(H)
			Model Name	Power Range	
4U	14-slot	RPC-500NC	ORION-D3501P	350W ATX, PFC, P4	482(W) x 450(D) x 177(H) mm 19"(W) x 18"(D) x 7"(H)
4U	ATX M/B	RPC-500NC-MX	ORION-D3501P	350W ATX, PFC, P4	
4U	14-slot	AREMO-4196	ORION-D3501P	350W ATX, PFC, P4	482(W) x 481(D) x 177(H) mm 19"(W) x 19"(D) x 7"(H)
	ATX M/B	AREMO-4196-MX	ORION-D3501P	350W ATX, PFC, P4	
3U	ATX M/B	AREMO-3194	ORION-B3501P	350W ATX, PFC, P4	482(W) x 488(D) x 133(H) mm 19"(W) x 19.2"(D) x 5.24"(H)
			ORION-D3501P	350W ATX, PFC, P4	
2U	6-slot	AREMO-2173P	ORION-D3501P	350W ATX, PFC, P4	482(W) x 429.2(D) x 88.6(H) mm 19"(W) x 16.9"(D) x 3.5"(H)
			ORION-D3502P	350W ATX, PFC, redundant	
2U	uATX M/B	AREMO-2173MX	ORION-D3501P	350W ATX, PFC, P4	482(W) x 429.2(D) x 88.6(H) mm 19"(W) x 17.4"(D) x 3.5"(H)
			ORION-D3502P	350W ATX, PFC, redundant	
1U	3-slot	PRC-1194	ORION-A2501	250W ATX PFC, P4	482(W) x 474(D) x 44(H) mm 19"(W) x 18.7"(D) x 1.75"(H)
Node	6-slot	AREMO-6163	ORION-D3501P	350W ATX, PFC, P4	260(W) x 420.5(D) x 172(H) mm 10.24"(W) x 16.56"(D) x 6.77"(H)
Node	8-slot	AREMO-8164	ORION-D3501P	350W PFC, ATX, P4	330(W) x 420.8(D) x 172(H) mm 12.99"(W) x 16.56"(D) x 6.77"(H)
Node /4U	12-slot	AREMO-4184	FSP350-601UA	350W PFC, ATX, P4	482(W) x 448(D) x 177(H) mm 19"(W) x 17.6"(D) x 7"(H)
Node	6-slot	AREMO-6182	FSP350-601UA	350W PFC, ATX, P4	219(W) x 446(D) x 160(H) mm 8.6"(W) x 17.6"(D) x 6.3"(H)



ESB Reference Table

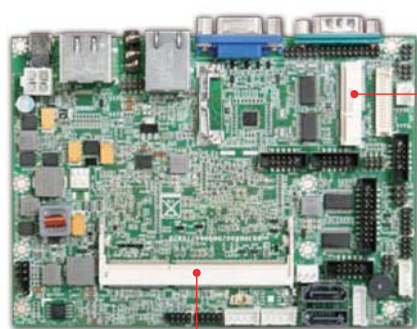


MODEL	PEB-2772	PEB-2771/2781	PEB-2770/2780	PEB-2739I	PEB-2738I	PEB-2737VLA	PEB-2131VG2A
Form Factor	3.5" Embedded	3.5" Embedded	3.5" Embedded	3.5" Embedded	3.5" Embedded	3.5" Embedded	3.5" Embedded
CPU	Intel® Atom™ D2550	Intel® Atom™ D525	Intel® Atom™ processor D510/Z450	Intel® Atom™ Z510PT/ Z520PT	Intel® Atom™ Z510PT/520PT	Intel® Atom™ Z510/ Z530	Intel® Atom™ N270
Chipset	Intel® NM10	Intel® ICH8M	Intel® ICH8M	Intel® US15WPT	Intel® US15WPT	Intel® US15W	Intel® 945GSE+ ICH7M
BIOS	Phoenix	AMI Core 8	AMI Core 8	AMI Core 8	AMI Core 8	AMI Core 8	Phoenix Award
Memory	1x DDR3 SODIMM up to 4GB	1x DDR3 SODIMM up to 2GB	1x DDR2 SODIMM up to 2GB	1x DDR2 SODIMM up to 2GB	1x DDR2 SODIMM up to 2GB	1x DDR2 SODIMM up to 2GB	1x DDR2 SODIMM up to 2GB
Expansion	1x Mini-PCle x1 socket	1x Mini-PCle x1 socket	1x PCIe x1 slot	SDVO (with PCIe x1+USB) connector/SDIO/ TPM header	SDVO (with PCIe x1+USB) connector/SDIO/ TPM header	N/A	1x Mini-PCle x1 socket
Display	VGA/HDMI/LVDS	VGA/LVDS	VGA/LVDS	SDVO/LVDS	SDVO/LVDS	VGA/LVDS	VGA/LVDS
Audio	Realtek ALC886 Audio codec	Realtek ALC892-GR HD Audio codec	Realtek ALC262-VC2-GR HD Audio codec	Realtek ALC662-GR HD Audio codec	Realtek ALC662-GR HD Audio codec	Realtek ALC262-VC2-GR HD Audio codec	Realtek ALC662-GR HD Audio codec
LAN	1x GbE	2x GbE	2x GbE	1x GbE	1x GbE	1x GbE	2x GbE
Serial Port	2x RS232 2x RS232/422/485	2x RS232 2x RS232/422/485	2x RS232 2x RS232/422/485	1x RS232 1x RS232/422/485	1x RS232 1x RS232/422/485	2x RS232	4x RS232
USB	6x USB 2.0	6x USB 2.0	6x USB 2.0	6x USB 2.0	6x USB 2.0	6x USB 2.0	7x USB 2.0
Storage Devices	2xSATA	2x SATA 1x CF	2x SATA 1x IDE 1x CF	1x SATA 1x CF 1x SDIO	1x IDE 1x CF 1x SDIO	2x SATA 1x IDE 1x CF 1x SD	2x SATA 1x CF
GPIO	8-bit	8-bit	8-bit	8-bit	8-bit	8-bit	8-bit
Others	PS/2 KB&MS	PS/2 KB&MS	PS/2 KB&MS	PS/2 KB&MS	PS/2 KB&MS	PS/2 KB&MS	PS/2 KB&MS
Dimension	146 x 102mm	146 x 102mm	146 x 102mm	146 x 102mm	146 x 102mm	146 x 102mm	146 x 102mm
Page	78	79	80	81	82	83	84



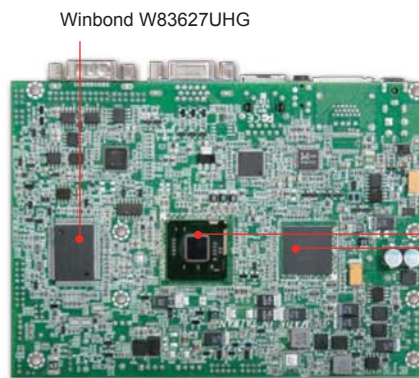
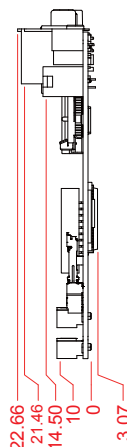
PEB-2772

Intel® Cedar Trail Atom™ Processor based 3.5' embedded Board with DDR3 SDRAM, Gigabit Ethernet, Two SATA Ports, Four COM ports and 12V DC input



SODIMM socket

Mini-PCIe x1 slot



Winbond W83627UHG

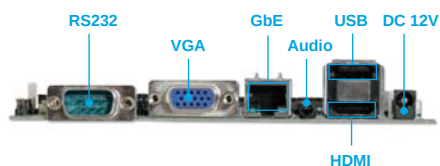
Intel® D2550
Intel® NM10

PEB-2772 takes advantage of the processor's performance and furthermore Portwell design the CPU/chipset on the backside of the board which is good for system thermal design. Customer could take this advantage to have an easy and perfect thermal solution which could solve the thermal of CPU.

FEATURES

- Intel® Atom D2550 processor
- Intel® NM10 Chipset
- One 204-pin SODIMM supports single channel DDR3 SDRAM up to 4GB
- Dual display: VGA/LVDS(24-bit)/HDMI
- One Mini-PCIe slot
- Two SATA 3Gb ports
- Four COM ports (3x RS232, 1x RS232/422/485)
- 12V DC input

REAR/I/O



ORDERING GUIDE

AB1-3791	(R).PEB-2772VGATM.Intel Cedar Trail 1.86G D2550+NM10 on Board.EBC.w/DDR3/VGA/HDMI/GbE/COM/Audio/USB
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PACKING LIST

One PEB-2772 Main Board
One Thermal Kit
One Installation CD
One SATA Cable

GENERAL

Processor	- Intel® Atom™ D2550(1.86GHz, 10W) processor in FCBGA559 package - Supports Intel® Hyper-Threading Technology, Intel® 64
Chipset	Intel® NM10 Express chipset
BIOS	Phoenix BIOS (SPI ROM)
Memory	Supports up to 4GB DDR3 800/1066 MHz SDRAM on one 204-pin SODIMM socket
Storage Devices	2x SATA II supporting up to 3.0Gb/s data transfer rate
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	- Temperature (CPU & System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	1x Mini-PCIe slot (Gen 1, 2.5 GT/s)

I/O INTERFACE

Super I/O	Winbond W83627UHG
Audio	- Intel® NM10 built-in High Definition Audio up to 96-kHz 24-bit - Realtek ALC886, 7.1+2 channel - Audio Jack on rear I/O (Line out) - Line in /Line out /Mic in on board pin header
Ethernet	- Intel® 82583V Gigabit Ethernet controller - 1x RJ45 connector on rear I/O
Serial Port	- 1x RS232 port with DB9 connector on rear I/O - 2x RS232 with on board pin headers - 1x RS232/422/485 with on board pin header
USB	- 1x USB 2.0 ports on rear I/O - 5x USB 2.0 ports on board with pitch 2.0 header - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on board header
GPIO	On board programmable 8-bit Digital I/Os

DISPLAY

Graphic Controller	- Intel® Graphics Technology provides a visually stunning experience optimized for Blu-ray and HD video with Windows Vista support - Supports DirectX 9 compliant Pixel Shader v3.0 and OGL 3.0
Display Interface	- VGA: analog resolution up to 1920x1200 on rear I/O - HDMI: resolution up to 1920x1200 on rear I/O - LVDS: Digital 24-bits LVDS resolution up to 1440x900 on board

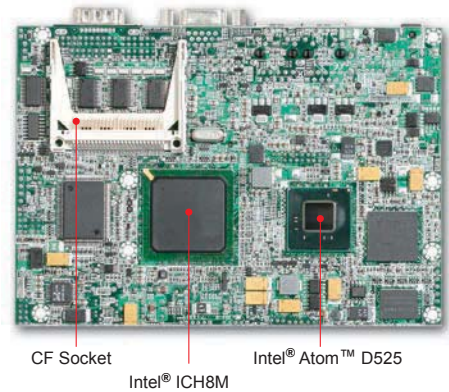
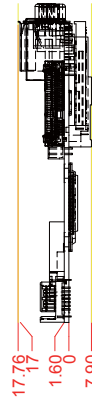
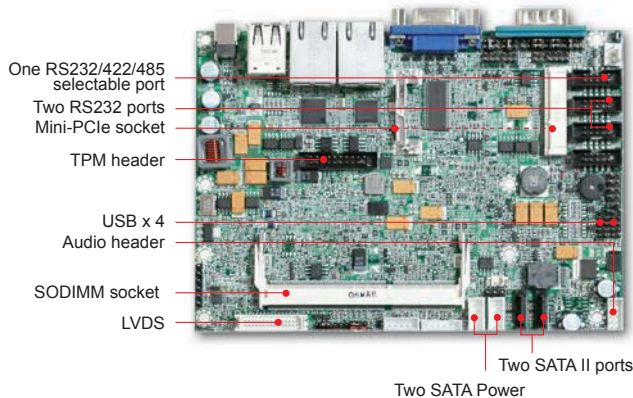
Mechanical & Environment

Dimension	146(L) x 102(W)mm; 5.75"(L) x 4.02"(W)
Power Supply	DC-12V input
Environment	- Operation Temperature: 0°C to 60°C - Storage Temperature: -20°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 100,000 hours at 40°C



PEB-2771/2781

3.5" Embedded size, based on Intel® 45nm Low Power Pineview processor with DDR3 SODIMM, dual display by VGA/LVDS, Dual GbE, Audio, COM and USB

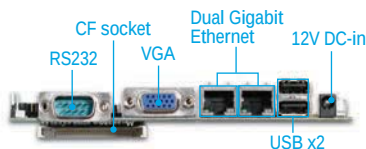


The PEB-2771/2781 takes advantage of the latest Intel® Atom™ technologies. It supports DDR3 SDRAM, dual gigabit ethernet and one expansion Mini PCI Express x1 socket. Based on Intel® Atom™ solutions, the fanless PEB-2771/2781 executes high performance with low power dissipation. Therefore, it's applied to Panel PC, Kiosk, DS, Medical, Military and industrial automation.

FEATURES

- Intel® Atom™ processor D525 and ICH8M chipset
- One 204-pin SODIMM supports DDR3 800 SDRAM up to 2GB
- Dual independent display: VGA/24-bit LVDS
- Dual Gigabit Ethernet
- Storage: One Compact Flash/Two SATA ports
- 12V DC input
- One Mini-PCIe socket

REAR I/O



ORDERING GUIDE

AB1-3563	PEB-2771VG2ATM.Intel Pineview 1.8G D525 on Board.EBC.w/DDR3/VGA/Dual GbE/COM/Audio/USB
AB1-3564	PEB-2781VG2ATM.Intel Pineview 1.66G N455 on Board.EBC.w/DDR3/VGA/Dual GbE/COM/Audio/USB

PACKING LIST

One PEB-2771/2781 Main Board
One Thermal Kit
One Installation CD
One SATA Cable
One ATX Power Cable

GENERAL

Processor	- Intel® Atom™ Processor D525 (1.80Ghz, 13W)/N455 (1.66Ghz, 6.5W) with 1M/512K L2 Cache in FCBGA559 package - DMI: 2.5 GT/s - Supports Intel® Hyper-Threading Technology, Intel® 64 Architecture, SpeedStep® Technology (N455 only), Thermal Monitoring Technology (N455 only)
Chipset	Intel® ICH8M (2.4W) supports Intel® AHCI Technology.
BIOS	AMI Core 8 BIOS
Memory	Supports up to 2GB DDR3 800 MHz SDRAM on one 204-pin SODIMM socket
Storage Devices	- 2x SATA II support 3.0Gb/s data transfer rate - 1x CompactFlash socket supports Ultra DMA100/66/33 MB/s
Watchdog Timer	Programmable via S/W from 1 sec. to 255 sec.
Hardware Monitoring	- Temperature (CPU & System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	1x Mini PCIExpress x1 socket (Gen 1, 2.5 GT/s)

I/O INTERFACE

Super I/O	Winbond W83627UHG
Audio	- Intel® ICH8M built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC892-GR HDA codec, 7.1+2 channels - Audio on board header with Line-out and Mic-in
Ethernet	- Intel® WG82567V gigabit phy and 82583V Gigabit Ethernet controllers - 2x RJ45 connectors on rear I/O
Serial Port	- 1x RS232/422/485 port with DB9 connector on rear I/O - 2x RS232 with on board pin headers - 1x RS232/422/485 with on board pin header
USB	- 2x USB 2.0 ports on rear I/O - 4x USB 2.0 ports on board with pitch 2.0 header - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on board header
GPIO	On board programmable 8-bit Digital I/Os

DISPLAY

Graphic Controller	- Intel® ICH8M Integrated GMA 3150 Graphics supports full hardware acceleration of video decode standards MPEG-2 - Supports Intel® Dynamic Video Memory Technology (Intel® DVM 4.0) - XILINX XC3S200AN LVDS Transmitter
Display Interface	- LVDS: Dual channel 24-bit LVDS - CRT: One DB-15 connector on rear I/O, resolution up to 2048 x 1536 (QXGA)

Mechanical & Environment

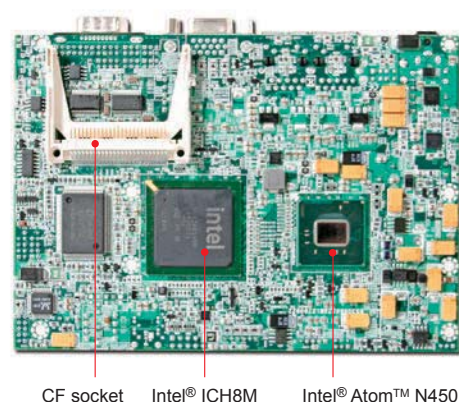
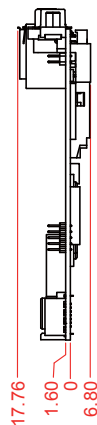
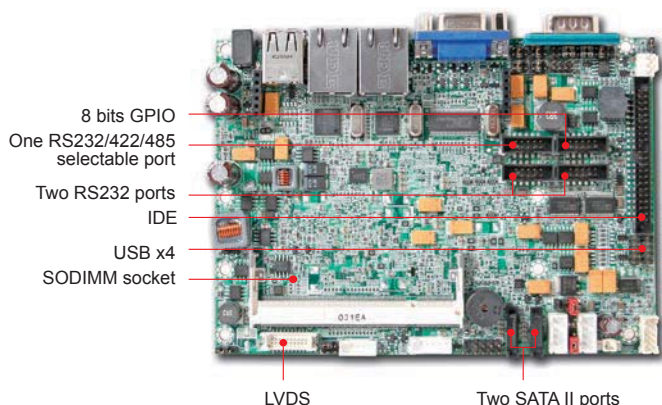
Dimension	146(L) x 102(W)mm; 5.75"(L) x 4.02"(W)
Power Supply	DC-12V input
Environment	- Operation Temperature: 0°C to 60°C - Storage Temperature: -20°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 120,000 hours at 40°C





PEB-2770/2780

3.5" Embedded size, based on Intel® 45nm Low Power Pineview processor with DDR2 SODIMM, dual display by VGA/LVDS, Dual GbE, Audio, COM and USB

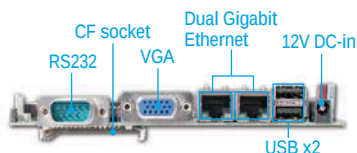


The PEB-2770/2780 takes advantage of the latest Intel® Atom™ technologies. It supports DDR2 SDRAM, dual gigabit ethernet and one expansion PCI Express x1 female header. Based on Intel® Atom™ solutions, the fanless PEB-2770/2780 executes high performance with low power dissipation. Therefore, it's applied to Panel PC, Kiosk, DS, Medical, Military and industrial automation.

FEATURES

- Intel® Atom™ processor D510/N450 and ICH8M chipset
- MPEG2 Decode in HW; Dual independent display: VGA/18-bit LVDS
- Dual Gigabit Ethernet
- Customization (Extension card): BTB connector with PCIe x1 signal
- Storage: One SATA/One CompactFlash/Two SATA ports
- 12V DC input

REAR I/O



ORDERING GUIDE

AB1-3588	PEB-2770VG2A.Intel Pineview 1.66G D510 on Board without Thermal module.EBC.w/VGA/Dual GbE/COM/Audio/USB
AB1-3589	PEB-2780VG2A.Intel Pineview 1.66G N450 on Board without Thermal module.EBC.w/VGA/Dual GbE/COM/Audio/USB

PACKING LIST

One PEB-2770/2780 Main Board
One Thermal Kit
One Installation CD
One SATA Cable
One ATX Power Cable

GENERAL

Processor	- Intel® Atom™ Processor D510 (1.66Ghz, 13W)/N450 (1.66Ghz, 5.5W) with 1M/512K L2 Cache in FCBGA437 package - DMI: 2.5 GT/s - Supports Intel® Hyper-Threading Technology, Intel® 64 Architecture, SpeedStep® Technology (N450 only), Thermal Monitoring Technology (N450 only)
Chipset	Intel® ICH8M (2.4W) supports Intel® AHCI Technology.
BIOS	AMI Core 8 BIOS
Memory	Supports up to 2GB DDR2 667 MHz SDRAM on one 200-pin SODIMM socket
Storage Devices	- 2x SATA II supports 3.0Gb/s data transfer rate - 1x CompactFlash socket supports Ultra DMA100/66/33 MB/s - 1x IDE connector supports Ultra DMA100/66/33 MB/s
Watchdog Timer	Programmable via S/W from 1 sec. to 255 sec.
Hardware Monitoring	- Temperature (CPU & System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	1x PCIExpressx1 female header (Gen 1, 2.5 GT/s)

I/O INTERFACE

Super I/O	Winbond W83627UHG
Audio	- Intel® ICH8M built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC262-VC2-GR HDA codec, 5.1 channels - Audio on board header with Line-in, Line-out and Microphone
Ethernet	- Intel® WG82567V gigabit phy and 82583V Gigabit Ethernet controllers - 2x RJ45 connectors on rear I/O
Serial Port	- 1x RS232/422/485 port with DB9 connector on rear I/O - 2x RS232 with on board pin headers - 1x RS232/422/485 with on board pin header
USB	- 2x USB 2.0 ports on rear I/O - 4x USB 2.0 ports on board with pitch 2.0 header - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on board header
GPIO	On board programmable 8-bit Digital I/Os

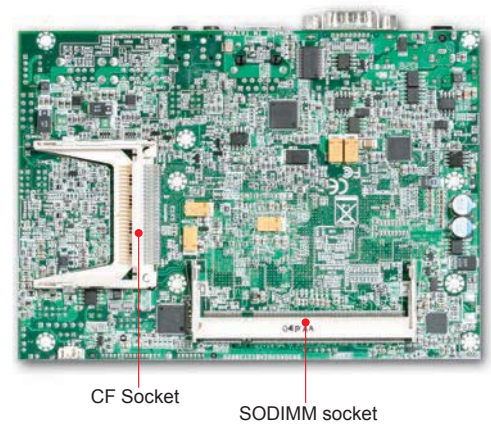
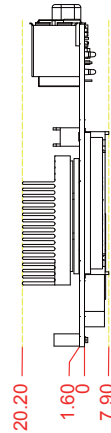
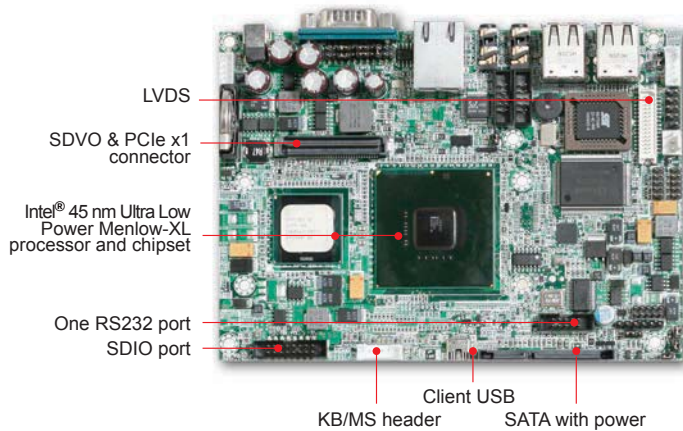
DISPLAY

Graphic Controller	- Intel® D510/N450 integrated Generation 3.5/2.5 graphics, supports DX9 Graphics up to 400MHz/200MHz - Supports Intel® Dynamic Video Memory Technology (Intel® DVMT 3.0)
Display Interface	- LVDS: Single channel 18-bit LVDS, resolution up to 1366x768, 18bpp - CRT: One DB-15 connector on rear IO, resolution up to 2048 x 1536 (QXGA)

Mechanical & Environment

Dimension	146(L) x 102(W)mm; 5.75"(L) x 4.02"(W)
Power Supply	DC-12V input
Environment	- Operation Temperature: 0°C to 60°C - Storage Temperature: -20°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 120,000 hours at 40°C



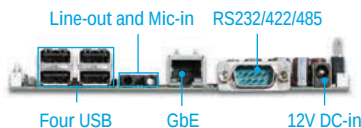


The PEB-2739I takes advantage of the latest Intel® Atom™ technologies. It supports DDR2 SDRAM, one gigabit ethernet and one expansion Multi function connector. Based on Intel® Atom™ solutions, the fanless PEB-2739I executes high performance with low power dissipation. Therefore, it's applied to Panel PC, Kiosk, Medical, and industrial automation.

FEATURES

- Intel® Atom™ processor Z500PT series and System Controller Hub US15WPT
- One 200-pin SODIMM supports DDR2 SDRAM up to 2GB
- Dual independent display: SDVO (by VGA/DVI/LVDS daughter card) and 24bit LVDS
- One Gigabit Ethernet
- Trusted Platform Module (TPM) ready (addition to board is optional)
- Customization (Extension card): BTB connector with SDVO/USB/PCIe x1 signal and SDIO pin header
- Storage: One SATA II/One CompactFlash/One USB Flash/One SDIO
- 12V DC input

REAR/I/O



ORDERING GUIDE

AB1-3557	PEB-2739I-1100.Intel Atom Z510PT 1.1G on Board. EBC.w/SDVO/COM/Audio/USB/LAN/SATA/DC-12V
AB1-3558	PEB-2739I-1330.Intel Atom Z520PT 1.33G on Board. EBC.w/SDVO/COM/Audio/USB/LAN/SATA/DC-12V

PACKING LIST

One PEB-2739I Main Board
One 2-in-1 Heatsink
One Installation CD
One SATA Cable

GENERAL

Processor	- Intel® Atom™ Processor Z510PT (1.1GHz, 2.2W)/Z520PT (1.33GHz, 2.2W) with 512K L2 Cache in FCBGA437 package - FSB: 400/533MHz - Supports Enhanced Intel SpeedStep®, Thermal Monitoring Technology
Chipset	- Intel® System Controller Hub US15WPT (2.3W)
BIOS	AMI Core 8 BIOS
Memory	- Supports up to 2GB DDR2 400/533 MHz SDRAM on one 200-pin SODIMM socket
Storage Devices	- 1x SATA II supports 3.0Gb/s data transfer rate by 88SA8052B1 PATA to SATA Bridge - 1x CompactFlash socket supports Ultra DMA100/66/33 MB/s - 1x SDIO box header supports 24MHz (SDIO Revision 1.1)
Watchdog Timer	- Programmable via S/W from 1 sec. to 255 sec.
Hardware Monitoring	- Temperature (CPU & System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	1x Multi function connector supports SDVO/PCI Express x1/USB

I/O INTERFACE

Super I/O	Winbond W83627DHG
Audio	- Intel® US15WPT built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC662-GR HDA codec, 5.1 channels - Audio Jacks on rear I/O with Line-out and Mic-in
Ethernet	- Intel® WG82574IT Gigabit Ethernet controller - 1x RJ45 connector on rear I/O
Serial Port	- 1x RS232/422/485 port with DB9 connector on rear I/O - 1x RS232 with on board pin header
USB	- 4x USB 2.0 ports on rear I/O - 2x USB 2.0 ports on board with pitch 2.0 header - 1x Client USB port on board edge - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
GPIO	On board programmable 8-bit Digital I/Os

DISPLAY

Graphic Controller	Intel® System Controller Hub US15WPT integrated Intel® GMA 500 supports full hardware acceleration of video decode standards, such H.264, MPEG2, MPEG4 and WMV9
Display Interface	LVDS: Single channel 24-bit LVDS

Mechanical & Environment

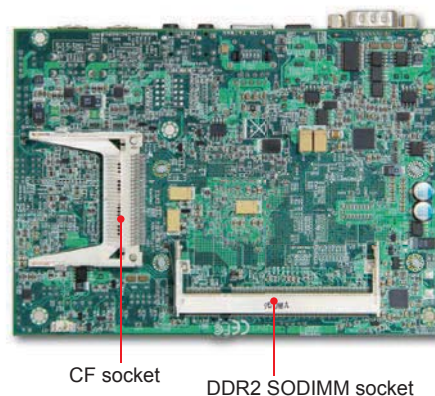
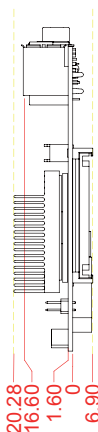
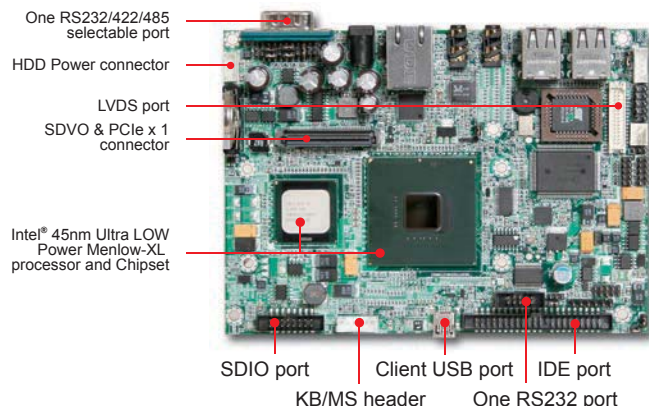
Dimension	146(L) x 102(W)mm; 5.75"(L) x 4.02"(W)
Power Supply	DC-12V input
Environment	- Operation Temperature: -40°C to 80°C - Storage Temperature: -40°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 120,000 hours at 40°C





PEB-2738I

Intel® 45nm Ultra Low Power Menlow-XL processor and chipset based 3.5" embedded board with dual display, Audio, USB and SDIO

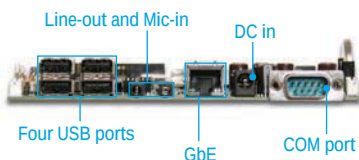


PEB-2738I takes advantage of the latest Intel® Atom™ technologies. It supports DDR2 SDRAM, one gigabit ethernet and one expansion Multi function connector. Based on Intel® Atom™ solutions, the fanless PEB-2738I executes high performance with low power dissipation. Therefore, it's applied to Panel PC, Kiosk, Medical, and industrial automation.

FEATURES

- Intel® Atom™ processor Z500PT series and System Controller Hub US15WPT
- One 200-pin SODIMM supports DDR2 SDRAM up to 2GB
- Dual independent display: SDVO (by VGA/DVI/LVDS daughter card) and 24-bit LVDS
- One Gigabit Ethernet
- Trusted Platform Module (TPM) ready (addition to board is optional)
- Customization (Extension card): BTB connector with SDVO/USB/PCIe x1 signal and SDIO pin header
- Storage: One PATA/One CompactFlash/One USB Flash/One SDIO
- 12V DC input

REAR I/O



ORDERING GUIDE

AB1-3278	PEB-2738I-1100.Intel Atom Z510PT 1.1G on Board. EBC.w/SDVO/COM/Audio/USB/LAN/DC-12V
AB1-3406	PEB-2738I-1330.Intel Atom Z520PT 1.33G on Board. EBC.w/SDVO/COM/Audio/USB/LAN/DC-12V

PACKING LIST

One PEB-2738I Main Board
One 2-in-1 Heatsink
One Installation CD
One IDE Cable

GENERAL

Processor	- Intel® Atom™ Processor Z510PT (1.1GHz, 2.2W)/Z520PT (1.33GHz, 2.2W) with 512K L2 Cache in FCBGA437 package - FSB: 400/533MHz - Supports Enhanced Intel SpeedStep®, Thermal Monitoring Technology
Chipset	- Intel® System Controller Hub US15WPT (2.3W)
BIOS	AMI Core 8 BIOS
Memory	- Supports up to 2GB DDR2 400/533 MHz SDRAM on one 200-pin SODIMM socket
Storage Devices	- 1x IDE connector supports Ultra DMA100/66/33 MB/s - 1x CompactFlash socket supports Ultra DMA100/66/33 MB/s - 1x SDIO box header supports 24MHz (SDIO Revision 1.1)
Watchdog Timer	- Programmable via S/W from 1 sec. to 255 sec.
Hardware Monitoring	- Temperature (CPU & System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	1x Multi function connector supports SDVO/PCI Express x1/USB

I/O INTERFACE

Super I/O	Winbond W83627DHG
Audio	- Intel® US15WPT built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC662-GR HDA codec, 5.1 channels - Audio Jacks on rear I/O with Line-out and Mic-in
Ethernet	- Intel® WG82574IT Gigabit Ethernet controller - 1x RJ45 connector on rear I/O
Serial Port	- 1x RS232/422/485 port with DB9 connector on rear I/O - 1x RS232 with on board pin header
USB	- 4x USB 2.0 ports on rear I/O - 2x USB 2.0 ports on board with pitch 2.0 header - 1x Client USB port on board edge - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on board header
GPIO	On board programmable 8-bit Digital I/Os

DISPLAY

Graphic Controller	Intel® System Controller Hub US15WPT integrated Intel® GMA 500 supports full hardware acceleration of video decode standards, such H.264, MPEG2, MPEG4 and WMV9
Display Interface	LVDS: Single channel 24-bit LVDS

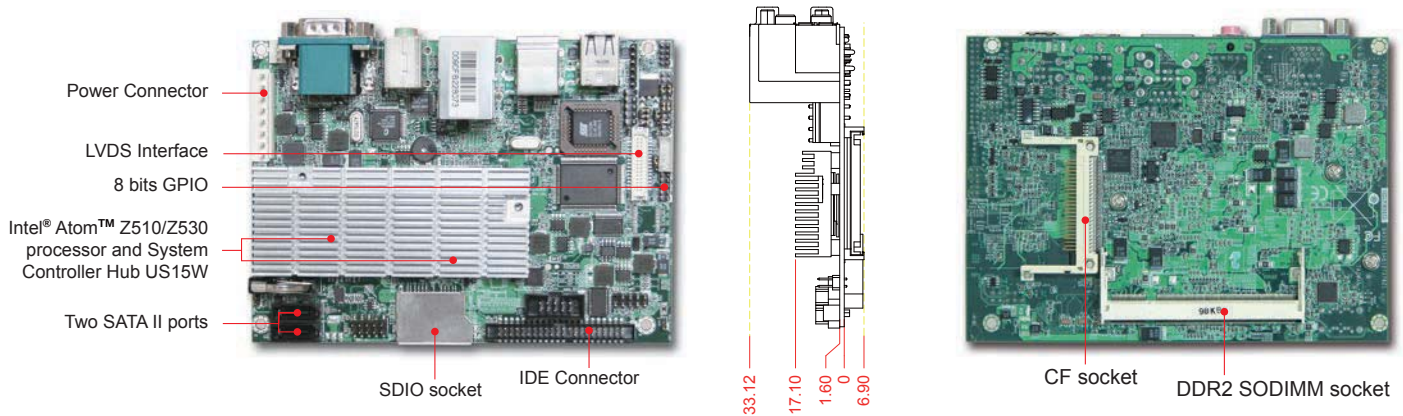
Mechanical & Environment

Dimension	146(L) x 102(W)mm; 5.75"(L) x 4.02"(W)
Power Supply	DC-12V input
Environment	- Operation Temperature: -40°C to 80°C - Storage Temperature: -40°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 120,000 hours at 40°C



PEB-2737VLA

Intel® 45nm Ultra Low Power Atom™ processor based 3.5" embedded board with VGA, LVDS, Gigabit Ethernet, Audio, USB and SDIO

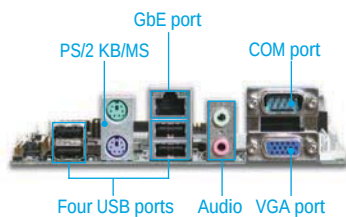


PEB-2737VLA takes advantage of the latest Intel® Atom™ technologies. It supports DDR2 SDRAM, and one gigabit ethernet. Based on Intel® Atom™ solutions, the fanless PEB-2737VLA executes high performance with low power dissipation. Therefore, making it the ideal solution for Panel PCs, Kiosks, and Industrial Automation.

