

# Industrial Platform Service SOLUTION GUIDE

# IPRS



Ver. 210A

**Portwell**  
Together in Electric Dream!

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



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### 55 AREMO-2173MX

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### 57 AREMO-3194

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### 59 PRC-4207

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### 61 AREMO-6163

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### 63 AREMO-8164

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### 65 AREMO-4184

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AREMO-6182

### 67 AREMO-6182

6-slot full-size industrial node chassis (Shoe-box)



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### 70 PRS-1174

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### 72 EZDRV-400

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### 74 PEB-2731VLA

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### 75 PEB-2130

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PEB-2131VGA

### 76 PEB-2131VGA

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### 78 PEB-2738

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PEB-2780VG2A

### 79 PEB-2780VG2A

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PEB-2770VG2A

### 80 PEB-2770VG2A

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Intel® Ultra Low Power Atom Processor based NANO-ITX Board with dual display, Gigabit Ethernet, Audio, USB and SATA



NANO-8045L

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Intel® Ultra Low Power Atom™ Processor based NANO-ITX Board with dual display, Gigabit Ethernet, Audio, USB and SATA



NANO-8050

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- 91 WADE-8066**  
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WADE-8068

- 92 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-8046

- 93 WADE-8046**  
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WADE-8065

- 94 WADE-8065**  
Network Enriched Intel® Core™ 2 Duo processor based Mini-ITX Board with Dual Displays, Three GbE LAN ports, Audio and USB



WADE-8071

- 95 WADE-8071**  
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WADE-8070

- 96 WADE-8070**  
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- 97 WADE-8072**  
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WADE-8170

- 98 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-8044

- 99 WADE-8044**  
Ultra Low Voltage Intel® Celeron® M processor Mini-ITX with DDR2 SDRAM, Dual Display, Four COM Ports and USB



WADE-8047

- 100 WADE-8047**  
On board Dual VGA Intel® Celeron® M/Pentium® M processor Mini-ITX with DDR2 SDRAM, LVDS, Four COM Ports and USB



WADE-8180

- 101 WADE-8180**  
Leading Intel® Core™ 2 Quad / Core™ 2 Duo Processor based Mini-ITX embedded board with Dual Display, WADE-8180 Dual Gigabit Ethernet, SATA, COM and USB



WADE-8056

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



WADE-8556

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The fan-less compact bare bone system with Intel® Celeron® M Mini-ITX board



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PCOM-B212VG

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Intel® Core™ Duo or Celeron® M processor based Type II COM Express module with DDR2 SDRAM, VGA, Gigabit Ethernet and USB



PCOM-B213VG

- 118 PCOM-B213VG**  
Intel® GM45 platform based Type II COM Express module with DDR3 SDRAM, VGA, Gigabit Ethernet, SATA and USB



PCOM-B214VG

- 119 PCOM-B214VG**  
Intel® Atom™ based Type II COM Express module with DDR2 SDRAM, VGA, Gigabit Ethernet, SATA and USB



PCOM-B215VG

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PCOM-B216VG

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PCOM-C210

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ATX Form Factor Evaluation Carrier Board for COM Express Type II Module



PQ7-M101G

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Qseven, based on Intel® Atom™ Processor with DDR2 SDRAM, LVDS Display, Gigabit Ethernet, SDVO and SATA



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



WEBS-4330

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



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**150 GADIWA-R9271**  
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**151 GADIWA-3160**  
128W DC/DC 12V~36V/wide-input, ATX/output, Board Type Converter



**152 GADIWA-3161**  
128W DC/DC 9V~29V/wide-input, ATX/output, Board Type Converter



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360W Mini-Redundant PSU, 18~30VDC Wide-Rang/input, ATX/output



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150W Flex form factor power supply with active PFC



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**156 ORION-B3501P**  
350W 2U ATX power supply with active PFC



**156 ORION-D3501P**  
350W ATX power supply with active PFC



**157 ORION-D4601P**  
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**157 ORION-D5501P**  
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**158 ORION-D3002DDP**  
300W -38VDC to -72VDC input DC/DC mini-redundant ATX power supply



**159 ORION-D3502P**  
350W ATX mini-redundant with active PFC power supply



**159 ORION-D4602P**  
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# About Portwell

## Who is Portwell?

Portwell, Inc. was founded in Taiwan in 1993 and entered the Industrial PC market in 1995 by developing single-board computers. Today, our continued development of leading-edge products has resulted in strong growth in market share 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 not only a member of the select group of Intel® Applied Computing Platform Providers (IACPP), but also an associate member of Intel® Embedded and Communications Alliance (ECA), as well as Advanced Telecom Computing Architecture (ATCA) and an executive member of PCI Industrial Computer Manufacturing group (PICMG).

Portwell, Inc. has worldwide offices in the U.S.A., Taiwan, Japan, China, Netherland, United Kingdom, and India.

## Why Partner with Portwell?

Whether you are working on a computer board or turnkey system, Portwell is the perfect partner to help you deliver your products to market on time as well as maintain longevity of product life cycle. With 16 years experience in the design and manufacture 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 service to suit your needs.

Portwell OEM and ODM solutions satisfy a host of top-tier companies in the 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 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, unique computer chassis, and specific computer system configurations. Whether you're working on a Medical Single Board Computer or Internet Security Appliance, Portwell is the perfect partner to help you deliver your products to market on time and stay one step ahead of the competition.

## Why Portwell Platforms and Services?

### 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

Partnering with Intel since 1999, and with streamline access to the latest Intel technologies and roadmap, Portwell delivers cutting-edge solutions not only to meet and exceed the demand for the technologies, but also the needs of the long product life cycle.

### Faster Time-to-Market

Portwell 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 cycle, as well as costs of conducting business.

### Leading Edge Innovator

Portwell is committed to product and solution innovation, and not only has completed a variety of proof-of-concept designs with Intel, but is also a leader in offering the latest technologies to the market.

### Committed to Customer Satisfaction

Portwell operates a high standard process in determined pursuit of our commitment to continuously improve our products and services to satisfy and exceed our customers' needs.

## What is Portwell Value Proposition?

### Design, Develop, and Deliver

- Design, develop and deliver to meet customer requirements, such as production, reliability, stability, cost-effectiveness, and longevity of product.
- Experienced and sophisticated engineering capability includes electronic, mechanical, firmware and system integration expertise.

### Portwell Manufacturing Excellence

- Supply chain and 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

- One point of contact, 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.



# About SBC (Single Board Computers)

## HIGH QUALITY

### Portwell is a leading designer and manufacturer of PICMG slot boards.



Portwell, Inc. is a leading designer and manufacturer of PICMG slot boards. Featuring more expansion slots for add-in cards, high integration with versatile backplanes, and ease of upgrading and maintenance, these boards are well suited to critical applied computing applications.

**As an Associate (Silver) Member of Intel® Embedded and Communications Alliance, Portwell is guaranteed at least five-year availability of the Intel® components contained in the Embedded Intel® Architecture. This helps equipment manufacturers to secure the longevity of products that have gone through long periods of validation.**

All the components used in the Portwell SBC are specifically selected to meet the environmental requirements from even the most critical industrial applications. All the boards have to pass strict and complete reliability and compatibility tests in both design and production phases.

In addition to our full-range PICMG 1.0 SBC, Portwell also provides a total solution of PICMG 1.2 system, integrating dual Xeon® processor based SHB, up to four independent PCI/PCI-X buses, single/redundant power supply and industrial chassis. The new PICMG 1.2 standard is characterized by the replacement of the ISA bus with PCI-X bus. Because the PCI-X bandwidth is eight times of a 32-bit / 33MHz PCI bus, many high throughput applications, such as image processing, data storage, and communication appliance, have already adopted this bus architecture. Server board is the application that most utilizes the PCI-X bus. Portwell also provides slot board features in response to growing needs, and to better fit these critical applications.

In pursuit of our commitment to excellence, Portwell operates an ISO 14001 and ISO 9001 qualified system (from initial design, through manufacturing to delivery) to provide high performance industrial computing platforms with satisfying quality. Furthermore, we consistently seek opportunities to collaborate with customers in every vertical market in order to develop the right product in their domains. Through this cooperation, customers can get the core engine or system at the same pace as their product planning.

Please note:

- \* Specifications are subject to change without notice.
- \* Other trademarks, logo, brands and company names are the property of their respective owners.





# About ESB

## USE ESB IN YOUR NEXT PROJECT



Portwell ESB (Embedded System Board) product line targets the Interactive client market with boards based on 5.25" and Embedded ATX/Micro ATX form factors. Interactive client applications include ATM (Automated Teller Machines), Kiosk, Digital Signage, POD, POS (Point-Of-Sale), Lottery, and Vending and Gaming Machines.

### HIGH SPEED PROCESSOR

All these interactive clients are even more powerful today in order to fulfill the current needs for convenience and entertainment. Richer functions demand the higher speed and hyper-threading/dual core processors we provide for running different applications concurrently.

### ETHERNET

Highly personalized and customized service is gaining popularity and contributes to the huge customer database growing behind the end nodes. To access this database, a secure and fast communication channel is required. Nowadays, Ethernet is the most popular communication interface in the world. It greatly minimizes construction cost and TTM (Time-To-Market) of the node terminals.

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### USB

USB (Universal Serial Bus) makes adding peripheral devices extremely easy without worrying about add-in cards or IRQs. With the introduction of USB 2.0, the raw data transmission rate is increased from 12 Mbps of USB 1.1 to 480 Mbps. Therefore, more and more peripherals adopt this interface. Since more USB ports are either embedded in the chipset or can be added by the USB hub, the system capability is expanded without any problems.

### DUAL DISPLAY

Most of the Portwell ESB offers dual display support to display identical or different contents at the same time. The secondary display provides additional information to users when they access or pass information to the interactive clients. It also allows users to have a wider display by extending the working space on dual displays.

# SBC Reference Table

## FULL-SIZE SINGLE BOARD COMPUTER



MODEL	ROBO-8921VG2R	ROBO-8914VG2AR	ROBO-8913VG2AR
<b>CPU</b>	LGA771 Dual/Quad Core™ Xeon®	LGA775 Core™ 2 Quad/Core™ 2 Duo/Celeron®	LGA775 Core™ 2 Quad/Core™ 2 Duo/Celeron®
<b>System Bus Frequency</b>	1333/1066MHz	1333/1066/800MHz	1333/1066/800MHz
<b>Max Memory</b>	4 DIMM/32GB (DDR2)	4 DIMM/8GB (DDR3)	2 DIMM/4GB (DDR2)
<b>ECC</b>	YES	NO	NO
<b>BIOS</b>	AMI	AMI	AMI
<b>Chipset</b>	Intel® 5100, ICH9R	Intel® Q45, ICH10DO	Intel® Q35, ICH9DO
<b>SSD</b>	N/A	N/A	N/A
<b>VGA / Panel</b>	XGI Z11	Intel® Q45 GMCH	Intel® Q35 GMCH
<b>HDD Channel</b>	6 SATA 300	6 SATA 300	6 SATA 300
<b>FDD Drives</b>	1	1	2
<b>LAN</b>	Intel® 82575x1	Intel® 82574Lx1, 82567LMx1	Intel® 82573Lx1, 82566DMx1
<b>Expansion Interface</b>	Two PCI-E x8, One PCI-E x4, Four PCI	Four PCI-E x1, One PCI-E x16, Four PCI	Four PCI-E x1, One PCI-E x16, Four PCI
<b>USB Port</b>	10	12	12
<b>ATX Control</b>	YES	YES	YES
<b>On-Board I/O</b>	W83627DHG	W83627HG	W83627HG
<b>Serial Port</b>	2	2	2
<b>Parallel Port</b>	1	1	1
<b>PS/2 K/B</b>	Header	Header	Header
<b>PS/2 Mouse</b>	Header	Header	Header
<b>WDT</b>	YES	YES	YES
<b>H/W Monitoring</b>	YES	YES	YES
<b>IrDA</b>	N/A	N/A	YES
<b>Audio</b>	N/A	YES	YES
<b>ISA</b>	NO	NO	NO
<b>Dimension (L) x (W)</b>	338.5 mm x 126.39 mm 13.33" x 4.98"	338.5 mm x 126.39 mm 13.33" x 4.98"	338.5 mm x 126.39 mm 13.33" x 4.98"
<b>Page</b>	<b>14</b>	<b>15</b>	<b>16</b>

\* Over-clocking

# SBC Reference Table

## FULL-SIZE SINGLE BOARD COMPUTER



MODEL	ROBO-8912VG2AR	ROBO-8911VG2A	ROBO-8910VG2A
<b>CPU</b>	LGA775 Core™ 2 Duo/Pentium® D/ Pentium® 4/ Celeron® D	mPGA479M Pentium® M/Celeron® M	mPGA478 Pentium® 4/Celeron® D
<b>System Bus Frequency</b>	1066/800/533MHz	533/400MHz	800/533MHz
<b>Max Memory</b>	2 DIMM/4GB (DDR2)	2 SODIMM/2GB (DDR2)	2 DIMM/2GB (DDR2)
<b>ECC</b>	NO	NO	NO
<b>BIOS</b>	Award	Award	Award
<b>Chipset</b>	Intel® Q965, ICH8DO	Intel® 915GME, ICH6	Intel® 915GV, ICH6
<b>SSD</b>	N/A	CF Max. 1GB	CF Max. 1GB
<b>VGA / Panel</b>	Intel® Q965 GMCH	Intel® 915GM GMCH/YES	Intel® 915GV GMCH/NO
<b>HDD Channel</b>	6 SATA 300	1 EIDE Ultra DMA 100/66/33 & 4 SATA 150	1 EIDE Ultra DMA 100/66/33 & 4 SATA 150
<b>FDD Drives</b>	2	2	2
<b>LAN</b>	Intel® 82573Lx1, 82566DMx1	Marvell 88E8001x2	Marvell 88E8001x2
<b>Expansion Interface</b>	Four PCI-E x1, One PCI-E x16, Four PCI	One PCI-E x16, Four PCI-E x1, Four PCI	Four PCI Express x1, Four PCI
<b>USB Port</b>	10	8	8
<b>ATX Control</b>	YES	YES	YES
<b>On-Board I/O</b>	W83627EHG	W83627THF	W83627THF
<b>Serial Port</b>	2	2	2
<b>Parallel Port</b>	1	1	1
<b>PS/2 K/B</b>	Header	Header	Header
<b>PS/2 Mouse</b>	Header	Header	Header
<b>WDT</b>	YES	YES	YES
<b>H/W Montioring</b>	YES	YES	YES
<b>IrDA</b>	N/A	YES	YES
<b>Audio</b>	YES	YES	YES
<b>ISA</b>	NO	NO	NO
<b>Dimension (L) x (W)</b>	338.5 mm x 126.39 mm 13.33" x 4.98"	338.5 mm x 122 mm 13.33" x 4.8"	338.5 mm x 122 mm 13.33" x 4.8"
<b>Page</b>	<b>17</b>	<b>18</b>	<b>19</b>

“\*” Over-clocking

# SBC Reference Table

## FULL-SIZE SINGLE BOARD COMPUTER



MODEL	ROBO-8779VG2AR	ROBO-8777VG2A	ROBO-8773VG
<b>CPU</b>	LGA775 Core™ 2 Quad/Core™ 2 Duo/Celeron®	LGA775 Core™ 2 Duo/Pentium® D/ Pentium® 4/ Celeron® D	LGA775 Core™ 2 Duo/Pentium® D/ Pentium® 4/ Celeron® D
<b>System Bus Frequency</b>	1333/1066/800MHz	1066/800/533MHz	1066* (Optional)/800/533MHz
<b>Max Memory</b>	2 DIMM/4GB (DDR3)	2 DIMM/4GB (DDR2)	2 DIMM/2GB (DDR)
<b>ECC</b>	NO	NO	NO
<b>BIOS</b>	AMI	Award	Award
<b>Chipset</b>	Intel® G41, ICH7R	Intel® Q965, ICH8	Intel® 865G, ICH5
<b>SSD</b>	Type II CF	N/A	N/A
<b>VGA / Panel</b>	Intel® G41 GMCH	Intel® Q965GMCH/NO	Intel® 865GMCH/NO
<b>HDD Channel</b>	4 SATA 300	4 SATA 300	4 EIDE Ultra DMA 100/66/33 & 2 SATA 150
<b>FDD Drives</b>	1	2	2
<b>LAN</b>	Intel® 82574Lx2	Realtek RTL 8111B x2	Realtek RTL 8110SC x1
<b>Expansion Interface</b>	N/A	N/A	N/A
<b>USB Port</b>	8	6	8
<b>ATX Control</b>	YES	YES	YES
<b>On-Board I/O</b>	W83627THG	W83627DHG	W83627THG
<b>Serial Port</b>	2	2	2
<b>Parallel Port</b>	1	1	1
<b>PS/2 K/B</b>	Header	Header	YES
<b>PS/2 Mouse</b>	Header	Header	YES
<b>WDT</b>	YES	YES	YES
<b>H/W Montioring</b>	YES	YES	YES
<b>IrDA</b>	NO	NO	YES
<b>Audio</b>	YES	YES	NO
<b>ISA</b>	YES	YES	YES
<b>Dimension (L) x (W)</b>	338.5 mm x 122 mm 13.33" x 4.8"	338.5 mm x 122 mm 13.33" x 4.8"	338.5 mm x 122 mm 13.33" x 4.8"
<b>Page</b>	<b>20</b>	<b>21</b>	<b>22</b>

\*" Over-clocking

# SBC Reference Table

## FULL-SIZE SINGLE BOARD COMPUTER



MODEL	ROBO-8719VG2AR	ROBO-8771VG2	ROBO-8718VG2A
<b>CPU</b>	45nm Mobile Core™ 2 Quad/Core™ 2 Duo/Celeron® M	ULV Celeron® M 600MHz	mFCPGA Pentium® M / Celeron® M
<b>System Bus Frequency</b>	1066/800/667MHz	400MHz	533/400MHz
<b>Max Memory</b>	2 DIMM/4GB (DDR2)	1 DIMM/1GB (DDR)	2 DIMM/2GB (DDR2)
<b>ECC</b>	NO	NO	NO
<b>BIOS</b>	AMI	Award	Award
<b>Chipset</b>	Intel® GM45, ICH9ME	Intel® 852GM, ICH4	Intel® 915GME, ICH6
<b>SSD</b>	Type II CF	N/A	CF Max. 1GB
<b>VGA / Panel</b>	Intel® GM45GMCH/YES	Intel® 852GM GMCH/NO	Intel® 915GM/YES
<b>HDD Channel</b>	3 SATA 300	2 EIDE Ultra DMA 100/66/33	1 EIDE Ultra DMA 100/66/33 & 4 SATA 150
<b>FDD Drives</b>	1	2	2
<b>LAN</b>	Intel® 82567LM, 82574L	Realtek RTL8110SC x2	Marvell 88E8053x2
<b>Expansion Interface</b>	N/A	N/A	N/A
<b>USB Port</b>	6	12	4
<b>ATX Control</b>	YES	YES	YES
<b>On-Board I/O</b>	W83627DHG	W83627THG	W83627THF
<b>Serial Port</b>	2	2	2
<b>Parallel Port</b>	1	1	1
<b>PS/2 K/B</b>	Header	Header	Header
<b>PS/2 Mouse</b>	Header	Header	Header
<b>WDT</b>	YES	YES	YES
<b>H/W Montioring</b>	YES	YES	YES
<b>IrDA</b>	NO	YES	YES
<b>Audio</b>	YES	N/A	YES
<b>ISA</b>	YES	YES	YES
<b>Dimension (L) x (W)</b>	338.5 mm x 122 mm 13.33" x 4.8"	338.5 mm x 122 mm 13.33" x 4.8"	338.5 mm x 122 mm 13.33" x 4.8"
<b>Page</b>	<b>23</b>	<b>24</b>	<b>25</b>

“\*” Over-clocking

# SBC Reference Table

## HALF-SIZE SINGLE BOARD COMPUTER



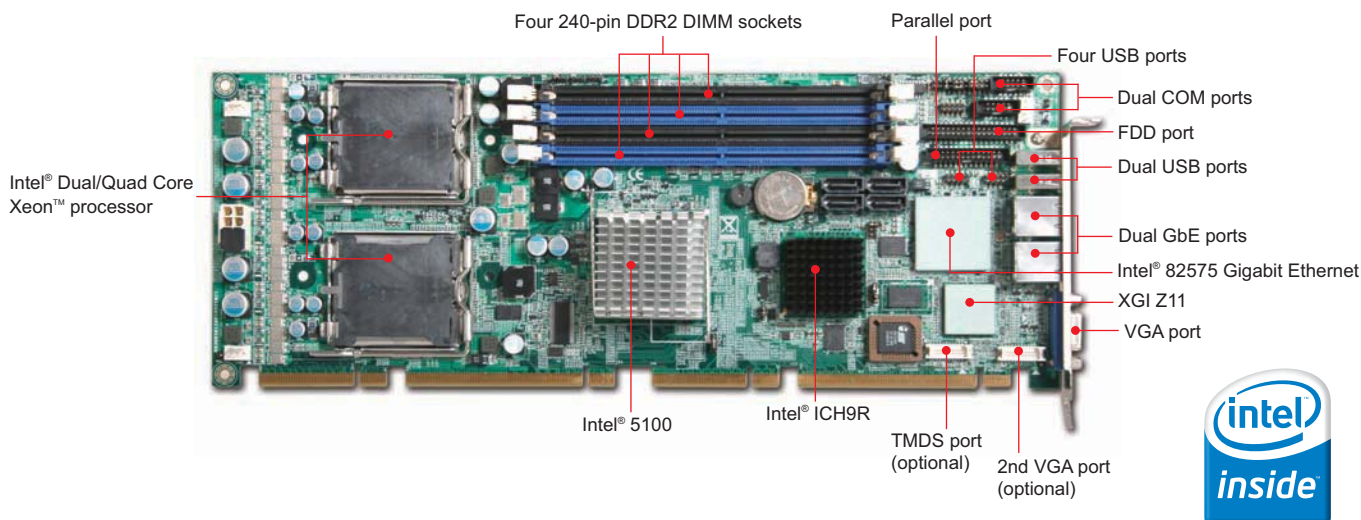
MODEL	ROBO-8713VGA	ROBO-6711VGA	ROBO-6730VLA
CPU	mPGA478 Pentium®4/ Celeron® D	mPGA478 Pentium® M/Celeron®M	ULV Celeron® M 600MHz
System Bus Frequency	800/533/400MHz	533/400MHz	400MHz
Max Memory	2 DIMM/2GB (DDR)	1 SODIMM/1GB (DDR)	1 SODIMM/1GB (DDR)
ECC	NO	NO	NO
BIOS	Award	Award	Award
Chipset	Intel® 865G, ICH5	Intel® 852GME, ICH4	Intel® 852GM, ICH4
SSD	CF Max. 1GB	CF Max. 1GB	CF Max. 1GB
VGA / Panel	Intel® 865GV GMCH/NO	Intel® 852GM GMCH/YES	Intel® 852GM GMCH/YES
HDD Channel	2 EIDE Ultra DMA 100/66/33 & 2 SATA 150	2 EIDE Ultra DMA 100/66/33	2 EIDE Ultra DMA 100/66/33
FDD Drives	2	2	2
LAN	Intel® 82547x1	Intel® 82541x1	Intel® 82562x1
Expansion Interface	Proprietary PCI connector	NO	NO
USB Port	4	4	4
ATX Control	YES	YES	NO
On-Board I/O	W83627HF	W83627HF	W83627HF
Serial Port	2	2	2
Parallel Port	1	1	1
PS/2 K/B	YES	YES	YES
PS/2 Mouse	YES	YES	YES
WDT	YES	YES	YES
H/W Montioring	YES	YES	YES
IrDA	YES	YES	YES
Audio	YES	YES	YES
ISA	YES	YES	YES
Dimension (L) x (W)	338.5 mm x 122 mm 13.33" x 4.8"	185 x 122 mm 7.3" x 4.8"	185 x 122 mm 7.3" x 4.8"
Page	<b>26</b>	<b>27</b>	<b>28</b>

"\*" Over-clocking



# ROBO-8921VG2R

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



## 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 assured the computer reliability and benefited the data swapping process
- Relative high performance graphic engine, XGI Z11 provides solid 2D for server grade market
- Dual PCI Express x4 based Gigabit Ethernet supports IPv4, IPv6 offloading, VLAN, Wake-On-LAN functions

## ORDERING GUIDE

<b>Standard</b>	<b>ROBO-8921VG2R</b> Dual Xeon® LV processor based PICMG 1.3 SHB with VGA and Dual Gigabit Ethernet (CPU Cooler included)
<b>Optional</b>	<b>PS/2 Keyboard/Mouse with Bracket</b> PS/2 keyboard/mouse connectors on bracket

## GENERAL

Processor	CPU & Package: Dual/Quad Core™ Intel® Xeon® processor (single or dual processor) in LGA-771 package FSB: 1333/1066MHz
Chipset/Core Logic	Intel® 5100 and ICH9R
System Memory	- Up to 32GB DDR2 533/667 SDRAM on four 240-pin DIMM sockets - Support ECC, registered
BIOS	AMI BIOS
Storage Devices	EIDE: N/A SATA: Support Six SATA 300 drives (dual SATA ports via Backplane) (RAID 0, 1, 5, 10)
Solid State Disk	N/A
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 sec.
Expansion Interface	- One PCI Express x8 - Three PCI Express x4 - Four PCI devices
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@7.01A; +12V@3.74A
Dimension	Dimension : 338.6(L) x 126.39(W) mm; 13.33"(L) x 4.98" (W) PCB: 12-layer
Environment	Operating Temperature: 0 to 60°C (for 80W CPU limitation) Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	106,427 hrs

## I/O

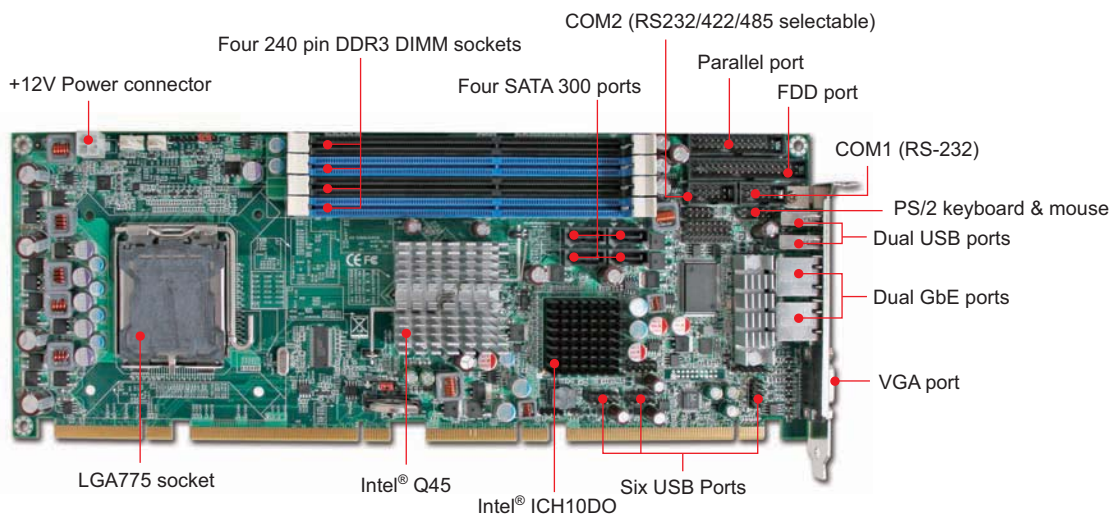
MIO	Two serial (RS232 x1, selectable RS232/485 x1), one parallel, one FDD channel
IrDA	N/A
Ethernet	PCI Express x4 interface based Intel® 82575 dual Gigabit Ethernet controller
Audio	N/A
USB	Ten USB 2.0 ports (Four through backplane)
Keyboard & Mouse	Two USB 2.0 ports on bracket dedicated to keyboard & mouse

## DISPLAY

Graphic Controller	XGI Z11
Graphic Memory	32MB DDR2 Memory
Display Interface	Support CRT and optional second CRT or DVI-D display interfaces

# ROBO-8914VG2AR

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



## FEATURES

- Support 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
- Support Intel® Q45 integrated GMA 4500 graphic engine delivers optimized 3D graphics performance
- Support 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

<b>Standard</b>	<b>ROBO-8914VG2AR</b> PICMG 1.3(PCI-E+PCI).LGA775.Core 2 Quad.SHB.w/VGA/Dual GbE/Audio
<b>Optional</b>	<b>PA-M1AU</b> Multimedia kit with audio and USB ports <b>PS/2 Keyboard/Mouse Cable with Bracket</b> PS/2 keyboard/mouse connectors on bracket <b>USB cable with bracket</b> Two USB ports with bracket <b>Low profile LGA775 Cooler</b> High efficiency slim cooler increases reliability of system

\* Specifications are subject to change without notice.

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## GENERAL

Processor	CPU & Package: Intel® Core™ 2 Quad, Core 2 Duo, Celeron processor in LGA-775 package FSB: 1333/1066/800MHz
Chipset/Core Logic	Intel® Q45 and ICH10DO
System Memory	Up to 8GB DDR3 1066/800 SDRAM on four 240-pin DIMM socket
BIOS	AMI BIOS
Storage Devices	EIDE: N/A SATA: Support six SATA 300 drives (dual SATA ports via backplane) (RAID 0,1,5,10)
Solid State Disk	N/A
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 sec.
Expansion Interface	N/A
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	N/A
Dimension	Dimension: 338.5(L) x 126.39(W) mm / 13.33"(L) x 4.98" (W) PCB: 8-layer
Environment	Operating Temperature: 0 to 55°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	N/A

## I/O

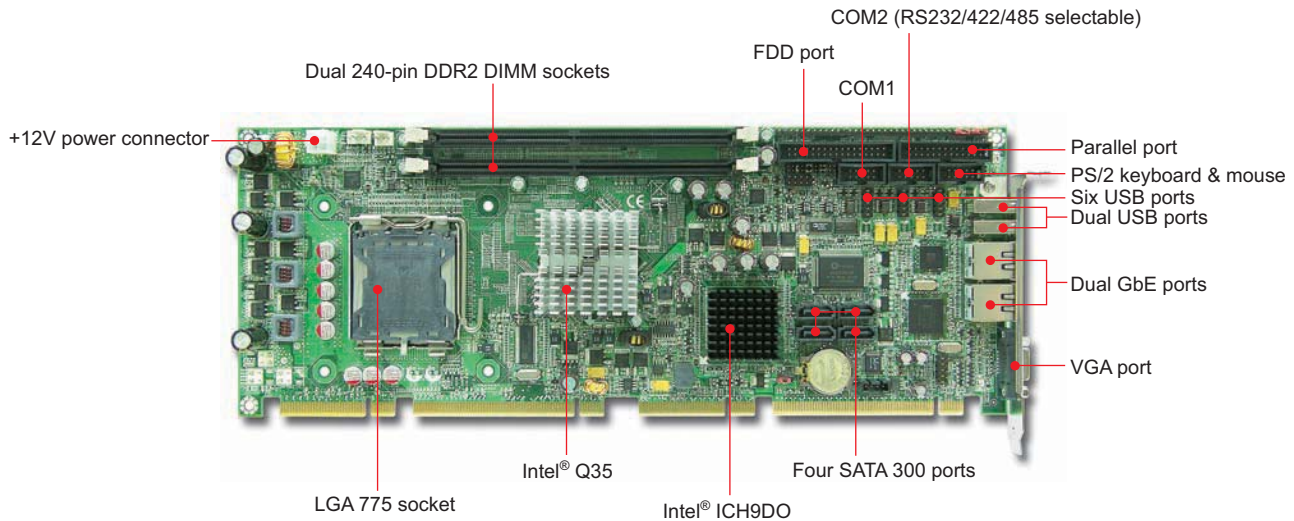
MIO	Two serial (RS-232x1, selectable RS-232/422/485 x1), one parallel and one FDD channel
IrDA	N/A
Ethernet	- Dual 10BASE-T/100BASE-TX/1000BASE-T Ethernet - PCI Express x1 interface based Gigabit Ethernet - Dual RJ-45 connector with two LED indicators
Audio	HDA interface, 5.1-channel Audio (Realtek ALC 662)
USB	Twelve USB 2.0 ports (Four USB ports via backplane)
Keyboard & Mouse	Two USB 2.0 ports on bracket dedicated to keyboard & mouse

## DISPLAY

Graphic Controller	- GMCH integrated Intel® Graphics Media Accelerator (GMA) 4500 - Provided improved 3D multimedia capabilities including Microsoft DirectX 10, Shader Model 4.0, MPEG-2 and OpenGL 2.1
Graphic Memory	Intel® Dynamic Video Memory Technology (DVMT) 5.0 shares system memory up to 1GB
Display Interface	Analog CRT: up to 2048 x 1536 @ 75Hz

# ROBO-8913VG2AR

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



## FEATURES

- Support Intel® Core™ 2 Quad processor up to FSB 1333MHz
- Low profile processor improves stability and reliability of whole system
- Support 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 (AMT) remotely discovers, heals 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 thru backplane

## ORDERING GUIDE

<b>Standard</b>	<b>ROBO-8913VG2AR</b> LGA-775 Core 2 Quad processor based PICMG 1.3 SHB with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB
<b>Optional</b>	<b>PA-M1AU</b> Multimedia kit with audio and USB ports <b>PS/2 Keyboard/Mouse Cable with Bracket</b> PS/2 keyboard/mouse connectors on bracket <b>Low Profile LGA775 Cooler</b> High efficiency slim cooler that increases reliability of system

## GENERAL

Processor	CPU & Package: Intel® Core™ 2 Quad, Core™ 2 Duo, Celeron® processor in the LGA-775 package FSB: 1333/1066/800MHz
Chipset/Core Logic	Intel® Q35 & ICH9DO
System Memory	Up to 4GB DDR2 800/667 SDRAM on dual 240-pin DIMM sockets
BIOS	AMI BIOS
Storage Devices	EIDE: N/A SATA: Support six SATA 300 drives (dual SATA ports via backplane) (RAID 0, 1, 5, 10)
Solid State Disk	N/A
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 sec.
Expansion Interface	Four PCI Express x1, one PCI Express x16 and four PCI
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@6.7A; +12V@2.7A
Dimension	Dimension : 338.5(L) x 126.39(W) mm; 13.33"(L) x 4.98" (W) PCB: 8-layer
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	115,592 hrs

## I/O

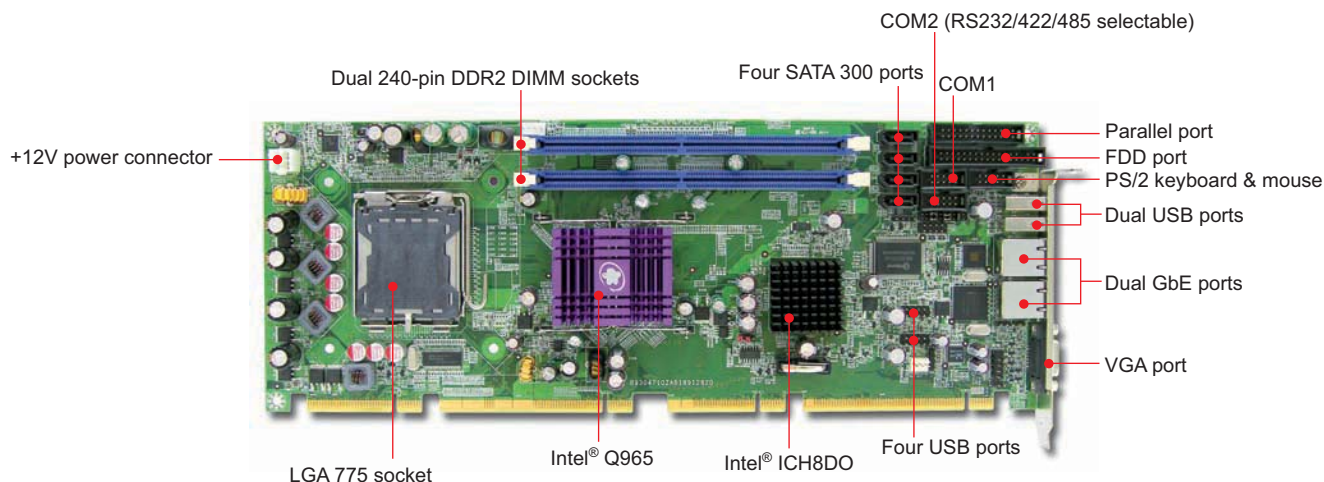
MIO	Two serial (RS232 x1, selectable RS232/422/485 x1), one parallel and one FDD channel
IrDA	IrDA 1.0
Ethernet	- Dual 10BAST-T/100BAST-TX/1000BAST-T Ethernet - PCI Express x1 interface based Gigabit Ethernet - Dual RJ-45 connector with two LED indicators
Audio	HDA interface, 2-channel Audio (Realtek ALC 262)
USB	Twelve USB 2.0 ports (Four USB ports via backplane)
Keyboard & Mouse	Two USB 2.0 ports on bracket dedicated to keyboard & mouse

## DISPLAY

Graphic Controller	- GMCH integrated Intel® Graphics Media Accelerator 3100 - Provides improved 3D multimedia capabilities including DirectX 9, Shader Model 2.0, OpenGL 1.4, MPEG-2 hardware acceleration
Graphic Memory	Intel® Dynamic Video Memory Technology (DVMT) 4.0 shares system memory up to 256MB
Display Interface	Support CRT interface up to QXGA 75Hz (2048x1536)

# ROBO-8912VG2AR

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



## FEATURES

- Support 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
- Low profile processor 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
- Embedded Intel® Active Management Technology (AMT) remotely discovers, heals 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 thru backplane

## ORDERING GUIDE

<b>Standard</b>	<b>ROBO-8912VG2AR</b> LGA-775 Core 2 Duo processor based PICMG 1.3 SHB with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB
<b>Optional</b>	<b>PA-M1AU</b> Multimedia kit with audio and USB ports <b>PS/2 Keyboard/Mouse Cable with Bracket</b> PS/2 keyboard/mouse connectors on bracket <b>Low Profile LGA775 Cooler</b> High efficiency slim cooler increases reliability of system

## GENERAL

Processor	CPU & Package: Intel® Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in the LGA-775 package FSB: 1066/800/533MHz
Chipset/Core Logic	Intel® Q965 and ICH8DO
System Memory	Up to 4GB DDR2 800/667/533 SDRAM on dual 240-pin DIMM sockets
BIOS	Award BIOS
Storage Devices	EIDE: N/A SATA: Support six SATA 300 drives (dual SATA ports via backplane) (RAID 0, 1, 5, 10)
Solid State Disk	N/A
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 sec.
Expansion Interface	Four PCI Express x1, one PCI Express x16 and four PCI
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@4.5A; +12V@6.3A
Dimension	Dimension : 338.5(L) x 126.39(W) mm; 13.33"(L) x 4.98" (W) PCB: 6-layer
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	93,332 hrs

## I/O

MIO	Two serial (RS232 x1, selectable RS232/422/485 x1), one parallel and one FDD channel
IrDA	N/A
Ethernet	- Dual 10BAST-T/100BAST-TX/1000BAST-T Ethernet - PCI Express x1 interface based Gigabit Ethernet - Dual RJ-45 connector with two LED indicators
Audio	HDA interface, 2-channel Audio (Realtek ALC 262)
USB	Ten USB 2.0 ports (four USB ports via backplane)
Keyboard & Mouse	Two USB 2.0 ports on bracket dedicated to keyboard & mouse

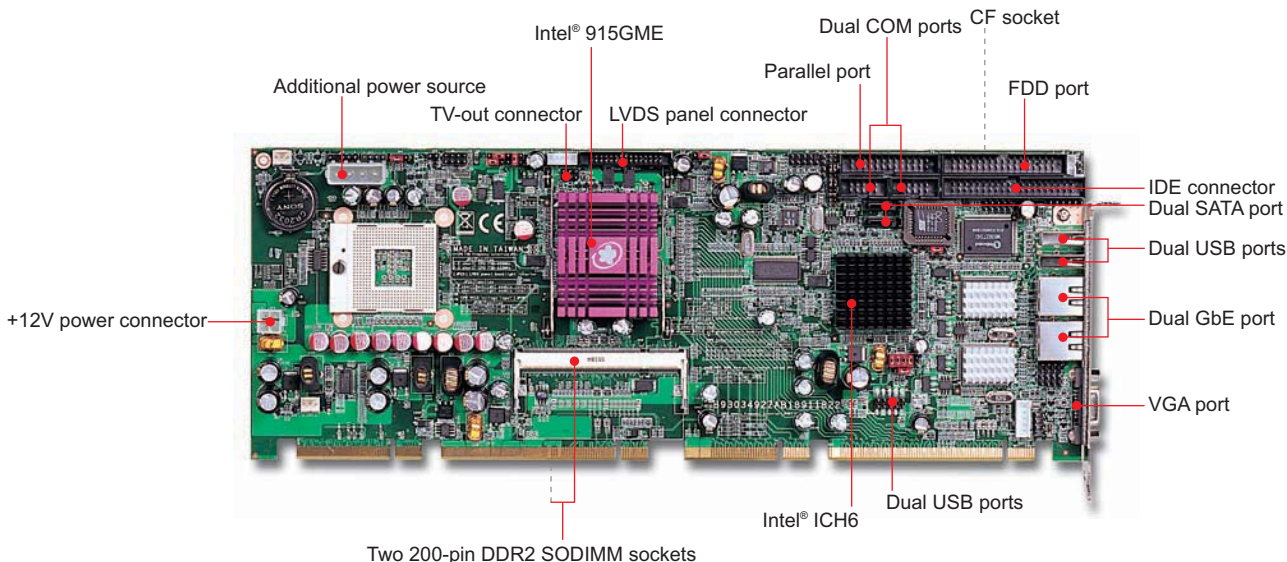
## DISPLAY

Graphic Controller	- GMCH integrated Intel® Graphics Media Accelerator 3000 - Provides improved 3D multimedia capabilities including DirectX 9, Shader Model 3.0, OpenGL 1.5, Advanced De-interlacing, MPEG-2 hardware acceleration
Graphic Memory	Intel® Dynamic Video Memory Technology (DVMT) 4.0 shares system memory up to 256MB
Display Interface	Support CRT interface up to QXGA 75Hz (2048x1536)



# ROBO-8911VG2A

Intel® Pentium® M or Celeron® M processor based PICMG 1.3 SHB with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



## FEATURES

- ROBO-8911 offers flexible 400MHz and 533MHz FSB selection of Intel® Pentium® M / Celeron® M that features high computing power with low heat
- Intel® new integrated engine GMA 900 provides better display quality and effects thru faster engine; SGI OpenGL 1.4 and Microsoft DirectX 9.0 supports latest external PCI Express x16 interface graphic's card via backplane
- Support dual view function via VGA, LVDS and TV interfaces
- Four SATA 150 ports for high speed storage interface and easy cable routing
- Support four PCI Express x1, one PCI Express x16 and four PCI expansion via backplane

## ORDERING GUIDE

<b>Standard</b>	<b>ROBO-8911VG2A</b> Socket mPGA479M Pentium® M or Celeron® M processor based PICMG 1.3 SHB with DDR2 SDRAM, VGA, Dual Gigabit Ethernet and Audio
<b>Optional</b>	<b>PA-M1AU</b> Multimedia kit with audio and USB ports <b>PS/2 Keyboard/Mouse with Bracket</b> PS/2 keyboard/mouse connectors on bracket

## GENERAL

Processor	CPU & Package: Intel® Pentium® M or Celeron® M processor in mFCPGA package FSB: 533/400MHz
Chipset/Core Logic	Intel® 915GME and ICH6
System Memory	Up to 2GB DDR2 533/400 SDRAM on two 200-pin SODIMM sockets
BIOS	Award BIOS
Storage Devices	EIDE: Support two EIDE devices with Ultra DMA 100/66/33 SATA: Support four SATA 150 devices (two through backplane)
Solid State Disk	One Type II CF socket; On Primary EIDE channel
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 sec.
Expansion Interface	- One PCI Express x16 - Four PCI Express x1 - Four PCI
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@3.1A; +12V@1.2A
Dimension	Dimension: 338.5(L) x 122(W) mm; 13.33"(L) x 4.8" (W) PCB: 8-layer
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	91,855 hrs

## I/O

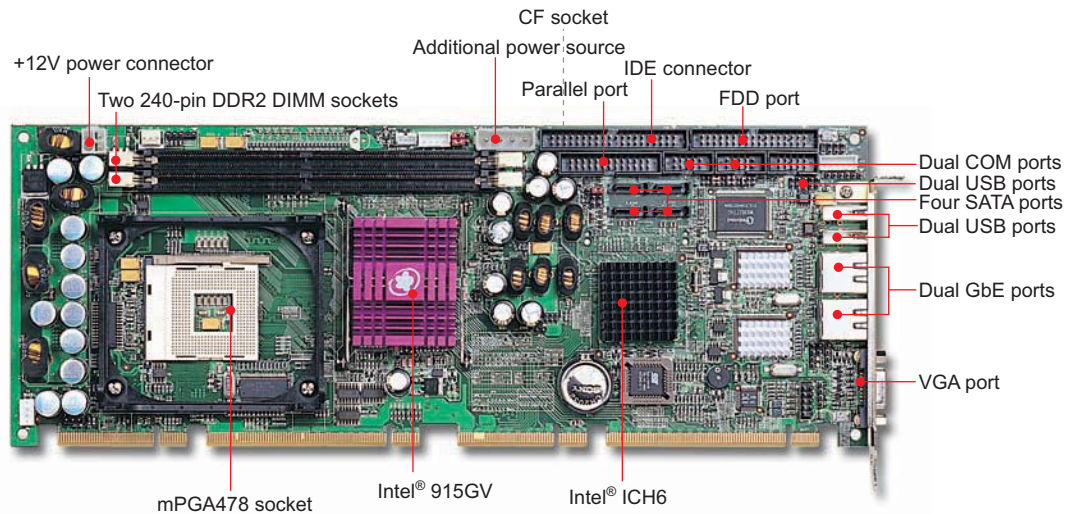
MIO	Two serial (selectable RS232/422/485 x1), one parallel, one FDD channel
IrDA	IrDA 1.0
Ethernet	- Dual 10BASE-T/100BASE-TX/1000BASE-T Ethernet - Dual RJ-45 connector with two LED indicators
Audio	AC'97 2.2 Audio (Realtek ALC 202A)
USB	Eight USB 2.0 ports (four through backplane)
Keyboard & Mouse	Two USB 2.0 ports on bracket for keyboard & mouse

## DISPLAY

Graphic Controller	915GM integrated Graphics Media Accelerator 900 (GMA 900)
Graphic Memory	Dynamic system memory sharing up to 224MB (Intel® DVMT 3.0) or static system memory sharing up to 128MB
Display Interface	CRT: Up to 2048 x1536 mode LVDS: Single/Dual 18-bit LVDS channel support TV: Up to 1024 x 768 resolution supported for NTSC/PAL

# ROBO-8910VG2A

Intel® Pentium® 4 or Celeron® D processor based PICMG 1.3 SHB with DDR2 533 SDRAM, VGA, Dual Gigabit Ethernet and Audio



## FEATURES

- High quality and reliable design with wider range Intel® Pentium® 4/ Celeron® D processor to support mission critical operation
- Intel® 915GV chipset with high performance integrated graphics, backed up by Intel® IPD's long product life support
- Intel® new GMA 900 integrated provides better display quality and effects thru faster engine; SGI OpenGL 1.4, Microsoft DirectX 9.0 supported
- Four SATA 150 ports for high speed storage interface and easy cable routing
- Support four PCI Express x1, and four PCI expansion via backplane (additional one PCI Express x16 per project spec.)

## ORDERING GUIDE

<b>Standard</b>	<b>ROBO-8910VG2A</b> Socket 478 Pentium® 4 or Celeron® D processor based PICMG 1.3 SHB with DDR2 SDRAM, VGA, Dual Gigabit Ethernet and Audio
<b>Optional</b>	<b>PA-M1AU</b> Multimedia kit with audio and dual USB port <b>PS/2 Keyboard/Mouse with Bracket</b> PS/2 keyboard/mouse connectors on bracket

## GENERAL

Processor	CPU & Package: Intel® Pentium® 4 or Celeron® D processor in mFCPGA package FSB: 800/533MHz
Chipset/Core Logic	Intel® 915GV and ICH6
System Memory	Up to 2GB DDR2 533/400 SDRAM on two 240-pin DIMM sockets
BIOS	Award BIOS
Storage Devices	EIDE: Support two EIDE devices with Ultra DMA 100/66/33 SATA: Support four SATA 150 drives
Solid State Disk	- One type II CF socket; On Primary EIDE channel - Bootable for no drive on primary channel
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 sec.
Expansion Interface	- Four PCI Express x1 - Four PCI
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@3.49A; +12V@7.57A
Dimension	Dimension : 338.5(L) x 126.39(W) mm; 13.33"(L) x 4.98" (W) PCB: 8-layer
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	115,533 hrs

## I/O

MIO	Two serial (selectable RS232/422/485 x1), one parallel, one FDD channel
IrDA	IrDA 1.0
Ethernet	- Dual 10BASE-T/100BASE-TX/1000BASE-T Ethernet - Dual RJ-45 connectors with two LED indicators
Audio	AC'97 2.2 Audio (Realtek ALC 202A)
USB	Eight USB 2.0 ports (four ports through backplane)
Keyboard & Mouse	Two USB 2.0 ports on bracket for keyboard & Mouse

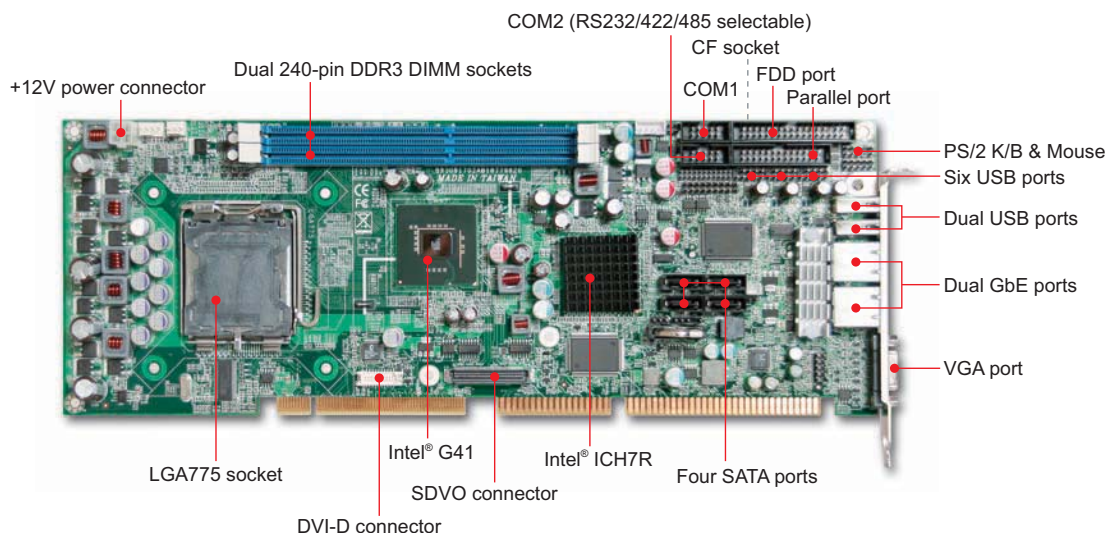
## DISPLAY

Graphic Controller	915GV integrated Graphics Media Accelerator 900 (GMA 900)
Graphic Memory	Dynamic system memory sharing up to 224MB (Intel® DVMT 3.0) or static system memory sharing up to 128MB
Display Interface	Display resolution up to 2048 x 536 @ 85Hz refresh



# ROBO-8779VG2AR

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



## FEATURES

- Support Intel® Core™ 2 Duo and Core™ 2 Quad processors and offers flexible 1333/1066/800MHz FSB selection
- Delivers up to 4GB maximum DDR3 1066/800 on two long DIMM sockets
- Support Intel® G41 integrated GMA X4500 graphic engine delivers optimized 3D graphics performance
- Support dual display VGA and DVI-D interface, and SDVO connector for other types display by project
- High speed dual Gigabit Ethernet based on PCI Express x1, high bandwidth I/O interface
- Support one CF socket up to UDMA5 mode
- Rich I/O connections such as FDD, two Gigabit Ethernet, serial ports, parallel port, USB 2.0, and SATA ports

## ORDERING GUIDE

<b>Standard</b>	<p><b>ROBO-8779VG2AR</b> Intel® Core™ 2 Quad processor based PICMG 1.0 SBC with DDR3 SDRAM, VGA, DVI, Dual Gigabit Ethernet, Audio and USB</p> <p><b>ROBO-8779VG2A</b> Intel® Core™ 2 Quad processor based PICMG 1.0 SBC with DDR3 SDRAM, VGA, DVI, Dual Gigabit Ethernet, Audio and USB</p>
<b>Optional</b>	<p><b>PA-M1AU</b> Multimedia kit with audio and USB ports</p> <p><b>PS/2 Keyboard/Mouse Cable with Bracket</b> PS/2 keyboard/mouse connectors on bracket</p> <p><b>USB Cable with bracket</b> Two USB ports with bracket</p> <p><b>PA-G1D</b> DVI output card via board to board SDVO connector</p> <p><b>Low Profile LGA775 Cooler</b> High efficiency slim cooler increases reliability of system</p>

## GENERAL

Processor	CPU & Package: Intel® Core™ 2 Quad, Core™ 2 Duo, Celeron® processor in LGA-775 package FSB: 1333/1066/800MHz
Chipset/Core Logic	Intel® G41 and ICH7R
System Memory	Up to 4GB DDR3 1066/800 SDRAM on two 240-pin DIMM socket
BIOS	AMI BIOS
Storage Devices	EIDA: N/A SATA: Support four SATA 300 drives (RAID 0, 1, 5, 10) With RAID on ROBO-8779VG2AR, W/o RAID on ROBO-8779VG2A
Solid State Disk	One Type II CF socket (up to UDMA5 mode)
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 sec.
Expansion Interface	N/A
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	N/A
Dimension	Dimension : 338.5(L) x 122(W) mm; 13.33"(L) x 4.8" (W) PCB: 8-layer
Environment	Operating Temperature: 0 to 55°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	N/A

## I/O

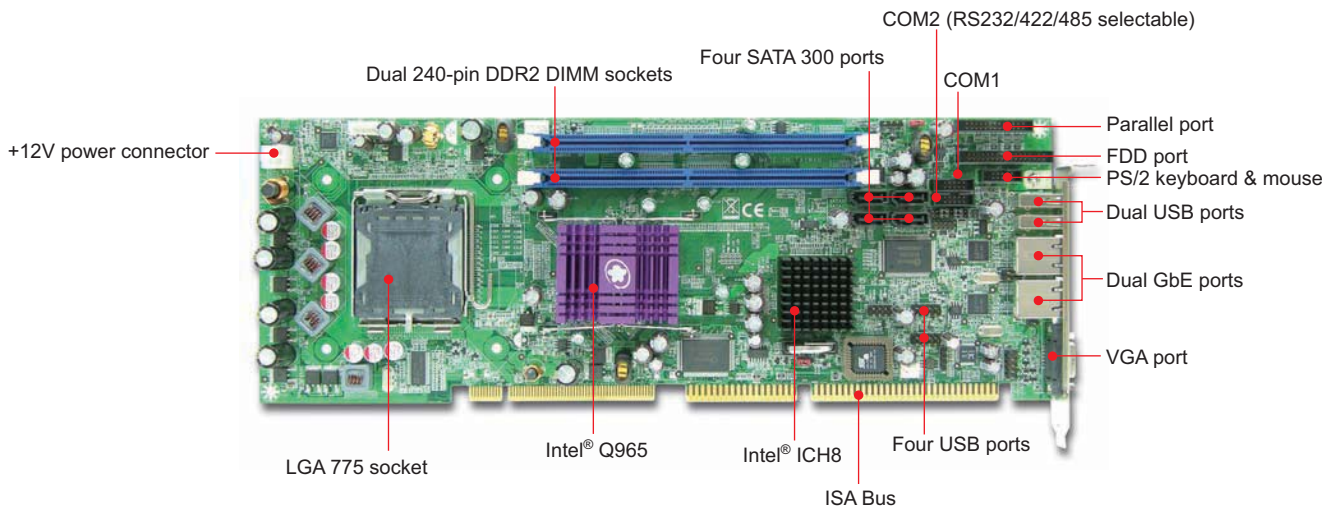
MIO	Two serial (RS232 x1, selectable RS232/422/485 x1), one parallel and one FDD channel
IrDA	N/A
Ethernet	- Dual 10 BASE-T/100 BASE-TX/1000 BASE-T Ethernet - PCI Express x1 interface based Gigabit Ethernet - Dual RJ-45 connectors with two LED indicators
Audio	HDA interface, 2-channel Audio (Realtek ALC 662)
USB	Eight USB 2.0 ports (Dual ports on bracket)
Keyboard & Mouse	Two USB 2.0 ports on bracket dedicated to keyboard & mouse

## DISPLAY

Graphic Controller	- GMCH integrated Intel® Graphics Media Accelerator (GMA) x4500 - Provided improved 3D multimedia capabilities including Microsoft DirectX 10, Shader Model 4.0 and OpenGL 2.0
Graphic Memory	Intel® Dynamic Video Memory Technology (DVMT) 5.0 shares system memory up to 1GB
Display Interface	Analog CRT: up to 2048 x 1536 DVI-D: up to 2048 x 1536

# ROBO-8777VG2A

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



## FEATURES

- Support 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
- Support ISA expansion

## ORDERING GUIDE

<b>Standard</b>	<b>ROBO-8777VG2A</b> LGA-775 Core 2 Duo processor based PICMG 1.0 SBC with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB
<b>Optional</b>	<b>PA-M1AU</b> Multimedia kit with audio and USB ports <b>PS/2 Keyboard/Mouse Cable with Bracket</b> PS/2 keyboard/mouse connectors on bracket <b>Low Profile LGA775 Cooler</b> High efficiency slim cooler increases reliability of system

## GENERAL

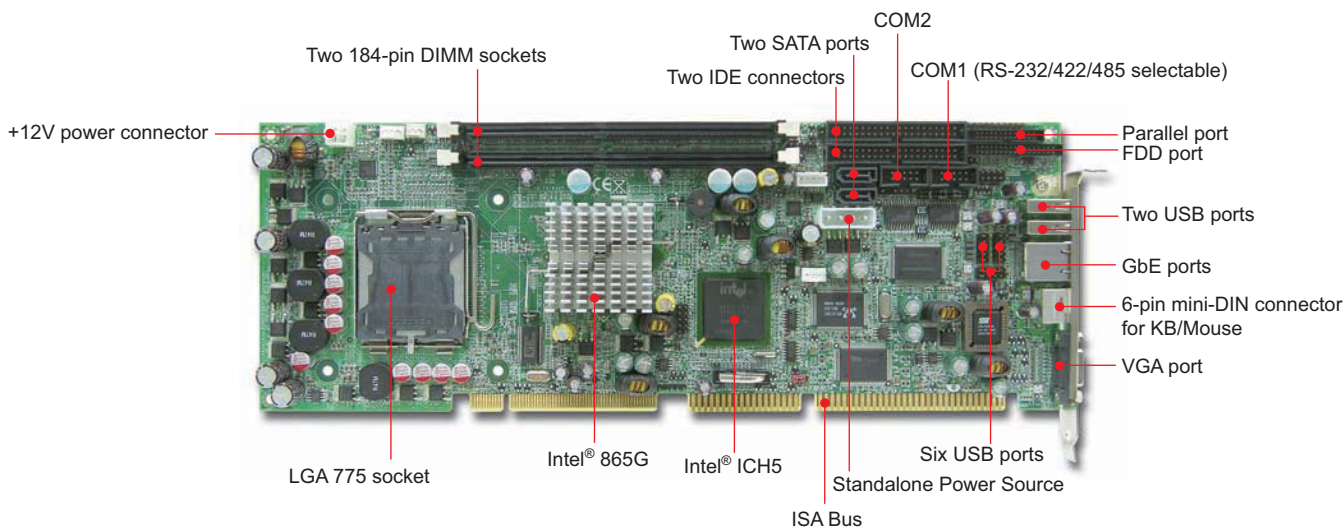
Processor	CPU & Package: Intel® Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in the LGA-775 package FSB: 1066/800/533MHz
Chipset/Core Logic	Intel® Q965 and ICH8
System Memory	Up to 4GB DDR2 800/667/533 SDRAM on dual 240-pin DIMM socket
BIOS	Award BIOS
Storage Devices	EIDE: N/A SATA: Support four SATA 300 drives
Solid State Disk	N/A
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 sec.
Expansion Interface	N/A
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@5.6A; +12V@1.3A
Dimension	Dimension : 338.5(L) x 122(W) mm; 13.33"(L) x 4.8" (W) PCB: 6-layer
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	93,788 hrs