FEATURES

- Intel® Atom™ processor Z510/Z530 and System Controller Hub US15W (TDP<5W)
- One 200-pin SODIMM supports DDR2 SDRAM up to 2GB
- One Type II CompactFlash, one IDE & two SATA ports
- Dual independent display: VGA and 24-bit LVDS
- One Gigabit Ethernet

REAR I/O



ORDERING GUIDE

AB1-3218	PEB-2737VLA-1100.Intel Atom 1.1G on Board. EBC.w/VGA/LAN/COM/Audio/USB
AB1-3241	PEB-2737VLA-1600.Intel Atom 1.6G on Board. EBC.w/VGA/LAN/COM/Audio/USB

PACKING LIST

One PEB-2737VLA Main Board
One 2-in-1 Heatsink
One Installation CD
One ATX Power Cable

GENERAL

Processor	- Intel® Atom™ Processor Z510 (1.1GHz, 2.2W)/Z530 (1.5GHz, 2W) with 512K L2 Cache in PBGA441 package - FSB: 400/533MHz - Supports Enhanced Intel SpeedStep®, Thermal Monitoring Technology
Chipset	Intel® System Controller Hub US15W (2.3W)
BIOS	AMI Core 8 BIOS
Memory	- Supports up to 2GB DDR2 400/533 MHz SDRAM on one 200-pin SODIMM socket
Storage Devices	- 2x SATA II support 3.0Gb/s data transfer rate by JMB362 SATA Host - 1x IDE connector supports Ultra DMA100/66/33 MB/s - 1x CompactFlash socket supports Ultra DMA100/66/33 MB/s - 1x SD socket supports 24MHz (SDIO Revision 1.1)
Watchdog Timer	- Programmable via S/W from 1 sec. to 255 sec.
Hardware Monitoring	- Temperature (CPU & System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)

I/O INTERFACE

Super I/O	Winbond W83627DHG
Audio	- Intel® US15W built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC262-VC2-GR HDA codec, 2.1 channels - Audio Jack on rear IO with Line-out and Mic-in
Ethernet	- Realtek RTL8111C-VC-GR Gigabit Ethernet controller - 1x RJ45 connector on rear I/O
Serial Port	- 1x RS232 port with DB9 connector on rear I/O - 1x RS232 with on board pin header
USB	4x USB 2.0 ports on rear I/O 2x USB 2.0 ports on board with pitch 2.0 header 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse connector on rear I/O
GPIO	On board programmable 8-bit Digital I/Os

DISPLAY

Graphic Controller	- Intel® System Controller Hub US15W integrated Intel® GMA 500 supports full hardware acceleration of video decode standards, such H.264, MPEG2, MPEG4 and WMV9 - Chronitel CH7317A-TF/CH7317B SDVO to RGB DAC
Display Interface	- LVDS: Single channel 24-bit LVDS - CRT: One DB-15 connector on rear I/O, resolution up to 1920x1200 (WUXGA)

Mechanical & Environment

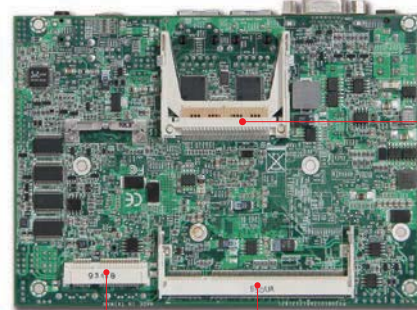
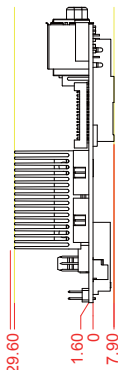
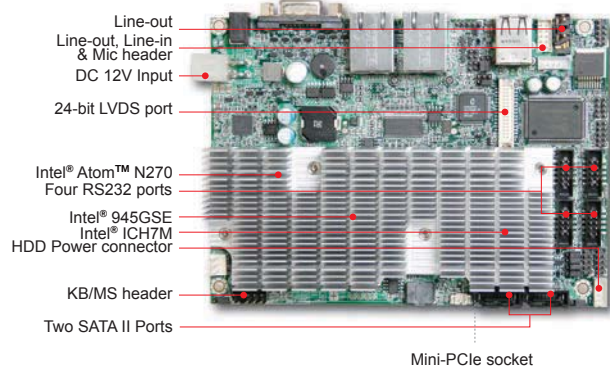
Dimension	146(L) x 102(W)mm; 5.75"(L) x 4.02"(W)
Power Supply	DC-12V input
Environment	- Operation Temperature: 0°C to 60°C - Storage Temperature: -20°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 120,000 hours at 40°C





PEB-2131VG2A

3.5" Embedded size, based on Intel® Atom™ N270 Processor with DDR2 SDRAM, Dual Display by VGA/LVDS, Gigabit Ethernet, Four Power COM Ports and Audio

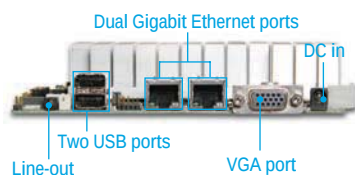


PEB-2131VG2A takes advantage of the latest Intel® Atom™ technologies. It supports DDR2 SDRAM, dual gigabit ethernet and one expansion Mini PCI-Express x1 socket. Based on the leading Intel® Atom™ solution, PEB-213VG2A has low power dissipation with high performance necessary for fanless models making it perfect for applications such as the Panel PCs and Kiosks as well as in Industrial Automation.

FEATURES

- Intel® Atom™ N270 and 945GSE platform that provides cost effective solution
- SATA and CF interfaces provide cost efficient storage
- Supports one SODIMM socket and up to 2GB memory size
- Mini-PCI Express and power COM ports provide flexibility
- Dual Gigabit Ethernet (10/100/1G) with RJ-45 connector
- High Definition audio with 2-channel amplifier@6W
- Low profile rear I/O supports thin client application

REAR/I/O



ORDERING GUIDE

AB1-3324	PEB-2131VG2A.ESB.N270.945GSE.ICH7M.DDR2 SDRAM/VGA/LVDS/Dual GbE/Audio
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PACKING LIST

One PEB-2131VG2A 3.5" Main Board
One Installation CD
One SATA Cable
One SATA Power Cable

GENERAL

Processor	- Intel® Atom™ N270 processor 1.6 GHz (2.5W) and 512KB Cache in FC-BGA package - FSB 533 MHz - Supports Intel® Hyper-Threading and SpeedStep Technology
Chipset	- Intel® 945GSE Graphics and Memory Controller Hub (6W), Intel® Gen 3.5 Integrated Graphics Engine. - Intel® ICH7M (2.5W), Intel® AHCI Technology.
BIOS	Phoenix Award BIOS
Memory	Supports up to 2GB DDR2 400/533 MHz SDRAM on one 200-pin SODIMM socket
Storage Devices	- 2x SATA II support 3.0Gb/s data transfer rate - 1x CompactFlash socket supports Ultra DMA100/66/33 MB/s
Watchdog Timer	Programmable via S/W from 1 sec. to 255 sec.
Hardware Monitoring	- Temperature (CPU & System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	1x Mini-PCI Express socket (Gen 1, 2.5 GT/s)

I/O INTERFACE

Super I/O	Winbond W83627UHG
Audio	- Intel® ICH7M built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC662-GR HDA codec, 5.1 channels - Audio Jack on rear I/O with Line-out - Audio on board box header with Line-in, Line-out and Mic-in
Ethernet	- Realtek RTL8111C-VC-GR Gigabit Ethernet controller - 2x RJ45 connectors on rear I/O
Serial Port	4x RS232 ports on board pin header
USB	- 2x USB 2.0 ports on rear I/O - 5x USB 2.0 ports on board with pitch 2.0 header - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	PS/2 Keyboard & Mouse with on board pin header
GPIO	On board programmable 8-bit Digital I/Os

DISPLAY

Graphic Controller	- Intel® 945GSE integrated Intel® GMA 950 supports dynamic video memory technology (Intel® DVM 3.0), Microsoft DirectX 9.1 operating system - Chronitel CH7308B-TF SDVO to LVDS Transmitter
Display Interface	- LVDS: Dual channel 24-bit LVDS, resolution up to 1600x1200 (UXGA) - CRT: One DB-15 connector on rear I/O, resolution up to 2048x1536 (QXGA)

Mechanical & Environment

Dimension	146(L) x 102(W)mm; 5.75"(L) x 4.02"(W)
Power Supply	DC-12V input
Environment	- Operation Temperature: 0°C to 60°C - Storage Temperature: -20°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 120,000 hours at 40°C





NANO-ITX Reference Table

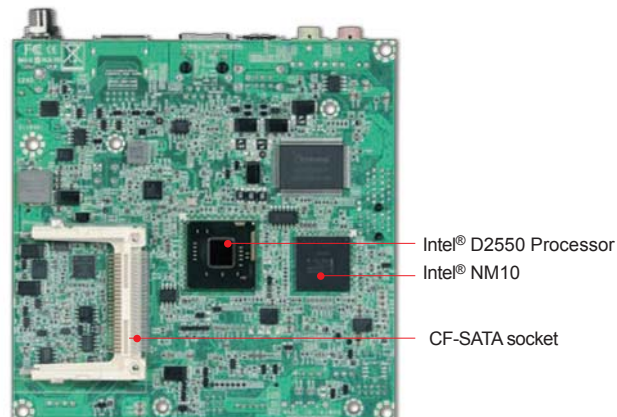
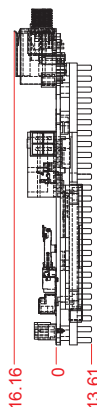
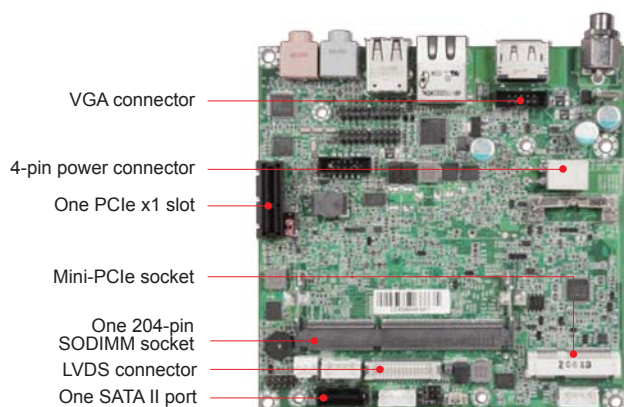


MODEL	NANO-5050	NANO-6040	NANO-8050
Form Factor	NANO-ITX	NANO-ITX	NANO-ITX
CPU	Intel® Atom™ D2550	Intel® Atom™ E6X0T	Intel® Core™ 2 Duo
Chipset	Intel® NM10	Intel® EG20T	Intel® GS45+ICH9M
BIOS	Phoenix UEFI	AMI UEFI	AMI Core 8
Memory	1x DDR3 SODIMM up to 4GB	DDR2 on board up to 2GB	1x DDR2 SODIMM up to 2GB
Expansion	1x PCIe x1 slot 1x Mini-PCIe x1 socket	1x PCIe x1 slot 1x Mini-PCIe x1 socket	1x PCIe x1 slot
Display	VGA/LVDS/DP	VGA/LVDS	SDVO/LVDS
Audio	Realtek ALC886-GR HD Audio codec	Realtek ALC892-GR HD Audio codec	Realtek ALC262-VC2-GR HD Audio codec
LAN	1x GbE	1x GbE	1x GbE
Serial Port	1x RS232/422/485	1x RS232/422/485	1x RS232/422/485
USB	6x USB 2.0	6x USB 2.0	6x USB 2.0
Storage Devices	1x SATA 1x CF-SATA	2x SATA 1x SD	2x SATA 1x CF
GPIO	8-bit	8-bit	8-bit
Dimension	120 x 120mm	120 x 120mm	120 x 120mm
Page	86	87	88



NANO-5050

Intel® Atom™ D2550 processor based NANO-ITX Board with dual display, Gigabit Ethernet, Audio, USB, CF-SATA and SATA

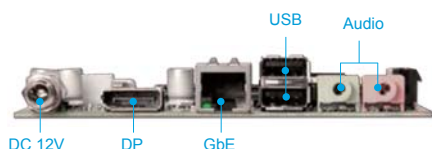


NANO-5050 adopts latest Intel® Atom™ D2550 CPU and NM10 chipset which is for the low power compact size system. The new architecture integrates the 3D graphics engine and memory controller. It's suitable for Medical and Networking applications.

FEATURES

- Intel® Atom™ D2550 1.86GHz processor based on Intel® NM10 platform
- One 204-pin SODIMM supports DDR3 up to 4GB
- Multiple display by VGA, DP, single channel 24 bit LVDS
- Supports one CF-SATA socket and one SATA port
- One Mini-PCIe socket and PCIe x1 slot for expansion
- Supports DC 12V input

REAR I/O



ORDERING GUIDE

AB1-3863	(R).NANO-5050. Nano-ITX ESB. Intel ATOM D2550 1.86GHz.w/DDR3 SDRAM/VGA/LVDS/DP/GbE LAN/CF-SATA
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PACKING LIST

One NANO-5050 NANO-ITX Main Board
One passive Heatsink
One Installation CD

GENERAL

Processor	- Intel® Atom™ Processor D2550 (1.86GHz, 10W) with 1MB L2 Cache in FCBGA559 package - FSB: 400/533MHz - Supports Intel® Hyper-Threading Technology
Chipset	Intel® NM10 Express chipset
BIOS	Phoenix uFEI BIOS (SPI ROM)
Memory	Supports up to 4GB DDR3 800/1066 MHz SDRAM on one 204-pin SODIMM socket
Storage Devices	- 1x CF-SATA (supports CF and CF-SATA card) - 1x SATA supports 3Gb/s data transfer rate
Watchdog Timer	- Programmable via S/W from 1 sec. to 255 sec.
Hardware Monitoring	- Temperature (CPU & System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	- 1x PCI Expressx1 slot (Gen 1, 2.5 GT/s) - 1x Mini-PCIe slot (Gen 1, 2.5 GT/s)

I/O INTERFACE

Super I/O	Winbond W83627DHG-PT
Audio	- Intel® NM 10 built-in High Definition Audio up to 96-kHz 24-bit - Realtek ALC886-GR HDA codec, 7.1+2 channels Audio Jack on rear I/O with Line-out and Mic-in
Ethernet	- Intel® 82583V Gigabit Ethernet controller - 1x RJ45 connector on rear I/O
Serial Port	1x RS232/422/485 on board connector
USB	- 2x USB 2.0 ports on rear I/O - 4x USB 2.0 ports on board with pitch 2.0 header - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
GPIO	On board programmable 8-bit Digital I/Os

DISPLAY

Graphic Controller	- Intel® Atom™ D2550 integrated Intel® GMA 3650 supports full hardware acceleration of video decode standards, such as DirectX 9
Display Interface	- LVDS: Single channel 24bit LVDS on board connector, resolution up to 1440x900 - CRT: One on-board DB-15 connector, resolution up to 1920x1200 (WUXGA) - DP: One DP port on rear I/O, resolution up to 2560x1600

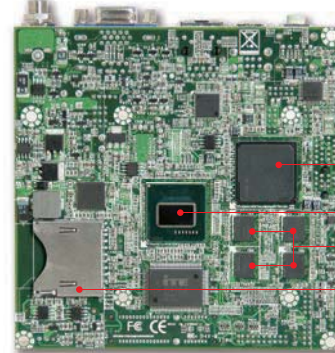
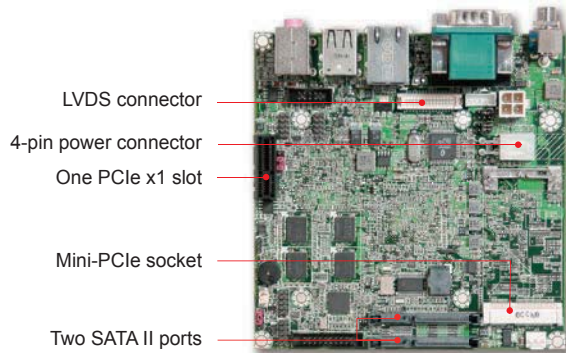
Mechanical & Environment

Dimension	120(L) x 120(W)mm; 4.72"(L) x 4.72"(W)
Power Supply	DC-12V input
Environment	- Operation Temperature: 0°C to 55°C - Storage Temperature: -20°C to 85°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 120,000 hours at 40°C



NANO-6040

Intel® Atom™ E6X0T processor based NANO-ITX Board with dual display, Gigabit Ethernet, Audio, USB, CAN, SD and SATA

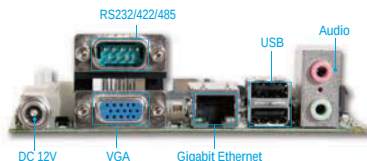


NANO-6040 adopts Intel's latest wide temperature Atom™ processors, which is for the small ultra low power form factor. The new architecture integrates the 3D graphics engine and memory controller making it suitable for critical environments. The board also comes equipped with a CAN bus connector for vehicle application.

FEATURES

- Intel® Atom™ E6X0T processor based on Intel® EG20T platform
- Dual independent display: VGA and single channel 18/24-bit LVDS
- One SD socket, two SATA II ports, one Gigabit Ethernet
- Supports iTPM function for more secure platforms
- One Mini-PCle socket and PCIe x1 slot for Expansion
- Supports DC 12V input

REAR I/O



ORDERING GUIDE

AB1-3745	(R).NANO-6040-1600-1024.Nano-ITX ESB.Intel Tunnel Creek E680T 1.6GHz.w/1GB SDRAM/VGA/LVDS/GbE LAN/Audio/USB
AB1-3746	(R).NANO-6040L-1000-1024.Nano-ITX ESB.Low profile type.Intel Tunnel Creek E640T 1.0GHz.w/1GB SDRAM/VGA/LVDS/GbE LAN/Audio/USB
AB1-3747	(R).NANO-6040L-1600-1024.Nano-ITX ESB.Low profile type.Intel Tunnel Creek E680T 1.6GHz.w/1GB SDRAM/VGA/LVDS/GbE LAN/Audio/USB

PACKING LIST

One NANO-6040 NANO-ITX Main Board
One passive Heatsink
One Installation CD

GENERAL

Processor	- Intel® Atom™ E620T (600MHz,3.3W), E640T (1.0GHz, 3.6W), E660T(1.33GHz, 3.6W), E680T (1.6GHz, 4.5W) with 512K L2 Cache in FCBGA676 - FSB: 400MHz - Supports Intel® Virtualization Technology (VT-x), Intel® Thermal Monitoring Technology, Enhanced Intel SpeedStep® Technology, Hyper-Threading Technology
Chipset	Intel® Platform Controller Hub EG20T (1.55W)
BIOS	AMI UEFI BIOS
Memory	Supports up to 2GB DDR2 667/800 MHz on-board SDRAM
Storage Devices	- 2x SATA II support 3.0Gb/s data transfer rate - 1x SD socket supports 24MHz (SDIO Revision 1.1)
Watchdog Timer	Programmable via S/W from 1 sec. to 255 sec.
Hardware Monitoring	- Temperature (CPU & System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	1x PCI Expressx1 slot (Gen 1, 2.5 GT/s) 1x Mini PCI Express socket (Gen 1, 2.5 GT/s)

I/O INTERFACE

Super I/O	ITE IT8783F
Audio	- Intel® processor built-in High Definition Audio up to 192-kHz 24-bit - Realtek ALC892-GR HDA codec, 7.1 channels - Audio Jack on rear I/O with Line-out and Mic-in (NANO-6040) - Audio Jack on rear I/O with Line-out (NANO-6040L) - Audio on board header with Line-out and Mic-in
Ethernet	- Intel® WG82574IT Gigabit Ethernet controller - 1x RJ45 connector on rear I/O
Serial Port	- 1x RS232/422/485 port with DB-9 connector on rear I/O (NANO-6040) - W/o serial port on rear I/O (NANO-6040L)
USB	- 2x USB 2.0 ports on rear I/O - 4x USB 2.0 ports on board with pitch 2.0 header - 480 Mb/s bus handles high-speed/full-speed/low-speed data ranges
GPIO	On board programmable 8-bit Digital I/Os
Others	TPM header, I2C header, CAN bus header

DISPLAY

Graphic Controller	- Intel® processors integrated graphic engine supports frequency up to 400MHz, OpenGL ES2.0, OpenVG 1.1 - Chronitel CH7317B-TF SDVO to RGB DAC
Display Interface	- LVDS: single channel 18/24-bit LVDS up to 1280x768 (WXGA) - CRT: resolution up to 1280 x1024 (SXGA)

Mechanical & Environment

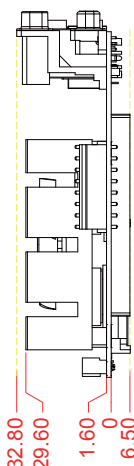
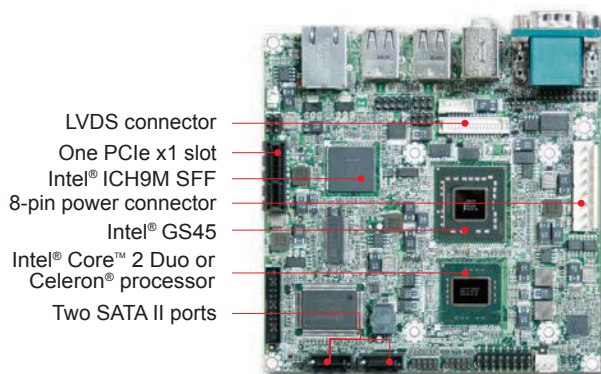
Dimension	120(L) x 120(W)mm; 4.72"(L) x 4.72"(W)
Power Supply	DC-12V input
Environment	- Operation Temperature: -40°C to 80°C - Storage Temperature: -40°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	126,104 hours at 40°C





NANO-8050

Leading Intel® latest ULV Mobile SFF 45nm Core™ 2 Duo or Celeron® M Processor based NANO-ITX with DDR2 SODIMM, Dual Displays, Gigabit Ethernet, Audio, USB

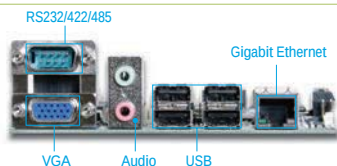


NANO-8050 adopts Intel® Small Form Factor (SFF) mobile chipset and takes advantage of leading Intel® Core™ 2 Duo/Celeron® M technologies with high performance, built-in graphics media accelerator (GMA) 4500MHD graphics engine. NANO-8050 supports 3D performance and dual display by VGA and LVDS. This compact, low heat model is ideal for Medical and DS applications.

FEATURES

- Intel® Ultra Low Voltage Mobile 45nm Core™ 2 Duo or Celeron® M Processor
- One 200-pin SODIMM supports DDR2 800/667MHz up to 2GB
- Dual Display: VGA and 24-bit LVDS
- One Intel® Gigabit Ethernet port
- Supports iTPM function for more secure platforms

REAR/I/O



ORDERING GUIDE

AB1-3266	NANO-8050-1200.Nano-ITX ESB.Intel Core 2 Duo SU9300 1.2GHz.w/DDR2 SDRAM/VGA/LVDS/Dual Display/GbE LAN/Audio
AB1-3280	NANO-8050-2260.Nano-ITX ESB.Intel Core 2 Duo SP9300 2.26GHz.w/DDR2 SDRAM/VGA/LVDS/Dual Display/GbE LAN/Audio
AB1-3281	NANO-8050-1860.Nano-ITX ESB.Intel Core 2 Duo SL9400 1.86GHz.w/DDR2 SDRAM/VGA/LVDS/Dual Display/GbE LAN/Audio
AB1-3355	NANO-8050-C1203.Nano-ITX ESB.Intel Celeron ULV723 1.2GHz.w/DDR2 SDRAM/VGA/LVDS/Dual Display/GbE LAN/Audio
AB1-3373	NANO-8050-C1202.Nano-ITX ESB.Intel Celeron ULV722 1.2GHz.w/DDR2 SDRAM/VGA/LVDS/Dual Display/GbE LAN/Audio
AA1-3078	PER-4110R.1 Slot Riser Card.PCIEx1 to PCIEx1

PACKING LIST

One NANO-8050 NANO-ITX Main Board
One Active or Passive Heatsink depends on CPU sku
One Installation CD
One 8 pin ATX Power Cable



GENERAL

Processor	- Intel® Core™ 2 Duo, and Celeron® mobile processors up to 2.26GHz - FSB: 800MHz - Supports Intel® Virtualization Technology (VT-x), Intel® Trusted Execution Technology, Enhanced Intel SpeedStep® Technology (SP9300)
Chipset	- Intel® 82GS45 Graphics and Memory Controller Hub (12W) - Intel® ICH9M SFF I/O Controller Hub (2.5W)
BIOS	AMI Core 8 BIOS
Memory	Supports up to 2GB DDR2 667/800 MHz SDRAM on one 200-pin SODIMM socket
Storage Devices	- 1x Type II CompactFlash socket supports Ultra DMA133/100/66/33 MB/s by JMD330 SATA to PATA Bridge - 2x SATA II support 3.0Gb/s data transfer rate
Watchdog Timer	Programmable via S/W from 1 sec. to 255 sec.
Hardware Monitoring	- Temperature (CPU & System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
Expansion Interface	1x PCI Expressx1 Gen 1 (2.5 GT/s)

I/O INTERFACE

Super I/O	Winbond W83627THG
Audio	- Intel® ICH9M built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC262-VC2-GR HDA codec, 2.1 channels - Audio Jack on rear I/O with Line-out and Mic-in
Ethernet	- Intel® WG82567LM Gigabit Ethernet Phy - 1x RJ45 connector on rear I/O
Serial Port	1x RS232/422/485 port with DB-9 connector on rear I/O
USB	- 4x USB 2.0 ports on rear I/O - 2x USB 2.0 ports on board with pitch 2.0 header - 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges
GPIO	On board programmable 8-bit Digital I/Os

DISPLAY

Graphic Controller	Intel® GMCH integrated Intel® GMA 4500MHD supports DVM 5.0, Microsoft DX 10, hardware acceleration of MPEG2
Display Interface	- LVDS: Dual channel 24-bit LVDS - CRT: One DB-15 connector on rear I/O resolution up to 2048x1536 (QXGA)

Mechanical & Environment

Dimension	120(L) x 120(W)mm; 4.72"(L) x 4.72"(W)
Power Supply	+5V, +12V input
Environment	- Operation Temperature: 0°C to 55°C - Storage Temperature: -20°C to 85°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	105,924 hours at 40°C



Mini-ITX Platform



The Mini-ITX form factor, defined by the chipset manufacturers in Taiwan, is a highly integrated all-in-one x86-based embedded computer board that measures a mere 170mm x 170mm. Its compact size and all-in-one design simplifies and accelerates the implementation of an embedded PC system. Portwell's Mini-ITX computer boards and barebones systems offer a wide selection of microprocessors, power efficient technologies, peripheral I/Os, expansions and mechanical form factors.

Whether you're working on medical instruments, thin network devices or digital media systems, Portwell's Mini-ITX boards and barebone systems are the perfect solutions to help you to deliver your products on time and

stay one step ahead of the competition.

With 20 years of experience in the design and manufacture of single board computers, Portwell provides not only one-stop shopping for off-the shelf products, but also custom-built solutions tailor-made to suit your needs.

Portwell's WADE series

Portwell already provides a variety of products based on the Mini-ITX form factor such as Desktop, Mobile and Low Power solutions.

Desktop

Equipped with Intel's latest generation Intel® Core™ i3/i5/i7 processor, it not only meets your high performance requirements but it also provides quality and reliability as supported by our standard and customized service. With its rich display interface, it is capable of supporting several multimedia devices to meet your different needs.

Product list: WADE-8013, WADE-8012, WADE-8011, WADE-8180, WADE-8056, WADE-8556, WADE-8656

Mobile

Striking a balance between energy efficiency and performance, Portwell's mobile Intel® Core™ 2 Duo product is based on mobile processors built with excellent power. It is a mobile platform that can be easily adapted to quite the system and available for numerous usage in the small size.

Product list: WADE-8020, WADE-8067, WADE-8066, WADE-8068, WADE-8046, WADE-8065

Low Power

With a low power consumption target, the Intel® Atom™ processor offers customers more than adequate computing power. Furthermore, its fanless design also offers noise reduction and efficient heat dissipation in keeping with Portwell's devotion to green environments.

Product list: WADE-8077, WADE-8075/76, WADE-8071, WADE-8070, WADE-8072, WADE-8170



Mini-ITX Reference Table



MODEL	WADE-8020	WADE-8067	WADE-8066	WADE-8068
Form Factor	MINI-ITX	MINI-ITX	MINI-ITX	MINI-ITX
CPU	Intel® Core™ i5/i7	Intel® Core™ 2 Duo/ Celeron® M	Intel® Core™ 2 Duo/ Celeron® M	Intel® Core™ 2 Duo/ Celeron® M
Chipset	Intel® QM57 PCH	Intel® GM45 + ICH9ME	Intel® GME965 + ICH8ME	Intel® GME965 + ICH8ME
BIOS	AMI UEFI	AMI Core 8	Award	Award
Memory	2x DDR3 SODIMM up to 8GB	2x DDR3 SODIMM up to 8GB	2x DDR2 SODIMM up to 4GB	2x DDR2 SODIMM up to 4GB
Expansion	1x PCI slot 1x PCIe x1 slot 1x Mini PCIe socket	1x PCIe x4 slot	1x PCI slot 1x PCIe x1 slot	1x PCI slot 1x PCIe x1 slot
Display	VGA/DVI/LVDS/HDMI	VGA/DVI/LVDS/HDMI	VGA/DVI/LVDS	VGA/LVDS
Audio	Realtek ALC888 HD Audio codec	Realtek ALC262-VC2-GR HD Audio codec	Realtek ALC883-GR HD Audio codec	Realtek ALC888 HD Audio codec
LAN	2x GbE	2x GbE	2x GbE	2x GbE
Serial Port	3x RS232 1x RS232/422/485	1x RS232 1x RS232/422/485	1x RS232 1x RS232/422/485	3x RS232 1x RS232/422/485
USB	8x USB 2.0	6x USB 2.0	8x USB 2.0	8x USB 2.0
Storage Device	6x SATA	4x SATA	2x SATA 1x CF	2x SATA 1x CF
GPIO	16-bit	8-bit	8-bit	16-bit
Others	SMBus pin header	1x TV out PS/2 KB&MS	PS/2 KB&MS	1x Parallel PS/2 KB&MS
Dimension	170 x 170mm	170 x 170mm	170 x 170mm	170 x 170mm
Page	94	95	96	97



Mini-ITX Reference Table



MODEL	WADE-8077	WADE-8075/76	WADE-8071	WADE-8070
Form Factor	MINI-ITX	MINI-ITX	MINI-ITX	MINI-ITX
CPU	Intel® Atom™ D2550	Intel® Atom™ D525/N455	Intel® Atom™ N270	Intel® Atom™ N270
Chipset	Intel® NM10	Intel® ICH8M	Intel® 945GSE + ICH7M	Intel® 945GSE + ICH7M
BIOS	Phoenix	AMI UEFI	Award	Award
Memory	1x DDR3 SODIMM up to 4GB	2x DDR3 SODIMM up to 4GB/2GB	1x DDR2 SODIMM up to 2GB	1x DDR2 SODIMM up to 2GB
Expansion	1x PCIe x1 slot 1x Mini-PCIe x1 socket	1x PCI slot 1x PCIe x1 slot 1x Mini-PCIe socket	1x PCIe x1 slot	1x PCIe x1 slot 1x Mini PCI socket
Display	VGA/HDMI/LVDS	VGA/LVDS	VGA/LVDS	VGA/DVI/LVDS
Audio	Realtek ALC662-GR HD Audio codec	Realtek ALC892 HD Audio codec	Realtek ALC662-GR HD Audio codec	Realtek ALC662-GR HD Audio codec
LAN	2x GbE	2x GbE	1x GbE	2x GbE
Serial Port	2x RS232	3x RS232 1x RS232/422/485	2x RS232	3x RS232 1x RS232/422/485
USB	6x USB 2.0	6x USB 2.0	6x USB 2.0	6x USB 2.0
Storage Device	2x SATA	3x SATA 1x CF 1x FDD	2x SATA 1x CF 1x IDE	2x SATA 1x CF 1x IDE
GPIO	8-bit	16-bit	8-bit	8-bit
Others	PS/2 KB&MS	1x Parallel PS/2 KB&MS	PS/2 KB&MS	PS/2 KB&MS
Dimension	170 x 170mm	170 x 170mm	170 x 170mm	170 x 170mm
Page	98	99	100	101



Mini-ITX Reference Table



MODEL	WADE-8072	WADE-8170	WADE-8013	WADE-8014	WADE-8012
Form Factor	MINI-ITX	MINI-ITX	MINI-ITX	MINI-ITX	MINI-ITX
CPU	Intel® Atom™ N270	Intel® Atom™ N270	Intel® Dual Core™/ Quad Core™	Intel® Dual Core™/ Quad Core™	Intel® Dual Core™/Quad Core™
Chipset	Intel® 945GSE + ICH7M	Intel® 945GSE + ICH7M	Intel® Q77	Intel® C216 PCH	Intel® Q67 PCH
BIOS	Award	Award	Phoenix	Phoenix	AMI UEFI
Memory	1x DDR2 SODIMM up to 2GB	1x DDR2 SODIMM up to 2GB	2x DDR3 DIMM up to 16GB	2x DDR3 DIMM up to 16GB	2x DDR3 DIMM up to 16GB
Expansion	1x PCI slot 1x PCIe x1 slot 1x Mini-PCIe socket	1x PCI slot 1x PCIe x1 slot	1x PCIe x16 slot 1x Mini-PCIe socket	1x PCIe x16 slot 1x Mini-PCIe socket	1x PCIe x16 slot
Display	VGA/LVDS	VGA/DVI/LVDS	VGA/DVI-D/HDMI	VGA/DVI-D/HDMI	VGA/DVI/HDMI
Audio	Realtek ALC662-GR HD Audio codec	Realtek ALC888 HD Audio codec	Realtek ALC886-GR HD Audio codec	Realtek ALC886-GR HD Audio codec	Realtek ALC662-GR HD Audio codec
LAN	2x GbE	2x GbE	2x GbE	2x GbE	2x GbE
Serial Port	3x RS232 1x RS232/422/485	2x RS232	4x RS232 2x RS232/422/485	4x RS232 2x RS232/422/485	1x RS232 1x RS232/422/485
USB	6x USB 2.0	8x USB 2.0	4x USB 3.0 6x USB 2.0	4x USB 3.0 6x USB 2.0	8x USB 2.0
Storage Device	2x SATA 1x IDE	2x SATA 1x IDE 1x CF	4x SATA	4x SATA	6x SATA
GPIO	8-bit	8-bit	16-bit	16-bit	16-bit
Others	1x TPM 1x Parallel PS/2 KB&MS	1x S-Video 1x Parallel PS/2 KB&MS	PS/2 KB&MS	PS/2 KB&MS	PS/2 KB&MS
Dimension	170 x 170mm	170 x 170mm	170 x 170mm	170 x 170mm	170 x 170mm
Page	102	103	104	105	106



Mini-ITX Reference Table

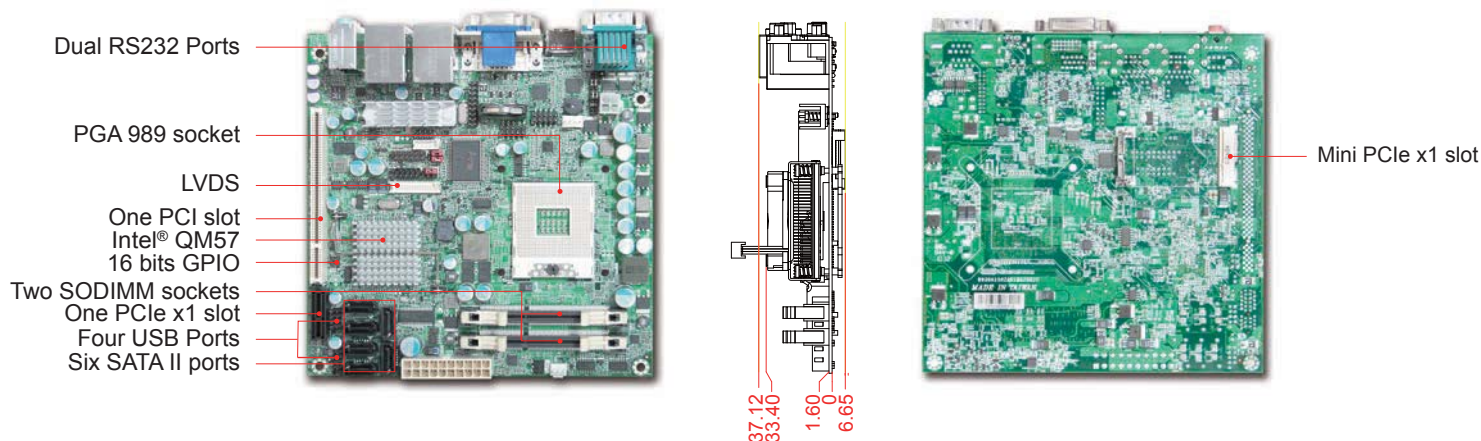


MODEL	WADE-8011	WADE-8180	WADE-8056	WADE-8556	WADE-8656
Form Factor	MINI-ITX	MINI-ITX	MINI-ITX	MINI-ITX	MINI-ITX
CPU	Intel® Dual Core™ / Quad Core™	Intel® Core™ 2 Quad / Core™ 2 Duo	Intel® Core™ 2 Quad / Core™ 2 Duo / Pentium® 4 / Celeron® D	Intel® Core™ 2 Quad / Core™ 2 Duo / Pentium® 4 / Celeron® D	Intel® Core™ 2 Quad / Core™ 2 Duo / Pentium® 4 / Celeron® D
Chipset	Intel® C206 PCH	Intel® Q45+ICH10DO	Intel® Q965+ICH8DO	Intel® Q965+ICH8DO	Intel® Q965+ICH8DO
BIOS	AMI UEFI	AMI Core 8	Award	Award	Award
Memory	2x DDR3 ECC DIMM up to 16GB	2x DDR3 DIMM up to 4GB	2x DDR2 DIMM up to 4GB	2x DDR2 DIMM up to 4GB	2x DDR2 DIMM up to 4GB
Expansion	1x PCIe x16 slot	1x PCIe x16 slot	1x PCI slot 1x Mini-PCIe socket	1x PCI slot 1x Mini-PCI socket	1x PCIe x16 slot
Display	VGA/DVI/HDMI	VGA/DVI	VGA/DVI	VGA/DVI	VGA
Audio	Realtek ALC662-GR HD Audio codec	Realtek ALC888 HD Audio codec	Realtek ALC262-VC2-GR HD Audio codec	Realtek ALC262-VC2-GR HD Audio codec	Realtek ALC262-VC2-GR HD Audio codec
LAN	2x GbE	2x GbE	1x GbE	1x GbE	2x GbE
Serial Port	1x RS232 1x RS232/422/485	2x RS232	4x RS232	4x RS232	1x RS232 1x RS232/422/485
USB	8x USB 2.0	8x USB 2.0	6x USB 2.0	6x USB 2.0	8x USB 2.0
Storage Device	6x SATA	4x SATA	4x SATA	4x SATA	6x SATA
GPIO	16-bit	8-bit	8-bit	8-bit	8-bit
Others	PS/2 KB&MS	PS/2 KB&MS	PS/2 KB&MS	PS/2 KB&MS	PS/2 KB&MS
Dimension	170 x 170mm	170 x 170mm	170 x 170mm	170 x 170mm	170 x 170mm
Page	107	108	109	110	111



WADE-8020

Intel® Core™ i5/i7 processor based
Mini-ITX with DDR3 SDRAM, Dual
Display, Dual Gigabit Ethernet and
USB Ports

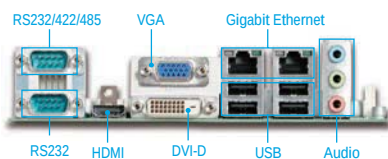


The WADE-8020 is built with the Intel® mobile QM57 chipset which works well with Intel® Core™ i5/i7 mobile processor technologies capable of supporting dual channel DDR3 memory. These features make the WADE-8020 the ideal solution for POS, Lottery, Medical, Gaming, High Resolution Digital Signage, Surveillance Security Monitoring, and Kiosk applications.

FEATURES

- Intel® Core™ i5/i7 processor (Quad-Core CPU support)
- Intel® QM57 PCH
- Two 204-pin SODIMMs support dual channel DDR3 SDRAM up to 8GB
- One PCI-Express x1 and one PCI Expansion slot
- One Mini-PCIe socket (with USB+PCIe x1 signal)
- Three RS232 ports and one RS232/422/485 port
- Six SATA II ports
- Dual Display by VGA/DVI/HDMI/LVDS (24 bits)
- Intel® Active Management Technology (Intel® AMT) 6.0

REAR I/O



ORDERING GUIDE

AB1-3587	WADE-8020.Mini-ITX ESB.QM57 w/o ECC PGA989.w/DDR3 SO-DIMM/VGA/LVDS/DVI/HDMI/ Dual GbE/COM/Audio/USB
AA1-3050	PEP-5311R.1 Slot Riser Card for Right Expansion.1xPCI.For WADE-8141/8041+C34

PACKING LIST

One WADE-8020 Mini-ITX Main Board
One Installation CD
One SATA Cable
One I/O shield

GENERAL

processor	Intel® Core™ i7/i5 or Celeron® processor with 4/3/2MB L2 Cache in PGA989 package supports Intel® Virtualization Technology (VT-x), Enhanced Intel SpeedStep® Technology, Thermal Monitoring Technologies
Chipset	Intel® BD82QM57 PCH (3.5W)
BIOS	AMI UEFI BIOS
Memory	Supports dual channel up to 8GB DDR3 1066/1333 MHz SDRAM on two 204-pin SODIMM socket
Storage Devices	- 6x SATA supports up to 3.0Gb/s data transfer rate - RAID 0,1,5,10
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	Monitoring Temperature, Voltage and cooling fan status.
Expansion Interface	- 1x PCI Express x1 slot (Gen 1, 2.5 GT/s) - 1x PCI 32-bit slot at 33MHz - 1x Mini-PCIe slot

I/O INTERFACE

Super I/O	ITE IT8721F
Audio	- Intel® QM57 built-in High Definition Audio up to 192-kHz 24-bit - Realtek ALC888, 5.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	Intel® 82574L and Intel® 82577LM Dual Gigabit Ethernet controllers support iAMT 6.0
Serial Port	- 1x RS232 port on rear I/O - 1x RS232/422/485 selectable port on rear I/O - 2x RS232 port on pin header
USB	- 4x USB 2.0 ports on rear I/O - 4x USB 2.0 ports on board with header - 480 Mb/s bus is capable of high-speed/full-speed/low-speed data ranges
GPIO	On board programmable 16-bit Digital I/Os

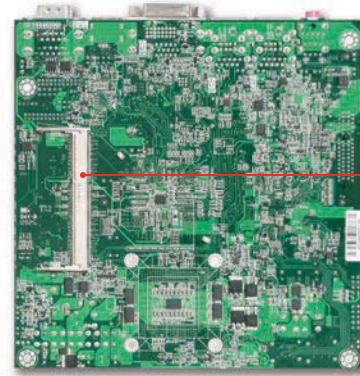
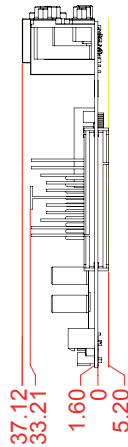
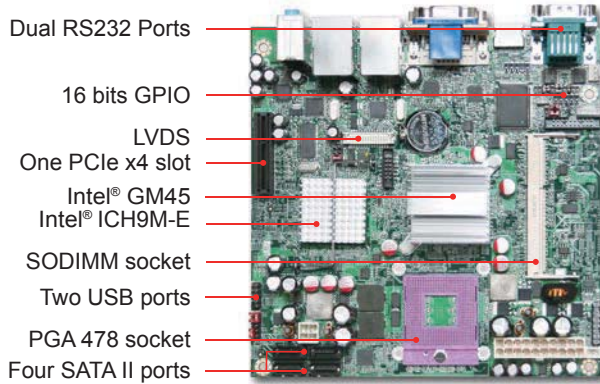
DISPLAY

Graphic Controller	- Intel® QM57 integrated Intel® HD Graphics (GMA HD) supports full hardware acceleration of video decoding standards, such MPEG2, MPEG4 - Supports Intel® Gen 6.0 integrated Graphics Engine
Display Interface	- VGA: dual channel 24-bit VGA, analog resolution up to 2048x1536(QXGA) - LVDS: dual channel 24-bit LVDS, Digital LVDS resolution up to 1600x1200(UXGA) - HDMI: dual channel 24-bit HDMI, Digital HDMI resolution up to 1920x1200(WUXGA) - DVI: dual channel 24-bit DVI, Digital DVI resolution up to 1920x1200 (WUXGA)

Mechanical & Environment

Dimension	170(L) x 170(W)mm; 6.69"(L) x 6.69"(W)
Power Supply	-Typical: +12(CPU)@1.25A; +12V(System)@0.33A; +5V@3.55A -Supports ATX mode
Environment	Operation Temperature: 0°C to 60°C Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 120,000 hours at 40°C



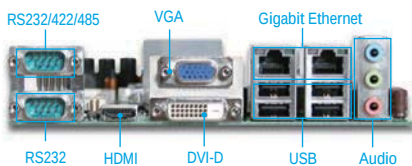


Built with the latest mobile Intel® GM45 Express chipset, the WADE-8067 takes advantage of Intel® Core™ 2 Duo technologies which have high performance and excellent power management features. In addition, its display-enriched interface can support various multimedia devices. The WADE-8067 is an industrial-grade embedded Mini-ITX motherboard ideal for POS, Lottery, Medical, Gaming, DVR, Digital Signage and Kiosk applications.

FEATURES

- Intel® Core™ 2 Duo/Celeron® M processors
- Intel® GM45 and ICH9M-E Chipset
- Two SODIMMs support dual channel DDR3 SDRAM up to 8GB
- Dual Display: VGA/DVI/HDMI/LVDS/TV-out, 3rd Display via PCI-Express graphic card
- Support Intel® Active Management Technology 4.0
- Integrated latest Trusted Platform Module (iTPM)

REAR I/O



ORDERING GUIDE

AB1-3164	WADE-8067PE.Mini-ITX ESB.Socket Type.Intel Core 2 Duo(Penryn).w/VGA/DVI/HDMI/Dual GbE/Audio/PCIEx1
AA1-3086	PEP-5A1X1.Slot Riser Card for Right Expansion.One PCI-E x4 Slot.For WADE-8067

PACKING LIST

One WADE-8067 Mini-ITX Main Board
One Installation CD
One SATA Cable
One I/O shield
One CPU Fan

GENERAL

processor	- Intel® Core™ 2 Duo/Celeron® M processor with 2MB L2 Cache in PGA 478 package - FSB: 667/800/1066MHz - Supports Enhanced Intel SpeedStep® Technology, Intel® 64 architecture, Execute Disable Bit
Chipset	Intel® 82GM45 Graphics and Memory Controller Hub (12W) and ICH9M-E
BIOS	AMI Core 8 BIOS
Memory	Supports dual channel up to 8GB DDR3 800/1066 MHz SDRAM on two 204-pin SODIMM socket
Storage Devices	- 4x SATA support up to 3.0Gb/s data transfer rate - RAID 0,1,5,10
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	- FAN Speed (CPU & System) - Temperature (CPU & System) - Voltage, Case open function
Expansion Interface	1x PCI-Express x4 slot (Gen 1, 2.5 GT/s)

I/O INTERFACE

Super I/O	Winbond W83627THG
Audio	- Intel® GM45 built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC262-VC2-GR, 2.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	Intel® 82567 and Intel® 82574L Dual Gigabit Ethernet controller
Serial Port	- 1x RS232 port on rear I/O - 1x RS232/422/485 selectable port on rear I/O
USB	- 4x USB 2.0 ports on rear I/O - 2x USB 2.0 ports on board with header - 480 Mb/s bus is capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1 x PS/2 Keyboard & Mouse on board
GPIO	On board programmable 8-bit Digital I/Os
Other	1x TV out header

DISPLAY

Graphic Controller	- Intel® GM45 GMCH Integrated Graphics Media Accelerator (GMA) 4500MHD supports full hardware acceleration of video decoding standards MPEG-2, AVC - Intel® Dynamic Video Memory Technology (Intel® DVMT 5.0)
Display Interface	- VGA: analog resolution up to 2048x1536 - DVI: digital DVI resolution up to 1600x1200 - LVDS: dual channel 24-bit LVDS - HDMI: resolution up to 1920x1200

Mechanical & Environment

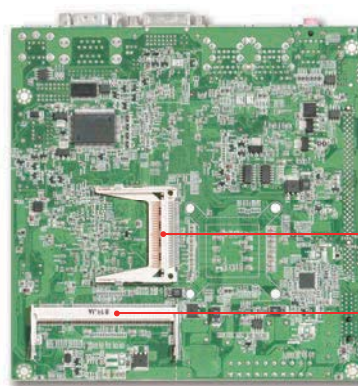
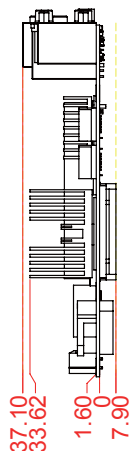
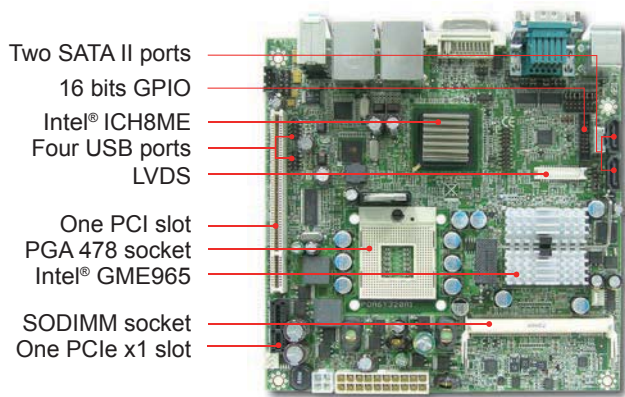
Dimension	170(L) x 170(W)mm; 6.69"(L) x 6.69"(W)
Power Supply	-Typical: +12V(CPU)@0.53A; +12V(System)@0.2A; +5V@1.96A; +3.3V@0.16A -Supports ATX mode
Environment	- Operation Temperature: 0°C to 60°C - Storage Temperature: -20°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 120,000 hours at 40°C





WADE-8066

Leading Intel® Core™ 2 Duo processor based Mini-ITX Board with DDR2 SDRAM, Dual Displays, Two GbE LAN ports, Audio and USB

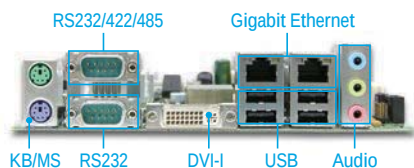


Based on the latest latest mobile Intel® GME965 chipset, the WADE-8066 takes advantage of Intel® Core™ 2 Duo technologies. The graphic media accelerator (GMA) X3100 provides both fast video response time and high quality images. With its display-enriched interface, the WADE-8066 can support various multimedia devices.

FEATURES

- Intel® Core™ 2 Duo and Celeron® M processor
- Intel® GME965 and ICH8ME chipset
- Two 200-pin SODIMMs support dual channel DDR2 SDRAM up to 4GB
- Dual Display :DVI-I/LVDS/TV-Out, 3rd Display via expansion slot
- One PCI slot and one PCIe x1 slot with PCIe x4 signal

REAR I/O



ORDERING GUIDE

AB1-3179	WADE-8066.Mini-ITX ESB.Intel Pentium M-Dual Core.w/DDR SDRAM/VGA/LVDS/Dual Display/Dual GbE/Audio
AA1-3049	PEP-592R.2 Slots Riser Card for Right Expansion. One PCI and One PCI-E x4.For WADE-8066
AA1-3072	PER-4210R.1 Slot Riser Card for Right Expansion. One PCI-E x4.For WADE-8066

PACKING LIST

One WADE-8066 Mini-ITX Main Board
One Installation CD
One SATA Cable
One I/O shield
One CPU Fan

GENERAL

processor	- Intel® Core™ 2 Duo/Celeron® M processor with 2MB L2 Cache in PGA 478 package - FSB 533/800MHz - Supports Enhanced Intel SpeedStep® Technology, Intel® 64 architecture, Execute Disable Bit
Chipset	Intel® 82GME965 Graphics and Memory Controller (13.5W) and ICH8ME
BIOS	Award BIOS
Memory	Supports dual channel up to 4GB DDR2 533/667 MHz SDRAM on two 200-pin SODIMM socket
Storage Devices	- 2x SATA support up to 3.0Gb/s data transfer rate - 1x CompactFlash socket supports Ultra DMA100/66/33 MB/s
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	- System temperature, voltage and cooling fan monitoring - Auto throttling control when CPU overheats
Expansion Interface	- 1x PCI Express x1 slot (Gen 1, 2.5 GT/s) (with PCIe x4 signal) - 1x PCI 32-bit slot

I/O INTERFACE

Super I/O	Winbond W83627THG
Audio	- Intel® GM45 built-in High Definition Audio up to 192-kHz 24-bit - Realtek ALC883-GR, 5.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	Intel® 82566MM and Marvell 88E8053 Dual Gigabit Ethernet controllers
Serial Port	- 1x RS232 port on rear I/O - 1x RS232/422/485 selectable port on rear I/O
USB	- 4x USB 2.0 ports on rear I/O - 4x USB 2.0 ports on board with header - 480 Mb/s bus is capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 16-bit Digital I/Os

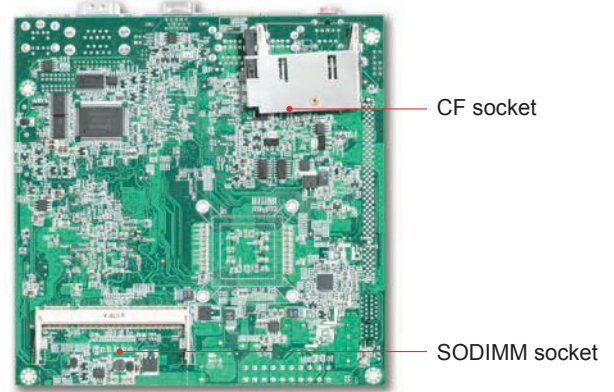
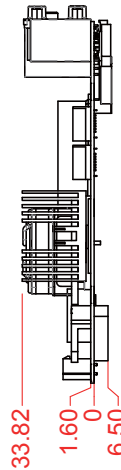
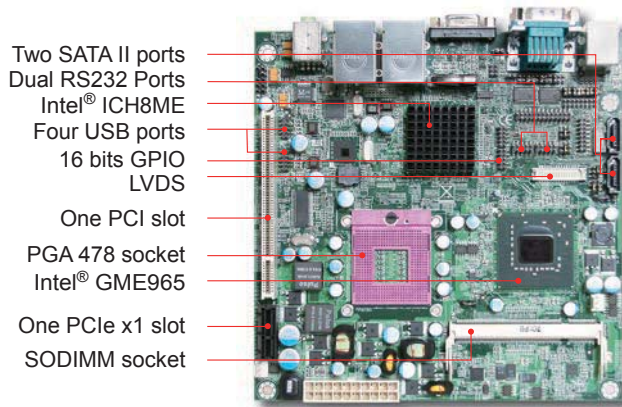
DISPLAY

Graphic Controller	- Intel® GME965 Integrated GMA X3100 Graphics device supports hardware acceleration of video decoding standards such MC - Intel® Dynamic Video Memory Technology (Intel® DVMT 4.0)
Display Interface	- VGA: dual channel 24-bit VGA, analog resolution up to 2048x1536 (QXGA) - DVI: dual channel 24-bit DVI, Digital DVI resolution up to 1600x1200 (UXGA) - LVDS: dual channel 24-bit LVDS

Mechanical & Environment

Dimension	170(L) x 170(W)mm; 6.69"(L) x 6.69"(W)
Power Supply	-Typical: +12V(System)@2.59A; +5V@2.96A; +3.3V@1.31A -Supports ATX mode
Environment	- Operation Temperature: 0°C to 55°C - Relative Humidity: 0% to 90%, non-condensing
MTBF	Over 120,000 hours at 40°C



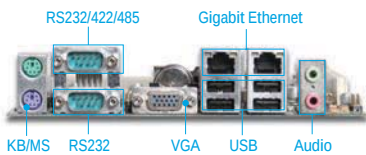


The WADE-8068 built with Intel® mobile GME965 chipset takes advantage of Intel® Core™ 2 Duo technologies. Based on an integrated graphic media accelerator (GMA) X3100 graphic device, the WADE-8068 with its diverse serial ports makes it ideal for applications such as Panel PCs, Lottery, Medical, Gaming, and Digital Signage.

FEATURES

- Intel® Core™ 2 Duo and Celeron® M processors
- Intel® GME965 and ICH8M-E Chipset
- Two 200-pin SODIMMs support dual channel DDR2 SDRAM up to 4GB
- Dual Display: VGA/24bit LVDS, 3rd Display via expansion slot Dual Gigabit Ethernet ports
- Two SATA II ports and One Type II Compact Flash
- One PCI slot and one PCIe x1 slot with PCIe x4 signal
- Three RS232 ports and one RS232/422/485 port

REAR I/O



ORDERING GUIDE

AB1-3233	WADE-8068.Mini-ITX ESB.Intel Core 2 Duo/Celeron M.w/DDR2 SDRAM/VGA/LVDS/Dual GbE/Audio
AA1-3027	PEP-581R. 1 Slot Riser Card for Right Expansion.1xPCI
AA1-3050	PEP-5311R.1 Slot Riser Card for Right Expansion.1xPCI
AA1-3049	PEP-592R.2 Slots Riser Card for Right Expansion. One PCI and One PCI-E x4

PACKING LIST

One WADE-8068 Mini-ITX Main Board
One Installation CD
One SATA Cable
One I/O shield
One CPU Fan
One COM Cable
One LPT Cable

GENERAL

processor	- Intel® Core™ 2 Duo/Celeron® M processor in PGA 478 package - FSB 533/800MHz - Supports Enhanced Intel SpeedStep® Technology, Intel® 64 architecture, Execute Disable Bit
Chipset	Intel® 82GME965 Graphics and Memory Controller (13.5W) and ICH8ME
BIOS	Award BIOS
Memory	Supports dual channel up to 4GB DDR2 533/ 667 MHz SDRAM on two 200-pin SODIMM socket
Storage Devices	- 2x SATA support up to 3.0Gb/s data transfer rate - 1x CompactFlash socket supports Ultra DMA100/66/33 MB/s
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	FAN Speed (CPU & System), Temperature (CPU & System), Voltage, Case open function
Expansion Interface	- 1x PCI Express x1 slot (Gen 1, 2.5 GT/s) (with PCIe x4 signal) - 1x PCI 32-bit slot

I/O INTERFACE

Super I/O	Winbond W83627UHG
Audio	- Intel® GM45 built-in High Definition Audio up to 192-kHz 24-bit - Realtek ALC888, 5.1 channels - Audio Jack DIP Light Pink/Lime
Ethernet	Intel® 82566MM and Realtek 8111C Dual Gigabit Ethernet controllers
Serial Port	- 1x RS232 on rear I/O - 1x RS232/422/485 selectable port on rear I/O - 2x RS232 on pin header
USB	- 4x USB 2.0 ports on rear I/O - 4x USB 2.0 ports on board with header - 480 Mb/s bus is capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 16-bit Digital I/Os
Other	1x parallel port on board pin header

DISPLAY

Graphic Controller	- Intel® GME965 Integrated GMA X3100 Graphics device supports hardware acceleration of video decode standards such MC - Intel® Dynamic Video Memory Technology (Intel® DVM T 4.0)
Display Interface	- VGA: dual channel 24-bit VGA, analog resolution up to 2048x1536 (QXGA) - LVDS: dual channel 24-bit LVDS, Digital LVDS resolution up to 600x1200 (UXGA)

Mechanical & Environment

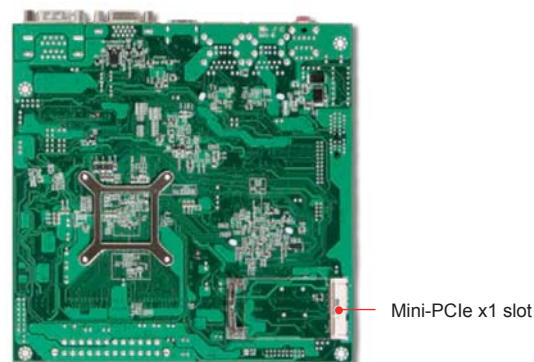
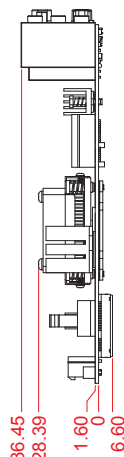
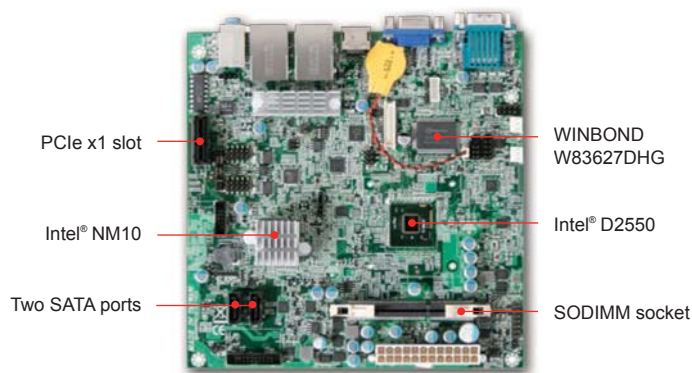
Dimension	170(L) x 170(W)mm; 6.69"(L) x 6.69"(W)
Power Supply	-Typical: +12V(System)@2.66A; +5V@3.74A; +3.3V@0.83A -Supports ATX mode
Environment	- Operation Temperature: 0°C to 55°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 120,000 hours at 40°C





WADE-8077

Intel® Next-Gen Atom™ processor based Mini-ITX Board with dual display, dual Gigabit Ethernet, Two SATA Ports, Two COM Ports (optional up to 4 COM ports) and Six USB Ports

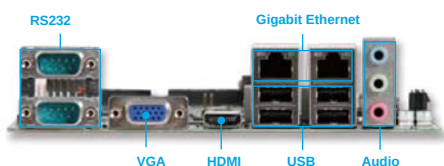


WADE-8077 is designed to provide high performance and flexibility for functional expansion and is ideal for applications in Gaming, Kiosk, Digital Signage, and Industrial Automation and control.

FEATURES

- Intel® Atom™ D2550 processor
- Intel® NM10 Chipset
- One 204-pin SODIMM supports single channel DDR3 SDRAM up to 4GB
- Dual display: VGA /LVDS (24-bit dual channel)/HDMI
- One Mini-PCle and one PCI Express x1 expansion slot
- Two SATA II ports
- Two COM ports (optional up to 4 COM ports)
- 2.6W AMP function (optional)

REAR I/O



ORDERING GUIDE

AB1-3799

(R) WADE-8077 Mini-ITX ESB Intel Cedar Trail 1.86G D2550 on Board+NM10.w/DDR3 SO-DIMM/ VGA/HDMI/24bits LVDS/Dual GbE/COM/Audio/USB

PACKING LIST

- One WADE-8077 Mini-ITX Main Board
- One Installation CD
- One SATA Cable
- One I/O shield

GENERAL

processor	- Intel® Atom™ D2550 (1.86GHz, 10W) processor in FCBGA559 package
Chipset	- Intel® NM10 Express chipset
BIOS	- Phoenix BIOS (SPI ROM)
Memory	- Supports single channel up to 4GB DDR3 800/1066 MHz SDRAM on one 204-pin SODIMM socket
Storage Devices	- 2x SATA II supporting up to 3.0Gb/s data transfer rate
Watchdog Timer	- Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	- FAN Speed (CPU & System), Temperature (CPU & System), Voltage - Beep alarms for field fan out, over/under voltage of DC
Expansion Interface	- 1x PCI Express x1 slot (Gen 1, 2.5 GT/s) - 1x Mini-PCle slot (Gen 1, 2.5 GT/s)

I/O INTERFACE

Super I/O	- WINBOND W83627DHG
Audio	- Intel® NM10 built-in High Definition Audio up to 96-kHz 24-bit - Realtek ALC662, 5.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	- RTL8111F*2 Dual Gigabit Ethernet
Serial Port	- 2x RS232 on rear I/O - 1x RS232 with header (optional) - 1x RS232/422/485 selectable with header (optional)
USB	- 4x USB 2.0 ports on rear I/O - 2x USB 2.0 ports on board with header - 480 Mb/s bus capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	- 1x PS/2 Keyboard & Mouse on board
GPIO	- On board programmable 8-bit Digital I/Os

DISPLAY

Graphic Controller	- Intel® Graphics Technology provides a visually stunning experience optimized for Blu-ray and HD video with Windows Vista support - Supports DirectX 9 compliant Pixel Shader v3.0 and OGL 3.0
Display Interface	- VGA: analog resolution up to 1920x1200 on rear I/O - HDMI: resolution up to 1920x1200 on rear I/O - LVDS: Digital 24-bits LVDS resolution up to 1920x1200 on board

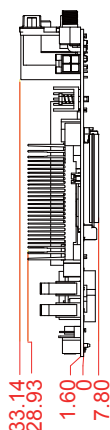
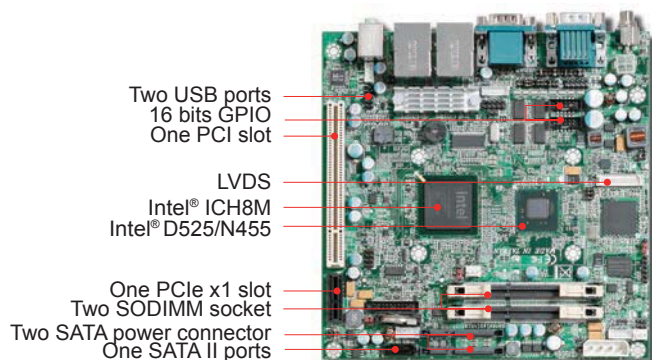
Mechanical & Environment

Dimension	- 170(L) x 170(W) mm; 6.69"(L) x 6.69"(W)
Power Supply	- ATX 24-pin power input
Environment	- Operation Temperature: 0°C to 60°C - Storage temperature: -20°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	- Over 140,000 hours at 40°C



WADE-8075/76

Intel® Dual Core™ Atom™ D525 1.8GHz/N455 1.67GHz processor based Mini-ITX with DC12V input, DDR3 SDRAM, Dual display, Dual Gigabit Ethernet, Three SATA, Four COM and Six USB ports



Based on Intel® mobile ICH8M chipset, the WADE-8075/76 takes advantages of Intel® Atom™ D525/N455 technologies. WADE-8075/76 which features low power, is capable of providing dual displays such as LVDS and VGA. In addition, the fanless, low power WADE-8075/76 is the best solution for POS, Medical, Gaming and Digital Signage applications.

FEATURES

- Intel® Atom™ D525 1.8GHz/N455 1.67GHz processor
- Intel® ICH8M Chipset
- Two 204-pin SODIMMs support single channel DDR3 SDRAM up to 4GB
- Dual Display by VGA/LVDS (24 bits or 18 bits)
- One PCI-Express x1, one PCI expansion slot and one Mini-PCIe socket (with USB + PCIe x1 signal)
- Three RS232 ports and one RS232/422/485 port

REAR I/O



ORDERING GUIDE

AB1-3584	WADE-8075.Mini-ITX ESB.Intel Pineview 1.8G D525 on Board+ICH8M. w/DDR3 SO-DIMM/VGA/24bits LVDS/Dual GbE/COM/Audio/USB
AB1-3585	WADE-8076.Mini-ITX ESB.Intel Pineview 1.67G N455 on Board+ICH8M. w/DDR3 SO-DIMM/VGA/18bits LVDS/Dual GbE/COM/Audio/USB
AA1-3102Z	PEP-5C1RX1. One PCI-E x1 Slot Riser Card for Right Expansion. PCI(no signal) +PCIe connectors.

PACKING LIST

One WADE-8075/76 Mini-ITX Main Board
One Installation CD
One SATA Cable
One SATA Power Cable
One I/O shield

GENERAL

processor	- Intel® Atom™ D525 (1.8GHz, 13W) N455 (1.67GHz, 6.5W) processor in PGA 478 package - FSB 800MHz - Supports Intel® Hyper- Threading Technology, Intel® 64, Execute Disable Bit, Enhanced Intel SpeedStep® Technology (N455 only)
Chipset	Intel® ICH8M Graphics and Memory Controller (13.5W) and ICH8M
BIOS	AMI UEFI BIOS
Memory	Supports single channel up to 4GB DDR3 533/667 MHz SDRAM on two 204-pin SODIMM socket (WADE-8076, supports up to 2GB DDR3)
Storage Devices	- 1x SATA port 3.0Gb/s data transfer rate - 2x SATA ports with power support - 1x Compact Flash socket supports Ultra DMA100/66/33 MB/s
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	FAN Speed (CPU & System), Temperature (CPU & System), Voltage, Auto throttling control when CPU overheats
Expansion Interface	- 1x PCI Express x1 slot (Gen 1, 2.5 GT/s) - 1x PCI 32-bit slot - 1x Mini-PCIe slot (Gen 1, 2.5 GT/s)

I/O INTERFACE

Super I/O	Winbond W83310DG
Audio	- Intel® ICH8M built-in High Definition Audio up to 192-kHz 24-bit - Realtek ALC892, 5.1 channels - Audio Jack DIP Light Pink/Lime
Ethernet	RTL8111D x2 Dual Gigabit Ethernet
Serial Port	- 2x RS232 5V/12V selectable port on rear I/O - 1x RS232 5V/12V selectable with header - 1x RS232/422/485 5V/12V selectable port on rear I/O
USB	- 4x USB 2.0 ports on rear I/O - 2x USB 2.0 ports on board with header - 480 Mb/s bus capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1 PS/2 Keyboard & Mouse on board
GPIO	On board programmable 16-bit Digital I/Os
Other	1x parallel port on board box header

DISPLAY

Graphic Controller	- Intel® ICH8M Integrated GMA 3150 Graphics supports full hardware acceleration of video decoding standards MPEG-2 - Intel® Dynamic Video Memory Technology (Intel® DVMT 4.0)
Display Interface	- Dual Channel 24-bit (WADE-8075) - Single Channel 18-bit (WADE-8076) - VGA: analog resolution up to 2048x1536 (QXGA) - LVDS: Digital LVDS resolution up to 1280x1024 (UXGA)

Mechanical & Environment

Dimension	170(L) x 170(W)mm; 6.69"(L) x 6.69"(W)
Power Supply	DC-12V input
Environment	- Operation Temperature: 0°C to 60°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 140,000 hours at 40°C

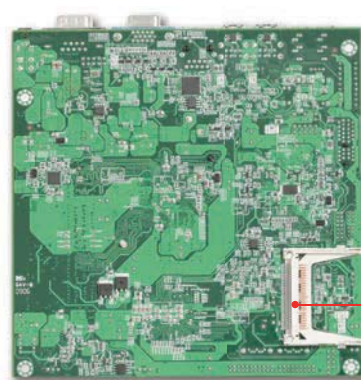
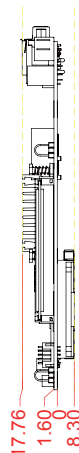
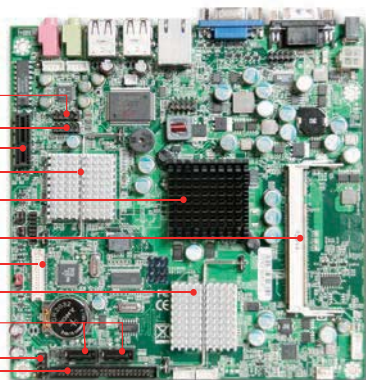




WADE-8071

Intel® Low Power Atom™ N270 1.6GHz processor based Mini-ITX Board with DC12V input, dual display, Gigabit Ethernet, Two SATA Ports, Two COM ports and Six USB Ports support thin client application

- KB/MS
- 8 bits GPIO
- One PCIe x1 slot
- Intel® ICH7-M
- Intel® 945GSE
- SODIMM socket
- LVDS
- Intel® N270
- Two SATA II ports
- Two USB ports
- IDE connector



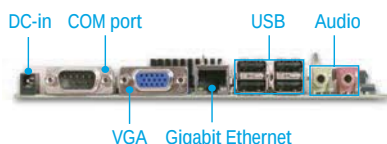
CF socket

Supported by the Intel® mobile 945GSE chipset, WADE-8071 takes advantage of Intel® Atom™ N270 technologies. WADE-8071 features low power while providing dual displays such as LVDS and VGA. In addition, the fanless, low power WADE-8071 is the most suitable choice for POS, Medical, Gaming and Digital Signage applications.