## I/O

MIO	Two serial (RS-232x1, selectable RS232/422/485x1), one parallel and one FDD channel
IrDA	N/A
Ethernet	- Dual 10BASE-T/100BASE-TX/1000BASE-T Ethernet - PCI Express x1 interface based Gigabit Ethernet - Dual RJ-45 connectors with two LED indicators
Audio	HDA interface, 2-channel Audio (Realtek ALC 262)
USB	Six USB 2.0 ports
Keyboard & Mouse	Two USB 2.0 ports on bracket dedicated to keyboard & mouse

## DISPLAY

Graphic Controller	- GMCH integrated Intel Graphics Media Accelerator 3000 (Intel® GMA 3000) - Provides improved 3D multimedia capabilities including DirectX 9, Shader Model 3.0, OpenGL 1.5, Advanced De-interlacing, MPEG-2 hardware acceleration
Graphic Memory	Intel® Dynamic Video Memory Technology (DVMT) 4.0 system memory sharing up to 256MB
Display Interface	Support CRT interface up to QXGA 75Hz (2048 x 1536)



## FEATURES

- Extreme cost / performance PICMG 1.0 single board computer supports LGA 775 processor with Gigabit Ethernet controller
- Various I/O interface includes dual IDE channel, dual SATA port, single FDD channel, dual serial and single parallel port
- Over-clocking extended the board supports 2nd generation, lower power consumption / thermal profile Core 2 Duo processor
- Integrated Intel® Extreme Graphics 2 graphics engine offers adequate display quality via VGA interface
- Single side design enhance reliability of production and simplify its process at the same time
- Eight plug-and-play USB 2.0 ports allow enriched expansion of the system built upon the board
- Support ISA expansion

## ORDERING GUIDE

<b>Standard</b>	<b>ROBO-8773VG</b> LGA-775 processor based PICMG 1.0 SBC with DDR SDRAM, VGA, Gigabit Ethernet and USB
<b>Optional</b>	<b>USB Cable with bracket</b> Two USB ports with bracket <b>Low Profile LGA775 Cooler</b> High efficiency slim cooler increases reliability of system <b>PA-M5A</b> Audio kit

## GENERAL

Processor	CPU & Package: Intel® Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in LGA-775 package FSB: 800/533MHz
Chipset/Core Logic	Intel® 865G and ICH5
System Memory	Up to 2GB DDR 400/333/266 SDRAM on dual 184-pin DIMM socket
BIOS	Award BIOS
Storage Devices	EIDE: Support four EIDE devices with Ultra DMA 100/66/33 SATA: Support dual SATA 150 drives
Solid State Disk	N/A
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 sec.
Expansion Interface	N/A
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@0.8A; +12V@7.5A
Dimension	Dimension : 338.5(L) x 122(W) mm; 13.33"(L) x 4.8" (W) PCB: 6-layer
Environment	Operating Temperature: 0 to 55°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	105,743 hrs

## I/O

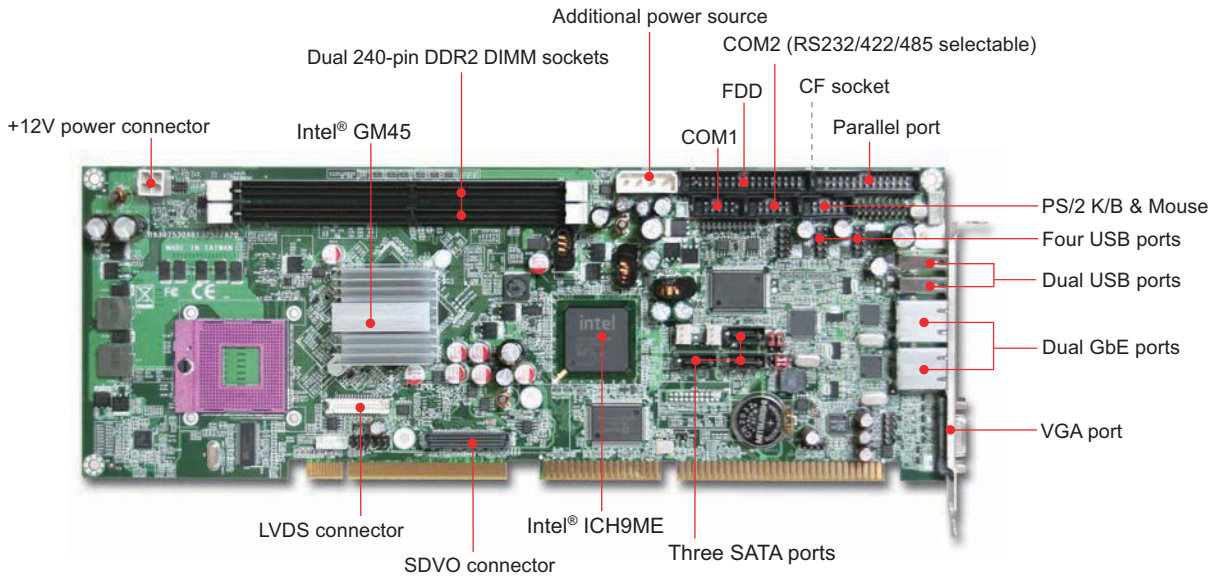
MIO	Two serial (RS232 x1, selectable RS232/422/485 x1), one parallel and one FDD channel
IrDA	N/A
Ethernet	- Single 10BASE-T/100BASE-TX/1000BASE-T Ethernet - PCI interface based Gigabit Ethernet - Single RJ-45 connector with two LED indicators
Audio	AC'97 interface reserved
USB	Eight USB 2.0 ports (Dual ports on bracket)
Keyboard & Mouse	One 6-pin mini-DIN connector for Keyboard & Mouse

## DISPLAY

Graphic Controller	- GMCH integrated Intel® Extreme graphics 2 technology - High performance 3D setup & render engine and hardware motion compensation for MPEG2
Graphic Memory	Intel® Dynamic Video Memory Technology (DVMT) 2.0 system memory sharing up to 64MB
Display Interface	Support CRT interface up to QXGA 75Hz (2048 x 1536)

# ROBO-8719VG2AR

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



## FEATURES

- ROBO-8719VG2A 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 5<sup>th</sup> generation graphic engine Mobile Intel® GMA 4500MHD built with max. graphics core speeds up to 533MHz to improve graphics and 3D rendering performance
- Support two on-board display output options, including VGA and 24-bit LVDS for flexible display choice. An optional DVI-D output card support via board to board SDVO connector by project
- Support integrated Intel® Trusted Platform Module (iTPM) for more secure platforms
- Support CF socket by SATA to IDE bridge for more storage application
- High speed dual Gigabit Ethernet support
- Various I/O interface includes three high-speed SATA 300 ports, six USB 2.0 ports, single Parallel port, two COM ports and single FDD port

## ORDERING GUIDE

<b>Standard</b>	<b>ROBO-8719VG2AR</b> Intel® latest 45nm Core™ 2 Duo or Celeron® M processor based PICMG SBC with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, and Audio
<b>Optional</b>	<b>PA-M1AU</b> Multimedia kit with audio and USB ports <b>PS/2 Keyboard/Mouse Cable with Bracket</b> PS/2 keyboard/mouse connectors on bracket <b>PA-G1D</b> DVI output card via board to board SDVO connector

## GENERAL

Processor	CPU & Package: Intel® 45nm Mobile Core™ 2 Quad, Core™ 2 Duo, Celeron® M processor in mFCPGA package FSB: 1066/800/667MHz
Chipset/Core Logic	Intel® GM45 and ICH9ME
System Memory	Up to 4GB DDR2 800/667 SDRAM on dual 240-pin DIMM socket
BIOS	Award BIOS
Storage Devices	EIDE: N/A SATA: Support three SATA 300 drives (RAID 0, 1)
Solid State Disk	One Type II CF socket (Up to UDMA5 mode)
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 sec.
Expansion Interface	N/A
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@5.4A; +12V@2A
Dimension	Dimension : 338.5(L) x 122(W) mm; 13.33"(L) x 4.8" (W) PCB: 8-layer
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 95%, non-condensing
MTBF	111,404 hrs

## I/O

MIO	Two serial (RS232 x1, selectable RS232/422/485 x1), one parallel and one FDD channel
IrDA	N/A
Ethernet	- Dual 10BASE-T/100BASE-TX/1000BASE-T Ethernet - PCI Express x1/GLCI/LCI interface based Gigabit Ethernet - Dual RJ-45 connector with two LED indicators
Audio	HDA interface, 2-channel Audio (Realtek ALC 262)
USB	Six USB 2.0 ports
Keyboard & Mouse	Two USB 2.0 on bracket dedicated to keyboard & mouse

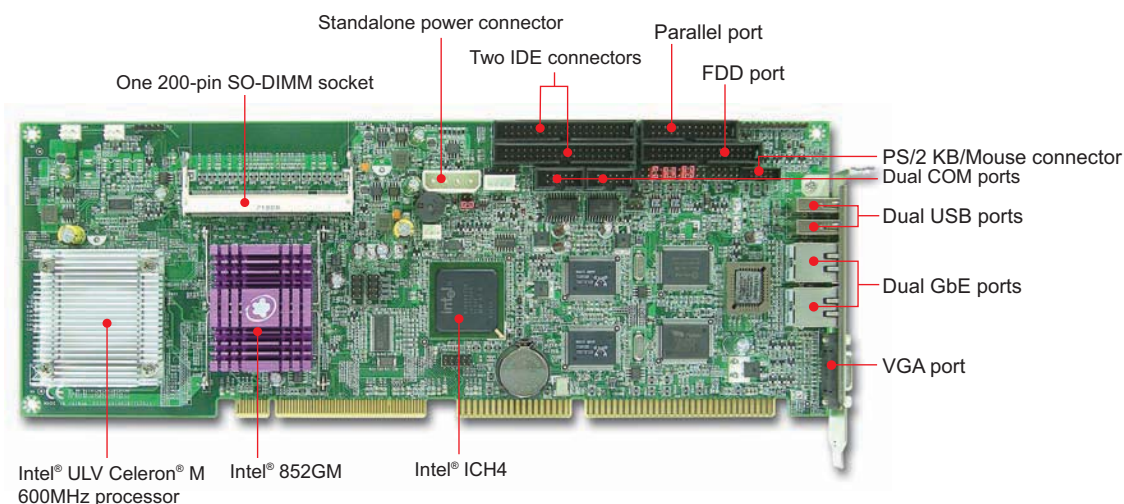
## DISPLAY

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



# ROBO-8771VG2

Ultra Low Voltage Intel® Celeron® M processor based PICMG SBC with VGA and LAN



## FEATURES

- On-board Ultra Low Voltage Intel® Celeron® M 600MHz with L2 Cache processor with passive heat sink for mission critical & fanless application
- Ideal replacement in terms of cost, functionality and performance
- Stand alone workable single board computer
- Rich I/O connections such as IDE, Gigabit Ethernet, serial port, parallel port, and USB ports

## GENERAL

Processor	CPU & Package: Ultra Low Voltage Intel® Celeron® M 600MHz processor FSB: 400MHz
Chipset/Core Logic	Intel® 852GM and ICH4
System Memory	Up to 1GB DDR 200/266 SDRAM on one 200-pin SODIMM socket
BIOS	Award BIOS 184-pin DIMM socket
Storage Devices	Support dual EIDE devices with Ultra DMA 100/66/33
Solid State Disk	N/A
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 sec.
Expansion Interface	N/A
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@3.96A; +12V@1.78A
Dimension	Dimension : 338.5(L) x 122(W) mm; 13.33"(L) x 4.8" (W) PCB: 6-layer
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 75°C Relative Humidity: 5% to 95%, non-condensing
MTBF	130,741 hrs

## ORDERING GUIDE

<b>Standard</b>	<b>ROBO-8771VG2</b> Ultra Low Voltage Intel® Celeron® M processor based PICMG SBC with VGA and LAN
<b>Optional</b>	<b>USB Cable with bracket</b> Two USB ports with bracket <b>PS/2 Keyboard/Mouse Cable with Bracket</b> PS/2 keyboard/mouse connectors on bracket <b>PA-M5A</b> Audio kit

## I/O

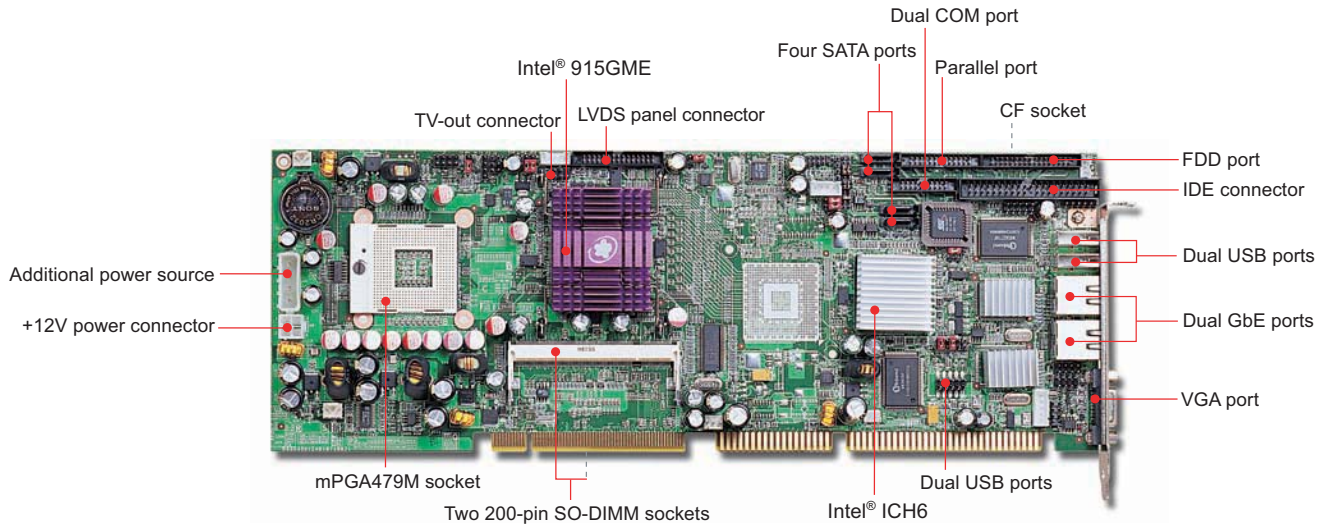
MIO	Two serial (one RS232/422/485 selectable), one parallel, one FDD channel
IrDA	N/A
Ethernet	- 10BASE-T/100BASE-TX/1000BASE-T Ethernet - IEEE 802.3u auto-negotiation - Dual RJ-45 connector with two LED indicators
Audio	AC'97 2.2 interface reserved
USB	Six USB 2.0 ports
Keyboard & Mouse	Two ports USB 2.0 on bracket dedicated to keyboard & mouse

## DISPLAY

Graphic Controller	Intel® 852GM mobile optimized graphics controller
Graphic Memory	Dynamically allocates 32/64MB system memory for display
Display Interface	Support VGA (DB15 on bracket) interface

# ROBO-8718VG2A

Intel® Pentium® M or Celeron® M processor based PICMG SBC with DDR2 533 SDRAM, VGA, Dual Gigabit Ethernet and Audio



## FEATURES

- ROBO-8718 offers flexible 400MHz and 533MHz FSB selection of Intel® Pentium® M / Celeron® M that features high computing power with low heat
- Scalable graphics support from Intel® 915GM featuring GMA 900 to ATI M22 graphics controller integrated 64MB display memory via PCI Express x16
- ATI M22 graphics support dual display configuration of LCD/CRT, TV/ CRT, LCD/LCD, LCD/TV displays
- High speed dual Gigabit Ethernet based on PCI Express x1, high bandwidth I/O interface
- Four SATA 150 ports for high speed storage interface and easy cable routing

## ORDERING GUIDE

<b>Standard</b>	<b>ROBO-8718VG2A</b> Socket mPGA479M Pentium® M or Celeron® M processor based PICMG SBC with DDR2 533 SDRAM, VGA, Dual Gigabit Ethernet and Audio
<b>Optional</b>	<b>PA-M1AU</b> Multimedia kit for P4 SBC with audio and USB ports <b>DVI-D Cable</b> TMDS adapter cable for DVI interface flat panel

## GENERAL

Processor	CPU & Package: Intel® Pentium® M or Celeron® M processor in mFCPGA package FSB: 533/400MHz
Chipset/Core Logic	Intel® 915GME and ICH6
System Memory	Up to 2GB DDR2 533/400 SDRAM on two 200-pin SODIMM sockets
BIOS	Award BIOS
Storage Devices	EIDE: Support two EIDE devices with Ultra DMA 100/66/33 SATA: Support four SATA 150 drives
Solid State Disk	- One Type II CF socket - On Primary EIDE channel - Bootable for no drives on primary channel
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 sec.
Expansion Interface	N/A
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@5.41A; +12V@1.58A
Dimension	Dimension : 338.5(L) x 122(W) mm; 13.33"(L) x 4.8" (W) PCB: 8-layer
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	77,830 hrs

## I/O

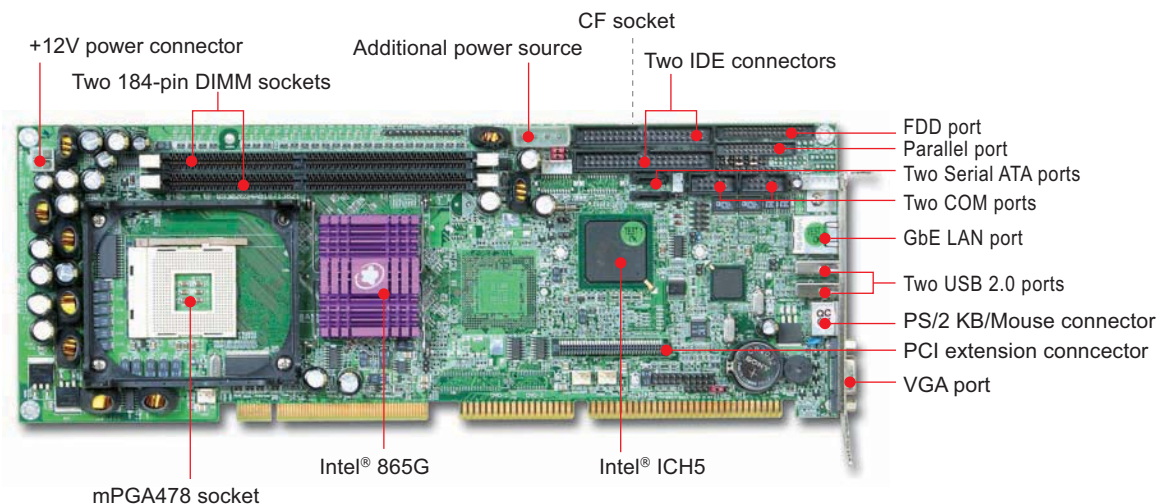
MIO	Two serial (selectable RS232/422/485 x1), one parallel, one FDD channel
IrDA	IrDA 1.0
Ethernet	- 10BASE-T/100BASE-TX/1000BASE-T Ethernet - Dual PCI-Express x1 based - Dual RJ-45 connectors with two LED indicators
Audio	AC'97 2.2 Audio (Realtek ALC 202A)
USB	Four USB 2.0 ports
Keyboard & Mouse	Two USB 2.0 ports on bracket dedicated to keyboard & mouse

## DISPLAY

Graphic Controller	- ATI Mobility M22 graphics controller [ROBO-8718UG2A] - Intel® 915GM integrated GMA 900 (Graphics Media Accelerator) [ROBO-8718VG2A]
Graphic Memory	64MB display memory
Display Interface	- Support CRT, LVDS, TV-out & DVI-D (TMDS) display interfaces [ROBO-8718UG2A] - Support CRT, LVDS & TV-out display interfaces [ROBO-8718VG2A]

# ROBO-8713VGA

Intel® Pentium® 4 or Celeron® D processor based PICMG SBC with DDR 400 SDRAM, AGP 8X VGA, Gigabit Ethernet and Audio



## FEATURES

- Intel® Pentium® 4 processor with Hyper-Threading technology runs at 800MHz FSB
- Wire-speed Gigabit Ethernet based on Communication Streaming Architecture (CSA) with double throughput than PCI based Ethernet
- Rich expansion capability thru proprietary PCI

## ORDERING GUIDE

<b>Standard</b>	<b>ROBO-8713VGA</b> Socket 478 Pentium® 4 or Celeron® D processor based PICMG SBC with DDR 400 SDRAM, integrated graphic, Gigabit Ethernet and audio
<b>Optional</b>	<b>ROBO-U160H</b> SCSI extension module with Portwell OmniPCI™ connection interface  <b>ROBO-N100P</b> Single Fast Ethernet port extension module with Portwell OmniPCI™ connection interface  <b>PA-M1AU</b> Multimedia kit for P4 SBC with audio and USB ports

## GENERAL

Processor	CPU & Package: Intel® Pentium® 4 or Celeron® (D) processor in mPGA478 package FSB: 800/533/400MHz
Chipset/Core Logic	Intel® 865G and ICH5
System Memory	Up to 2GB dual channel DDR 400/333/266 SDRAM on two 184-pin DIMM sockets
BIOS	Award BIOS
Storage Devices	EIDE: Support four EIDE devices with Ultra DMA 100/66/33 SATA: Support two SATA 150 devices
Solid State Disk	- One Type II CF socket - On Secondary EIDE channel
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 sec.
Expansion Interface	Proprietary PCI connection interface
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@6.0A; +12V(CPU)@5.7A; +12V (system)@0.8A
Dimension	Dimension : 338.5(L) x 122(W) mm; 13.33"(L) x 4.8" (W) PCB: 8-layer
Environment	Operating Temperature: 0 to 50°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	98,733 hrs

## I/O

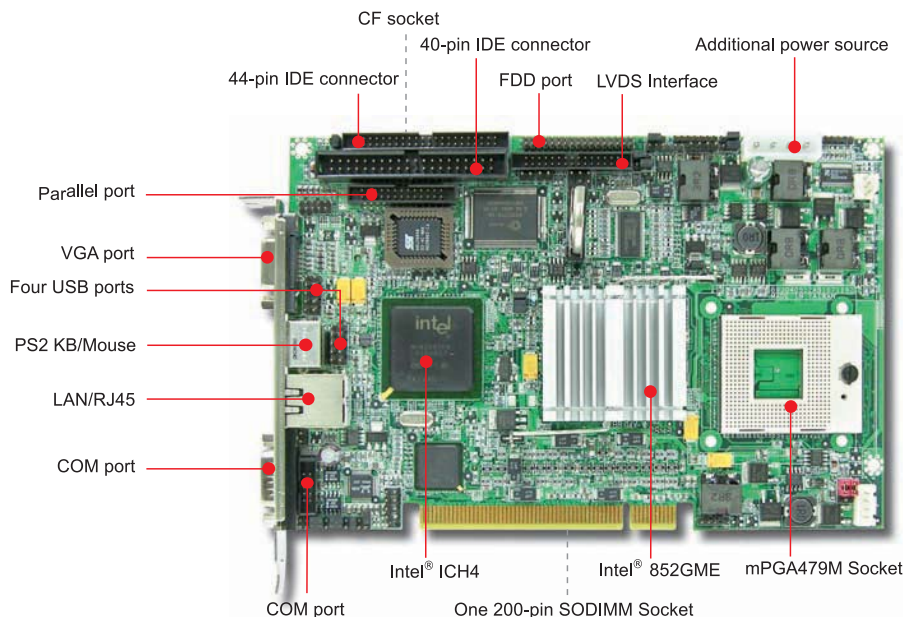
MIO	Two serial (selectable RS232/422/485 x1), one parallel, one FDD channel
IrDA	IrDA 1.0
Ethernet	- 10BASE-T/100BASE-TX/1000BASE-T Ethernet - Gigabit Ethernet via CSA interface - One RJ-45 connector with two LED indicators
Audio	AC'97 2.2 Audio (Realtek ALC 202A)
USB	Four USB 2.0 ports (two on bracket)
Keyboard & Mouse	- One 6-pin mini-DIN connector for keyboard and mouse - One 5-pin header for external keyboard connection

## DISPLAY

Graphic Controller	Intel® 865 integrated Extreme Graphics 2.0
Graphic Memory	64MB display memory
Display Interface	Support CRT display interface

# ROBO-6711VGA

mPGA479M Pentium® M/Celeron® M processor based half-size PCI SBC with VGA, LCD, GbE and Audio



## FEATURES

- Support Intel® low power consumption 533/400MHz FSB Pentium® M/Celeron® M processor for thermal/power limited applications
- One SODIMM socket at the rear that supports up to 1GB ECC system memory for critical applications
- Support dual display function via VGA and LVDS output
- Perfect engine for slim computers with LVDS interface LCD panel
- On-board Intel® 10BASE-T/100BASE-TX/1000BASE-T Gigabit Ethernet
- One Type II Compact Flash at the rear supports up to 1GB flash disk for installation OS without hard drive
- Audio Codec '97 (AC'97) 2.2 for high quality audio architecture
- PCI bus interface for higher flexibility and expandability
- Optional support TV-out by project

## ORDERING GUIDE

<b>Standard</b>	<b>ROBO-6711VGA</b> mPGA479M Pentium® M/Celeron® M processor based half-size PCI SBC with VGA, LCD, GbE and Audio
<b>Optional</b>	<b>PA-M1AU</b> Multimedia kit with audio and USB ports on bracket

## GENERAL

Processor	CPU & Package: Intel® Pentium® M/Celeron® M processor FSB: 533/400MHz
Chipset/Core Logic	Intel® 852GME and ICH4
System Memory	Up to 1GB DDR 266/333 SDRAM with ECC on one 200-pin SODIMM socket
BIOS	Award BIOS
Storage Devices	- Support dual EIDE channel with Ultra DMA 100/66/33 - One 44-pin and one 40-pin connector
Solid State Disk	- One Type II CF socket - On secondary EIDE channel - Bootable for no drives primary channel
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 sec.
Expansion Interface	N/A
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@2.0A; +12V(CPU)@1.5A
Dimension	Dimension : 185(L) x 122(W) mm; 7.3"(L) x 4.8" (W) PCB: 8-layer
Environment	Operating Temperature: 0 to 55°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	116,027 hrs

## I/O

MIO	Two serial (one on bracket; one RS232/422/485 selectable), one parallel, one FDD channel
IrDA	IrDA 1.0
Ethernet	- 10BASE-T/100BASE-TX/1000BASE-T Ethernet - IEEE 802.3u auto-negotiation - One RJ-45 connector with two LED indicators
Audio	AC'97 2.2 Audio (Realtek ALC 203)
USB	Four USB ports
Keyboard & Mouse	One 6-pin mini-DIN connector for keyboard/mouse

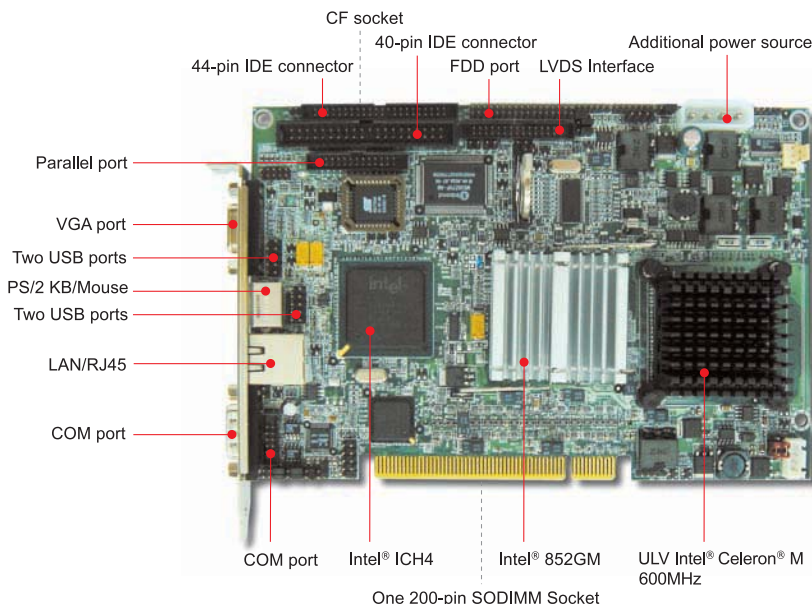
## DISPLAY

Graphic Controller	Intel® 852GME mobile optimized graphics controller
Graphic Memory	Dynamical allocates 32/64MB system memory for display
Display Interface	Support VGA (DB15 on bracket) and LVDS interface



# ROBO-6730VLA

Ultra Low Voltage Intel® Celeron® M processor based half-size PCI SBC with VGA, LCD, LAN and Audio



## FEATURES

- Fanless solution with on-board Ultra Low Voltage Intel® Celeron® M 600MHz processor
- Support dual display function via VGA and LVDS output
- Perfect engine for slim computers with LVDS interface LCD panel
- On-board Intel® 10BASE-T/100BASE-TX Fast Ethernet
- One SODIMM socket at the rear supports up to 1GB system memory
- One Type II Compact Flash at the rear supports up to 1GB flash disk for installation OS without hard drive
- Audio Codec '97 (AC'97) 2.2 for high quality audio architecture
- PCI bus interface for higher flexibility and expandability

## GENERAL

Processor	CPU & Package: Ultra Low Voltage Intel® Celeron® M 600MHz processor FSB: 400MHz
Chipset/Core Logic	Intel® 852GM and ICH4
System Memory	Up to 1GB DDR 200/266/333 SDRAM on one 200-pin SODIMM socket
BIOS	Award BIOS
Storage Devices	Support dual EIDE devices with Ultra DMA 100/66/33
Solid State Disk	- One Type II CF socket - On secondary EIDE channel - Bootable for no drives primary channel
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 sec.
Expansion Interface	N/A
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@2.0A; +12V@1.5A
Dimension	Dimension : 185(L) x 122(W) mm; 7.3"(L) x 4.8" (W) PCB: 8-layer
Environment	Operating Temperature: 0 to 55°C Storage Temperature: -20 to 75°C Relative Humidity: 5% to 95%, non-condensing
MTBF	115,787 hrs

## ORDERING GUIDE

<b>Standard</b>	<b>ROBO-6730VLA</b> Ultra Low Voltage Intel® Celeron® M processor based half-size PCI SBC with VGA, LCD, LAN and Audio
<b>Optional</b>	<b>PA-M1AU</b> Multimedia kit with audio and USB ports on bracket

## I/O

MIO	Two serial (one on bracket; one RS232/422/485 selectable), one parallel, one FDD channel
IrDA	IrDA 1.0
Ethernet	- 10BASE-T/100BASE-TX Ethernet - IEEE 802.3u auto-negotiation support - One RJ-45 connector
Audio	AC'97 2.2 Audio (Realtek ALC 202A)
USB	Four USB ports
Keyboard & Mouse	One 6-pin mini-DIN connector for keyboard/mouse

## DISPLAY

Graphic Controller	Intel® 852 mobile optimized graphics controller
Graphic Memory	Dynamically allocates 32/64MB system memory for display
Display Interface	Support VGA (DB15 on bracket) and LVDS interface

# PICMG Backplane

## PICMG GENERAL DESCRIPTION

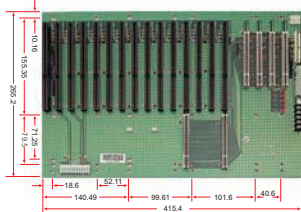
PICMG Backplane in this section are SBC (Single Board Computer)/SHB (Single Host Board) companion that feature expansion slots such as ISA, PCI, PCI-X or PCI Express interface. In addition, backplane also features several power connectors that draw power from power supply to devices on it. Some LEDs 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 backplane to support more devices or different kind of expansion interfaces. However, PICMG 1.0, 1.2, and 1.3 are not compatible with each other.

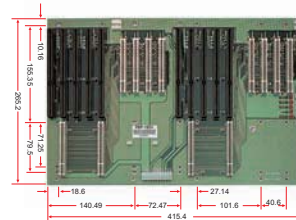
## PICMG 1.0 BACKPLANE

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

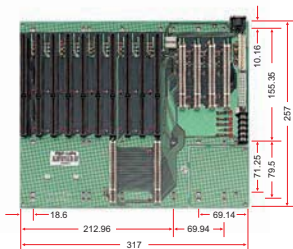
#### ■ 32-bit PCI/16-bit ISA



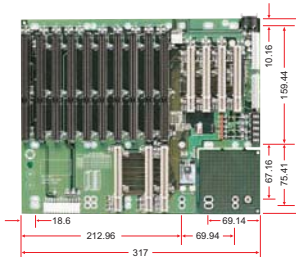
**BBP-19P4**  
**19-slot (4xPCI) PICMG Backplane**  
 - Fit for 20-slot chassis  
 - ATX power connector support  
 - Sufficient ISA slots for CTI application



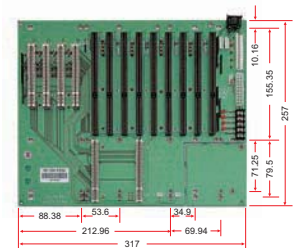
**BBP-18D4**  
**18-slot Dual-system PICMG Backplane**  
 - Fit for 20-slot chassis  
 - Designed for fault-tolerant computing  
 - ATX power connector support



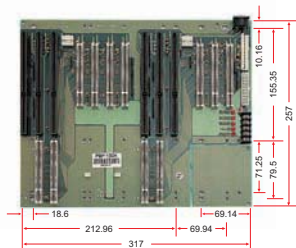
**BBP-14P4**  
**14-slot (4xPCI) PICMG Backplane**  
 - Fit for 14-slot chassis  
 - ATX power connector support  
 - The most popular and reliable PICMG backplane



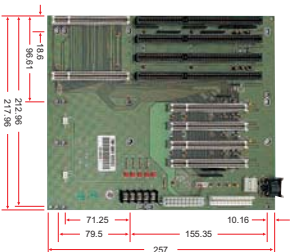
**ACTI-14P4**  
**14-slot (4xPCI) Active PICMG Backplane**  
 - 2.4 mm PCB thickness  
 - ATX power connector support  
 - Fit for 14-slot chassis



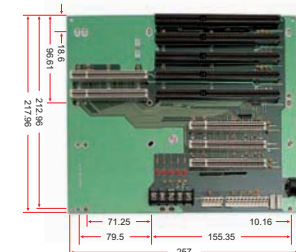
**BBP-13R4**  
**13-slot (4xPCI) PICMG Backplane**  
 - Fit for 14-slot chassis  
 - Special design for full-length PCI cards  
 - ATX power connector support



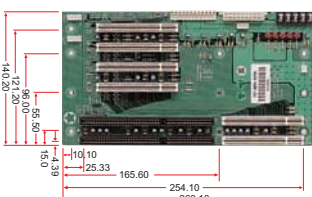
**BBP-13D4**  
**13-slot Dual-system PICMG Backplane**  
 - Fit for 14-slot chassis  
 - Design for fault-tolerant computing  
 - ATX power connector support



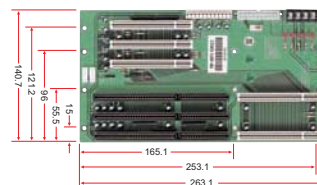
**BBP-08P4**  
**8-slot (4xPCI) PICMG Backplane**  
 - Fit for node chassis and desktop case  
 - ATX power connector support



**BBP-08P3**  
**8-slot (3xPCI) PICMG Backplane**  
 - Fit for node chassis and desktop case

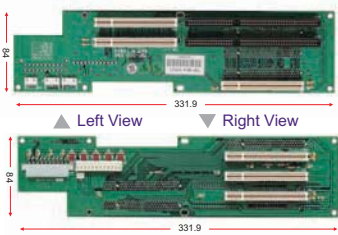


**BBP-06P4**  
**6-slot (4xPCI) PICMG Backplane**  
 - Fit for node chassis  
 - ATX power connector support

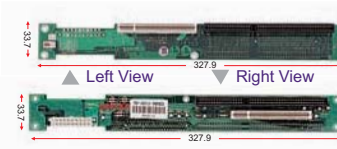


**BBP-06P3**  
**6-slot (3xPCI) PICMG Backplane**  
 - Fit for node chassis  
 - ATX power connector support

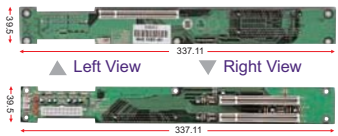
# PICMG Backplane



**BBP-06V4**  
**Vertical 6-slot (4xPCI) PICMG Backplane**  
 - Fit for 2U chassis  
 - ATX and AT power connector support

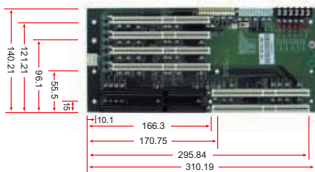


**BBP-02V1X**  
**Vertical 2-slot (1xPCI) PICMG Backplane**  
 - Fit for 1U chassis  
 - ATX power connector support

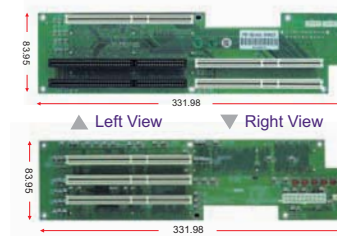


**BBP-03P2X**  
**Vertical 3-slot (2xPCI) PICMG Backplane**  
 - Fit for Portwell's 1U chassis  
 - ATX power connector support

## 64-bit PCI/16-bit ISA

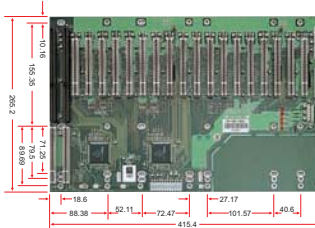


**BBP-06P464**  
**6-slot (4x64-bit PCI) PICMG Backplane**  
 - Fit for node chassis  
 - ATX and AT power connector support

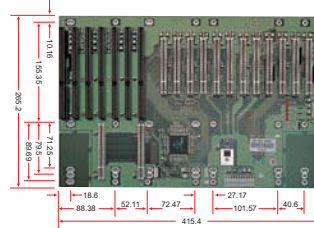


**BBP-06V464**  
**Vertical 6-slot (4x64-bit PCI) PICMG Backplane**  
 - Fit for 2U chassis  
 - ATX power connector

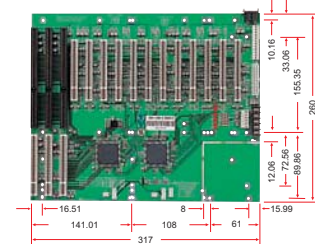
## Active Backplane: Backplane that using bridge to support PCI master beyond four



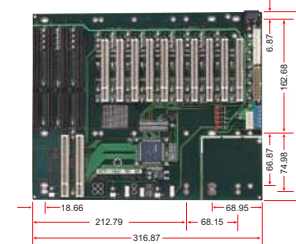
**BBP-19AI**  
**19-slot (18xPCI) Active PICMG Backplane**



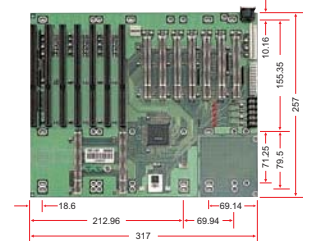
**BBP-19AC**  
**19-slot (12xPCI) Active PICMG Backplane**



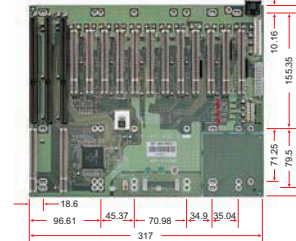
**BBP-14AC-B**  
**14-slot (12xPCI) Active PICMG Backplane**



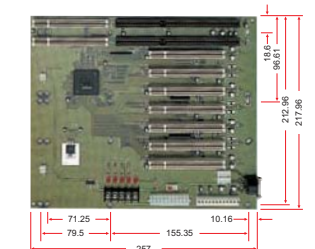
**ACTI-14AA**  
**14-slot (10xPCI) Active PICMG Backplane**  
 - 2.4 mm PCB thickness  
 - ATX power connector support  
 - Fit for 14-slot chassis



**BBP-14A7**  
**14-slot (7xPCI) Active PICMG Backplane**



**BBP-14AC**  
**14-slot (12xPCI) Active PICMG Backplane**



**BBP-08A7**  
**8-slot (7xPCI) Active PICMG Backplane**

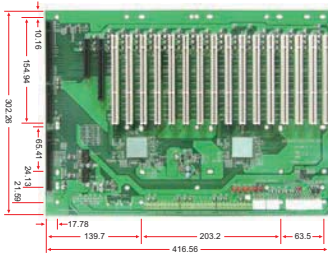
# PICMG Backplane

## 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

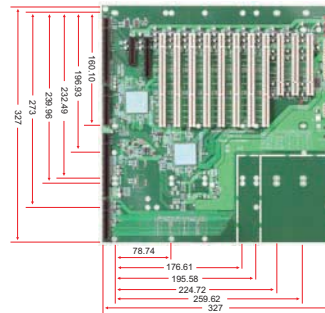
### Server Grade Backplane



#### PBPE-19AG64

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

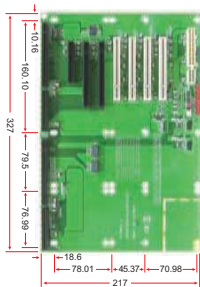
- Fit for 4U up chassis
- Four PCI-X buses support 16 PCI-X expansion slots



#### PBPE-14AD64

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

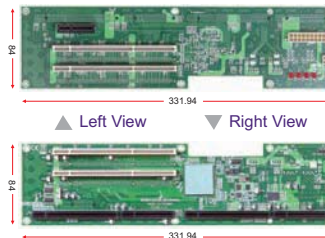
- Fit for 4U chassis
- Four PCI-X buses support eight PCI-X expansion slots



#### PBPE-08P41

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

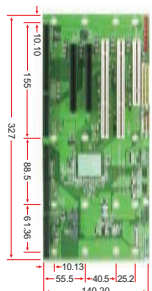
- Fit for Node chassis
- Four USB ports



#### PBPE-06V464

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

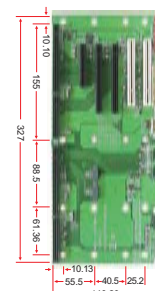
- Fit for 2U chassis
- Dual PCI-X buses support four PCI-X slots



#### PBPE-06A364

6-slot [PCI-E 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



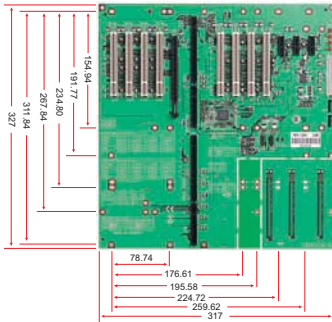
#### PBPE-06P2

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

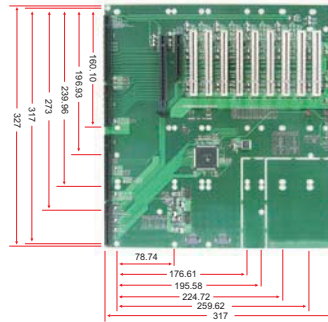
- Fit for Node chassis
- Four USB ports

# PICMG Backplane

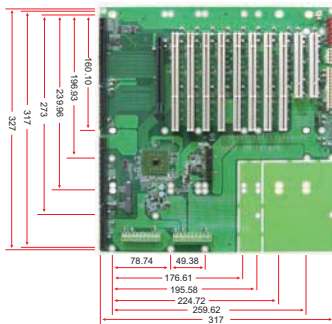
## Non-Server Grade Backplane



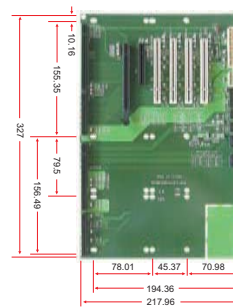
**PBPE-13A8**  
**13-slot [PCI-E x1 (3), PCI-E x16 (1), PCI (8)]**  
 - Fit for 4U chassis  
 - Four USB ports  
 - Dual SATA ports  
 - 24-pin ESP12V power connector



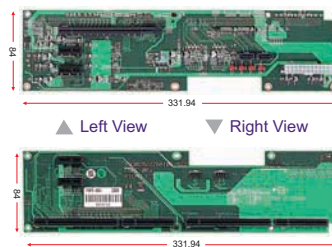
**PBPE-12A9**  
**12-slot [PCI-E x16 (1), PCI-E x8 (1, x4 signal), PCI (9)]**  
 - Fit for 4U chassis  
 - Four USB ports  
 - Dual SATA ports



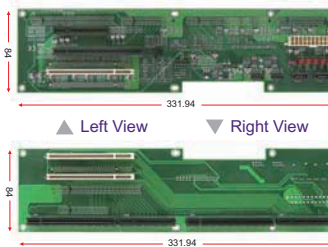
**PBPE-12AA64**  
**12-slot [PCI-X (8), PCI-E x16 (1), PCI (2)]**  
 - Fit for 4U chassis  
 - Four USB ports  
 - Dual SATA ports  
 - Two PCI-X buses support eight PCI-X expansion slot



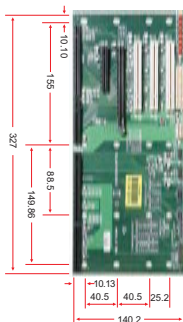
**PBPE-07P4**  
**7-slot [PCI-E x4 (1), PCI-E x16 (1), PCI (4)]**  
 - Fit for Node chassis  
 - Four USB ports  
 - Dual SATA ports



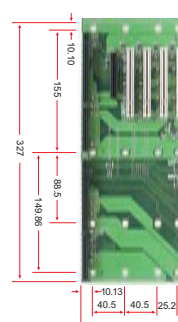
**PBPE-06V**  
**Vertical 6-slot [PCI-E x1 (4), PCI-E x16 (1)]**  
 - Fit for 2U chassis  
 - Four USB ports  
 - Dual SATA ports  
 - 24-pin ESP 12V power connector



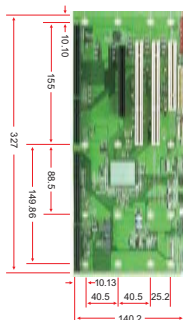
**PBPE-06V3**  
**Vertical 6-slot [PCI-E x8 (1, x4 signal), PCI-E x16 (1), PCI (3)]**  
 - Fit for 2U chassis  
 - Four USB ports  
 - Dual SATA ports



**PBPE-06P3**  
**6-slot [PCI-E x16 (1), PCI-E x4 (1), PCI (3)]**  
 - Fit for Node chassis  
 - Four USB ports  
 - Dual SATA ports



**PBPE-06P4**  
**6-slot [PCI-E x8 (1, x4 signal), PCI (4)]**  
 - Fit for Node chassis  
 - Four USB ports  
 - Dual SATA ports



**PBPE-05A364**  
**5-slot [PCI-E 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

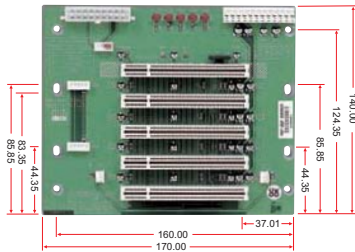
# PCI & ISA Backplane

## 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 keep lower impedance
- Frame rated PCB at 94-V0
- User friendly design supports external K/B connector, power for chassis fan and power indicator

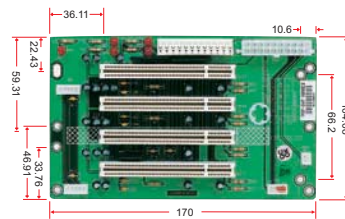
### PBP-05P

#### 5-slot Passive PCI Backplane



### PBP-04P

#### 4-slot Passive PCI Backplane



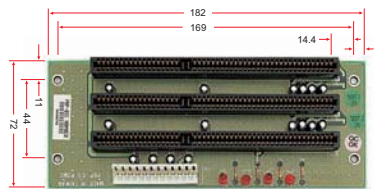
## ISA GENERAL DESCRIPTION

- 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

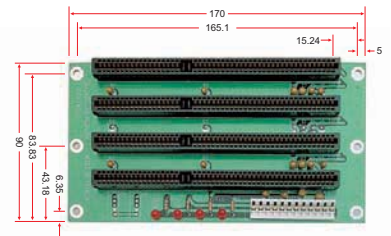
### PBP-03I

#### 3-slot Passive ISA Backplane



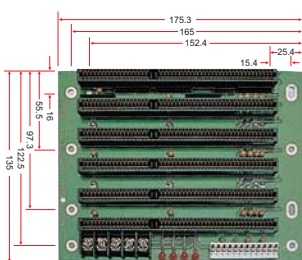
### PBP-04I

#### 4-slot Passive ISA Backplane



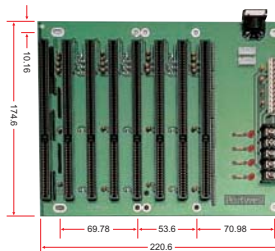
### PBP-06I

#### 6-slot Passive ISA Backplane



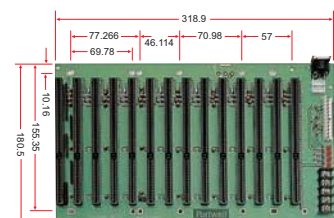
### PBP-08I

#### 8-slot Passive ISA Backplane



### PBP-14I

#### 14-slot Passive ISA Backplane

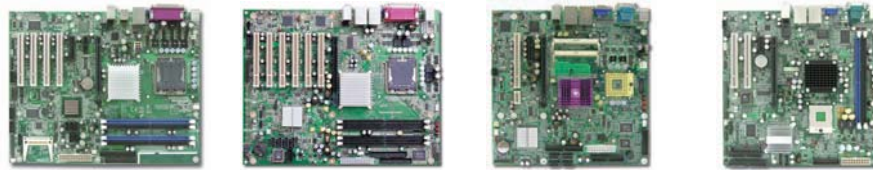


# IMB Reference Table



MODEL	RUBY-9911	RUBY-9719VG2AR	RUBY-9718VG2AR	RUBY-9717VGAR	RUBY-9716VG2AR
<b>Form Factor</b>	ATX	ATX	ATX	µATX	ATX
<b>Chipset</b>	Q45+ICH10DO	G41+ICH7R	Q965+ICH8DO	Q965+ICH8DO	Q965+ICH8DO
<b>CPU</b>	Core™ 2 Quad/ Core™ 2 Duo	Core™ 2 Quad/ Core™ 2 Duo	Core™ 2 Quad/ Core™ 2 Duo/ Pentium® D/ Pentium® 4/ Celeron® D	Core™ 2 Quad/ Core™ 2 Duo/ Pentium® D/ Pentium® 4/ Celeron® D	Core™ 2 Quad/ Core™ 2 Duo/ Pentium® D/ Pentium® 4/ Celeron® D
<b>Display</b>	VGA/DVI-D	VGA	VGA/DVI-D	VGA/DVI-D	VGA
<b>Memory</b>	DIMM x2 and up to 4G	DIMM x2 and up to 4GB	DIMM x4 and up to 8GB	DIMM x4 and up to 8GB	DIMM x4 and up to 8GB
<b>Expansion</b>	Four PCI slots, One PCI-E x4 slot, One PCI- Ex16 slot	One PCI-E x16 slot, One ISA slot and five PCI slot	Four PCI slots, Two PCI-E x1 slot, One ADD2 slot	Two PCI slots, One PCI-E x4 slot, One ADD2 slot	Four PCI slots, One PCI-E x4 slot, One PCI-E x16 slot
<b>LAN</b>	Gbe x2	GbE x2	GbE x2	GbE x1	GbE x2
<b>Serial</b>	RS232 x3, RS232/422/485*1	RS232 x5, RS232/422/485 x1	RS232 x3, RS232/422/485 x1	RS232 x3, RS232/422/485 x1	RS232 x3, RS232/422/485 x1
<b>USB</b>	USB 2.0*8	USB 2.0 x8	USB 2.0 x10	USB 2.0 x10	USB 2.0 x8
<b>SATA</b>	SATA 4	SATA x4	SATA x6	SATA x6	SATA x5
<b>IDE</b>	IDE x1	IDE x1	N/A	N/A	IDE x1
<b>RAID</b>	RAID 0/1/5/10	RAID 0/1/5/10	RAID 0/1/5/10	RAID 0/1/5/10	RAID 0/1/5/10
<b>SSD</b>	N/A	CF x1	N/A	N/A	CF x1
<b>Paralell</b>	LPT x1	LPT x1	LPT x1	LPT x1	LPT x1
<b>FDD</b>	FDD x1	N/A	FDD x1	FDD x1	FDD x1
<b>IrDA</b>	--	N/A	N/A	N/A	IrDA 1.0
<b>Audio</b>	HDA 2 channel	HDA 2 channel	HDA 2 channel	HDA 2 channel	HDA 2 channel
<b>Dimension</b>	304.8 x 243.8mm	304.8 x 243.8mm	304.8 x 243.8mm	243.8 x 243.8mm	304.8 x 243.8mm
<b>Page</b>	<b>36</b>	<b>37</b>	<b>38</b>	<b>39</b>	<b>40</b>

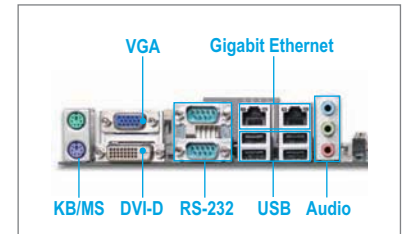
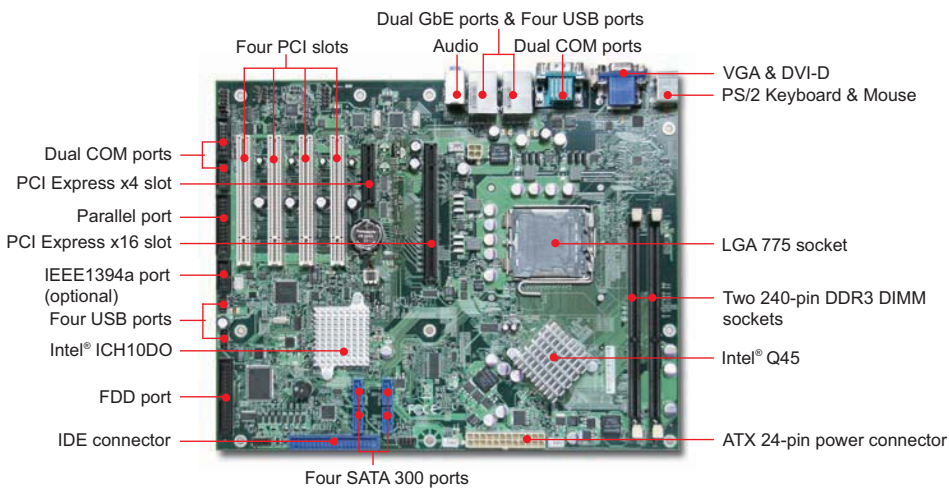
# IMB Reference Table



MODEL	RUBY-9716VGAR	RUBY-9715VG2AR	RUBY-9713VG2AR	RUBY-7720VG2A
<b>Form Factor</b>	ATX	ATX	uATX	uATX
<b>Chipset</b>	Q965+ICH8DO	945G+ICH7R	945GME+ICH7R	915GME+ICH6M
<b>CPU</b>	Core™ 2 Quad/ Core™ 2 Duo/ Pentium® D/ Pentium® 4/ Celeron® D	Core™ 2 Duo/ Pentium® D/ Pentium® 4/ Celeron® D	Core™ 2 Duo/ Core™ Duo/ Core™ Solo	Pentium® M/ Celeron® M
<b>Display</b>	VGA	VGA	VGA/LVDS	VGA/LVDS
<b>Memory</b>	DIMM x4 and up to 8GB	DIMM x4 and up to 4GB	SO-DIMM x2 and up to 4GB	DIMM x2 and up to 2GB
<b>Expansion</b>	Four PCI slots, One PCI-E x4 slot, One PCI-E x1 slot, One PCI-E x16 slot	Six PCI slots, One PCI-E x16 slot	One PCI slot (support up to 4 PCI slots via riser card), One PCI-E x4 slot, one PCI-E x16 slot	Two PCI slots, One PCI-E x16 slot, One PCI-E x1 slot
<b>LAN</b>	GbE x1	GbE x2	GbE x2	GbE x2
<b>Serial</b>	RS232 x3, RS232/422/485 x1	RS232 x1, RS232/422/485 x1	RS232 x1, RS232/422/485 x1	RS232 x3, RS232/422/485 x1
<b>USB</b>	USB 2.0 x8	USB 2.0 x8	USB 2.0 x8	USB 2.0 x8
<b>SATA</b>	SATA x5	SATA x4	SATA x4	SATA x2
<b>IDE</b>	IDE x1	IDE x1	IDE x1	IDE x1
<b>RAID</b>	RAID 0/1/5/10	RAID 0/1/5/10	RAID 0/1/5/10	N/A
<b>SSD</b>	CF x1	N/A	N/A	CF x1
<b>Paralell</b>	LPT x1	LPT x1	LPT x1 (pin header)	LPT x1
<b>FDD</b>	FDD x1	FDD x1	FDD x1	FDD x1
<b>IrDA</b>	IrDA 1.0	IrDA 1.0	IrDA 1.0	IrDA 1.0
<b>Audio</b>	HDA 2 channel	AC'97 2.2	AC'97 2.2	HDA 2 channel
<b>Dimension</b>	304.8 x 243.8mm	312.8 x 243.8mm	243.8 x 243.8mm	243.8 x 243.8mm
<b>Page</b>	<b>41</b>	<b>42</b>	<b>43</b>	<b>44</b>

# 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



Rear I/O

## 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 or PCI-Express expansion slot
- Four SATA ports and One IDE connector
- Support RAID 0, 1, 5, 10 function
- One PCI-Express x16, One PCI-Express x 4 and Four PCI slots
- TPM 1.2 and iAMT 5.0 supported

## ORDERING GUIDE

Standard	<b>RUBY-9911</b> Intel® Core™ 2 Quad / Core™ 2 Duo processor ATX Motherboard
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\* Specifications are subject to change without notice.

\* Core™ 2 Quad and Core™ 2 Duo processor are registered trademarks of Intel® Corporation.

\* Other trademarks, logo, brands and company names are the property of their respective owners.