FEATURES

- Intel® Atom™ N270 1.6GHz processor
- Intel® 945GSE and ICH7-M chipset
- One 200-pin SODIMM supports single channel DDR2 SDRAM up to 2GB
- Dual display: VGA/LVDS, 3rd display via PCI-Express x1 graphic card
- One PCI-Express x1 expansion slot
- 20mm height supports thin client application

REAR I/O



ORDERING GUIDE

AB1-3284	WADE-8071.Mini-ITX ESB.945GSE+N270 processor.12V DC Input w/DDR2 SDRAM/VGA/LVDS/1xGbE/Audio
AA1-3078	PER-4110R.1 Slot Riser Card.PCIEx1 to PCIEx1

PACKING LIST

One WADE-8071 Mini-ITX Main Board
One Installation CD
One SATA Cable
One SATA Power Cable
One USB Cable
One IDE Cable
One I/O shield

GENERAL

processor	- Intel® Atom™ N270 (1.60GHz,2.5W) processor in PBGA 437 package, L2 Cache 522 KB - FSB 533MHz - Supports Intel® Hyper-Threading Technology, Enhanced Intel SpeedStep® Technology, Thermal Monitoring Technologies, Execute Disable Bit
Chipset	Intel® 82945GSE Graphics and Memory Controller (6W) and ICH7M
BIOS	Award BIOS
Memory	Supports single channel up to 2GB DDR2 400/533 MHz SDRAM on one 200-pin SODIMM socket
Storage Devices	- 2x SATA port 3.0Gb/s data transfer rate - 1x IDE connector supports Ultra DMA100/66/33 MB/s - 1x CompactFlash socket supports Ultra DMA100/66/33 MB/s
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	FAN Speed (CPU & System), Temperature (CPU & System), Voltage, Case open function
Expansion Interface	1x PCI Express x1 slot (Gen 1, 2.5 GT/s)

I/O INTERFACE

Super I/O	Winbond W83627HG
Audio	- Intel® 945GSE built-in High Definition Audio up to 96-kHz 24-bit - Realtek ALC662-GR, 5.1 channels - Audio Jack DIP Light Pink/Lime
Ethernet	Realtek RTL8111C Gigabit Ethernet controller
Serial Port	- 1x RS232 port on rear I/O - 1x RS232 port on pin header
USB	- 4x USB 2.0 ports on rear I/O - 2x USB 2.0 ports on board with header - 480 Mb/s bus capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on board
GPIO	On board programmable 8-bit Digital I/Os

DISPLAY

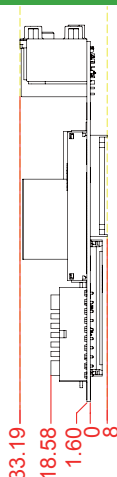
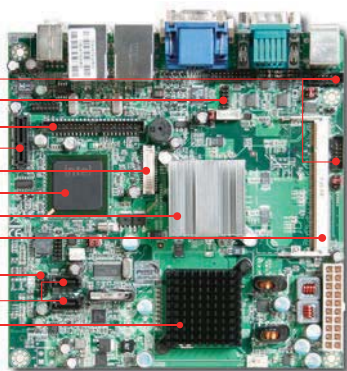
Graphic Controller	- Intel® 945GSE Integrated Graphics Media Accelerator (GMA) 950 supports hardware acceleration of video decode standards MC, DirectX 9.0c - Intel® Dynamic Video Memory Technology (Intel® DVMT 3.0)
Display Interface	- VGA: dual channel VGA, analog resolution up to 2048x1536 (QXGA) - LVDS: dual channel 18-bit and 24-bit output, Digital LVDS resolution up to 1600x1200 (UXGA)

Mechanical & Environment

Dimension	170(L) x 170(W)mm; 6.69"(L) x 6.69"(W)
Power Supply	DC-12V input
Environment	- Operation Temperature: 0°C to 60°C - Relative Humidity: 10% to 90%, non-condensing
MTBF	Over 140,000 hours at 40°C



- Two RS232 ports
- 8 bits GPIO
- IDE connector
- One PCIe x1 slot
- LVDS
- Intel® ICH7-M
- Intel® 945GSE
- SODIMM socket
- Two USB ports
- Two SATA II ports
- Intel® N270



CF socket

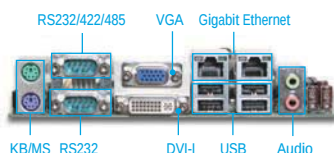
Mini-PCI socket

Built with the Intel® mobile 945GSE chipset, WADE-8070 takes advantage of Intel® Atom™ N270 technologies. This low power, fanless WADE-8070 makes it most suitable for POS, Medical, Gaming and Digital Signage applications.

FEATURES

- Intel® Atom™ N270 1.6GHz processor
- Intel® 945GSE and ICH7-M chipset
- One 200-pin SODIMM supports single channel DDR2 SDRAM up to 2GB
- Dual display: VGA/LVDS/DVI, 3rd display via PCI-Express x1 graphic card
- One Mini-PCI and one PCI-Express x1 expansion slot
- Two SATA, one CompactFlash socket & one IDE connector

REAR I/O



ORDERING GUIDE

AB1-3242	WADE-8070 Mini-ITX ESB.945GSE+N270 processor.w/DDR2 SDRAM/VGA/LVDS/Dual GbE Ethernet/Audio
AA1-3089Z	PEP-5B1X1. 1 Slot Riser Card for Right Expansion. One PCI-E x1 Slot.For WADE-8070/8071

PACKING LIST

One WADE-8070 Mini-ITX Main Board
One Installation CD
One SATA Cable
One COM Cable
One USB Cable
One IDE Cable
One I/O shield

GENERAL

processor	- Intel® Atom™ N270 (1.60GHz, 2.5W) processor in PBGA 437 package, L2 Cache 522 KB - FSB 533MHz - Supports Intel® Hyper-Threading Technology, Enhanced Intel SpeedStep® Technology, Thermal Monitoring Technologies, Execute Disable Bit
Chipset	Intel® 82945GSE Graphics and Memory Controller (6W) and ICH7M
BIOS	Award BIOS
Memory	Supports single channel up to 2GB DDR2 400/533 MHz SDRAM on one 200-pin SODIMM socket
Storage Devices	2x SATA port 3.0Gb/s data transfer rate 1x IDE connector supports Ultra DMA100/66/33 MB/s 1x Compact Flash socket supports Ultra DMA100/66/33 MB/s
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	FAN Speed (CPU & System), Temperature (CPU & System), Voltage, Case open function
Expansion Interface	1x PCI Express x1 slot (Gen 1, 2.5 GT/s) 1x Mini-PCI socket

I/O INTERFACE

Super I/O	Winbond W83627UHG
Audio	- Intel® 945GSE built-in High Definition Audio up to 96-kHz 24-bit - Realtek ALC662-GR, 5.1 channels - Audio Jack DIP Light Pink/Lime
Ethernet	Realtek 8111C Dual Gigabit Ethernet controller
Serial Port	1x RS232 port on rear I/O 1x RS232/422/485 selectable on rear I/O 2x RS232 port on pin header
USB	4x USB 2.0 ports on rear I/O 2x USB 2.0 ports on board with header 480 Mb/s bus capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 8-bit Digital I/Os

DISPLAY

Graphic Controller	- Intel® 945GSE Integrated Graphics Media Accelerator (GMA) 950 supports hardware acceleration of video decoding standards MC, DirectX 9.0c - Intel® Dynamic Video Memory Technology (Intel® DVMT 3.0)
Display Interface	- VGA: dual channel 18-bit VGA, analog resolution up to 2048x1536 (QXGA) - LVDS: dual channel 18-bit LVDS, Digital LVDS resolution up to 1600x1200 (UXGA) - DVI-I: One connector on rear I/O

Mechanical & Environment

Dimension	170(L) x 170(W)mm; 6.69"(L) x 6.69"(W)
Power Supply	- Typical: +12V(CPU)@0.17A; +12V@0.24A; +5V@1.31A; +3.3V@0.55A - Supports ATX mode
Environment	- Operation Temperature: 0°C to 60°C - Relative Humidity: 10% to 90%, non-condensing
MTBF	Over 140,000 hours at 40°C

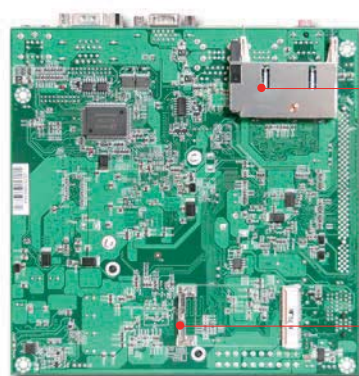
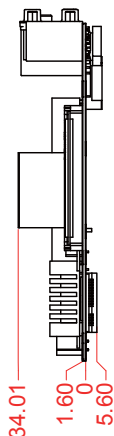
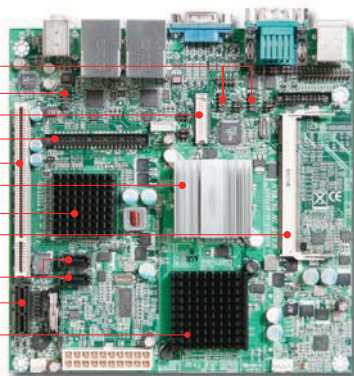




WADE-8072

Intel® Low Power Atom™ N270 1.6GHz processor based Mini-ITX Board with dual display, Gigabit Ethernet, Two SATA Ports, Four COM ports and Six USB Ports

- Dual RS232 ports
- Two USB ports
- LVDS
- IDE connector
- One PCI slot
- Intel® 945GSE
- Intel® ICH7-M
- SODIMM socket
- Two SATA II ports
- One PCIe x1 slot
- Intel® N270



CF socket

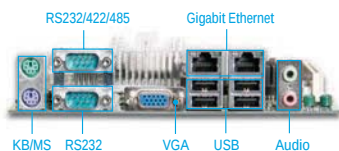
Mini PCIe x1 socket

Based on the Intel® mobile 945GSE chipset, WADE-8072 takes advantage of Intel® Atom™ N270 technologies. This low power, fanless model, WADE-8072, makes it most suitable for POS, Medical, Industrial Control and Digital Signage applications.

FEATURES

- Intel® Atom™ N270 1.6GHz processor
- Intel® 945GSE and ICH7-M chipset
- One 200-pin SODIMM supports single channel DDR2 SDRAM up to 2GB
- Dual display: VGA/LVDS, 3rd display via expansion slot
- Two SATA, one Compact Flash socket & one IDE connector
- One PCI slot, one PCIe x1 expansion slot and one Mini-PCIe socket
- Three RS232 ports and one RS232/422/485 port

REAR I/O



ORDERING GUIDE

AB1-3353	WADE-8072 Mini-ITX ESB.945GSE+N270 processor.w/DDR2 SDRAM/VGA/LVDS/Dual GbE Ethernet/COM/Audio
AA1-3027	PEP-581R. 1 Slot Riser Card for Right Expansion.1xPCI.For WADE-8134/8144

PACKING LIST

One WADE-8072 Mini-ITX Main Board
One Installation CD
One SATA Cable
One COM Cable
One LPT Cable
One I/O shield

GENERAL

processor	- Intel® Atom™ N270 (1.60GHz, 2.5W) processor in PBGA 437 package, L2 Cache 522 KB - FSB 533MHz - Supports Intel® Hyper-Threading Technology, Enhanced Intel SpeedStep® Technology, Thermal Monitoring Technologies, Execute Disable Bit
Chipset	Intel® 82945GSE Graphics and Memory Controller (6W) and ICH7M
BIOS	Award BIOS
Memory	Supports single channel up to 2GB DDR2 400/533 MHz SDRAM on one 200-pin SODIMM socket
Storage Devices	- 2x SATA port 3.0Gb/s data transfer rate - 1x IDE connector supports Ultra DMA100/66/33 MB/s
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	FAN Speed (CPU & System), Temperature (CPU & System), Voltage, Case open function
Expansion Interface	- 1x PCI Expressx1 slot (Gen 1, 2.5 GT/s) - 1x PCI 32-bit slot - 1x Mini-PCIe socket (Gen 1, 2.5 GT/s)

I/O INTERFACE

Super I/O	Winbond W83627UHG
Audio	- Intel® 945GSE built-in High Definition Audio up to 96-kHz 24-bit - Realtek ALC662-GR, 5.1 channels - Audio Jack DIP Light Pink/Lime
Ethernet	Realtek 8111C Dual Gigabit Ethernet controller
Serial Port	- 1x RS232 port on rear I/O - 1x RS232/422/485 selectable on rear I/O - 2x RS232 port on pin header
USB	- 4x USB 2.0 ports on rear I/O - 2x USB 2.0 ports on board with header - 480 Mb/s bus capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 8-bit Digital I/Os
Other	- 1x TPM pin header - 1x parallel port on pin header

DISPLAY

Graphic Controller	- Intel® 945GSE Integrated Graphics Media Accelerator (GMA) 950 supports hardware acceleration of video decode standards MC, DirectX 9.0c - Intel® Dynamic Video Memory Technology (Intel® DVMT 3.0)
Display Interface	- VGA: dual channel 24-bit VGA, analog resolution up to 2048x1536 (QXGA) - LVDS: Digital LVDS resolution up to 1600x1200 (UXGA)

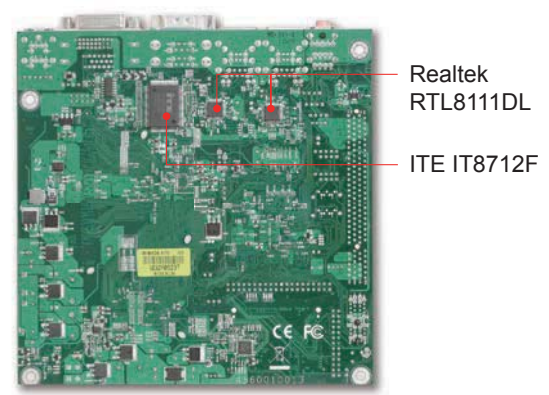
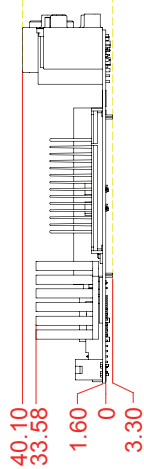
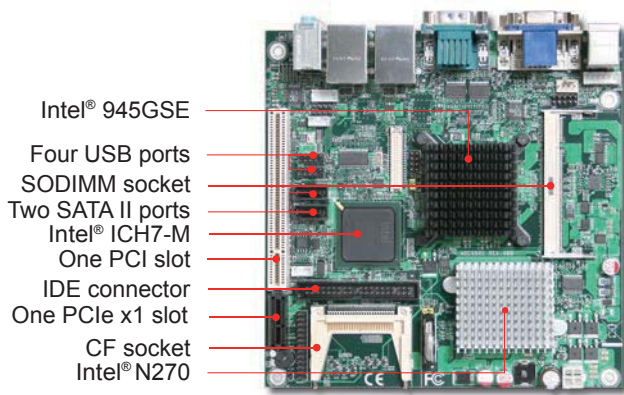
Mechanical & Environment

Dimension	170(L) x 170(W)mm; 6.69"(L) x 6.69"(W)
Power Supply	- Typical: +12V(System)@0.35A; +5V@2.44A; +3.3V@0.82A - Supports ATX mode
Environment	- Operation Temperature: 0°C to 60°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 140,000 hours at 40°C



WADE-8170

Intel® Atom™ N270 processor based Mini-ITX Board with Dual Display, Dual Gigabit Ethernet, Two SATA Ports, Two COM ports and Eight USB Ports

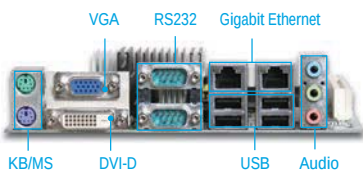


Built with the Intel® mobile 945GSE chipset, WADE-8170 takes advantage of Intel® Atom™ N270 technologies. WADE-8170 features low power while providing multiple displays such as LVDS, VGA, TV-out and DVI. Based on 12V & 15V~24V DC power input design, the WADE-8170 would be the best solution for POS, Medical, Gaming and Digital Signage applications.

FEATURES

- Intel® Atom™ N270 1.6GHz processor
- Intel® 945GSE and ICH7-M chipset
- 12V, 15V~24V DC Power Input
- One 200-pin SODIMM supports single channel DDR2 SDRAM up to 2GB
- Dual display: VGA/LVDS/DVI/TV-Out, 3rd display via riser card
- One PCI expansion slot (Two PCI & one PCI-Expansion x1 slots via riser card)
- Two SATA, one Compact Flash socket & one IDE connector

REAR I/O



ORDERING GUIDE

AB1-3269	WADE-8170 Mini-ITX ESB 945GSE+N270 processor w/DDR2 SDRAM/VGA/LVDS/Dual GbE Ethernet/Audio/12VDC Input
AA1-3102Z	PEP-5C1RX1. One PCI-E x1 Slot Riser Card for Right Expansion. PCI(no signal)+PCIe connectors.

PACKING LIST

One WADE-8170 Mini-ITX Main Board
One Installation CD
One SATA Cable
One SATA Power Cable
One I/O shield

GENERAL

processor	- Intel® Atom™ N270 (1.60GHz/2.5W) processor in PBGA 437 package, L2 Cache 522 KB - FSB 533MHz - Supports Intel® Hyper-Threading Technology, Enhanced Intel SpeedStep® Technology, Thermal Monitoring Technologies, Execute Disable Bit
Chipset	Intel® 82945GSE Graphics and Memory Controller (6W) and ICH7M
BIOS	Award BIOS
Memory	Supports single channel up to 2GB DDR2 400/533 MHz SDRAM on one 200-pin SODIMM socket
Storage Devices	- 2x SATA port support up to 3.0Gb/s data transfer rate - 1x 40 pin IDE connector supports Ultra DMA100/66/33 MB/s - 1x Compact Flash socket supports Ultra DMA100/66/33 MB/s
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	FAN Speed (CPU & System), Temperature (CPU & System), Voltage, Case open function
Expansion Interface	- 1x PCI 32-bit slot - 1x PCI Express x1 slot (Gen 1, 2.5 GT/s) through riser card

I/O INTERFACE

Super I/O	ITE IT8712F
Audio	- Intel® 945GSE built-in High Definition Audio up to 192-kHz 24-bit - Realtek ALC888, 5.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	Realtek 8111C Dual Gigabit Ethernet controller
Serial Port	2x RS232 port on rear I/O
USB	- 4x USB 2.0 ports on rear I/O - 4x USB 2.0 ports on board with header - 480 Mb/s bus capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 8-bit Digital I/Os
Other	1x S-Video header

DISPLAY

Graphic Controller	- Intel® 945GSE Integrated Graphics Media Accelerator (GMA) 950 supports hardware acceleration of video decoding standards MC, DirectX 9.0c - Intel® Dynamic Video Memory Technology (Intel® DVMT 3.0)
Display Interface	- VGA: dual channel 18bits LVDS, analog resolution up to 2048x1536 (QXGA) - LVDS: Digital LVDS resolution up to 1600x1200 (UXGA) - DVI: Digital DVI resolution up to 1600x1200 (UXGA)

Mechanical & Environment

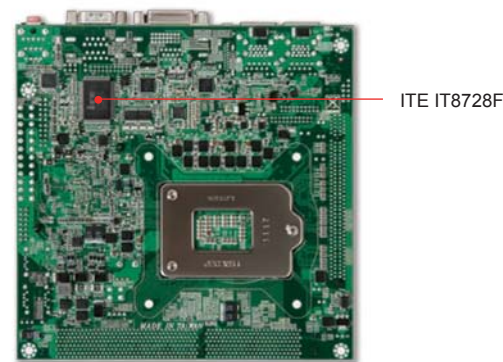
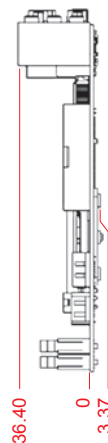
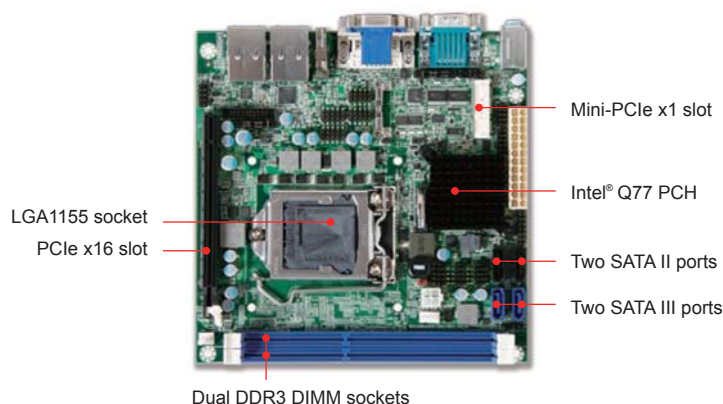
Dimension	170(L) x 170(W)mm; 6.69"(L) x 6.69"(W)
Power Supply	DC-12V input
Environment	- Operation Temperature: 0°C to 60°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 140,000 hours at 40°C





WADE-8013

Intel® Next-Gen Dual/Quad processor based Mini-ITX Board with dual Gigabit Ethernet, Four SATA Ports, Six COM Ports, One PCI-Express x16 expansion slot and one Mini-PCIe slot support mSATA interface

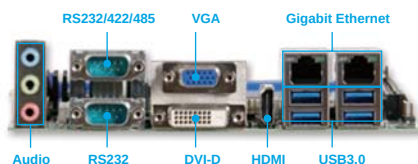


WADE-8013 supports the latest 3rd generation Intel® Core™ processor platform in an LGA1155 package, integrated with the memory and PCI Express controller supporting two-channel DDR3 memory and PCI Express 3.0 lanes to provide great graphics performance.

FEATURES

- Intel® next-Gen Dual/Quad processor in LGA1155 package
- Intel® Q77 Chipset
- Two 240-pin Long-DIMM supports DDR3 SDRAM up to 16GB
- Dual display: VGA/DVI/HDMI
- One PCI Express x16 expansion slot
- Four SATA ports (2x SATA II, 2x SATA III)
- Six COM ports
- One Mini-PCIe slot supports mSATA interface

REAR I/O



ORDERING GUIDE

AB1-3709	(R) WADE-8013 Mini-ITX ESB Q77 w/o ECC PGA1155 w/DDR3 SDRAM /VGA/DVI-D/HDMI/Dual GbE/COM/Audio/USB 3.0
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PACKING LIST

One WADE-8013 Mini-ITX Main Board
One Installation CD
One SATA Cable
One I/O shield

GENERAL

processor	- Intel® Dual Core™/Quad Core™ processor in LGA1155 package - FSB: 667/800/1066MHz - Supports Intel® Hyper-Threading Technology, Intel® Virtualization Technology (VT-x), Intel® Advanced Vector Extensions (AVX)
Chipset	- Intel® Q77 PCH
BIOS	- Phoenix BIOS (SPI ROM)
Memory	- Supports dual channel up to 16GB DDR3 1333/1600 MT/s SDRAM on two 240-pin and sockets
Storage Devices	- 2x SATA II supporting up to 3.0Gb/s data transfer rate - 2x SATA III supporting up to 6.0Gb/s data transfer rate
Watchdog Timer	- Programmable via S/W from 1 sec. to 255 min.
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 slot (Gen 3, 8.0GT/s) (support PCIe x1, x4, x8, x16 mode) - 1x Mini-PCIe slot

I/O INTERFACE

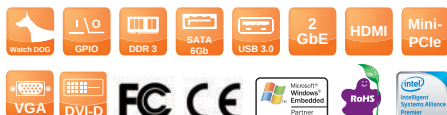
Super I/O	- ITE IT8728F
Audio	- Intel® Q77 built-in High Definition Audio up to 96-kHz 24-bit - Realtek ALC886-GR, 7.1+2 channel - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	- Intel® 82583V support iAMT 8.0 and Intel® 82574L Dual Gigabit Ethernet controllers
Serial Port	- 1x RS232 port on rear I/O - 1x RS232/422/485 selectable port on rear I/O - 3x RS232 with header - 1x RS232/422/485 with header
USB	- 4x USB 3.0 ports on rear I/O - 6x USB 2.0 ports on board with two headers - For USB 2.0: 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges - For USB 3.0: 5Gbps bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	- 1x PS/2 Keyboard & Mouse on board
GPIO	- On board programmable 16-bit Digital I/Os

DISPLAY

Graphic Controller	- Intel® Q77 Integrated 3D GMA support DX10.1, OpenGL 3.0, MPEG-2, Shader Model 4.0
Display Interface	- VGA: One connector DB-15 on rear I/O, analog resolution up to 2048x1536 - HDMI: One connector on rear I/O, support up to 1920x1200 resolution - DVI-D: One connector on rear I/O, Digital DVI resolution up to 1920x1200

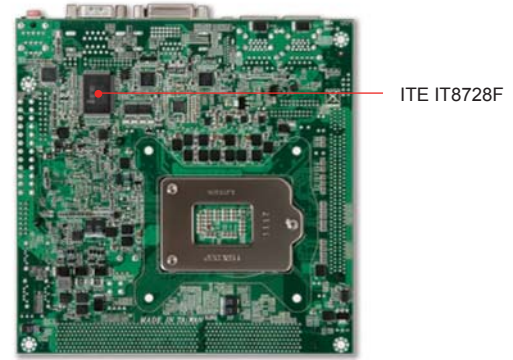
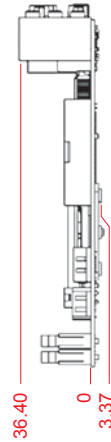
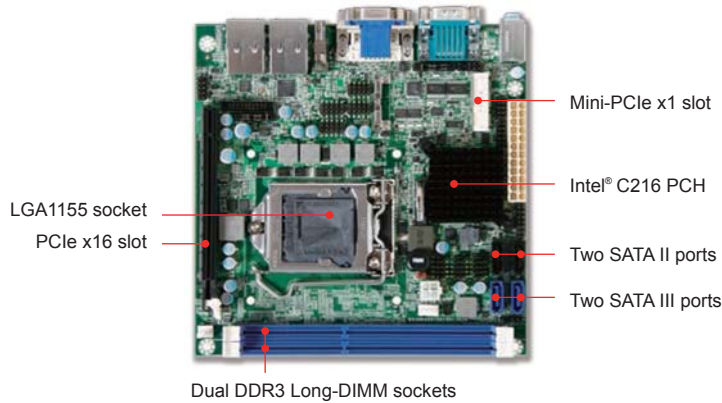
Mechanical & Environment

Dimension	- 170(L) x 170(W) mm; 6.69"(L) x 6.69"(W)
Power Supply	- ATX 24-pin power input
Environment	- Operation Temperature: 0°C to 60°C - Storage temperature: -20°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	- Over 100,000 hours at 40°C



WADE-8014

Intel® Next-Gen Dual/Quad processor based Mini-ITX Board with dual Gigabit Ethernet, Four SATA Ports, Six COM Ports, One PCI-Express x16 expansion slot and one Mini-PCIe slot support mSATA interface

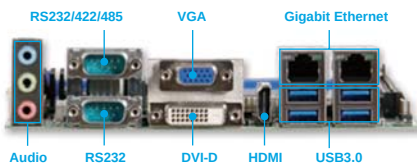


WADE-8014 supports the latest 3rd generation Intel® Core™ processor platform in an LGA1155 package, integrated with the memory and PCI Express controller supporting two-channel DDR3 memory and PCI Express 3.0 lanes to provide great graphics performance.

FEATURES

- Intel® next-Gen Dual/Quad processor in LGA1155 package
- Intel® C216 Chipset
- Two 240-pin Long-DIMM supports DDR3 SDRAM up to 16GB
- Dual display: VGA/DVI/HDMI
- One PCI Express x16 expansion slot
- Four SATA ports (2x SATA II, 2x SATA III)
- Six COM ports
- One Mini-PCIe slot supports mSATA interface

REAR I/O



ORDERING GUIDE

AB1-3709	(R) WADE-8014 Mini-ITX ESB C216 w/ECC PGA1155 w/DDR3 SDRAM /VGA/DVI-D/HDMI/Dual GbE/COM/Audio/USB 3.0
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PACKING LIST

One WADE-8014 Mini-ITX Main Board
One Installation CD
One SATA Cable
One I/O shield

GENERAL

processor	- Intel® Dual Core™/Quad Core™ processor in LGA1155 package - FSB: 800/1066MHz - Supports Intel® Hyper-Threading Technology, Intel® Virtualization Technology (VT-x), Intel® Advanced Vector Extensions (AVX)
Chipset	- Intel® C216 PCH
BIOS	- Phoenix BIOS (SPI ROM)
Memory	- Supports dual channel up to 16GB DDR3 1333/1600 MT/s SDRAM on two 240-pin and sockets
Storage Devices	- 2x SATA II supporting up to 3.0Gb/s data transfer rate - 2x SATA III supporting up to 6.0Gb/s data transfer rate
Watchdog Timer	- Programmable via S/W from 1 sec. to 255 min.
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 slot (Gen 3, 8.0GT/s) (support PCIe x1, x4, x8, x16 mode) - 1x Mini-PCIe slot

I/O INTERFACE

Super I/O	- ITE IT8728F
Audio	- Intel® C216 built-in High Definition Audio up to 96-kHz 24-bit - Realtek ALC886-GR, 7.1+2 channel - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	- Intel® 82583V support iAMT 8.0 and Intel® 82574L Dual Gigabit Ethernet controllers
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 USB 3.0 ports on rear I/O - 6x USB 2.0 ports on board with two headers - For USB 2.0: 480 Mb/s bus comprehends the high-speed/full-speed/low-speed data ranges - For USB 3.0: 5Gbps bus comprehends the high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	- 1x PS/2 Keyboard & Mouse on board
GPIO	- On board programmable 16-bit Digital I/Os

DISPLAY

Graphic Controller	- Intel® C216 Integrated 3D GMA support DX10.1, OpenGL 3.0, MPEG-2, Shader Model 4.0
Display Interface	- VGA: One connector DB-15 on rear I/O, analog resolution up to 2048x1536 - HDMI: One connector on rear I/O, support up to 1920x1200 resolution - DVI-D: One connector on rear I/O, Digital DVI resolution up to 1920x1200

Mechanical & Environment

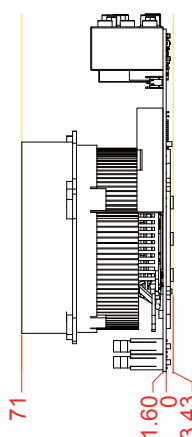
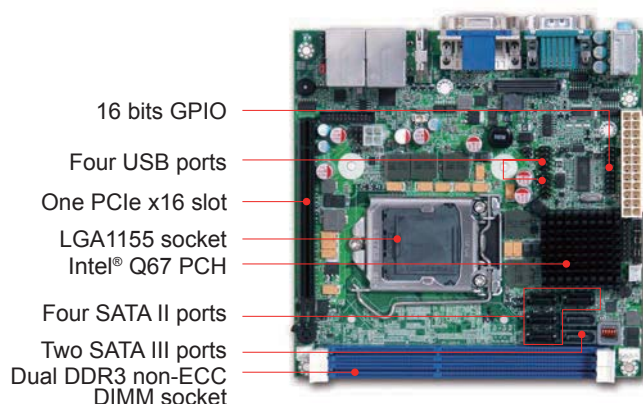
Dimension	- 170(L) x 170(W) mm; 6.69"(L) x 6.69"(W)
Power Supply	- ATX 24-pin power input
Environment	- Operation Temperature: 0°C to 60°C - Storage temperature: -20°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	- Over 100,000 hours at 40°C





WADE-8012

Intel® Core™ i5/i7 processor based Mini-ITX with dual displays, DDR3 SDRAM, Two COM Ports and Eight USB Ports

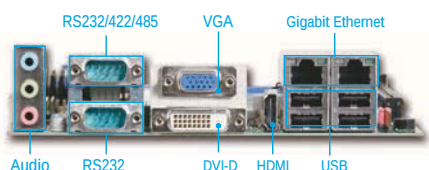


Equipped with second generation Intel® Core™ i5/i7 processors in the LGA1155 socket, Portwell's WADE-8012 Mini-ITX offers superior performance in a small package and is suitable for diverse applications such as Panel PC, Lottery, Medical, Gaming and Digital Signage.

FEATURES

- Intel® Core™ i5/i7 in LGA1155 socket
- Intel® Q67 PCH
- Two 240pin DIMM sockets support Dual channel DDR3 SDRAM up to 8GB
- Dual Display by VGA/DVI/HDMI
- Intel® Active Management Technology (Intel® AMT 7.0)
- Supports Six SATA ports (SATA II x4, SATA III x2), Eight USB ports
- RAID 0,1,5,10

REAR I/O



ORDERING GUIDE

AB1-3644	WADE-8012 Mini-ITX ESB.Q67 w/ECC PGA1155.w/ DDR3 SDRAM /VGA/DVI-D/HDMI/Dual GbE/COM/ Audio/USB
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PACKING LIST

One WADE-8012 Mini-ITX Main Board
One Installation CD
One SATA Cable
One I/O shield

GENERAL

processor	- Intel® Core™ i5/i7 processor up to 3.4GHz (65~95W) with (3~8MB) Cache in LGA1155 package - Supports Intel® Hyper-Threading Technology, Intel® Virtualization Technology (VT-x), Intel® Trusted Execution Technology, Enhanced Intel SpeedStep® Technology
Chipset	Intel® BD82Q67 PCH
BIOS	AMI UEFI BIOS
Memory	Supports dual channel up to 16GB DDR3 1333/1066 MT/s SDRAM on two 240-pin non-ECC socket
Storage Devices	- 4x SATA support up to 3.0Gb/s data transfer rate - 2x SATA support up to 6.0Gb/s data transfer rate
Watchdog Timer	Programmable via S/W from 0.5 sec. to 255 min.
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 slot (Gen 2, 5.0 GT/s) (supports PCIe x1, x4, x8, x16 mode)

I/O INTERFACE

Super I/O	ITE IT8728F
Audio	- Intel® Q67 built-in High Definition Audio up to 96-kHz 24-bit - Realtek ALC662-GR, 5.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	Intel® 82579LM supports iAMT 7.0 and Intel® 82574L Dual Gigabit Ethernet controllers
Serial Port	- 1x RS232 port on rear I/O - 1x RS232/422/485 selectable port on rear I/O
USB	- 4x USB 2.0 ports on rear I/O - 4x USB 2.0 ports on board with two headers - 480 Mb/s bus capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 16-bit Digital I/Os

DISPLAY

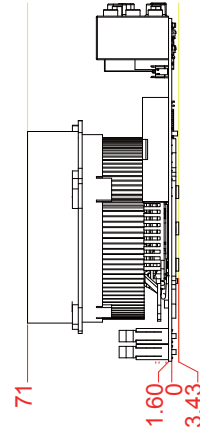
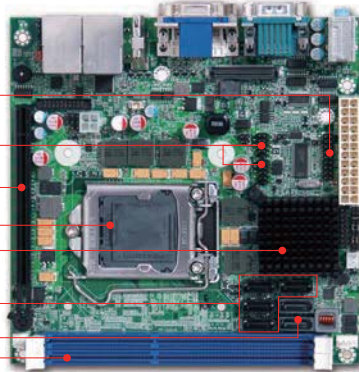
Graphic Controller	Intel® Q67 Integrated 3D GMA supports DX10.1, OpenGL 3.0, MPEG-2, Shader Model 4.0
Display Interface	- VGA: One connector DB-15 on rear I/O, analog resolution up to 2048x1536 (QXGA) - HDMI: One connector on rear I/O, supports up to 1920 x 1200 resolution - SDVO: One on-board connector (PCIe x1 & USB x1 signals) - DVI-D: One connector on rear I/O, Digital DVI resolution up to 1920x1200 (WUXGA)

Mechanical & Environment

Dimension	170(L) x 170(W)mm; 6.69"(L) x 6.69"(W)
Power Supply	- Typical: +12V(CPU)@3.81A; +12V(System)@2.21A; +5V@2.3A; +3.3V@1.15A - Supports ATX mode
Environment	- Operation Temperature: 0°C to 60°C - Storage temperature: -20°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 100,000 hours at 40°C



- 16 bits GPIO
- Four USB ports
- One PCIe x16 slot
- LGA1155 socket
- Intel® C206 PCH
- Four SATA II ports
- Two SATA III ports
- Dual DDR3 ECC DIMM socket



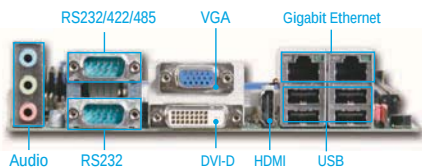
ITE IT8728F

Equipped with second generation Intel® Core™ i3 and Xeon® E3-1200 series processors in the LGA1155 socket, Portwell's WADE-8011 Mini-ITX offers superior performance in a small package and is suitable for diverse applications such as Panel PC, Lottery, Medical, Gaming and Digital Signage.

FEATURES

- Intel® i3 and Xeon® E3-1200 series processor in LGA1155 socket
- Intel® C206 PCH chipset
- Two 240pin DIMM sockets support dual channel DDR3 SDRAM up to 8GB
- Dual Display by VGA/DVI/HDMI
- Intel® Active Management Technology (Intel® AMT 7.0)

REAR I/O



ORDERING GUIDE

AB1-3643	WADE-8011.Mini-ITX ESB.C206 w/ECC PGA1155.w/DDR3 SDRAM /VGA/DVI-D/HDMI/Dual GbE/COM/Audio/USB
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PACKING LIST

One WADE-8011 Mini-ITX Main Board
One Installation CD
One SATA Cable
One I/O shield

GENERAL

processor	- Intel® Core™ i3 and Xeon® E3-1200 series processor up to 3.4GHz (65~95W) with (3~8MB) Cache in LGA1155 package - Supports Intel® Hyper-Threading Technology, Intel® Virtualization Technology (VT-x), Intel® Trusted Execution Technology, Enhanced Intel SpeedStep® Technology
Chipset	Intel® BD82C206 PCH
BIOS	AMI UEFI BIOS
Memory	Supports dual channel up to 16GB DDR3 1333/1066 MT/s SDRAM on two 240-pin ECC and non-ECC socket
Storage Devices	- 4x SATA support up to 3.0Gb/s data transfer rate - 2x SATA support up to 6.0Gb/s data transfer rate
Watchdog Timer	Programmable via S/W from 0.5 sec. to 255 min.
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 slot (Gen 2, 5.0 GT/s) (support PCIe x1, x4, x8, x16 mode)

I/O INTERFACE

Super I/O	ITE IT8728F
Audio	- Intel® C206 built-in High Definition Audio up to 96-kHz 24-bit - Realtek ALC662-GR, 5.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	Intel® 82579LM support iAMT 7.0 and Intel® 82574L Dual Gigabit Ethernet controllers
Serial Port	- 1x RS232 port on rear I/O - 1x RS232/422/485 selectable port on rear I/O
USB	- 4x USB 2.0 ports on rear I/O - 4x USB 2.0 ports on board with two headers - 480 Mb/s bus capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 16-bit Digital I/Os

DISPLAY

Graphic Controller	Intel® C206 Integrated 3D GMA support DX10.1, OpenGL 3.0, MPEG-2, Shader Model 4.0
Display Interface	- VGA: One connector DB-15 on rear I/O, analog resolution up to 2048x1536 (QXGA) - HDMI: One connector on rear I/O, supports up to 1920 x 1200 resolution - SDVO: One on-board connector (PCIe x1 & USB x1 signals) - DVI-D: One connector on rear I/O, Digital DVI resolution up to 1920x1200 (WUXGA)

Mechanical & Environment

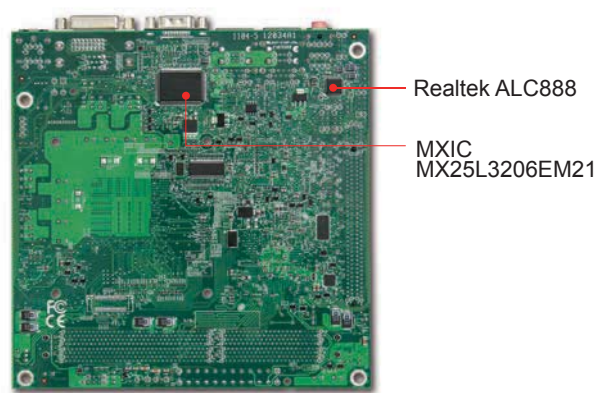
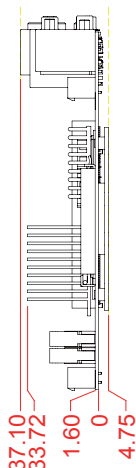
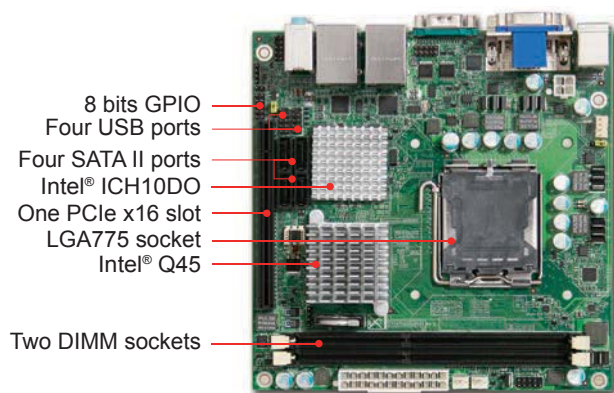
Dimension	170(L) x 170(W)mm; 6.69"(L) x 6.69"(W)
Power Supply	-Typical: +12V(CPU)@3.81A; +12V(System)@2.21A; +5V@2.3A; +3.3V@1.15A -Supports ATX mode
Environment	- Operation Temperature: 0°C to 60°C - Storage temperature: -20°C to 80°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 100,000 hours at 40°C





WADE-8180

Leading Intel® Core™ 2 Quad/Core™ 2 Duo processor based Mini-ITX embedded board with Dual Display, Dual Gigabit Ethernet, SATA, COM and USB

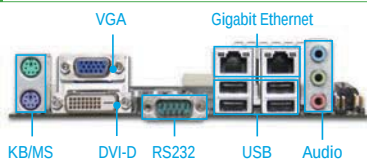


WADE-8180 offers the availability of an extra graphics card which enables powerful graphic processing ability. In addition, the VGA and DVI-D dual video outputs can drive two displays simultaneously which is ideal for gaming applications. With dual GbE LAN, four SATA, dual COM and eight USB I/O functions, WADE-8180 is the best solution for multiple applications such as Automation, Multi-media and KIOSK.

FEATURES

- Intel® Core™ 2 Quad/Core™ 2 Duo processor Intel® Q45 Express and ICH10DO chipset
- Two 240-pin DIMM sockets support dual channel DDR3 SDRAM up to 4GB
- Dual display: VGA/DVI-D, 3rd display via PCI-Express x16 slot
- Four SATA ports
- Two GbE LAN ports and One PCIe x16 slot
- RAID 0,1,5,10
- TPM 1.2 and iAMT 5.0 supported

REAR I/O



ORDERING GUIDE

AB1-3255	WADE-8180.Mini-ITX ESB. Intel Core 2 Quad/ Core 2 Duo. w/DDR3 SDRAM /VGA/DVI-D/Dual GbE/ Audio
AA1-3052	PER-4410R.PCI-E x 16 to PCI-E x 16 Riser Card

PACKING LIST

One WADE-8180 Mini-ITX Main Board
One Installation CD
One SATA Cable
One I/O shield
One USB Cable
CPU Fan

GENERAL

processor	- Intel® Core™ 2 Quad/Intel® Core™ 2 Duo processor up to 2.66 GHz (95W) with 6MB L2 Cache in LGA775 package - FSB 1333/1066/800 MHz - Supports Enhanced Intel SpeedStep® Technology, Intel® 64 architecture, Execute Disable Bit
Chipset	Intel® 82Q45 Graphics and Memory Controller Hub (17W) and ICH10DO
BIOS	AMI Core 8 BIOS
Memory	Supports dual channel up to 4GB DDR3 1066/800 MT/s SDRAM on two 240-pin DIMM socket
Storage Devices	4x SATA support up to 3.0Gb/s data transfer rate
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	FAN Speed (CPU & System), Temperature (CPU & System), Voltage
Expansion Interface	1x PCI Express x16 (Gen 1, 2.5 GT/s) (Compatible to the PCI Express® Base Specification revision 2.0)

I/O INTERFACE

Super I/O	MXIC MX25L3206EM21
Audio	- Intel® Q45 built-in High Definition Audio up to 192-kHz 24-bit - Realtek ALC888, 5.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	Intel® 82576LM and Intel® 82574L Dual Gigabit Ethernet controllers
Serial Port	- 1x RS232 on rear I/O - 1x RS232 on board pin header
USB	- 4x USB 2.0 ports on rear I/O - 4x USB 2.0 ports on board with two headers - 480 Mb/s bus capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 8-bit Digital I/Os

DISPLAY

Graphic Controller	- Intel® Q45 Express integrated GMA 4500 Graphics device supports full hardware acceleration MPEG-2, DirectX 10 - Intel® Dynamic Video Memory Technology (Intel® DVM 5.0)
Display Interface	- VGA: Analog resolution up to 2048x1536 (QXGA) - DVI: Digital DVI resolution up to: 2560x1600 @60Hz

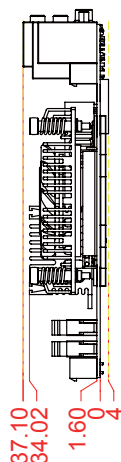
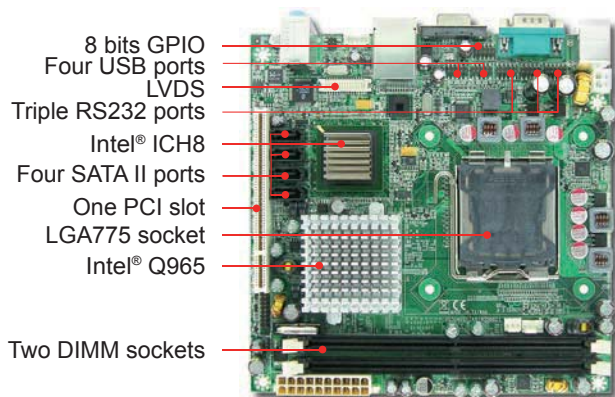
Mechanical & Environment

Dimension	170(L) x 170(W)mm; 6.69"(L) x 6.69"(W)
Power Supply	- Typical: +12V(CPU)@9.25A; +12V@2.8A; +5V@6.72A; +3.3V@10.54A - Supports ATX mode
Environment	- Operation Temperature: 0°C to 60°C - Relative Humidity: 5% to 95%, non-condensing
MTBF	Over 100,000 hours at 40°C



WADE-8056

Leading Intel® Core™ 2 Quad processor based Mini-ITX Board with Dual Displays and One GbE

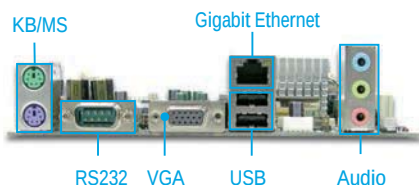


The WADE-8056 is an advanced mini-ITX embedded system board that takes advantage of Intel® Core™ 2 Duo technologies. With its GPIO, WADE-8056 offers robust computing power and reliability for embedded applications that need a digital control interface. Dual video outputs can drive two displays simultaneously at a high speed, while maintaining superior image quality. The expansion slots provide the highly flexibility necessary for functional expansion.

FEATURES

- Intel® Core™ 2 Quad processor
- Intel® Q965 GMCH and ICH8DO Chipset
- Max. 4GB memory, DDR2 SDRAM
- Dual Display by VGA/LVDS
- One GbE LAN port and one PCI slot
- Max. four COM and six USB 2.0 ports
- RAID 0, 1, 5, 10

REAR I/O



ORDERING GUIDE

AB1-3078	WADE-8056 Mini-ITX ESB Intel P4-Dual Core w/ DDR SDRAM/VGA/LVDS/Dual Display/GbE/Audio
AA1-3027	PEP-581R. 1 Slot Riser Card for Right Expansion. 1xPCI.

PACKING LIST

One WADE-8056 Mini-ITX Main Board
One Installation CD
One SATA Cable
One I/O shield
COM Cable

GENERAL

processor	- Intel® Core™ 2 Duo/Core™ 2 Quad/Celeron® D/Pentium® 4 processor up to 3 GHz (65W) with 6MB L2 Cache in LGA775 package - FSB 1066/800/533 MHz - Supports Enhanced Intel SpeedStep® Technology, Intel® 64 architecture, Execute Disable Bit
Chipset	Intel® 82Q965 Graphics and Memory Controller (28W) and ICH8DO
BIOS	Award BIOS
Memory	Supports dual channel up to 4GB DDR2 800/667/533 MT/s SDRAM on two 240-pin DIMM socket
Storage Devices	4x SATA support up to 3.0Gb/s data transfer rate
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	FAN Speed (CPU & System), Temperature (CPU & System), Voltage
Expansion Interface	- 1x PCI Slot (Supports PCI Rev 2.3 specification at 33 MHz) - 1x Mini-PCI socket (Supports PCI Rev 2.3 specification at 33 MHz)

I/O INTERFACE

Super I/O	Winbond W83627HG
Audio	- Intel® Q965 built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC262-VC2-GR, 2.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	Intel® 82566DM Gigabit Ethernet controller
Serial Port	- 1x RS232 port on rear I/O - 3x RS232 on board pin header
USB	- 2x USB 2.0 ports on rear I/O - 4x USB 2.0 ports on board with two headers - 480 Mb/s bus capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 8-bit Digital I/Os

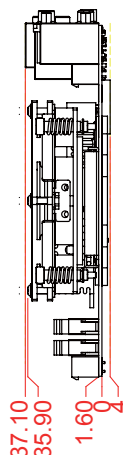
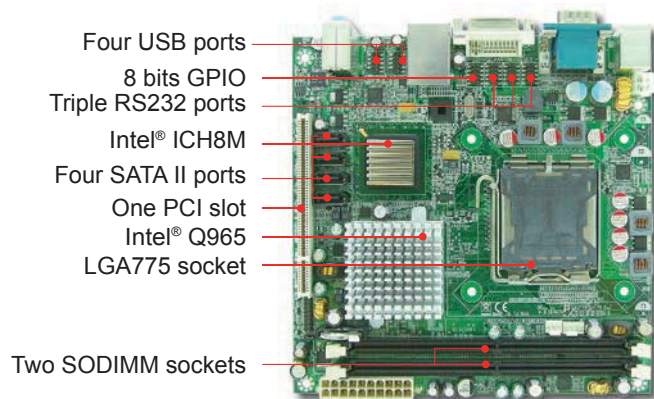
DISPLAY

Graphic Controller	- Intel® Q965 Express integrated GMA 3000 Graphics device support hardware acceleration MC, DirectX 9.0c - Intel® Dynamic Video Memory Technology (Intel® DVMT 4.0)
Display Interface	- VGA: Analog resolution up to 2048x1536 (QXGA) - LVDS: Digital LVDS resolution up to 1920x1200 (UXGA)

Mechanical & Environment

Dimension	170(L) x 170(W)mm; 6.69"(L) x 6.69"(W)
Power Supply	- Typical: +12V(CPU)@2.8A; +12V(System)@0.7A; +5V@5.1A; +3.3V@4.4A - Supports ATX mode
Environment	- Operation Temperature: 0°C to 55°C - Relative Humidity: 0% to 90%, non-condensing
MTBF	Over 100,000 hours at 40°C





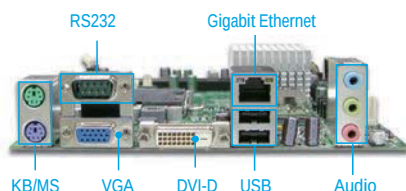
Mini PCI x1 slot

WADE-8556 is an advanced mini-ITX embedded system board that takes advantage of Intel® Core™ 2 Quad technologies. With its Mini-PCI slot, WADE-8556 offers the availability of an extra wireless LAN card which is suitable for Kiosk application. Its VGA and DVI dual video outputs can drive two displays simultaneously making it especially suitable for Digital Signage. The expansion slots are based on PCI technologies and support up to two PCI slots providing high flexibility necessary for functional expansion.

FEATURES

- Intel® Core™ 2 Quad processor
- Intel® Q965 GMCH and ICH8DO Chipset
- Dual Display by VGA/DVI
- One GbE LAN port, one PCI and one Mini-PCI slot
- Max. four COM and six USB 2.0 ports
- RAID 0, 1, 5, 10

REAR I/O



ORDERING GUIDE

AB1-3073	WADE-8556 Mini-ITX ESB Intel P4-Dual Core.w/ DDR SDRAM/VGA/DVI/Dual Display/GbE/Audio
AA1-3027	PEP-581R, 1 Slot Riser Card for Right Expansion.1xPCI.

PACKING LIST

One WADE-8556 Mini-ITX Main Board
One Installation CD
One SATA Cable
One I/O shield
COM Cable

GENERAL

processor	- Intel® Core™ 2 Duo/Core™ 2 Quad/Pentium® 4/Celeron® D processor up to 3 GHz (65W) with 6MB L2 Cache in LGA775 package - FSB 1066/800/533 MHz - Supports Enhanced Intel SpeedStep® Technology, Intel® 64 architecture, Execute Disable Bit
Chipset	Intel® 82Q965 Graphics and Memory Controller (28W) and ICH8DO
BIOS	Award BIOS
Memory	Supports dual channel up to 4GB DDR2 800/667/533 MT/s SDRAM on two 240-pin DIMM socket
Storage Devices	4x SATA support up to 3.0Gb/s data transfer rate
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	FAN Speed (CPU & System), Temperature (CPU & System), Voltage
Expansion Interface	- 1x PCI 32-bit Slot (Supports PCI Rev 2.3 specification at 33 MHz) - 1x Mini-PCI socket (Supports PCI Rev 2.3 specification at 33 MHz)

I/O INTERFACE

Super I/O	Winbond W83627HG
Audio	- Intel® Q965 built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC262-VC2-GR, 2.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	Intel® 82566DM Gigabit Ethernet controller
Serial Port	- 1x RS232 port on rear I/O - 3x RS232 with on board pin headers
USB	- 2x USB 2.0 ports on rear I/O - 4x USB 2.0 ports on board with two headers - 480 Mb/s bus capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 8-bit Digital I/Os

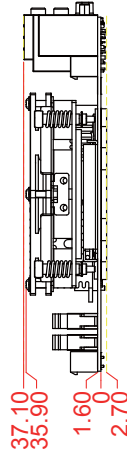
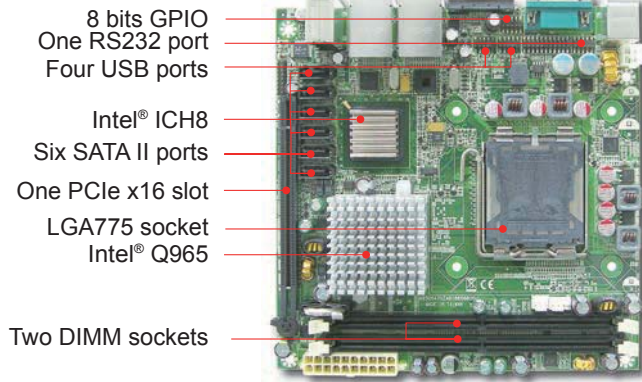
DISPLAY

Graphic Controller	- Intel® Q965 Express integrated GMA 3000 Graphics device support hardware acceleration MC, DirectX 9.0c - Intel® Dynamic Video Memory Technology (Intel® DVMT 4.0)
Display Interface	- VGA: Analog resolution up to 2048x1536 (QXGA) - DVI: Digital DVI resolution up to 1920x1200 (UXGA)

Mechanical & Environment

Dimension	170(L) x 170(W)mm; 6.69"(L) x 6.69"(W)
Power Supply	-Typical: +12V(CPU)@2.8A; +12V(System)@0.7A; +5V@5.1A; +3.3V@4.4A -Supports ATX mode
Environment	- Operation Temperature: 0°C to 55°C - Relative Humidity: 0% to 90%, non-condensing
MTBF	Over 100,000 hours at 40°C





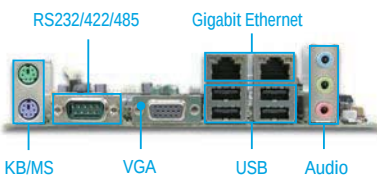
Winbond
W83772G

WADE-8656 is an advanced mini-ITX embedded system board that takes advantage of Intel® Core™ 2 Quad technologies. With its PCIe x16 slot, WADE-8656 provides an extra graphic card which can offer powerful graphic processing ability suitable for gaming applications. Six SATA Ports enrich the system capacity, especially suitable for storage usage. Two Gigabit Ethernet ports provide high performance for networking transmission.

FEATURES

- Intel® Core™ 2 Quad processor
- Intel® Q965 GMCH and ICH8DO chipset
- Six SATA ports support
- Two GbE LAN ports, one PCIe x16 slot
- Max. two COM and eight USB 2.0 ports
- RAID 0, 1, 5, 10

REAR I/O



ORDERING GUIDE

AB1-3093	WADE-8656.Mini-ITX ESB.Intel P4-Dual Core.w/ DDR SDRAM/VGA/PCI-E expansion/Dual GbE/Audio
AA1-3052	PER-4410R.PCI-E x 16 to PCI-E x 16 Riser Card

PACKING LIST

One WADE-8656 Mini-ITX Main Board
One Installation CD
One SATA Cable
One I/O shield
USB Cable
COM Cable

GENERAL

processor	- Intel® Core™ 2 Duo/Core™ 2 Quad/Pentium® 4/Celeron® D processor up to 3 GHz (65W) with 6MB L2 Cache in LGA775 package - FSB 1066/800/533 MHz - Supports Enhanced Intel SpeedStep® Technology, Intel® 64 architecture, Execute Disable Bit
Chipset	Intel® 82Q965 Graphics and Memory Controller (28W) and ICH8DO
BIOS	Award BIOS
Memory	Supports dual channel up to 4GB DDR2 800/667/533 MT/s SDRAM on two 240-pin DIMM socket
Storage Devices	6x SATA support up to 3.0Gb/s data transfer rate
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Hardware Monitoring	FAN Speed (CPU & System), Temperature (CPU & System), Voltage
Expansion Interface	1x PCI Express x16 (Gen 1, 2.5 GT/s) (Compatible to the PCI Express® Base Specification revision 1.1a)

I/O INTERFACE

Super I/O	Winbond W83772G
Audio	- Intel® Q965 built-in High Definition Audio up to 192-kHz 32-bit - Realtek ALC262-VC2-GR, 2.1 channels - Audio Jack DIP Light Pink/Lime/Light Blue
Ethernet	- Intel® 82566DM Gigabit Ethernet controller - Realtek 8111B Gigabit LAN
Serial Port	- 1x RS232 port on board head - 1x RS232/422/485 selectable port on rear I/O
USB	- 4x USB 2.0 ports on rear I/O - 4x USB 2.0 ports on board with two headers - 480 Mb/s bus capable of high-speed/full-speed/low-speed data ranges
Keyboard & Mouse	1x PS/2 Keyboard & Mouse on rear I/O
GPIO	On board programmable 8-bit Digital I/Os

DISPLAY

Graphic Controller	- Intel® Q965 Express integrated GMA 3000 Graphics device support hardware acceleration MC, DirectX 9.0c - Intel® Dynamic Video Memory Technology (Intel® DVM T 4.0)
Display Interface	VGA: Analog resolution up to 2048x1536 (QXGA)

Mechanical & Environment

Dimension	170(L) x 170(W)mm; 6.69"(L) x 6.69"(W)
Power Supply	-Typical: +12V(CPU)@2.8A; +12V(System)@0.7A; +5V@5.1A; +3.3V@4.4A -Supports ATX mode
Environment	- Operation Temperature: 0°C to 55°C - Relative Humidity: 0% to 90%, non-condensing
MTBF	Over 100,000 hours at 40°C





The WADE-2221A is a rugged and stylish barebone system suitable for embedded applications that stand alone or are rackmounted. Its effective ventilation is achieved by the mesh design of the front panel. No actual tool is needed to release the top cover of chassis, simplifying integration and field service.

This barebone system includes a WADE series board, 150-watt or 180-watt power supply, 2.5" drive bay and one PCI expansion slot. A 2U rackmount tray is specially designed to hold two units side-by-side and converts them to the rackmount platform.

FEATURES

- Integrated with various Mini-ITX board
- One PCI expansion slot
- Tool-free mechanism to open the top cover
- Rugged and stylish design
- Quick 2.5" HDD installation by releasing the top cover
- Two side-by-side units to form two systems in 2U rackmount form factor

POWER SUPPLY

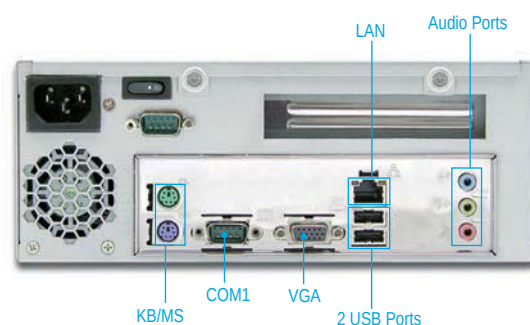
ORION-A1801P optional

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	6A@115V, 3A@230V
Efficiency	>75%
Holdup Time	16ms. at full load@25°C
Over Voltage Protection	+5V@5.7~6.5V; +3.3V@3.9~4.3V; +12V@13.6~+15V
Over Power/Load Protection	Output power over to 110%~150%
MTBF	>130,000 hrs
EMI & Safety Approval	UL, TUV, BSMI, NEMCO, FCC, CE
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	81.5 x 150 x 40.5 mm; 3.2" x 5.9" x 1.6"

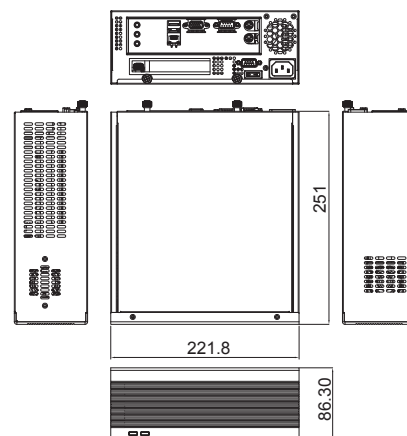
MECHANICAL & ENVIRONMENTAL

Operation Temperature	0~50°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension	251 x 221.8 x 86.3 (mm)
Weight	2.2 Kg

REAR I/O



ENGINEERING DRAWING



ORDERING GUIDE

- **WADE-2221A-150X**
Rugged and stylish industrial Mini-ITX Bare-bones Chassis with 150W active PFC PSU
- **WADE-2221A-180X**
Rugged and stylish industrial Mini-ITX Bare-bones Chassis with 180W active PFC PSU



WADE-1120A

The fan-less compact Mini-ITX Bore Bone Chassis



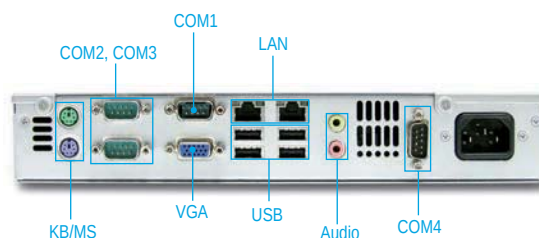
The WADE-1120A is designed to efficiently dissipate any internal heat, eliminating the need for a ventilation fan. It is the perfect system solution for any embedded application that operates in a harsh environment. WADE-1120A is designed with either a built-in WADE-8041 board or similar

Mini-ITX board as the barebone system. Its unique tool-free design allows the integrator or field service professional to release the top cover easily and quickly. Complete with memory, DOM or Compact flash, WADE-1120A is ready to go to work.

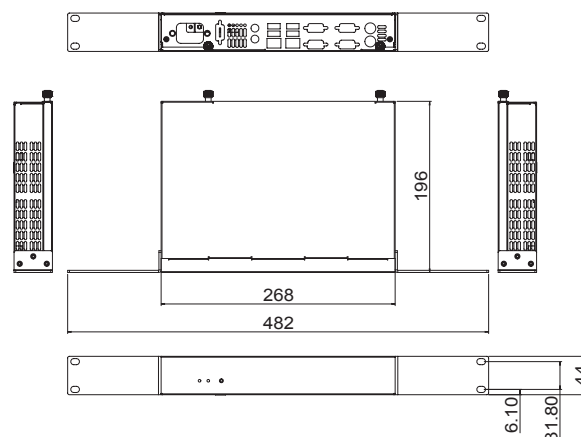
FEATURES

- Integrated with WADE-8041 or similar Mini-ITX board
- Small form factor with fan-less ventilation mechanism
- Rugged design for harsh environment
- Unique tool-free design for quick top cover release

REAR I/O



ENGINEERING DRAWING



ORDERING GUIDE

■ WADE-1120A-55X

The Fan-free Designed Compact Node Chassis built with 55W ATX PSU

* Rack-mount kit available (option)

POWER SUPPLY FSP055-50LM optional

Maximum Output	55W ATX power supply
Input Voltage	90V ~ 265V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	2.0A(RMS)@115V, 1.0A(RMS)@230V
Efficiency	>74%
Holdup time	17ms. at 115V/60Hz or 230V/50Hz
Over Voltage Protection	3.3V@3.5~4.5V; 5V@5.5~6.82V; 12V@13.4~16.5V
MTBF	121,330 hrs
Certification	UL, cUL, TUV, CE, FCC
Dimension (WxDxH)	183 x 50 x 37.6 mm; 7.2" x 2" x 1.5"

MECHANICAL & ENVIRONMENTAL

Operation Temperature	0~50°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension	268 x 196 x 44 (mm)
Weight	2.2 Kg



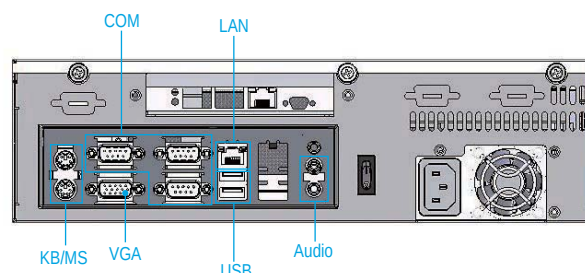
The WADE-2231Q is a rugged and stylish barebones system suitable for embedded applications that stand alone or are rackmounted. Its effective ventilation is achieved by the mesh design of the front panel. No actual tool is needed to release the

top cover of chassis, simplifying integration and field service. This barebone system includes a WADE series board, 180-watt power supply, 3.5" drive bay and one PCI expansion slot.

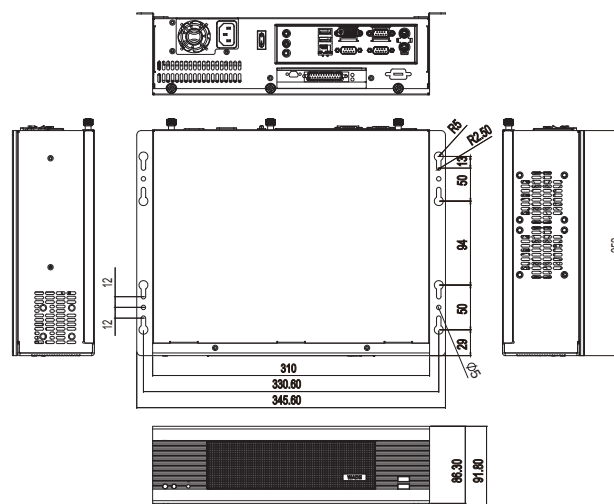
FEATURES

- Bare-bones Chassis for Mini-ITX board
- Tool-free mechanism to open the top cover
- Rugged and stylish design
- Quick 3.5" HDD installation by releasing the top cover

REAR I/O



ENGINEERING DRAWING



POWER SUPPLY

ORION-A1801P optional

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	6A@115V, 3A@230V
Efficiency	>75%
Holdup Time	16ms. at full load@25°C
Over Voltage Protection	+5V@5.7~6.5V; +3.3V@3.9~4.3V; +12V@13.6~+15V
Over Power/Load Protection	Output power over to 110%~150%
MTBF	>130,000 hrs
EMI & Safety Approval	UL, TUV, BSMI, NEMCO, FCC, CE
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	81.5 x 150 x 40.5 mm; 3.2" x 5.9" x 1.6"

MECHANICAL & ENVIRONMENTAL

Operation Temperature	0~50°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension	310 x 252 x 86.3 (mm)
Weight	3.0 Kg

ORDERING GUIDE

- **WADE-2231Q-4410R-180X**
Rugged and stylish industrial Mini-ITX Bare-bones Chassis with PER-4410R, PCI-E x 16 riser card & 180W PSU
- **WADE-2231Q-518R-180X**
Rugged and stylish industrial Mini-ITX Bare-bones Chassis with PEP-581R, 1 slot PCI riser card & 180W PSU



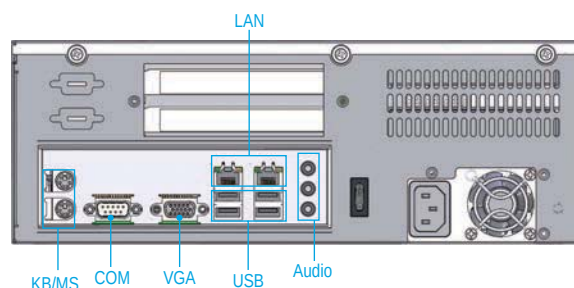
The WADE-2232Q is a rugged and stylish barebones system suitable for embedded applications that stand alone or are rackmounted. Its effective ventilation is achieved by the mesh design of the front panel. No actual tool is needed to release the top cover of chassis,

simplifying integration and field service. This barebone system includes a WADE series board, 220-watt power supply, 3.5" drive bay and two PCI expansion slot.

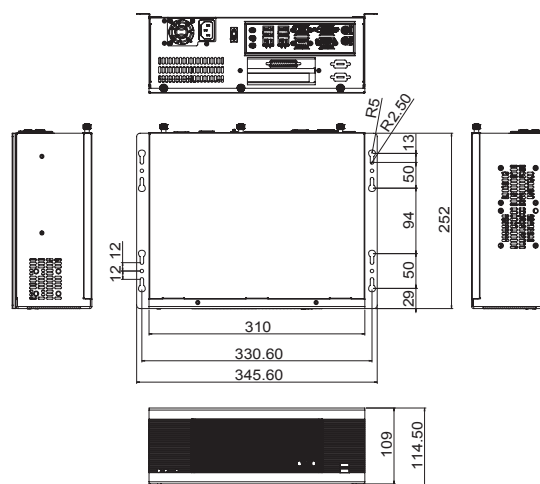
FEATURES

- Bare-bones Chassis for Mini-ITX board
- Tool-free mechanism to open the top cover
- Rugged and stylish design
- Quick 3.5" HDD installation by releasing the top cover
- Two expansion slots

REAR I/O



ENGINEERING DRAWING



ORDERING GUIDE

- **WADE-2232Q-582R-220X**
Rugged and stylish industrial Mini-ITX Bare-bones Chassis with PEP-582R, 2 slots PCI, riser card & 220W PSU
- **WADE-2232Q-592R-220X**
Rugged and stylish industrial Mini-ITX Bare-bones Chassis with PEP-592R, 2 slots (PCI-E x 1, PCI x 1)

POWER SUPPLY FSP220-60LE

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	5A@115V, 3A@230V
Efficiency	>80%
Holdup Time	17ms. at full load@25°C
Over Voltage Protection	+5V@5.5~6.82V; +3.3@3.5~4.8V; +12V@13.4~15.6V
Over Power/Load Protection	Output power over to 110%~140%
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, CSA, SEMKO, FIMKO, NEMCO, DIMCO
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -20 ~ 80°C, 10m ~ 90%RH
Dimension (WxDxH)	150 x 81.5 x 40.5 mm; 5.9" x 3.2" x 1.6"

MECHANICAL & ENVIRONMENTAL

Operation Temperature	0~50°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension	310 x 252 x 109 (mm)
Weight	3.5 Kg



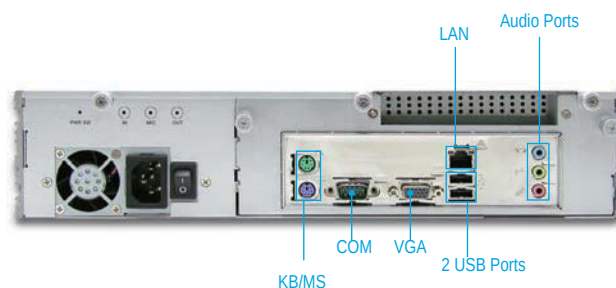
The compact and slim ARTO-220-ITX is design to fit Mini-ITX MB applications operating where space is at a premium. It also features a tool-free mechanical design to quickly release the top cover of the chassis for ease of integration and field service. The

barebone system includes a WADE series board, 3.5" drive bay, one PCI expansion slot and a 250-watt power supply.