## GENERAL

Processor	CPU & Package: Intel® Core™ 2 Quad / Core™ 2 Duo processor in LGA-775 package FSB: 1333/1066/800 MHz
Chipset/Core Logic	Intel® Q45 Express and ICH10DO
System Memory	Up to 4GB DDR3 800/1066MHz SDRAM on Two 240-pin DIMM sockets
BIOS	AMI BIOS
Storage Devices	EIDE: Support one EIDE devices with Ultra DMA 100/66/33 SATA: Support four SATA 300 drivers RAID: RAID 0/1/5/10
Solid State Disk	N/A
Watchdog Timer	Programmable via software from 1 sec. to 255 min.
Expansion Interface	-One PCI-Express x16 slot - One PCI-Express x4 slot -Four 32-bit PCI expansion slots
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	TBD
Dimension	Dimension : 308.4(L) x 243.8(W) mm ; 12"(L) x 9.6"(W)
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 10% to 90%, non-condensing
MTBF	TBD

## I/O

MIO	- Four serial ports( RS232 x 3, selectable RS232/422/485 x 1) - One D-SUB 15-pin and One D-SUB 24-pin at rear I/O panel - One Parallel, One FDD channel, 8 GPIO - One IEEE1394a (Optional)
IrDA	N/A
Ethernet	- Dual 10BASE-T/100BASE-TX/1000BASE-T Ethernet - Dual RJ-45 connector with two LED indicators at rear I/O pannel
Audio	HD Audio interface, 2-channel Audio
USB	Eight USB ports (Four ports at rear I/O panel ; Four ports internal)
Keyboard & Mouse	PS/2 keyboard/mouse at rear I/O panel

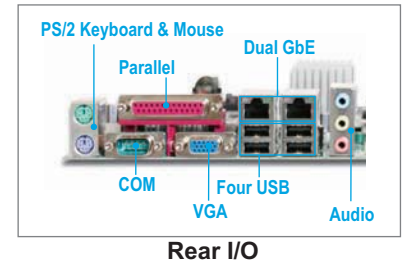
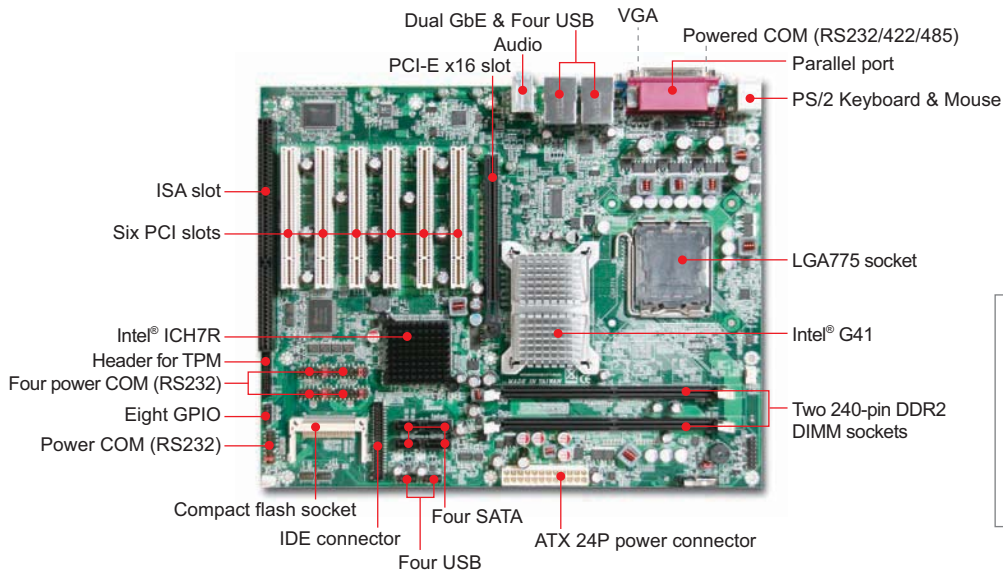
## DISPLAY

Chipset	Intel® Q45 Integrated Intel® Gen 5.0 GMA 4500 Graphics
Display Memory	Intel® Dynamic Video Memory Technology (Intel® DVMT 5.0)
Resolution	Up to 2048 x1536 @ 75 Hz (QXGA)
DVI	DVI-D interface



# RUBY-9719VG2AR

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



## 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-300 ports support Intel Matrix Storage Technology with RAID 0, 1, 5, 10
- One 44pin IDE and one Compact flash share the same channel
- PCIE x16 slot can support x1, x4, x8 or x16 cards

## GENERAL

Processor	CPU & Package: Intel® Core™ 2 Quad, Intel® Core™ 2 Duo processors in the LGA-775 Land Grid Array package targeted for desktop platforms
Chipset/Core Logic	Intel® G41 and ICH7R
System Memory	Max. up to 4GB DDR2 667/800 SDRAM on two 240-pin DIMM sockets with dual channel mode
BIOS	AMI BIOS
Storage Devices	- Four SATA 300 ports (RAID 0/1/5/10) - One IDE 44-pin connector - One Compact Flash connector (share with IDE channel)
Watchdog Timer	Programmable via software from 1 sec. to 255 min.
Expansion Interface	- One PCI-Express x16 slot - One ISA slot and five 32-bit PCI slots or Six 32-bit PCI slots
Hardware Monitoring	System monitor (fan, temperature, voltage)
Dimension	Dimension : 305(L) x 244(W) mm; 12"(L) x 9.6" (W)
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 95%, non-condensing
MTBF	TBD

## ORDERING GUIDE

<b>Standard</b>	<b>RUBY-9719VG2AR</b> 45nm Intel® Core™ 2 Duo/Core™ 2 Quad Processor based ATX Motherboard with DDR2, VGA, Dual Gigabit Ethernet, Audio and USB
	<b>RUBY-9719VGAR</b> (One LAN, w/o ISA & RAID) 45nm Intel® Core™ 2 Duo/Core™ 2 Quad Processor based ATX Motherboard with DDR2, VGA, One Gigabit Ethernet, Audio and USB, w/o ISA & RAID

## I/O

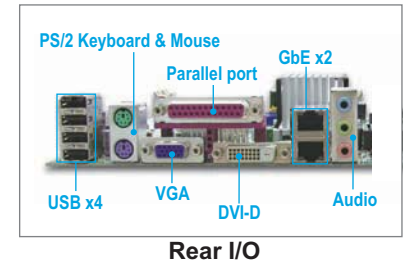
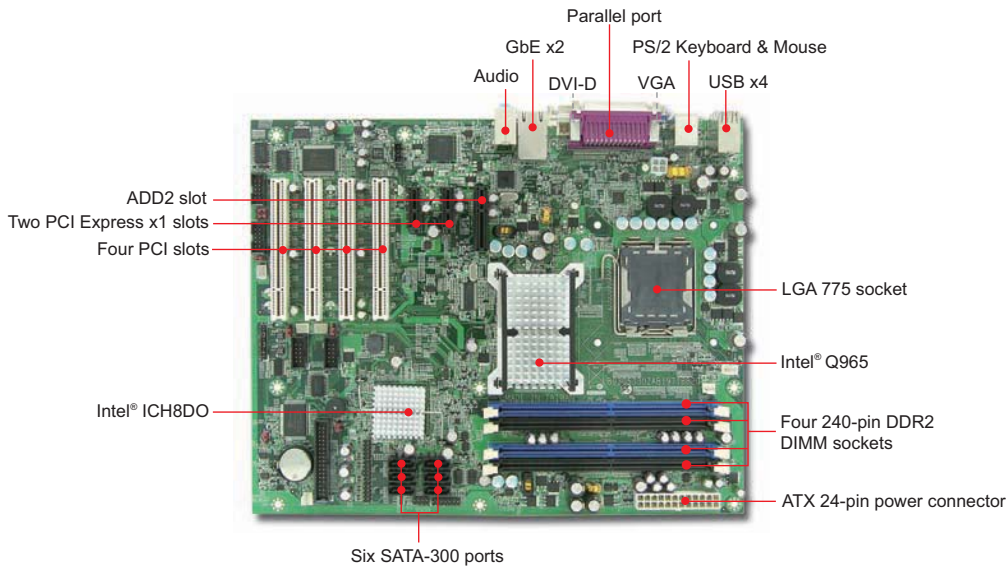
MIO	- Six Powered serial ports: One RS232/422/485 (5V/12V) selectable at rear I/O and Five RS232 (5V/12V) internal - One Parallel port at rear I/O - 8 GPIO internal - LPC pin header for optional TPM module
Display	VGA
Ethernet	- Dual Gigabit Ethernet Controller (Intel® 82583V x2) - Dual RJ-45 connector with two LED indicator at rear I/O panel
Audio	HD Audio interface (Mic-In, Line-In, Line-Out)
USB	Eight USB ports (Four ports at rear I/O panel; Four ports internal)
Keyboard & Mouse	PS/2 keyboard/mouse at rear I/O panel

## DISPLAY

Graphic Controller	- Intel® G41 integrated Intel® Gen. 5.0 GMA 4500 Graphics - Intel® Dynamic Video Memory Technology 5.0 - Onboard display: VGA
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# 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



## FEATURES

- Industrial mainboard in ATX form factor that supports all Intel® mainstream desktop processors - Core™ 2 Quad, Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in LGA-775 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-300 ports, Intel® Matrix Storage Technology with RAID 0, 1, 5, 10 support

## GENERAL

Processor	CPU & Package: Intel® Core™ 2 Quad, Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in the LGA-775 package FSB: 1066/800/533MHz
Chipset/Core Logic	Intel® Q965 and ICH8DO
System Memory	Up to 8GB DDR2 800/667/533 SDRAM on four 240-pin DIMM sockets
BIOS	Award BIOS
Storage Devices	Six SATA 300 ports with RAID 0/1/5/10 support by Intel® Matrix Storage Technology
Solid State Disk	N/A
Watchdog Timer	Programmable via software from 1 sec. to 255 min.
Expansion Interface	- One ADD2 slot (single SDVO bus) - Two PCI Express x1 slots - Four 32-bit PCI expansion slots
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	+12V(CPU)@8.75A; 12V(System)@3.6A; 5Vsb(System)@0.13A; 5V(System)@5.6A; 3.3V(System)@2.81A
Dimension	Dimension : 304.8(L) x 243.8(W) mm; 12"(L) x 9.6" (W)
Environment	Operating Temperature: 0 to 55°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	TBD

## ORDERING GUIDE

<b>Standard</b>	<b>RUBY-9718VG2AR</b> Intel® Core™ 2 Quad processor based ATX Industrial Mainboard with onboard DVI/VGA Dual-Display, DDR2 SDRAM, Dual Gigabit Ethernet, Audio and USB
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## I/O

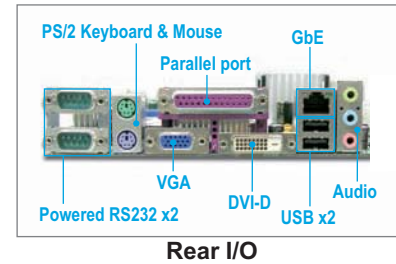
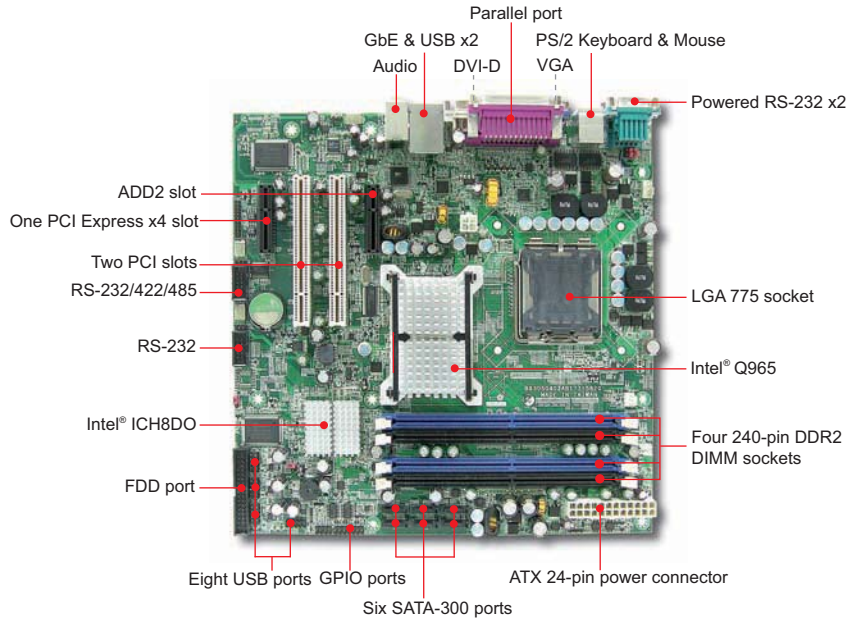
MIO	Four serial ports(RS232/Powered selectable x2, selectable RS232/422/485 x1, RS232 x1), one FDD, 12 GPIO
IrDA	N/A
Ethernet	- Dual 10BASE-T/100BASE-TX/1000BASE-T Ethernet (Intel® 82573L, Intel® 82566DM) - PCI Express x1 interface based Gigabit Ethernet - Dual RJ-45 connector with two LED indicators at rear I/O panel
Audio	HD Audio interface, 2-channel Audio
USB	Ten USB ports (Four ports at rear I/O panel; six ports internal)
Keyboard & Mouse	PS/2 keyboard/mouse at rear I/O panel

## DISPLAY

Graphic Controller	- GMCH integrated Intel® Graphics Media Accelerator 3000 (Intel® GMA 3000) - ADD2 graphics slot (single SDVO bus) for ADD2 card - Onboard dual independent display VGA and DVI-D
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# 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



Rear I/O

## FEATURES

- Industrial mainboard in uATX form factor that supports all Intel® mainstream desktop processors - Core™ 2 Quad, Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in LGA-775 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-300 ports support Intel® Matrix Storage Technology with RAID 0, 1, 5, 10

## GENERAL

Processor	CPU & Package: Intel® Core™ 2 Quad, Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in LGA-775 package FSB: 1066/800/533MHz
Chipset/Core Logic	Intel® Q965 & ICH8DO
System Memory	Up to 8GB DDR2 800/667/533 SDRAM on four 240-pin DIMM sockets
BIOS	Award BIOS
Storage Devices	Six SATA 300 ports with RAID 0/1/5/10 support by Intel® Matrix Storage Technology
Solid State Disk	N/A
Watchdog Timer	Programmable via software from 1 sec. to 255 min.
Expansion Interface	- One ADD2 slot (single SDVO bus) - One PCI Express x4 slot - Two 32-bit PCI expansion slots
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	+12V(CPU)@3.31A ; +12V(System)@5.82A ; +5V(System)@5.95A
Dimension	Dimension : 243.8(L) x 243.8(W) mm; 9.6"(L) x 9.6" (W)
Environment	Operating Temperature: 0 to 55°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	TBD

## ORDERING GUIDE

<b>Standard</b>	<b>RUBY-9717VGAR</b> LGA-775 Core™ 2 Quad processor based Micro-ATX Industrial Mainboard with onboard DVI/VGA dual-display, DDR2 SDRAM, Gigabit Ethernet, Audio and USB
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## I/O

MIO	Four serial ports(RS232/Powered selectable x2 on rear panel, Selectable RS232/422/485 x1, RS-232 x1), one FDD, 12 GPIO
IrDA	N/A
Ethernet	- Single 10BASE-T/100BASE-TX/1000BASE-T Ethernet (Intel® 82566DM) - PCI Express x1 interface based Gigabit Ethernet - Single RJ-45 connector with two LED indicators at rear I/O panel
Audio	HD Audio interface, 2-channel Audio
USB	Ten USB ports (Two ports at rear I/O panel; eight ports internal)
Keyboard & Mouse	PS/2 keyboard/mouse at rear I/O panel

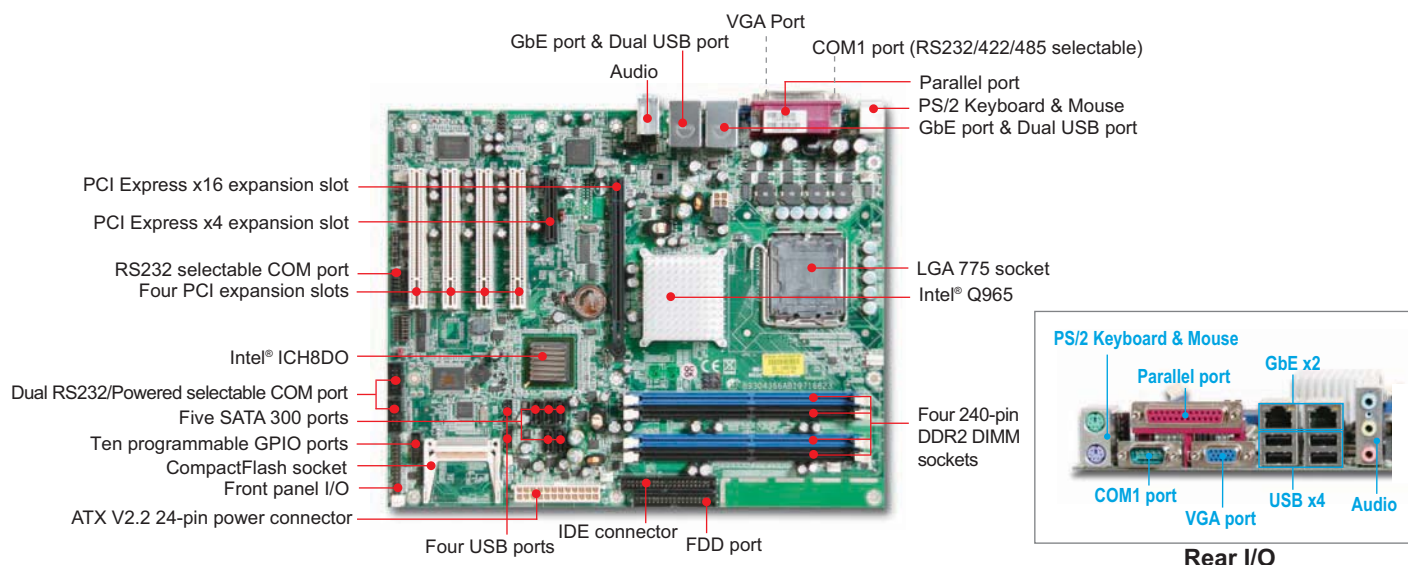
## DISPLAY

Graphic Controller	- GMCH integrated Intel® Graphics Media Accelerator 3000 (Intel® GMA 950) - ADD2 graphics slot (single SDVO bus) for ADD2 card - Onboard dual independent display VGA and DVI-D
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# RUBY-9716VG2AR

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



## FEATURES

- Industrial mainboard in ATX form factor supports all Intel® mainstream desktop processors - Core™ 2 Quad, Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in LGA-775 package
- Benefits such as Hyper-Threading, EM64T, dual-core, EIST, XD & VT of processor can be easily applied to system by changing processor
- Embedded Intel 4th generation graphics engine provides better user experience of display performance
- 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 300 ports together with one IDE channel and CF socket are perfect combination to storage interface for all kinds of applications; supports Intel® Matrix Storage Technology

## ORDERING GUIDE

<b>Standard</b>	<b>RUBY-9716VG2AR</b> LGA-775 Core™ 2 Quad processor based ATX Industrial Mainboard with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB
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## GENERAL

Processor	CPU & Package: Intel® Core™ 2 Quad, Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in LGA-775 package FSB: 1066/800/533MHz
Chipset/Core Logic	Intel® Q965 and ICH8DO
System Memory	Up to 8GB DDR2 800/667/533 SDRAM on four 240-pin DIMM sockets
BIOS	Award BIOS
Storage Devices	EIDE: Support single EIDE device with Ultra DMA 100/66/33 SATA: Support five SATA 300 drives
Solid State Disk	One Type II CF socket (only available if no IDE device attached)
Watchdog Timer	Programmable via software from 1 sec. to 255 min.
Expansion Interface	- Four 32-bit PCI expansion slots - One PCI Express x4 slot for x1 or x4 card - One PCI Express x16 slot for PCIe x16 or PCIe x1 or ADD2/+ card
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@4.0A; +12V@6.5A; 3.3V@3A
Dimension	Dimension : 304.8(L) x 243.8(W) mm; 12"(L) x 9.6" (W)
Environment	Operating Temperature: 0 to 55°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	73,803 hrs

## I/O

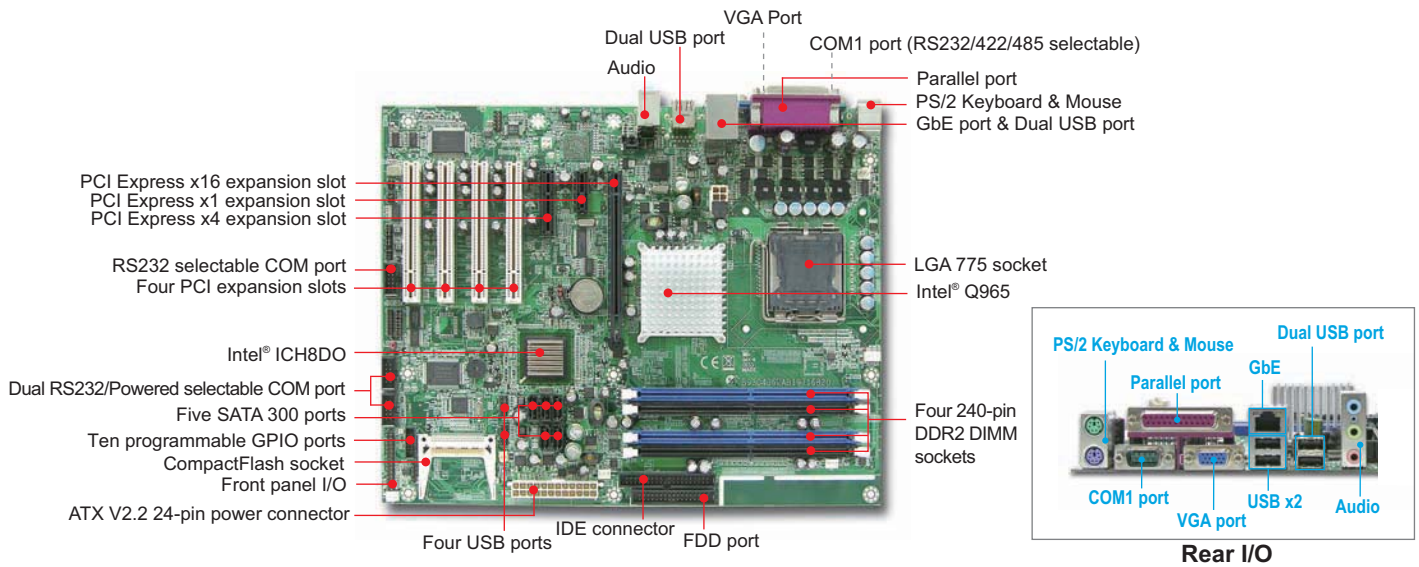
MIO	Four serial (RS232/TTL selectable x1, RS232/Powered selectable x2, RS232/422/485 selectable x1), one at rear I/O panel, one parallel, one FDD channel
IrDA	IrDA 1.0
Ethernet	- Dual 10BASE-T/100BASE-TX/1000BASE-T Ethernet (Intel® 82573L, Intel® 82566DM) - PCI Express x1 interface based Gigabit Ethernet - Dual RJ-45 connector with two LED indicators at rear I/O panel
Audio	HDA interface, 2-channel Audio
USB	Eight USB 2.0 ports (Four ports at rear I/O panel; four ports internal)
Keyboard & Mouse	PS/2 keyboard/mouse at rear I/O panel

## DISPLAY

Graphic Controller	- GMCH integrated Intel® 4th generation Extreme Graphics controller - Intel® GMA 3000 which provides improved 3D multimedia capabilities including DirectX9, Shader Model 3.0, OpenGL 1.5, Advanced De-interlacing, MPEG-2 hardware acceleration - Support dual independent display with ADD2/+ card
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# RUBY-9716VGAR

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



Rear I/O

## FEATURES

- Industrial mainboard in ATX form factor supports all Intel® mainstream desktop processors - Core™ 2 Quad, Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in LGA-775 package
- Benefits such as Hyper-Threading, EM64T, dual-core, EIST, XD & VT of processor can be easily applied to system by changing processor
- Embedded Intel 4th generation graphics engine provides better user experience of display performance
- 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
- One PCI Express x1 and four 32-bit PCI expansion slots for most industrial I/O cards
- Five SATA 300 ports together with one IDE channel and CF socket are perfect combination to storage interface for all kinds of applications; supports Intel® Matrix Storage Technology

## ORDERING GUIDE

<b>Standard</b>	<b>RUBY-9716VGAR</b> LGA-775 Core™ 2 Quad processor based ATX Industrial Mainboard with DDR2 SDRAM, VGA, Gigabit Ethernet, Audio and USB
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## GENERAL

Processor	CPU & Package: Intel® Core™ 2 Quad, Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in LGA-775 package FSB: 1066/800/533MHz
Chipset/Core Logic	Intel® Q965 and ICH8DO
System Memory	Up to 8GB DDR2 800/667/533 SDRAM on four 240-pin DIMM sockets
BIOS	Award BIOS
Storage Devices	EIDE: Support single EIDE device with Ultra DMA 100/66/33 SATA: Support five SATA 300 drives
Solid State Disk	One Type II CF socket (only available if no IDE device attached)
Watchdog Timer	Programmable via software from 1 sec. to 255 min.
Expansion Interface	- Four 32-bit PCI expansion slots - One PCI Express x4 slot for x1 or x4 card - One PCI Express x1 slot - One PCI Express x16 slot for PCIe x16 or PCIe x1 or ADD2/+ card
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@4.0A; +12V@6.5A; 3.3V@3A
Dimension	Dimension : 304.8(L) x 243.8(W) mm; 12"(L) x 9.6" (W)
Environment	Operating Temperature: 0 to 55°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	73,803 hrs

## I/O

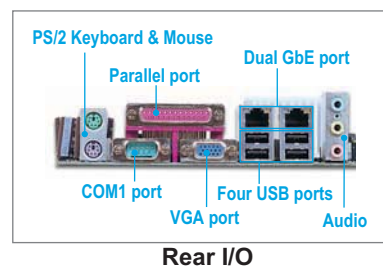
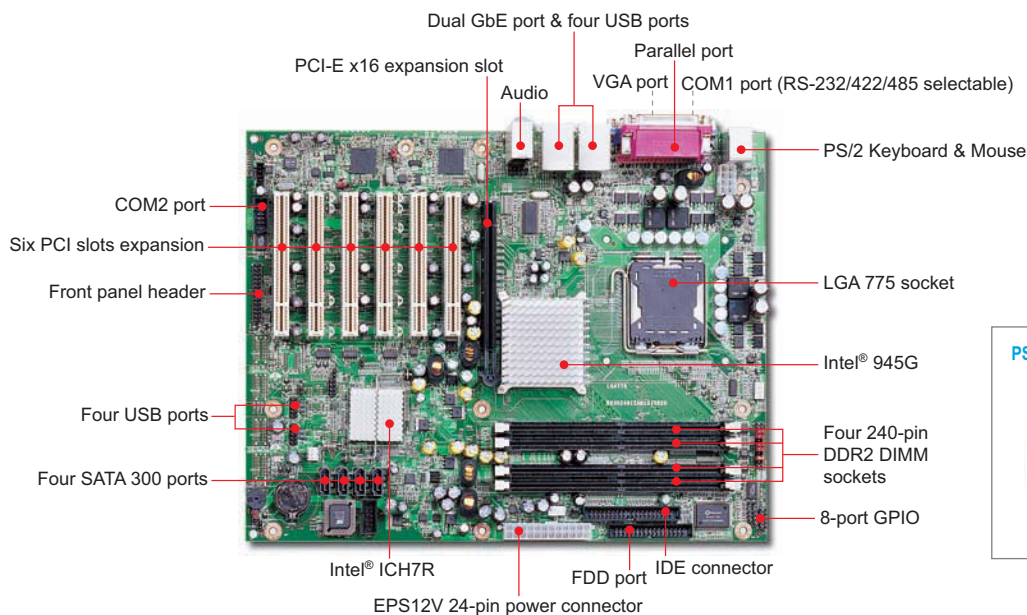
MIO	Four serial (RS232/TTL selectable x1, RS232/Powered selectable x2, RS232/422/485 selectable x1), one at rear I/O panel, one parallel, one FDD channel
IrDA	IrDA 1.0
Ethernet	- Single 10BASE-T/100BASE-TX/1000BASE-T Ethernet (Intel® 82566DM) - PCI Express x1 interface based Gigabit Ethernet - Single RJ-45 connector with two LED indicators at rear I/O panel
Audio	HDA interface, 2-channel Audio
USB	Eight USB 2.0 ports (Four ports at rear I/O panel; four ports internal)
Keyboard & Mouse	PS/2 keyboard/mouse at rear I/O panel

## DISPLAY

Graphic Controller	- GMCH integrated Intel® 4th generation Extreme Graphics controller - Intel® GMA 3000 which provides improved 3D multimedia capabilities including DirectX9, Shader Model 3.0, OpenGL 1.5, Advanced De-interlacing, MPEG-2 hardware acceleration - Support dual independent display with ADD2/+ card
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# RUBY-9715VG2AR

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



## FEATURES

- Industrial mainboard in ATX form factor supports Intel® Pentium® 4 processor with Hyper-Threading technology, Core™ 2 Duo, Pentium® D and Celeron® D processor in LGA-775 package up to 1066MHz front side bus
- Support DDR2 667/533 SDRAM up to 4GB in dual channel architecture
- Intel® new GMCH integrated graphics engine increases 9% ~ 25% performance of GMA 900 of Intel 915GV
- One PCI Express x16 slot features high-end graphics card connection interface or dual independent displays with ADD2+ media card that provides TV tuner, video capture in and DVI, TV-out
- Six 32-bit PCI expansion slots for most industrial I/O cards
- Dual Gigabit Ethernet ports based on PCI Express x1 interface without sharing bandwidth of PCI expansion bus
- Four ports for SATA RAID controller providing benefits of Intel Matrix Storage Technology RAID 0, 1, 5, 10

## ORDERING GUIDE

Standard	<b>RUBY-9715VG2AR</b> Intel® Core™ 2 Duo processor based ATX Industrial Mainboard with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB
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## GENERAL

Processor	CPU & Package: Intel® Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processor in LGA-775 package FSB: 1066/800/533MHz
Chipset/Core Logic	Intel® 945G & ICH7R
System Memory	Up to 4GB DDR2 667/533 SDRAM on four 240-pin DIMM sockets
BIOS	Award BIOS
Storage Devices	EIDE: Support two EIDE devices with Ultra DMA 100/66/33 SATA: Support four SATA 300 drives
Solid State Disk	N/A
Watchdog Timer	Programmable via software from 1 sec. to 255 min.
Expansion Interface	- Six 32-bit PCI expansion slots - One PCI Express x16 slot for graphics card, ADD2+ card or PCI Express x1 (general purpose) card - Up to four PCI Express x1 external interface per (project spec.)
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Typical: +5V@2.69A ; +12V@5.37A
Dimension	Dimension : 312.8(L) x 243.8(W) mm; 12.3"(L) x 9.6" (W)
Environment	Operating Temperature: 0 to 55°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	105,889 hrs

## I/O

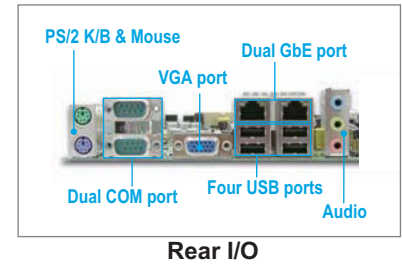
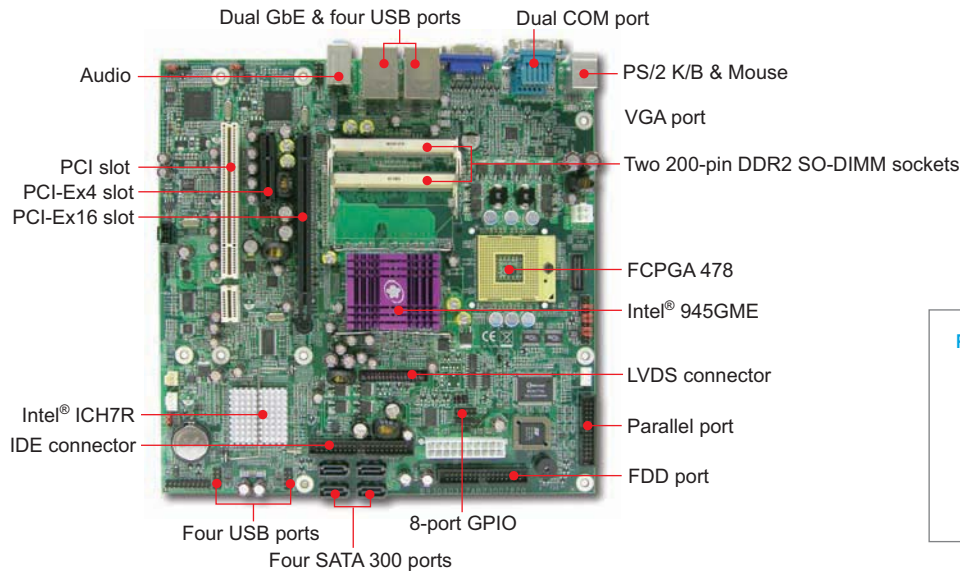
MIO	Two serial (RS232 x1, selectable RS232/422/485 x1) ports, one at rear I/O panel, one parallel, one FDD channel
IrDA	IrDA 1.0
Ethernet	- Dual 10BASE-T/100BASE-TX/1000BASE-T Ethernet (Intel® 82573L x2) - PCI Express x1 interface based Gigabit Ethernet - Dual RJ-45 connectors with two LED indicators at rear I/O panel
Audio	AC'97 2.2 Audio
USB	Eight USB 2.0 ports (Four ports at rear I/O panel; four ports internal)
Keyboard & Mouse	Dual 6-pin mini-DIN connectors at rear I/O panel for PS/2 keyboard/mouse

## DISPLAY

Graphic Controller	GMCH integrated Intel® Graphics Media Accelerator 950 (Intel® GMA 950)
Graphic Memory	Dynamic system memory sharing up to 224MB (Intel® DVM T 3.0) or static system memory sharing up to 128MB
Display Interface	Display resolution up to 2048 x 1536

# RUBY-9713VG2AR

Intel® Core™ 2 Duo processor based  
Micro-ATX Industrial Mainboard with  
DDR2 SO-DIMM, VGA, Dual Gigabit  
Ethernet, Audio and USB



## FEATURES

- Industrial mainboard in uATX form factor supports all Intel® Core™ 2 Duo, Core™ Duo, Core™ Solo processor for MoDT (Mobile on Desktop) application
- One 32-bit PCI expansion slot or supports up to four PCI slots by riser card
- One PCI-Express x4 slot or supports up to four PCI Express x1 slot by riser card
- Support GPIO and LVDS on board
- Adopts Intel Matrix Storage Technology to support RAID 0/1/5/10
- Dual Gigabit Ethernet ports based on PCI Express x1 interface without sharing bandwidth of PCI expansion bus

## GENERAL

Processor	CPU & Package: Intel® Core™ 2 Duo, Core™ Duo, Core™ Solo processor FSB: 667/533MHz
Chipset/Core Logic	Intel® 945GME and ICH7R
System Memory	Up to 4GB DDR2 667/533 SDRAM on two 200pin SODIMM sockets
BIOS	Award BIOS
Storage Devices	EIDE: Support two EIDE devices with Ultra DMA 100/66/33 SATA: Support four SATA 300 drives RAID: RAID 0/1/5/10
Solid State Disk	N/A
Watchdog Timer	Programmable via software from 1 sec. to 255 min.
Expansion Interface	- One 32-bit PCI expansion slot or support up to four PCI slots by riser card - One PCI-Express x4 slot or support up to four PCI Express x1 slot by riser card - One PCI-Express x16 slot
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	Standby +5@1.7A; +12V(CPU)@3A, +12V(System)@1A, +5V(System)@2.5A, +3.3V(System)@1.5A
Dimension	Dimension : 243.8(L) x 243.8(W) mm; 9.6"(L) x 9.6" (W)
Environment	Operating Temperature: 0 to 55°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	86,705 hrs

## ORDERING GUIDE

<b>Standard</b>	<b>RUBY-9713VG2AR</b> Intel® Core™ 2 Duo processor based Micro-ATX, Industrial Mainboard with DDR2 SODIMM, VGA, Dual Gigabit Ethernet, Audio and USB
<b>Optional</b>	<b>PEP-541L</b> PCI-E x4 to PCI-E x4 riser card <b>PEP-544L</b> PCI-E x4 to four PCI-E x1 riser card <b>PEP-554L</b> PCI to four PCI slots riser card <b>PEP-553L</b> PCI to three PCI slots riser card <b>B9970540</b> Pentium® M 1U Active Heat Sink

## I/O

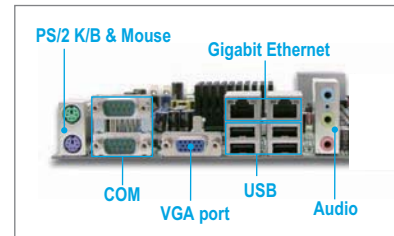
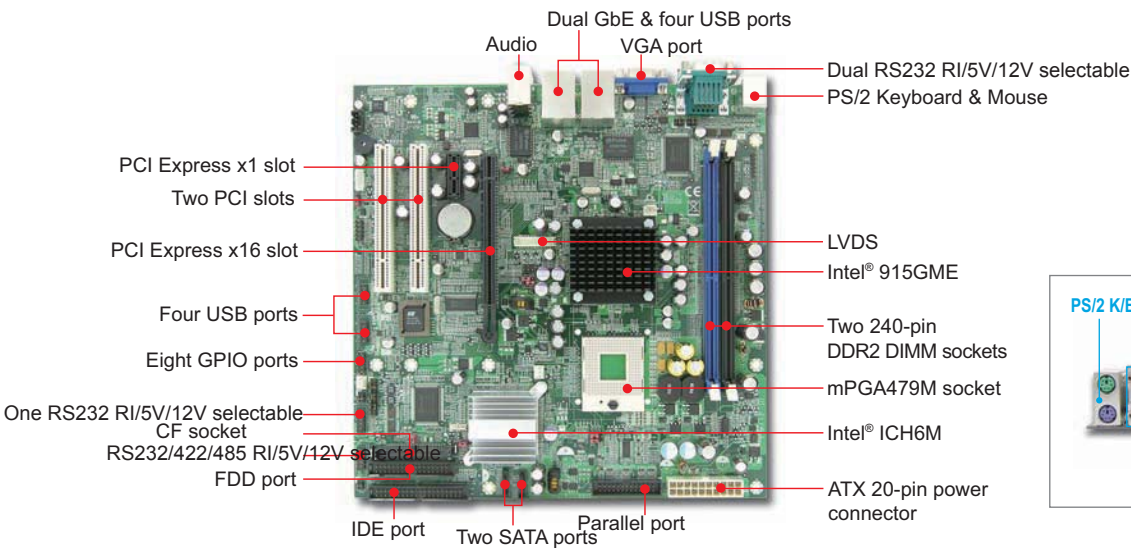
MIO	Two serial (RS232 x1, selectable RS232/422/485 x1) One parallel, one FDD channel, eight GPIO
IrDA	IrDA 1.0
Ethernet	- Dual 10BASE-T/100BASE-TX/1000BASE-T Ethernet (Intel® 82573L x2) - PCI Express x1 interface based Gigabit Ethernet - Dual RJ-45 connectors with two LED indicators at rear I/O panel
Audio	AC'97 2.2 Audio
USB	Eight USB 2.0 ports (Four ports at rear I/O panel; four ports internal)
Keyboard & Mouse	Dual 6-pin mini-DIN connector at rear I/O panel for PS/2 keyboard/mouse

## DISPLAY

Graphic Controller	GMCH integrated Intel® Graphics Media Accelerator 950 (Intel® GMA 950)
Graphic Memory	Dynamic share system memory up to 224MB (Intel DVMT 3.0) or static share system memory up to 128MB
Display Interface	Display resolution up to 2048x1536; LVDS

# RUBY-7720VG2A

Intel® Pentium® M or Celeron® M processor based Micro-ATX Motherboard with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB



Rear I/O

## FEATURES

- Industrial mainboard in Micro-ATX form factor with 915GME chipset that supports Intel® Pentium® M and Celeron® M processor up to 2.0GHz
- Maximum 2GB DDR2-533 system memory
- Onboard dual display: VGA and LVDS, 3rd display via PCI-E x16 Graphic card
- One PCI-Express x16 slot for high-end graphics card or ADD2 card
- Dual Gigabit Ethernet ports based on PCI-Express x1 interface
- Two 32-bit PCI expansion slots with riser card supported
- Fanless cooler for Intel® ULV processor

## ORDERING GUIDE

Standard	<b>RUBY-7720VG2A</b> Intel® Pentium M or Celeron M processor based Micro-ATX Motherboard with DDR2 SDRAM, VGA, Dual Gigabit Ethernet, Audio and USB
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## GENERAL

Processor	CPU & Package: Intel® mPGA479M socket support uFC-PGA Pentium® M or Celeron® M up to 2.0GHz FSB: 533/400MHz
Chipset/Core Logic	Intel® 915GME and ICH6M
System Memory	Up to 2GB DDR2-400/533 memory on two 240-pin DIMM sockets with dual channel mode
BIOS	Award BIOS
Storage Devices	- Two SATA ports - One IDE port
Solid State Disk	One Type I/II Compact Flash socket
Watchdog Timer	Programmable via software from 1 sec. to 255 min.
Expansion Interface	- Two 32-bit PCI expansion slots (supports one riser card) - One PCI-Express x1 slot - One PCI-Express x16 slot
Hardware Monitoring	System monitor (fan, temperature, voltage)
Power Requirement	TBD
Dimension	Dimension : 243.8(L) x 243.8(W) mm; 9.6"(L) x 9.6" (W)
Environment	Operating Temperature: 0 to 55°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing
MTBF	TBD

## I/O

MIO	Four serial ports (two RS232 (RI/5V/12V) selectable at Rear IO, one RS232 & one RS232/422/485 (RI/5V/12V) selectable internally)
IrDA	One IrDA
Ethernet	- Dual 10BASE-T/100BASE-TX/1000BASE-T Ethernet (Realtek 8111B-GR x2) - PCI Express x1 interface based Gigabit Ethernet - Two RJ-45 connector with two LED indicators at rear I/O panel
Audio	HD Audio interface, 2-channel Audio
USB	Eight USB 2.0 ports (Four ports at rear I/O panel; four ports internal)
Keyboard & Mouse	PS/2 keyboard/mouse at rear I/O panel

## DISPLAY

Graphic Controller	- Intel® 915GME integrated GMA 900 - One VGA (rear panel) and one LVDS (onboard) - Dual independent display by VGA and LVDS, 3rd display via PCIE x16 Graphic Card
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# About Chassis

## ▾ FLEXIBLE AND UNIQUE

At Portwell, we take care of our customers' needs. Portwell is 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 pleasing 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, but is also built practically, so that it 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 our continuing place 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

**A**dvanced  
**R**uggedized  
**E**nhanced  
**M**odulized  
**O**ptimized

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.

# Chassis Reference Table



AREMO-4196



AREMO-2173P



AREMO-3194



PRC-4207

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
			AREMO-4196-14P4-D3202P		9	4	1
	ATX M/B	AREMO-4196-MX	AREMO-4196-MX-D3501P	--	--	7	--
2U	6-slot	AREMO-2173P	AREMO-2173P-06V4-D3501P	PBP-06V4	1	4	1
			AREMO-2173P-06V4-D3502P		--	4	--
2U	uATX M/B	AREMO-2173MX	AREMO-2173MX-D3501P	--	--	--	--
			AREMO-2173MX-3502P		--	--	--
3U	ATX M/B	AREMO-3194	AREMO-3194-MX-350X	--	--	7	--
4U	ATX M/B	PRC-4207	PRC-4207-MX	--	--	--	--
FS	6-slot	AREMO-6163	AREMO-6163-06P4-D3501P	PBP-06P4	1	4	1
FS	8-slot	AREMO-8164	AREMO-8164-08P4-D3501P	PBP-08P4	3	4	1
FS	12-slot	AREMO-4184	AREMO-4184-06P3-350X	PBP-06P3	4	6	2
FS	6-slot	AREMO-6182	AREMO-6182-06P3-350X	PBP-06P3	2	3	1
			AREMO-6182-06P4-350X	PBP-06P4	1	4	1
1U	uATX	PRS-1174	PRS-1174-MX-270X	--	--	1	--
1U	3-slot	RPC-1194	RPC-1194	PBP-03P2X	--	2	1

# Chassis Reference Table



AREMO-6163



AREMO-8164



AREMO-4184



AREMO-6182



PRS-1174

TYPE	SLOT	MODEL	PSU		Dimension (W)x (D)x(H)	Page
			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)	48-49
4U	ATX M/B	RPC-500NC-MX	ORION-D4201P ORION-D3502P	420W 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)	50-52
	ATX M/B	AREMO-4196-MX	ORION-D3202P ORION-D4201P	320W ATX, PFC, redundant 420W ATX, PFC, P4		
2U		6-slot	AREMO-2173P	ORION-D3501P ORION-D3502P		
2U	uATX M/B	AREMO-2173MX	ORION-D3501P ORION-D3502P	350W ATX, PFC, P4 350W ATX, PFC, redundant	482(W) x 441.6(D) x 88.4(H) mm 19"(W) x 17.4"(D) x 3.5"(H)	55-56
3U	ATX M/B	AREMO-3194	ORION-B3501P	350W ATX, PFC, P4	482(W) x 456(D) x 132(H) mm 19"(W) x 18.0"(D) x 5.25"(H)	57-58
4U	ATX M/B	PRC-4207	ORION-D4601P	460W ATX, PFC, P4	482(W) x 519(D) x 177(H) mm 19"(W) x 20.4"(D) x 7"(H)	59-60
FS	6-slot	AREMO-6163	ORION-D3501P	350W ATX, PFC, P4	260(W) x 420.8(D) x 172(H) mm 10.24"(W) x 16.56"(D) x 6.77"(H)	61-62
FS	8-slot	AREMO-8164	ORION-D3501P	350W PFC, ATX, P4	330(W) x 420.8(D) x 17(H) mm 12.99"(W) x 16.56"(D) x 6.77"(H)	63-64
FS	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)	65-66
FS	6-slot	AREMO-6182	FSP350-601UA	350W PFC, ATX, P4	219(W) x 448(D) x 160(H) mm 8.6"(W) x 17.6"(D) x 6.3"(H)	67-68
1U	uATX	PRS-1174	PRS-1174-MX-270X	270W ATX PFC, P4	482(W) x 510(D) x 44(H) mm 19"(W) x 20"(D) x 1.75"(H)	70
1U	3-slot	PRC-1194	PRC-1194-03P2X-A2501	250W ATX PFC, P4	482(W) x 474(D) x 44(H) mm 19"(W) x 18.7"(D) x 1.75"(H)	71



### 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

### 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	One 5-pin K/B connector on the front panel with a cap
Standard Color	Beige, Black
Dimension	RPC-500N: 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-500N: 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

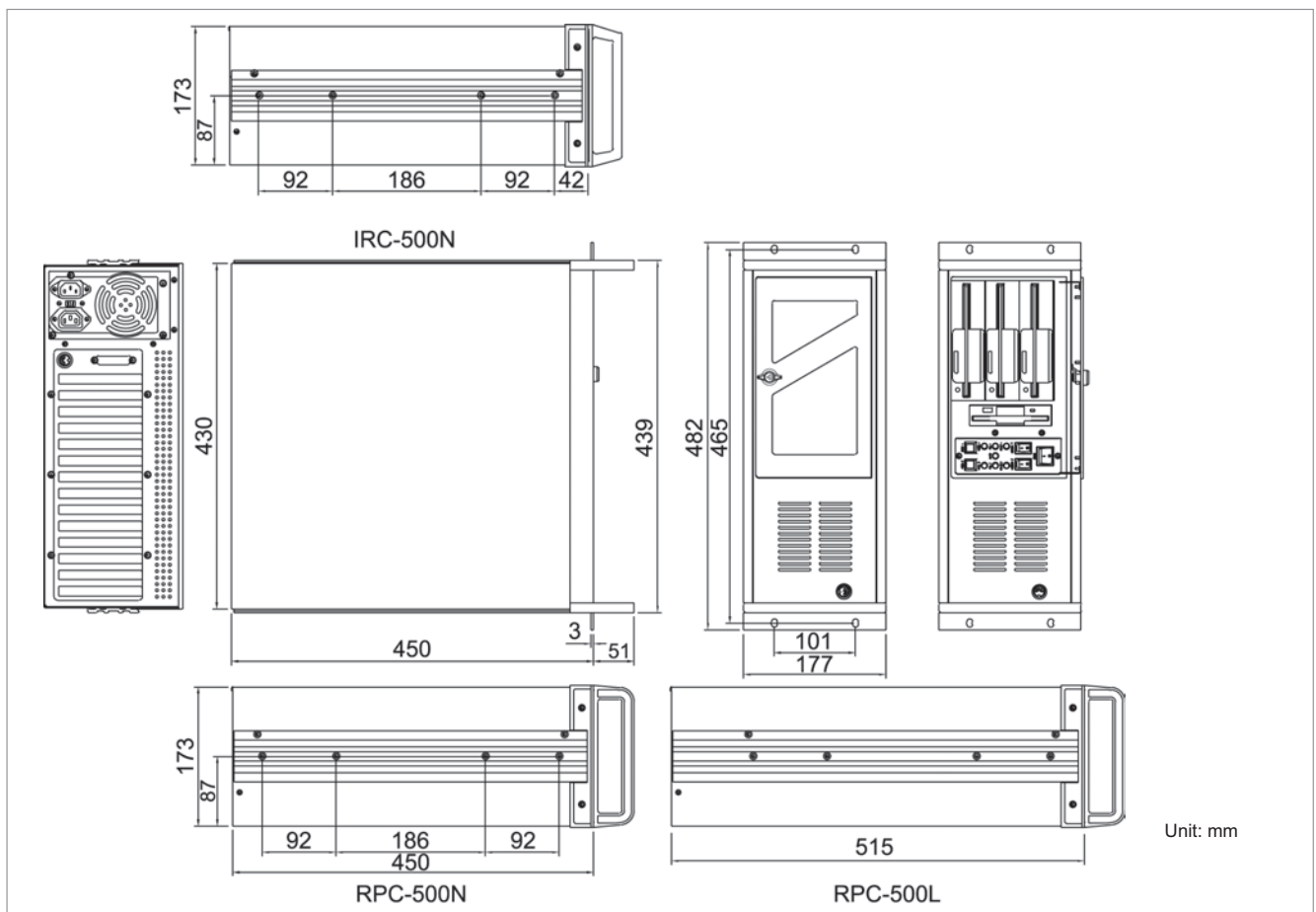
Maximum output	350W active PFC
Output Voltage & Current	+5V@40A; +12V@18A; +3.3V@30A; -5V@0.3A, -12V@1.0A, +5Vsb@2A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63Hz
Input Current	10A@115V, 5V@230V
Efficiency	> 68%
MTBF	75,145 hrs
EMI & Safety Approval	UL, cUL, TUV, CE, FCC
Temperature/Humidity	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
<ul style="list-style-type: none"> <li>■ A lockable front door with thumb lock</li> </ul>	<ul style="list-style-type: none"> <li>■ Good for dust-proof &amp; Running status visible</li> </ul>
<ul style="list-style-type: none"> <li>■ One power on/off switch with LED indicator, one reset and one K/B lock switches inside the lockable door</li> </ul>	<ul style="list-style-type: none"> <li>■ Avoid accidental reset for better running security</li> </ul>
<ul style="list-style-type: none"> <li>■ Front replaceable air filter</li> </ul>	<ul style="list-style-type: none"> <li>■ For installing dual systems and redundant power supplies more easily</li> </ul>
<ul style="list-style-type: none"> <li>■ Two USB ports on the front panel</li> </ul>	<ul style="list-style-type: none"> <li>■ For easy access</li> </ul>
<ul style="list-style-type: none"> <li>■ One PS/2 K/B connector on the front panel</li> </ul>	<ul style="list-style-type: none"> <li>■ Convenient to connect to the keyboard</li> </ul>
<ul style="list-style-type: none"> <li>■ One K/B connector cap</li> </ul>	<ul style="list-style-type: none"> <li>■ Good for dust-proof for the front accessible K/B connector</li> </ul>
<ul style="list-style-type: none"> <li>■ Two ball-bearing cooling fans</li> </ul>	<ul style="list-style-type: none"> <li>■ Better ventilation to provide the system with higher reliability</li> </ul>
<ul style="list-style-type: none"> <li>■ Enhanced drive bracket to hold 3 x 5.25" + 1 x 3.5" (external) and 1 x 3.5" drives (internal)</li> </ul>	<ul style="list-style-type: none"> <li>■ For integrating varied systems with higher flexibility</li> </ul>
<ul style="list-style-type: none"> <li>■ Shock-resistant cushion for the drive bracket</li> </ul>	<ul style="list-style-type: none"> <li>■ Suitable for installing RAID and CD-ROM drive</li> </ul>
<ul style="list-style-type: none"> <li>■ Two adjustable positions for hold-down card retainers</li> </ul>	<ul style="list-style-type: none"> <li>■ For fixing all the cards more flexibly and tightly</li> </ul>
<ul style="list-style-type: none"> <li>■ Changeable modularized back panel for 14-slot ISA/PICMG backplane or ATX M/B</li> </ul>	<ul style="list-style-type: none"> <li>■ Only one minutes to change the back panel</li> <li>■ Easy to change to different backplanes and keep stock</li> </ul>
<ul style="list-style-type: none"> <li>■ Field replaceable power supply bracket for both normal PS/2 power supply and PS/2 type redundant power supply</li> </ul>	<ul style="list-style-type: none"> <li>■ Only three minutes to change defective power supply</li> <li>■ Only 30 seconds to change the defective PSU module</li> </ul>

### ENGINEERING DRAWING



# AREMO-4196

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



## 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-4201P**  
19" 4U rack-mount chassis for ATX motherboard with active 420W ATX, Active PFC power supply
- **AREMO-4196-00-4201P**  
19" 4U rack-mount chassis for PICMG version and 420w ATX, Active PFC power supply (3-in-2 mobile rack Drive is optional)

## GENERAL

Construction	Heavy-duty steel with aluminum front panel
Drive Bay	External: 5.25" x3, 3.5" HDD x1
Card Retainer	Three locations for one card retainer
Air Filter	Two replaceable air filter
Cooling Fan	Two 12cm 8cm 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-D4201P optional

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	5A@230V; 10A@115V
Efficiency	> 70%
Holdup Time	17 ms. at full load @25°C
Over Voltage Protection	+5V@7V; +3.3V@4.5V; +12V@15.6V
Over Power/Load Protection	Output power over to 110%~140%
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV
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-4196

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

FEATURE	BENEFITS
<ul style="list-style-type: none"> <li>■ A lockable front door with thumb lock</li> </ul>	<ul style="list-style-type: none"> <li>■ Good for dust-proof &amp; security</li> </ul>
<ul style="list-style-type: none"> <li>■ One power on/off switch and one system reset button on the front panel behind the lockable door</li> </ul>	<ul style="list-style-type: none"> <li>■ Avoid accidental reset for better running security</li> </ul>
<ul style="list-style-type: none"> <li>■ Fan control board</li> </ul>	<ul style="list-style-type: none"> <li>■ Detect fan fail and Alarm</li> </ul>
<ul style="list-style-type: none"> <li>■ Front replaceable air filter</li> </ul>	<ul style="list-style-type: none"> <li>■ For easy cleaning and install</li> </ul>
<ul style="list-style-type: none"> <li>■ Equipped two USB ports</li> </ul>	<ul style="list-style-type: none"> <li>■ Efficient Access</li> </ul>
<ul style="list-style-type: none"> <li>■ Dual 12cm ball-bearing cooling fans</li> </ul>	<ul style="list-style-type: none"> <li>■ Better ventilation to provide the system with higher reliability</li> </ul>
<ul style="list-style-type: none"> <li>■ Enhanced drive bracket to hold three 5.25" and two 3.5" HDD drives (internal)</li> </ul>	<ul style="list-style-type: none"> <li>■ For integrating varied systems with higher flexibility</li> <li>■ Suitable for installing RAID and CD-ROM drive</li> </ul>
<ul style="list-style-type: none"> <li>■ Shock-resistant cushion for the drive bracket</li> </ul>	<ul style="list-style-type: none"> <li>■ Suitable for harsh industrial environment</li> </ul>
<ul style="list-style-type: none"> <li>■ Two adjustable positions for hold-down card retainers</li> </ul>	<ul style="list-style-type: none"> <li>■ For fixing all the cards more flexibly and tightly</li> </ul>
<ul style="list-style-type: none"> <li>■ Changeable modularized back panel for 14-slot ISA/PICMG backplane or ATX motherboard</li> </ul>	<ul style="list-style-type: none"> <li>■ Only one minute to change the back panel</li> <li>■ Easy to change to different backplanes and keep stock</li> </ul>
<ul style="list-style-type: none"> <li>■ Field replaceable power supply bracket for both normal PS/2 power supply and PS/2 type redundant power supply</li> </ul>	<ul style="list-style-type: none"> <li>■ Only three minutes to change the defective power supply</li> <li>■ Only thirty seconds to change the defective PSU module</li> </ul>

## 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 unmount 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 adapted 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 expire 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



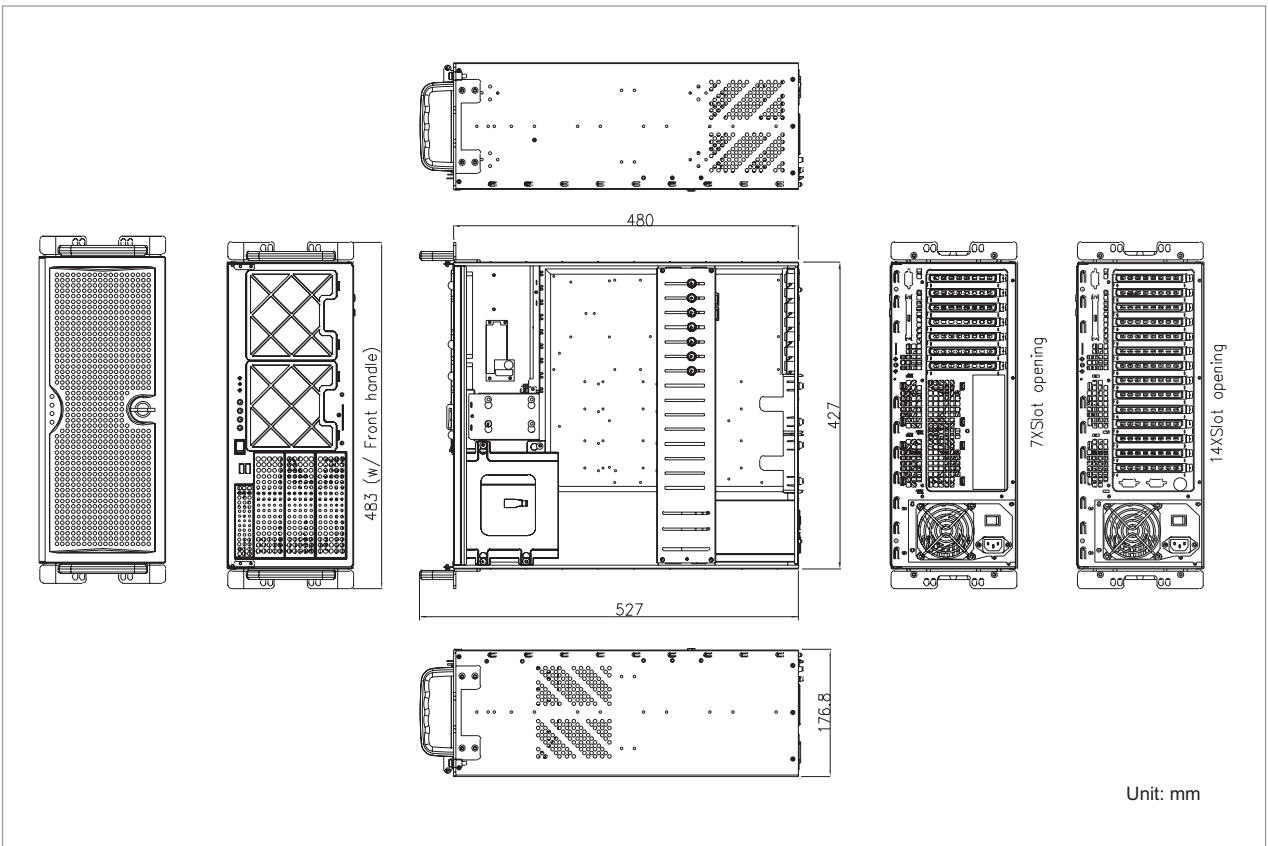
AREMO-4196



AREMO-4196-MX



## ENGINEERING DRAWING



# AREMO-2173P

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



## 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 441.6(D) x 88.4(H) mm; 19"(W) x 17.4"(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

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 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: -20 ~ 70°C, 10 ~ 90%RH
Dimension (WxDxH)	150x140x86 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

# AREMO-2173P

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

FEATURE	BENEFITS
<ul style="list-style-type: none"> <li>350W Active PFC power supply</li> </ul>	<ul style="list-style-type: none"> <li>Sufficient power source for Intel® Pentium® 4 processor</li> </ul>
<ul style="list-style-type: none"> <li>Two 7cm high speed fans</li> </ul>	<ul style="list-style-type: none"> <li>Better ventilation to enhance system reliability</li> </ul>
<ul style="list-style-type: none"> <li>Two swappable SATA HDD drive bays</li> </ul>	<ul style="list-style-type: none"> <li>Easy to access HDD drives</li> </ul>
<ul style="list-style-type: none"> <li>Four Low profile PCI expansion slots</li> </ul>	<ul style="list-style-type: none"> <li>For system function expansion</li> </ul>
<ul style="list-style-type: none"> <li>Front replaceable air filters</li> </ul>	<ul style="list-style-type: none"> <li>Easy cleaning</li> </ul>

## WHAT'S NEW



**Thumb Lock**

Convenient to operate or protect the system



**Two Swappable SATA HDD Drives**

Easy to access HDD drives



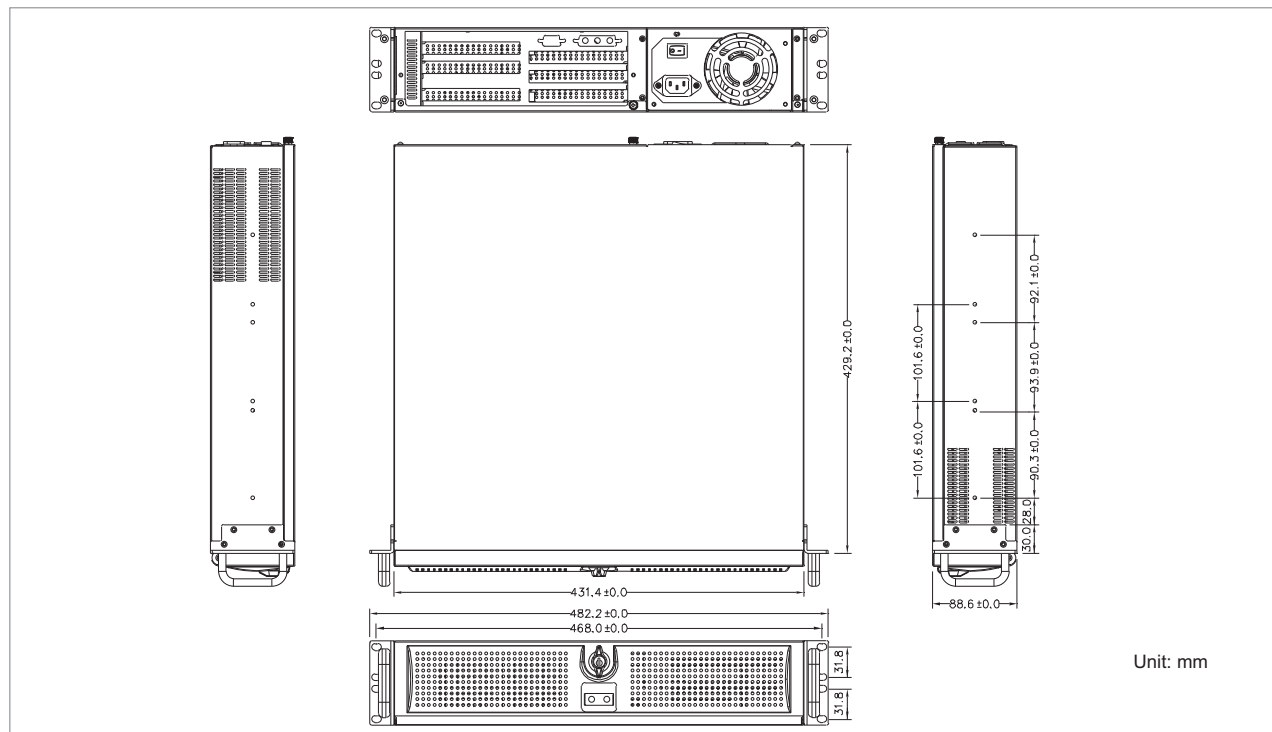
**Front Replaceable Air Filters/Fans**

Convenient to change air filters or fans when needed



**Rear View**

## ENGINEERING DRAWING



# AREMO-2173MX

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



## 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

## 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 441.6(D) x 88.4(H) mm; 19"(W) x 17.4"(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

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 110%~140%
MTBF	75,145 hrs
EMI & Safety Approval	UL, TUV
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -40 ~ 70°C, 10 ~ 90%RH
Dimension (WxDxH)	150x140x86 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

# AREMO-2173MX

FEATURE	BENEFITS
<ul style="list-style-type: none"> <li>350W Active PFC power supply</li> </ul>	<ul style="list-style-type: none"> <li>Sufficient power source for Intel® Pentium® 4 processor</li> </ul>
<ul style="list-style-type: none"> <li>Two 7cm high speed fans</li> </ul>	<ul style="list-style-type: none"> <li>Better ventilation to enhance system reliability</li> </ul>
<ul style="list-style-type: none"> <li>Two swappable SATA HDD drive bays</li> </ul>	<ul style="list-style-type: none"> <li>Easy to access HDD drives</li> </ul>
<ul style="list-style-type: none"> <li>Four Low profile PCI expansion slots</li> </ul>	<ul style="list-style-type: none"> <li>For system function expansion</li> </ul>
<ul style="list-style-type: none"> <li>Front replaceable air filters</li> </ul>	<ul style="list-style-type: none"> <li>Easy cleaning</li> </ul>

## WHAT'S NEW



**Thumb Lock**

Convenient to operate or protect the system



**Two Swappable SATA HDD Drives**

Easy to access HDD drives



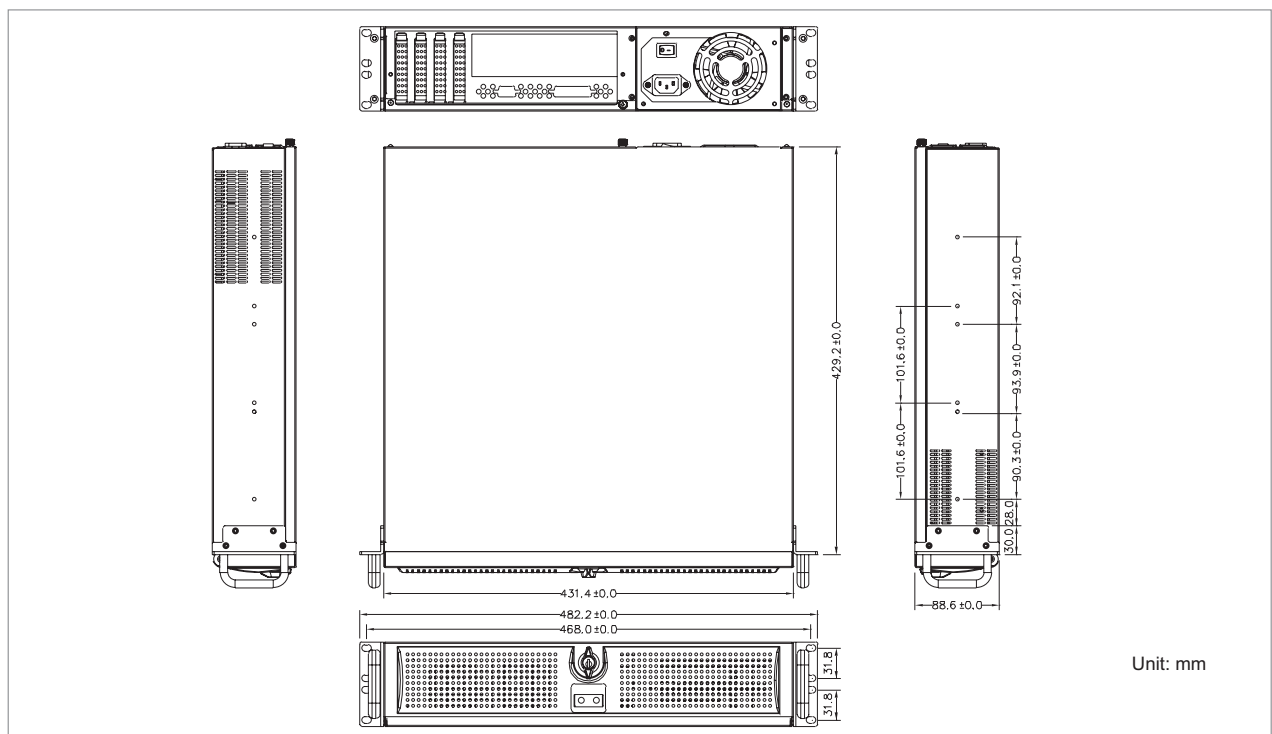
**Front Replaceable Air Filters/Fans**

Convenient to change air filters or fans when needed



**Rear View**

## ENGINEERING DRAWING





### 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 132.7(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	> 65%
Holdup Time	16 ms. at full load
Over Voltage Protection	+5V@5.5~7.0V; 3.3V@3.7~4.5V; +12V@13.6~14.6V
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)	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
■ Two USB and one IEEE 1394 ports on the front panel	■ 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
■ Thumb lock	■ 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



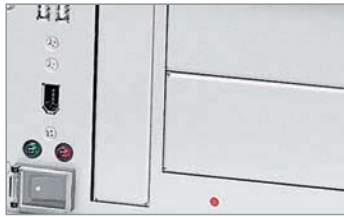
### Front Replaceable Air Filters

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

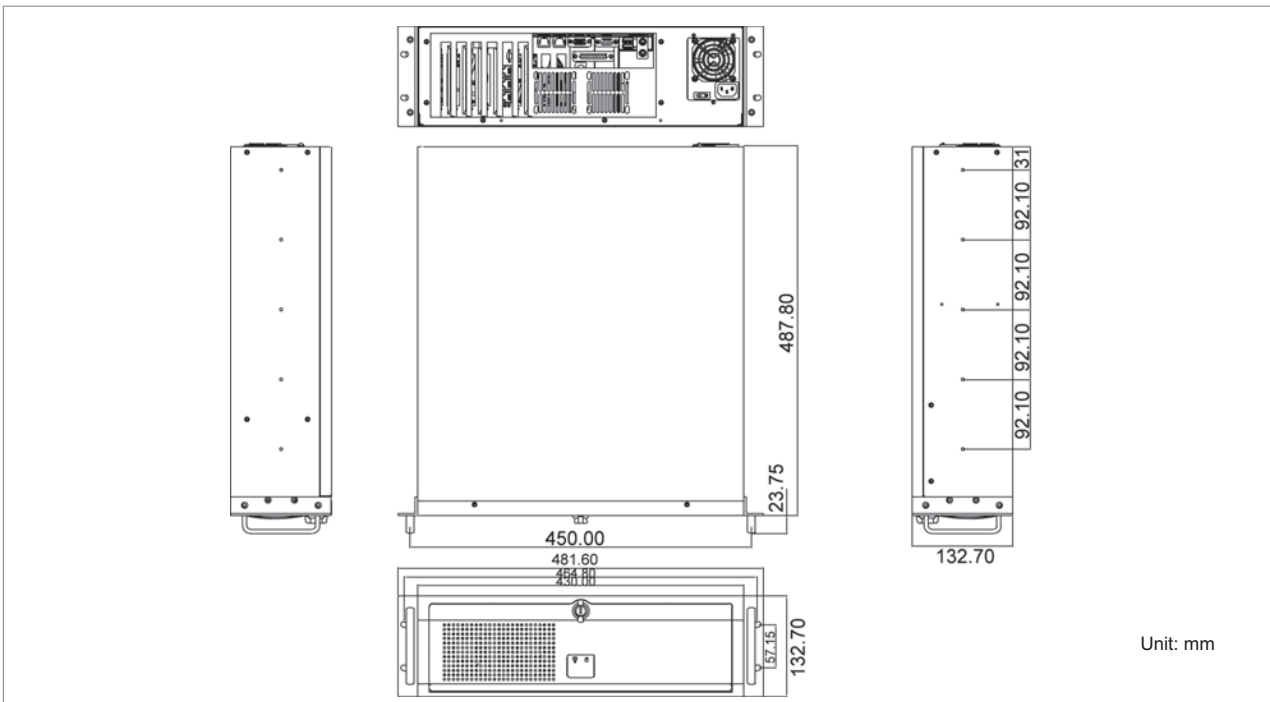
Avoid abnormal operation and increase system reliability



### Excellent Cooling System

New slot cover and air holes for better ventilation

## ENGINEERING DRAWING





### FEATURES

- 5.25" x3 + 3.5" x4 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 front panel
- ATX M/B applicable, especially for server grade M/B
- PS/2 redundant power supply installable

### ORDERING GUIDE

- **PRC-4207**  
19" 4U rack-mount chassis for PICMG backplane
- **PRC-4207-MX**  
19" 4U rack-mount chassis for ATX M/B

### GENERAL

Construction	Heavy-duty steel
Drive Bay	External: 5.25" x3 Internal: 3.5" HDD x4
Card Retainer	Two locations for one card retainer
Air Filter	One replaceable air 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	Two USB ports on the front panel
Standard Color	Beige, Black
Dimension	482(W) x 519(D) x 177(H) mm; 19"(W) x 20.4"(D) x 7"(H)
Weight	Net: 14 kg (30.9 lb); Gross: 15 kg (33.1 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-D4601P optional

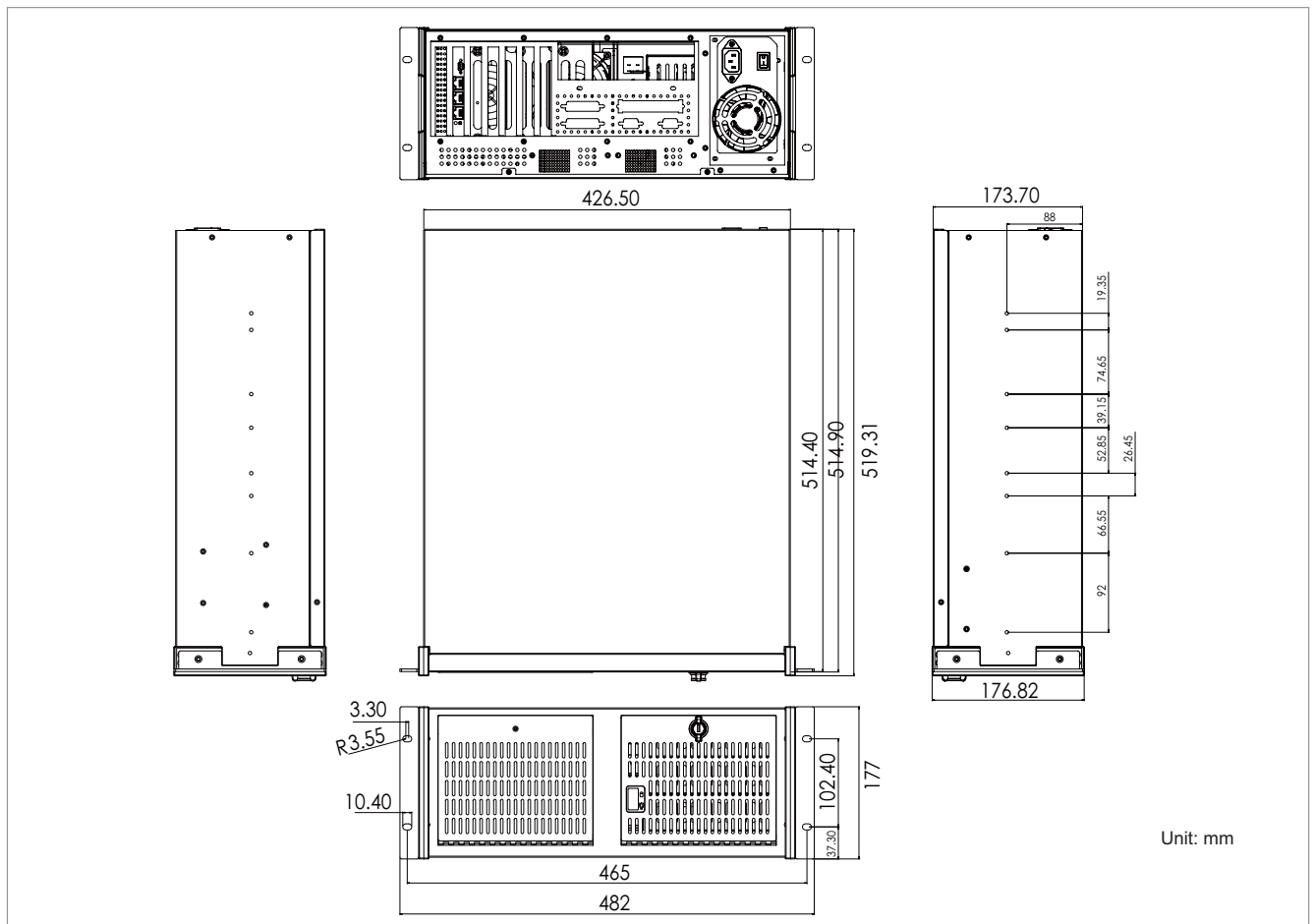
Maximum output	460W
Output Voltage & Current	+5V@20A; +12V@32A; +3.3V@22A, -12V@0.5A, +5Vsb@2.5A
Input Voltage	90V ~ 264V AC selectable
Input Frequency	47 ~ 63Hz
Input Current	6A@115V, 3V@230V
Efficiency	> 70%
MTBF	100,000 hrs at 25°C
EMI & Safety Approval	UL, TUV, CE, FCC
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -40 ~ 60°C, 5 ~ 95%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 +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
<ul style="list-style-type: none"> <li>■ A lockable front door with acrylic windows</li> </ul>	<ul style="list-style-type: none"> <li>■ Good for dust-proof &amp; Running status visible</li> </ul>
<ul style="list-style-type: none"> <li>■ One power on/off switch with LED indicator, one reset and one K/B lock switches inside the lockable door</li> </ul>	<ul style="list-style-type: none"> <li>■ Avoid accidental reset for better running security</li> </ul>
<ul style="list-style-type: none"> <li>■ Front replaceable air filter</li> </ul>	<ul style="list-style-type: none"> <li>■ For installing dual systems and redundant power supplies more easily</li> </ul>
<ul style="list-style-type: none"> <li>■ Two USB ports on the front panel</li> </ul>	<ul style="list-style-type: none"> <li>■ For easy access</li> </ul>
<ul style="list-style-type: none"> <li>■ Two ball-bearing cooling fans</li> </ul>	<ul style="list-style-type: none"> <li>■ Better ventilation to provide the system with higher reliability</li> </ul>
<ul style="list-style-type: none"> <li>■ Enhanced drive bracket to hold 3 x 5.25" + 4 x 3.5" drives (internal)</li> </ul>	<ul style="list-style-type: none"> <li>■ For integrating varied systems with higher flexibility</li> </ul>
<ul style="list-style-type: none"> <li>■ Shock-resistant cushion for the drive bracket</li> </ul>	<ul style="list-style-type: none"> <li>■ Suitable for installing RAID and CD-ROM drive</li> </ul>
<ul style="list-style-type: none"> <li>■ Two adjustable positions for hold-down card retainers</li> </ul>	<ul style="list-style-type: none"> <li>■ For fixing all the cards more flexibly and tightly</li> </ul>
<ul style="list-style-type: none"> <li>■ Changeable modularized back panel for 14-slot ISA/PICMG backplane or ATX M/B</li> </ul>	<ul style="list-style-type: none"> <li>■ Only one minutes to change the back panel</li> <li>■ Easy to change to different backplanes and keep stock</li> </ul>
<ul style="list-style-type: none"> <li>■ Field replaceable power supply bracket for both normal PS/2 power supply and PS/2 type redundant power supply</li> </ul>	<ul style="list-style-type: none"> <li>■ Only three minutes to change the defective power supply</li> <li>■ Only 30 seconds to change the defective PSU module</li> </ul>

### ENGINEERING DRAWING



# AREMO-6163 6-slot full-size industrial node chassis (Shoe-box)



## 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 420.8(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 PISA bus PICMG backplane PBP-06P4: 6-slot (4xPCI) PICMG backplane PBP-06P3: 6-slot (3xPCI) PICMG backplane

## POWER SUPPLY

### ORION-D3501P optional

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
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -40 ~ 70°C, 10 ~ 90%RH
Dimension (WxDxH)	150x140x86 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

# AREMO-6163

6-slot full-size industrial node chassis  
(Shoe-box)

FEATURE	BENEFITS
<ul style="list-style-type: none"> <li>5.25" drive space for CD-ROM or mobile rack</li> </ul>	<ul style="list-style-type: none"> <li>Easy to install software</li> </ul>
<ul style="list-style-type: none"> <li>Two USB ports at the front</li> </ul>	<ul style="list-style-type: none"> <li>Easy to operate the system</li> </ul>
<ul style="list-style-type: none"> <li>One replaceable air filter</li> </ul>	<ul style="list-style-type: none"> <li>Easy cleaning</li> <li>Two USB ports equipped</li> </ul>
<ul style="list-style-type: none"> <li>Can be vertically or horizontally mounted</li> </ul>	<ul style="list-style-type: none"> <li>Easy to fit into different space limited environments</li> </ul>
<ul style="list-style-type: none"> <li>Two adjustable positions for hold-down card retainer</li> </ul>	<ul style="list-style-type: none"> <li>For fixing all the cards more flexibly and tightly</li> </ul>
<ul style="list-style-type: none"> <li>Both 6-slot ISA and PICMG backplane applicable</li> </ul>	<ul style="list-style-type: none"> <li>Easy to change to different backplane and keep in stock</li> </ul>
<ul style="list-style-type: none"> <li>Field replaceable power supply bracket for both normal PS/2 power supply and PS/2 type redundant power supply</li> </ul>	<ul style="list-style-type: none"> <li>Easy maintenance</li> </ul>

## WHAT'S NEW



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

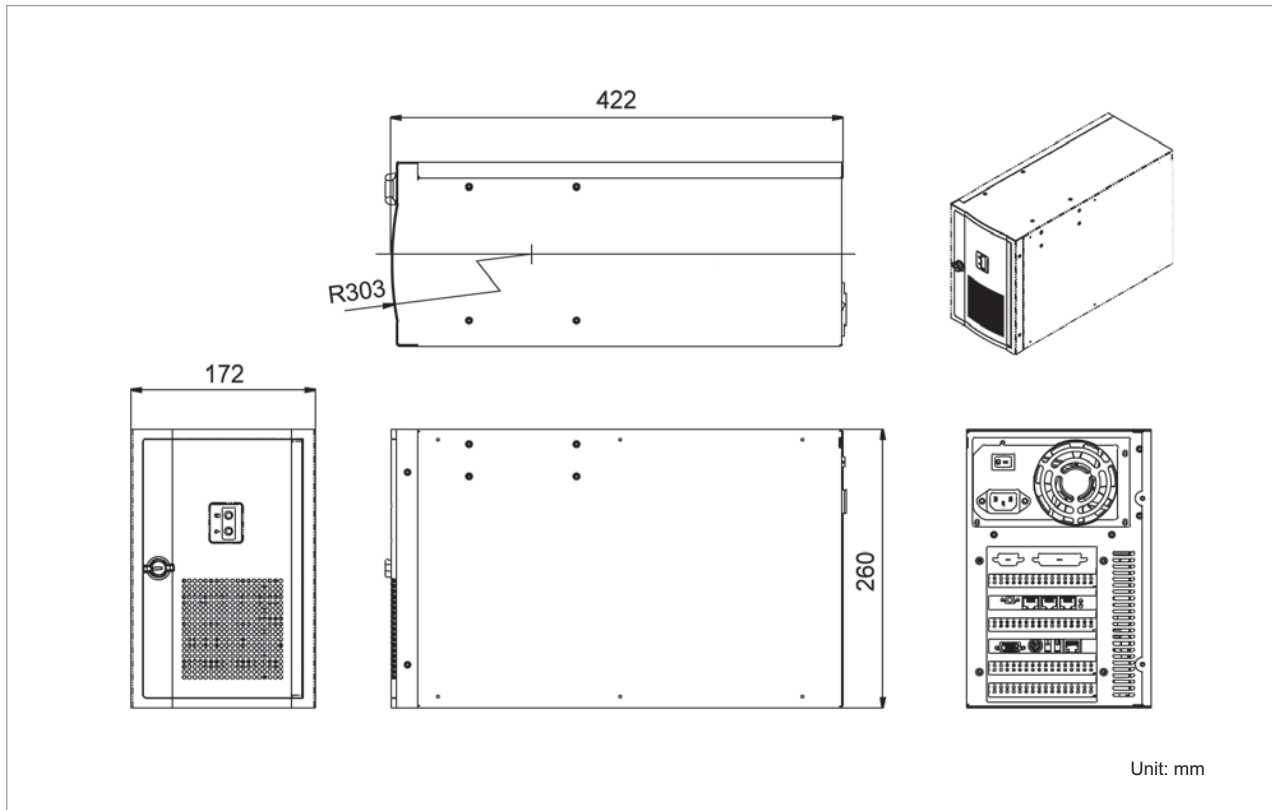


**Plastic Fan Filter**  
For easy cleaning and replace



**New HDD Drive Design**  
Easy to install HDD drives

## ENGINEERING DRAWING



# AREMO-8164

8-slot full-size industrial node chassis  
(Shoe-box)



## 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 8 $\Omega$ 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

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 110%~140%
MTBF	75,145 hrs
EMI & Safety Approval	UL, TUV
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -40 ~ 70°C, 10 ~ 90%RH
Dimension (WxDxH)	150x140x86 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

# AREMO-8164

8-slot full-size industrial node chassis (Shoe-box)

FEATURE	BENEFITS
<ul style="list-style-type: none"> <li>5.25" drive bays for CD-ROM or mobile rack</li> </ul>	<ul style="list-style-type: none"> <li>Easy to install software and mirror disk (RAID 1)</li> </ul>
<ul style="list-style-type: none"> <li>Two USB ports on the front panel</li> </ul>	<ul style="list-style-type: none"> <li>Easy to operate the system</li> </ul>
<ul style="list-style-type: none"> <li>One replaceable air filter</li> </ul>	<ul style="list-style-type: none"> <li>Easy cleaning</li> </ul>
<ul style="list-style-type: none"> <li>Can be vertically or horizontally mounted</li> </ul>	<ul style="list-style-type: none"> <li>Easy to fit into different space limited environments</li> </ul>
<ul style="list-style-type: none"> <li>Two adjustable positions for hold-down card retainer</li> </ul>	<ul style="list-style-type: none"> <li>For fixing all the cards more flexibly and tightly</li> </ul>
<ul style="list-style-type: none"> <li>Both 8-slot ISA and PICMG backplane applicable</li> </ul>	<ul style="list-style-type: none"> <li>Easy to change to different backplane and keep in stock</li> </ul>
<ul style="list-style-type: none"> <li>Field replaceable power supply bracket for both normal PS/2 power supply and PS/2 type redundant power supply</li> </ul>	<ul style="list-style-type: none"> <li>Easy maintenance</li> </ul>

## WHAT'S NEW



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

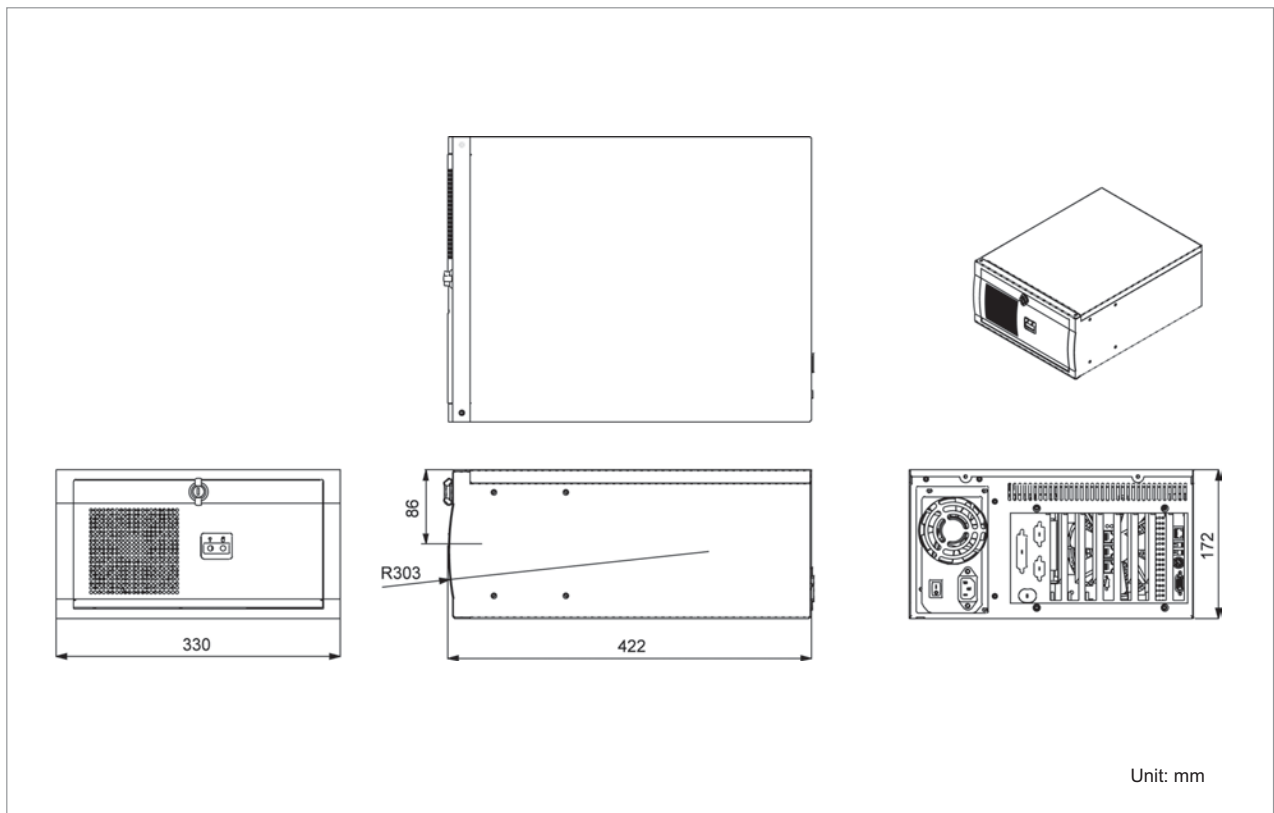


**Plastic Fan Filter**  
For easy cleaning and replacing



**Excellent Cooling System**  
New slot cover for better ventilation

## ENGINEERING DRAWING



# AREMO-4184

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



AREMO-4184

## 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-4184-06P4-350X/B**  
Two sets of AREMO-6182 with rack-mount kit, 6-slot (3xPCI) PICMG backplane and 350W 1U ATX, active PFC power supply
- **AREMO-6182-06P4-350X/B**  
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 (each system) Internal: 3.5" x1 (each system)
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 $\Omega$ 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

## POWER SUPPLY

### FSP350-601UA optional

Input Voltage	90V ~ 135V, 180V ~ 265V AC
Input Frequency	47 ~ 63 Hz
Input Current	6A@115V, 3A@230V
Efficiency	> 65%
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)	150x140x86 mm; 5.9"x5.5"x3.4"

## 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
<ul style="list-style-type: none"> <li>One 5.25" drive bay for EZDRV</li> </ul>	<ul style="list-style-type: none"> <li>For both CD-ROM and FDD support or Hot-swappable HDD</li> </ul>
<ul style="list-style-type: none"> <li>Front replaceable air filter</li> </ul>	<ul style="list-style-type: none"> <li>Easy cleaning &amp; replacing</li> </ul>
<ul style="list-style-type: none"> <li>Two adjustable positions for hold-down card retainer</li> </ul>	<ul style="list-style-type: none"> <li>For fixing all the cards more flexibly and tightly</li> </ul>
<ul style="list-style-type: none"> <li>Both 6-slot ISA and PICMG backplane applicable</li> </ul>	<ul style="list-style-type: none"> <li>Easy to change to different backplane and keep in stock</li> </ul>
<ul style="list-style-type: none"> <li>350W micro-ATX power supply</li> </ul>	<ul style="list-style-type: none"> <li>Save the space inside the chassis</li> </ul>
<ul style="list-style-type: none"> <li>Special kit to combine dual systems into 4U space</li> </ul>	<ul style="list-style-type: none"> <li>Can be integrated as a fault tolerant system</li> </ul>

## WHAT'S NEW



### Special Configuration with EZDRV

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



### Easy to Mount

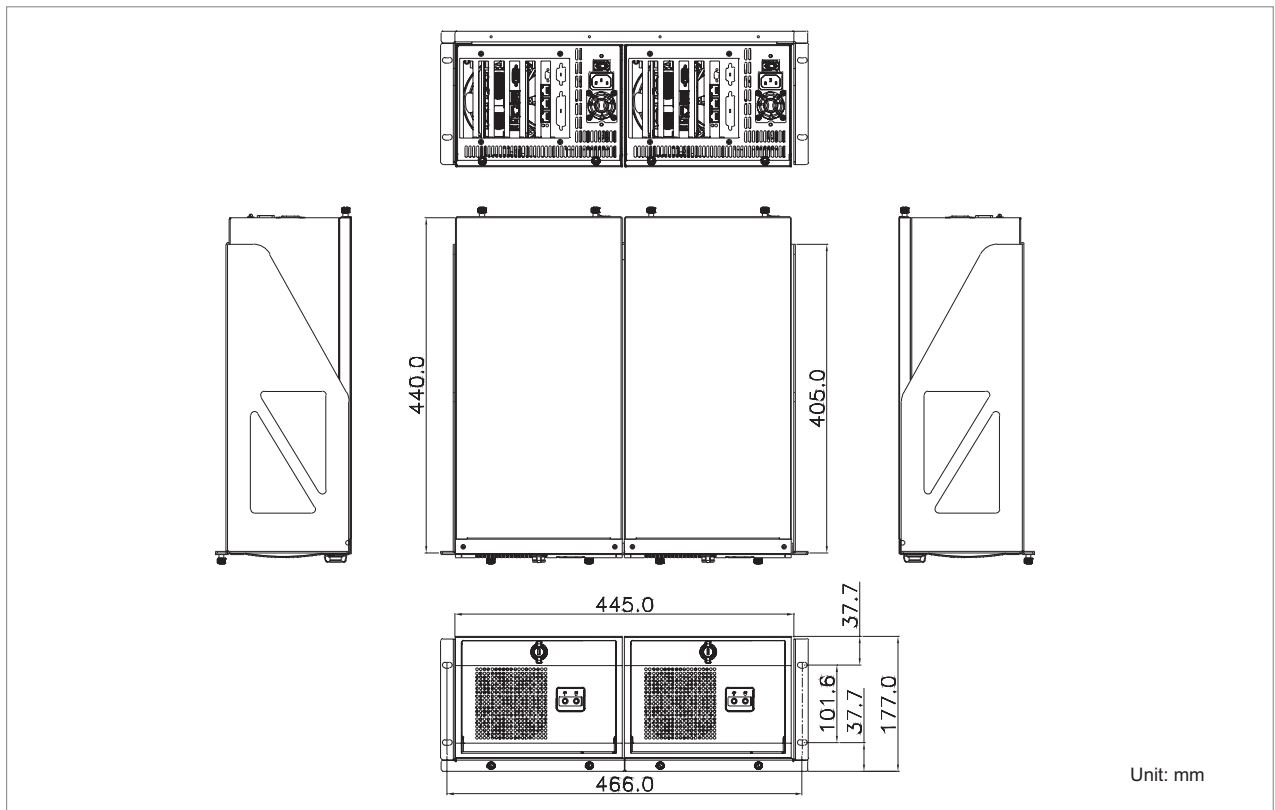
AREMO-6182 can be easily mounted on the supporter



### Two become One

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

## ENGINEERING DRAWING



# AREMO-6182

6-slot full-size industrial node chassis  
(Shoe-box)



## 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 $\Omega$ 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: 8.5 kg (18.7 lb); Gross: 9.5 kg (20.9 lb)
Backplane	6-slot PISA bus PICMG backplane

## POWER SUPPLY

FSP350-601UA optional

Input Voltage	90V ~ 132V, 180V ~ 265V AC
Input Frequency	47 ~ 63 Hz
Input Current	6A@115V, 3A@230V
Efficiency	> 65%
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)	150x140x86 mm; 5.9"x5.5"x3.4"

## 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-6182

6-slot full-size industrial node chassis  
(Shoe-box)

FEATURE	BENEFITS
<ul style="list-style-type: none"> <li>5.25" drive bay for CD-ROM or mobile rack</li> </ul>	<ul style="list-style-type: none"> <li>Easy to install software and mirror disk (RAID 1)</li> </ul>
<ul style="list-style-type: none"> <li>One replaceable air filter</li> </ul>	<ul style="list-style-type: none"> <li>Easy to operate the system</li> </ul>
<ul style="list-style-type: none"> <li>Can be vertically or horizontally mounted</li> </ul>	<ul style="list-style-type: none"> <li>For easy cleaning</li> </ul>
<ul style="list-style-type: none"> <li>Two adjustable positions for hold-down card retainer</li> </ul>	<ul style="list-style-type: none"> <li>Easy to fit into different space limited environment</li> </ul>
<ul style="list-style-type: none"> <li>Both 6-slot ISA and PICMG backplane applicable</li> </ul>	<ul style="list-style-type: none"> <li>For fixing all the cards more flexibly and tightly</li> </ul>
<ul style="list-style-type: none"> <li>Field replaceable power supply bracket for both normal PS/2 power supply and PS/2 type redundant power supply</li> </ul>	<ul style="list-style-type: none"> <li>Easy to change to different backplane and keep stock</li> </ul>
<ul style="list-style-type: none"> <li>Field replaceable bracket for both normal PS/2 and redundant power supply</li> </ul>	<ul style="list-style-type: none"> <li>For ease of maintenance</li> </ul>
<ul style="list-style-type: none"> <li>Removable fan kit</li> </ul>	<ul style="list-style-type: none"> <li>Easy to replace the broken fan</li> </ul>

## WHAT'S NEW



### Removable Fan Kit

Easy to replace the fan when broken



### Can be Mounted in Different Styles

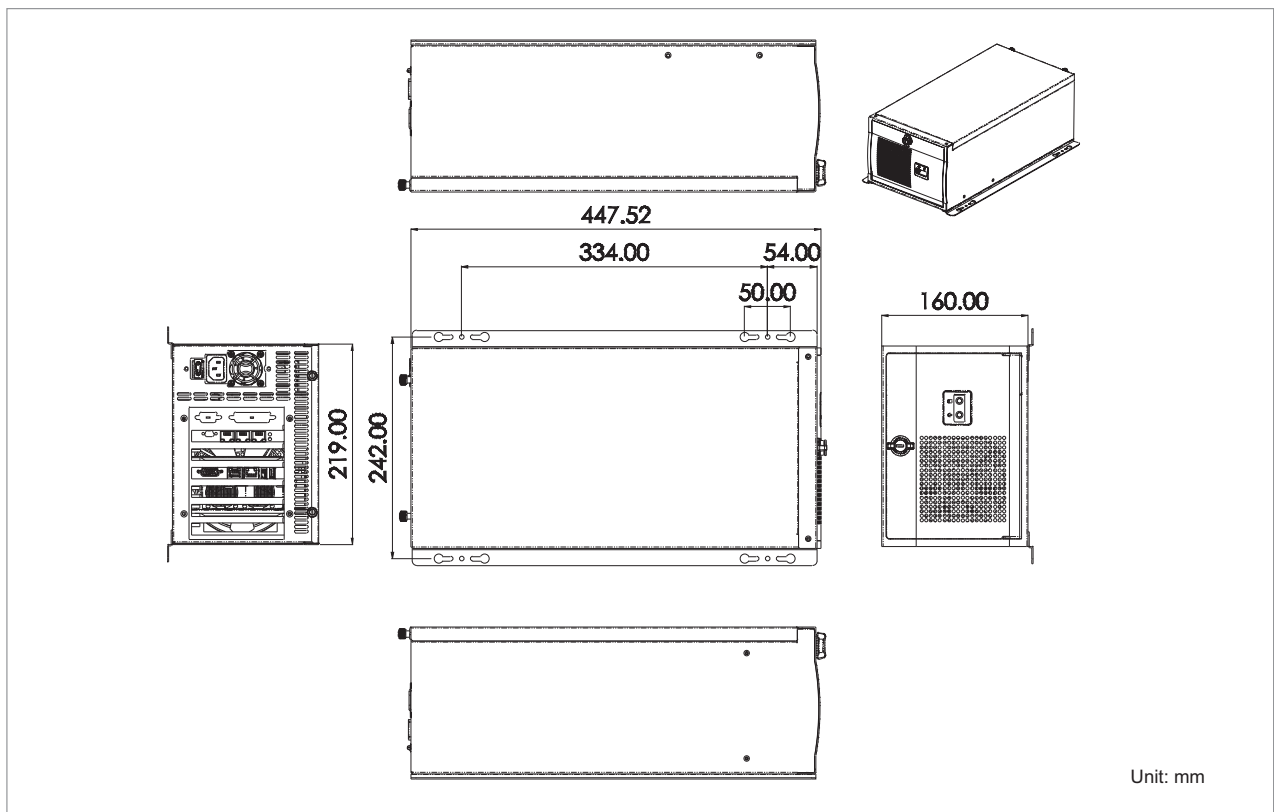
AREMO-6182 can be either vertically or horizontally installed



### Dual Card Retainers

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

## ENGINEERING DRAWING





### FEATURES

- One NB CD-ROM, one NB FDD and one 3.5" HDD drive bays
- Can be vertically or horizontally mounted, easy to fit into space limited environment
- Replaceable air filter for easy cleaning
- One power on/off switch protection cap and one touchfree reset for secure access
- Two front accessible USB ports
- Wall-mounting bracket equipped
- One 12cm ball-bearing cooling fan provides better ventilation to enhance the system reliability
- Built-in 150W ATX active PFC power supply

### ORDERING GUIDE

- **PNC-5063-05P-150X**  
6-slot node chassis with 5-slot PCI backplane, 150W ATX active PFC, power supply, 24X NB CD-ROM and NB FDD

### GENERAL

Construction	Heavy-duty steel
Drive Bay	External: NB CD-ROM x1 + NB FDD x1 (devices built in) Internal: 3.5" HDD x1
Air Filter	One replaceable air filter at the front door
Cooling Fan	One 12cm ball-bearing fan
Indicator	HDD x1
Switch	Power on/off (with a protection cap) x1, System reset x1
Speaker	One 8 $\Omega$ speaker
Connector	Two USB ports on the front panel
Standard Color	Industrial dark gray
Dimension	196(W) x 262(D) x 196(H) mm; 7.7"(W) x 10.3"(D) x 7.2"(H)
Weight	Net: 6.5 kg (14.3 lb); Gross: 7 kg (15.4 lb)
Backplane	PBP-05P: 5-slot PCI backplane

### POWER SUPPLY

#### ORION-A1501

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 @25°C
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 to 110%~160%
MTBF	84,228 hrs
EMI & Safety Approval	UL, CSA, TUV, FCC, CE
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 90%RH Storage: -20 ~ 70°C, 5 ~ 95%RH
Dimension (WxDxH)	150x140x86 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

- Four external 3.5" HDD drive bays
- One PCI expansion slot
- Three 4cm ball-bearing cooling fans for better ventilation
- Adopt standard micro-ATX M/B
- Support Hot-swappable mobile rack
- Easy maintenance and installation

## GENERAL

Construction	Heavy-duty steel
Drive Bay	Internal: 3.5" HDD x4
Cooling Fan	One 4cm ball-bearing fan
Indicator	Power on/off x1, HDD x1
Switch	Power on/off x1, System reset x1
Speaker	One 8 $\Omega$ speaker
Connector	Two USB ports on the front panel
Standard Color	Silver
Dimension	432(W) x 510(D) x 44(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)

## ORDERING GUIDE

- **PRS-1174-MX-270X**  
1U barebone RAID server with four drive bays, 270w active PFC power supply

## POWER SUPPLY

### FSP270-50PLA optional

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	10A@250V
Efficiency	> 68%
Holdup Time	17 ms. at full load @25°C
Over Voltage Protection	+5V@5.7~6.5V; +3.3V@3.7~4.5V; +12V@13.3~+5.6V
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, 10 ~ 90%RH
Dimension (WxDxH)	150x81.6x40.6 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

- 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

### 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	480.4(W) x 474(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"

### ORDERING GUIDE

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

### 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

# 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

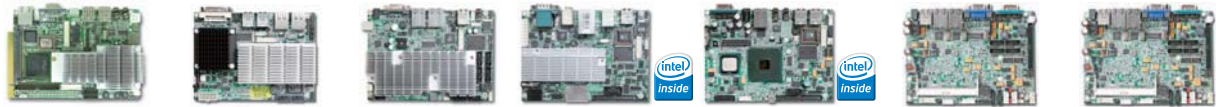
- **EZDRV-400DR**  
5.25" compact drive bracket with slim type DVD-ROM, SD/CF reader, 2 USB ports and space for 2.5" HDD
- **EZDRV-400DRW**  
5.25" compact drive bracket with slim type DVD-RW, SD/CF reader, 2 USB ports and space for 2.5" HDD

## ENVIRONMENT

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



# ESB Reference Table

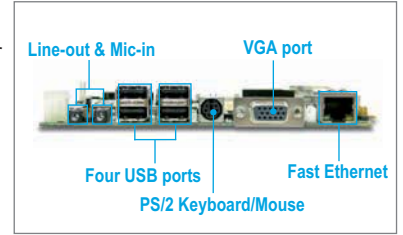
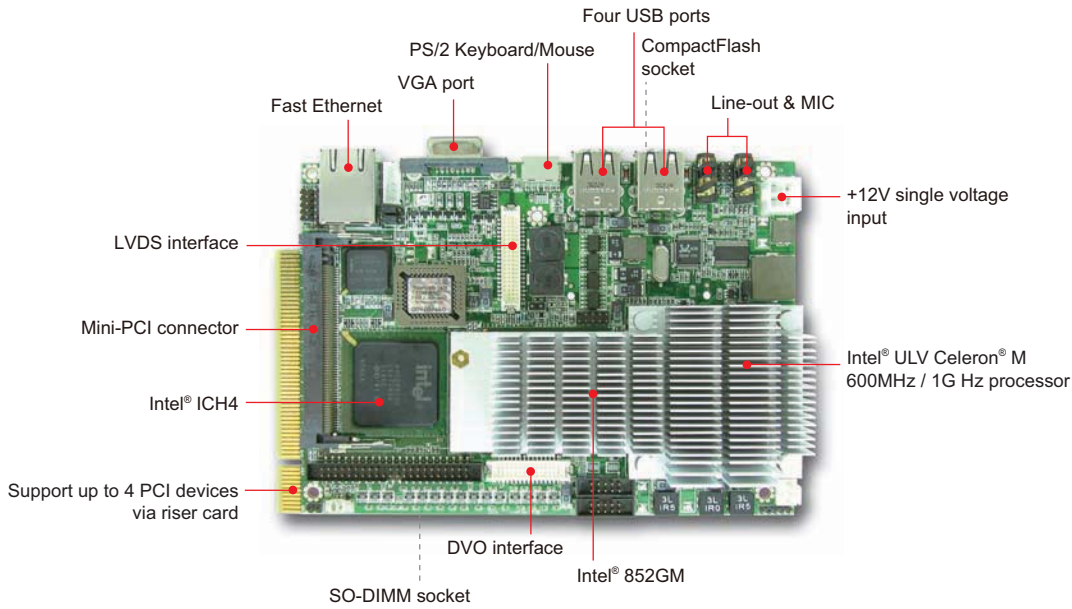


MODEL	PEB-2731VLA	PEB-2130	PEB-2131VG2A	PEB-2737VLA	PEB-2738	PEB-2780	PEB-2770
<b>Form Factor</b>	3.5" Floppy-size	3.5" Embedded	3.5" Embedded	3.5" Embedded	3.5" Embedded	3.5" Embedded	3.5" Embedded
<b>CPU</b>	Ultra Low Voltage Intel® Celeron® M	Intel® Celeron® M	Intel® ATOM™ N270	Intel® ATOM™ Z510 / Z530	Intel® ATOM™ Z510PT / Z520PT	Intel® ATOM™ processor N450	Intel® ATOM™ processor D510
<b>Chipset</b>	852GM + ICH4	910GML E + ICH6-M	945GSE + ICH7-M	US15W	US15WPT	Intel® ICH8M	Intel® ICH8M
<b>FSB</b>	400MHz	400MHz	533MHz / 667MHz	400MHz / 533MHz	400MHz / 533MHz	1.6GHz	1.6GHz
<b>Max Memory</b>	One SO-DIMM / 1GB	One SO-DIMM / 1GB	One SO-DIMM / 2GB	One SO-DIMM / 2GB	One SO-DIMM / 2GB	One SO-DIMM/2GB	One SO-DIMM/2GB
<b>Memory Chip Type</b>	DDR	DDR2	DDR2	DDR2	DDR2	DDR2	DDR2
<b>Display</b>	VGA / LVDS / DVO	DVI-I / LVDS	VGA / LVDS	VGA / LVDS	SDVO / LVDS	VGA/18bit LVDS	VGA/18bit LVDS
<b>Expansion Interface</b>	4 PCI master expansion via riser card / One Mini-PCI socket	One Mini-PCI Express socket	One Mini-PCI Express socket	N/A	SDVO (with PCI-E x1 + USB) connector / SDIO / TPM header		
<b>LAN</b>	Fast Ethernet x1	GbE x2	GbE x2	GbE x1	GbE x1	Gbe 2	Gbe 2
<b>Serial</b>	RS232 x2	RS232 x1, RS232 / 422 / 485 x1	RS232 x4	RS232 x1, RS232 / 422 / 485 x1	RS232 x1, RS232 / 422 / 485 x1	RS232 3 RS232 / 422 / 485	RS232 3 RS232 / 422 / 485
<b>USB</b>	USB 2.0 x6	USB 2.0 x6	USB 2.0 x7	USB 2.0 x8	USB 2.0 x6	USB 2.0 x6	USB 2.0 x6
<b>SATA</b>	N/A	SATA x2	SATA x2	SATA x2	N/A	SATA x2	SATA x2
<b>IDE</b>	One 44-pin IDE connector	N/A	N/A	One 44-pin IDE connector	One 44-pin IDE connector	One 44-pin IDE connector	One 44-pin IDE connector
<b>SSD</b>	Compact Flash socket x1	Compact Flash socket x1	Compact Flash socket x1	Compact Flash socket x1	Compact Flash socket x1	Compact Flash socket x1	Compact Flash socket x1
<b>Parallel</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Audio</b>	AC'97 2.3	High Definition Audio 2.1 channel	High Definition Audio 2.1 channel	High Definition Audio 2.1 channel	High Definition Audio 2.1 channel	High Definition Audio 2.1 channel	High Definition Audio 2.1 channel
<b>Dimension</b>	154(W) x 104(L) mm; 6.07"(W) x 4.13"(L)	146(W) x 102(L) mm; 5.75"(W) x 4.02"(L)	146(W) x 102(L) mm; 5.75"(W) x 4.02"(L)	146(W) x 102(L) mm; 5.75"(W) x 4.02"(L)	146(W) x 102(L) mm; 5.75"(W) x 4.02"(L)	146(W) x 102(L) mm; 5.75"(W) x 4.02"(L)	146(W) x 102(L) mm; 5.75"(W) x 4.02"(L)
<b>Page</b>	<b>74</b>	<b>75</b>	<b>76</b>	<b>77</b>	<b>78</b>	<b>79</b>	<b>80</b>



# PEB-2731VLA

3.5" Floppy-size, Ultra Low Voltage Intel® Celeron® M processor based Embedded Board with VGA, LCD, LAN and Audio



Rear I/O

## FEATURES

- 3.5" compact computing engine equipped with Ultra Low Voltage Intel® Celeron® M 600MHz/1GHz processor for fanless requirement
- Wireless application can be accomplished by adding Mini-PCI form factor wireless adapter
- Display interface cover VGA, LVDS and DVO to fulfill common graphic needs
- Gold finger along short edge of board allows up to four PCI devices expansion that increases capability of the platform
- +12V powered embedded board makes the platform smaller and lighter with portable power adapter
- Equipped IrDA port enables wireless platform remote control

## GENERAL

Processor	CPU & Package: Ultra Low Voltage Intel® Celeron® M processor FSB: 400MHz
Chipset/Core Logic	Intel® 852GM and ICH4
System Memory	Up to 1GB DDR 266/200 SDRAM on one 200-pin SODIMM socket
BIOS	Award BIOS
SSD	- One Type II CF socket - On secondary EIDE channel
Storage Devices	One 44-pin IDE connector
Watchdog Timer	Yes
Expansion Interface	- 4 PCI master expansion via riser card - One Mini-PCI socket
Hardware Monitoring	Voltage, Fan, Temperature
Power Requirement	+12V only
Dimension	Dimension : 105.0(W) x 154.3(L) mm; 4.13"(W) x 6.07" (L)
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing

## ORDERING GUIDE

<b>Standard</b>	<b>PEB-2731VLA</b> 3.5" Floppy-size, Ultra Low Voltage Intel® Celeron® M 600MHz processor based Embedded Board with VGA, LCD, LAN and Audio
<b>Optional</b>	<b>PEB-2731VLA-1G-Z</b> 3.5" Floppy-size, Ultra Low Voltage Intel® Celeron® M 1GHz processor based Embedded Board with VGA, LCD, LAN and Audio

## I/O

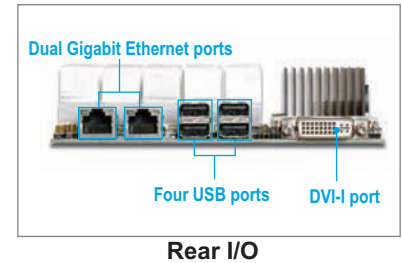
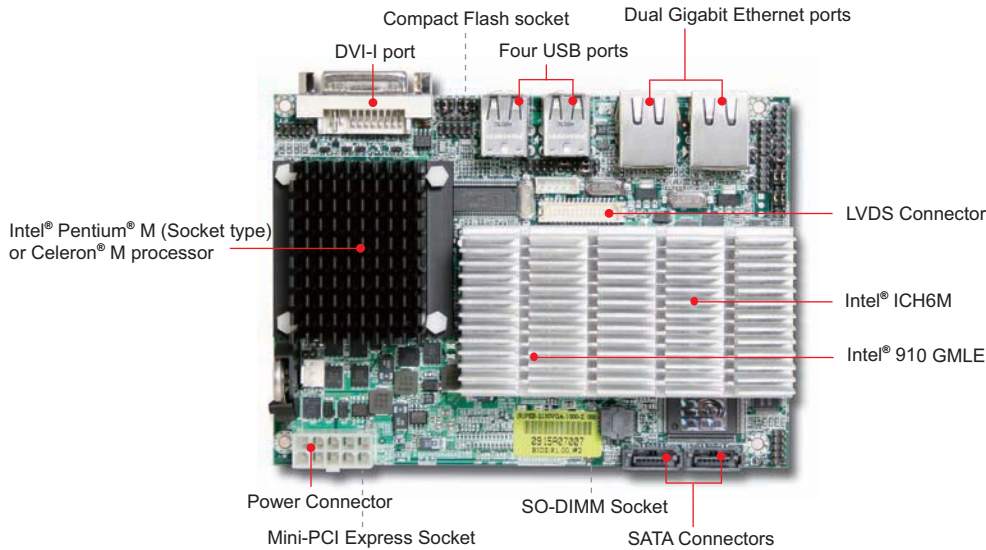
MIO	RS232 x2
IrDA	Yes (shared with one RS232)
Ethernet	10 BASE-T/100 BASE-TX Fast Ethernet (Intel® 82562EZ)
Audio	AC'97 2.3 Audio
USB	USB 2.0 x 6 (Four ports at rear I/O panel; dual ports internal)
Keyboard & Mouse	PS/2 Keyboard/Mouse

## DISPLAY

Graphic Controller	Intel® 852GM mobile optimized graphics controller
Graphic Memory	Dynamically allocates 32/64MB system memory for display
Display Interface	Support VGA, LVDS and DVO ports

# PEB-2130

3.5" Embedded size, Intel® Pentium® M or Celeron® M processor based on Embedded Board with DVI, LVDS, Dual Gigabit Ethernet, Audio and USB



## FEATURES

- Intel® Pentium® M or Celeron® M in Micro-FCPGA/FCBGA package
- One 200-pin SO-DIMM supports DDR2 SDRAM up to 1GB
- One Type II Compact Flash and two SATA ports
- Dual independent display: DVI and 18bit LVDS
- On board dual Gigabit Ethernet
- Wireless application can be accomplished by adding Mini-PCI Express form factor wireless adapter

## PACKING LIST

- ATX Power cable x1
- CPU heatsink x1
- Utility CD x1

## ORDERING GUIDE

<b>Standard</b>	<b>PEB-2130VGA-1000-Z</b> 3.5" ESB based on Intel® Celeron® M 1GHz processor with DVI / LVDS, LAN, COM, USB and Audio
<b>Optional</b>	<b>PEB-2130VGA-600</b> 3.5" ESB based on Intel® Celeron® M 600MHz processor with DVI / LVDS, LAN, COM, USB and Audio
	<b>PEB-2130VGA</b> 3.5" ESB based on socket type with DVI / LVDS, LAN, COM, USB and Audio

## SYSTEM

CPU	Intel® Celeron® M or Pentium® M(socket type) processor
Chipset	Intel® 910GMLE and ICH6M
System Memory	One 200-pin SO-DIMM supports DDR2 400 up to 1GB
BIOS	Award
SSD	Type II CompactFlash socket
Storage Devices	One CF socket and two SATA ports
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Expansion Interface	One Mini-PCI Express socket
Hardware Monitoring	- FAN Speed (CPU and System) - Temperature (CPU and System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V) - Support case open function
Power Requirement	ATX compliant power
Dimension	146(W) x102(L) mm; 5.75"(W) x 4.0"(L)
Environment	Operation temperature: 0~55°C Storage temperature: -20~80°C Operation humidity: 5~95%, non-condensation

## I/O

MIO	SATA x2, RS232 x1 and RS232/422/485(selectable) x1, 8-bit Digital I/O x1
Ethernet	Dual Gigabit Ethernet (Realtek RTL 8111B)
Audio	Mic in, Line out
USB	4 x USB 2.0 ports & 2 x USB 2.0 with header
Keyboard & Mouse	PS/2 Keyboard & Mouse (Header)

## OPTIONAL

Part No.	QTY	Description
B2900260	1	SATA cable

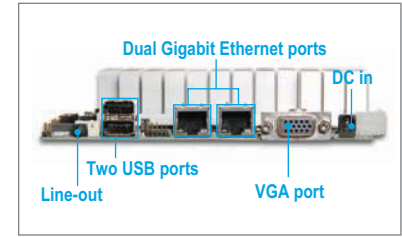
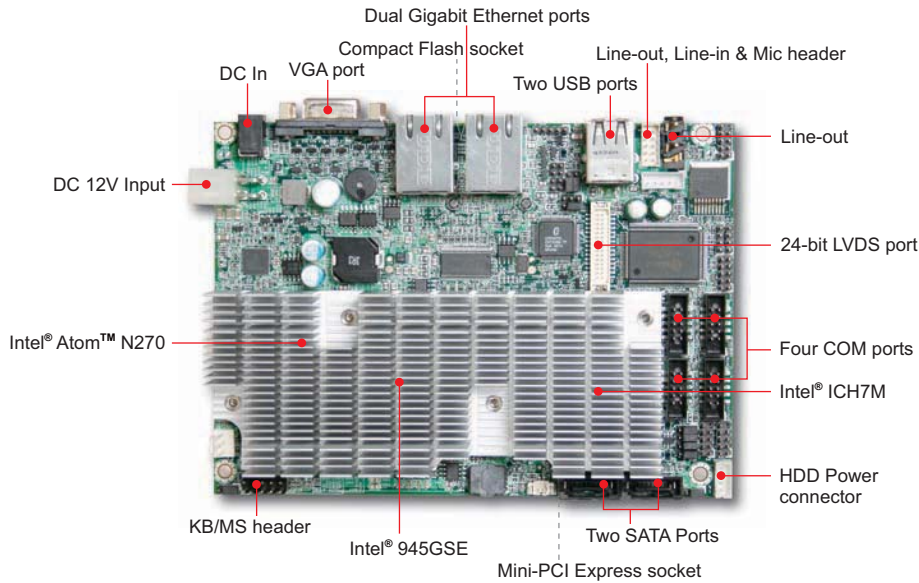
## DISPLAY

Graphic Controller	Intel® 910GMLE GMA900
Graphic Memory	Intel® DVMT 3.0 supports up to 128MB video memory
Display Interface	DVI (Chrontek 7307C) / 18bit LVDS



# 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



Rear I/O

## FEATURES

- Intel® Atom™ N270 and 945GSE platform that provides cost effective solution technology
- SATA and CF interface provide best cost effective storage for market
- Support one SODIMM socket and up to 2GB memory size
- Mini-PCI Express and power COM ports bring flexible usage model
- 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