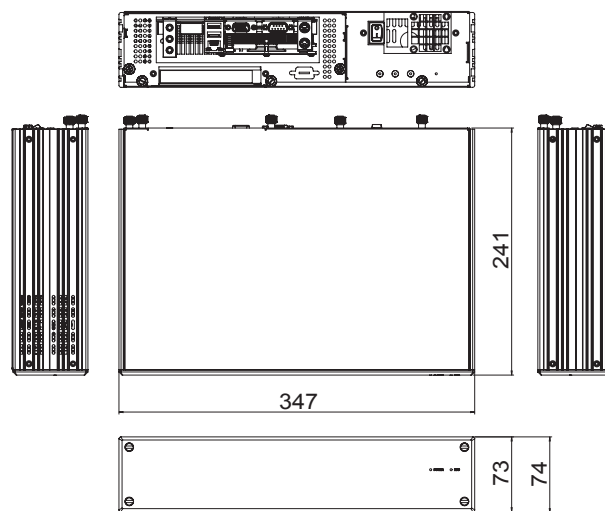
FEATURES

- Bare-bones chassis for Mini-ITX board
- Compact, slim and stylish ID design
- One 3.5" HDD bay and 250W PSU
- One PCI expansion slot

REAR I/O



ENGINEERING DRAWING



ORDERING GUIDE

- **ARTO-220-ITX-250X**
1.5U Advanced Mini-ITX based Chassis with PEP-581R, 1 slot PCI, rise card & 250W Active PFC PSU

POWER SUPPLY		FSP250-50PLB optional
Input Voltage	90V ~ 264V AC, full range	
Input Frequency	47 ~ 63 Hz	
Input Current	5A@115V, 3A@230V	
Efficiency	>68%	
Holdup Time	17ms. at full load@25°C	
Over Voltage Protection	+5V@5.7~6.5V; +3.3@3.7~4.5V; +12V@13.3~+5.6V	
Over Power/Load Protection	Output power over to 110%~160%	
MTBF	105,405 hrs	
EMI & Safety Approval	UL, cUL, TVU, CE, FCC	
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -20 ~ 70°C, 10m ~ 90%RH	
Dimension (WxDxH)	100 x 190 x 40.5 mm; 3.9" x 7.5" x 1.6"	

MECHANICAL & ENVIRONMENTAL	
Operation Temperature	0~50°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension	347 x 241 x 74 (mm)
Weight	3.5 Kg



WADE-1042

1U Height Bare Bone server with four drive bays for RAID and two expansion slots

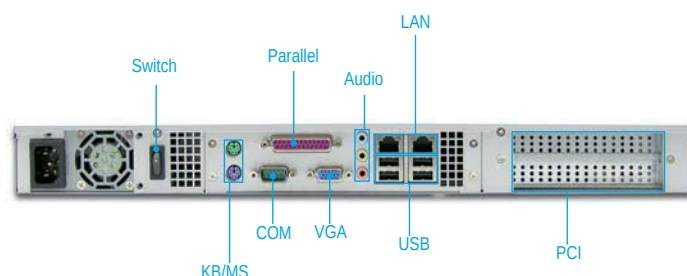


The WADE-1042 uses a 1U rack-mount form factor and is designed for network or communication applications. Its four drive bays support RAID configuration through the SATA interfaces on the board. Applications will benefit from WADE-1042's compact size, expansion capability, RAID configuration and 250-watt power supply.

FEATURES

- Bare-bone s chassis for Mini-ITX board
- Compact, slim and stylish ID design
- Four 3.5" HDD bays and 180W PSU
- Two PCI expansion slot

REAR I/O



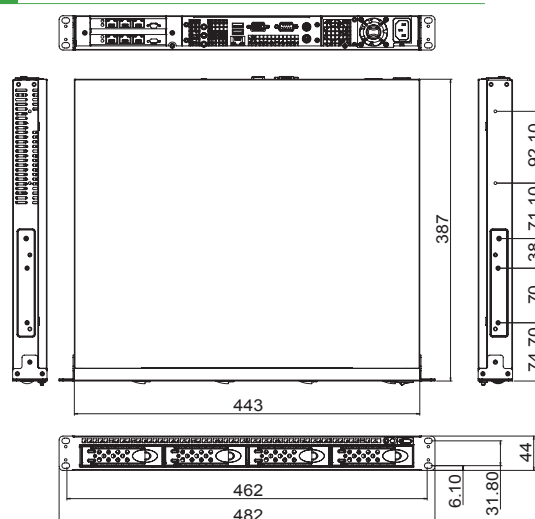
POWER SUPPLY **FSP220-60LE optional**

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	5A@115V, 3A@230V
Efficiency	>68%
Holdup Time	20ms. at full load@25°C
Over Voltage Protection	+5V@5.5~6.8V; +3.3@3.7~4.8V; +12V@13.4~15.6V
Over Power/Load Protection	Output power over to 110%~140%
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, CSA, SEMKO, FIMKO, NEMCO, DIMCO
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -40 ~ 70°C, 10m ~ 90%RH
Dimension (WxDxH)	150 x 81.6 x 40.6 mm; 5.9" x 3.2" x 1.6"

MECHANICAL & ENVIRONMENTAL

Operation Temperature	0~50°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension	443 x 387 x 44 (mm)
Weight	6.5 Kg

ENGINEERING DRAWING



ORDERING GUIDE

■ WADE-1042-582L-220X

Advance Mini-ITX based Chassis for Rack-Mount with PEP-582L, 2 slots PCI, riser card & 220W Active PFC PSU



Riser Card Selection Guide

WADE ESB	Riser Card	WADE-2221A	ARTO-220-ITX	WADE-2232Q
WADE-8066	PER-4210R			
	PEP-581R			
	PEP-582R			
	PEP-5311R			
WADE-8056	PEP-581R			
	PEP-582R			
	PEP-5311R			
WADE-8556	PEP-581R			
	PEP-582R			
	PEP-5311R			
WADE-8656	PER-4410R			
WADE-8065	PEP-581R			
	PEP-582R			
	PEP-5311R			
WADE-8055	PEP-581R			
	PEP-582R			
	PEP-5311R			
WADE-8044	PEP-581R			
	PEP-582R			
	PEP-5311R			



WEBS: Portwell Intelligent Fan-less System

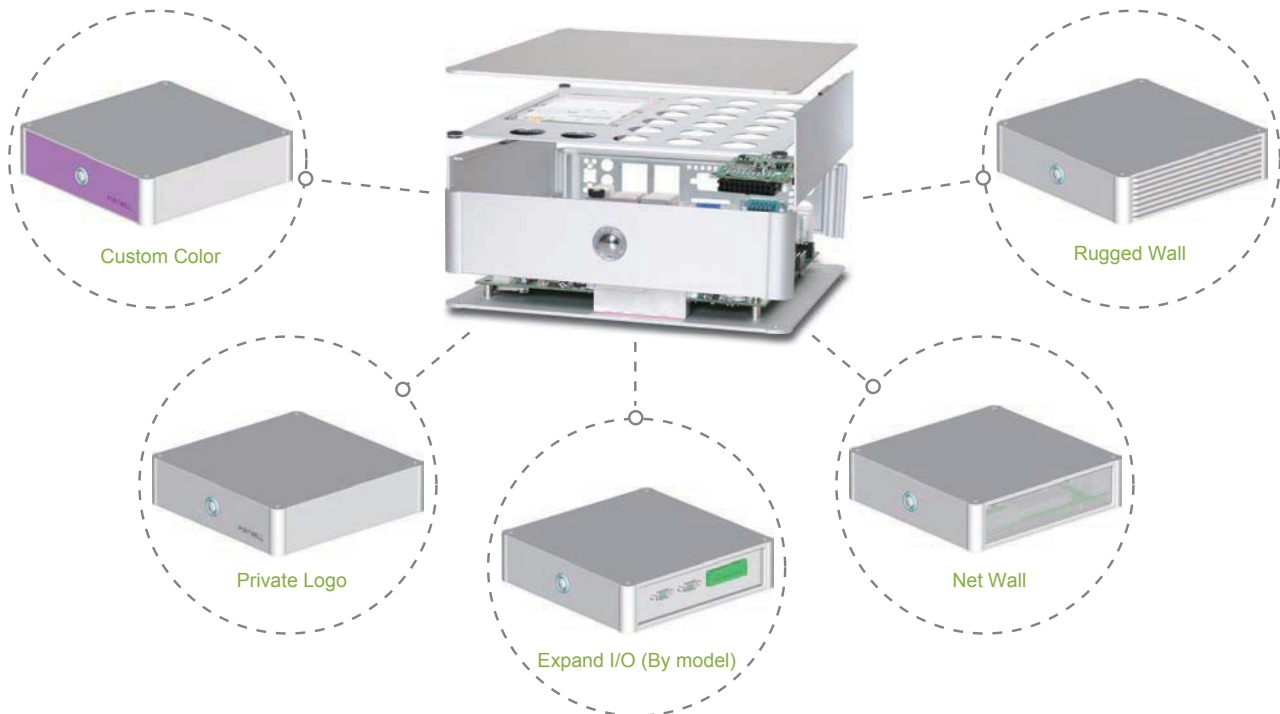
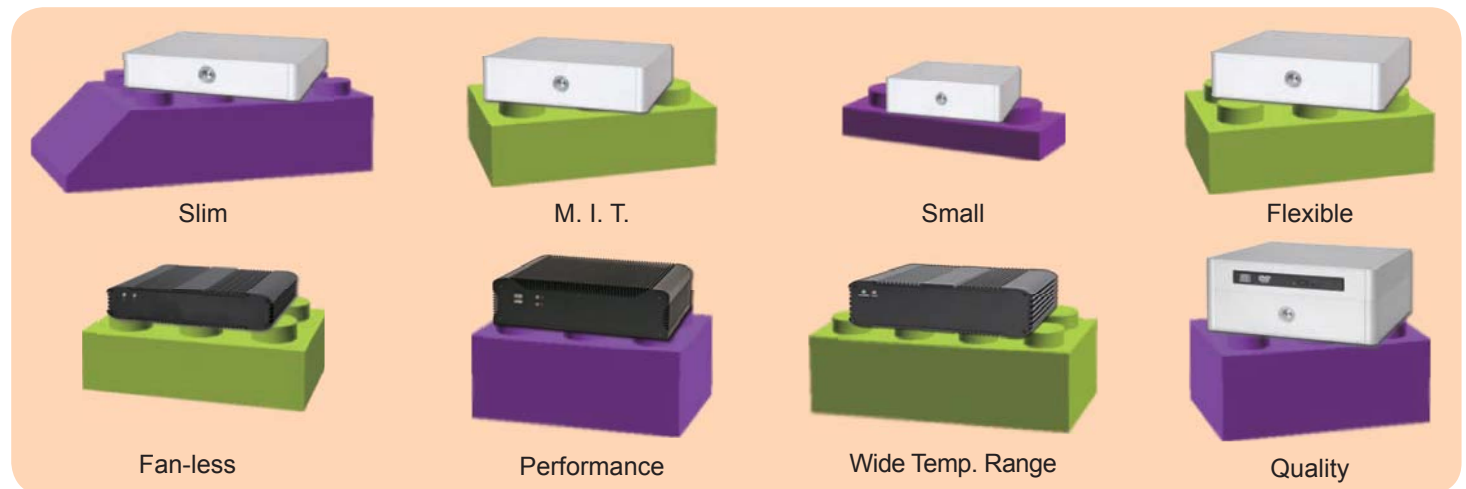
Compact, Flexible, Rugged Computing Systems

With leading embedded computing technology, Portwell has developed the industrial grade WEBS fan-less computing systems for harsh environment such as factory automation, transportation, facility management, networking and public works.

To meet these harsh environmental parameters, each WEBS computing system is designed by precise thermal simulation and verification to make the system stable and user friendly.

The all-aluminum chassis design provides effective heat dissipation and transfers the heat out of the system quickly and easily.

Built with the latest Intel® chipsets, the WEBS systems feature not only superior performance but also low power consumption. They are suitable for energy-critical applications and environmental friendly.



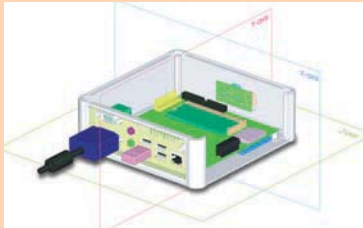


① Design & Analysis

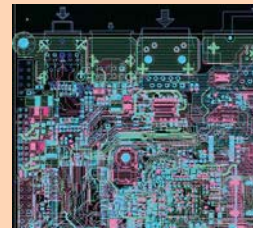
Portwell WEBS systems undergo quality assurance procedures during the critical early stages of development. Designing a stable product makes it easy for quality checking and complies with Design for Quality (DFQ).

At the development stage the product design also involves the material and assembly important for production, with the focus on Design for Manufacturability (DFM). This develops simple, consistent and efficient system structures and endows the product with a stable quality.

With their experienced engineering team and complete 3D circuit and layout development facility, Portwell is able to supply more efficient system development and support their customers in "Design Win."



Design & analysis is performed by 3D workstation. (WEBS-2120)



Circuit design & layout by advanced tools (NANO-8044)

② Thermal Design

Thermal Design Concept

Thermal control is the key to all future industrial appliances. Portwell knows this and has focused many hours of research and put immense efforts upon thermal solutions.

Based on our findings and experience, many components on the motherboard demonstrated wide temperature changes which affected the operating temperature endurance of the board and the system.

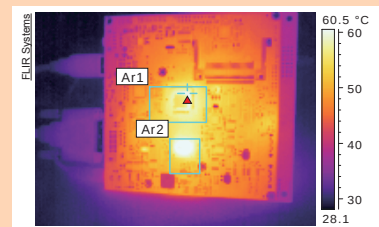
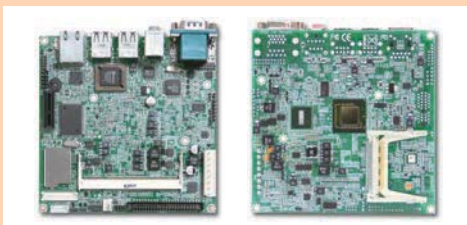
The CPU T-junction temperature, for example, will dramatically increase around 30 to 40 degrees Celsius from power-on to full loading under ambient temperature. This means the CPU T-junction could reach between 90 and 100 degrees Celsius when the ambient temperature is at 60 degrees Celsius. Moreover, the CPU T-junction temperature is capable of an additional 5 degrees Celsius, which exceeds CPU specifications, due to its fan-free chassis.

In our labs, we saw these symptoms and developed unique solutions. Thermal design and component placement on a motherboard go hand in hand. Therefore, heat ventilation in a chassis is necessary for fan-less or fan-free systems.

Some manufactures will claim they have solved the heat dissipation problem based on their calculations and data sets, but "seeing is believing!" So test your systems in our certified and advanced labs and see if your systems meet your specifications.

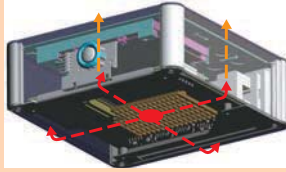
Since there is no fan and airflow inside the fan-less WEBS systems, handling the thermal output becomes one of the most important concerns. System heat comes from ICs on the embedded board and this is pre-determined by Intel®. Therefore, the key to developing a reliable fan-less system is determined by two major factors.

First is to balance the heat on the embedded board and make sure it does not accumulate. Determining the thermal balance for the hot components is a prime concern. The picture below shows the heat situation of the NANO-8044, NANO-ITX embedded board used in the WEBS-2120 system. The heat in this example is arranged and balanced for superior dissipation in a fan-less system design.



Quality Assurance

Second is to maximize the arrangement of heat dissipation by system design. WEBS systems are designed with an all-aluminum chassis that is ideal for heat dissipation. Heat sinks link the ICs on the embedded board and the aluminum chassis for direct heat transference. The heat transfers from the bottom up so the lower temperature is at the chassis top for greater ease of use and protection. The pictures below illustrate the heat flow of a WEBS system. Balancing the heat of the product in this way makes the perfect fan-less system.



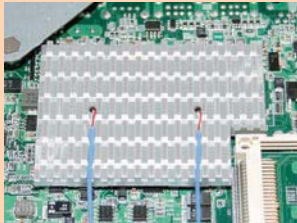
WEBS-2120 Heat-flow (Bottom)



WEBS-2120 Heat-flow (Top)

3 Thermal Validation

After completing the thermal design, the WEBS system undergoes thermal validation by following Intel's thermal guide. The system is tested inside the calibrated chamber with defined temperatures. The efficacy of the WEBS system is further improved when the temperature of any component is over specification. Thermal tests are conducted until all the major ICs are below thermal specification.



Holes are made on the heat sink and thermal sensor cables are added for measuring the temperature

4 Safety & Reliability Validation

In addition to the thermal validation, the WEBS systems undergo safety assessment and tests and achieve CE and FCC certification. Testing includes ESD, EMI and EMC.

To ensure product quality, complete quality assurance tests are performed during both the development and the manufacturing phases for all system-level products. Portwell WEBS systems are tested and comply with safety regulations, and are reliable to be used in the harsh environments.

-Based on customer's requirements, Portwell can do additional tests with a NRE (non-recurring engineering) charge.



ESD Test



EMC Test



EMC Test



Vibration Test



Shock Test



Packing Vibration Test



Packing Drop Test



WEBS Reference Table



Model		WEBS-1320	WEBS-2121	WEBS-3330	WEBS-3331
M/B		PEB-2737	NANO-8045	WADE-8070	WADE-8071
Form Factor		3.5" ECX	NANO-ITX	MINI-ITX	MINI-ITX
System	CPU	Atom™ Z510 1.1GHz Atom™ Z530 1.6GHz	Atom™ Z510 1.1GHz Atom™ Z530 1.6GHz	Atom™ N270 1.6GHz	Atom™ N270 1.6GHz
	Chipset	US15W	US15W	945GSE+ICH7-M	945GSE+ICH7-M
	FSB	400MHz/533MHz	400MHz/533MHz	533MHz	533MHz
	BIOS	AMI	AMI	Award	Award
	Memory	DDR2/2GB	DDR2/2GB	DDR2/2GB	DDR2/2GB
	Graphic Controller	GMA 500	GMA500	GMA 950	GMA 950
	Audio Codec	ALC-262-VC2-GR	ALC-262	ALC-262-GR	ALC-262-GR
	Super I/O	W83627DHG	W83627DHG	W83627UHG	W83627HG-AW
	Storage	CF, 2.5" SATA	CF, 2.5" SATA	CF, 2.5" SATA	CF
External I/O	Serial	1x RS232	1x RS232	1x RS232+ 1x RS232/422/485	1x RS232
	USB	4	2	4	4
	Display	VGA	DVI-D	VGA, DVI-D	VGA
	Ethernet	RTL8111C-VC	RTL8111C-VC	RTL8111C-VB x 2	RTL8111C-VC
	PS/2	Ⓢ	N/A	Ⓢ	N/A
	Audio	Mic-in, Line-out	Mic-in, Line-out	Mic-in, Line-out	Mic-in, Line-out
	D I/O	N/A	N/A	N/A	N/A
Expansion		SDIO	N/A	Mini-PCI	N/A
PWR	System	DC 12V	DC 12V	DC 12V	DC 12V
	Adapter	AC 100~240V	AC 100~240V	100~240V	100~240V
Environment	OP Temp.	-5 ~ 50°C	-5 ~ 45°C	-5 ~ 45°C	-5 ~ 45°C
	Stor. Temp	-20 ~ 80°C	-20 ~ 80°C	-20 ~ 80°C	-20 ~ 80°C
	Humidity	95%@40°C, non-condensing	95%@40°C, non-condensing	95%@40°C, non-condensing	95%@40°C, non-condensing
	Vibratoin	5Grms/5~500Hz	5Grms/5~500Hz	5Grms/5~500Hz	5Grms/5~500Hz
	Shock	50G, 11msce.	50G, 11msce.	50G, 11msce.	50G, 11msce.
Mechanical	Dimension(WxDxH)	200 x 150 x 51 mm	150 x 150 x 51 mm	200 x 200 x 51/83 mm	200 x 200 x 36 mm
	Weight	1.2 kg	1 kg	1.1/1.8 kg	1.1 kg



WEBS Reference Table



WEBS-1312	WEBS-1330	WEBS-1341	WEBS-3332	WEBS-3560B	WEBS-4330
PEB-2739	PEB-2131	PEB-2771/2781	WADE-8071	WADE-8020	WADE-8170
3.5" ECX	3.5" ECX	3.5" ECX	MINI-ITX	MINI-ITX	MINI-ITX
Atom™ Z510PT 1.1GHz Atom™ Z520PT 1.3GHz	Atom™ N270 1.6GHz	Atom™ N455 1.6GHz Atom™ D525 1.8GHz	Atom™ N270 1.6GHz	Intel® Core i5/i7 (PGA989)	Atom™ N270 1.6GHz
US15WPT	945GSE+ICH7-M	ICH8-M	945GSE+ICH7-M	QM57	945GSE+ICH7-M
400MHz / 533MHz	533MHz	800MHz	533MHz	800/1066/1333 MHz	533MHz
AMI	Award	AMI	Award	AMI UEFI	Award
DDR2 / 2GB	DDR2 / 2GB	DDR3 / 2GB	DDR2/2GB	DDR3 SO-DIMM/8G	DDR2/2GB
GMA 500	GMA 950	GMA 950	GMA 950	GEN 6.0	GMA 950
ALC-262-GR	ALC-662	ALC-892	ALC-662-GR	ALC-888	ALC-655
W83627DHG	W83627UHG	W83627UHG	W83627HG-AW	ITE IT8721F/CX-L	ITE IT8712F-A
CF, 2.5" SATA	CF, 2.5" SATA	CF, 2.5" SATA	CF	2.5" SATA	CF, 2.5" SATA
1x RS232+ 1x RS232/422/485	4x RS232(5V/12V)	3x RS232+ 1x RS232/422/485	1x RS232	3x RS232+ 1x RS232/422/485	2x RS232
4	2	4	4	6	4
VGA	VGA	VGA	VGA	VGA, DVI-D	VGA, DVI-D
Intel® 82574IT x 1	RTL-8111D-VB-GR*2	Intel® 82567V+82583V	RTL8111C-VC	Intel® 82574L+82577LM	ALC8111C x 2
N/A	N/A	N/A	N/A	N/A	©
Mic-in, Line-out	Line-out	N/A	Mic-in, Line-out	HDMI; Mic-in, Line-out, Line-in	Mic-in, Line-out, Line-in
8-bit Digital I/O	N/A	N/A	N/A	8-bit Digital I/O	8-bit Digital I/O
Mini-PCIe	Mini-PCIe	Mini-PCIe	N/A	Mini-PCIe	N/A
DC 12V	DC 12V	DC 12V	DC 12V	DC 12V	DC 12V/Wire type
100~240V	100~240V	100~240V	100~240V	100~240V	100~240V
-25 ~ 70°C	-5 ~ 45°C	-5 ~ 45°C	-5 ~ 50°C	-5 ~ 50°C	-5 ~ 50°C
-20 ~ 80°C	-20 ~ 80°C	-40 ~ 80°C	-20 ~ 80°C	-20 ~ 80°C	-20 ~ 80°C
95%@40°C, non-condensing	95%@40°C, non-condensing	95%@40°C, non-condensing	95%@40°C, non-condensing	95%@40°C, non-condensing	95%@40°C, non-condensing
5Grms/5~500Hz	5Grms/5~500Hz	5Grms/5~500Hz	5Grms/5~500Hz	5Grms/5~500Hz	5Grms/5~500Hz
50G, 11msce.	50G, 11msce.	50G, 11msce.	50G, 11msce.	50G, 11msce.	50G, 11msce.
200 x 150 x 51 mm	200 x 150 x 51 mm	200 x 150 x 51 mm	200 x 200 x 40 mm	253 x 190 x 70 mm	200 x 200 x 62 mm
1.6 kg	1.6 kg	1.6 kg	1.4 kg	4.2 kg	1.9 kg

Brick Concept

As well as stable quality requirements, users are always looking for a unique product to differentiate them from their competitors. To simplify system customization, Portwell created the Brick concept, an intelligent structure for the WEBS systems that builds the WEBS chassis using three simple elements: wall, pillar and cover. This makes the chassis flexible and easy for customization by following customer's requirements. The illustration below shows the segments for customization.

* May necessitate extra cost and MOQ for an individual customization.

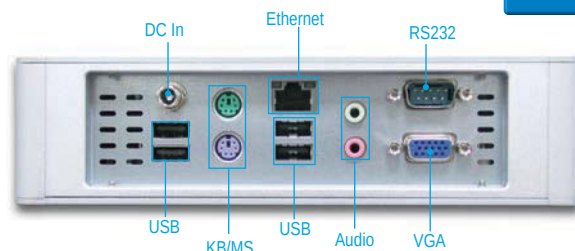


With its flexible structure, a Portwell WEBS system can adjust the size of its form-factor to supply a customized chassis for the customer. The three system sizes below illustrate the standard WEBS system form-factors. Customer can adapt any model to suit their applications. (Size unit is mm)



Configuration

- **Full System:** Chassis + (Power Module) + Adaptor + Cable + Embedded Board + Memory + HDD/CF
- **Bare System (By request only):** Chassis + (Power Module) + Adaptor + Cable + Embedded Board



FEATURES

- Intel® Atom™ processor Z510/Z530 and System Controller Hub US15W
- Ultra low power and fan-less design
- Compact and user-friendly design for easy installation and maintenance
- Fan-less & cable-less design
- One SDIO interface for flexible expansion
- Single DC 12V power input for easy system intergation
- Versatile mounting solutions such as Wall, Panel and DIN mount (Optional)
- OP Vibration: 5Grms/5~500Hz
- OP Shock: 50G, 11 msec.
- IP40 Rating

Brick Concept



ORDERING GUIDE

AS5-3275

(R).ATO.WEBS-1320.A.3.5"
ECX System.PEB-2737

System

M/B	PEB-2737
System Chipset	Intel® System Controller Hub US15W integrated GMA500
CPU	Intel® Atom™ Z510 (1.1GHz)/Z530 (1.6GHz)
FSB	400/533 MHz
BIOS	AMI BIOS
System Memory	One 200-pin SODIMM supports DDR2 400/533 up to 2GB
Storage	1× SATA 2.5"; 1× CF
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
H/W Status Monitor	Temperature (CPU and System); Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)

External I/O

Serial Port	1× RS232
Display	1× VGA
USB	4× USB 2.0
Audio Interface	Line-out and Mic-in (ALC262)
Ethernet	1× Gigabit Ethernet (RTL8111C)
Others	PS2 KB+MS

Power Supply Unit

Power Input	DC 12V
Adaptor	AC 100~240V

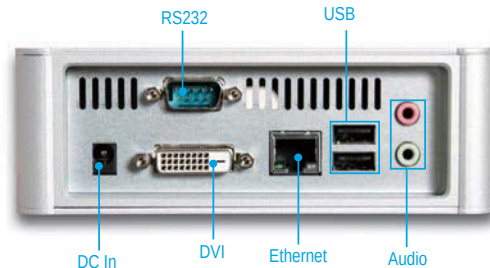
Environmental

Operation Temperature	-5~50°C
Storage Temperature	-20~80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/5~500Hz, IEC 60068-2-27
Operation Shock	50G, 11 msec., IEC 60068-2-27

Mechanical

Dimension	200(W) × 150(D) × 51(H)mm; 7.9"(W) × 5.9"(D) × 2"(H)
Weight	1.2kg
Mounting	Desk, DIN/Wall/Panel-mounting





FEATURES

- Intel® Atom™ Z510/Z530 processor and System Controller Hub US15W
- Ultra low power and fan-less design
- One 200-pin SODIMM supports DDR2 SDRAM up to 2GB
- Various storage types such as CompactFlash and SATA 2.5" HDD
- Fan-less & cable-less design
- Single DC 12V power input for easy system integration
- Versatile mounting solutions such as Wall, Panel and DIN mount (Optional)
- OP Vibration: 5Grms/5~500Hz
- OP Shock: 50G, 11 msec.
- IP40 Rating

Brick Concept



ORDERING GUIDE

AS5-3288

(R).ATO.WEBS-2121.A. NANO System.NANO-8045

System

M/B	NANO-8045
System Chipset	Intel® System Controller Hub US15W integrated GMA500 Graphics
CPU	Intel® Atom™ Z510 (1.1GHz)/Z530 (1.6GHz)
FSB	400/533
BIOS	AMI BIOS
System Memory	One 200-pin SODIMM support DDR2 400/533 up to 2GB
Storage	1× SATA 2.5" HDD; 1× CF
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
H/W Status Monitor	Temperature (CPU and System) ; Voltage (CPU Vcore VBAT, 5VSB, 12V, 5V, 3.3V)

External I/O

Serial Port	1× RS232
Display	1× DVI
USB	2× USB 2.0
Audio Interface	Line-out and Mic-in (ALC262)
Ethernet	1× Gigabit Ethernet (RTL8111C)

Power Supply Unit

Power Input	DC 12V
Adaptor	AC 100~240V

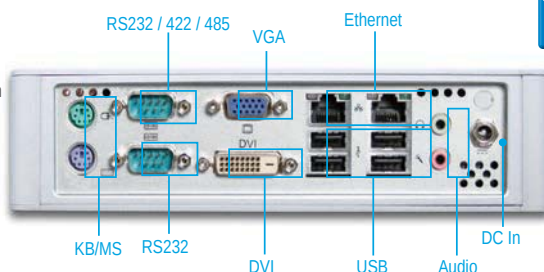
Environmental

Operation Temperature	-5~45°C
Storage Temperature	-20~80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/5~500Hz, IEC 60068-2-27
Operation Shock	50G, 11 msec., IEC 60068-2-27

Mechanical

Dimension	150(W) × 150(D) × 51(H)mm; 5.9"(W) × 5.9"(D) × 2"(H)
Weight	1 kg
Mounting	Desk, DIN/Wall/Panel-mounting





FEATURES

- Intel® Atom™ N270 1.6GHz processor
- Intel® 945GSE+ICH70M platform
- Dual Display by VGA/DVI
- One Mini-PCIExpress expansion and Antenna hole
- Fan-less & cable-less design
- Single DC 12V power input for easy system integration
- Versatile mounting solutions such as Wall and Panel mount (Optional)
- OP Vibration: 5Grms/5~500Hz
- OP Shock: 50G, 11 msec.
- IP40 Rating

WEBS-3330-1602



WEBS-3330-1603



ORDERING GUIDE

AS5-3278

(R).ATO.WEBS-3330.Mini-ITX System.WADE-8070. GADIWA-1090. 60W Adaptor

System

M/B	WADE-8070
System Chipset	Intel® 945GSE GMCH integrated GMA 950 Graphics and ICH7-M
CPU	Intel® N270 1.6GHz processor
FSB	533 MHz
BIOS	Award BIOS
System Memory	One 200-pin SODIMM supports DDR2 400/533 up to 2GB
Storage	1× SATA 2.5" HDD; 1 × CF
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
H/W Status Monitor	Temperature (CPU and System), Voltage, Case open function
Expansion	1× Mini-PCI socket

External I/O

Serial Port	1× RS232 ; 1× RS232/422/485
Display	1× VGA ; 1× DVI
USB	4× SB 2.0
Audio Interface	Line-out and Mic-in (ALC262)
Ethernet	2× Gigabit Ethernet (RTL8111C)
Others	PS2 KB+MS

Power Supply Unit

Power Input	DC 12V
Adaptor	AC 100~240V

Environmental

Operation Temperature	-5~45°C
Storage Temperature	-20~80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/5~500Hz, IEC 60068-2-27
Operation Shock	50G, 11 msec., IEC 60068-2-27

Mechanical

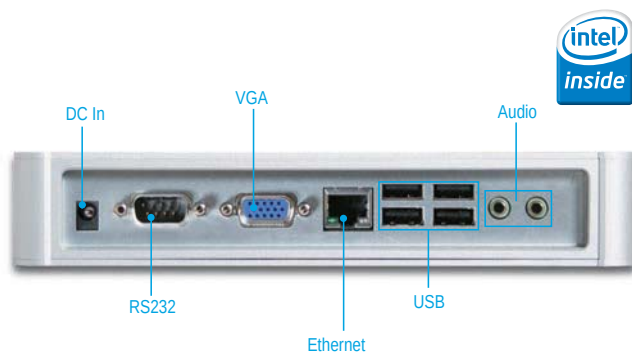
Dimension	200(W) × 200(D) × 51(H)mm; 7.9"(W) × 7.9"(D) × 2"(H) 200(W) × 200(D) × 83(H)mm; 7.9"(W) × 7.9"(D) × 3.3"(H) (W/ optional module)
Weight	1.8kg
Mounting	Desk, Wall/Panel-mounting





WEBS-3331

Embedded slim fan-less system with Intel® Atom™ N270 based MINI-ITX board



FEATURES

- Intel® Atom™ N270 1.6GHz processor
- Intel® 945GSE+ICH70M platform
- Analog Display: up to 2048 x 1536 (QXGA)
- 36mm height supports thin client and DS application
- Fan-less and optional cable-less design for easy maintenance
- Versatile mounting solutions such as Wall and Panel mount (Optional)
- Single DC 12V power input for easy system integration
- CF socket for storage
- OP Vibration: 5Grms/5~500Hz
- OP Shock: 50G, 11 msec.
- IP40 Rating

ORDERING GUIDE

AS5-3289

(R).ATO.WEBS-3331.Mini-ITX
System.WADE-8071

System

M/B	WADE-8071
System Chipset	Intel® 945GSE GMCH integrated GMA 950 Graphics and ICH7-M
CPU	Intel® N270 1.6GHz processor
FSB	533 MHz
BIOS	Award BIOS
System Memory	One 200-pin SODIMM supports DDR2 400/533 up to 2GB
Storage	1× CF
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
H/W Status Monitor	Temperature (CPU and System), Voltage, Case open function

External I/O

Serial Port	1× RS232
Display	1× VGA
USB	4× USB 2.0
Audio Interface	Line-out and Mic-in (ALC262)
Ethernet	1× Gigabit Ethernet (RTL8111C)

Power Supply Unit

Power Input	DC 12V
Adaptor	AC 100~240V

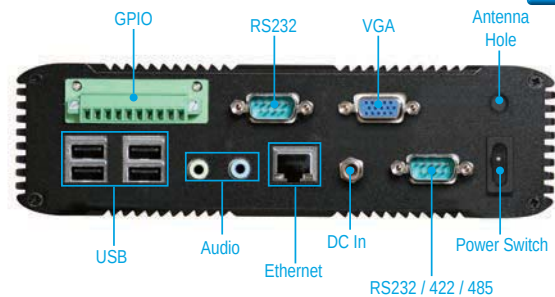
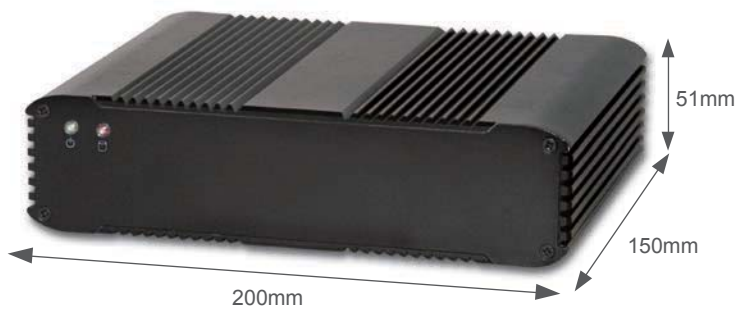
Environmental

Operation Temperature	-5~45°C
Storage Temperature	-20~80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/5~500Hz, IEC 60068-2-27
Operation Shock	50G, 11 msec., IEC 60068-2-27

Mechanical

Dimension	200(W) × 200(D) × 36(H)mm; 7.9"(W) × 7.9"(D) × 1.4"(H)
Weight	1.1kg
Mounting	Desk, Wall/Panel-mounting