## PACKING LIST

- 3 in 1 Heatsink x1
- SATA cable x1
- SATA power cable x1
- Utility CD x1

## ORDERING GUIDE

Standard	PEB-2131VG2A (R), PEB-2131VG2A, ESB, N270, 945GSE, ICH7-M, w/ DDR2 SDRAM/GA/LVDS/Dual GbE/Audio
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## OPTIONAL

Part No.	QTY	Description
B6901970	1	USB cable
B7866130	1	COM port cable

## SYSTEM

CPU	Intel® Atom™ N270 1.6GHz in FCBGA package FSB: 533MHz
Chipset	Intel® 945GSE and ICH7-M
System Memory	Up to 2GB DDR2 533 SDRAM on one SODIMM socket
BIOS	Award
SSD	CF: Support one Compact Flash socket
Storage Devices	SATA: Support two SATA 150 drives
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
Expansion Interface	One Mini-PCI Express socket
Hardware Monitoring	FAN Speed(System), Temperature (CPU and System) Vcore, 12V, 5V, 3.3V, VBAT
Power Requirement	12V DC In
Dimension	146(L) x102(W) mm; 5.75"(L) x 4.0"(W)
Environment	Operation temperature: 0~60°C Storage temperature: -20~80°C Operation humidity: 5~95%, non-condensation

## I/O

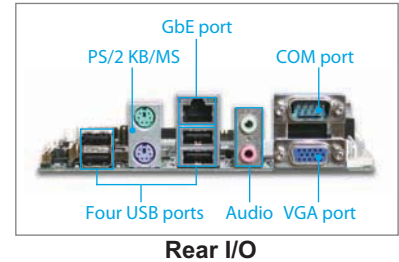
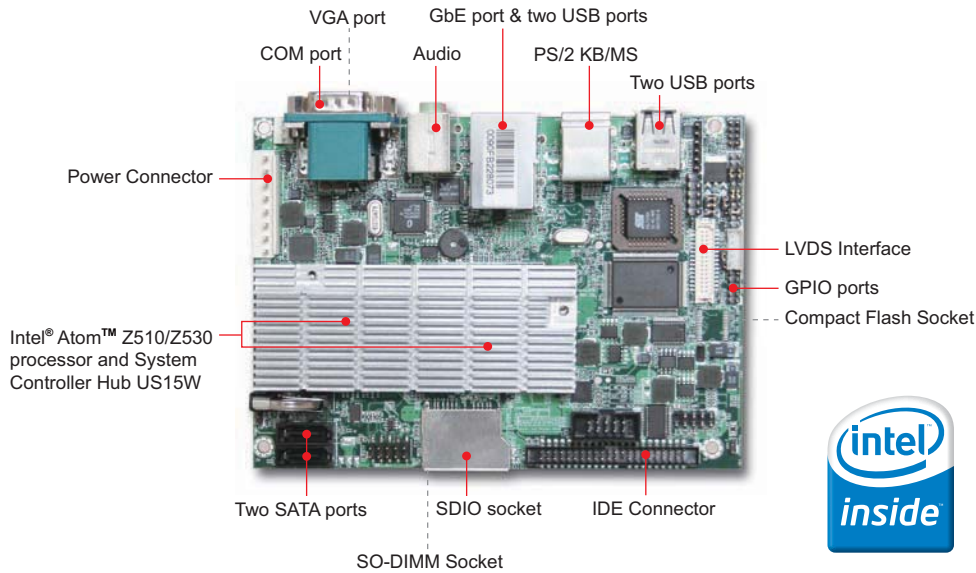
MIO	Two SATA ports and RS232 x4 with power as pin header type
Ethernet	Two Gigabit Ethernet with RJ45 connectors, IEEE802.3 10/100/1000 BASE-T Compliant (Realtek RTL 8111D)
Audio	High Definition Audio with Audio Amplifier (one Line-out jack and Line-out/Line-in/Mic-in header)
USB	USB 2.0 x 2 ports & USB 2.0 with header x5
Keyboard & Mouse	PS/2 Keyboard & Mouse with on board pin header

## DISPLAY

Graphic Controller	Intel® 945GSE integrated Graphics Media Accelerator (Intel® GMA 950)
Graphic Memory	Dynamic share system memory up to 224MB (Intel® DVMT 3.0) or static share System memory up to 128MB
Display Interface	- Support CRT, 18bit/24bit LVDS (Chrontel 7308B-TF), display interfaces - CRT display resolution up to 2048x1596 @ 85Hz refresh

# PEB-2737VLA

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



## FEATURES

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

## PACKING LIST

- ATX Power cable x1
- CPU heatsink x1
- Utility CD x1

## ORDERING GUIDE

<b>Standard</b>	<b>PEB-2737VLA-1100</b> 3.5" ESB based on Intel® Atom™ 1.1G processor with processor with VGA/LVDS, LAN, COM, USB and Audio
<b>Optional</b>	<b>PEB-2737VLA-1600</b> 3.5" ESB based on Intel® Atom™ 1.6G processor with VGA/LVDS, LAN, COM, USB and Audio

## OPTIONAL

Part No.	QTY	Description
B6900262	1	SATA cable
B690004S	1	IDE cable

## SYSTEM

CPU	Intel® Atom processor Z510 / Z530 FSB: 400/533 MHz
Chipset	Intel® System Controller Hub US15W
System Memory	One 200-pin SO-DIMM support DDR2 533/400 up to 2GB
BIOS	AMI
SSD	Type II CompactFlash socket
Storage Devices	One 44-pin IDE connector & two SATA ports
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min
Expansion Interface	N/A
Hardware Monitoring	- Temperature (CPU and System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
Power Requirement	ATX compliant power
Dimension	102(W) x146(L) mm; 4.01"(W) x 5.74"(L)
Environment	Operation temperature: 0~60°C Storage temperature: -20~80°C Operation humidity: 5~95%, non-condensation

## I/O

MIO	IDE x1, SATA x2, RS232/422/485 x2: One DB9 & one pin header, SDIO x1, K/B x1, Mouse x1, GbE x1
Ethernet	One Gigabit Ethernet (Realtek RTL 8111C)
Audio	Mic in, Line out
USB	USB 2.0 x 4 ports & USB 2.0 with header x4

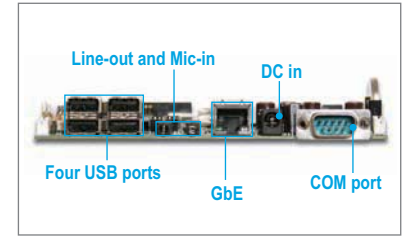
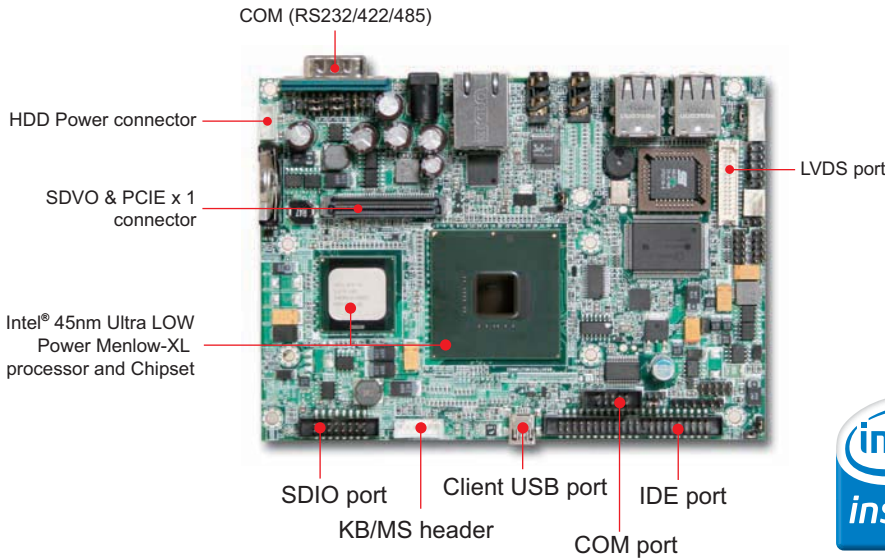
## DISPLAY

Graphic Controller	Intel® System Control Hub US15W integrated graphics
Graphic Memory	Intel® GMA 500
Display Interface	VGA (Chrontel 7317A-TF) / 24bit LVDS



# PEB-2738

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



Rear I/O

## FEATURES

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

## PACKING LIST

- CPU heatsink x1
- Utility CD x1

## ORDERING GUIDE

<b>Standard</b>	<b>PEB-2738IVA-1100</b> 3.5" ESB based on Intel® Atom™ wide temperature 1.1G processor with LVDS/SDVO, COM, USB and Audio
<b>Optional</b>	<b>PEB-2738IVA-1300</b> 3.5" ESB based on Intel® Atom™ wide temperature 1.3G processor with LVDS/SDVO, COM, USB and Audio

## OPTIONAL

Part No.	QTY	Description
B6900262	1	IDE cable
AB9-3050Z	1	SDIO daughter board
AB9-3049Z	1	VGA daughter board

## SYSTEM

CPU	Intel® Atom™ processor Z510P / Z520PT
Chipset	Intel® System Controller Hub US15WPT
System Memory	One 200-pin SO-DIMM support DDR2 533 up to 2GB
BIOS	AMI
SSD	Type II Compact Flash socket
Storage Devices	One 44-pin IDE connector
Watchdog Timer	Programmable via S/W from 1sec. to 255min.
Expansion Interface	- SDVO/PCI-E x1/USB signals on one connector for daughter board - SDIO header
Hardware Monitoring	- Temperature (CPU and System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
Power Requirement	DC 12V input
Dimension	102(W) x146(L) mm; 4.01"(W) x 5.7"(L)
Environment	- PEB-2738I Operation temperature: -40~80°C Storage temperature: -40~80°C Operation humidity: 5~95%, non-condensing

## I/O

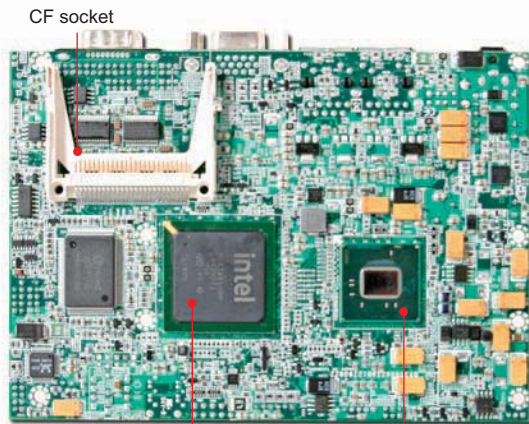
MIO	IDE x1, One RS232/422/485 selectable at rear IO and one RS232 internal, SDIO pin header x1, SDVO connector x1, Client USB port x1
Ethernet	One RJ45 Gigabit Ethernet (Intel® 82574IT)
Audio	Line-out and Mic-in
USB	USB 2.0 x 4 & USB 2.0 with header x2
Keyboard & Mouse	One K/B & M/S pin header

## DISPLAY

Graphic Controller	Intel® System Control Hub US15WPT integrated graphics
Graphic Memory	Intel® GMA 500
Display Interface	24bit LVDS / SDVO

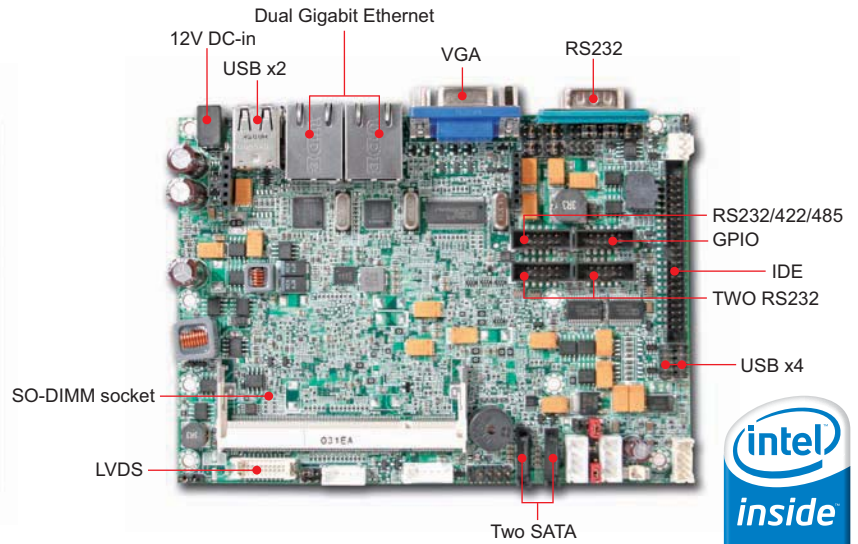
# PEB-2780VG2A

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



Intel® ICH8M

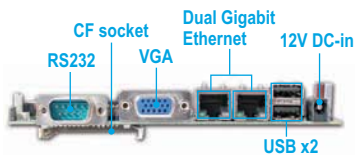
Intel® Atom™ N450



## FEATURES

- Intel® Atom™ processor N450 and ICH8M chipset
- One 200-pin SO-DIMM support DDR2 667 SDRAM up to 2GB
- MPEG2 Decode in HW; independent display: VGA/ 18 bit LVDS
- Dual independent display: VGA/18bit LVDS
- Dual Gigabit Ethernet
- Customization (Extension card): BTB connector with PCIE x1 signal
- Storage: One PATA/One Compact Flash/Two SATA ports
- 12V DC input

## REAR/IO



## PACKING LIST

- CPU heatsink x1
- Utility CD x1
- SATA cable x1
- SATA power cable x1

## ORDERING GUIDE

<b>Standard</b>	<b>PEB-2780VG2A</b> 3.5" Embedded size, Based on Intel 45nm Low Power Pineview processor N450 with DDR2 SODIMM, Dual display by VGA/LVDS, Dual GbE, Audio, COM and USB
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## OPTIONAL

Part No.	QTY	Description
B690004S	1	IDE Cable
B6901970	1	USB Cable
B7866130	1	COM Cable

## SYSTEM

CPU	Intel® Atom™ processor N450
Chipset	Intel® ICH8M
System Memory	One 200-pin SO-DIMM support DDR2 667 up to 2GB
BIOS	AMI
SSD	Type II CompactFlash socket
Storage Devices	One 44-pin IDE connector and two SATA ports
Watchdog Timer	Programmable via S/W from 1sec. to 255min.
Expansion Interface	One connector with PCIE x1 signal for daughter board
Hardware Monitoring	- Temperature (CPU and System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
Power Requirement	12V DC Input
Dimension	146(L) x 105(W) mm; 5.75"(L) x 4.0"(W)
Environment	Operation temperature: 0~60°C Storage temperature: -20~80°C Operation humidity: 5~95%, non-condensation

## I/O

MIO	One IDE, two SATA ports, four serial ports: One DB9 & three box headers, one CF socket and one PCIE x1 header
Ethernet	Dual RJ45 Gigabit Ethernet
Audio	High Definition Audio with one Line-out/Mic-in header
USB	2 x USB 2.0 ports and 4 x USB 2.0 with header
Keyboard & Mouse	One K/B & M/S pin header

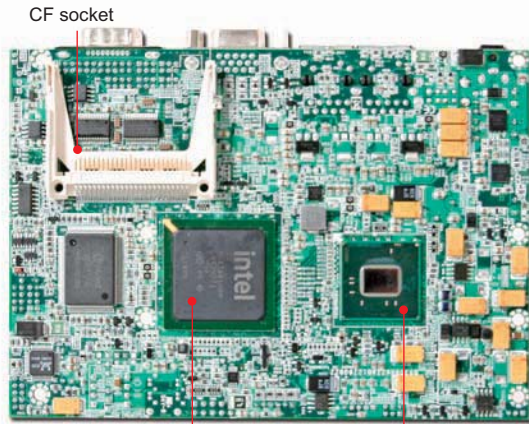
## DISPLAY

Graphic Controller	Intel® Atom™ processor (N450) Integrated Intel® DX9 graphics
Graphic Memory	Intel® Dynamic Video Memory Technology 4.0
Display Interface	18bit LVDS/VGA



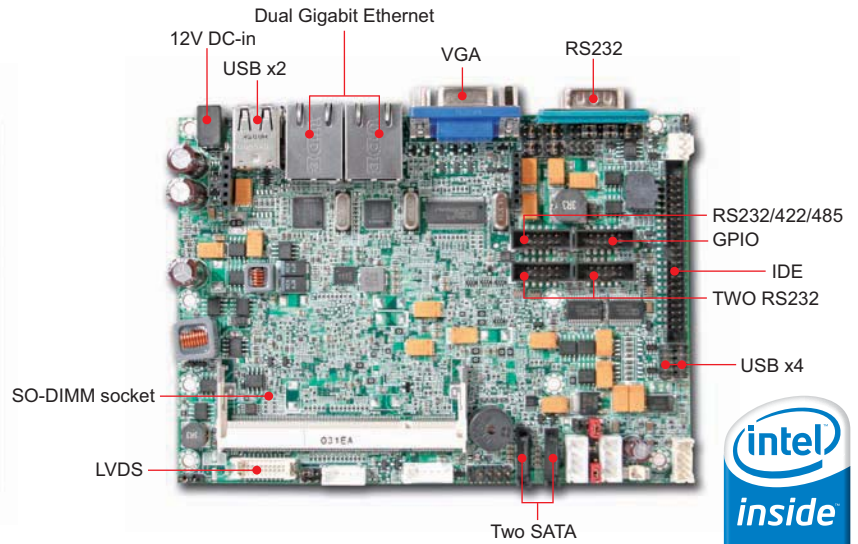
# PEB-2770VG2A

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



Intel® ICH8M

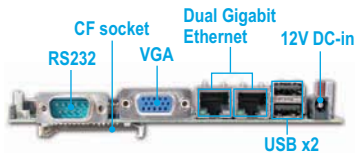
Intel® Atom™ D510



## FEATURES

- Intel® Atom™ processor D510 and ICH8M chipset
- One 200-pin SO-DIMM support DDR2 667 SDRAM up to 2GB
- MPEG2 Decode in HW; independent display: VGA/ 18 bit LVDS
- Dual independent display: VGA/18bit LVDS
- Dual Gigabit Ethernet
- Customization (Extension card): BTB connector with PCIE x1 signal
- Storage: One PATA/One Compact Flash/Two SATA ports
- 12V DC input

## REAR/I/O



## PACKING LIST

- |                    |    |
|--------------------|----|
| ■ CPU heatsink     | x1 |
| ■ Utility CD       | x1 |
| ■ SATA cable       | x1 |
| ■ SATA power cable | x1 |

## ORDERING GUIDE

<b>Standard</b>	<b>PEB-2770VG2A</b> 3.5" Embedded size, Based on Intel 45nm Low Power Pineview processor D510 with DDR2 SODIMM, Dual display by VGA/LVDS, Dual GbE, Audio, COM and USB
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## OPTIONAL

Part No.	QTY	Description
B690004S	1	IDE Cable
B6901970	1	USB Cable
B7866130	1	COM Cable

## SYSTEM

CPU	Intel® Atom™ processor D510
Chipset	Intel® ICH8M
System Memory	One 200-pin SO-DIMM support DDR2 667 up to 2GB
BIOS	AMI
SSD	Type II CompactFlash socket
Storage Devices	One 44-pin IDE connector and two SATA ports
Watchdog Timer	Programmable via S/W from 1sec. to 255min.
Expansion Interface	One connector with PCIE x1 signal for daughter board
Hardware Monitoring	- Temperature (CPU and System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
Power Requirement	12V DC Input
Dimension	146(L) x 105(W) mm; 5.75"(L) x 4.0"(W)
Environment	Operation temperature: 0~60°C Storage temperature: -20~80°C Operation humidity: 5~95%, non-condensation

## I/O

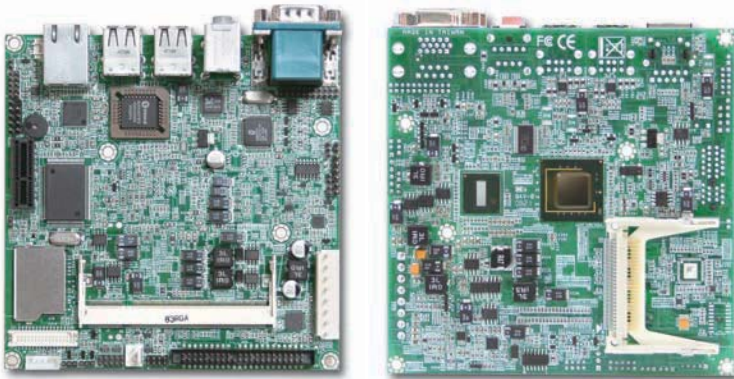
MIO	One IDE, two SATA ports, four serial ports: One DB9 & three box headers, one CF socket and one PCIE x1 header
Ethernet	Dual RJ45 Gigabit Ethernet
Audio	High Definition Audio with one Line-out/Mic-in header
USB	2 x USB 2.0 ports and 4 x USB 2.0 with header
Keyboard & Mouse	One K/B & M/S pin header

## DISPLAY

Graphic Controller	Intel® Atom™ processor (D510) Integrated Intel® DX9 graphics
Graphic Memory	Intel® Dynamic Video Memory Technology 4.0
Display Interface	18bit LVDS/VGA

# NANO-8044

Intel® Ultra Low Power Atom™ Processor based NANO-ITX Board with dual display, Gigabit Ethernet, Audio, USB and SDIO



## FEATURES

- Intel® Atom™ processor Z510 / Z530 and System Controller Hub US15W
- One 200-pin SO-DIMM supports DDR2 SDRAM up to 2GB
- Dual independent display: VGA and 24bit LVDS
- One Type II Compact Flash & one IDE connector
- One Intel® Gigabit Ethernet

NANO-8044 takes advantage of the latest Intel® Atom™ technologies. It supports DDR2 SDRAM, dual displays, one Gigabit Ethernet and one expansion PCI-Express x1 slot. Base

on leading Intel® Atom™ solution, NANO-8044 is a compact and ultra low power dissipation board for Medical, Mobile Gaming and DSS applications.

### SYSTEM

<b>CPU</b>	Intel® Atom™ processor Z510 / Z530
<b>FSB</b>	400/533 MHz
<b>BIOS</b>	AMI BIOS
<b>System Chipset</b>	Intel® System Controller Hub US15W
<b>System Memory</b>	One 200pin SO-DIMM support DDR2 400/533MHz up to 2GB
<b>Storage</b>	- 1x 44 pin IDE - 1 x CF (up to UDMA5 mode) - 1 x SD
<b>Watchdog Timer</b>	Programmable via S/W from 1sec. to 255sec.
<b>H/W Monitor</b>	- Temperature (CPU and System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
<b>GPIO</b>	On board programmable 8-bit Digital I/Os
<b>Expansion</b>	One PCI-Express x1 slot

### On Board I/O

<b>USB</b>	Two USB 2.0 ports, Pitch 2.00mm
<b>Others</b>	One 24 bits LVDS, 8bit GPIO pin header, one SD

### Rear I/O

<b>Serial Port</b>	One RS232/422/485 port
<b>Display</b>	One VGA (by Chrontel CH 7317A)
<b>Gigabit Ethernet</b>	One RJ-45 LAN port
<b>USB</b>	Four USB 2.0 ports
<b>Audio Interface</b>	Line-out and Mic-in

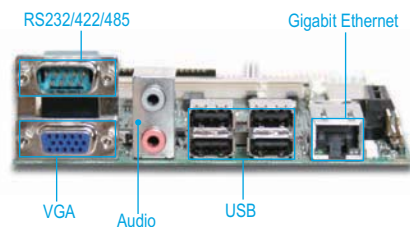
### DISPLAY

<b>Graphic Controller</b>	Intel® System Controller Hub US15W integrated GMA 500 Graphics device
<b>Display Interface</b>	VGA / single channel 24-bit LVDS

### MECHANICAL & ENVIRONMENTAL

<b>Operating Temperature</b>	0~55°C
<b>Storage Temperature</b>	-20~80°C
<b>Operating Humidity</b>	5%~95% non-condensing
<b>Dimension</b>	4.72" x 4.72" (120 mm x 120 mm)

## REAR I/O



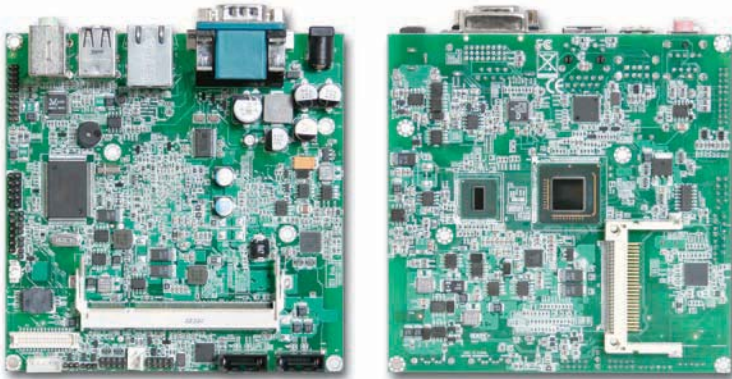
## ORDERING GUIDE

- **NANO-8044-1100**  
Intel® Atom™ processor Z510 Nano-ITX Board
- **NANO-8044-1600**  
Intel® Atom™ processor Z530 Nano-ITX Board
- **PER-4110R**  
One slot PCI-E x1 riser card



# NANO-8045

Intel® Ultra Low Power Atom™ Processor based NANO-ITX Board with dual display, Gigabit Ethernet, Audio, USB and SATA



## FEATURES

- Intel® Atom™ processor Z510 / Z530 and System Controller Hub US15W
- One 200-pin SO-DIMM supports DDR2 SDRAM up to 2GB
- Dual independent display: DVI-D and 24bit LVDS
- One Type II Compact Flash & two SATA ports
- One Realtek Gigabit Ethernet
- Support DC 12V input

NANO-8045 takes advantage of the latest Intel® Atom™ technologies. It supports DDR2 SDRAM, dual displays and one Gigabit Ethernet. Base on leading Intel® Atom™ solution,

NANO-8045 is a compact and ultra low power dissipation board for Medical, Mobile Gaming and DS applications.

### SYSTEM

CPU	Intel® Atom™ processor Z510 / Z530
FSB	400/533 MHz
BIOS	AMI BIOS
System Chipset	Intel® System Controller Hub US15W
System Memory	One 200pin SO-DIMM support DDR2 400/533MHz up to 2GB
Storage	- 2 x SATA II - 1 x CF (up to UDMA5 mode)
Watchdog Timer	Programmable via S/W from 1sec. to 255sec.
H/W Monitor	- Temperature (CPU and System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
GPIO	On board programmable 8-bit Digital I/Os
Expansion	N/A

### On Board I/O

USB	Four USB 2.0 ports, Pitch 2.00mm, one can support client USB
Others	One 24 bits LVDS, 8 bit GPIO pin header, Line-out and Mic-in pin header

### Rear I/O

Serial Port	One RS232 port
Display	One DVI-D (by Chrontel CH7307C)
Gigabit Ethernet	One RJ-45 LAN port
USB	Two USB 2.0 ports
Audio Interface	Line-out and Mic-in

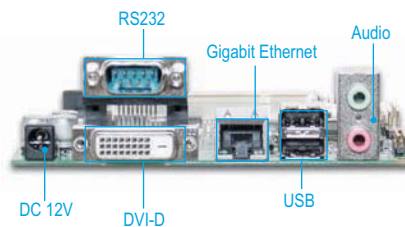
### DISPLAY

Graphic Controller	Intel® System Controller Hub US15W integrated GMA 500 Graphics device
Display Interface	DVI-D / single channel 24-bit LVDS

### MECHANICAL & ENVIRONMENTAL

Operating Temperature	0~60°C
Storage Temperature	-20~80°C
Operating Humidity	5%~95% non-condensing
Dimension	4.72" x 4.72" (120 mm x 120 mm)

## REAR I/O

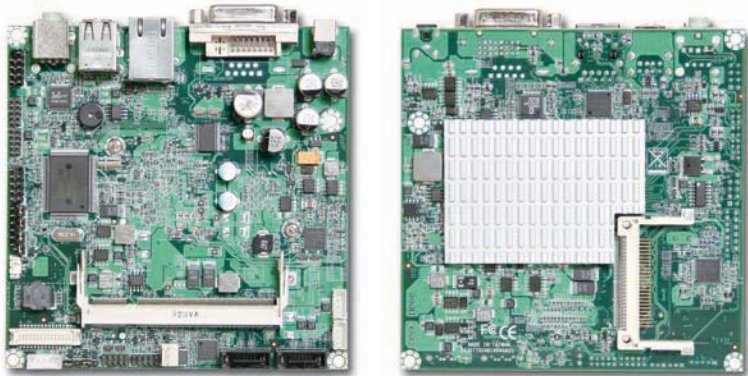


## ORDERING GUIDE

- **NANO-8045-1100**  
Intel® Atom™ processor Z510 Nano-ITX Board
- **NANO-8045-1600**  
Intel® Atom™ processor Z530 Nano-ITX Board

# NANO-8045L

Intel® Ultra Low Power Atom™ Processor based NANO-ITX Board with dual display, Gigabit Ethernet, Audio, USB and SATA



## FEATURES

- Intel® Atom™ processor Z510 / Z530 and System Controller Hub US15W
- One 200-pin SO-DIMM supports DDR2 SDRAM up to 2GB
- Dual independent display: DVI-D and 24bit LVDS
- One Type II Compact Flash & two SATA ports
- One Realtek Gigabit Ethernet
- Support DC 12V input
- Only 17mm height for rear I/O

NANO-8045L takes advantage of the latest Intel® Atom™ technologies. It supports DDR2 SDRAM, dual displays, one Gigabit Ethernet. Base on leading Intel® Atom™ solution,

NANO-8045L is a compact and ultra low power dissipation board for Medical, Mobile Gaming and DS applications.

### SYSTEM

<b>CPU</b>	Intel® Atom™ processor Z510 / Z530
<b>FSB</b>	400/533 MHz
<b>BIOS</b>	AMI BIOS
<b>System Chipset</b>	Intel® System Controller Hub US15W
<b>System Memory</b>	One 200pin SO-DIMM support DDR2 400/533MHz up to 2GB
<b>Storage</b>	- 2 x SATA II - 1 x CF (up to UDMA5 mode)
<b>Watchdog Timer</b>	Programmable via S/W from 1sec. to 255sec.
<b>H/W Monitor</b>	- Temperature (CPU and System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
<b>GPIO</b>	On board programmable 8-bit Digital I/Os
<b>Expansion</b>	N/A

### On Board I/O

<b>USB</b>	Four USB 2.0 ports, Pitch 2.00mm, one can support client USB
<b>Others</b>	One 24 bits LVDS, 8 bit GPIO pin header, Line-out and Mic-in pin header

### Rear I/O

<b>Display</b>	One DVI-D (by Chrontel CH7307C)
<b>Gigabit Ethernet</b>	One RJ-45 LAN port
<b>USB</b>	Two USB 2.0 ports
<b>Audio Interface</b>	Line-out

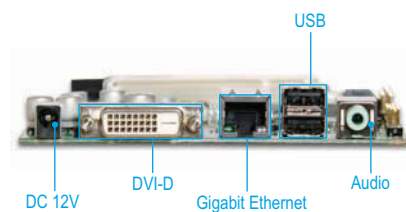
### DISPLAY

<b>Graphic Controller</b>	Intel® System Controller Hub US15W integrated GMA 500 Graphics device
<b>Display Interface</b>	DVI-D / single channel 24-bit LVDS

### MECHANICAL & ENVIRONMENTAL

<b>Operating Temperature</b>	0~60°C
<b>Storage Temperature</b>	-20~80°C
<b>Operating Humidity</b>	5%~95% non-condensing
<b>Dimension</b>	4.72" x 4.72" (120 mm x 120 mm)

## REAR I/O

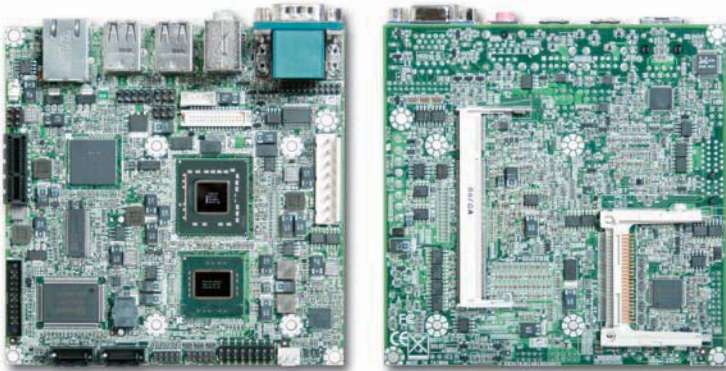


## ORDERING GUIDE

- **NANO-8045L-1100**  
Intel® Atom™ processor Z510 Nano-ITX Board
- **NANO-8045L-1600**  
Intel® Atom™ processor Z530 Nano-ITX Board

# 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



## FEATURES

- Intel® latest Ultra Low Voltage Mobile SFF 45nm Core™ 2 Duo or Celeron® M Processor
- Intel® GS45 SFF and ICH9M SFF Chipset
- One 200-pin SO-DIMM support DDR2 800/667MHz up to 2GB
- Dual Display: VGA and 24-bit LVDS
- One Intel® Gigabit Ethernet port
- One PCI-Express x1 expansion slot
- One Type II Compact Flash
- Support iTPM function for more secure platforms

NANO-8050 adopts Intel® latest Small Form Factor(SFF) mobile chipset and takes advantage of leading Intel® latest SFF Core™ 2 Duo / Celeron® M technologies with high performance. It can support one DDR2 SODIMM memory, one Intel® Gigabit Ethernet port, one Type II Compact Flash, and one expansion PCI-Express

x1 slot. Built in graphic media accelerator (GMA) 4500MHD graphic engine, NANO-8050 can support 3D performance and dual display by VGA and LVDS. This is a compact size with low-heat solution for versatile applications such as Medical and DS.

### SYSTEM

<b>CPU</b>	Intel® latest ULV Mobile SFF 45nm Core™ 2 Duo or Celeron® M processor
<b>FSB</b>	800/1066 MHz
<b>BIOS</b>	AMI BIOS
<b>System Chipset</b>	Intel® GS45 SFF and ICH9M SFF Chipset
<b>System Memory</b>	One 200-pin SO-DIMM support DDR2 800/667MHz up to 2GB
<b>SSD</b>	One Type II Compact Flash (up to UDMA5 mode)
<b>Watchdog Timer</b>	Programmable via S/W from 1sec. to 255sec.
<b>H/W Monitor</b>	- Temperature (CPU and System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
<b>GPIO</b>	Onboard programmable 8-bit Digital I/Os
<b>Expansion</b>	One PCI-Express x1 slot

### On Board I/O

<b>USB</b>	Two USB 2.0 ports
<b>SATA</b>	Two SATA 300 ports
<b>Display</b>	One 24 bit LVDS connector
<b>Others</b>	8bit GPIO pin header

### Rear I/O

<b>Serial Port</b>	One selectable RS232/422/485 port
<b>Display</b>	One VGA
<b>Ethernet</b>	One 10BASE-T/100BASE-TX/1000BASE-T Ethernet port with RJ45 connector
<b>USB</b>	Four USB 2.0 ports
<b>Audio Interface</b>	Line-out and Mic-in

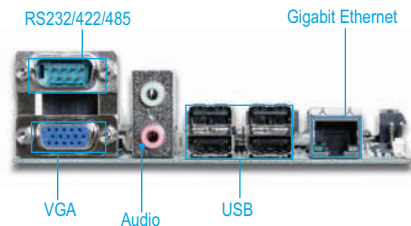
### DISPLAY

<b>Graphic Controller</b>	GMCH Integrated Intel® Graphics Media Accelerator (GMA) 4500MHD
<b>Display Interface</b>	- VGA : Up to 2048 x 1536 (QXGA) - LVDS: Dual channel 24-bit LVDS support

### MECHANICAL & ENVIRONMENTAL

<b>Operating Temperature</b>	0~60°C
<b>Storage Temperature</b>	-20~80°C
<b>Operating Humidity</b>	5%~95% non-condensing
<b>Dimension</b>	4.72" x 4.72" (120 mm x 120 mm)

## REAR I/O



## ORDERING GUIDE

- **NANO-8050-2260**  
NANO-ITX Board with Intel® Core™ 2 Duo SP9300 2.26GHz CPU
- **NANO-8050-1200**  
NANO-ITX Board with Intel® Core™ 2 Duo SU9300 1.2GHz CPU
- **NANO-8050-C1203**  
NANO-ITX Board with Intel® Celeron® ULV723 1.2GHz CPU
- **NANO-8050-C1202**  
NANO-ITX Board with Intel® Celeron® ULV722 1.2GHz CPU
- **PER-4110R**  
One slot PCIEx1 riser card

# About Mini-ITX



The Mini-ITX form factor, was 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 consumption, peripheral I/Os, expansion and mechanical form factors.

Whether you're working on medical instruments, thin network devices or digital media systems, Portwell's Mini-ITX boards and barebones systems are the perfect solutions to help you to deliver your products on time and stay one step ahead of the competition.

With 15-year experience in the design and manufacture of single board computers, Portwell not only provides one-stop shopping for the off-the-shelf products, but also custom-built solutions, tailor-made to suit your needs.

## Form factor comparison of embedded computer boards

Form Factor	Board Size (inch/mm)				Expansion	Board Size (inch <sup>2</sup> )
	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
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
SSI	12.00	13.00	330.20	330.20	On Board	156.00

# Mini-ITX Reference Table



MODEL	WADE-8067	WADE-8066	WADE-8068	WADE-8046
<b>Form Factor</b>	MINI-ITX	MINI-ITX	MINI-ITX	MINI-ITX
<b>CPU</b>	Core™ 2 Duo/ Celeron® M	Core™ 2 Duo/ Celeron® M	Core™ 2 Duo/ Celeron® M	Core™ 2 Duo/ Core™ Solo / Core™ Duo and Celeron® M
<b>Chipset</b>	GM45 + ICH9ME	GME965 + ICH8ME	GME965 + ICH8ME	945GME + ICH7-M
<b>FSB</b>	1066/800/667 MHz	800/533 MHz	800/533 MHz	667/ 533 MHz
<b>Max Memory</b>	Two SO-DIMMs / 8GB	Two SO-DIMMs / 4GB	Two SO-DIMMs / 4GB	Two SO-DIMMs / 4GB
<b>Memory Chip</b>	DDR3	DDR2	DDR2	DDR2
<b>Display</b>	VGA / DVI-D / LVDS / HDMI / TV-OUT	DVI-I / TV-OUT	VGA / LVDS	VGA / LVDS / DVI
<b>Expansion</b>	One PCI-E x4 slot	One PCI slot, One PCI-E x1 slot with PCI-E x4 interface	One PCI slot, One PCI-E x1 slot with PCI-E x4 interface	One PCI-E x1 slot, One Mini PCI socket
<b>LAN</b>	GbE x 2	GbE x 2	GbE x 2	GbE x 2
<b>Serial</b>	RS232 x 1, RS232/422/485 x1	RS232 x 1, RS232/422/485 x1	RS232 x 3, RS232/422/485 x1	RS232 x 3, RS232/422/485 x1
<b>USB</b>	USB 2.0 x 6	USB 2.0 x 8	USB 2.0 x 8	USB 2.0 x 6
<b>SATA</b>	SATA x 4	SATA x 2	SATA x 2	SATA x 2
<b>IDE</b>	N/A	N/A	N/A	One 44pin IDE connector
<b>SSD</b>	N/A	Compact Flash socket x1	Compact Flash socket x1	Compact Flash socket x1
<b>Parallel</b>	N/A	N/A	LPT header x 1	LPT header x 1
<b>Audio</b>	High Definition Audio 2.1 channel	High Definition Audio 5.1 channel	High Definition Audio 5.1 channel	High Definition Audio 5.1 channel
<b>Dimension</b>	6.69" x 6.69"	6.69" x 6.69"	6.69" x 6.69"	6.69" x 6.69"
<b>Page</b>	<b>90</b>	<b>91</b>	<b>92</b>	<b>93</b>

# Mini-ITX Reference Table



MODEL	WADE-8065	WADE-8071	WADE-8070	WADE-8072
<b>Form Factor</b>	MINI-ITX	MINI-ITX	MINI-ITX	MINI-ITX
<b>CPU</b>	Core™ 2 Duo/ Core™ Solo / Core™ Duo and Celeron® M	Intel® ATOM™ N270 1.6GHz	Intel® ATOM™ N270 1.6GHz	Intel® ATOM™ N270 1.6GHz
<b>Chipset</b>	945GME + ICH7-M	945GSE + ICH7-M	945GSE + ICH7-M	945GSE + ICH7-M
<b>FSB</b>	667/533 MHz	533/667 MHz	533 MHz	533 MHz
<b>Max Memory</b>	Two SO-DIMMs / 4GB	One SO-DIMM/ 2GB	One SO-DIMM / 2GB	One SO-DIMM / 2GB
<b>Memory Chip</b>	DDR2	DDR2	DDR2	DDR2
<b>Display</b>	VGA / LVDS / DVI	VGA/LVDS	VGA / LVDS / DVI	VGA / LVDS
<b>Expansion</b>	One PCI slot	One PCI-Express x1 slot	One PCI-E x1 slot, One Mini PCI socket	One PCI slot, One PCI-E x1 slot and One Mini-PCIE socket
<b>LAN</b>	GbE x 3	Gbe x 1	GbE x 2	GbE x 2
<b>Serial</b>	RS232 x 1, RS232/422/485 x1	RS232 x 2	RS232 x 3, RS232/422/485 x1	RS232 x 3, RS232/422/485 x1
<b>USB</b>	USB 2.0 x 6	USB 2.0 x 6	USB 2.0 x 6	USB 2.0 x 6
<b>SATA</b>	SATA x 2	SATA x 2	SATA x 2	SATA x 2
<b>IDE</b>	One 44pin IDE connector	One 44pin IDE Connector	One 44pin IDE connector	One 44pin IDE connector
<b>SSD</b>	Compact Flash socket x1	Compact Flash Socket*1	Compact Flash socket x1	Compact Flash socket x1
<b>Parallel</b>	N/A	N/A	LPT header x 1	LPT header x 1
<b>Audio</b>	High Definition Audio 5.1 channel	High Definition Audio 2.1 channel	High Definition Audio 5.1 channel	High Definition Audio 2.1 channel
<b>Dimension</b>	6.69" x 6.69"	6.69"x 6.69"(170mm x 170mm)	6.69" x 6.69"	6.69" x 6.69"
<b>Page</b>	<b>94</b>	<b>95</b>	<b>96</b>	<b>97</b>



# Mini-ITX Reference Table



MODEL	WADE-8170	WADE-8044	WADE-8047	WADE-8180
<b>Form Factor</b>	MINI-ITX	MINI-ITX	MINI-ITX	MINI-ITX
<b>CPU</b>	Intel® ATOM™ N270 1.6GHz	Celeron® M	Celeron® M	Core™ 2 Quad/ Core™ 2 Duo
<b>Chipset</b>	945GSE + ICH7-M	910GML+ICH6-M	910GML+ICH6-M	Q45+ICH10DO
<b>FSB</b>	533 MHz	400 MHz	400 MHz	1333/1066/800 MHz
<b>Max Memory</b>	One SO-DIMM/ 2GB	Two 240pin DIMMs / 2GB	Two 240pin DIMMs / 2GB	Two 240pin DIMMs / 2GB
<b>Memory Chip</b>	DDR2	DDR2	DDR2	DDR3
<b>Display</b>	VGA/DVI-D	VGA / LVDS / DVI (Optional)	Dual VGA / LVDS	VGA/DVI-D
<b>Expansion</b>	One PCI-Express x1 slot	One PCI x1 slot	One PCI x1 slot	One PCI-Express x16 slot
<b>LAN</b>	Gbe x 2	GbE x 2	Fast Ethernet x 2	Gbe x 2
<b>Serial</b>	RS232 x 2	RS232 x 3, RS232/422/485 x1	RS232 x3, RS232/422/485 x1	RS232 x 2
<b>USB</b>	USB 2.0 x 8	USB 2.0 x 8	USB 2.0 x 8	USB 2.0 x 8
<b>SATA</b>	SATA x 2	SATA x 2	SATA x 2	SATA x 4
<b>IDE</b>	One 44pin IDE Connector	One 44pin IDE connector	One 44pin IDE connector	N/A
<b>SSD</b>	Compact Flash Socket*1	Compact Flash socket x1	Compact Flash socket x1	N/A
<b>Parallel</b>	N/A	LPT header x 1	LPT header x 1	N/A
<b>Audio</b>	High Definition Audio 5.1 channel	High Definition Audio 2.1 channel	High Definition Audio 2.1 channel	High Definition Audio 5.1 channel
<b>Dimension</b>	6.69" x 6.69" (170mm x 170mm)	6.69" x 6.69"	6.69" x 6.69"	6.69" x 6.69"
<b>Page</b>	<b>98</b>	<b>99</b>	<b>100</b>	<b>101</b>

# Mini-ITX Reference Table



MODEL	WADE-8056	WADE-8556	WADE-8656	WADE-8055
<b>Form Factor</b>	MINI-ITX	MINI-ITX	MINI-ITX	MINI-ITX
<b>CPU</b>	Core™ 2 Uuad / Core™ 2 Duo / Pentium® 4 and Celeron® D	Core™ 2 Uuad / Core™ 2 Duo / Pentium® 4 and Celeron® D	Core™ 2 Uuad / Core™ 2 Duo / Pentium® 4 and Celeron® D	Core™ 2 Duo/ Pentium® 4 and Celeron® D
<b>Chipset</b>	Q965+ICH8DO	Q965+ICH8DO	Q965+ICH8DO	945G + ICH7
<b>FSB</b>	1066 / 800 / 533 MHz	1066 / 800 / 533 MHz	1066 / 800 / 533 MHz	1066 / 800 / 533 MHz
<b>Max Memory</b>	Two 240pin DIMMs / 4GB	Two 240pin DIMMs / 4GB	Two 240pin DIMMs / 4GB	Two SO-DIMMs / 4GB
<b>Memory Chip</b>	DDR2	DDR2	DDR2	DDR2
<b>Display</b>	VGA	VGA / DVI-D	VGA	VGA
<b>Expansion</b>	One PCI x1 slot, One Mini PCI socket	One PCI x1 slot, One Mini PCI socket	One PCI x16 slot	One PCI x1 slot
<b>LAN</b>	GbE x 1	GbE x 1	GbE x 2	GbE x 2
<b>Serial</b>	RS232 x 4	RS232 x 4	RS232 x 1, RS232/422/485 x1	RS232 x 1, RS232/422/485 x1
<b>USB</b>	USB 2.0 x 6	USB 2.0 x 6	USB 2.0 x 8	USB 2.0 x 8
<b>SATA</b>	SATA x 4	SATA x 4	SATA x 6	SATA x 4
<b>IDE</b>	N/A	N/A	N/A	N/A
<b>SSD</b>	N/A	N/A	N/A	Compact Flash socket x1
<b>Parallel</b>	N/A	N/A	N/A	N/A
<b>Audio</b>	High Definition Audio 2.1 channel	High Definition Audio 2.1 channel	High Definition Audio 2.1 channel	High Definition Audio 5.1 channel
<b>Dimension</b>	6.69" x 6.69"	6.69" x 6.69"	6.69" x 6.69"	6.69" x 6.69"
<b>Page</b>	<b>102</b>	<b>103</b>	<b>104</b>	<b>105</b>



# 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



## FEATURES

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

Built with latest mobile Intel® GM45 Express chipset, WADE-8067 takes advantage of Intel® Core™ 2 Duo technologies which has high performance and excellent power management features. It not only supports dual display by VGA / DVI / HDMI / LVDS / TV-out and the third display via PCI-Express expansion slot.

In addition, with its display-enriched interface it can support various multimedia devices, WADE-8067 is one industrial-grade embedded Mini-ITX motherboard for POS, Lottery, Medical, Gaming, DVR, Digital Signage and Kiosk.

### SYSTEM

CPU	Intel® Core™ 2 Duo processor
FSB	667/800/1066MHz
BIOS	AMI BIOS
System Chipset	Intel® GM45 and ICH9M-E Chipset
System Memory	Two 204pin SO-DIMMs support dual channel DDR3 SDRAM up to 8GB
Storage	4 x SATA
Watchdog Timer	Programmable via S/W from 1sec. to 255min
H/W Monitor	FAN Speed(CPU and System), Temperature(CPU and System), Voltage, Case open function
GPIO	On board programmable 8-bit Digital I/Os
Expansion	One PCI-E x 4 slot

### MECHANICAL & ENVIRONMENTAL

Power Requirement	+12V(CPU) @ 0.53A; +12V(System) @ 0.2A; +5V @ 1.96A; +3.3V @ 0.16A
Operating Temperature	0~60°C
Storage Temperature	-20~80°C
Operating Humidity	5~95% non-condensing
Dimension	6.69" x 6.69" (170 mm x 170 mm)

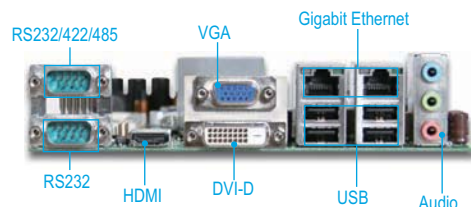
### I/O

MIO	1 x RS232, 1 x RS232/422/485, 1 x TV-out header
USB	4 x USB 2.0 ports and 2 x USB 2.0 with header
Audio Interface	Mic-in, Line-in and Line-out, High Definition Audio 2.1 channel
Ethernet Interface	IEEE 802.3 10/100/1000BASE-T Gigabit Ethernet compliant (Intel® 82567 and 82574L)

### DISPLAY

Chipset	Intel® GM45 GMCH Integrated Intel® Graphics Media Accelerator (GMA) 4500MHD
Display Memory	Intel® Dynamic Video Memory Technology (Intel® DVM T 5.0)
Multi Display	LVDS / DVI-D (Chrontel CH7318B) / HDMI (Chrontel CH7318B) / VGA / TV-out

## REAR I/O



## ORDERING GUIDE

- **WADE-8067PE**  
Intel® Core™ 2 Duo and Intel® Celeron® M processor Based Mini-ITX Board with VGA, DVI, HDMI, TV-out, Dual GbE LAN, Audio and USB
- **PEP-5A1X1**  
One PCI-E x4 riser card
- **B6931170**  
Active cooler

# WADE-8066

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



## FEATURES

- Intel® Core™ 2 Duo and Celeron® M processor
- Intel® GME965 and ICH8ME chipset
- Two 200pin SO-DIMMs support dual channel DDR2 SDRAM up to 4GB
- Dual Display :DVI-I / LVDS / TV-Out, 3<sup>rd</sup> Display via expansion slot
- One PCI slot and one PCI-E x 1 slot with PCI-E x 4 signal

Built with Intel® latest mobile chipset GME965, WADE-8066 takes advantage of Intel® Core™ 2 Duo technologies. The graphic media accelerator X3100 provides both fast video response time and high quality images via the two-channel

memory architecture. WADE-8066 supports dual display by VGA, DVI, LVDS and TV-Out. With its display-enriched interface, WADE-8066 can support various multimedia devices.

### SYSTEM

<b>CPU</b>	Intel® Core™ 2 Duo and Intel® Celeron® M processor (Socket P)
<b>FSB</b>	FSB 800/533 MHz
<b>BIOS</b>	Award BIOS
<b>System Chipset</b>	Intel® GME965 and ICH8ME Chipset
<b>System Memory</b>	Two 200pin SO-DIMMs support dual channel DDR2 SDRAM up to 4GB
<b>Storage</b>	2 x Serial ATA connector high-speed data transfers at up to 3 Gb/s
<b>SSD</b>	1 x Compact Flash
<b>Watchdog Timer</b>	Reset; 1 sec.-255 min. and 1 sec. or 1 min./step
<b>H/W Status Monitor</b>	Monitoring system temperature, voltage, and cooling fan status. Auto throttling control when CPU overheats
<b>GPIO</b>	On-board programmable 16 Digital I/O interface
<b>Expansion</b>	One PCI slot and One PCI-E x 1 slot (with PCI-E x 4 signal)

### I/O

<b>MIO</b>	1 x RS232, 1 x RS232/422/485 selectable, 1 x K/B, 1 x Mouse
<b>IrDA</b>	IrDA 1.0
<b>USB</b>	4 x USB 2.0 ports and 4 x USB 2.0 with header
<b>Audio Interface</b>	Mic in, Line in, Line out, High Definition Audio 5.1 channel
<b>Ethernet Interface</b>	IEEE 802.3 10/100/1000BASE-T Gigabit Ethernet compliant (Intel® 82566MM and Mavell88E8053)

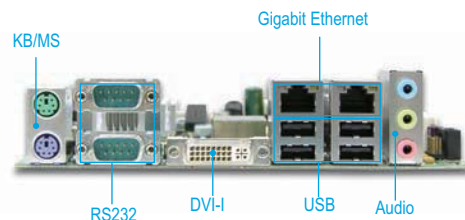
### DISPLAY

<b>Chipset</b>	Intel® GME965 Integrated GMA x3100 Graphics device
<b>Display Memory</b>	Intel® DVMT 4.0 supports up to 384 MB video memory
<b>Resolution</b>	Analog Display: Up to 2048 x 1536 (QXGA) Digital DVI Display: Up to 1600 x 1200 (UXGA)
<b>Multi Display</b>	24-bit, dual Channel LVDS / TV-out / VGA / DVI (Silicon Image Sil 1362)

### MECHANICAL & ENVIRONMENTAL

<b>Power Requirement</b>	+12V(System) @ 2.59A; +5V @ 2.96A; +3.3V @ 1.31A
<b>Operating Temperature</b>	0~55°C
<b>Operating Humidity</b>	0%~90% relative humidity, noncondensing
<b>Size (L x W)</b>	6.69" x 6.69" (170 mm x 170 mm)
<b>Weight</b>	0.94 lbs (0.43 Kg)

## REAR I/O



## ORDERING GUIDE

- **WADE-8066**  
Intel® Core™ 2 Duo and Celeron® M processors Main Board with DVI, Audio, GbE LANs, 8 x USB 2.0
- **PEP-581R/582R**  
One/Two slots PCI riser card
- **PEP-592R**  
One PCI and one PCI-E x4 slot riser card
- **PER-4210R**  
One slot PCI-E x4 riser card
- **B9970540**  
1U active heatsink



# 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



## FEATURES

- Intel® Core™ 2 Duo and Celeron® M processors
- Intel® GME965 and ICH8M-E Chipset
- Two 200-pin SO-DIMMs support dual channel DDR2 SDRAM up to 4GB
- Dual Display: VGA / 24bit LVDS, 3<sup>rd</sup> Display via expansion slot Dual Gigabit Ethernet ports
- Two SATA ports and One Type II Compact Flash
- One PCI slot and one PCI-E x 1 slot with PCI-E x 4 signal
- Three RS232 ports and one RS232/422/485 port

The WADE-8068 built with Intel® mobile GME965 chipset and takes advantage of Intel® Core™ 2 Duo technologies that can support dual channel DDR2 memory, two Gigabit Ethernet ports, one expansion PCI-Express x1 slot and one PCI slot. Base on integrated graphic media accelerator (GMA) X3100

graphic device, WADE-8068 can support high 3D performance dual display by VGA and LVDS. With enriched serial ports make WADE-8068 can be adopted for diversity applications such as Panel PC, Lottery, Medical, Gaming and Digital Signage.

### SYSTEM

<b>CPU</b>	Intel® Core™ 2 Duo and Intel® Celeron® M processor (Socket P)
<b>FSB</b>	800/533 MHz
<b>BIOS</b>	Award BIOS
<b>System Chipset</b>	Intel® GME965 & ICH8M-E Chipset
<b>System Memory</b>	Two 200-pin SO-DIMM support dual channel DDR2 SDRAM up to 4GB
<b>Storage</b>	2 x Serial ATA connector high-speed data transfers at up to 3Gb/s
<b>SSD</b>	1 x Compact Flash
<b>Watchdog Timer</b>	Programmable via S/W from 1sec. to 255min.
<b>H/W Monitor</b>	FAN Speed(CPU and System), Temperature(CPU and System), Voltage, Case open function
<b>GPIO</b>	On board programmable 16-bit Digital I/Os
<b>Expansion</b>	One PCI slot and one PCI-E x 1 slot (with PCI-E x 4 signal)

### I/O

<b>MIO</b>	1 x LPT, 3 x RS232 port, 1 x RS232/422/485 selectable, 1 x K/B, 1 x Mouse
<b>USB</b>	4 x USB 2.0 ports and 4 x USB 2.0 ports with header
<b>Audio Interface</b>	Mic-in, Line-out, High Definition Audio 5.1 channel
<b>Ethernet Interface</b>	IEEE 802.3 10/100/1000BASE-T Gigabit Ethernet compliant (Intel® 82566MM and Realtek 8111C)

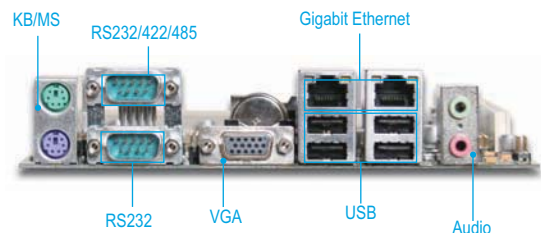
### DISPLAY

<b>Chipset</b>	Intel® GME965 GMCH Integrated Intel® GMA x3100
<b>Display Memory</b>	Intel® DVMT 4.0 supports up to 384MB video memory
<b>Resolution</b>	Analog Display: Up to 2048 x 1536 (QXGA) Digital LVDS: Up to 1600 x 1200 (UXGA)
<b>Multi Display</b>	24bit, dual channel LVDS / VGA

### MECHANICAL & ENVIRONMENTAL

<b>Power Requirement</b>	+12V(System) @ 2.66A; +5V @ 3.74A; +3.3V @ 0.83A
<b>Operating Temperature</b>	0~55°C
<b>Operating Humidity</b>	5%~95% noncondensing
<b>Size (L x W)</b>	6.69" x 6.69" (170 mm x 170 mm)
<b>Weight</b>	0.94 lbs (0.43 Kg)

## REAR I/O

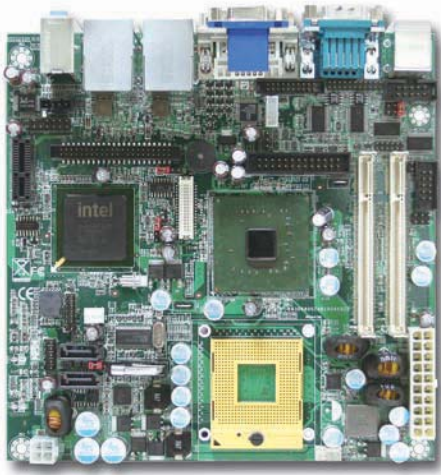


## ORDERING GUIDE

- **WADE-8068**  
Intel® Core™ 2 Duo and Intel® Celeron® M processor Based Mini-ITX Board with VGA, 24-bit LVDS, Dual GbE LAN, Four COM Ports and Eight USB 2.0 Ports
- **PEP-581R/582R**  
One/Two slots PCI riser card
- **PEP-592R**  
One PCI and one PCI-E x4 slot riser card
- **PER-4210R**  
One slot PCI-E x4 riser card
- **B9970540**  
1U active heatsink

# WADE-8046

Intel® Core™ 2 Duo processor based Mini-ITX Board with DDR2 SDRAM, VGA/ LVDS / DVI, Gigabit Ethernet, Audio and USB



## FEATURES

- Intel® Core™ 2 Duo / Core™ Duo / Celeron® M processor
- Intel® 945GME and ICH7-M chipset
- Two 200-pin SO-DIMMs support dual channel DDR2 SDRAM up to 4GB
- Dual display: VGA / LVDS / DVI, 3rd display via PCI-Express x 1 graphic card
- One PCI-Express x 1 expansion slot and one Mini PCI socket
- One Compact Flash socket & high definition audio

WADE-8046 is a high performance Mini-ITX embedded board for applications that need dual channel DDR2 memory, two Gigabit Ethernet ports, one expansion PCI-Express x1 slot and one Mini PCI socket. Built in Intel® 945GME and ICH7-M chipset, it

takes advantage of Intel® Core™ 2 Duo / Core™ Duo / Celeron® M processor. WADE-8046 can provide triple display for diversity applications such as Lottery, Medical, Gaming and Digital Signage.

### SYSTEM

<b>CPU</b>	Intel® Core™ 2 Duo / Core™ Duo / Celeron® M processor
<b>FSB</b>	533/667 MHz
<b>BIOS</b>	Award BIOS
<b>System Chipset</b>	Intel® 945GME GMCH and ICH7-M
<b>System Memory</b>	Two 200pin SO-DIMM support dual channel DDR2 SDRAM up to 4GB
<b>Storage</b>	- 2 x SATA - 1 x 44 pin IDE connector
<b>SSD</b>	1 x Compact Flash share the same channel with IDE and support UDMA
<b>Watchdog Timer</b>	Programmable via S/W from 1sec. to 255min
<b>H/W Status Monitor</b>	FAN Speed(CPU and System), Temperature(CPU and System), Voltage, Case open function
<b>GPIO</b>	Onboard programmable 8-bit Digital I/Os
<b>Expansion</b>	1 x PCI-Express x1 slot, 1 x Mini PCI socket

### I/O

<b>MIO</b>	Two RS232 ports, one Parallel port
<b>IrDA</b>	N/A
<b>USB</b>	4 x USB 2.0 ports and 2 x USB 2.0 ports with header
<b>Audio Interface</b>	Line-out , Line-in and Mic-in
<b>Ethernet Interface</b>	IEEE 802.3 10/100/1000BASE-T Gigabit Ethernet compliant (Realtek 8111C)

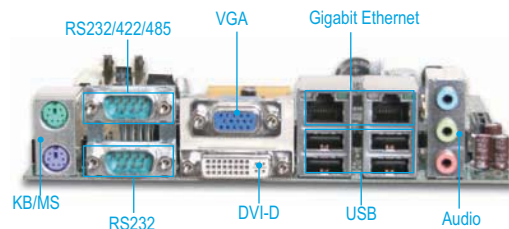
### DISPLAY

<b>Chipset</b>	- Intel® 945GME GMCH Integrated - Intel® GMA 950 graphics
<b>Display Memory</b>	Intel® DVMT 3.0 supports up to 224MB video memory
<b>Resolution</b>	Analog Display: Up to 2048 x 1536 (QXGA) Digital LVDS: Up to 1600 x 1200 (UXGA) Digital DVI: Up to 1600 x 1200 (UXGA)
<b>Multi Display</b>	Dual Channel 18-bit LVDS / VGA / DVI (Chrontel CH7307)

### MECHANICAL & ENVIRONMENTAL

<b>Power Requirement</b>	+12V(CPU) @ 1.33A; +12V(System) @ 0.33A; +5V @ 1.74A; +3.3V @ 0.72A
<b>Operating Temperature</b>	0~60°C
<b>Storage Temperature</b>	-20~80°C
<b>Operating Humidity</b>	5~95% non-condensing
<b>Size (L x W)</b>	6.69" x 6.69" (170 mm x 170 mm)

## REAR I/O



※DVI-I connector support DVI-D signal only

## ORDERING GUIDE

- **WADE-8046**  
Intel® Core™ 2 Duo / Core™ Duo / Celeron® M processors Mini-ITX Board
- **PEP-5B1X1**  
One PCI-E x1 riser card
- **B9970542**  
Active cooler



# WADE-8065

Network Enriched Intel® Core™ 2 Duo Processor based Mini-ITX Board with Dual Displays, Three GbE LAN ports, Audio and USB



## FEATURES

- Intel® Core™ 2 Duo / Core™ solo / Core™ Duo and Celeron® M processors
- Intel® 945GME and ICH7-M Chipset
- Two 200-pin SO-DIMMs support dual channel DDR2 SDRAM up to 4GB
- Dual Display: VGA / DVI / LVDS, 3<sup>rd</sup> Display via expansion slot
- Three Intel® Gigabit Ethernet

WADE-8065 is a network bandwidth-enriched solution. With a low power consumption mobile processor, it not only provides more than adequate computing power, but also eliminates any heat issues. Dual video outputs are supported by two-channel

memory structure that enhances graphic performance. Three GbE LAN ports provide the wide bandwidth necessary for communication or network related applications. WADE-8065 is the preferred choice where high price/performance ratio is a criterion.

### SYSTEM

<b>CPU</b>	Intel® Core™ 2 Duo / Core™ Duo / Core™ Solo processor
<b>FSB</b>	667/533 MHz
<b>BIOS</b>	Award BIOS
<b>System Chipset</b>	Intel® 945GME and ICH7-M Chipset
<b>System Memory</b>	2 x 200-pin dual channel DDR2 SDRAM DIMM 667/533 MHz support up to 4GB
<b>Storage</b>	- 1 x IDE - 2 x SATA
<b>SSD</b>	1 x Compact Flash
<b>Watchdog Timer</b>	Reset: 1 sec.~255 min. and 1 sec. or 1 min./step
<b>H/W Status Monitor</b>	Monitoring system temperature, voltage, and cooling fan status. Auto throttling control when CPU overheats
<b>GPIO</b>	On-board programmable 8-bit Digital I/O interface
<b>Expansion</b>	1 x PCI slot

### I/O

<b>MIO</b>	1 x RS232, 1 x RS232/422/485 selectable, 1 x K/B, 1 x Mouse, 3 x GbE
<b>USB</b>	2 x USB 2.0 ports and 4 x USB 2.0 with header
<b>Audio Interface</b>	Mic-in, Line-in, Line-out, High Definition Audio 5.1 channel
<b>Ethernet Interface</b>	IEEE 802.3 10/100/1000BASE-T Gigabit Ethernet compliant (Intel® 82574L)

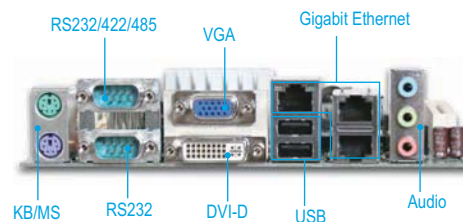
### DISPLAY

<b>Chipset</b>	Intel® 945GME Integrated Intel® GMA 950 graphics
<b>Display Memory</b>	Integrated Intel® Graphics Media Accelerator GMA 950, and share system memory to 224 MB
<b>Resolution</b>	Analog Display Port: QXGA 2048 x 1536 Digital LVDS Port: UXGA 1600 x 1200
<b>Multi Display</b>	18-bit, dual Channel LVDS / VGA / DVI (Chrontel CH7307)

### MECHANICAL & ENVIRONMENTAL

<b>Power Requirement</b>	+12V(CPU) @ 1.16A; +12V(System) @ 0.32A; +5V @ 1.58A; +3.3V @ 0.74A
<b>Operating Temperature</b>	0~55°C
<b>Operating Humidity</b>	0%~90% relative humidity, noncondensing
<b>Size (L x W)</b>	6.69" x 6.69" (170 mm x 170 mm)
<b>Weight</b>	0.94 lbs (0.43 Kg)

## REAR I/O



※DVI-I connector support DVI-D signal only

## ORDERING GUIDE

- **WADE-8065**  
Intel® Core™ 2 Duo processor Mini-ITX Board with VGA, LCD, Audio, three GbE LANs and 6 USB 2.0 ports
- **PEP-581R/582R**  
One/Two slots PCI riser card
- **B9970540**  
1U active cooler

# 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



## FEATURES

- Intel® ATOM™ N270 1.6GHz processor
- Intel® 945GSE and ICH7-M chipset
- One 200-pin SO-DIMM 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
- 12V DC Input
- 20mm height supports thin client application

Built with Intel® mobile 945GSE chipset, WADE-8071 takes advantage of Intel® Atom™ N270 technologies. WADE-8071 features with its low power and also can provide dual displays such as LVDS and VGA. In addition, WADE-8071 has one SODIMM socket which supports DDR2 SDRAM, one Gigabit Ethernet, two

RS232 serial ports, two SATA, six USB ports and one PCI-Express x1 expansion slot. WADE-8071 is not only a suitable choice for fanless and low profile usage but also the best solution for POS, Medical, Gaming and Digital Signage applications.

### SYSTEM

<b>CPU</b>	Intel® Atom™ N270 1.6GHz processor
<b>FSB</b>	533/667 MHz
<b>BIOS</b>	Award BIOS
<b>System Chipset</b>	Intel® 945GSE GMCH and ICH7-M
<b>System Memory</b>	One 200-pin SO-DIMM supports single channel DDR2 SDRAM up to 2GB
<b>Storage</b>	2 x SATA, 1 x IDE
<b>SSD</b>	1 x Compact Flash share the same channel with IDE and support UDMA
<b>Watchdog Timer</b>	Programmable via S/W from 1sec. to 255min.
<b>H/W Status Monitor</b>	FAN Speed(CPU and System), Temperature (CPU and System), Voltage, Case open function
<b>GPIO</b>	Onboard programmable 8-bit Digital I/Os
<b>Expansion</b>	1 x PCI-Express slot

### I/O

<b>MIO</b>	1 x IDE, 2 x RS232 ports, 1x K/B, 1 x Mouse, 1 x CF
<b>USB</b>	4 x USB 2.0 ports and 2 x USB 2.0 with header
<b>Audio Interface</b>	Mic-in, Line-out
<b>Ethernet Interface</b>	IEEE 802.3 10/100/1000 BASE-T Gigabit Ethernet compliant

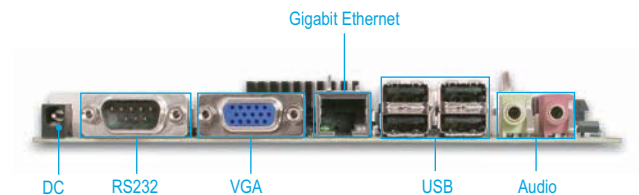
### DISPLAY

<b>Chipset</b>	Intel® 9945GSE GMCH Integrated Intel® GMA 950 graphics
<b>Display Memory</b>	Intel® DVMT 3.0 share system memory up to 128MB
<b>Multi Display</b>	- Analog Display: Up to 2048 x 1536 (QXGA) - Digital LVDS: Up to 1600 x 1200(UXGA)
<b>LVDS</b>	Dual Channel 18-bit and 24-bit output

### MECHANICAL & ENVIRONMENTAL

<b>Power Requirement</b>	DC Input
<b>Operating Temperature</b>	0~60°C
<b>DC Input</b>	10%~90% non-condensing
<b>Dimension</b>	6.69" x 6.69" (170mm x 170mm)

## REAR I/O



## ORDERING GUIDE

### ■ WEDE-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.

# 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



## FEATURES

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

Built with Intel® mobile 945GSE chipset, WADE-8070 takes advantage of Intel® Atom™ N270 technologies. WADE-8070 features with its low power and also can provide multiple displays such as LVDS, VGA and DVI. In addition, WADE-8070 has one SO-DIMM socket which supports DDR2 SDRAM, dual Gigabit Ethernet, two RS232

serial ports, two SATA, one Mini PCI socket and one PCI-Express x1 expansion slot. WADE-8070 is not only a suitable choice for fanless usage but also the best solution for POS, Medical, Gaming and Digital Signage applications.

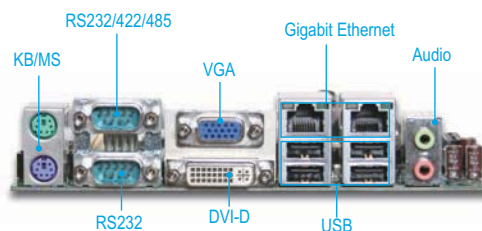
SYSTEM	
CPU	Intel® Atom™ N270 1.6GHz processor
FSB	533 MHz
BIOS	Award BIOS
System Chipset	Intel® 945GSE GMCH and ICH7-M Chipset
System Memory	One 200-pin SO-DIMM supports single channel DDR2 SDRAM up to 2GB
Storage	- 2 x SATA - 1 x IDE
SSD	1 x Compact Flash share the same channel with IDE and support UDMA
Watchdog Timer	Programmable via S/W from 1sec. to 255min
H/W Status Monitor	FAN Speed(CPU and System), Temperature(CPU and System), Voltage, Case open function
GPIO	Onboard programmable 8-bit Digital I/Os
Expansion	1 x Mini-PCI socket, 1 x PCI-Express x1 slot

I/O	
MIO	1 x EIDE, 3 x RS232 port, 1 x K/B, 1 x Mouse, 1 x RS232/422/485 selectable
USB	4 x USB 2.0 ports and 2 x USB 2.0 with header
Audio Interface	Mic in and Line-out, High Definition Audio 5.1 channel
Ethernet Interface	IEEE 802.3 10/100/1000BASE-T Gigabit Ethernet compliant (Realtek 8111C)

DISPLAY	
Chipset	Intel® 945GSE GMCH Integrated Intel® GMA 950 graphics
Display Memory	Intel® DVM T 3.0 share system memory up to 128MB
Resolution	Analog Display: Up to 2048 x 1536 (QXGA) Digital LVDS: Up to 1600 x 1200(UXGA)
Multi Display	18-bit, dual Channel LVDS / VGA / DVI-D (Chrontel CH7307)

MECHANICAL & ENVIRONMENTAL	
Power Requirement	+12V(CPU) @ 0.17A; +12V(System) @ 0.24A; +5V @ 1.31A; +3.3V @ 0.55A
Operating Temperature	0~60°C
Operating Humidity	10%~90% non-condensing
Size (L x W)	6.69" x 6.69" (170 mm x 170 mm)

## REAR I/O



※DVI-I connector support DVI-D signal only

## ORDERING GUIDE

- **WADE-8070**  
Intel® Atom™ N270 1.6GHz processor based Mini-ITX Board with VGA, 18bit LVDS, DVI, Dual LAN, Four COM Ports and Six USB 2.0 Ports
- **PEP-5B1X1**  
One PCI-E x1 riser card

# 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



## FEATURES

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

Built with Intel® mobile 945GSE chipset, WADE-8072 takes advantage of Intel® Atom™ N270 technologies. WADE-8072 features with its low power and also can provide dual displays such as VGA and 24-bit LVDS. In addition, WADE-8072 has one SO-DIMM socket which supports DDR2 SDRAM, dual Gigabit Ethernet, four serial ports, two

SATA, one LPT, one PCI slot and one PCI-Express x1 expansion. WADE-8072 is not only a suitable choice for fanless usage but also the best solution for Mobile POS, Medical, Industrial Control and Digital Signage applications.

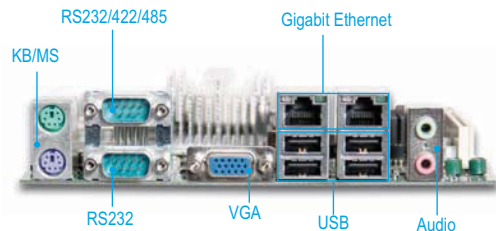
SYSTEM	
CPU	Intel® Atom™ N270 1.6GHz processor
FSB	533 MHz
BIOS	Award BIOS
System Chipset	Intel® 945GSE GMCH and ICH7-M Chipset
System Memory	One 200-pin SO-DIMM supports single channel DDR2 SDRAM up to 2GB
Storage	- 2 x SATA - 1 x IDE
SSD	1 x Compact Flash share the same channel with IDE and support UDMA 5 (At bottom side board edge)
Watchdog Timer	Programmable via S/W from 1sec. to 255min.
H/W Status Monitor	FAN Speed(CPU and System), Temperature(CPU and System), Voltage, Case open function
GPIO	Onboard programmable 8-bit Digital I/Os
Expansion	- 1 x PCI slot and one PCI-E x 1 slot - 1 x TPM pin header - 1 x Mini-PCIE socket

I/O	
MIO	1 x IDE, 1 x LPT, 3 x RS232 ports, 1 x RS232/422/485 selectable, 1 x K/M, 1 x Mouse
USB	4 x USB 2.0 ports and 2 x USB 2.0 with header
Audio Interface	Mic-in, Line-out
Ethernet Interface	IEEE 802.3 10/100/1000BASE-T Gigabit Ethernet compliant (Realtek 8111D)

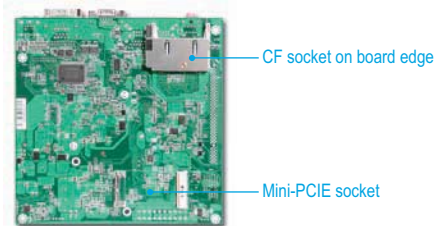
DISPLAY	
Chipset	Intel® 945GSE GMCH Integrated Intel® GMA 950 graphics
Display Memory	Intel® DVMT 3.0 share system memory up to 128MB
Resolution	Analog Display: Up to 2048 x 1536 (QXGA) Digital LVDS: Up to 1600 x 1200(UXGA)
Multi Display	Dual Channel 24-bit output (Chrontel CH7308B) / VGA

MECHANICAL & ENVIRONMENTAL	
Power Requirement	+12V(System) @ 0.35A; +5V(System) @ 2.44A; +3.3V(System) @ 0.82A
Operating Temperature	0~60°C
Operating Humidity	5%~95% non-condensing
Size (L x W)	6.69" x 6.69" (170 mm x 170 mm)

## REAR I/O



## SOLDER SIDE



## ORDERING GUIDE

### ■ 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

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



## FEATURES

- Intel® ATOM™ N270 1.6GHz processor
- Intel® 945GSE and ICH7-M chipset
- 12V, 15V~24V DC Power Input
- One 200-pin SO-DIMM 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 x 1 slots via riser card)
- Two SATA, one Compact Flash socket & one IDE connector

Built with Intel® mobile 945GSE chipset, WADE-8170 takes advantage of Intel® Atom™ N270 technologies. WADE-8170 features with its low power and also can provide multiple displays such as LVDS, VGA, TV-out and DVI. In addition, WADE-8170 has one SO-DIMM socket which supports DDR2

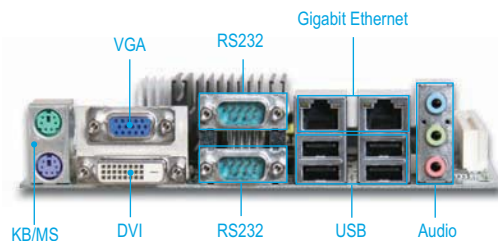
SDRAM, dual Gigabit Ethernet, two RS232 serial ports, two SATA, One PCI expansion slot (Two PCI & one PCI-Expansion x 1 slots via riser card). Base on 12V & 15V~24V DC power input design, WADE-8170 can be best solution for POS, Medical, Gaming and Digital Signage applications.

SYSTEM	
CPU	Intel® Atom™ N270 1.6GHz processor
FSB	533 MHz
BIOS	Award BIOS
System Chipset	Intel® 945GSE GMCH and ICH7-M
System Memory	One 200-pin SO-DIMM supports single channel DDR2 SDRAM up to 2GB
Storage	- 2 x SATA - 1 x 40 pin IDE
SSD	1 x Compact Flash share the same channel with IDE and support UDMA
Watchdog Timer	Programmable via S/W from 1sec. to 255min.
H/W Status Monitor	FAN Speed(CPU and System), Temperature(CPU and System), Voltage, Case open function
GPIO	Onboard programmable 8-bit Digital I/Os
Expansion	1 x PCI slot, 1 x PCI-Ex1 slot through Riser card

MECHANICAL & ENVIRONMENTAL	
Power Requirement	DC Input
Operating Temperature	0~60°C
Operating Humidity	5%~95% non-condensing
Size (L x W)	6.69" x 6.69" (170mm x 170mm)

I/O	
MIO	1 x EIDE, 2 x RS-232 ports, 1 x K/B, 1 x Mouse, 1 x S-Video header
IrDA	N/A
USB	4 x USB 2.0 ports and 4 x USB 2.0 with header
Audio Interface	Mic-in, Line-out, Line-in
Ethernet Interface	IEEE 802.3 10/100/1000BASE-T Gigabit Ethernet compliant

## REAR I/O



DISPLAY	
Chipset	Intel® 945GSE GMCH Integrated Intel® GMA 950 graphics
Display Memory	Intel® DVM T 3.0 share system memory up to 128MB
Resolution	-Analog Display: Up to 2048 x 1536 (QXGA) -Digital LVDS: Up to 1600 x 1200(UXGA) -Digital DVI: Up to 1600 x 1200(UXGA)
LVDS	Dual Channel 18-bit
DVI	DVI-D interface

## ORDERING GUIDE

### ■ WEDE-8170

Intel® Atom™ N270 1.6GHz processor Based Mini-ITX Board with VGA, 18bit LVDS, DVI, Dual LAN, Two COM Ports and Eight USB 2.0 Ports

\* Specifications are subject to change without notice.

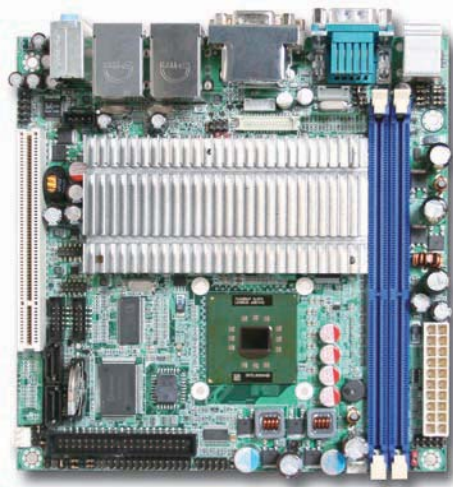
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# WADE-8044

Ultra Low Voltage Intel® Celeron® M Processor Mini-ITX with DDR2 SDRAM, Dual Displays, Four COM Ports and USB



## FEATURES

- Intel® Pentium® M / Celeron® M processor
- Intel® 910GMLE and ICH6-M chipset
- Two 240-pin DIMMs support dual channel DDR2 SDRAM up to 2GB
- Dual Display: VGA / 18bit LVDS
- Dual Gigabit Ethernet ports and one PCI slot
- One Type II Compact Flash, Four COM Ports and Eight USB Ports

The WADE-8044 is cost effective Mini-ITX embedded board for applications that need Dual channel DDR2 memory, Dual Gigabit Ethernet ports and expansion PCI slot. With low power Intel® Pentium® M / Celeron® M processor and Intel® 910GMLE and

ICH6-M chipset, WADE-8044 not only is a fanless solution but also can provide dual displays for diversity applications such as Lottery, Medical, Gaming and Digital Signage.

### SYSTEM

<b>CPU</b>	Intel® Pentium® M / Celeron® M processor
<b>FSB</b>	400 MHz
<b>BIOS</b>	Award BIOS
<b>System Chipset</b>	Intel® 910GMLE GMCH and ICH6-M
<b>System Memory</b>	Two 240-pin DIMMs support dual channel DDR2 SDRAM up to 2GB
<b>Storage</b>	- 2 x SATA - 1 x IDE
<b>SSD</b>	1 x Compact Flash share the same channel with IDE and support UDMA
<b>Watchdog Timer</b>	Programmable via S/W from 1sec. to 255min.
<b>H/W Status Monitor</b>	FAN Speed (CPU and System), Temperature (CPU and System), Voltage, Case open function
<b>GPIO</b>	On-board programmable 8-bit Digital I/O interface
<b>Expansion</b>	1 x PCI slot

### I/O

<b>MIO</b>	1 x EIDE, 1 x LPT, 3 x RS232 port, 1 x RS232/422/485 selectable, 1 x K/B, 1 x Mouse
<b>IrDA</b>	N/A
<b>USB</b>	4 x USB 2.0 ports and 4 x USB 2.0 with header
<b>Audio Interface</b>	Mic in, Line out
<b>Ethernet Interface</b>	IEEE 802.3 10/100/1000BASE-T Gigabit Ethernet compliant (Realtek 8111B)

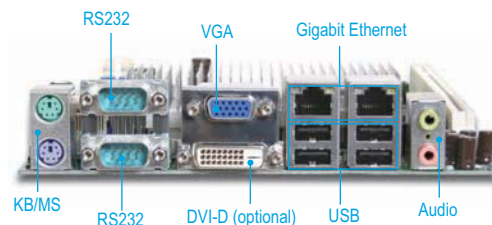
### DISPLAY

<b>Chipset</b>	Intel® 910GMLE GMCH Integrated Intel® GMA 900 graphics
<b>Display Memory</b>	Intel® DVMT 3.0 share system memory up to 128MB
<b>Resolution</b>	Analog Display: Up to 2048 x1536 (QXGA) Digital LVDS: Up to 1400 x 1050 (SXGA+) Digital DVI (Optional): Up to 1600 x 1200 (UXGA) (Chrontel CH7307)
<b>LVDS</b>	Dual Channel 18-bit

### MECHANICAL & ENVIRONMENTAL

<b>Power Requirement</b>	+12V(System) @ 0.48A; +5V @ 2.85A; +3.3V @ 0.63A
<b>Operating Temperature</b>	0~55°C
<b>Operating Humidity</b>	5%~95%, noncondensing
<b>Size (L x W)</b>	6.69" x 6.69" (170 mm x 170 mm)
<b>Weight</b>	0.94 lbs (0.43 Kg)

### REAR I/O



### ORDERING GUIDE

- **WADE-8044**  
Intel® Pentium® M / Celeron® M processors Based Mini-ITX Board with VGA, 18-bit LVDS, DVI, Dual GbE LAN, Four COM Ports and Eight USB 2.0 Ports
- **WADE-8044-600**  
Intel® Celeron® M 600MHz (512KB Cache) Based Mini-ITX Board with VGA, 18-bit LVDS, Dual GbE LAN, Four COM Ports and Eight USB 2.0 Ports
- **WADE-8044-1G**  
Intel® Celeron® M 1.0GHz (Zero Cache) Based Mini-ITX Board with VGA, 18-bit LVDS, Dual GbE LAN, Four COM Ports and Eight USB 2.0 Ports



## FEATURES

- Intel® Pentium® M / Celeron® M processor
- Intel® 910GMLE and ICH6-M chipset
- Two 240-pin DIMMs support dual channel DDR2 SDRAM up to 2GB
- Dual Display: Dual VGA / 18-bit LVDS
- Two 10/100Mbps LAN and one PCI slot
- Two SATA ports, One IDE connector and One Type II Compact Flash
- Four COM Ports and Eight USB Ports

The WADE-8047 is a Mini-ITX embedded board featured its onboard dual VGA ports that can deliver better cost effective benefits when choosing display devices for operating. In addition, it can also provide LVDS, Dual channel DDR2 memory, two SATA ports, two 10/100 BASE-T Ethernet and expansion PCI

slot. With low power Intel® Pentium® M / Celeron® M processor and Intel® 910GMLE and ICH6-M chipset, WADE-8047 can meet diversity applications such as Gaming, Lottery, Medical, and Digital Signage.

### SYSTEM

<b>CPU</b>	Intel® Pentium® M / Celeron® M processor
<b>FSB</b>	400 MHz
<b>BIOS</b>	Award BIOS
<b>System Chipset</b>	Intel® 910GMLE GMCH and ICH6-M Chipset
<b>System Memory</b>	Two 240-pin DIMMs support dual channel DDR2 SDRAM up to 2GB
<b>Storage</b>	- 2 x SATA - 1 x IDE
<b>SSD</b>	1 x Compact Flash share the same channel with IDE and support UDMA
<b>Watchdog Timer</b>	Programmable via S/W from 1sec. to 255min
<b>H/W Status Monitor</b>	FAN Speed(CPU and System), Temperature(CPU and System), Voltage, Case open function
<b>GPIO</b>	On board programmable 8-bit Digital I/Os
<b>Expansion</b>	1 x PCI slot

### MECHANICAL & ENVIRONMENTAL

<b>Power Requirement</b>	+12V(System) @ 2.40A; +5V @ 2.97A; +3.3V @ 0.45A
<b>Operating Temperature</b>	0~55°C
<b>Operating Humidity</b>	5%~95% non-condensing
<b>Size (L x W)</b>	6.69" x 6.69" (170 mm x 170 mm)
<b>Weight</b>	0.95 lbs (0.43 Kg)

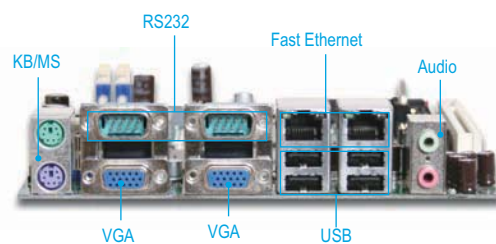
### I/O

<b>MIO</b>	1 x EIDE, 1 x LPT, 3 x RS232 port, 1 x RS232/422/485 selectable, 1 x K/B, 1 x Mouse
<b>IrDA</b>	N/A
<b>USB</b>	4 x USB 2.0 ports and 4 x USB 2.0 ports with header
<b>Audio Interface</b>	Mic-in, Line-in
<b>Ethernet Interface</b>	IEEE 802.3 10/100BASE-T Ethernet compliant (Realtek 8111)

### DISPLAY

<b>Chipset</b>	Intel® 910GMLE GMCH Integrated Intel® GMA 900 graphics
<b>Display Memory</b>	Intel® DVMT 3.0 share system memory up to 128MB
<b>Resolution</b>	Analog Display: Up to 2048 x 1536 (QXGA) Digital LVDS: Up to 1400 x 1050 (SXGA+)
<b>Second VGA</b>	SDVO interface (CH7317)
<b>LVDS</b>	18-bit, dual Channel

## REAR I/O



## ORDERING GUIDE

- **WADE-8047**  
Intel® Pentium® M / Celeron® M processors Based Mini-ITX Board with Dual VGA, 18-bit LVDS, Dual LAN, Four COM Ports and Eight USB 2.0 Ports
- **WADE-8047-600**  
Intel® Celeron® M 600MHz (512KB Cache) Based Mini-ITX Board with Dual VGA, 18-bit LVDS, Dual GbE LAN, Four COM Ports and Eight USB 2.0 Ports
- **WADE-8047**  
Intel® Celeron® M 1.0GHz (Zero Cache) Based Mini-ITX Board with Dual VGA, 18-bit LVDS, Dual GbE LAN, Four COM Ports and Eight USB 2.0 Ports

# 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



## 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 PCI-E x16 slot
- RAID 0 / 1 / 5 / 10
- TPM 1.2 and iAMT 5.0 supported

Built with Intel® latest Q45 chipset, WADE-8180 takes advantage of Intel® Core 2 Quad & Core 2 Duo technologies. With its PCI-E x 16 slot, WADE-8180 offers the availability of extra graphic card which can offer powerful graphic processing ability. In addition, the VGA and DVI-D dual video outputs can drive two displays

simultaneously that suitable for gaming application. With dual GbE LAN, four SATA, dual COM and eight USB I/O function, WADE-8180 can be the best solution for multiple applications such as automation, multi-media and KIOSK.

### SYSTEM

<b>CPU</b>	Intel® Core™ 2 Quad / Core™ 2 Duo processor
<b>FSB</b>	1333/1066/800 MHz
<b>BIOS</b>	AMI BIOS
<b>System Chipset</b>	Intel® Q45 Express and ICH10DO chipset
<b>System Memory</b>	Two 240-pin DIMM sockets support dual channel 800/1066MHz DDR3 SDRAM up to 4GB
<b>Storage</b>	4 x SATA-300
<b>Watchdog Timer</b>	Reset; 1 sec.~255 min. and 1 sec. or 1 min./step
<b>H/W Monitor</b>	Monitoring CPU and system temperature, voltage and cooling fan status
<b>GPIO</b>	Onboard programmable 8-bit Digital I/O interface (4 input / 4 output)
<b>Expansion</b>	One PCI-Express x16 Slot

### I/O

<b>MIO</b>	1 x D-SUB 15-pin & 1 x D-SUB 24-pin connector, 2 x RS232 ports, 1 x K/B & Mouse
<b>IrDA</b>	N/A
<b>USB</b>	4 x USB 2.0 ports and 4 x USB 2.0 ports with header
<b>Audio Interface</b>	Line out, Line-in and Mic-in
<b>Ethernet Interface</b>	IEEE 802.3 10/100/1000BASE-T Gigabit Ethernet compliant

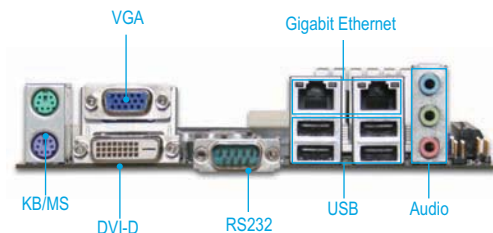
### DISPLAY

<b>Chipset</b>	Intel® Q45 Integrated Intel® Gen 5.0 GMA 4500 Graphics
<b>Display Memory</b>	Intel® Dynamic Video Memory Technology (Intel® DVMT 5.0)
<b>Resolution</b>	Up to 2048 x1536 @ 75 Hz (QXGA)
<b>DVI</b>	DVI-D interface

### MECHANICAL & ENVIRONMENTAL

<b>Power Requirement</b>	TBD
<b>Operating Temperature</b>	0~60°C
<b>Operating Humidity</b>	10%~90%, noncondensing
<b>Dimension</b>	6.69" x 6.69" (170mm x 170mm)

## REAR I/O



## ORDERING GUIDE

### ■ WEDE-8180

Intel® Core™ 2 Quad / Core™ 2 Duo processor Mini-ITX Motherboard

\* Specifications are subject to change without notice.

\* Core™ 2 Quad and Core™ 2 Duo processor are registered trademarks of Intel® Corporation.

\* Other trademarks, logo, brands and company names are the property of their respective owners.



# WADE-8056

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



## FEATURES

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

The WADE-8056 is an advanced mini-ITX embedded system board (ESB) 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, based on PCI technologies and support up to two PCI slots, which provide the highly flexibility necessary for functional expansion.

### SYSTEM

<b>CPU</b>	Intel® Core™ 2 Quad / Core™ 2 Duo and Pentium® 4 / Celeron® D processor
<b>FSB</b>	FSB 1066/800/533 MHz
<b>BIOS</b>	Award BIOS
<b>System Chipset</b>	Intel® Q965 GMCH & 82801HB ICH8DO
<b>System Memory</b>	2 x 240-pin dual channel DDR2 SDRAM DIMM 533/667/800 MHz supports up to 4 GB
<b>Storage</b>	4 x Serial ATA connector high-speed data transfers at up to 3 Gb/s
<b>Watchdog Timer</b>	Reset; 1 sec.~255 min. and 1 sec. or 1 min./step
<b>H/W Status Monitor</b>	Monitoring system temperature, voltage, and cooling fan status. Auto throttling control when CPU overheats
<b>GPIO</b>	On-board programmable 8-bit Digital I/O interface
<b>Expansion</b>	1 x PCI slot; 1 x Mini-PCI

### I/O

<b>MIO</b>	4 x RS232, 1 x K/B, 1 x Mouse, 1 x GbE
<b>IrDA</b>	N/A
<b>USB</b>	2 x USB 2.0 ports and 4 x USB 2.0 with header
<b>Audio Interface</b>	Mic in, Line in, Line out
<b>Ethernet Interface</b>	IEEE 802.3 10/100/1000BASE-T Gigabit Ethernet compliant (Intel® 82566DM)

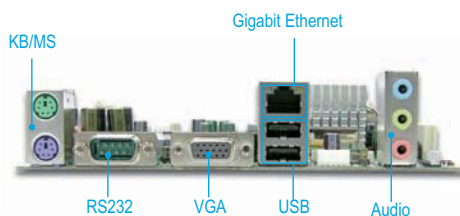
### DISPLAY

<b>Chipset</b>	Intel® Q965 GMCH Integrated GMA 3000 Graphics device
<b>Display Memory</b>	Intel® DVM T 4.0 supports up to 384 MB video memory
<b>Resolution</b>	Analog Display: Up to 2048 x 1536 (QXGA) Digital LVDS Display: Up to 1920 x 1200
<b>LVDS</b>	Dual Channel 24-bit

### MECHANICAL & ENVIRONMENTAL

<b>Power Requirement</b>	+5V @ 5.1A; +12V(CPU) @ 2.8A; +12V(system) @ 0.7A; +3.3V @ 4.4A
<b>Operating Temperature</b>	0~55°C
<b>Operating Humidity</b>	0%~90% relative humidity, noncondensing
<b>Size (L x W)</b>	6.69" x 6.69" (170 mm x 170 mm)
<b>Weight</b>	0.94 lbs (0.43 Kg)

## REAR I/O



## ORDERING GUIDE

- **WADE-8056**  
Intel® Core™ 2 Quad / Core™ 2 Duo and Pentium® 4 / Celeron® D processors  
Main Board with VGA, Audio, GbE LANs, 6 USB 2.0
- **EZCool**  
Compact 1U active heatsink suitable for Intel® Core™ 2 Duo processor (blow 65W)
- **PEP-581R/582R**  
One/Two slots PCI riser card
- **PEP-582L**  
Two slots PCI riser card

# WADE-8556

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



## FEATURES

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

WADE-8556 is an advanced mini-ITX embedded system board (ESB) 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. VGA & DVI dual video output can drive two displays

simultaneously, especially suitable for Digital Signage usage. The expansion slots, based on PCI technologies and support up to two PCI slots, which provide the highly flexibility necessary for functional expansion.

### SYSTEM

<b>CPU</b>	Intel® Core™ 2 Quad / Core™ 2 Duo and Pentium® 4 / Celeron® D processor
<b>FSB</b>	FSB 1066/800/533 MHz
<b>BIOS</b>	Award BIOS
<b>System Chipset</b>	Intel® Q965 GMCH & 82801HB ICH8DO
<b>System Memory</b>	2 x 240-pin dual channel DDR2 SDRAM DIMM 533/667/800 MHz support up to 4GB
<b>Storage</b>	4 x Serial ATA connector high-speed data transfers at up to 3 Gb/s
<b>Watchdog Timer</b>	Reset: 1 sec.~255 min. and 1 sec. or 1 min./step
<b>H/W Status Monitor</b>	Monitoring system temperature, voltage, and cooling fan status. Auto throttling control when CPU overheats
<b>GPIO</b>	On-board programmable 8-bit Digital I/O interface
<b>Expansion</b>	1 x PCI slot; 1 x Mini-PCI

### I/O

<b>MIO</b>	4 x RS232, 1 x K/B, 1 x Mouse, 1 x GbE
<b>IrDA</b>	N/A
<b>USB</b>	2 x USB 2.0 ports and 4 x USB 2.0 with header
<b>Audio Interface</b>	Mic in, Line in, Line out
<b>Ethernet Interface</b>	IEEE 802.3 10/100/1000BASE-T Gigabit Ethernet compliant (Intel® 82566DM)

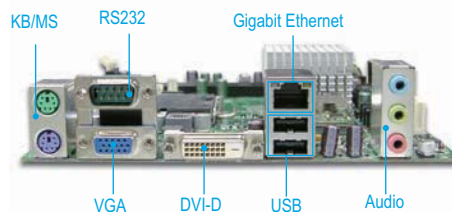
### DISPLAY

<b>Chipset</b>	Intel® Q965 GMCH Integrated GMA 3000 Graphics device
<b>Display Memory</b>	Intel® DVM T 4.0 supports up to 384 MB video memory
<b>Resolution</b>	Analog Display: Up to 2048 x 1536 (QXGA) Digital DVI Display: Up to 1920 x 1200
<b>DVI</b>	DVI-D interface

### MECHANICAL & ENVIRONMENTAL

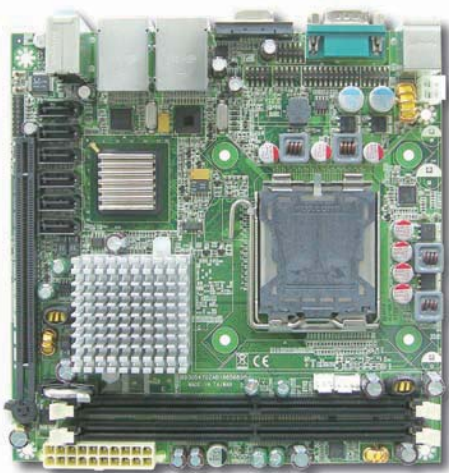
<b>Power Requirement</b>	+5V @ 5.1A; +12V(CPU) @ 2.8A; +12V(system) @ 0.7A; +3.3V @ 4.4A
<b>Operating Temperature</b>	0~55°C
<b>Operating Humidity</b>	0%~90% relative humidity, noncondensing
<b>Size (L x W)</b>	6.69" x 6.69" (170 mm x 170 mm)
<b>Weight</b>	0.94 lbs (0.43 Kg)

### REAR I/O



### ORDERING GUIDE

- **WADE-8556**  
Intel® Core™ 2 Quad / Core™ 2 Duo and Pentium® 4 / Celeron® D processors  
Main Board with VGA, Audio, GbE LANs, 6 USB 2.0
- **EZCool**  
Compact 1U active heatsink suitable for Intel® Core™ 2 Duo processor (blow 65W)
- **PEP-581R/582R**  
One/Two slots PCI riser card
- **PEP-582L**  
Two slots PCI riser card



## FEATURES

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

WADE-8656 is an advanced mini-ITX embedded system board (ESB) that takes advantage of Intel® Core™ 2 Quad technologies. With its PCI-E x16 slot, WADE-8656 gets the availability of extra graphic card which can offer powerful graphic processing ability

and suitable for gaming application. Six SATA Ports enrich the system capacity, especially suitable for Storage usage. Two Gigabit Ethernet ports provide high performance for networking transmission.

### SYSTEM

<b>CPU</b>	Intel® Core™ 2 Quad / Core™ 2 Duo and Pentium® 4 / Celeron® D processor
<b>FSB</b>	FSB 1066/800/533 MHz
<b>BIOS</b>	Award BIOS
<b>System Chipset</b>	Intel® Q965 GMCH & 82801HB ICH8DO
<b>System Memory</b>	2 x 240-pin dual channel DDR2 SDRAM DIMM 533/667/800 MHz supports up to 4GB
<b>Storage</b>	6 x Serial ATA connector high-speed data transfers at up to 3 Gb/s
<b>Watchdog Timer</b>	Reset; 1 sec.~255 min. and 1 sec. or 1 min./step
<b>H/W Status Monitor</b>	Monitoring system temperature, voltage, and cooling fan status. Auto throttling control when CPU overheats
<b>GPIO</b>	On-board programmable 8-bit Digital I/O interface
<b>Expansion</b>	One PCI-E x16 slot

### I/O

<b>MIO</b>	1 x RS232, 1 x RS232/422/485 selectable, 1 x K/B, 1 x Mouse, 2 x GbE
<b>IrDA</b>	N/A
<b>USB</b>	4 x USB 2.0 ports and 4 x USB 2.0 with header
<b>Audio Interface</b>	Mic in, Line in, Line out
<b>Ethernet Interface</b>	IEEE 802.3 10/100/1000BASE-T Gigabit Ethernet compliant (Intel® 82566DM, Realtek 8111B)

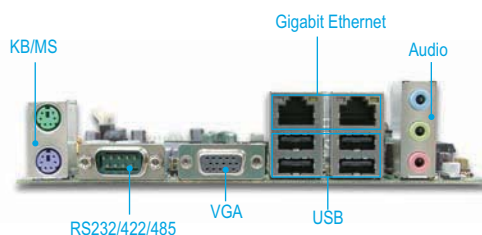
### DISPLAY

<b>Chipset</b>	Intel® Q965 GMCH Integrated GMA 3000 Graphics device
<b>Display Memory</b>	Intel® DVMT 4.0 supports up to 384 MB video memory
<b>Resolution</b>	Analog Display: Up to 2048 x 1536 (QXGA)
<b>LVDS</b>	N/A

### MECHANICAL & ENVIRONMENTAL

<b>Power Requirement</b>	+5V @ 5.1A; +12V(CPU) @ 2.8A; +12V(system) @ 0.7A; +3.3V @ 4.4A
<b>Operating Temperature</b>	0~55°C
<b>Operating Humidity</b>	0%~90% relative humidity, noncondensing
<b>Size (L x W)</b>	6.69" x 6.69" (170 mm x 170 mm)
<b>Weight</b>	0.94 lbs (0.43 Kg)

## REAR I/O



## ORDERING GUIDE

- **WADE-8656**  
Intel® Core™ 2 Quad / Core™ 2 Duo and Pentium® 4 / Celeron® D processors Main Board with VGA, Audio, GbE LANs, 8 USB 2.0
- **EZCool**  
Compact 1U active heatsink suitable for Intel Core 2 Duo processor (blow 65W)
- **PER-4410R**  
One slot PCI-E x16 riser card

# WADE-8055

Network Enriched Intel® Core™ 2 Duo Processor based Mini-ITX Board with Dual Displays and Two GbE



## FEATURES

- Intel® Core™ 2 Duo / Pentium® 4 / Celeron® D Processor
- Intel® 945G and ICH7 Chipset
- Two 200pin SO-DIMMs support dual channel DDR2 SDRAM up to 4GB
- Four SATA ports support
- Two GbE-LAN ports and one PCI slot
- Max. two COM and eight USB 2.0 ports
- All capacitors are solid type

WADE-8055 is an industrial-grade Mini-ITX board with best C/P ratio. The LGA775 CPU socket enables WADE-8055 to support wide range processors, such as Intel® Core™ 2 Duo, Pentium® 4 or Celeron® CPUs. With special heatsink design, WADE-8055 can

run with Celeron® 440 35W processor without any fan. Moreover, all solid type capacitors enhance the durability, stability and reliability of the board as well.

### SYSTEM

<b>CPU</b>	Intel® Core™ 2 Duo / Pentium® 4 / Celeron® D processor
<b>FSB</b>	FSB 1066/800/533 MHz
<b>BIOS</b>	Award BIOS
<b>System Chipset</b>	Intel® 945G and ICH7 Chipset
<b>System Memory</b>	2 x 200-pin DDR2 SO-DIMM socket support up to 4GB dual channel 667/533 MHz
<b>Storage</b>	Support 4 SATA 300 drives
<b>SSD</b>	1 x Compact Flash
<b>Watchdog Timer</b>	Reset: 1 sec.~255 min. and 1 sec. or 1 min./step
<b>H/W Status Monitor</b>	Monitoring system temperature, voltage, and cooling fan status. Auto throttling control when CPU overheats
<b>GPIO</b>	On-board programmable 8-bit Digital I/O interface
<b>Expansion</b>	1 x PCI slot

### I/O

<b>MIO</b>	1 x RS232, 1 x RS232/422/485 selectable
<b>IrDA</b>	N/A
<b>USB</b>	6 x USB 2.0 ports and 2 x USB 2.0 with header
<b>Audio Interface</b>	Mic in, Line in, CD Audio in, Line out
<b>Ethernet Interface</b>	IEEE 802.3 10/100/1000BASE-T Gigabit Ethernet compliant (Realtek 8111C x2)

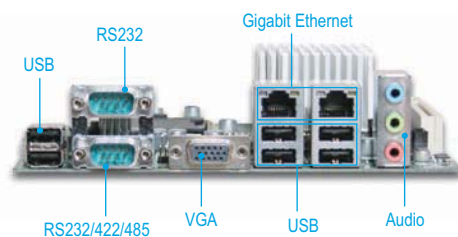
### DISPLAY

<b>Chipset</b>	Intel® 945G GMCH
<b>Display Memory</b>	Integrated Intel® Graphics Media Accelerator GMA 950, and share system memory to 224 MB
<b>Resolution</b>	Analog Display: Up to 2048 x 1536 (QXGA)
<b>LVDS</b>	N/A

### MECHANICAL & ENVIRONMENTAL

<b>Power Requirement</b>	+5V@2.35A ; +12V@2.46A ; +12V(system)@0.48A ; +3.3V@3.65A
<b>Operating Temperature</b>	0~55°C
<b>Operating Humidity</b>	0%~90% relative humidity, noncondensing
<b>Size (L x W)</b>	6.69" x 6.69" (170 mm x 170 mm)
<b>Weight</b>	0.94 lbs (0.43 Kg)

### REAR I/O



### ORDERING GUIDE

- **WADE-8055**  
Intel® Core™ 2 Duo / Pentium® 4 / Celeron® D processors Mini-ITX Board
- **PEP-581R/582R**  
One/Two slots PCI riser card
- **PEP-582L**  
Two slots PCI riser card
- **EZCool**  
Compact 1U active heatsink suitable for Intel® Core™ 2 Duo processor (blow 65W)



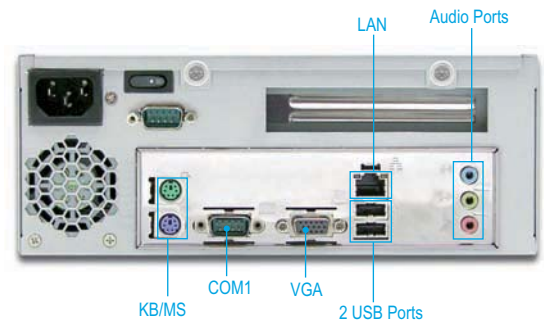
The WADE-2221A is a rugged and stylish barebone system suitable for embedded applications that stand alone or are rackmounted. Its effective ventilation is achieved by the mesh design of the front panel. No actual tool is needed to release the top cover of chassis, simplifying integration and field service.

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
- Built-in VGA/LAN/USB/COM ports
- Two side-by-side units to form two systems in 2U rackmount form factor

### REAR I/O



POWER SUPPLY		FSP150-50PLA 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@5.7~6.5V; +3.3V@3.7~4.5V; +12V@13.3~+5.6V	
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)	150x81.6x40.6 mm; 5.9"x3.2"x1.6"	

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	3.5 Kg

### 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 bare bone system with Intel® Celeron® M Mini-ITX board



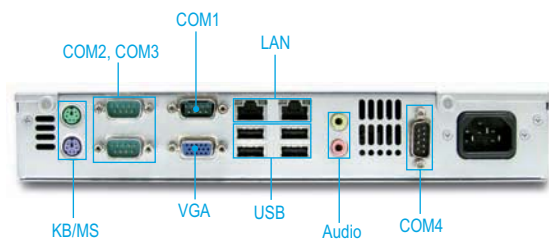
The WADE-1120A is designed to efficiently dissipate any internal heat, eliminating the need for a ventilation fan. It is the perfect system solution for any embedded application that operates in a harsh environment. WADE-1120A is designed with either a built-in WADE-8041 board or similar

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



### 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)	183x50x37.6 mm; 7.2"x2"x1.5"

### MECHANICAL & ENVIRONMENTAL

Operation Temperature	0~50°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension	278 x 200 x 44 (mm)
Weight	2~2.5 Kg

## ORDERING GUIDE

- **WADE-1120A-40X**  
The Fan-free Designed Compact Node Chassis built with 40W ATX PSU
- **WADE-1120A-55X**  
The Fan-free Designed Compact Node Chassis built with 55W ATX PSU



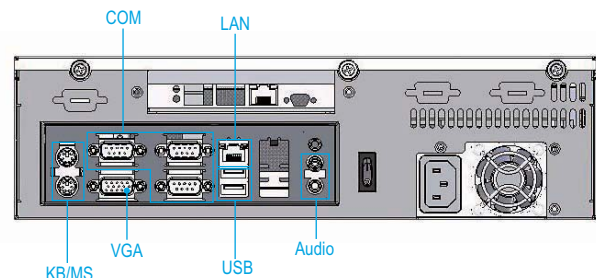
The WADE-2231Q is a rugged and stylish barebones system suitable for embedded applications that stand alone or are rackmounted. Its effective ventilation is achieved by the mesh design of the front panel. No actual tool is needed to release the

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



POWER SUPPLY	FSP180-50PLA 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@5.7~6.5V; +3.3@3.7~4.5V; +12V@13.3~+5.6V
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)	150x81.6x40.6 mm; 5.9"x3.2"x1.6"

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	3.5 Kg

## ORDERING GUIDE

- **WADE-2231Q-150X**  
Rugged and stylish industrial Mini-ITX Bare-bones Chassis with 150W active PFC PSU
- **WADE-2231Q-180X**  
Rugged and stylish industrial Mini-ITX Bare-bones Chassis with 180W active PFC PSU (Core™ 2 Quad Solution)



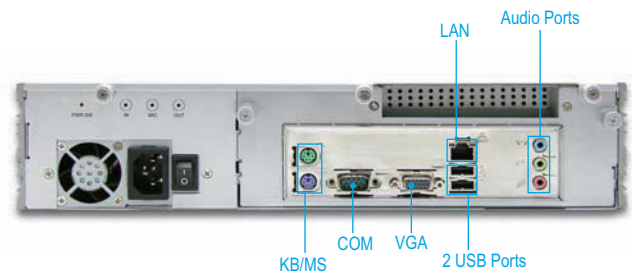
The compact and slim ARTO-220-ITX is design to fit Mini-ITX MB applications operating where space is at a premium. It also features a tool-free mechanical design to quickly release the top cover of the chassis for ease of integration and

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



#### 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)	100x190x40.5 mm; 3.9"x7.5"x1.6"

#### MECHANICAL & ENVIRONMENTAL

Operation Temperature	0~50°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension	374 x 241 x 74 (mm)
Weight	6.5 Kg

### ORDERING GUIDE

- **ARTO-220-ITX-250X**  
1.5U Advanced Mini-ITX based Chassis with 250W Active PFC PSU



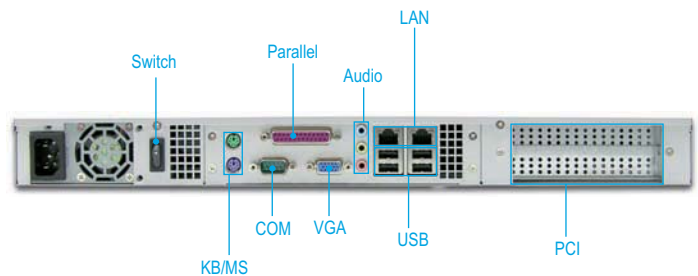
The WADE-1042 uses a 1U rack-mount form factor and is designed for network or communication applications. Its four drive bays support RAID configuration through the SATA inter-

faces on the board. Applications will benefit from WADE-1042's compact size, expansion capability, RAID configuration and 250-watt power supply.

## FEATURES

- Bare-bones 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)	150x81.6x40.6 mm; 5.9"x3.2"x1.6"	

## ORDERING GUIDE

### ■ WADE-1042-220X

Advance Mini-ITX based Chassis for Rack-Mount with 180W Active PFC PSU

## MECHANICAL & ENVIRONMENTAL

Operation Temperature	0~50°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension	432 x 380 x 44 (mm)
Weight	8.5 Kg

# WADE-1181

Compact Low Profile Mini-ITX Bare Bone Chassis with 1-slot PCI Expansion



A wider version Mini-ITX barebone chassis that provides essential expansion capability for function that is not covered by the embedded Mini-ITX board. The provided 1-slot PCI

expansion could be capture card for DSS application or serial port card for data acquisition in factory.

## FEATURES

- Support Mini-ITX embedded board
- Hard drive bay for internal 2.5" hard drive (project based to support 3.5" hard drive without PCI expansion)
- Include 150W Active PFC power supply
- Customized label of front panel and rear I/O bracket are welcome
- Dual USB ports and Power LED indication on front panel

POWER SUPPLY		FSP150-50PLA 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@5.7~6.5V; +3.3@3.7~4.5V; +12V@13.3~+5.6V	
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)	150x81.6x40.6 mm; 5.9"x3.2"x1.6"	

MECHANICAL & ENVIRONMENTAL	
Operation Temperature	0~50°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension	370 x 231 x 44.4 (mm)
Weight	3.2 Kg

## REAR I/O



150W Active PFC PSU

\*Flexible rear I/O panel design

## ORDERING GUIDE

- **WADE-1181-150X**  
Advance Mini-ITX based Chassis with 1-slot PCI expansion for Desktop (1U High) with 150W Active PFC PSU



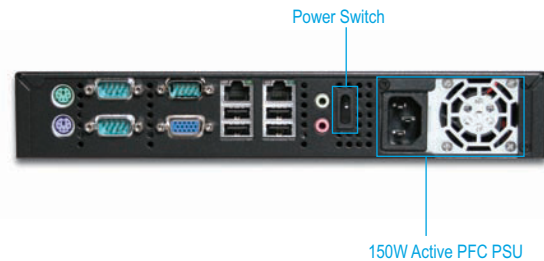
Mini-ITX adoption of embedded applications is non stop trend of industries. A compact, easy installation and low price demanding barebone chassis is urgently inquiry. WADE-1141, not fancy but

durable Mini-ITX barebone chassis meets the request perfectly. Standard chassis yet customized front panel label makes it special for your project.

### FEATURES

- Support Mini-ITX embedded board
- Hard drive bay for internal 2.5" hard drive (3.5" drive bay by project)
- Include 150W Active PFC power supply
- Customized label of front panel and rear I/O bracket are welcome
- Dual USB ports and Power LED indication on front panel

### REAR I/O



\*Flexible rear I/O panel design

POWER SUPPLY	FSP150-50PLA 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@5.7~6.5V; +3.3@3.7~4.5V; +12V@13.3~+5.6V
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)	150x81.6x40.6 mm; 5.9"x3.2"x1.6"

### MECHANICAL & ENVIRONMENTAL

Operation Temperature	0~50°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension	275 x 231 x 50(mm)
Weight	2.5 Kg

### ORDERING GUIDE

- **WADE-1141-150X**  
Advanced Mini-ITX based Chassis for Desktop (1U High) with 150W Active PFC PSU



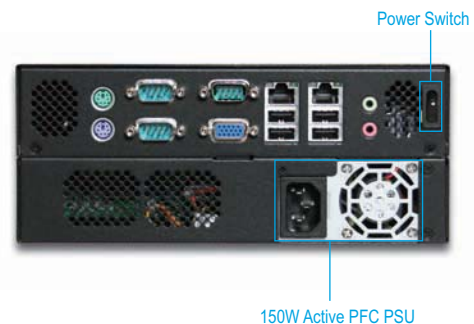
Install hard drive or maintenance is a terrible work for system assembly or field maintenance technicians. To ease their work and minimize down time of valuable running system, the WADE-2110 provides one front accessible 3.5" hard drive bay to

get away from the nightmare. The 2U height barebone chassis can be fixed in 19" cabinet with special carrier for having dual systems in 2U space.

### FEATURES

- Support Mini-ITX embedded board
- Front accessible 3.5" SATA hard drive bay
- Include 150W Active PFC power supply
- Able to install dual systems in 19" rack with special carrier
- Dual USB ports and Power LED indication on front panel

### REAR I/O



\*Flexible rear I/O panel design

POWER SUPPLY		FSP150-50PLA 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@5.7~6.5V; +3.3@3.7~4.5V; +12V@13.3~+5.6V	
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)	150x81.6x40.6 mm; 5.9"x3.2"x1.6"	





















MECHANICAL & ENVIRONMENTAL	
Operation Temperature	0~50°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension	215 x 231 x 88.5 (mm)
Weight	3.0 Kg

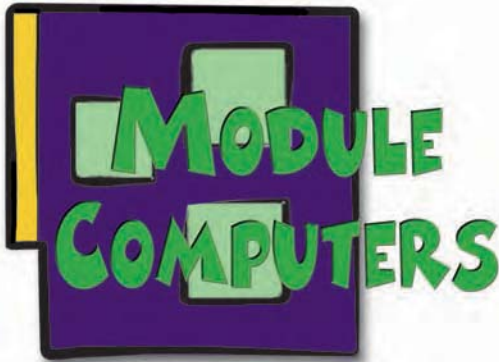
### ORDERING GUIDE

- **WADE-2110-150X**  
Advance Mini-ITX based Chassis with front accessible hard drive bay and 150W 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			



## Modular computing platforms

Compact size, computing power options, reliability, ease of use, and function expansion are the key design considerations for every embedded application. Modular computing boards have been defined and developed in order to satisfy these design needs. The modular computing approach is to condense the fundamental computer functions into a compact module that includes an interface for additional function expansion.

The PC/104, PC/104+, and EBX (Embedded Board eXpandable) are some traditional form factors of modular computing boards in the market place. The ETX (Embedded Technology eXtended) form factor has been created in recent years with greater computing power, smaller size, and extended expansion capability. In 2005, the ETX was imbued with latest interface technologies such as PCI Express and SATA. Due to the simplicity of its circuit design, balanced computing power, and I/O bandwidth, the ETX standard evolved into COM Express -- one of the PICMG (PCI Industrial Computer Manufacturer Group) standards.

### ▪ COM Express

The COM Express form factor includes a bootable host computer modular board that is connected with its carrier board through the PCI Express interconnection. The PCI Express Technology enables the data transmission from parallel to serial. The advantage of such architecture is higher I/O density and greater performance.