FEATURES

- Intel® Atom™ processor Z510PT/Z520PT and System Controller Hub US15WPT
- Wide temperature range and fan-less design are perfect for environment-critical applications
- One Mini-PCIExpress expansion and Antenna hole
- GPIO and rich I/O and good for versatile applications
- Rugged and compact are good for using at harsh environment
- Versatile mounting solutions such as Wall and Panel mount (Optional)
- Single DC 12V power input for easy system intergration
- OP Vibration: 5Grms/5~500Hz
- OP Shock: 50G, 11 msec.
- IP40 Rating

ORDERING GUIDE

AS5-3273

(R).ATO.WEBS-1312.A.3.5"
ECX System.PEB-2739I

System

M/B	PEB-2739
System Chipset	Intel® US15WPT
CPU	Intel® Atom™ Z510PT (1.1GHz)/Z520PT (1.3GHz)
FSB	400/533 MHz
BIOS	AMI BIOS
System Memory	One 200-pin SODIMM support DDR2 400/533 up to 2GB
Storage	1× CF, 1× SATA 2.5" SSD
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
H/W Status Monitor	Temperature (CPU and System), Voltage
Expansion	1× Mini-PCle socket

External I/O

Serial Port	1× RS232+1× RS232/422/485
Display	1× VGA
USB	4× USB 2.0
Audio Interface	Line-out and Mic-in (ALC262)
Ethernet	1× Gigabit Ethernet (82574IT)
Other	8 bits GPIO

Power Supply Unit

Power Input	DC 12V
Adaptor	AC 100~240V

Environmental

Operation Temperature	-25~70°C
Storage Temperature	-40~80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/5~500Hz, IEC 60068-2-27
Operation Shock	50G, 11 msec., IEC 60068-2-27

Mechanical

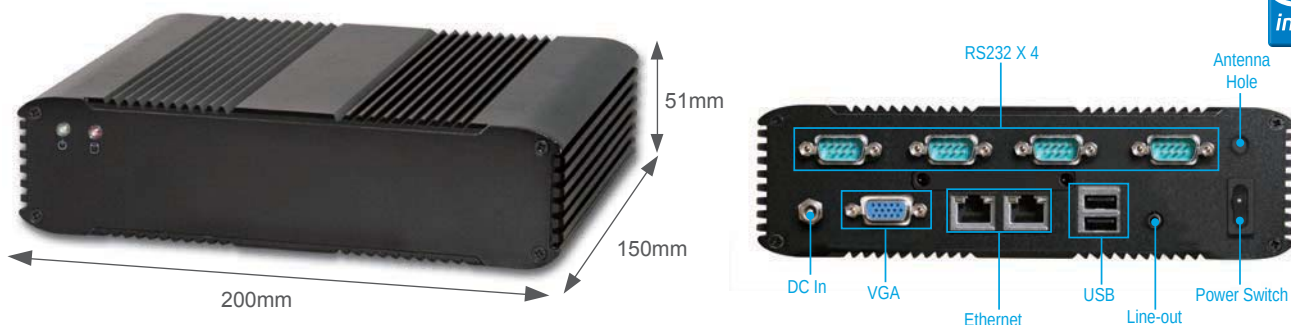
Dimension	200(W) × 150(D) × 51(H)mm ; 7.9"(W) × 5.9"(D) × 2"(H)
Weight	1.6kg
Mounting	Desk, Wall/Panel-mounting





WEBS-1330

Embedded rugged fan-less system with Intel® Atom™ N270 based 3.5" ECX board



FEATURES

- Intel® Atom™ N270 1.6GHz processor and Intel® 945GSE+ICH7-M chipset
- Analog Display : Up to 2048 × 1536 (QXGA)
- One Mini-PCIEExpress expansion and Antenna hole
- 4 COMs (5V/12V selectable) are good for Networking, POS and Automation applications
- Rugged and compact are good for using at harsh environment
- Versatile mounting solutions such as Wall and Panel mount (Optional)
- Single DC 12V power input for easy system intergation
- OP Vibration: 5Grms/5~500Hz
- OP Shock: 50G, 11 msec.
- IP40 Rating

ORDERING GUIDE

AS5-3290

(R).ATO.WEBS-1330.A.3.5"
ECX System.PEB-2131

System

M/B	PEB-2131
System Chipset	Intel® 945GSE GMCH intergrated GMA 950 Graphics and ICH7-M
CPU	Intel® Atom™ N270 1.6GHz processor
FSB	533 MHz
BIOS	Award BIOS
System Memory	One 200-pin SODIMM supports DDR2 400/533 up to 2GB
Storage	1× CF, 1× SATA 2.5" HDD
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
H/W Status Monitor	Temperature (CPU and System), Voltage
Expansion	1× Mini-PCle socket

External I/O

Serial Port	4× Powered RS232 (5V/12V)
Display	1× VGA
USB	2× USB 2.0
Audio Interface	Line-out (ALC662)
Ethernet	2× Gigabit Ethernet (RTL-8111D)

Power Supply Unit

Power Input	DC 12V
Adaptor	AC 100~240V

Environmental

Operation Temperature	-5~45°C
Storage Temperature	-20~80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/5~500Hz, IEC 60068-2-27
Operation Shock	50G, 11 msec., IEC 60068-2-27

Mechanical

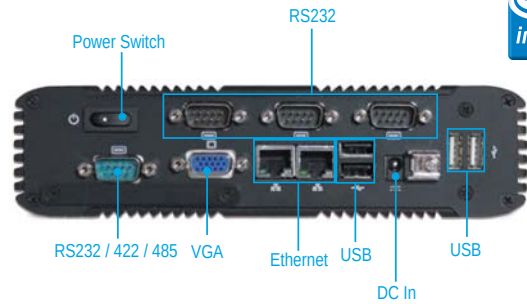
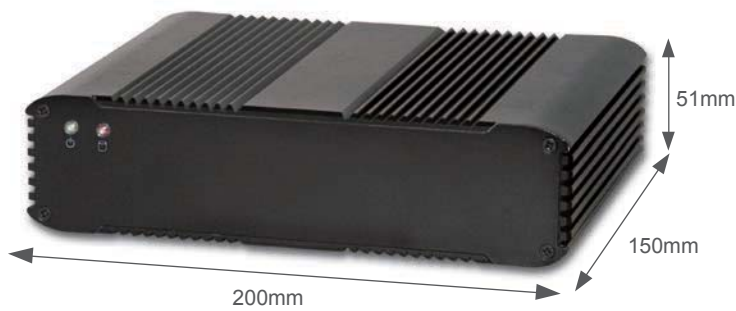
Dimension	200(W) × 150(D) × 51(H)mm; 7.9"(W) × 5.9"(D) × 2"(H)
Weight	1.6kg
Mounting	Desk, Wall/Panel-mounting





WEBS-1341

Embedded rugged fan-less system with Intel® Atom™ N455/D525 based 3.5" ECX board



FEATURES

- Fan-less solution with Dual-Core CPU
- Intel® Atom™ N455/D525 1.6/1.8GHz processor and Intel® ICH8-M chipset
- One Mini-PCIExpress expansion and Antenna hole
- Rich I/O is good for versatile applications
- Rugged and compact design for harsh environment
- Versatile mounting solutions such as Wall and Panel mount (Optional)
- Single DC 12V power input for easy system intergration
- One Mini-PCI Express expansion
- OP Vibration: 5Grms/5~500Hz
- OP Shock:50G, 11 msec.
- IP40 Rating

ORDERING GUIDE

AS5-3271

(R).ATO.WEBS-1341.
3.5" ECX System.PEB-
2771VG2A/2781VG2A. DDR3.
40W Adapter

System

M/B	PEB-2771/2781
System Chipset	Intel® ICH8-M
CPU	Intel® Atom N455 (1.6GHz)/D525 (1.8GHz) processor
FSB	800 MHz
BIOS	AMI BIOS
System Memory	One 204-pin SODIMM support DDR3 up to 2GB
Storage	1× CF, 1× SATA 2.5" HDD
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
H/W Status Monitor	Temperature (CPU and System), Voltage
Expansion	1× Mini-PCIe socket

External I/O

Serial Port	3× RS232 + 1× RS232/422/485
Display	1× VGA
USB	4× USB 2.0
Ethernet	2× Gigabit Ethernet (82567V + 82583V)
Others	Removeable CF card; Internal header for Audio (ALC262)

Power Supply Unit

Power Input	DC 12V
Adaptor	AC 100~240V

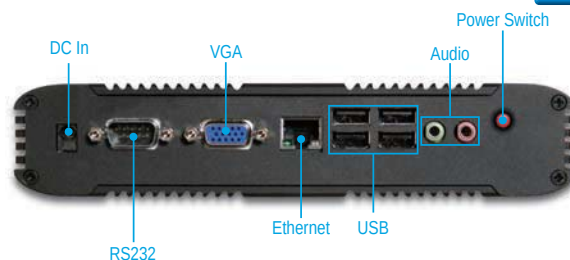
Environmental

Operation Temperature	-5~45°C
Storage Temperature	-20~80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/5~500Hz, IEC 60068-2-27
Operation Shock	50G, 11 msec., IEC 60068-2-27

Mechanical

Dimension	200(W) × 150(D) × 51(H)mm; 7.9"(W) × 5.9"(D) × 2"(H)
Weight	1.6 kg
Mounting	Desk, Wall/Panel-mounting





FEATURES

- Intel® Atom™ N270 1.6GHz processor and Intel® 945GSE+ICH7-M chipset
- 40mm height supports thin client and DS application
- Analog Display: Up to 2048×1536 (QXGA)
- Rugged and slim design is ideal for environment critical application
- Fan-less and optional cable-less design for easy maintenance
- Versatile mounting solutions such as Wall and Panel mount (Optional)
- Vibration test (5grms/5~500Hz/operation)
- Shock test (50g peak acceleration-11 msec. duration)
- OP Vibration: 5Grms/5~500Hz
- OP Shock: 50G, 11 msec.
- IP40 Rating

ORDERING GUIDE

AS5-3292

(R).ATO.WEBS-3332.Mini-ITX
System.WADE-8071

System

M/B	WADE-8071
System Chipset	Intel® 945GSE GMCH integrated GMA950 Graphics and ICH7-M
CPU	Intel® Atom™ N270 1.6GHz processor
FSB	533 MHz
BIOS	Award BIOS
System Memory	One 200-pin SODIMM support DDR2 400/533 up to 2GB
Storage	1× CF
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
H/W Status Monitor	Temperature (CPU and System), Voltage

External I/O

Serial Port	1× RS232
Display	1× VGA
USB	4× USB 2.0
Audio Interface	Line-out and Mic-in (ALC662)
Ethernet	1× Gigabit Ethernet (RTL8111C)

Power Supply Unit

Power Input	DC 12V
Adaptor	AC 100~240V

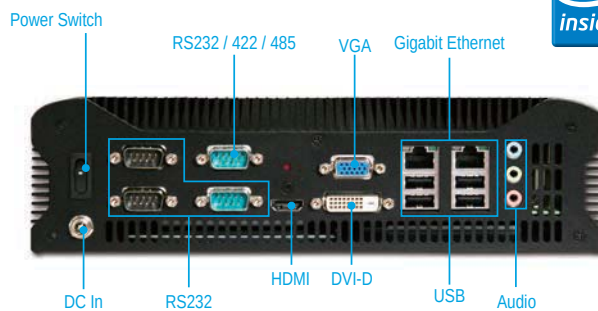
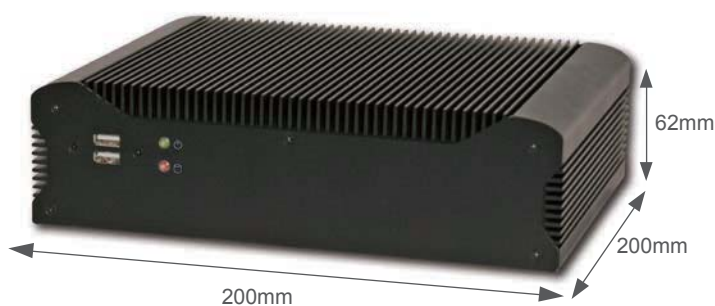
Environmental

Operation Temperature	-5~45°C
Storage Temperature	-20~80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/5~500Hz, IEC 60068-2-27
Operation Shock	50G, 11 msec., IEC 60068-2-27

Mechanical

Dimension	200(W) × 200(D) × 40(H)mm; 7.9"(W) × 7.9"(D) × 1.6"(H)
Weight	1.4 kg
Mounting	Desk, DIN/Wall/Panel-mounting





FEATURES

- Intel® Core™ i5/i7 processor (Quad-Core CPU support)
- Intel® QM57 Chipset
- Two 204-pin SODIMMs DDR3 up to 8GB, support dual channel
- One Mini-PCle socket (with USB+PCle ×1 signal)
- 1 SATA port, 2 GbE, 3 RS232+ 1 RS232/422/485
- Dual Display by VGA/DVI/HDMI
- Intel® Active Management Technology (Intel® AMT) 6.0
- Fan-less and optional cable-less design for easy maintenance
- Rugged design is good for using in harsh environment
- Versatile mounting solutions such as Wall and Panel mount (Optional)
- OP Vibration: 5Grms/5~500Hz
- OP Shock: 50G, 11 msec.

ORDERING GUIDE

AS5-3269	(R).ATO.WEBS-3560B. Mini-ITX System.WADE-8020. 128W Adaptor
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System

M/B	WADE-8020
System Chipset	Intel® QM57
CPU	Intel® Core i5/i7 processor (PGA989)
FSB	800/1066/1333
BIOS	AMI UEFI BIOS
System Memory	Two 204-pin SODIMM support dual channel DDR3 SDRAM up to 8GB
Storage	1× SATA 2.5" SSD
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
H/W Status Monitor	Monitoring Temperature, Voltage, and cooling fan status
Expansion	1× Mini-PCle socket

External I/O

Serial Port	3× RS232 + 1× RS232/422/485
Display	1× VGA + 1× DVI-D
USB	6× USB 2.0
Audio Interface	Line-in, Line-out and Mic-in (ALC888)
Ethernet	2 × Gigabit Ethernet (82574L+82577LM)

Power Supply Unit

Power Input	DC 12~36V
Adaptor	AC 100~240V

Environmental

Operation Temperature	-5~45°C
Storage Temperature	-20~80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/5~500Hz, IEC 60068-2-27
Operation Shock	50G, 11 msec., IEC 60068-2-27

Mechanical

Dimension	253(W) × 190(D) × 70(H)mm; 10"(W) × 7.5"(D) × 2.8"(H)
Weight	4.2kg
Mounting	Desk, Wall/Panel-mounting





WEBS-4330

Embedded rugged fan-less system with Intel® Atom™ N270 based MINI-ITX board



FEATURES

- Intel® Atom™ N270 1.6GHz processor and Intel 945GSE+ICH7-M chipset
- Dual Display (VGA/DVI-D), Dual Gigabit Ethernet and Dual RS232
- Analog Display: up to 2048*1536 (QXGA)
- Optional GADIWA-R9271 (9~27V) for IVI application
- Rugged and Fan-less design is ideal for Environment-critical application
- External GPIO (4 in, 4 out) for digital control
- Versatile mounting solutions such as Wall and Panel mount (Optional)
- Single DC 12~36V power input for easy system intergration
- Two interfaces of DC power input by adaptor plug or wiring type
- OP Vibration: 5Grms/5~500Hz
- OP Shock: 50G, 11 msec.
- IP40 Rating

ORDERING GUIDE

AS5-3293	(R).ATO.WEBS-4330.A.MINI-ITX System. WADE-8170. Wire-type
AS5-3294	(R).ATO.WEBS-4330.A.MINI-ITX System. WADE-8170. DC-In

System

M/B	WADE-8170
System Chipset	Intel® 945GSE GMCH integrated GMA 950 Graphics and ICH7-M
CPU	Intel® Atom™ N270 1.6GHz processor
FSB	533 MHz
BIOS	Award BIOS
System Memory	One 200-pin SODIMM supports DDR2 400/533 up to 2GB
Storage	1× CF, 1× SATA 2.5" HDD
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
H/W Status Monitor	Temperature (CPU and System), Voltage

External I/O

Serial Port	2× RS232
Display	1× VGA + 1× DVI-D
USB	4× USB 2.0
Audio Interface	Line-in, Line-out and Mic-in (ALC655)
Ethernet	2× Gigabit Ethernet (ALC8111C)
Others	8 bits GPIO; PS2 KB+MS

Power Supply Unit

Power Input	DC 12~36V
Adaptor	AC 100~240V
Optional wire type DC-IN	DC 9~27V

Environmental

Operation Temperature	-5~45°C
Storage Temperature	-20~80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/5~500Hz, IEC 60068-2-27
Operation Shock	50G, 11 msec., IEC 60068-2-27

Mechanical

Dimension	200(W) × 200(D) × 62(H)mm; 7.9"(W) × 7.9"(D) × 2.4"(H)
Weight	1.9 kg
Mounting	Desk , Wall/Panel-mounting





WEBS Mounting Solution

Wall Mount Kit



WEBS-2120/2121/1320

System Size	150/200(W) x 150(D) x 51(H)mm
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Ordering	WEBS-2120 Wall Mount Kit
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WEBS-3330/3331

System Size	200(W) x 200(D) x 51/36(H)mm
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Ordering	WEBS-3330 Wall Mount Kit
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WEBS-3332/4330

System Size	200(W) x 200(D) x 40/62(H)mm
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Ordering	WEBS-3332 Wall Mount Kit
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WEBS-1310/1330/1340

System Size	200(W) x 150(D) x 51(H)mm
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Ordering	WEBS-1310 Wall Mount Kit
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DIN Mount Kit



WEBS-2120 / 2121 / 1320

System Size	150/200(W) x 150(D) x 51(H)mm
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Ordering	WEBS-2120 Wall Mount Kit
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Remark	DIN Rail H=35mm (w/o Rail)
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Panel Mount Kit



WEBS-2120/2121

System Size	150(W) x 150(D) x 51(H)mm
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Ordering	WEBS-2120 Panel Mount Kit
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Remark	VESA 75/100
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WEBS-1320

System Size	200(W) x 150(D) x 51(H)mm
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Ordering	WEBS-1320 Panel Mount Kit
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Remark	VESA 75/100
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WEBS-3330/3331

System Size	200(W) x 200(D) x 51/36(H)mm
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Ordering	WEBS-3330 Panel Mount Kit
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Remark	VESA 75/100
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WEBS-3332/4330

System Size	200(W) x 200(D) x 40/62(H)mm
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Ordering	WEBS-3332 Panel Mount Kit
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Remark	VESA 75/100
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WEBS-1310/1330/1340

System Size	200(W) x 150(D) x 51(H)mm
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Ordering	WEBS-1310 Panel Mount Kit
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Remark	VESA 75/100
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PSU Reference Table



ORION-A2501



ORION-D5501P



ORION-300DX/24/48



ORION-D4601P



ORION-D4602P



MPM-842P



MPI-815H



MPI-810H



MPI-806H

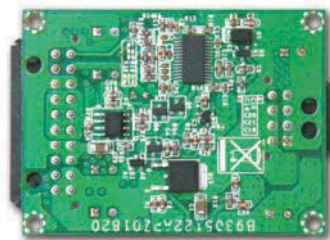
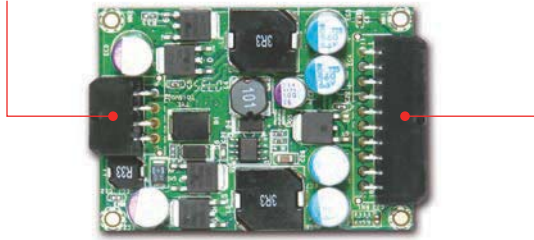
TYPE	MODEL	FORM FACTOR	DIMENSION	POWER RANGE	PAGE
Single	GADIWA-P0901	DC/DC	60 x 45 x 15 mm	120W / ATX Output	137
Wide-Range	GADIWA-R9271	Regulator	60 x 45 x 22 mm	9-27V DC / Regulator	138
Wide-Range	GADIWA-3160	DC/DC	150 x 51 x 22.5 mm	128W / 12~36V DC Wide Input	139
Wide-Range	GADIWA-3161	DC/DC	100 x 45 x 22.5 mm	128W / 9-29V DC Wide Input	140
Single	ORION-A1501	1U	100 x 190 x 40 mm 3.93" x 7.48" x 1.57"	150W / PFC / P4	141
Single	ORION-A2501	1U	100 x 190 x 40.5 mm 3.93" x 7.48" x 1.60"	250W / PFC / P4	141
Single	ORION-A1501P	Flex	81.5 x 150 x 40.5 mm 3.2" x 5.9" x 1.6"	150W / ATX	142
Single	ORION-A1801P	Flex	81.5 x 150 x 40.5 mm 3.2" x 5.9" x 1.6"	180W / ATX	142
Single	ORION-B3501P	2U	200 x 100 x 70 mm 7.87" x 3.94" x 2.8"	350W / PFC / P4	143
Single	ORION-B4001	2U	100 x 240 x 70 mm 3.9" x 9.4" x 2.8"	400W / PFC / P4	143
Single	ORION-D3501P	PS/2	150 x 140 x 86 mm 5.9" x 5.5" x 3.4"	350W / PFC / P4	144
Single	ORION-D4601P	PS/2	150 x 140 x 86 mm 5.9" x 5.5" x 3.4"	460W / PFC / P4	144
Single	ORION-D5501P	PS/2	150 x 140 x 86 mm 5.9" x 5.5" x 3.4"	550W / PFC / P4	145
Single	ORION-300DX/24/48	PS/2	150 x 140 x 86 mm 5.9" x 5.5" x 3.4"	300W / DC / ATX	145
Redundant	ORION-D3502P	mini-redundant (PS/2)	150 x 190 x 84 mm 5.9" x 7.2" x 3.4"	350W / PFC / P4	146
Redundant	ORION-D4602P	mini-redundant (PS/2)	150 x 190 x 85 mm 5.9" x 7.2" x 3.3"	460W / PFC / P4	146
Single	MPM-842P	PS/2	150 x 140 x 86 mm 5.9" x 5.5" x 3.4"	400W / Medical / ATX	147
Single	MPI-815H	1U	198 x 93 x 40.5 mm 7.8" x 3.66" x 1.6"	150W / Fanless / ATX	147
Single	MPI-810H	OPEN FRAME	83.9 x 152.4 x 38.1 mm 3.3" x 6" x 1.5"	120W / ATX	148
Single	MPD-810H	OPEN FRAME DC TO DC	83.9 x 152.4 x 38.1 mm 3.3" x 6" x 1.5"	120W / DC / ATX	148
Single	MPE-008A-P	OPEN FRAME	50.8 x 127 x 40 mm 2" x 5" x 1.57"	80W / ATX	149
Single	MPI-806H	OPEN FRAME	128 x 81 x 40 mm 5.0" x 3.2" x 1.55"	60W / ATX	149
Adapter					150
Configuration Matrix					151

GADIWA-P0901

120W DC/DC Converter (12V/input, ATX/output), Board Type

12V / Mini-Fit 8 pin
input power connector

Main / Mini-Fit 20 pin
output power connector



GADIWA-P0901 is a DC-DC converter for board type. It normally support 120Watts and maximum can reach to 150Watts. GADIWA-P0901 can save more space and cost, it's not only capability for fan-less system but also suitability for different application. Moreover, the converter is made and tested by automatic production line; therefore, it can provide high quality and performance.

FEATURES

- 12V DC/input, plug into the ATX connector with board output
- Compact and user-friendly design for installation and maintenance
- Fan-less design for mission-critical application
- Small size for 1U or higher system to save space

SPECIFICATION

Input Voltage	12V (+5%/-4%)
Line Regulation	11.52V / 12.6V
Output	120Watts/ 150Watts peak
Efficiency	>96% @ 12.3V
MTBF	836,407hrs @45°C, 592,361hrs @55°C
EMI & Safety Approval	CE, FCC
Input Connector	Mini-Fit 8 pin (P/N: B6902040)
Output Connector	Mini-Fit 20 pin (P/N: B6902071)
Dimension (WxDxH)	60 x 45 x 15 mm

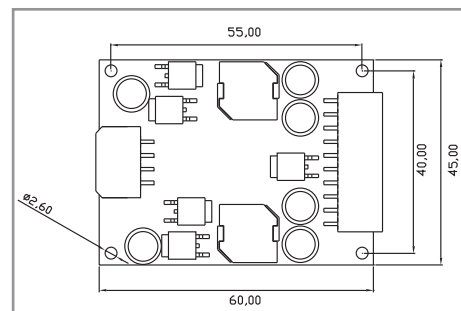
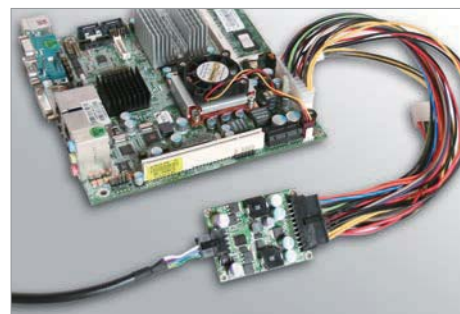
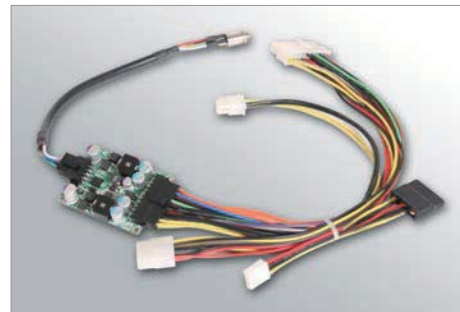
CHARACTERISTICS

Output Voltage	Load Regulation	Cross Regulation
+12V	0~7A	6.5A
+5V	0~6A	6A
+3.3V	0~6A	6A
+5Vsb	0~2A	1A
-12V	0~0.1A	0.1A

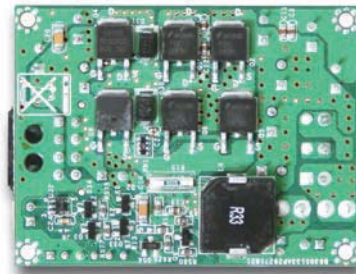
ORDERING GUIDE

- **GADIWA-P0901**
120W DC/DC Converter (12V/input, ATX/output), Board Type

Installation Image



9V~27V / Mini-Fit 3 pin input power connector



12V / Mini-Fit 8 pin output power connector

GADIWA- R9271 is a wide input regulator for board type. GADIWA-R9271 can collocate with GADIWA-P0901 and GADIWA-1120 which are DC-DC converters; it's easily to deploy critical application. The converter is made and tested by automatic production line; therefore, it can provide high quality and performance. GADIWA-R9271 has special design for socket type fuse protection.

FEATURES

- Compact and user-friendly design for installation and maintenance
- Small size for 1U or higher system to save space
- Suitable for Car PC, Steamer, Truck, Boat and Adapter
- Special Design for Delay-Time
- Socket Type Fuse Protection

SPECIFICATION

Input Voltage	9V~27V
Line Regulation	9V~27V continuous, 7~30V<10 sec@cold start
Efficiency	>95% @ 14V input
MTBF	577,768hrs @45°C, 409,990hrs @55°C
EMI & Safety Approval	CE, FCC
Input Connector	Mini-Fit 3 pin (P/N: B6902060)
Output Connector	Mini-Fit 8 pin (P/N: B6902042)
Dimension (WxDxH)	60 x 45 x 22 mm

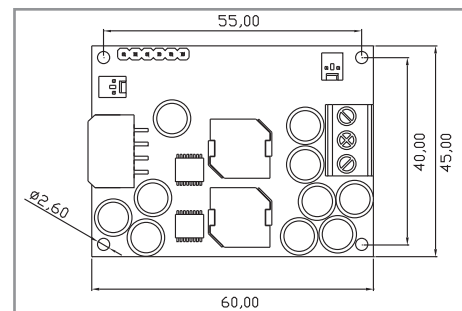
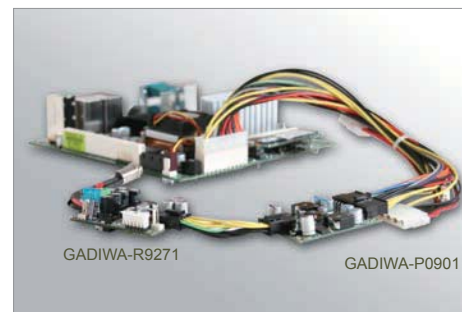
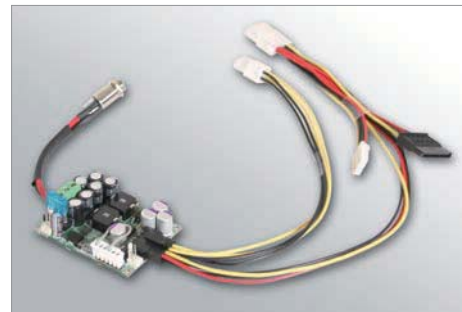
CHARACTERISTICS

Output Voltage	Load Regulation	Cross Regulation
+12V	12.3V @ 0~8.5A	12.3V @ 0~8.5A

ORDERING GUIDE

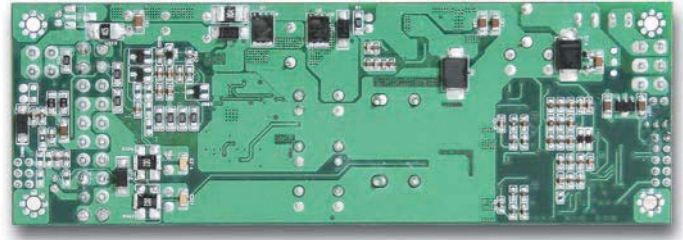
- **GADIWA-R9271**
9V to 27V/Wide-input, 12V/output Regulator, Board Type

Installation Image



GADIWA-3160

128W DC/DC 12V~36V/wide-input,
ATX/output, Board Type Converter



GADIWA- 3160 is a wide input converter for board type. It normally support 128Watts and maximum can reach to 160Watts. GADIWA-3160 can save more space and cost, it's not only capability for fan-less system but also suitability for different application. Gadiwa-3610 also have UL certification and watch dog function design, it'll be easy to deploy any critical application.

FEATURES

- 12~36V/Wide-input, plug into the ATX connector with board output
- Compact and user-friendly design for installation and maintenance
- Fan-less design for mission-critical application
- Small size for 1U or higher system to save space
- Watchdog Timer function

SPECIFICATION

Input Voltage	12V~36V
Line Regulation	11.5V~36V/input
Output	128Watts / 160Watts Peak
Efficiency	>85% @ 12V
MTBF	245,000hrs @45°C, 192,000hrs @55°C
EMI & Safety Approval	UL, CE, FCC
Input Connector	12V~36V / 6 pin
Output Connector	Main / ATX 20 pin
Dimension (WxDxH)	150 x 51 x 22.5 mm

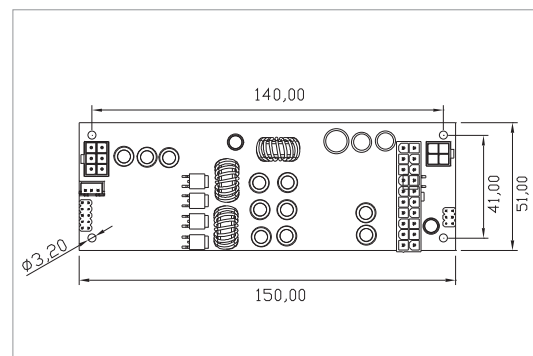
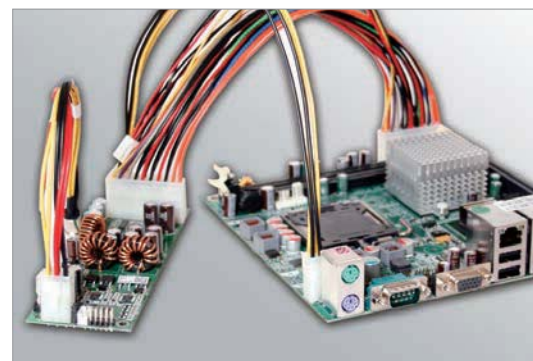
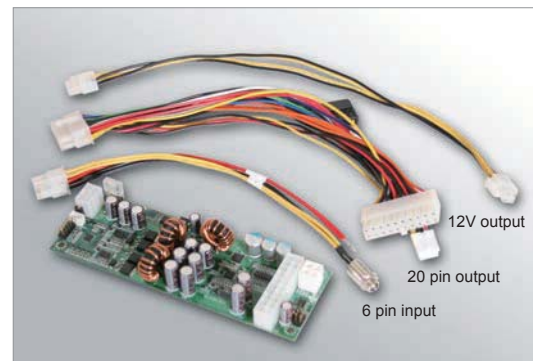
CHARACTERISTICS

Output Voltage	Current Range (forced air 10cfm)	Current Range (convection or high temperatures)
+12V	0~8A	0~6A
+5V	0~8A	0~6A
+3.3V	0~7A	0~5.25A
+5Vsb	0~2A	0~1.5A
-12V	0~0.15A	0~0.12A

ORDERING GUIDE

- **GADIWA-3160**
128W DC/DC 12V~36V/wide-input, ATX/output, Board Type Converter

Installation Image

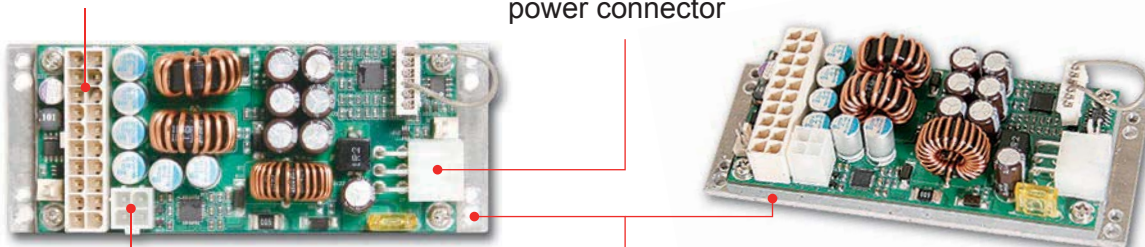


Main / ATX 20 pin output power connector

9V~29V / 3 pin input power connector

12V / ATX 4 pin output power connector

Thermal Pad



GADIWA- 3161 is a wide input board type converter. It normally support 128Watts and maximum can reach to 160Watts. GADIWA-3161 can save more space and cost, it's not only capability for fan-less system but also suitability for different application. Besides, the converter is made and tested by automatic production line; therefore, it can provide high quality and performance.