The module, bootable host computer "engine" is packaged as an off-the-shelf board and plugged into a "carrier board," which is implemented with I/Os and also connects to the power supply. The application-specific system functions and peripheral expansion are all built on the carrier board.

### ▪ QSEVEN

The QSEVEN form factor measures a mere 70 x 70 mm, making it smaller than most of other modules in the market place. The QSEVEN Consortium defined the mechanical and electrical interfaces so that hardware vendors and system integrators can build and integrate compliant components, signal devices, and systems.

The high density, compact size and latest interfaces -- as well as the expandability to meet the latest serial transmission interface, such as PCI Express, SATA, Gigabit Ethernet and SDVO interface - benefit many applications in the embedded market, including industrial control and small form factor applications.

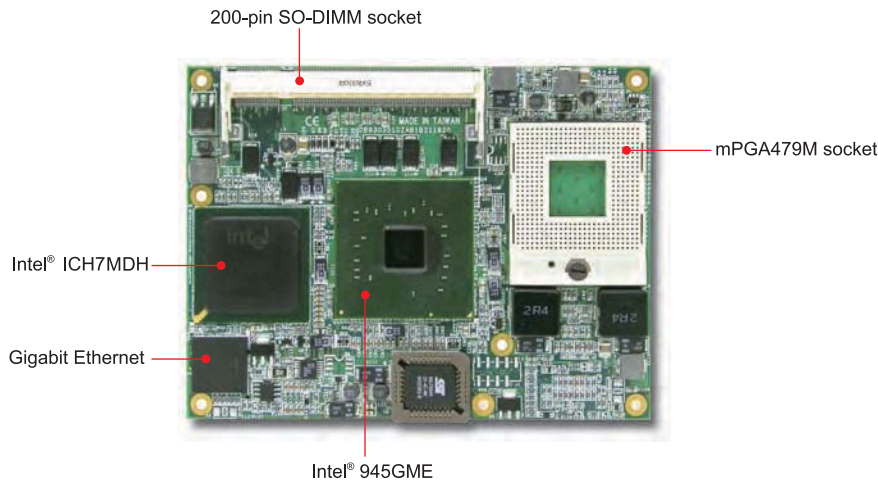
### ▪ ETX

The ETX form factor is build from early 2000 for standardized module computing purpose. It includes the common PC functions such as VGA, USB, Keyboard, Mouse, Serial/Parallel Port, IDE and Fast Ethernet. In addition, its PCI and ISA interfaces are industrial standard that can support versatile applications and different kinds of peripheral devices. While it is an early modular concept and has been adopted for a long time, the latest and powerful chipsets technology still brings this form factor higher performance.



# PCOM-B211VG

Intel® Core™ Duo & Solo processor based Type II COM Express module with DDR2 SDRAM, VGA, Gigabit Ethernet, SATA 300 and USB



Active Heat Sink



Passive Heat Sink

## FEATURES

- Intel® 945GME based module supports Core Solo or Core Duo processors
- Accept both Intel® socket type and BGA type processors for intensive computing power or fan-less applications
- Plug-n-run with the carrier boards and speeds up time-to market
- SATA interface to support faster transfer rate in storage devices
- Maximum 2GB DDR2 memory

## GENERAL

Processor	CPU & Package: Intel® Core™ Duo or Solo processor in mFCPGA package FSB: 667/533MHz
Chipset/Core Logic	Intel® 945GME and ICH7MDH
System Memory	Up to 2GB DDR2 667/533/400 SDRAM on one 200-pin DIMM socket
BIOS	Award BIOS
Storage Devices	EIDE: Support one EIDE channel with Ultra DMA 100/66/33 SATA: Support Two SATA 150 drives
Solid State Disk	N/A
Watchdog Timer	N/A
Expansion Interface	- One PCI Express x16, multiplexed with SDVO interface - Five PCI Express x1 - Four PCI devices - LPC interface - High definition audio interface
Hardware Monitoring	CPU temperature
Dimension	Dimension : 125(L) x 95(W) mm; 4.9"(L) x 3.7" (W)
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing

## ORDERING GUIDE

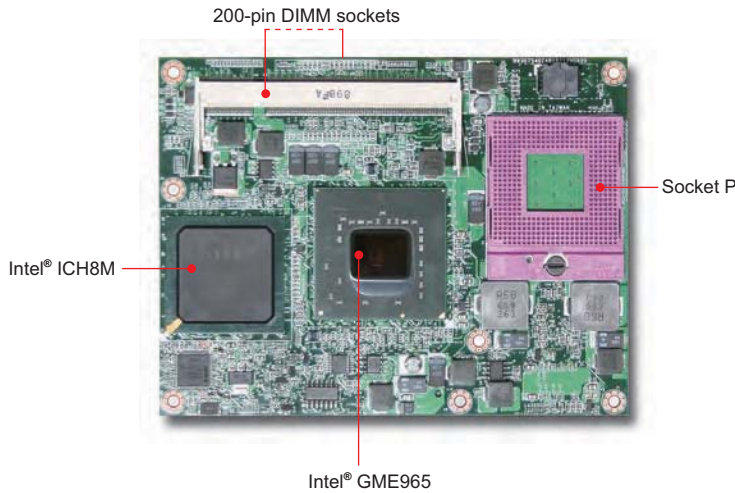
<b>Standard</b>	<b>PCOM-B211VG</b> Intel® Core™ Duo or Solo processor based Type II COM Express module with DDR2 SDRAM, VGA, Gigabit Ethernet and USB
<b>Optional</b>	<b>Active Heat Sink</b> Heat sink for both PCOM-210/211 with socket type processor  <b>Passive Heat Sink</b> Heat sink for both PCOM-210/211 with low power consumption on-board processor

## I/O

MIO	N/A
IrDA	N/A
Ethernet	One Gigabit Ethernet (Intel® PC82573L)
Audio	N/A
USB	USB 2.0 x 8
Keyboard & Mouse	N/A

## DISPLAY

Graphic Controller	Intel® 945GME integrated Intel® Graphics Media Accelerator 950 (Intel® GMA 950)
Graphic Memory	Dynamic share system memory up to 224MB (Intel® DVMT 3.0) or static share system memory up to 128MB
Display Interface	- Support CRT, LVDS and TV-out display interfaces - CRT display resolution QXGA



Active Heat Sink



Passive Heat Sink

## FEATURES

- The Intel® Core™ 2 Duo processor brings dual-core technology and provides significant performance improvement.
- The Intel® GME965 integrated GMA X3100 graphic provides better performance and variable display interfaces.
- Design to comply with both socket type and BGA type Core™ 2 Duo & Celeron® M processor for intensive computing
- Architecture of module and carrier boards speeds up time-to-market of tailor-made equipment
- Equipped with single PCI Express x1 interface based Gigabit Ethernet

## GENERAL

Processor	CPU & Package: Intel® Core™ 2 Duo or Celeron® M processor FCPGA package FSB: 533/800MHz
Chipset/Core Logic	Intel® GME965 and ICH8M
System Memory	Up to 4GB DDR2 533/667 SDRAM on two 200-pin DIMM socket
BIOS	Award BIOS
Storage Devices	EIDE: Support one EIDE channel with Ultra DMA 100/66/33 SATA: Support three SATA 300 drives
Solid State Disk	N/A
Watchdog Timer	N/A
Expansion Interface	- One PCI Express x16, multiplexed with SDVO interface - Five PCI Express x1 - Four PCI devices - LPC interface - High definition audio interface
Hardware Monitoring	CPU Voltage and Temperature
Dimension	Dimension : 125(L) x 95(W) mm; 4.9"(L) x 3.7" (W)
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing

## ORDERING GUIDE

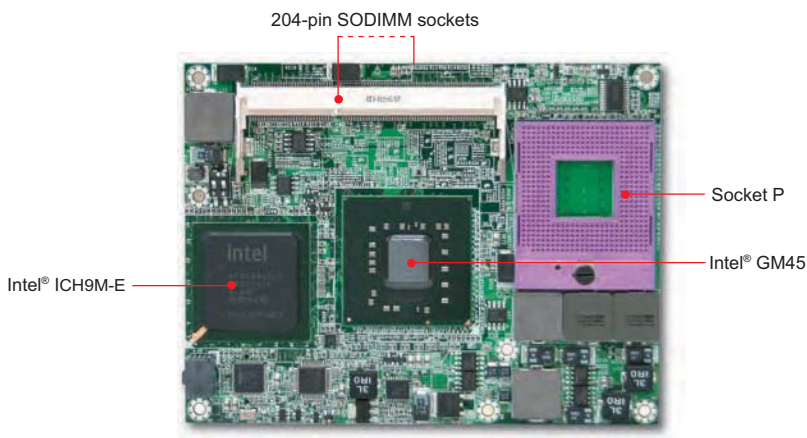
<b>Standard</b>	<b>PCOM-B212VG</b> Intel® Core™ 2 Duo or Celeron® M processor based Type II COM Express module with DDR2 SDRAM, VGA, Gigabit Ethernet and USB
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## I/O

MIO	N/A
IrDA	N/A
Ethernet	One Gigabit Ethernet Controller (Intel® WG82574L)
Audio	N/A
USB	Eight USB ports
Keyboard & Mouse	N/A

## DISPLAY

Graphic Controller	Intel® GME965 integrated Graphics Media Accelerator X3100 (Intel® GMA X3100)
Graphic Memory	Dynamic share system memory up to 384MB (Intel® DVMT 4.0)
Display Interface	- Support CRT, LVDS, TV-out, and SDVO display interfaces - CRT display resolution up to 2048x1536 @ 85Hz refresh



Active Heat Sink



Passive Heat Sink

### FEATURES

- The Intel® 45nm Core™ 2 Quad/Core™ 2 Duo processor features dual core/quad core technology that provides latest semiconductor technology
- Intel® GM45 integrated GMA 4500MHD graphic provides extreme 3D performance for media applications
- Intel® GM45 platform brings latest iAMT 4.0 and ITPM for powerful management and cryptal functions
- Architecture of module and carrier boards speeds up time-to-market of tailor-made equipment
- Support two SODIMM socket and up to 8GB memory size

### GENERAL

Processor	CPU & Package: Intel® 45nm Core™ 2 Quad/Core 2 Duo FSPGA package FSB: 667/800/1066MHz
Chipset/Core Logic	Intel® GM45 and ICH9M-E
System Memory	Up to 8GB DDR3 667/800/1066 SDRAM on two SODIMM socket
BIOS	AMI BIOS
Storage Devices	EIDE: Support one EIDE channel with Ultra DMA 100/66/33 SATA: Support Four SATA 300 drives
Solid State Disk	N/A
Watchdog Timer	N/A
Expansion Interface	- One PCI Express x16, multiplexed with SDVO interface - Five PCI Express x1 - Four PCI devices - LPC interface - High definition audio interface
Hardware Monitoring	CPU Voltage and Temperature
Power Requirement	TBA
Dimension	Dimension : 125(L) x 95(W) mm; 4.9"(L) x 3.7" (W)
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing

### ORDERING GUIDE

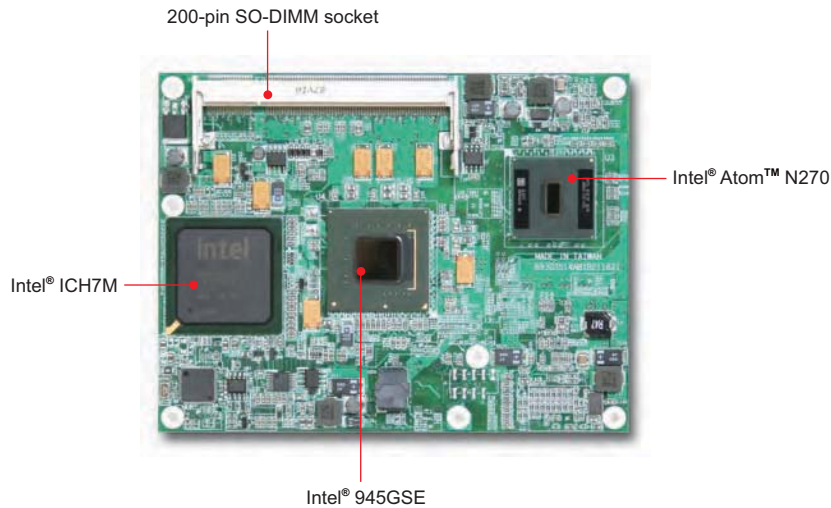
Standard	<b>PCOM-B213VG</b> Intel® GM45 platform based Type II COM Express module with DDR3 SDRAM, VGA, Gigabit Ethernet and USB
----------	--

### I/O

MIO	N/A
IrDA	N/A
Ethernet	One Gigabit Ethernet Controller (Intel® WG82567LM)
Audio	N/A
USB	Eight USB ports
Keyboard & Mouse	N/A

### DISPLAY

Graphic Controller	Intel® GM45 integrated Graphics Media Accelerator 4500MHD (Intel® GMA 4500MHD)
Graphic Memory	Dynamic share system memory (Intel® DVMT 5.0)
Display Interface	- Support CRT, LVDS, TV-out and SDVO display interfaces - CRT display resolution up to 2048x1536 @ 85Hz refresh



Active Heat Sink



Passive Heat Sink

## FEATURES

- The Intel® Atom™ N270 and 945GSE platform that provides cost effective solution technology
- Intel® Atom™ N270 + 945GSE + ICH7M platform brings under 10W TDP solution for easy fan-less applications
- SATA and IDE interface provide best cost effective functions for market
- Architecture of module and carrier boards speeds up time-to-market of tailor-made equipment
- Support one SODIMM socket and up to 2GB memory size

## GENERAL

Processor	CPU & Package: Intel® Atom™ N270 1.6GHz in FCPGA package FSB: 533MHz
Chipset/Core Logic	Intel® 945GSE and ICH7M
System Memory	Up to 2GB DDR2 533 SDRAM on one SO-DIMM socket
BIOS	Award BIOS
Storage Devices	EIDE: Support one EIDE channel with Ultra DMA 100/66/33 SATA: Support two SATA 150 drives
Solid State Disk	N/A
Watchdog Timer	N/A
Expansion Interface	- One SDVO port - Three PCI Express x1 - Four PCI devices - LPC interface - AC'97/High definition audio interface
Hardware Monitoring	CPU temperature
Dimension	Dimension : 125(L) x 95(W) mm; 4.9"(L) x 3.7" (W)
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing

## ORDERING GUIDE

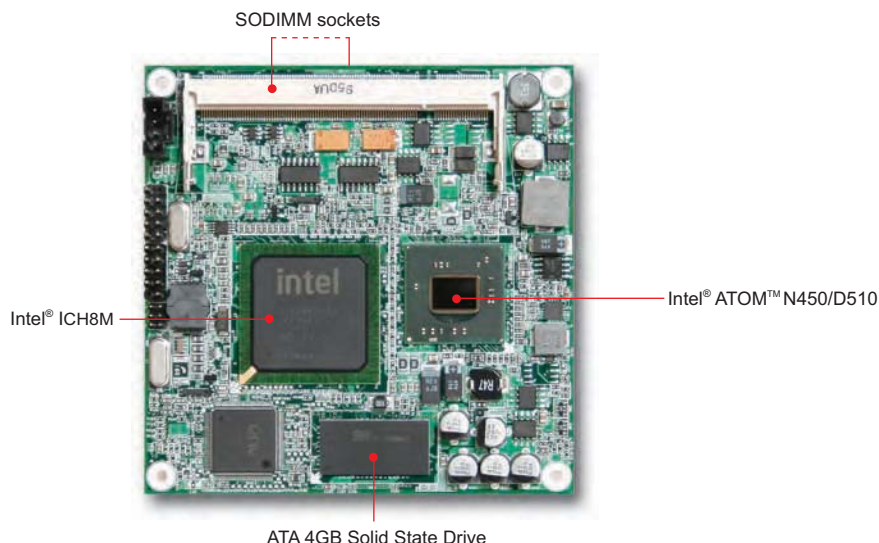
<b>Standard</b>	<b>PCOM-B214VG</b> Intel® Atom™ processor based Type II COM Express module with DDR2 SDRAM, VGA, Gigabit Ethernet and USB
-----------------	--

## I/O

MIO	N/A
IrDA	N/A
Ethernet	One Gigabit Ethernet Controller (Intel® WG82574L)
Audio	N/A
USB	Eight USB ports
Keyboard & Mouse	N/A

## DISPLAY

Graphic Controller	Intel® 945GSE integrated Graphics Media Accelerator (Intel® GMA 950)
Graphic Memory	Dynamic share system memory up to 224MB (Intel® DVMT 3.0) or static share system memory up to 128MB
Display Interface	- Support CRT, LVDS, TV-out and SDVO display interfaces - CRT display resolution up to 2048x1536@85Hz refresh



## FEATURES

- The Intel® ATOM N450(Pineview-M) / D410 (Pineview-D, Single core) D510(Pineview-D, Duo core) and ICH8M platform that provides cost effective solution with low power and duo core processor technology
- Intel® Pineview-M / Pineview-D can be supported on the same compact board
- Support five PCI Express lanes, four x1 lanes can be configured to one x4 lane
- On-board ATA 4GB Solid State Drive, up to 8G Byte
- Support one DDR2 533/667MHz SDRAM, up to 4GB memory size
- Support MPEG2 Decode in HW

## ORDERING GUIDE

<b>Standard</b>	<b>PCOM-B215VG</b> Intel® ATOM based Type II micro-COM Express module with DDR2 SDRAM, VGA, Gigabit Ethernet, SATA, USB and NAND Flash
-----------------	---

\* Specifications are subject to change without notice.

\* Celeron M® and Pentium® M are registered trademarks of Intel Corporation.

\* Other trademarks, logo, brands and company are the property of their respective owners.

## GENERAL

Processor	CPU: Intel® ATOM N450/D510 in FCBGA package - N450 - D510
Chipset/Core Logic	Intel® ICH8M
System Memory	Supports up to 4GB DDR2 667 SDRAM on one SODIMM
BIOS	AMI BIOS
Storage Devices	IDE: Support one IDE channel with Ultra DMA 100/66/33 SATA: Support three SATA 300 drives
Solid State Disk	On-board ATA 4GB Solid State Drive, up to 8G Byte
Watchdog Timer	N/A
Expansion Interface	- Five PCI Express x1 lanes of which four x1 lanes can be configured to one x4 lane - Four PCI devices - LPC Interface - AC97 / High definition audio interface
Hardware Monitoring	CPU Temperature
Power Requirement	TBA
Dimension	Dimension : 70(L) x 70(W) mm; 2.75"(L) x 2.75" (W)
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%

## I/O

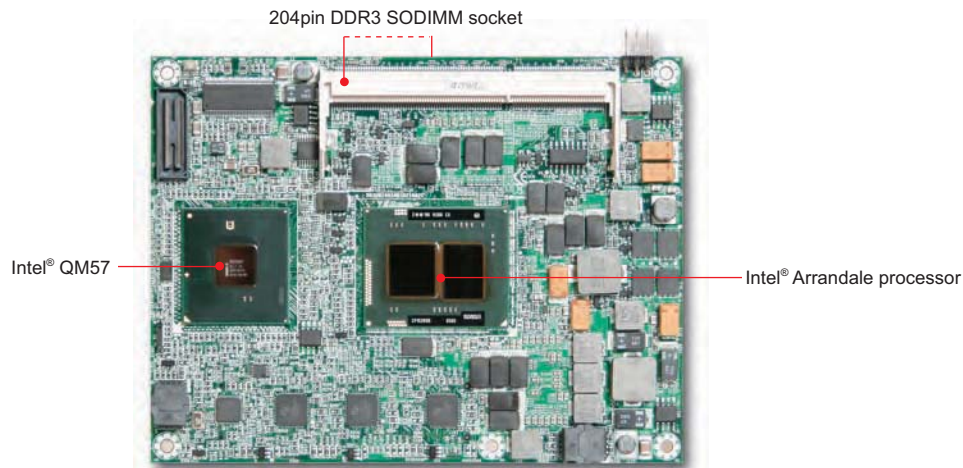
MIO	N/A
IrDA	N/A
Ethernet	One Gigabit Ethernet Controller (Realtek RTL8111C-VC-GR)
Audio	N/A
USB	Eight USB ports
Keyboard & Mouse	N/A

## DISPLAY

Graphic Controller	- N450 integrated Generation 2.5 graphics, supports DX9 Graphics up to 200MHz - D510 integrated Generation 3.5 graphics, supports DX9 Graphics up to 400MHz
Graphic Memory	Dynamic share system memory up to 256MB (Intel® DVMT 4.0)
Display Interface	- Support CRT, 1x 18bit LVDS display interfaces - Resolution: CRT display: Pineview-M: up to 1400 x 1050 @ 60Hz refresh Pineview-D: up to 2048 x 1536 @ 60Hz refresh LVDS display: Pineview-M: up to 1280 x 800 Pineview-D: up to 1366 x 768

# PCOM-B216VG

Intel® Arrandale processor based Type II COM Express module with DDR3 SDRAM, VGA, Gigabit Ethernet 3.0 GT/s SATA and USB



## FEATURES

- The Intel® Arrandale and QM57 platform with turbo boost technology to maximize CPU & Graphic performance
- Intel® Arrandale platform support variously powerful processor from ultra low power to mainstream performance type
- Supports Intel® intelligent power sharing technology to reduce TDP (Thermal Design Power)
- Enhance Intel® vPro efficiency by Intel® 82577LM GbE PHY and AMT6.0 technology
- Support two DDR3 800/1066 SDRAM on two SODIMM sockets, up to 8GB memory size

## ORDERING GUIDE

<b>Standard</b>	<b>PCOM-B216VG</b> Intel® Arrandale processor based Type II COM Express module with DDR3 SDRAM, VGA, Gigabit Ethernet, 3.0GT/s SATA and USB
<b>CPU Support List</b>	Intel® Core i7-610E SV (4M Cache, 2.53 GHz) Intel® Core i7-620LE LV (4M Cache, 2.00 GHz) Intel® Core i7-620UE ULV (4M Cache, 1.06 GHz) Intel® Core i5-520E SV (3M Cache, 2.40 GHz) Intel® Core i3-330E SV (3M Cache, 2.13 GHz) Intel® Celeron P4505 SV (2M Cache, 1.86 GHz)

\* Specifications are subject to change without notice.

\* Arrandale Core i7 / i5 / i3 and Celeron are registered trademarks of Intel Corporation.

\* Other trademarks, logo, brands and company are the property of their respective owners.

## GENERAL

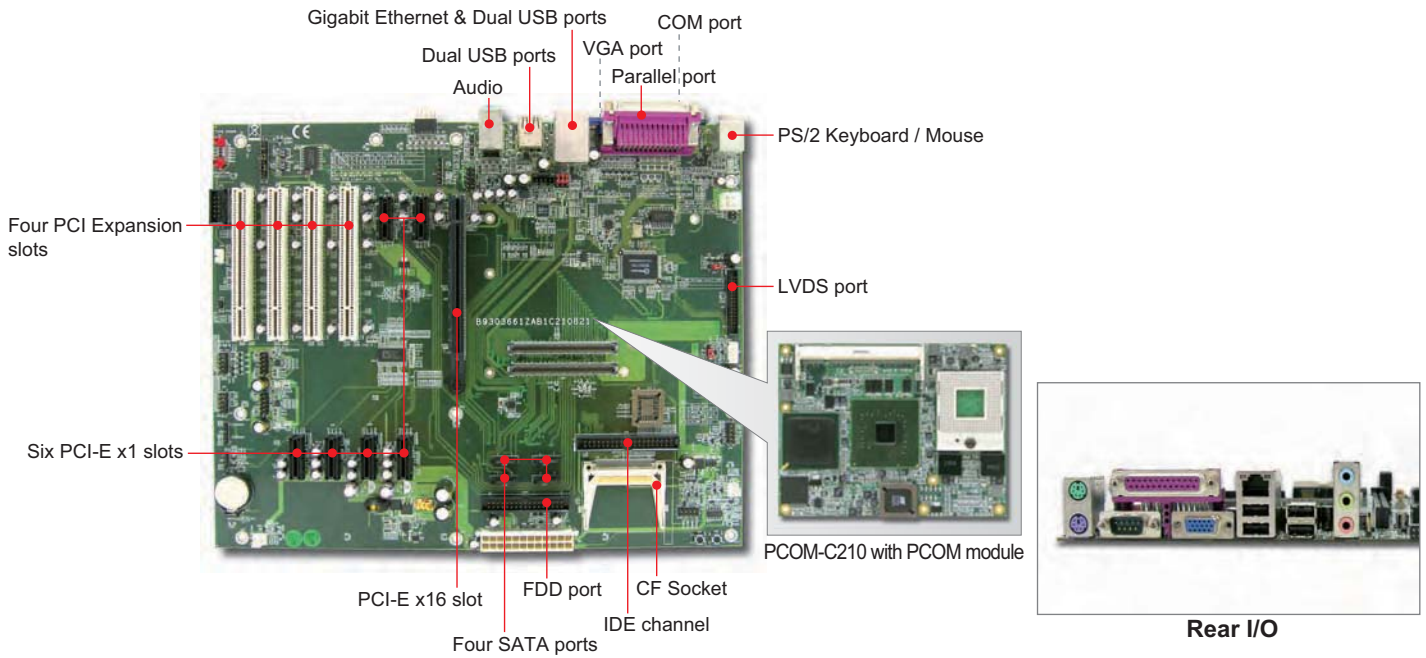
Processor	CPU & Package: Intel® 45nm Arrandale Core i7/i5/i3 or Celeron P4505 processor up to 2.53 GHz with 4MB Cache in FC-BGA package DMI x4 Link: 4.8GT/s (Full-Duplex)
Chipset/Core Logic	Intel® QM57
System Memory	Up to 8GB DDR3 800/1066 SDRAM on two SODIMM sockets
BIOS	UEFI AMI BIOS
Storage Devices	SATA: Four SATA 300 drivers; IDE: one EIDE channel with Ultra DMA 100/66/33
Solid State Disk	N/A
Watchdog Timer	N/A
Expansion Interface	- One PCI Express x16 - Four PCI devices - Six PCI Express x1 - LPC & SPI Interface - High definition audio interface
Hardware Monitoring	CPU Voltage and Temperature
Power Requirement	TBA
Dimension	Dimension: 125(L) x 95(W) mm
Environment	Operation Temperature: 0~60 °C Storage Temperature: -20~80 °C Operation Humidity: 5~90%

## I/O

MIO	N/A
IrDA	N/A
Ethernet	One Intel® 82577LM Gigabit Ethernet PHY
Audio	N/A
USB	Eight USB ports
Keyboard & Mouse	N/A

## DISPLAY

Graphic Controller	Intel® Arrandale integrated Graphics Media Accelerator (Gen 5.75 with 12 execution units)
Graphic Memory	Dynamic share system memory over 512MB (Intel® DVMT 5.0)
Display Interface	- Support CRT, LVDS, and PEG interfaces - CRTdisplay resolution up to 2048x1536@85Hz refresh



Rear I/O

## FEATURES

- COM Express carrier board accepts Portwell Type II COM Express modules
- ATX form factor to meet most standard mounting space and provide more expansions slots
- On-board power and reset switches benefit engineering testing or evaluation without a chassis
- 2 EIDE, 4 SATA, 4 PCI, 6 PCI-E x1 and 1 PCI-E x16
- Allow user to select master BIOS on board or from CPU module

## GENERAL

Com Express Module	Portwell Type II COM Express Module
BIOS	Award BIOS (or BIOS on COM Express Module)
Storage Devices	EIDE: Two EIDE devices with Ultra DMA 100/66/33 SATA: Four SATA ports
Solid State Disk	One Type II CF socket
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 min.
Expansion Interface	Four PCI, six PCI Express x1 and one PCI Express x16 expansion slots (availability based on COM Express module)
Dimension	Dimension : 304.8(L) x 243.8(W) mm; 12"(L) x 9.6" (W)
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing

## I/O

MIO	RS232 x1, one FDD channel and one parallel port
IrDA	N/A
Ethernet	- Single 10BASE-T/100BASE-TX/1000BASE Ethernet - Single RJ-45 connector with two LED indicators at rear I/O panel
Audio	High Definition Audio
USB	USB 2.0 x 6 (Dual ports at rear I/O panel; four ports internal)
Keyboard & Mouse	PS/2 keyboard & mouse

## ORDERING GUIDE

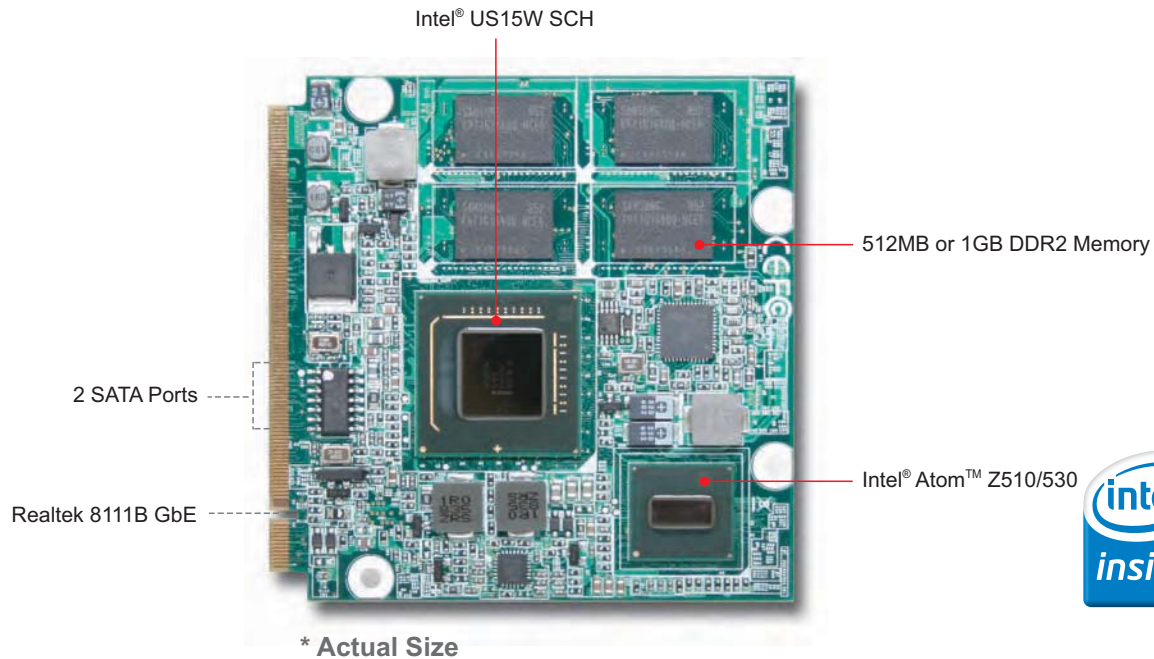
Standard	<b>PCOM-C210</b> ATX Form Factor Evaluation Board For COM Express Type II Module
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## DISPLAY

Graphic Controller	Depends on selected PCOM Module
Graphic Memory	Depends on selected PCOM Module
Display Interface	Support VGA, LVDS interfaces with dual display capability

# PQ7-M101G

Qseven, based on Intel® Atom™ Processor with DDR2 SDRAM, LVDS Display, Gigabit Ethernet, SDVO and SATA



## FEATURES

- Atom™ Z510 (1.1GHz) or Z530 (1.6GHz)
- Intel® US15W integrated GMA 500 Graphic, full hardware acceleration of H.264, MPEG2, VC1 and WMV9 is supported
- Support Two SATA Ports from Qseven Golden Finger
- Ultra Low CPU and SCH TDP (Under 5W) for fan-less application
- Full Hardware acceleration of H.264, MPEG2, VC1 and WM V9 is supported
- On board 512MB DDR2 supported
- 4Mbit flash ROM for easy BIOS upgrade and video BIOS for DFP

## GENERAL

Processor	Intel® Atom™ Processor Z510/Z530
Chipset/Core Logic	Intel® System Control Hub US15W
System Memory	Memory down, 512MB DDR2 400/533 SDRAM
BIOS	AMI
Storage Devices	SDIO Interface, support boot from SD (SDIO 1.1); 2 x SATA
Solid State Disk	N/A
Watchdog Timer	N/A
Expansion Interface	- One SDVO interface - One PCI Express x1 - LPC Interface - High definition audio interface
Hardware Monitoring	CPU Voltage and Temperature Sensing
Dimension	Dimension : 70(L) x 70(W) mm; 2.75"(L) x 2.75" (W)
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing

## ORDERING GUIDE

Standard	Part Number	Description
	<b>PQ7-M101G-1100-0512</b>	Intel® Atom™ Z510 Processor based Qseven module with 512MB DDR2 SDRAM, LVDS Display, Gigabit Ethernet SDVO and SATA
	<b>PQ7-M101G-1600-0512</b>	Intel® Atom™ Z530 Processor based Qseven module with 512MB DDR2 SDRAM, LVDS Display, Gigabit Ethernet SDVO and SATA
	<b>PQ7-M101G-1600-1024</b>	Intel® Atom™ Z530 Processor based Qseven module with 1024MB DDR2 SDRAM, LVDS Display, Gigabit Ethernet SDVO and SATA

## I/O

MIO	N/A
IrDA	N/A
Ethernet	One Gigabit Ethernet Controller (Realtek RTL8111B-GR)
Audio	Intel® HDA
USB	USB 2.0 x 8
Keyboard & Mouse	N/A

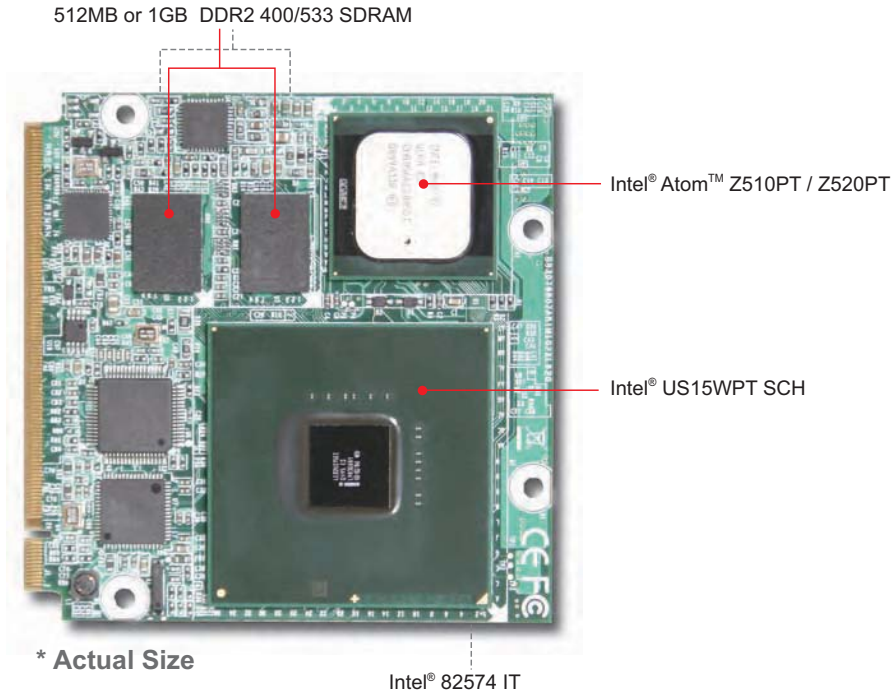
## DISPLAY

Graphic Controller	Intel® US15W SCH
Graphic Memory	Intel® GMA 500
Display Interface	LVDS / SDVO



# PQ7-M102XL

Qseven, Intel® Embedded Menlow-XL Platform with DDR2 SDRAM, LVDS Display, Gigabit Ethernet, SDVO and SATA



## FEATURES

- Atom™ Z510PT (1.1GHz) or Z520PT (1.33GHz)
- Intel® US15WPT integrated GMA 500 Graphic, full hardware acceleration of H.264, MPEG2, VC1 and WMV9 is supported
- Support Two SATA Ports from Qseven Golden Finger
- Ultra Low CPU and SCH TDP (Under 5W) for fan-less application
- Internal LVDS and SDVO interface for dual independent display
- On board 512MB DDR2 supported
- 4Mbit flash ROM for easy BIOS upgrade and video BIOS for DFP

## GENERAL

Processor	Intel® Atom™ Processor Z510PT/Z520PT
Chipset/Core Logic	Intel® System Control Hub US15WPT
System Memory	Memory down, 512MB 400/533 SDRAM
BIOS	AMI
Storage Devices	SDIO Interface, support boot from SD (SDIO 1.1); 2 x SATA
Solid State Disk	N/A
Watchdog Timer	N/A
Expansion Interface	- One Port SDVO interface - One PCI Express x1 - LPC Interface - High definition audio interface
Hardware Monitoring	CPU Voltage and Temperature Sensing
Dimension	Dimension : 70(L) x 70(W) mm; 2.75"(L) x 2.75" (W)
Environment	Operating Temperature: -40 to 85°C Storage Temperature: -40 to 85°C Relative Humidity: 5% to 95%, non-condensing

## ORDERING GUIDE

Standard	<b>PQ7-M102XL-1100-0512</b> Intel® Atom™ Z510PT Processor based Qseven module with 512MB DDR2 SDRAM, LVDS Display, Gigabit Ethernet SDVO and SATA
	<b>PQ7-M1102XL-1330-0512</b> Intel® Atom™ Z520PT Processor based Qseven module with 512MB DDR2 SDRAM, LVDS Display, Gigabit Ethernet SDVO and SATA

## I/O

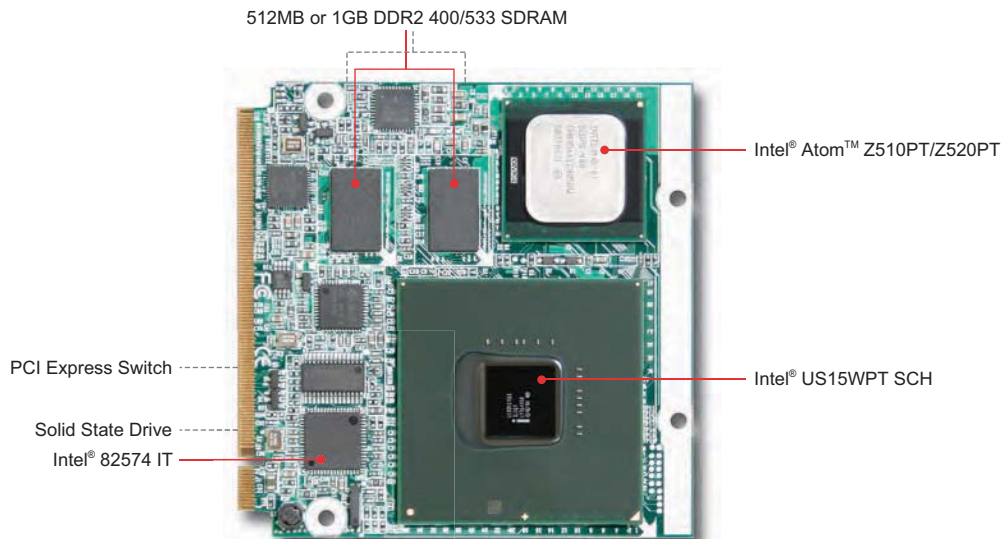
MIO	N/A
IrDA	N/A
Ethernet	One Gigabit Ethernet Controller (Intel® 82574 IT)
Audio	Intel® HDA
USB	USB 2.0 x 8
Keyboard & Mouse	N/A

## DISPLAY

Graphic Controller	Intel® US15WPT SCH
Graphic Memory	Intel® GMA 500
Display Interface	LVDS / SDVO

# PQ7-M103XL

Qseven, Based on Intel® eMenlow XL Platform with DDR2 SDRAM, SATA LVDS Display, Gigabit Ethernet, SDVO and NANDrive



\* Actual Size

## FEATURES

- Atom™ Z510PT (1.1GHz) or Z520PT (1.33GHz)
- Intel® US15WPT integrated GMA 500 Graphic
- Ultra Low CPU and SCH TDP (Under 5W) for fan-less application
- LVDS and SDVO interface for dual independent display
- Full Hardware acceleration of H.264, MPEG2, VC1 and WMV9 is supported
- On board DDR2 supported up to 1GB
- 4Mbit flash ROM for easy BIOS upgrade and video BIOS for DFP

## ORDERING GUIDE

Standard	<p><b>PQ7-M103XL-1100-0512-1G SSD</b> Intel® Atom™ Z510PT Processor based Qseven module with 512MB DDR2 SDRAM, LVDS Display, Gigabit Ethernet, SDVO and 1GB SSD</p> <p><b>PQ7-M103XL-1100-1024-1G SSD</b> Intel® Atom™ Z510PT Processor based Qseven module with 1GB DDR2 SDRAM, LVDS Display, Gigabit Ethernet, SDVO and 1GB SSD</p> <p><b>PQ7-M103XL-1330-0512-1G SSD</b> Intel® Atom™ Z520PT Processor based Qseven module with 512MB DDR2 SDRAM, LVDS Display, Gigabit Ethernet, SDVO and 1GB SSD</p> <p><b>PQ7-M103XL-1330-1024-1G SSD</b> Intel® Atom™ Z520PT Processor based Qseven module with 1GB DDR2 SDRAM, LVDS Display, Gigabit Ethernet, SDVO and 1GB SSD</p>
Optional	<p><b>Heat Spreader</b> 70x62x8mm for PQ7-M103XL with 512MB DDR2 SDRAM</p> <p><b>Heat Spreader</b> 70x62x8mm for PQ7-M103XL with 1GB DDR2 SDRAM</p>

## GENERAL

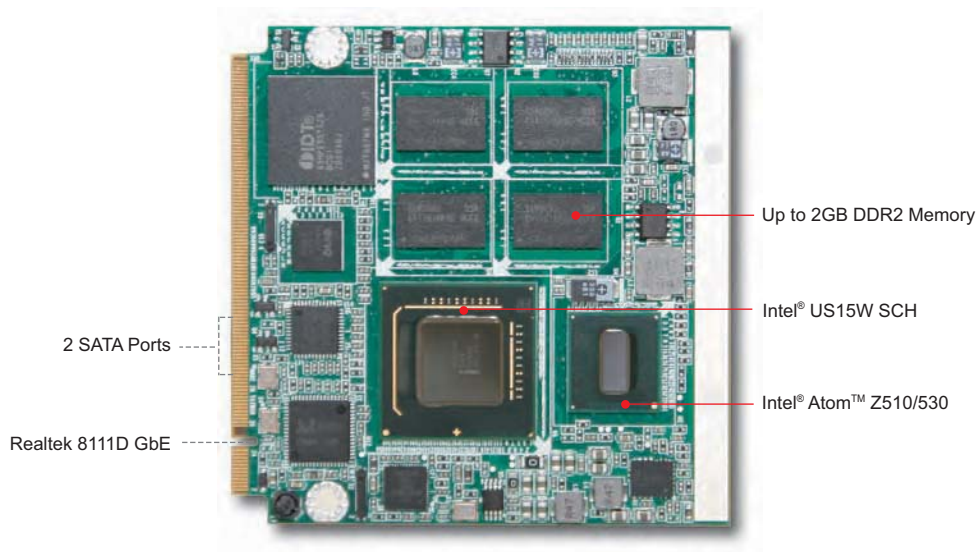
Processor	Intel® Atom™ Processor Z510PT / Z520PT (with Hyper-Threading Technology)
Chipset/Core Logic	Intel® System Control Hub US15WPT
System Memory	Memory down, Up to 1 GB DDR2 400/533 SDRAM, single channel (64 bits wide), 1 rank
BIOS	AMI
Storage Devices	SATA x2, SSD on module
Solid State Disk	On-board ATA 1GB Solid State Drive, up to 4G Byte support (optional)
Watchdog Timer	Customization
Expansion Interface	- Two PCI Express x1 lanes (3rd lane is available if no GbE support) - One SDVO interface - LPC Interface - High definition audio interface
Hardware Monitoring	EMC 1402 for Voltage and Temperature Sensing
Dimension	Dimension : 70(W) x 70(L) mm; 2.75"(W) x 2.75" (L)
Environment	Operation Temperature: -40 to 85°C Storage Temperature: -40 to 85°C Operation Humidity: 5 to 90%

## I/O

MIO	N/A
IrDA	N/A
Ethernet	One Gigabit Ethernet Controller (Intel® 82574 IT)
Audio	Intel® High Definition Audio (Intel® HD Audio)
USB	USB 2.0 x 8
Keyboard & Mouse	N/A

## DISPLAY

Graphic Controller	Intel® US15WPT SCH
Graphic Memory	Intel® GMA 500
Display Interface	- Single channel 112MHz LVDS transmitter, supports display with 1x18 and and 1x24 bit data mapping up to resolutions of 1366x768 pixel - Single channel SDVO interface, supports resolutions up to 1280x1024 pixel - Dual independent display support



2 SATA Ports

Realtek 8111D GbE

Up to 2GB DDR2 Memory

Intel® US15W SCH

Intel® Atom™ Z510/530

## FEATURES

- Atom™ Z510 (1.1GHz) or Z530 (1.6GHz)
- Intel® US15W integrated GMA 500 Graphic, full hardware acceleration of H.264, MPEG2, VC1 and WMV9 is supported
- Support two SATA and three PCI Express lanes from Qseven Golden Finger
- Ultra Low CPU and SCH TDP (Under 5W) for fan-less application
- Internal LVDS and SDVO interface for dual independent display
- On board up to 2GB DDR2 supported

## ORDERING GUIDE

### Standard

#### PQ7-M104G-1100-0512

Intel® Atom™ Z510 Processor based Qseven module with 512MB DDR2 SDRAM, LVDS Display, Gigabit Ethernet, SDVO and SATA

#### PQ7-M104G-1100-1024

Intel® Atom™ Z510 Processor based Qseven module with 1GB DDR2 SDRAM, LVDS Display, Gigabit Ethernet, SDVO and SATA

#### PQ7-M104G-1100-2048

Intel® Atom™ Z510 Processor based Qseven module with 2GB DDR2 SDRAM, LVDS Display, Gigabit Ethernet, SDVO and SATA

#### PQ7-M104G-1600-0512

Intel® Atom™ Z530 Processor based Qseven module with 512MB DDR2 SDRAM, LVDS Display, Gigabit Ethernet, SDVO and SATA

#### PQ7-M104G-1600-1024

Intel® Atom™ Z530 Processor based Qseven module with 1GB DDR2 SDRAM, LVDS Display, Gigabit Ethernet, SDVO and SATA

#### PQ7-M104G-1600-2048

Intel® Atom™ Z530 Processor based Qseven module with 2GB DDR2 SDRAM, LVDS Display, Gigabit Ethernet, SDVO and SATA

## GENERAL

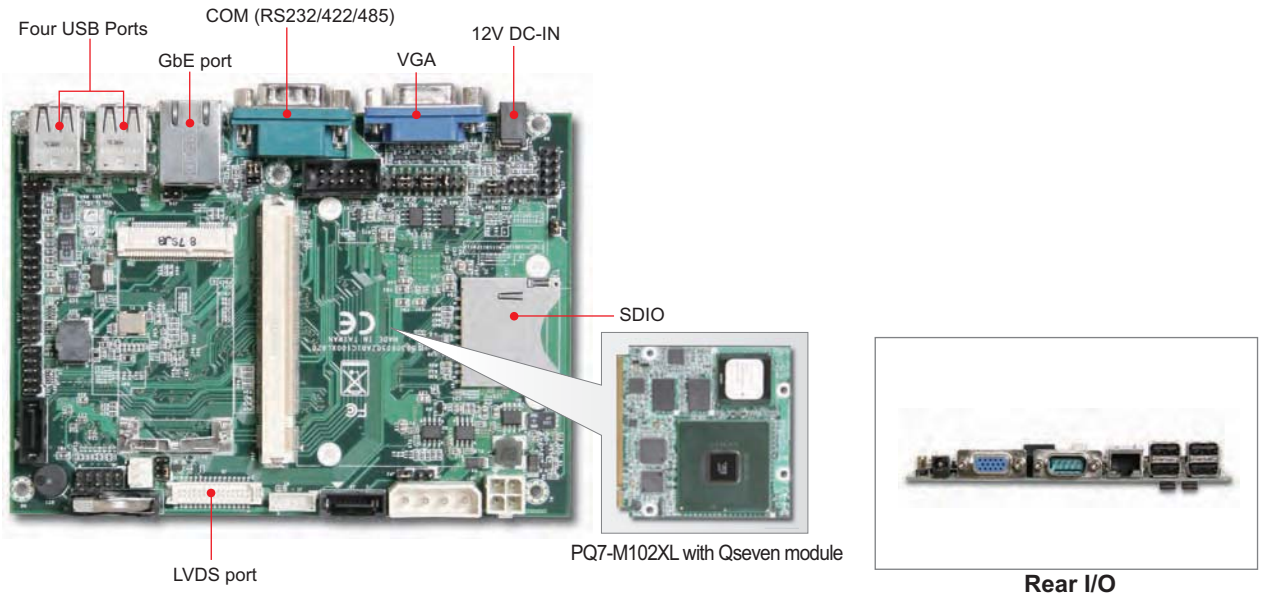
Qseven Module	Intel® Atom™ Processor Z510/Z530
Chipset/Core Logic	Intel® System Control Hub US15W
System Memory	Memory down, up to 2GB DDR2 400/533 SDRAM
BIOS	AMI
Storage Devices	SDIO Interface
Solid State Disk	On-board ATA 1GB Solid State Drive, up to 8G Byte support (optional)
Watchdog Timer	N/A
Expansion Interface	- One Port SDVO Interface - Three PCI Express x1 lanes (fourth lanes is available if no SATA support) - Two Ports SATA Interface - LPC Interface - High Definition Audio Interface
Hardware Monitoring	CPU Voltage and Temperature Sensing
Dimension	Dimension : 70(W) x 70(L) mm; 2.75"(W) x 2.75" (L)
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5 to 90%

## I/O

MIO	N/A
IrDA	N/A
Ethernet	One Realtek Gigabit Ethernet Controller (RTL8111D)
Audio	Intel® HDA
USB	USB 2.0 x 8
Keyboard & Mouse	N/A

## DISPLAY

Graphic Controller	Intel® US15W SCH
Graphic Memory	Intel® GMA 500
Display Interface	LVDS / SDVO



### FEATURES

- Qseven carrier board accept Portwell Qseven modules
- Intel® Atom™ Z5XXPT and SCH US15WPT
- 3.5" ESB form factor to embedded applications
- On Board DC to DC circuit for DC in application
- Mini-PCIe support
- Support boot from SD (SDIO 1.1)

### GENERAL

Qseven module	Portwell Qseven module PQ7-M102XL Series
BIOS	AMI BIOS (or BIOS and Qseven Module)
Storage Devices	SATA x 2
Solid State Disk	One SD socket (Support boot from SD)
Watchdog Timer	Programmable via software from 0.5 sec. to 254.4 min.
Expansion Interface	One mini-PCIe connector
Dimension	Dimension : 146(L) x 105(W) mm; 5.75"(L) x 4.13" (W)
Environment	Operating Temperature: -40 to 85°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing

### ORDERING GUIDE

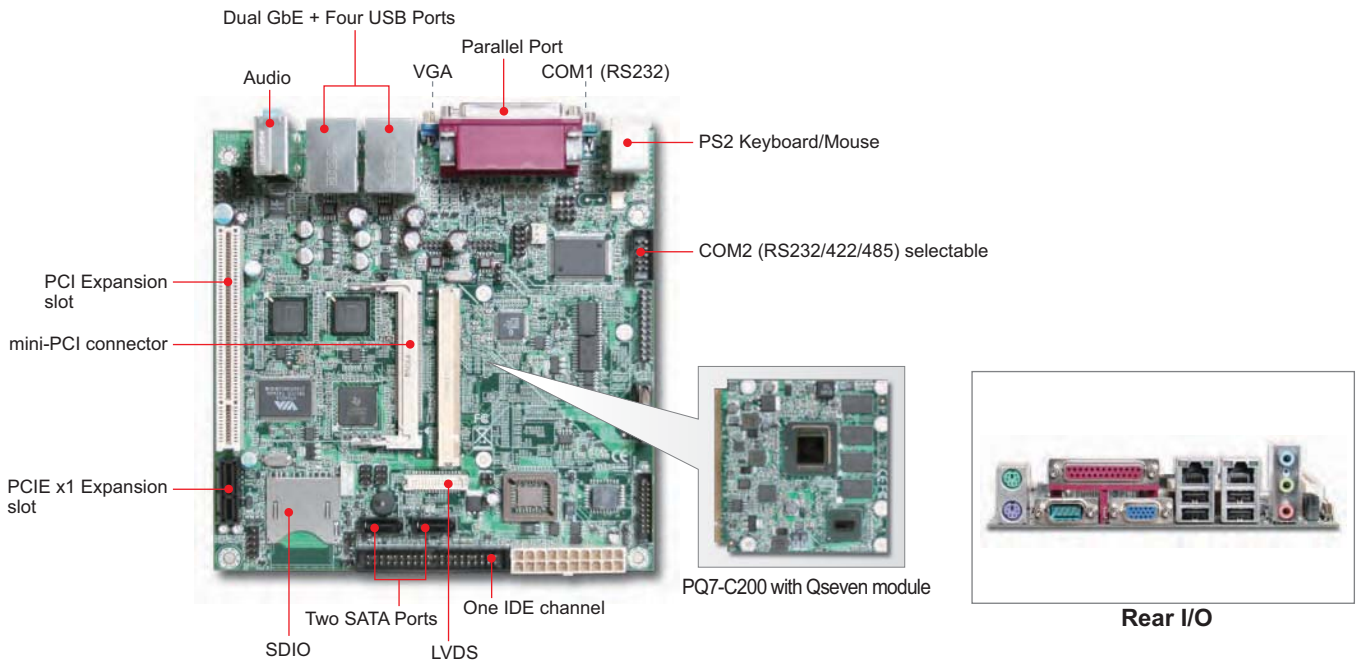
<b>Standard</b>	<b>PQ7-C100XL</b> Qseven Module in 3.5" ESB Form Factor Carrier Board with Wide range temperature support
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### I/O

MIO	RS232 x1, Client USB x1, Mic-in/Line-out
IrDA	Yes
Ethernet	IEEE802.3 10/100/1000 BASE-T Gigabit Ethernet compliant
Audio	Mic-in, Line-out
USB	USB 2.0 x 7
Keyboard & Mouse	N/A

### DISPLAY

Graphic Controller	Intel® US15WPT SCH
Graphic Memory	Intel® GMA 500
Display Interface	LVDS / VGA



### FEATURES

- Qseven carrier board accept Portwell Qseven modules
- Intel® Atom™ Z5XX and SCH US15W
- Mini-ITX form factor for embedded applications
- Dual PCI interface Gigabit Ethernet ports
- One IDE channel and Two SATA 150 Ports
- One PCI and PCIE x1 expansion slot via riser card

### GENERAL

Qseven Module	Portwell Qseven module PQ7-M100 Series
BIOS	Award BIOS (or BIOS on Qseven Module)
Storage Devices	IDE x1, SATA x2
Solid State Disk	One SD socket
Watchdog Timer	Programmable via software from 0.5 sec. to 254.5 min.
Expansion Interface	- One mini-PCI connector - One PCI expansion connector - One PCIE x1 expansion connector by riser card
Hardware Monitoring	CPU temperature
Dimension	Dimension : 170(L) x 170(W) mm; 6.69"(L) x 6.69" (W)
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing

### I/O

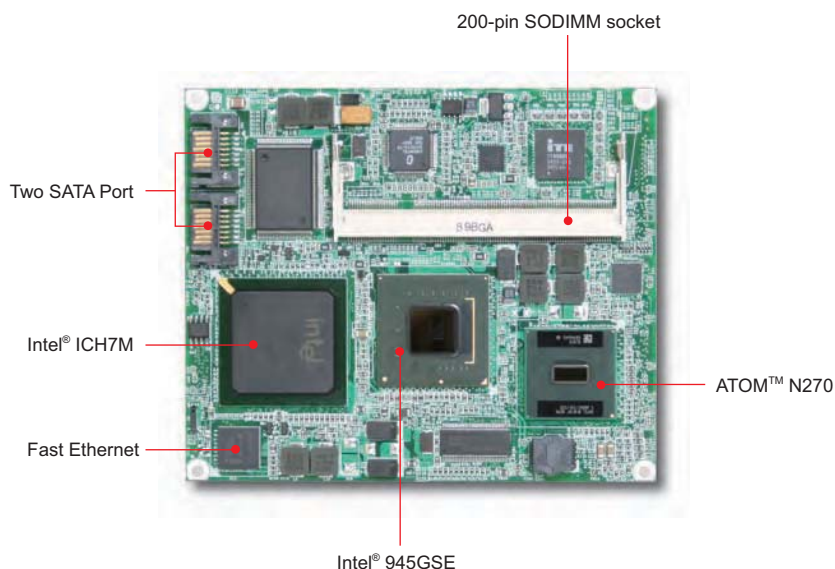
MIO	RS232 x1, RS232/422/485 selectable x1, LPT x1, K/B x1, Mouse x1, GbE x2
IrDA	N/A
Ethernet	IEEE802.3 10/100/1000BASE-T Gigabit Ethernet compliant
Audio	Mic in, Line in, Line out
USB	USB 2.0 x 4 ports and USB 2.0 x2 with header
Keyboard & Mouse	PS/2 Keyboard & Mouse

### ORDERING GUIDE

<b>Standard</b>	<b>PQ7-C200</b> Qseven Module in Mini-ITX Form Factor Carrier Board with Dual Displays and Two GbE
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### DISPLAY

Graphic Controller	Intel® US15W SCH
Graphic Memory	Intel® GMA 500
Display Interface	LVDS / VGA



## FEATURES

- The Intel® Atom™ N270 and 945GSE platform that provides cost effective solution and technology
- The Intel® platform brings under 10W TDP solution for easy fan-less design
- SATA and IDE interface provide best cost effective functions for market
- Architecture of module and carrier boards speeds up time-to-market of tailor-made equipment
- Support one SODIMM socket and up to 2GB memory size

## ORDERING GUIDE

<b>Standard</b>	<b>PEM-E200VLA</b> Intel® Atom™ N270, 945GSE platform based ETX module with DDR2 SDRAM, VGA, Fast Ethernet and USB
-----------------	---

## GENERAL

Processor	CPU & Package: Intel® Atom™ N270 1.6GHz in FCBGA package FSB: 533MHz
Chipset/Core Logic	Intel® 945GSE and ICH7M
System Memory	Up to 2GB DDR2 533 SDRAM on one 200-pin SODIMM socket
BIOS	Award BIOS
Storage Devices	EIDE: Support two EIDE channel with Ultra DMA 100/66/33 SATA: Support two SATA 150 drives
Solid State Disk	N/A
Watchdog Timer	Programmable via software from 1 sec. to 255 min.
Expansion Interface	- Two IDE channels - Four PCI devices - ISA Bus - Two COM Ports - One Printer Port - PS/2 Keyboard and Mouse - Line Out, Line In and MIC
Hardware Monitoring	CPU temperature
Dimension	Dimension : 114(L) x 95(W) mm; 4.5"(L) x 3.7" (W)
Environment	Operating Temperature: 0 to 60°C Storage Temperature: -20 to 80°C Relative Humidity: 5% to 90%, non-condensing

## I/O

MIO	Two serial ports (TTL Level)
IrDA	Yes
Ethernet	One Fast Ethernet Controller (Realtek RTL8102EL)
Audio	One HDA Audio Codec
USB	Four USB ports
Keyboard & Mouse	PS/2 Keyboard and Mouse

## DISPLAY

Graphic Controller	Intel® 945GSE integrated Graphics Media Accelerator (Intel® GMA 950)
Graphic Memory	Dynamic share system memory up to 224MB (Intel® DVMT 3.0) or static share system memory up to 128MB
Display Interface	- Support dual VGA (2nd supported by Chrontel CH7317A), LVDS and TV-out (optional) - CRT display resolution up to 2048x1536@85Hz refresh

## WEBS: Portwell Intelligent Fan-less System

Compact, Flexible, Rugged Computing Systems

With the capability of leading embedded computing technology, Portwell developed the industrial grade WEBS fan-less computing systems for harsh environment applications such as factory automation, transportation, facility management, networking and public works.

To meet these harsh environmental parameters, each WEBS computing system was 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 idea for environmental protection.