FEATURES

- 9~29V/Wide-input, plug into the ATX connector with board output
- Compact and user-friendly design for installation and maintenance
- Fan-less design for mission-critical application
- Small size for 1U or higher system to save space
- Socket Type Fuse Protection

SPECIFICATION

Input Voltage	9V~29V, 6~9V workable with derating
Line Regulation	9V~29V/input
Output	128Watts / 160 Watts Peak
Efficiency	>85% @ 12V input @ 120W output
EMI & Safety Approval	CE, FCC
Input Connector	9V~29V / 3 pin
Output Connector	Main / ATX 20 pin
Dimension (WxDxH)	100 x 45 x 22.5 mm

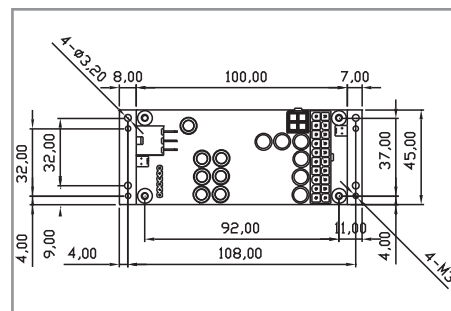
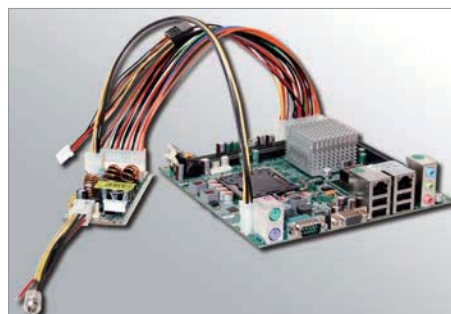
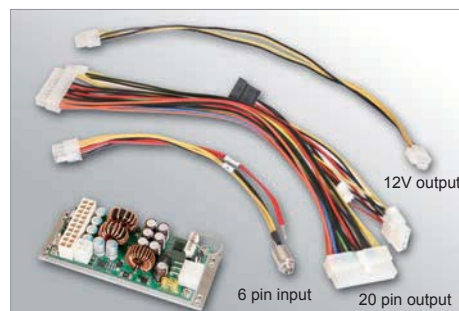
CHARACTERISTICS

Output Voltage	Load Regulation	Cross Regulation
+12V	0~6A	6A
+5V	0~6A	6A
+3.3V	0~6A	6A
+5Vsb	0~2A(Share with +5V)	2A(Share with +5V)
-12V	0~0.1A	0.1A

ORDERING GUIDE

- **GADIWA-3161**
128W DC/DC 9V~29V/wide-input, ATX/output, Board Type Converter

Installation Image



ORION-A1501

150W 1U ATX power supply with active PFC



SPECIFICATION

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	4A@115V, 2A@230V
Efficiency	> 65%
Holdup Time	16 ms. at full load
Over Voltage Protection	+5V: 5.6~6.6V; +3.3V: 3.6~4.2V; +12V: 13.2~14.6V
Over Power/Load Protection	Output power over 110% ~ 160%
MTBF	84,228 hrs
EMI & Safety Approval	UL, cUL, TUV, CE, FCC
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	100 x 190 x 40 mm; 3.9" x 7.48" x 1.57"

FEATURES

- Low profile power supply suitable for 1U and node chassis
- Active PFC, full-range input
- Higher +5V and +3.3 V output
- Max. +5V standby output is 1.5A

ORDERING GUIDE

- **ORION-A1501**
150W 1U ATX power supply with active PFC

DC OUTPUT

	+5V	+3.3V	+12V	-5V	-12V	+5Vsb
Max. Load	14A	10A	6A	0.5A	0.8A	1.5A
Min. Load	2A	1A	1A	0.1A	0.1A	0.1A
Max. Watt.	135W	135W	135W	2.5W	9.6W	7.5W
Load Reg.	±5%	±5%	±5%	±5%	±10%	±5%
Cross Reg.	±5%	±5%	±5%	±5%	±10%	±5%
Line Reg.	±1%	±1.5%	±0.8%	±1%	±1%	±1%
Ripple	±1%	±1.8%	±1%	±2%	±1%	±1.2%
Noise	±1.4%	±2.1%	±1%	±2%	±1%	±1.4%

ORION-A2501

250W 1U ATX power supply with active PFC



SPECIFICATION

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	6A@115V, 3A@230V
Efficiency	> 65%
Holdup Time	16 ms at full load
Over Voltage Protection	+5V: 5.4 ~ 6.5V; +3.3V: 3.9 ~ 4.4V; +12V: 13.6 ~ 15.6V
Over Power/Load Protection	Output power over 110% ~ 160%
MTBF	105,405 hrs
EMI & Safety Approval	UL, cUL, TUV, CE, FCC, CCC
Temperature/Humidity	Operating: 5 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	100 x 190 x 40.5 mm; 3.93" x 7.48" x 1.59"

FEATURES

- Low profile power supply suitable for 1U and node chassis
- Active PFC, full-range input
- Support for Intel® Pentium® 4 processor
- Total output power of +5V, +3.3V and +12V is 234W

ORDERING GUIDE

- **ORION-A2501**
250W 1U ATX power supply with active PFC

DC OUTPUT

	+5V	+3.3V	+12V	-5V	-12V	+5Vsb
Max. Load	24A	20A	12A	0.5A	0.5A	1.5A
Min. Load	3A	1A	2A	0A	0A	0.1A
Load Reg.	±5%	±5%	±8%	±10%	±10%	±5%
Line Reg.	±1%	±1%	±1%	±1%	±1%	±1%
Ripple & Noise	80mv	80mv	120mv	150mv	150mv	80mv

ORION-A1501P

150W Flex form factor power supply with active PFC



SPECIFICATION

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	7.5A@115V, 3.5A@230V
Efficiency	> 71%
Holdup Time	16 ms at full load
Over Voltage Protection	+5V: 5.7 ~ 6.5V; +3.3V: 3.7 ~ 4.5V; +12V: 13.3V ~ 15.6V
Over Power/Load Protection	Output power over 110% ~ 150%
MTBF	>160,000 hrs
EMI & Safety Approval	TUV, UL / cUL
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	81.5 x 150 x 40.5 mm; 3.2" x 5.9" x 1.6"

FEATURES

- Flex form factor power supply
- Full-range input with active PFC
- Max. 5V output is 13A
- Low noise

ORDERING GUIDE

- **ORION-A1501P**
150W PSU. Active PFC. Low Noise

DC OUTPUT

	+5V	+3.3V	+12V	-12V	+5Vsb
Max. Load	13A	10A	10A	0.5A	2A
Min. Load	0.3A	0.3A	1A	0A	0A
Load Reg.	±5%	±5%	±5%	±10%	±5%
Line Reg.	±1%	±1%	±1%	±1%	±1%
Ripple	50mv	50mv	120mv	120mv	50mv
Noise	50mv	50mv	120mv	120mv	50mv

ORION-A1801P

180W Flex form factor power supply with active PFC



SPECIFICATION

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	6A@115V, 3A@230V
Efficiency	> 75%
Holdup Time	16 ms at full load
Over Voltage Protection	+5V: 5.7 ~ 6.5V; +3.3V: 3.9 ~ 4.3V; +12V: 13.6 ~ 15V
Over Power/Load Protection	Output power over 110% ~ 150%
MTBF	>130,000 hrs
EMI & Safety Approval	UL, TUV, BSMI, NEMCO, CCC, CE
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	81.5 x 150 x 40.5 mm; 3.2" x 5.9" x 1.6"

FEATURES

- Flex form factor power supply
- Full-range input with active PFC
- Max. +5V output is 16A
- Low noise

ORDERING GUIDE

- **ORION-A1801P**
180W PSU. Active PFC. Low Noise

DC OUTPUT

	+5V	+3.3V	+12V	-12V	+5Vsb
Max. Load	16A	14A	14A	0.5A	2A
Min. Load	0.3A	0.3A	1.5A	0A	0A
Load Reg.	±5%	±5%	±5%	±10%	±5%
Line Reg.	±1%	±1%	±1%	±1%	±1%
Ripple	50mv	50mv	120mv	120mv	50mv
Noise	50mv	50mv	120mv	120mv	50mv

ORION-B3501P

350W 2U ATX power supply
with active PFC



SPECIFICATION

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	10A@115V, 6A@230V
Efficiency	> 67%
Holdup Time	16 ms at full load
Over Voltage Protection	+5V: 6.5 ~ 7.0V; +3.3V: 4.5V; +12V: 14.5V
Over Power/Load Protection	Output power over 110% ~ 150%
MTBF	100,000 hrs
EMI & Safety Approval	UL, CB, TUV, CE, FCC
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	200 x 100 x 70 mm; 7.87" x 3.94" x 2.8"

FEATURES

- 2U ATX power supply suitable for 2U and larger chassis
- Active PFC, full-range input
- Support Intel® Pentium® 4 processor
- Max. +5V standby output is 2A
- Max. +12V load output is 25A

ORDERING GUIDE

- **ORION-B3501P**
350W 2U ATX power supply with active PFC

DC OUTPUT

	+5V	+3.3V	+12V	-12V	+5Vsb
Max. Load	25A	17A	25A	0.5A	2A
Min. Load	1.0A	1.0A	1.0A	0.25A	0A
Load Reg.	±5%	±5%	±5%	±10%	±5%
Line Reg.	±1%	±1.5%	±0.4%	±0.4%	±1%
Ripple	50mv	50mv	120mv	120mv	50mv
Noise	100mv	100mv	150mv	200mv	100mv

ORION-B4001

400W 2U ATX power supply with
active PFC



SPECIFICATION

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	7A@115V, 3.5A@230V
Efficiency	> 70%
Holdup Time	16 ms. at full load
Over Voltage Protection	+5V: 5.7~6.5V; +3.3V:3.9~4.3V; +12V: 13.6~15.0V
Over Power/Load Protection	Output power over to 110%~150%
MTBF	87,961 hrs
EMI & Safety Approval	UL, cUL, TUV, CE, FCC
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	100 x 240 x 70 mm; 3.9" x 9.4" x 2.8"

FEATURES

- Low profile power supply, suitable for 2U and node chassis
- Dual ATX 12V power connector for dual Intel® Xeon™ processor based server board ROBO-8820VG2
- Active PFC, full range input
- Total output power of +5V, +3.3V and +12V is 385W

ORDERING GUIDE

- **ORION-B4001**
400W 2U ATX power supply with active PFC

DC OUTPUT

	+5V	+3.3V	+12V	-5V	-12V	+5Vsb
Max. Load	33A	28A	25A	0.8A	1A	2A
Min. Load	5A	1A	2.5A	0.05A	0.1A	0.1A
Max. Watt	385W			4W	12W	10W
Load Reg.	±5%	±5%	±5%	±5%	±5%	±5%
Cross Reg.	±5%	±5%	±5%	±5%	±5%	±5%
Line Reg.	±1%	±1.5%	±0.4%	±1%	±0.4%	±1%
Ripple	±1.2%	±1.5%	±0.8%	±3%	±1.25%	±1.2%
Noise	±1.2%	±1.5%	±0.8%	±3%	±1.25%	±1.2%

ORION-D3501P

350W PS/2 ATX power supply
with active PFC



SPECIFICATION

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	6A@90V
Efficiency	> 68%
Holdup Time	17 ms. at full load @25°C
Over Voltage Protection	+5V: 7V; +3.3V: 4.3V; +12V: 15.6V
Over Power/Load Protection	Output power over to 110%~140%

MTBF	75,145 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, CSA, SEMKO, FIMKO, NEMCO, DIMCO
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -40 ~ 70°C, 10 ~ 90%RH
Dimension (WxDxH)	150 x 140 x 86 mm; 5.9" x 5.5" x 3.4"

FEATURES

- PS/2 ATX power supply, suitable for 2U, node chassis, and larger chassis
- Active PFC, full-range input
- Total output power of +5V, +3.3V and +12V is 326W
- Max. +12V load output is 18A

ORDERING GUIDE

- **ORION-D3501P**
350W PS/2 ATX power supply with active PFC

DC OUTPUT

	+5V	+3.3V	+12V	-5V	-12V	+5Vsb
Max. Load	18A	20A	18A	0.3A	0.5A	2.5A
Min. Load	1A	1A	1A	0A	0A	0A
Load Reg.	±5%	±5%	±5%	±10%	±10%	±5%
Line Reg.	±1%	±1.5%	±1%	±2.4%	±1%	±1%
Ripple	±1%	±1.5%	±0.8%	±3%	±1.25%	±1%
Noise	±1%	±1.5%	±0.8%	±3%	±1.25%	±1%

ORION-D4601P

460W PS/2 ATX power supply
with active PFC



SPECIFICATION

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	9A@115V, 5A@230V
Efficiency	80%
Holdup Time	16 ms at full load
Over Voltage Protection	+5V: 5.7 ~ 7.0V; +3.3V: 3.9 ~ 4.5V; +12V: 13.6 ~ 16.0V
Over Power/Load Protection	Output power over 110% ~ 150%

MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 85%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	150 x 140 x 86 mm; 5.9" x 5.5" x 3.4"

FEATURES

- PS/2 ATX power supply suitable for 2U and larger chassis
- Active PFC, full-range input
- Support Intel® Pentium® 4 processor
- Max. +5V load output is 20A

ORDERING GUIDE

- **ORION-D4601P**
460W PS/2 ATX power supply with active PFC

DC OUTPUT

	+5V	+3.3V	+12V	-12V	+5Vsb
Max. Load	20A	22A	16A	0.5A	2.5A
Min. Load	0.5A	0.3A	1A	0A	0A
Reg.	±5%	±5%	±5%	±10%	±5%
Ripple	50mv	50mv	120mv	120mv	50mv
Noise	50mv	50mv	120mv	120mv	50mv

ORION-D5501P

550W PS/2 ATX power supply
with active PFC



SPECIFICATION

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	9.5A@115V, 5.5A@230V
Efficiency	> 60%
Holdup Time	16 ms at full load
Over Voltage Protection	+5V: 5.7 ~ 7.0V; +3.3V: 3.9 ~ 4.5V; +12V: 13.6 ~ 16.0V
Over Power/Load Protection	Output power over 110% ~ 150%
MTBF	100,000 hrs
EMI & Safety Approval	UL, cUL, TUV, CE, FCC
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	150 x 165 x 86 mm; 5.9" x 6.5" x 3.4"

FEATURES

- PS/2 ATX power supply suitable for 2U and larger chassis
- Active PFC, full-range input
- Support Intel® Pentium® 4 processor
- Max. +5V load output is 29A

ORDERING GUIDE

- **ORION-D5501P**
550W PS/2 ATX power supply with active PFC

DC OUTPUT

	+5V	+3.3V	+12V	-5V	-12V	+5Vsb
Max. Load	29A	27A	18A	0.3A	0.8A	2A
Min. Load	3A	0.4A	1A	0A	0A	0A
Reg.	+5% -4%	+5% -4%	+5% -4%	±10%	+9% -5%	+5% -4%
Ripple	50mv	50mv	120mv	120mv	120mv	50mv
Noise	50mv	50mv	120mv	120mv	120mv	50mv

ORION-300DX/24/48

300W-48V/24V DC input
DC/DC PS/2 ATX power supply



SPECIFICATION

Input Voltage	-40V~-72V DC for ORION-300DX/48 19V~32V DC for ORION-300DX/24
Input Current	10A@-48V, 20A@24V DC input
Efficiency	> 65%
Holdup Time	16 ms
Over Voltage Protection	+5V: 5.7 ~ 7.0V
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV, CSA
Temperature/Humidity	Operating: 0 ~ 40°C, 10 ~ 90%RH Storage: -60 ~ 70°C, 5 ~ 95%RH
Dimension (WxDxH)	150 x 140 x 86 mm; 5.9" x 5.5" x 3.4"

FEATURES

- PS/2 ATX power supply suitable for 2U and larger chassis
- ORION-300DX/24 for +24V DC input, suitable for vehicle applications
- ORION-300DX/48 for -48V DC input, suitable for telecommunication applications
- Max. -12V output is 2A, suitable for CTI application

ORDERING GUIDE

- **ORION-300DX/48**
300W -48V DC input DC/DC PS/2 ATX power supply
- **ORION-300DX/24**
300W 24V DC input DC/DC PS/2 ATX power supply

DC OUTPUT

	+5V	+3.3V	+12V	-5V	-12V	+5Vsb
Max. Load	30A	15A	15A	2A	2A	1.2A
Min. Load	2A	0.3A	0.5A	0A	0A	0A
Load Reg.	±5%	±3%	±5%	±10%	±5%	±5%
Cross Reg.	±5%	±3%	±5%	±10%	±5%	±5%
Line Reg.	±1%	±1%	±1%	±1%	±1%	±1%
Ripple	±1%	±1.5%	±1%	±2%	±1%	±1%
Noise	±1%	±1.5%	±1%	±2%	±1%	±1%

ORION-D3502P

350W+350W mini-redundant with active PFC power supply



SPECIFICATION

Input Voltage	100V~240V AC
Input Frequency	47 ~ 63 Hz
Input Current	6A@115V, 3A@230V
Efficiency	> 80%
Holdup Time	16 ms. at full load
Over Voltage Protection	3.3@4.5V; 5V@6.5V; 12V@14.5V
MTBF	> 100,000 hrs
EMI & Safety Approval	UL, cUL, TUV, CE, FCC
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	150 x 190 x 84 mm; 5.9" x 7.2" x 3.4"

FEATURES

- Mini-redundant ATX power supply suitable for 2U and larger chassis
- Active PFC, full-range input
- Two independent AC inputs

ORDERING GUIDE

- **ORION-D3502P**
350W+350W mini-redundant power supply with active PFC (PS/2 bracket is available)

DC OUTPUT

	+5V	+3.3V	+12V	-5V	-12V	+5Vsb
Max. Load	20A	20A	18A	0.5A	0.8A	2A
Min. Load	0.5A	0.5A	0.5A	0A	0A	0A
Load Reg.	±5%	±5%	±5%	±10%	±5%	±5%
Cross Reg.	±5%	±5%	±5%	±10%	±5%	±5%
Line Reg.	±1%	±1%	±1%	±1%	±1%	±1%
Ripple	50mv	50mv	120mv	200mv	200mv	50mv
Noise	50mv	50mv	120mv	200mv	200mv	50mv

ORION-D4602P

460W+460W mini-redundant with active PFC power supply



SPECIFICATION

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	9A@115V, 5A@230V
Efficiency	> 65%
Holdup Time	20 ms. at full load
Over Voltage Protection	+5V: 5.6 ~ 6.5V; +3.3V: 3.8 ~ 4.3V; +12V: 13.6 ~ 15.6V
Over Power/Load Protection	Output power over 110% ~ 130% on +3.3V/+5V; 120% ~ 150% on +12V
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -40 ~ 70°C, 5 ~ 95%RH
Dimension (WxDxH)	150 x 190 x 85 mm; 5.9" x 7.5" x 3.3"

FEATURES

- Mini-redundant power supply suitable for 2U/4U and larger chassis
- Active PFC, full-range input
- Two independent AC inputs

ORDERING GUIDE

- **ORION-D4602P**
460W+460W mini-redundant power supply with active PFC (PS/2 bracket is available)

DC OUTPUT

	+5V	+3.3V	+12V	-12V	+5Vsb
Max. Load	25A	25A	30A	0.8A	2A
Min. Load	2A	2A	2.5A	0A	0A
Max. Watt.	370W	370W	370W	9.6W	10W
Load Reg.	±5%	±5/-3%	±5%	±5%	±10%
Cross Reg.	±5%	±5/-3%	±5%	±5%	±5%
Line Reg.	±1%	±1%	±1%	±1%	±1%
Ripple	±1%	±1%	±1%	±1%	±1%
Noise	±1%	±1%	±1%	±2%	±1%

MPM-842P

400W PS/2 ATX power supply
with active PFC



SPECIFICATION

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	7.5A@115V, 3.5A@230V
Efficiency	> 71%
Holdup Time	16 ms at full load
Over Voltage Protection	+5V: 4.75 ~ 5.25V; +3.3V: 3.14 ~ 3.47V; +12V: 11.4V ~ 12.6V
Over Power/Load Protection	Output power over 110% ~ 150%
MTBF	>160,000 hrs
EMI & Safety Approval	TUV, UL/cUL
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	150 x 140 x 86 mm; 5.9" x 5.5" x 3.4"

FEATURES

- PS/2 ATX power supply suitable for 2U and larger chassis
- Active PFC, full-range input
- Support Intel® Pentium® 4 processor
- Max. 12V output is 22A
- Medical level power supply

ORDERING GUIDE

- **MPM-842P**
400W PS/2 ATX power supply with active PFC

DC OUTPUT

	+5V	+3.3V	+12V	-12V	+5Vsb
Max. Load	21A	22A	22A	0.8A	1.5A
Min. Load	0.3A	0.5A	1A	0A	0.1A
Load Reg.	±5%	±5%	±5%	±5%	±5%
Line Reg.	±1%	±1%	±1%	±1%	±1%
Ripple & Noise	50mv	50mv	120mv	120mv	50mv

MPI-815H

150W 1U ATX power supply
with active PFC



SPECIFICATION

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	6A@115V, 3A@230V
Efficiency	> 75%
Holdup Time	16 ms at full load
Over Voltage Protection	+5V: 5.7 ~ 6.5V; +3.3V: 3.9 ~ 4.3V; +12V: 13.6 ~ 15
Over Power/Load Protection	Output power over 110% ~ 150%
MTBF	>130,000 hrs
EMI & Safety Approval	UL
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	198 x 93 x 40.5 mm; 7.8" x 3.66" x 1.6"

FEATURES

- 1U ATX power supply
- Full-range input
- Max. +5V standby output is 14A
- Thermal protection
- +5V standby & remote On/Off

ORDERING GUIDE

- **MPI-815H**
150W fanless, 1U, ATX power supply

DC OUTPUT

	+5V	+3.3V	+12V	-12V	+5Vsb
Max. Load	14A	12A	10A	1A	1.5A
Min. Load	1A	0A	0A	0A	0A
Load Reg.	±2%	±5%	±5%	±5%	±5%
Line Reg.	±1%	±1%	±1%	±1%	±1%
Ripple & Noise	50mv	50mv	100mv	150mv	100mv

MPI-810H

120W universal input open-frame power supply



SPECIFICATION

Input Voltage	90 ~ 260V AC
Input Frequency	47 ~ 63 Hz
Input Current	3A@115VAC or 1.5A@230VAC
Efficiency	> 70%
Holdup Time	16 ms at full load
Over Voltage Protection	+5V: 5.6 ~ 6.6V; +3.3V: 3.6 ~ 4.2V; +12V: 13.2 ~ 14.6V
Over Power/Load Protection	Output power over 110% ~ 160%
MTBF	130,000 hrs
EMI & Safety Approval	UL, VDE, CSA
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 90%RH Storage: -20 ~ 70°C, 5 ~ 95%RH
Dimension (WxDxH)	83.8 x 152.4 x 38.1 mm; 3.3" x 6" x 1.5"

FEATURES

- 3.3" x 6" open-frame power supply suitable for node chassis
- Five rails outputs (+5V, +12V, -12V, +3.3V & +5Vsb)
- Universal AC input
- Higher +5V output (14A)

ORDERING GUIDE

- **MPI-810H**
120W universal input open-frame power supply

DC OUTPUT

	+5V	+3.3	+12V	-12V	+5Vsb
Max. Load	14A	12A	6A	1A	0.75A
Min. Load	1A	0A	0A	0A	0A
Load Reg.	±3%	±5%	±5%	±5%	±5%
Line Reg.	±1%	±1%	±1%	±1%	±1%
Ripple	50mv	50mv	120mv	200mv	

MPD-810H

120W universal input open-frame, DC to DC power supply



SPECIFICATION

Input Voltage	10V ~ 30V DC
Input Frequency	47 ~ 63 Hz
Input Current	18A@10V DC
Efficiency	> 70%
Holdup Time	16 ms at full load
Over Voltage Protection	+5V: 5.6 ~ 6.6V; +3.3V: 3.6 ~ 4.2V; +12V: 13.2 ~ 14.6V
Over Power/Load Protection	Output power over 110% ~ 160%
MTBF	130,000 hrs
EMI & Safety Approval	UL
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 90%RH Storage: -20 ~ 70°C, 5 ~ 95%RH
Dimension (WxDxH)	83.8 x 152.4 x 38.1 mm; 3.3" x 6" x 1.5"

FEATURES

- Open-frame DC to DC power supply suitable for node chassis
- Five rails outputs (+5V, +12V, -12V, +3.3V & +5Vsb)
- 10~30 VDC input
- Higher +5V output (10A)

ORDERING GUIDE

- **MPD-810H**
120W 10~30VDC input open-frame power supply

DC OUTPUT

	+5V	+3.3	+12V	-12V	+5Vsb
Max. Load	10A	8A	4A	1A	0.75A
Min. Load	1A	0A	0A	0A	0A
Load Reg.	±2%	±5%	±5%	±5%	
Line Reg.	±2.5%	±2.5%	±2.2%	±2.5%	±2.5%
Ripple	100mv	100mv	120mv	200mv	

MPE-008A-P

80W universal input open-frame power supply



SPECIFICATION

Input Voltage	90V ~ 264V AC
Input Frequency	47 ~ 63 Hz
Input Current	2A@115V; 1A@230V
Efficiency	> 80%
Holdup Time	16 ms at full load
Over Voltage Protection	Automatic recovery up on of over voltage condition. Trigger point is at about 5.8V ~ 6.8V
MTBF	130,000 hrs
EMI & Safety Approval	UL, cUL, TUV, CE, CCC
Temperature/Humidity	Operating: -20 ~ 50°C, 5 ~ 95%RH Storage: -20 ~ 85°C, 5 ~ 95%RH
Dimension (WxDxH)	50.8 x 127 x 40 mm; 2.0" x 5" x 1.57"

FEATURES

- 60W convection cooling and 80W forced air-cooling
- Conductive EMI Meets CISPR/FCC Class B
- 2" x 5" compact size dual output
- A ray leakage current <100uA

ORDERING GUIDE

- **MPE-008A-P**
80W universal input open-frame power supply

DC OUTPUT

	5V	+12V
Max. Load	5A	5A
Min. Load	0A	0A
Load Reg.	±3%	±3%
Line Reg.	±1%	±1%
Ripple	50mv	120mv
Noise	50mv	120mv

MPI-806H

60W universal input open-frame power supply



SPECIFICATION

Input Voltage	90V ~ 264V AC
Input Frequency	47 ~ 63 Hz
Input Current	2A@115V, 1A@230V
Efficiency	> 70%
Holdup Time	20 ms. at full load
Over Voltage Protection	+5V: 5.15 ~ 6.45V; +3.3V: 3.7 ~ 4.5V; +12V: 12.6 ~ 15.6V
Over Power/Load Protection	Output power over 120%
MTBF	130,000 hrs
EMI & Safety Approval	UL, TUV
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	128 x 81 x 40 mm; 5.0" x 3.2" x 1.55"

FEATURES

- 80W with 8.6CFM forced air-cooling
- Compact size with ATX output
- PG/PF signal
- +5V standby & remote on/off

ORDERING GUIDE

- **MPI-806H**
60W ATX, open-frame power supply

DC OUTPUT

	+5V	+3.3V	+12V	-12V	+5Vsb
Max. Load	8A	6A	3A	0.5A	0.75A
Min. Load	1A	0A	0A	0A	0A
Load Reg.	±2%	±4%	±4%	±5%	±4%
Line Reg.	±1%	±1%	±1%	±1%	±1%
Ripple	50mv	50mv	120mv	120mv	120mv
Noise	±1%	±1%	±1%	±2%	±1%

Industrial Power Adapter

APH-3019

40W DC-Plug with Screw Power Adapter



FEATURES

- Efficiency: Meet CEC (California Energy Commission)
- Low Ripple & Noise
- Short Circuit Protection
- Over Current Protection 5A(Max.)
- Over Voltage Protection 18Vdc Max. (Upper Trip limit)
- No Load Power Consumption $\leq$ 0.3W
- DC plug with screw for securing

SPECIFICATION

AC Input Voltage	90V ~ 264V
DC Output Voltage	12V
Output Load	3.33A
Output Regulation	11.4V~12.6V
Efficiency	>83.1%, 115V@60Hz, 230V@50Hz
MTBF	100,000 hrs@25°C
EMI & Safety Approval	UL, cUL, TUV, CE, FCC, CB
Dimension	110(w) x 50(d) x 32(h) mm

APH-3020

60W DC-Plug with Screw Power Adapter



FEATURES

- Efficiency: Meet CEC (California Energy Commission)
- Low Ripple & Noise
- Short Circuit Protection
- Over Current Protection 7.3A(Max.)
- Over Voltage Protection 18Vdc Max. (Upper Trip limit)
- No Load Power Consumption $\leq$ 0.5W
- DC plug with screw for securing

SPECIFICATION

AC Input Voltage	90V ~ 264V
DC Output Voltage	12V
Output Load	5A
Output Regulation	11.4V~12.6V
Efficiency	>87%, 115V@60Hz, 230V@50Hz
MTBF	60,000 hrs@25°C
EMI & Safety Approval	UL, cUL, TUV, CE, FCC, CB
Dimension	110(w) x 62(d) x 32(h) mm

APH-3023

96W DC-Plug with Screw Power Adapter



FEATURES

- Efficiency: Meet CEC (California Energy Commission)
- Low Ripple & Noise
- Short Circuit Protection
- Over Current Protection, Shutdown and no damage
- Over Voltage Protection 18Vdc Max. (Upper Trip limit)
- Over Temperature Protection (No fire, no smoke)
- No Load Power Consumption $\leq$ 0.75W
- DC plug with screw for securing

SPECIFICATION

AC Input Voltage	90V ~ 264V
DC Output Voltage	12V
Output Load	8A
Output Regulation	11.4V~12.6V
Efficiency	>81%, 100V@60Hz, 240V@50Hz
MTBF	100,000 hrs@25°C
EMI & Safety Approval	UL, cUL, TUV, CE, FCC, CB
Dimension	174(w) x 65(d) x 37(h) mm

APH-3028

150W DC-Plug Power Adapter



FEATURES

- Efficiency: Meet CEC (California Energy Commission)
- Low Ripple & Noise
- Short Circuit Protection
- Over Current Protection, Shutdown and no damage
- Over Voltage Protection 17Vdc Max. (Upper Trip limit)
- Over Temperature Protection (No fire, no smoke)
- No Load Power Consumption $\leq$ 0.5W
- DIN plug connector for power DIN plug (with lock)

SPECIFICATION

AC Input Voltage	90V ~ 264V
DC Output Voltage	12V
Output Load	12.5A
Output Regulation	11.4V~12.6V
Efficiency	>86%, 100V@60Hz, 240V@50Hz
MTBF	43,800 hrs@25°C
EMI & Safety Approval	UL, cUL, TUV, CE, FCC, CB
Dimension	171(w) x 72(d) x 40(h) mm



Configuration Matrix

Model	RPC-500NC /MX/L	AREMO- 4196/MX	AREMO- 3194	AREMO- 2173P	AREMO- 2173PA	AREMO- 2173-MX	AREMO- 6163	AREMO- 8164	AREMO- 4184	AREMO- 6182
ATX M/B	V	V	V							
Micro ATX	V	V	V			V				
SBC PICMG 1.0	V	V		V			V	V	V	V
SBC PICMG 1.3	V	V			V					
PBP-13D4	V	V								
PBP-13R4	V	V								
PBP-14P4	V	V								
PBP-14AC-B	V	V								
PBP-14A7	V	V								
PBP-14AC	V	V								
PBPE-13A8	V	V								
PBPE-12A9	V	V								
PBPE-12AA64	V	V								
PBPE-14AD64	V	V								
PBP-06V4				V						
PBP-06V464				V						
PBPE-06V					V					
PBPE-06V3					V					
PBPE-06V464					V					
PBP-06P3							V		V	V
PBP-06P4							V		V	V
PBP-08A7								V		
PBP-08P3								V		
PBP-08P4								V		
ORION-A1501									V	V
ORION-A2501									V	V
ORION-B3501P			V							
ORION-D3501P	V	V		V	V	V	V	V		
ORION-D4601P	V	V		V	V	V	V	V		
ORION-D5501P	V	V		V	V	V	V	V		

Embedded System Integration Service

In order to help improve our customer's product time to market, Portwell provides the following services for the Embedded Computing Platform.

These services are provided for both board support and system integration, and are available to our valued customers who work with our world-class ecosystem and alliance program for embedded computing.

The three main services include:

1. Panel Kit service

This service focuses on the Interactive Client segment -- defined by Intel IPD as users of display-oriented applications such as POS/ATM/KIOSK/Medical/Gaming/E-payment -- and is supplemented by the 2001 Portwell Alliances with a first tier LCD maker in Taiwan to provide three year longevity support, panel kit for most of Portwell embedded system boards, with customized video BIOS, and Intel Embedded Graphic Driver (IEGD) by customer request.

2. Embedded OS board support package

Portwell joins the Microsoft Windows Embedded Partner (WEP) program and works with chipset and device silicon vendors to provide customers with this board support package (BSP). Customers can now focus their application software to shorten the system developing cycle and still maintain a lower total cost of ownership (TCO).

3. Peripherals integration and system level thermal solution

Portwell can provide consulting service and deliverable solution for peripherals integration upon customer's request. Our customer service engineering team can even be your window to leverage the IT infrastructure of the greater China area.

EZCool



SPECIFICATION

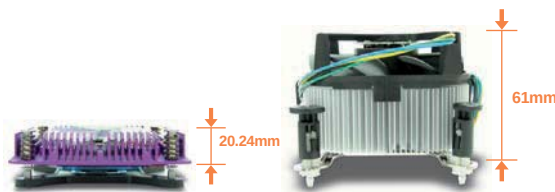
Socket Type	Socket LGA 775 (Core™ 2 Duo, Celeron® 440)
Heat Sink Dimension	90 x 90 x 18mm (L x W x H)
Fan Dimension	Φ55.5x11.3 mm (compatible with 80mm fan)
Heat Sink Material	Aluminum extrusion base and fins
Fan Speed	5.76 CFM(At zero pressure and 25°C, rated speed)
Fan Air Pressure	9.11 mmH2O (At zero static pressure and 25°C, rated speed)
Fan Life Expectancy	40,000 hours at 45°C
Bearing Type	Ball Bearing
Voltage Rating	12 VDC
Input Current	0.3 A Max. (At 25°C, in free air rated voltage)
Noise Level	39.3 dBA
Connector	3 pin
Heat Sink Weight	136.4 g (included fasteners)
Fan Weight	13.6 g
Thermal Interface Material	SC102

A reliable thermal solution of processor is always highly appreciated for most applications. The reliable solution is not only about whether the processor over its thermal specification or keep its temperature under protection point but also noise and weight related. EZCool is the reliable thermal solution for Intel® Core™ 2 Duo processor, Pentium® 4 651 and Celeron® D 352 and so on that Thermal Design Power (TDP) does not over 65W because of it's compact size, silent cooling fan and fixing mechanism.

FEATURES

Compact Size

EZCool is just one of third height of boxed cooler that benefits applications that need low profile cooler.



Bending Prevention

Larger preload of cooler causes the main board bending and it could introduce permanent damage to the PCB (Print Circuit Board) and traces on it. With back plate conjunction, EZCooler makes no deflection of board.



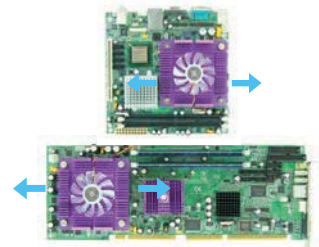
Twist Avoidance

Main board fixed vertically in chassis instead of horizontally such as PICMG 1.X SBC/SHB can be twisted because of the weight of cooler. It damages SBC/SHB badly once the platform vibrates or shakes in the same direction.



Semi-symmetric Design

The semi-symmetric heat sink design allows air flow thru dual directions that can help ventilation of other key components nearby and fully leverage system air flow that draw from outside of the chassis.



Further Contact

Completed Technical Service-In order to ensure that customers can get the right and speedy service from Portwell, we do offer the following services to meet your needs.



Logistics Service

It is not only for the scalable or world-grade customers, we offer the service to our partners who need the world-wide delivery to save time and expense.



Consulting Service

Our engineering experts provide a free service to discuss with you the projects or technologies that you need in a short period of time. Please visit Portwell web and click the button, then the on-line service will appear for you.



Product Service

We have the experienced product managers who can help you to get the right products in our list and also the related information to complete your solution.



Design Service

If our existing products cannot meet your requirements, a customized design service can be initiated to build the exact products that you demand.



Manufacturing Service

Portwell has the most advanced manufacturing facilities to produce the quality product for your application or business. Please pay a visit to our Portwell engine, you will know how best that we can do for you.



Both Portwell RDC & SIC are set for the completed service to our customers & Partners. Your any requirements or technical issues are welcome to contact us for further solution. Our service can be arranged in the following ways.

Web Service

Portwell already set up the contact for our technology service on the air. Please just visit our web on the internet and left the message for further contact by our people. Besides, you also can get the on-line consulting service via Skype or the phone if the immediate service is needed.

Extended Visits to PE

Some idea or issue is not easy to have the solution within short period of time. Portwell has the necessary facility and dormitory for customers or partners who need to stay with us for a period of time. Please contact us and our service people will give you the message for it.

Direct Contact

Portwell welcomes our customers to visit our Laboratory for the regulation test or design service. We believe that it is the fastest way to solve your questions and achieve the right solution. Just call or mail us; you will have the right service immediately.



Live Chat (Skype)

You can get the on-line consulting service via Skype if an immediate response is needed.

<http://www.portwell.com.tw/support/LiveChat.php>



Global Service (Telephone)

In addition, you can get immediate support via telephone. Check the web site for phone numbers.

<http://www.portwell.com.tw/contact/worldwide.html>



E-Mail

Portwell's technical support department can be reached by e-mail as follows

TSD@portwell.com.tw



Live Message

If you prefer to a question into a web form and receive a reply by e-mail, please visit:

<http://wms.portwell.com.tw/chat/livehelp.php?department=2>

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