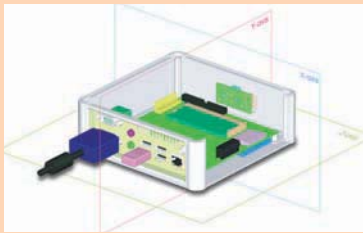
# Quality Assurance

## 1 Design & Analysis

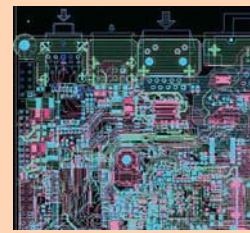
Portwell WEBS systems use quality assurance reviewing procedures in the critical early stages of development. Designing a stable product makes it easy for quality checking and complies with Design for Quality (DFQ).

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 its experienced engineering team, plus the complete development facility with 3D, circuit and layout design equipments, Portwell is able to supply more efficient system development to support its customers in "Design Win".



Design & analysis is performed by 3D workstation. (WEBS-2120)

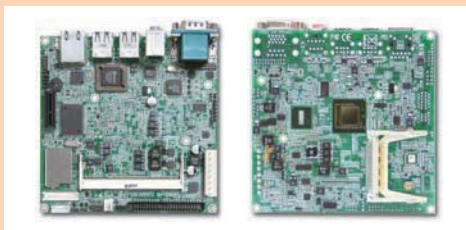


Circuit design & layout by advanced tools (NANO-8044)

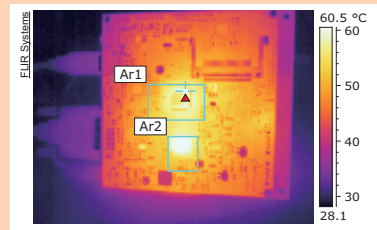
## 2 Thermal Design

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 accumulat. 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.

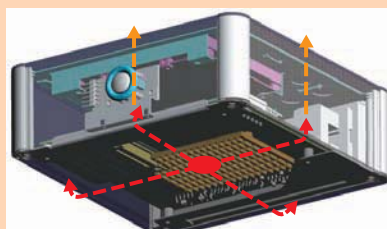


NANO-8044 M/B

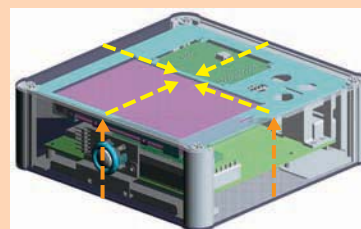


Thermal image of NANO-8044 M/B

**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.



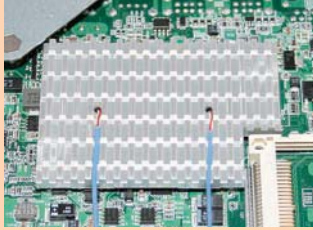
WEBS-2120 Heat-flow (Bottom)



WEBS-2120 Heat-flow (Top)

## 3 Thermal Validation

After completing the thermal design, the WEBS system starts the thermal validation by following Intel's thermal guide and 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



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. Testings include 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



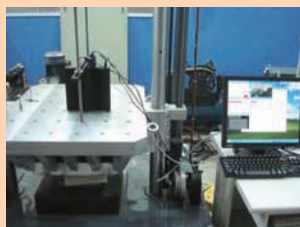
EMC Test



Vibration Test



Packing Vibration Test



Shock Test

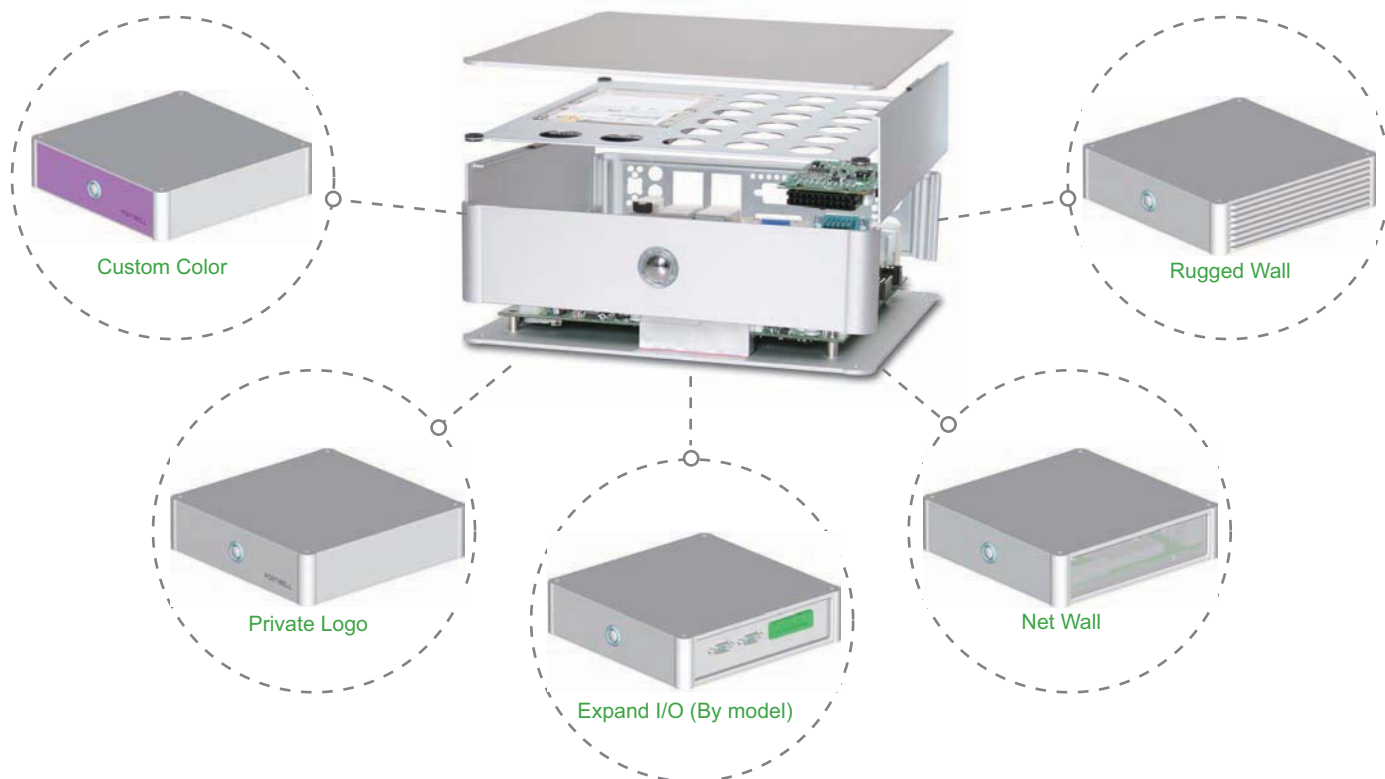


Packing Drop Test

## 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 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

# WEBS Reference Table



		Low Power	Low Power	Compact & Low Power	Low Power	Slim & Cable-less
Model		WEBS-3330	WEBS-2120	WEBS-2121	WEBS-1320	WEBS-3331
Embedded Board		WADE-8070	NANO-8044	NANO-8045	PEB-2737	WADE-8071
Platform	Form Factor	MINI-ITX	NANO-ITX	NANO-ITX	3.5" ECX	MINI-ITX
	Intel® Processor	Atom™ N270 1.6GHz	Atom™ Z510 1.1GHz Atom™ Z530 1.6GHz	Atom™ Z510 1.1GHz Atom™ Z530 1.6GHz	Atom™ Z510 1.1GHz Atom™ Z530 1.6GHz	Atom™ N270 1.6GHz
	Intel® Chipset	945GSE+ICH7-M	US15W	US15W	US15W	945GSE+ICH7-M
	FSB	533MHz	400MHz / 533MHz	400MHz / 533MHz	400MHz / 533MHz	533MHz
	BIOS	Award BIOS	AMI BIOS	AMI BIOS	AMI BIOS	Award BIOS
Memory	Socket	200-pin SO-DIMM	200-pin SO-DIMM	200-pin SO-DIMM	200-pin SO-DIMM	200-pin SO-DIMM
	Max. Memory	DDR2 2GB	DDR2 2GB	DDR2 2GB	DDR2 2GB	DDR2 2GB
Storage	Solid State	CF Socket	CF Socket	CF Socket	CF Socket	CF Socket
	HDD	2.5" SATA HDD	2.5" PATA	2.5" SATA HDD	2.5" SATA HDD	N/A
Networking	Controller (interface)	RTL8111C-VB (PCIE x1)	Intel® 82574L (PCIE x1)	RTL8111C-VC (PCIE x1)	RTL8111C-VC (PCIE x1)	RTL8111C-VC (PCIE x1)
Video	Controller	GMA 950	GMA 500	GMA 500	GMA 500	GMA 950
Audio	Codec	Realtek ALC662-GR	Realtek ALC262	Realtek ALC262	Realtek ALC262-VC2-GR	Realtek ALC662-GR
H/W Monitor	Controller	Winbond W83627UHG	Winbond W83627DHG	Winbond W83627DHG	Winbond W83627DHG	Winbond W83627HG-AW
	WDT	Programmable (1sec. to 255min.)	Programmable (1sec. to 255min.)	Programmable (1sec. to 255min.)	Programmable (1sec. to 255min.)	Programmable (1sec. to 255min.)
I/O	COM Ports	1x RS232 1x RS232/422/485	1x RS232/422/485	1x RS232	1x RS232	1x RS232
	Digital I/O	N/A	N/A	N/A	N/A	N/A
	USB 2.0	4	2	2	4	4
	VGA	1 x VGA	1 x VGA	N/A	1 x VGA	1 x VGA
	DVI	N/A	N/A	1 x DVI	N/A	N/A
	LAN	1 x Gigabit Ethernet	1 x Gigabit Ethernet	1 x Gigabit Ethernet	1 x Gigabit Ethernet	1 x Gigabit Ethernet
	PS/2	1 x KB; 1 x Mouse	N/A	N/A	1 x KB; 1 x Mouse	N/A
	Audio	Line-out and Mic-in	Line-out and Mic-in	Line-out and Mic-in	Line-out and Mic-in	Line-out and Mic-in
	Internal CF	1 x CF Socket	1 x CF Socket	1 x CF Socket	1 x CF Socket	1 x CF Socket
	Expansion	1 x Mini-PCI socket	N/A	N/A	SDIO socket (Internal onboard)	N/A
Power	System	12V DC-in	12V DC-in	12V DC-in	12V DC-in	12V DC-in
	Adaptor	100 ~ 240V	100 ~ 240V	100 ~ 240V	100 ~ 240V	100 ~ 240V
OS Supported		XP, Vista, CE, Linux	XP, XPe, CE, Linux	XP, XPe, CE, Linux	XP, Vista, CE, Linux	XP, Vista, CE, Linux
Environmental Parameters	Temperature	-5 ~ 45°C	-5 ~ 45°C	-5 ~ 45°C	-5 ~ 45°C	-5 ~ 45°C
	Hmidity (RH)	5 ~ 95%, non-condensing	5 ~ 95%, non-condensing	5 ~ 95%, non-condensing	5 ~ 95%, non-condensing	10 ~ 90%, non-condensing
Size (mm)		200 x 200 x 51	150 x 150 x 51	150 x 150 x 51	200 x 150 x 51	200 x 200 x 36

# WEBS Reference Table



		Wide Range Power Input	Wide Temp. Range	Rich Function	Rich Function	Slim & Cable-less
Model		WEBS-4330	WEBS-1310	WEBS-1330	WEBS-1340	WEBS-3332
<b>Embedded Board</b>		WADE-8170	PEB-2738	PEB-2131VG2A	PEB-2780	WADE-8071
<b>Platform</b>	Form Factor	MINI-ITX	3.5" ECX	3.5" ECX	3.5" ECX	MINI-ITX
	Intel® Processor	Atom™ N270 1.6GHz	Atom™ Z510 1.1GHz Atom™ Z520 1.3GHz	Atom™ N270 1.6GHz	Atom™ N450/D510 1.6GHz	Atom™ N270 1.6GHz
	Intel® Chipset	945GSE+ICH7-M	US15W PT	945GSE+ICH7-M	ICH8-M	945GSE+ICH7-M
	FSB	533MHz	400MHz / 533MHz	533MHz / 667MHz	667MHz	533MHz
	BIOS	Award BIOS	AMI BIOS	Award BIOS	Award BIOS	Award BIOS
<b>Memory</b>	Socket	200-pin SO-DIMM	200-pin SO-DIMM	200-pin SO-DIMM	200-pin SO-DIMM	200-pin SO-DIMM
	Max. Memory	DDR2 2GB	DDR2 2GB	DDR2 2GB	DDR2 2GB	DDR2 2GB
<b>Storage</b>	Solid State	CF Socket	CF Socket	CF Socket	CF Socket	CF Socket
	HDD	2.5" SATA HDD	2.5" SSD	2.5" SATA HDD	2.5" SATA HDD	N/A
<b>Networking</b>	Controller (interface)	ALC8111C (PCIe x1)	Intel® 82574IT (PCIe x1)	RTL8111D-VB-GR (PCIe x1)	1x Intel® 82657V 1x Intel® 82583V (PCIe x1)	RTL8111C-VC (PCIe x1)
<b>Video</b>	Controller	GMA 950	GMA 500	GMA 950	GMA 950	GMA 950
<b>Audio</b>	Codec	Realtek ALC655	Realtek ALC662-GR	Realtek ALC662	Realtek ALC262	Realtek ALC662-GR
<b>H/W Monitor</b>	Controller	ITE IT8712	Winbond W83627DHG	Winbond W83627UHG	Winbond W83627UHG	Winbond W83627HG-AW
	WDT	Programable (1sec. to 255min.)	Programable (1sec. to 255min.)	Programable (1sec. to 255min.)	Programable (1sec. to 255min.)	Programable (1sec. to 255min.)
<b>I/O</b>	COM Ports	2x RS232	1x RS232 1x RS232/422/485	4x RS232	3x RS232 1x RS232/422/485	1x RS232
	Digital I/O	8-bit Digital I/O	8-bit Digital I/O	N/A	N/A	N/A
	USB 2.0	4	4	2	4	4
	VGA	1 x VGA	1 x VGA	1 x VGA	1 x VGA	1 x VGA
	DVI	1 x DVI-D	N/A	N/A	N/A	N/A
	LAN	2 x Gigabit Ethernet	1 x Gigabit Ethernet	2 x Gigabit Ethernet	2 x Gigabit Ethernet	1 x Gigabit Ethernet
	PS/2	1 x KB; 1 x Mouse	N/A	N/A	N/A	N/A
	Audio	Line in, Line-out and Mic-in	Line-out and Mic-in	Line-out	N/A	Line-out and Mic-in
	Internal CF	1 x CF Socket	1 x CF Socket	1 x CF Socket	1 x CF Socket	1 x CF Socket
	Expansion	N/A	1 x Mini-PCIExpress	1 x Mini-PCIExpress	N/A	N/A
<b>Power</b>	System	12V DC-in or 9~27V DC-in(optional)	12V DC-in	12V DC-in	12V DC-in	12V DC-in
	Adaptor	100 ~ 240V	100 ~ 240V	100 ~ 240V	100 ~ 240V	100 ~ 240V
<b>OS Supported</b>		XP, Vista, CE, Linux	XP, Vista, CE, Linux	XP, Vista, CE, Linux	XP, Vista, CE, Linux	XP, Vista, CE, Linux
<b>Environmental Parameters</b>	Temperature	-5 ~ 45°C	-25 ~ 70°C	-5 ~ 45°C	-5 ~ 45°C	-5 ~ 50°C
	Hmidity (RH)	10 ~ 90%, non-condensing	5 ~ 95%, non-condensing	10 ~ 90%, non-condensing	10 ~ 90%, non-condensing	10 ~ 90%, non-condensing
<b>Size (mm)</b>		200 x 200 x 62	200 x 150 x 51	200 x 150 x 51	200 x 150 x 51	200 x 200 x 40



## FEATURES

- Intel® Atom™ N270 1.6GHz processor and Intel® 945GSE + ICH7-M chipset
- One 200-pin SO-DIMM supports DDR2 SDRAM up to 2GB
- Dual display (VGA / DVI), Dual Gigabit Ethernet and Dual serial ports
- Fan-less design is ideal for environment-critical application
- Optional DVD module
- Optional PCI/e x1 expansion slot for additional peripheral card
- Versatile mounting solutions such as Wall and Panel mount (Optional)
- Single DC 12V power input for easy system intergration

### SYSTEM

CPU	Intel® Atom™ N270 1.6GHz processor
FSB	533 MHz
BIOS	Award BIOS
System Chipset	Intel® 945GSE GMCH and ICH7-M
System Memory	One 200-pin SO-DIMM support DDR2 400/533 up to 2GB
Storage	- 1 x SATA 2.5" HDD - 1 x CF
Watchdog Timer	Programmable via S/W from 1sec. to 255min.
H/W Status Monitor	Temperature (CPU and System), Voltage, Case open function
Expansion	1 x Mini-PCI socket

### REAR PANEL

Serial Port	1 x RS232; 1 x RS232/422/485 selectable
Display	1 x VGA; 1 x DVI
USB	4 x USB 2.0
KB/MS	1 x K/B; 1 x Mouse
Audio Interface	Line-out and Mic-in
Ethernet	2 x Gigabit Ethernet

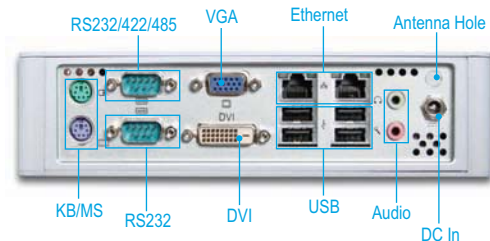
### Power Supply Unit

Power Input	DC 12V
Adaptor	AC 100~240V

### MECHANICAL & ENVIRONMENTAL

Operation Temperature	-5~45°C
Storage Temperature	-20~80°C
Relative Humidity	10~90% non-condensing
Dimension (WxDxH)	200x200x51 mm; 7.9"x7.9"x2" 200x200x83 mm; 7.9"x7.9"x3.3" (with optional module)
Weight	1.8 kg

## REAR I/O



## WEBS-3330-1602



## WEBS-3330-1603



## ORDERING GUIDE

- **WEBS-3330-1600**  
System with WADE-8070 (Atom™ N270 1.6GHz) + 2GB DDR2 + 120GB HDD
- **WEBS-3330-1602**  
System with WADE-8070 (Atom™ N270 1.6GHz) + 2GB DDR2 + 120GB HDD + DVD Module
- **WEBS-3330-1603**  
System with WADE-8070 (Atom™ N270 1.6GHz) + 2GB DDR2 + 120GB HDD + PCI/e x 1 expansion



## FEATURES

- Intel® Atom™ processor Z510/Z530 and System Controller Hub US15W
- Ultra low power and fan-less design
- One 200-pin SO-DIMM supports DDR2 SDRAM up to 2GB
- Versatile interfaces such as Compact Flash and 2.5" HDD
- Compact and user-friendly design for easy installation and maintenance
- Versatile mounting solutions such as Wall, Panel and DIN mount (Optional)
- Vibration test (5grms/5~500Hz/operation) - Compact Flash
- Shock test (50g peak acceleration - 11msec. duration) - Compact Flash

### SYSTEM

<b>CPU</b>	Intel® Atom™ processor Z510 / Z530
<b>FSB</b>	400/533 MHz
<b>BIOS</b>	AMI BIOS
<b>System Chipset</b>	Intel® System Controller Hub US15W integrated GMA 500 Graphics
<b>System Memory</b>	One 200-pin SO-DIMM support DDR2 400/533 up to 2GB
<b>Storage</b>	- 1 x SATA 2.5" HDD - 1 x CF
<b>Watchdog Timer</b>	Programmable via S/W from 1sec. to 255min.
<b>H/W Status Monitor</b>	- Temperature (CPU and System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)

### REAR PANEL

<b>Serial Port</b>	1 x RS232/422/485
<b>Display</b>	1 x VGA
<b>USB</b>	4 x USB 2.0
<b>Audio Interface</b>	Line-out and Mic-in
<b>Ethernet</b>	Ethernet 1 x Gigabit Ethernet

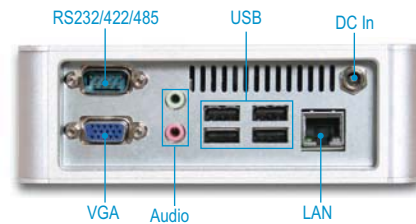
### Power Supply Unit

<b>Power Input</b>	DC 12V
<b>Adaptor</b>	AC 100~240V

### MECHANICAL & ENVIRONMENTAL

<b>Operation Temperature</b>	-5~45°C
<b>Storage Temperature</b>	-20~80°C
<b>Relative Humidity</b>	5~95% non-condensing
<b>Dimension (WxDxH)</b>	150x150x51 mm; 5.9"x5.9"x2"
<b>Weight</b>	1 kg

## REAR I/O



## Brick Concept



## ORDERING GUIDE

- **WEBS-2120-1100**  
System with NANO-8044 (Atom™ Z510 1.1GHz) + 1GB DDR2 + 120GB HDD
- **WEBS-2120-1600**  
System with NANO-8044 (Atom™ Z530 1.6GHz) + 2GB DDR2 + 120GB HDD



## FEATURES

- Intel® Atom™ processor Z510/Z530 and System Controller Hub US15W
- Ultra low power and fan-less design
- One 200-pin SO-DIMM supports DDR2 SDRAM up to 2GB
- Versatile interfaces such as Compact Flash and SATA 2.5" HDD
- Compact and user-friendly design for easy installation and maintenance
- Versatile mounting solutions such as Wall, Panel and DIN mount (Optional)
- Vibration test (5grms/5~500Hz/operation) - Compact Flash
- Shock test (50g peak acceleration - 11msec. duration) Compact Flash

### SYSTEM

CPU	Intel® Atom™ processor Z510 / Z530
FSB	400/533 MHz
BIOS	AMI BIOS
System Chipset	Intel® System Controller Hub US15W integrated GMA 500 Graphics
System Memory	One 200-pin SO-DIMM support DDR2 400/533 up to 2GB
Storage	- 1 x SATA 2.5" HDD - 1 x CF
Watchdog Timer	Programmable via S/W from 1sec. to 255min.
H/W Status Monitor	- Temperature (CPU and System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)

### REAR PANEL

Serial Port	1 x RS232
Display	1 x DVI
USB	2 x USB 2.0
Audio Interface	Line-out and Mic-in
Ethernet	1 x Gigabit Ethernet

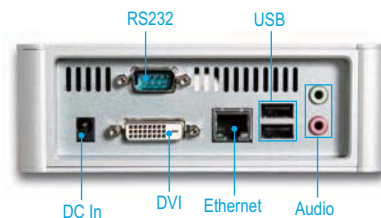
### Power Supply Unit

Power Input	DC 12V
Adaptor	AC 100~240V

### MECHANICAL & ENVIRONMENTAL

Operation Temperature	-5~45°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension (WxDxH)	150x150x51 mm; 5.9"x5.9"x2"
Weight	1 kg

## REAR I/O



## Brick Concept



## ORDERING GUIDE

- **WEBS-2121-1100**  
System with NANO-8045 (Atom™ Z510 1.1GHz) +1GB DDR2 + 120GB HDD
- **WEBS-2121-1600**  
System with NANO-8045 (Atom™ Z530 1.6GHz) +2GB DDR2 + 120GB HDD



## FEATURES

- Intel® Atom™ processor Z510/Z530 and System Controller Hub US15W
- Ultra low power and fan-less design
- One 200-pin SO-DIMM supports DDR2 SDRAM up to 2GB
- Versatile interfaces such as Compact Flash and SATA 2.5" HDD
- Compact and user-friendly design for easy installation and maintenance
- Versatile mounting solutions such as Wall, Panel and DIN mount (Optional)
- Single DC 12V power input for easy system integration

### SYSTEM

<b>CPU</b>	Intel® Atom™ processor Z510 / Z530
<b>FSB</b>	400/533 MHz
<b>BIOS</b>	AMI BIOS
<b>System Chipset</b>	Intel® System Controller Hub US15W integrated GMA 500 Graphics
<b>System Memory</b>	One 200-pin SO-DIMM support DDR2 400/533 up to 2GB
<b>Storage</b>	- 1 x SATA 2.5" HDD - 1 x CF
<b>Watchdog Timer</b>	Programmable via S/W from 1sec. to 255min.
<b>H/W Status Monitor</b>	- Temperature (CPU and System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)

### REAR PANEL

<b>Serial Port</b>	1 x RS232
<b>Display</b>	1 x VGA
<b>USB</b>	4 x USB 2.0
<b>KB/MS</b>	1 x K/B; 1 x Mouse
<b>Audio Interface</b>	Line-out and Mic-in
<b>Ethernet</b>	1 x Gigabit Ethernet

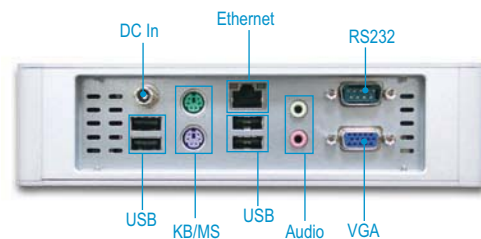
### Power Supply Unit

<b>Power Input</b>	DC 12V
<b>Adaptor</b>	AC 100~240V

### MECHANICAL & ENVIRONMENTAL

<b>Operation Temperature</b>	-5~45°C
<b>Storage Temperature</b>	-20~80°C
<b>Relative Humidity</b>	5~95% non-condensing
<b>Dimension (WxDxH)</b>	200x150x51 mm; 7.9"x5.9"x2"
<b>Weight</b>	1.2 kg

## REAR I/O



## Brick Concept



## ORDERING GUIDE

- **WEBS-1320-1100**  
System with PEB-2737 (Atom™ Z510 1.1GHz) +1GB DDR2 + 120GB HDD
- **WEBS-1320-1600**  
System with PEB-2737 (Atom™ Z530 1.6GHz) +2GB DDR2 + 120GB HDD



## FEATURES

- Intel® Atom™ N270 1.6GHz processor and Intel® 945GSE + ICH7-M chipset
- One 200-pin SO-DIMM supports DDR2 SDRAM up to 2GB
- 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

### SYSTEM

CPU	Intel® Atom™ N270 1.6GHz processor
FSB	533 MHz
BIOS	Award BIOS
System Chipset	Intel® 945GSE GMCH integrated GMA 950 Graphics and ICH7-M
System Memory	One 200-pin SO-DIMM supports DDR2 400/533 up to 2GB
SSD	1 x CF
Watchdog Timer	Programmable via S/W from 1sec. to 255min.
H/W Status Monitor	Temperature (CPU and System), Voltage, Case open function

### REAR PANEL

Serial Port	1 x RS232
Display	1 x VGA
USB	4 x USB 2.0
Audio Interface	Line-out and Mic-in
Ethernet	1 x Gigabit Ethernet

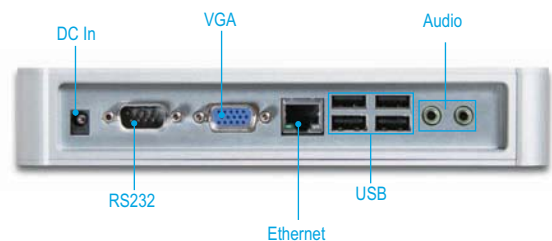
### Power Supply Unit

Power Input	DC 12V
Adaptor	AC 100~240V

### MECHANICAL & ENVIRONMENTAL

Operation Temperature	-5~45°C
Storage Temperature	-20~80°C
Relative Humidity	10~90% non-condensing
Dimension (WxDxH)	200x200x36 mm; 7.9"x7.9"x1.4"
Weight	1.1 kg

## REAR I/O

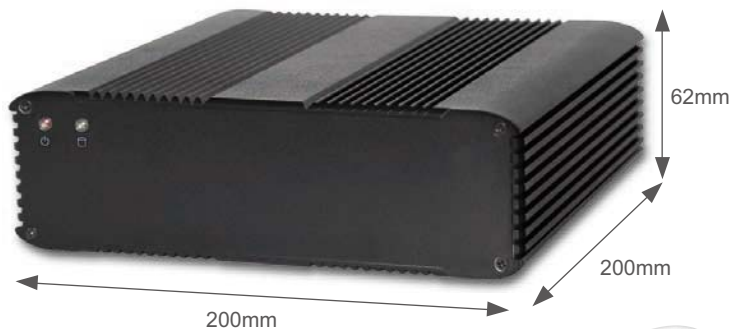


## Brick Concept



## ORDERING GUIDE

- **WEBS-3331-1600**  
System with WADE-8071 (Atom™ N270 1.6GHz) + 2GB DDR2 + 4GB CF
- **WEBS-3331-1601**  
System with WADE-8071 (Atom™ N270 1.6GHz) + 1GB DDR2 + 512MB CF



## FEATURES

- Intel® Atom™ N270 1.6GHz processor and Intel® 945GSE+ICH7-M chipset
- Dual display (VGA / DVI-D), Dual Gigabit Ethernet and Dual RS232
- 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 12V power input for easy system intergration
- Two interfaces of DC power input by adaptor plug or wiring type

SYSTEM	
CPU	Intel® Atom™ N270 1.6GHz processor
FSB	533 MHz
BIOS	AMI BIOS
System Chipset	Intel® 945GSE GMCH integrated GMA 950 Graphics and ICH7-M
System Memory	One 200-pin SO-DIMM support DDR2 400/533 up to 2GB
Storage	1 x CF, 1x HDD
Watchdog Timer	Programmable via S/W from 1sec. to 255min.
H/W Status Monitor	Temperature (CPU and System), Voltage

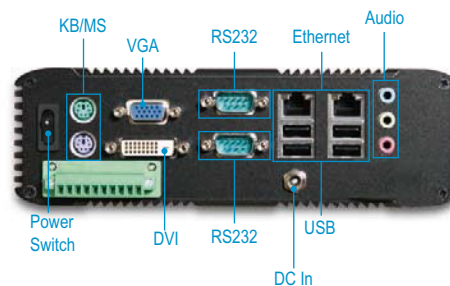
REAR PANEL	
Serial Port	2 x RS232
Display	1 x VGA + 1 x DVI-D
USB	4 x USB 2.0
KB/MS	1 x K/B; 1 x Mouse
Audio Interface	Line-in, Line-out and Mic-in
Ethernet	2 x Gigabit Ethernet
PS/2	1 x Keyboard, 1 x Mouse
Digital IO	8-bit Digital IO

Power Supply Unit	
Power Input	DC 12V
Adaptor	AC 100~240V
Optional wire type DC-IN	DC 9V~27V

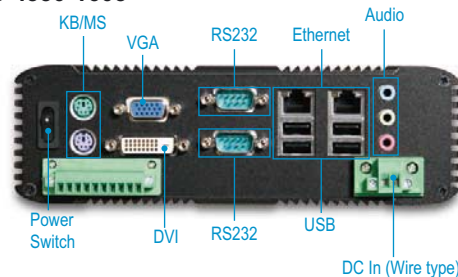
MECHANICAL & ENVIRONMENTAL	
Operation Temperature	-5~45°C
Storage Temperature	-20~80°C
Relative Humidity	10~90% non-condensing
Dimension (WxDxH)	200x200x62 mm; 7.9"x7.9"x2.4"
Weight	1.9 kg

## REAR I/O

### WEBS-4330-1600



### WEBS-4330-1603

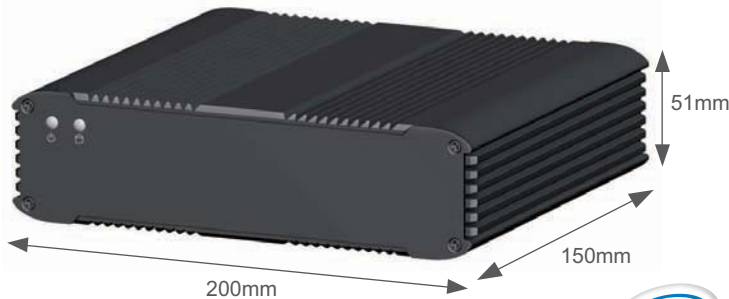


## ORDERING GUIDE

- **WEBS-4330-1600**  
System with WADE-8170 (Atom™ N270 1.6GHz) with DC Jack + Adaptor + 2GB DDR2 + 160GB HDD
- **WEBS-4330-1603**  
System with WADE-8170 (Atom™ N270 1.6GHz) + GADIWA-R9271 with wire type power input interface

# WEBS-1310

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



## 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

### SYSTEM

CPU	Intel® Atom™ Z510PT(1.1GHz)/Z520PT(1.3GHz)
FSB	400/533 MHz
BIOS	AMI BIOS
System Chipset	Intel® US15WPT
System Memory	One 200-pin SO-DIMM support DDR2 400/533 up to 2GB
Storage	1 x CF, 1 x SSD
Watchdog Timer	Programmable via S/W from 1sec. to 255min.
H/W Status Monitor	Temperature (CPU and System), Voltage

### REAR PANEL

Serial Port	1 x RS232 + 1 x RS232/422/485
Display	1 x VGA
USB	4 x USB 2.0
Audio Interface	Line-out and Mic-in
Ethernet	1 x Gigabit Ethernet
Digital IO	8-bit Digital IO

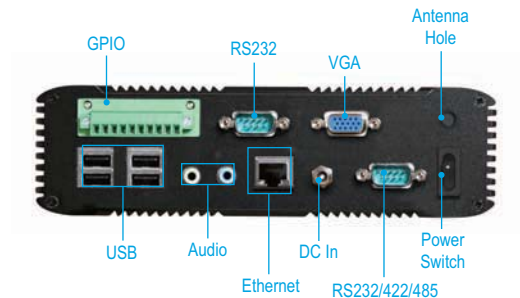
### Power Supply Unit

Power Input	DC 12V
Adaptor	AC 100~240V

### MECHANICAL & ENVIRONMENTAL

Operation Temperature	-5~45°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension (WxDxH)	200x150x51 mm; 7.9"x5.9"x2"
Weight	1.6 kg

## REAR I/O



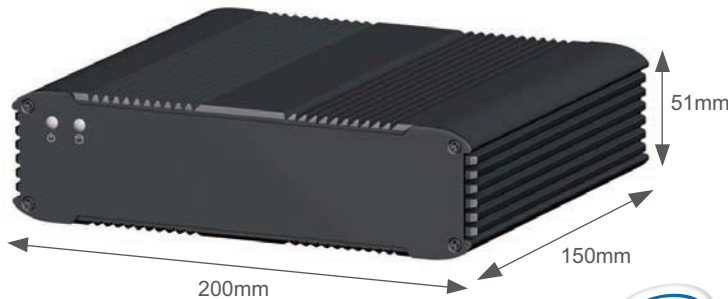
## ORDERING GUIDE

- **WEBS-1310-1100**  
System with PEB-2738 (Atom™ Z510PT 1.1GHz) + 1GB DDR2 + 512MB CF
- **WEBS-1310-1300**  
System with PEB-2738 (Atom™ Z520PT 1.3GHz) + 2GB DDR2 + 4GB CF



# 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 x 1536 (QXGA)
- One Mini-PCIExpress expansion with an Antenna hole
- Dual LAN and 4 COMs (5V/12V selectable) are good for networking, POS and automation 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

### SYSTEM

CPU	Intel® Atom™ N270 1.6GHz processor
FSB	533 MHz
BIOS	AMI BIOS
System Chipset	Intel® 945GSE GMCH integrated GMA 950 Graphics and ICH7-M
System Memory	One 200-pin SO-DIMM support DDR2 400/533 up to 2GB
Storage	1 x CF, 1x HDD
Watchdog Timer	Programmable via S/W from 1sec. to 255min.
H/W Status Monitor	Temperature (CPU and System), Voltage

### REAR PANEL

Serial Port	4 x Powered RS232 (5V/12V)
Display	1 x VGA
USB	2 x USB 2.0
Audio Interface	Line-out
Ethernet	2 x Gigabit Ethernet

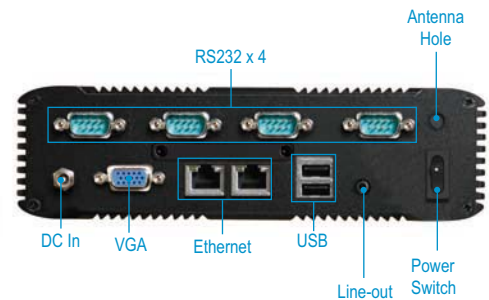
### Power Supply Unit

Power Input	DC 12V
Adaptor	AC 100~240V

### MECHANICAL & ENVIRONMENTAL

Operation Temperature	-5~45°C
Storage Temperature	-20~80°C
Relative Humidity	10~90% non-condensing
Dimension (WxDxH)	200x150x51 mm; 7.9"x5.9"x2"
Weight	1.6 kg

## REAR I/O

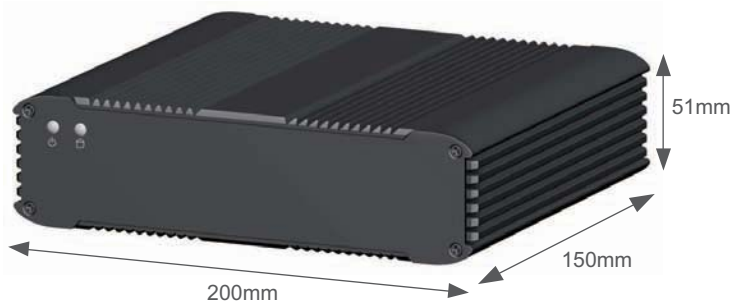


## ORDERING GUIDE

- **WEBS-1330-1600**  
System with PEB-2131 (Atom™ N270 1.6GHz) + 1GB DDR2 + 512MB CF

# WEBS-1340

Embedded rugged fan-less system with Intel® Atom™ N450/D510 based 3.5" ECX board



## FEATURES

- Fan-less solution with Dual-Core CPU
- Intel® Atom™ N450/D510 1.6GHz processor and Intel® ICH8-M chipset
- Dual Gigabit Ethernet
- 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
- Three RS232 and one RS232/422/485 serial ports

### SYSTEM

<b>CPU</b>	Intel® Atom™ N450/D510 1.6GHz processor
<b>FSB</b>	667 MHz
<b>BIOS</b>	AMI BIOS
<b>System Chipset</b>	Intel® ICH8-M
<b>System Memory</b>	One 200-pin SO-DIMM support DDR2 up to 2GB
<b>Storage</b>	1 x CF, 1 x HDD
<b>Watchdog Timer</b>	Programmable via S/W from 1sec. to 255min.
<b>H/W Status Monitor</b>	Temperature (CPU and System), Voltage

### REAR PANEL

<b>Serial Port</b>	3 x RS232 + 1 x RS232/422/485
<b>Display</b>	1 x VGA
<b>USB</b>	4 x USB 2.0
<b>Audio Interface</b>	N/A (internal header only)
<b>Ethernet</b>	2 x Gigabit Ethernet

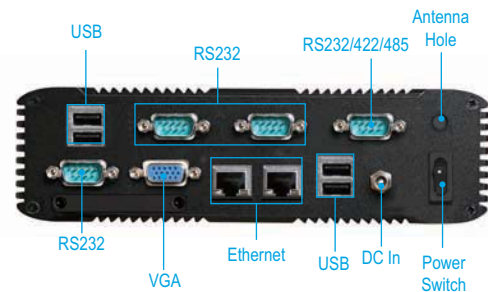
### Power Supply Unit

<b>Power Input</b>	DC 12V
<b>Adaptor</b>	AC 100~240V

### MECHANICAL & ENVIRONMENTAL

<b>Operation Temperature</b>	-5~45°C
<b>Storage Temperature</b>	-20~80°C
<b>Relative Humidity</b>	10~90% non-condensing
<b>Dimension (WxDxH)</b>	200x150x51 mm; 7.9"x5.9"x2"
<b>Weight</b>	1.6 kg

## REAR I/O



## ORDERING GUIDE

- **WEBS-1340-1600**  
System with PEB-2780 (Atom™ N450 1.6GHz) + 1GB DDR2 + 512MB CF



## FEATURES

- Intel® Atom™ N270 1.6GHz processor and Intel® 945GSE + ICH7-M chipset
- One 200-Pin SO-DIMM supports DDR2 SDRAM up to 2GB
- Analog Display: Up to 2048 x 1536 (QXGA)
- 40mm height supports thin client and DS application
- Fan-less and optional cable-less design for easy maintenance
- Rugged and slim design is ideal for environment-critical application
- Versatile mounting solutions such as Wall and Panel mount (Optional)
- Vibration test (5grms/5~500Hz/operation)
- Shock test (50g peak acceleration - 11msec. duration)

### SYSTEM

CPU	Intel® Atom™ N270 1.6GHz processor
FSB	533 MHz
BIOS	Award BIOS
System Chipset	Intel® 945GSE GMCH integrated GMA 950 Graphics and ICH7-M
System Memory	One 200-pin SO-DIMM support DDR2 400/533 up to 2GB
SSD	1 x CF
Watchdog Timer	Programmable via S/W from 1sec. to 255min.
H/W Status Monitor	Temperature (CPU and System), Voltage

### REAR PANEL

Serial Port	1 x RS232
Display	1 x VGA
USB	4 x USB 2.0
Audio Interface	Line-out and Mic-in
Ethernet	1 x Gigabit Ethernet

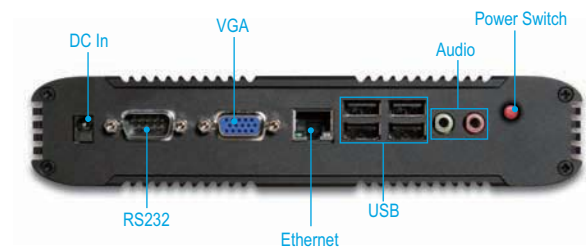
### Power Supply Unit

Power Input	DC 12V
Adaptor	AC 100~240V

### MECHANICAL & ENVIRONMENTAL

Operation Temperature	-5~50°C
Storage Temperature	-20~80°C
Relative Humidity	10~90% non-condensing
Dimension (WxDxH)	200x200x40 mm; 7.9"x7.9"x1.6"
Weight	1.4 kg

## REAR I/O



## ORDERING GUIDE

- **WEBS-3332-1600**  
System with WADE-8071 (Atom™ N270 1.6GHz) + 2GB DDR2 + 4GB CF
- **WEBS-3332-1601**  
System with WADE-8071 (Atom™ N270 1.6GHz) + 1GB DDR2 + 512MB CF

# WEBS Mounting Solution

## Wall Mount Kit



### WEBS-2120 / 2121 / 1320

System Size	150/200(W) x 150(D) x 51(H)mm
Ordering	WEBS-2120 Wall Mount Kit

### WEBS-3330 / 3331

System Size	200(W) x 200(D) x 51/36(H)mm
Ordering	WEBS-3330 Wall Mount Kit



### WEBS-3332 / 4330

System Size	200(W) x 200(D) x 40/62(H)mm
Ordering	WEBS-3332 Wall Mount Kit

### WEBS-1310 / 1330 / 1340

System Size	200(W) x 150(D) x 51(H)mm
Ordering	WEBS-1310 Wall Mount Kit

## DIN Mount Kit



### WEBS-2120 / 2121 / 1320

System Size	150/200(W) x 150(D) x 51(H)mm
Ordering	WEBS-2120 Wall Mount Kit
Remark	DIN Rail H=35mm (w/o Rail)

## Panel Mount Kit



### WEBS-2120 / 2121

System Size	150(W) x 150(D) x 51(H)mm
Ordering	WEBS-2120 Panel Mount Kit
Remark	VESA 75/100

### WEBS-1320

System Size	200(W) x 150(D) x 51(H)mm
Ordering	WEBS-1320 Panel Mount Kit
Remark	VESA 75/100

### WEBS-3330 / 3331

System Size	200(W) x 200(D) x 51/36(H)mm
Ordering	WEBS-3330 Panel Mount Kit
Remark	VESA 75/100



### WEBS-3332 / 4330

System Size	200(W) x 200(D) x 40/62(H)mm
Ordering	WEBS-3332 Panel Mount Kit
Remark	VESA 75/100

### WEBS-1310 / 1330 / 1340

System Size	200(W) x 150(D) x 51(H)mm
Ordering	WEBS-1310 Panel Mount Kit
Remark	VESA 75/100

# WEBS Mounting Solution

## Wall Mount Kit



### WEBS-2120 / 2121 / 1320

System Size	150/200(W) x 150(D) x 51(H)mm
Ordering	WEBS-2120 Wall Mount Kit

### WEBS-3330 / 3331

System Size	200(W) x 200(D) x 51/36(H)mm
Ordering	WEBS-3330 Wall Mount Kit



### WEBS-3332 / 4330

System Size	200(W) x 200(D) x 40/62(H)mm
Ordering	WEBS-3332 Wall Mount Kit

### WEBS-1310 / 1330 / 1340

System Size	200(W) x 150(D) x 51(H)mm
Ordering	WEBS-1310 Wall Mount Kit

## DIN Mount Kit



### WEBS-2120 / 2121 / 1320

System Size	150/200(W) x 150(D) x 51(H)mm
Ordering	WEBS-2120 Wall Mount Kit
Remark	DIN Rail H=35mm (w/o Rail)

## Panel Mount Kit



### WEBS-2120 / 2121

System Size	150(W) x 150(D) x 51(H)mm
Ordering	WEBS-2120 Panel Mount Kit
Remark	VESA 75/100

### WEBS-1320

System Size	200(W) x 150(D) x 51(H)mm
Ordering	WEBS-1320 Panel Mount Kit
Remark	VESA 75/100

### WEBS-3330 / 3331

System Size	200(W) x 200(D) x 51/36(H)mm
Ordering	WEBS-3330 Panel Mount Kit
Remark	VESA 75/100



### WEBS-3332 / 4330

System Size	200(W) x 200(D) x 40/62(H)mm
Ordering	WEBS-3332 Panel Mount Kit
Remark	VESA 75/100

### WEBS-1310 / 1330 / 1340

System Size	200(W) x 150(D) x 51(H)mm
Ordering	WEBS-1310 Panel Mount Kit
Remark	VESA 75/100

# PSU Reference Table



ORION-A2501



ORION-D5501P



ORION-D3202P



ORION-D4601P



ORION-D4602P



MPM-842P



MPI-815H



MPI-810H

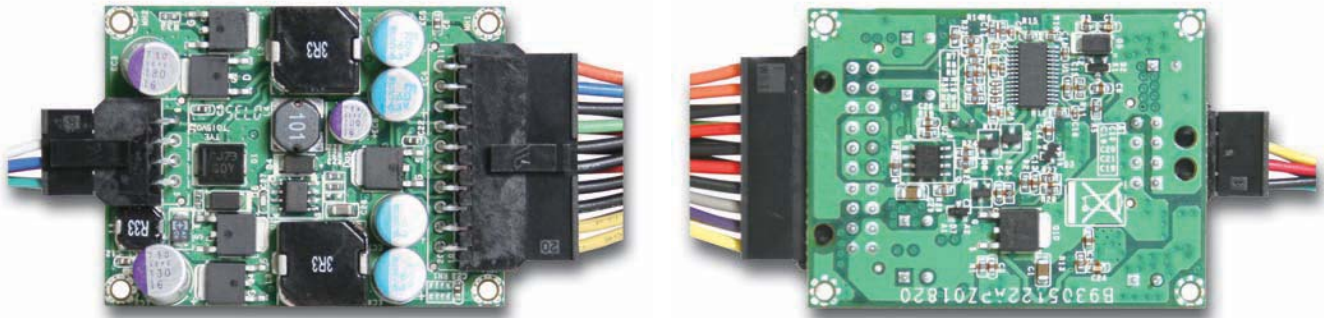


MPI-806H

TYPE	MODEL	FORM FACTOR	DIMENSION	POWER RANGE	PAGE
Single	GADIWA-P0901	DC/DC	60 x 45 x 15 mm	120W / ATX Output	149
Wide-Range	GADIWA-P9271	Regulator	60 x 45 x 22 mm	9-27V DC / Regulator	150
Wide-Range	GADIWA-3160	DC/DC	150 x 51 x 22.5 mm	128W / 12~36V DC / Input	151
Wide-Range	GADIWA-3161	DC/DC	100 x 45 x 22.5 mm	128W / 9-29V DC / Input	152
Redundant	GADIWA-N2360	mini-redundant	150 x 86 x 139.6 mm	360W / 18~30V DC / Input	153
Single	ORION-A2501	1U	100 x 190 x 40.5 mm 3.93" x 7.48" x 1.60"	250W / PFC / P4	154
Single	ORION-A1501	1U	100 x 190 x 40 mm 3.93" x 7.48" x 1.57"	150W / PFC / P4	154
Single	ORION-A1501P	Low-Noise	81.5 x 150 x 40.5 mm 3.2" x 5.9" x 1.6"	150W / ATX	155
Single	ORION-A1801P	Low-Noise	81.5 x 150 x 40.5 mm 3.2" x 5.9" x 1.6"	180W / ATX	155
Single	ORION-B3501P	2U	190 x 100 x 70 mm 7.48" x 3.94" x 2.8"	350W / PFC / P4	156
Single	ORION-D3501P	PS/2	150 x 140 x 86 mm 5.9" x 5.5" x 3.4"	350W / PFC / P4	156
Single	ORION-D4601P	PS/2	150 x 140 x 86 mm 5.9" x 5.5" x 3.4"	460W / PFC / P4	157
Single	ORION-D5501P	PS/2	150 x 140 x 86 mm 5.9" x 5.5" x 3.4"	550W / PFC / P4	157
Redundant	ORION-300DX/24/48	PS/2	150 x 140 x 86 mm 5.9" x 5.5" x 3.4"	330W / DC / ATX	158
Redundant	ORION-D3002DDP	mini-redundant DC TO DC	150 x 183 x 86 mm 5.9" x 7.2" x 3.4"	300W / PFC / DC / P4	158
Redundant	ORION-D3502P	mini-redundant	150 x 190 x 84 mm 5.9" x 7.2" x 3.4"	320W / PFC / P4	159
Redundant	ORION-D4602P	mini-redundant	150 x 140 x 86 mm 5.9" x 5.5" x 3.4"	400W / PFC / P4	159
Single	MPM-842P	PS/2	150 x 140 x 86 mm 5.9" x 5.5" x 3.4"	400W / Medical / ATX	160
Single	MPI-815H	OPEN FRAME	198 x 93 x 40.5 mm 7.8" x 3.66" x 1.6"	150W / Fanless / ATX	160
Single	MPI-810H	OPEN FRAME	83.9 x 152.4 x 38.1 mm 3.3" x 6" x 1.5"	120W / ATX	161
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	161
Single	MPE-008A-P	OPEN FRAME	50.8 x 127 x 40 mm 2" x 5" x 1.57"	80W / ATX	162
Single	MPI-806H	OPEN FRAME	128 x 81 x 40 mm 5.0" x 3.2" x 1.55"	60W / ATX	162
Adapter					163
Configuration Matrix					164

# GADIWA-P0901

120W DC/DC Converter (12V/input, ATX/output), Board Type



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

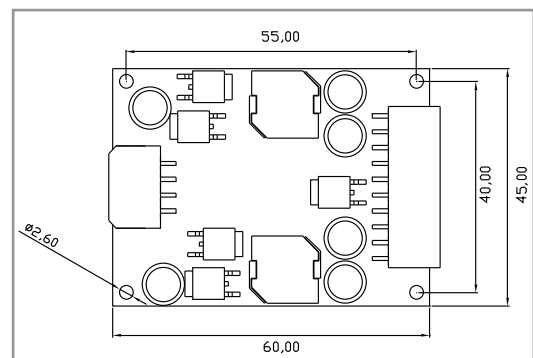
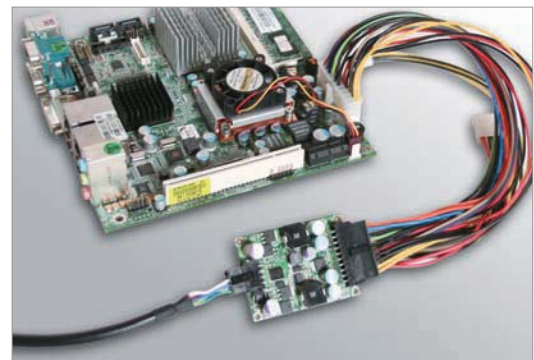
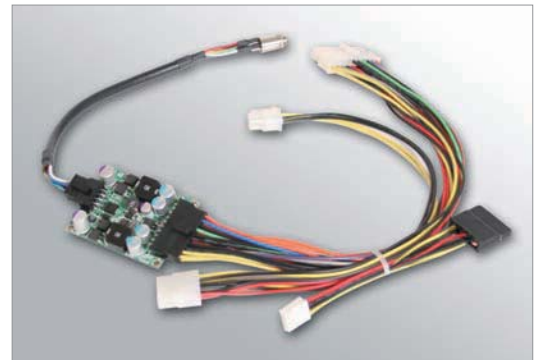
## CHARACTERISTICS

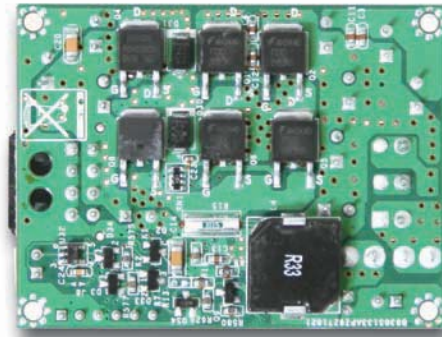
Output Voltage	Load Regulation	Cross Regulation
+12V	0~7A	6.5A
+5V	0~6A	6A
+3.3V	0~6A	6A
+5Vsb	0~2A	1A
-12V	0~0.1A	0.1A

## ORDERING GUIDE

- **GADIWA-P0901**  
120W DC/DC Converter (12V/input, ATX/output), Board Type

## Installation Image





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

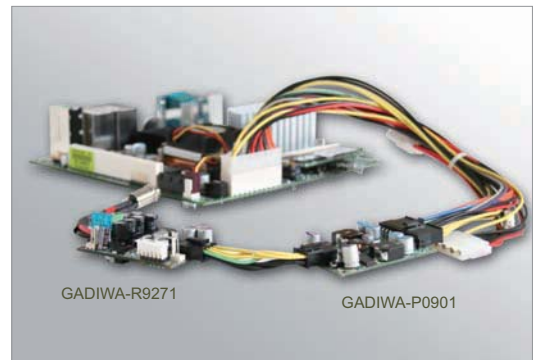
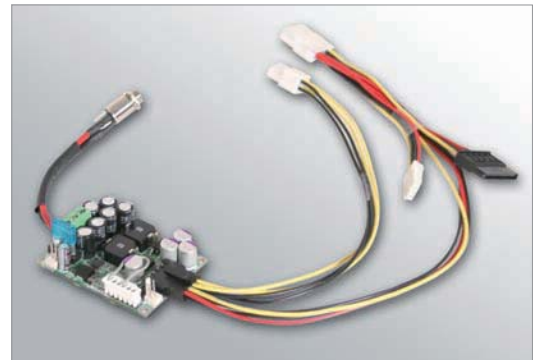
## CHARACTERISTICS

Output Voltage	Load Regulation	Cross Regulation
+12V	12.3V @ 0~8.5A	12.3V @ 0~8.5A

## ORDERING GUIDE

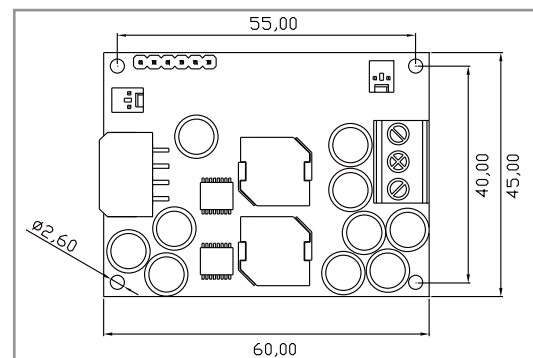
- **GADIWA-R9271**  
9V to 27V/Wide-input, 12V/output Regulator, Board Type

## Installation Image



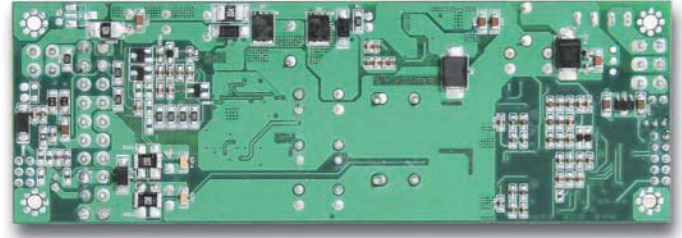
GADIWA-R9271

GADIWA-P0901



# 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	Mini-Fit 6 pin (P/N: B6902400)
Output Connector	- Mini-Fit 20 pin (P/N: B6902410) - 12V output (P/N: B6902420)
Dimension (WxDxH)	150 x 51 x 22.5 mm

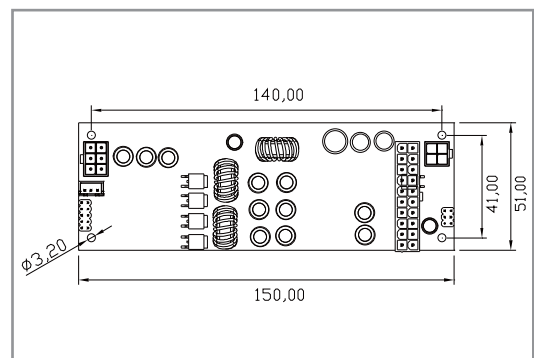
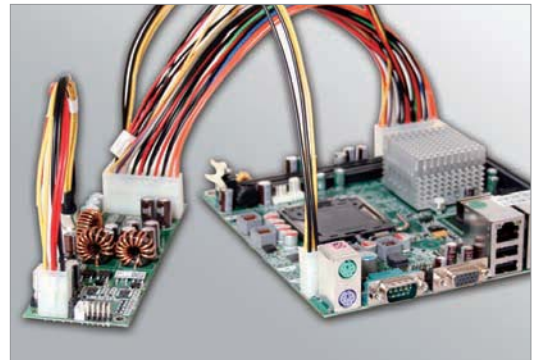
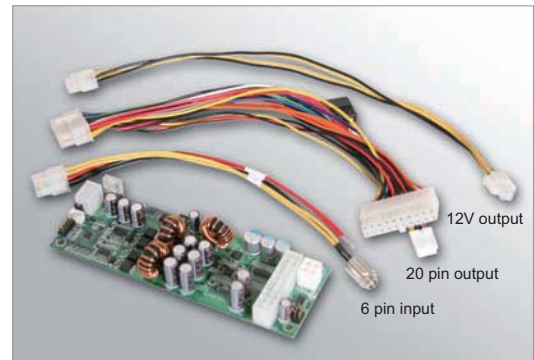
## CHARACTERISTICS

Output Voltage	Current Range	Current Range
+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

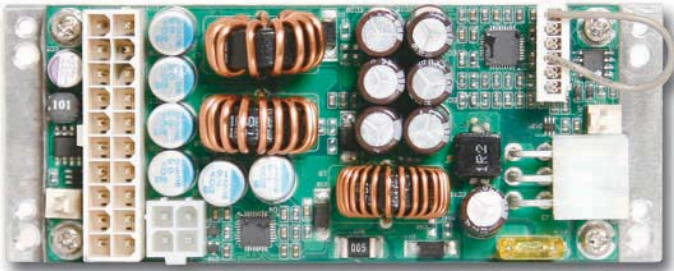
- **GADIWA-3160**  
128W DC/DC 12V~36V/wide-input, ATX/output, Board Type Converter

## Installation Image



# GADIWA-3161

128W DC/DC 9V~29V/wide-input, ATX/output, Board Type Converter



GADIWA-3161 is a wide input board type converter. 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. 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	Mini-Fit 6 pin (P/N: B6902430)
Output Connector	- Mini-Fit 20 pin (P/N: B6902410) - 12V output (P/N: B6902420)
Dimension (WxDxH)	100 x 45 x 22.5 mm

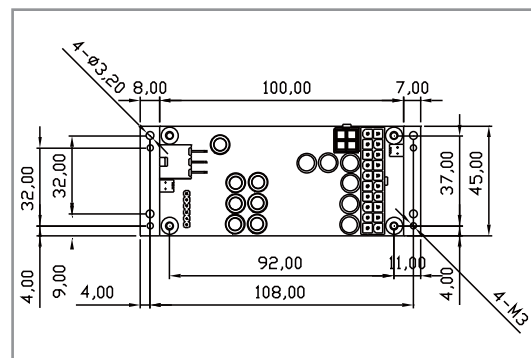
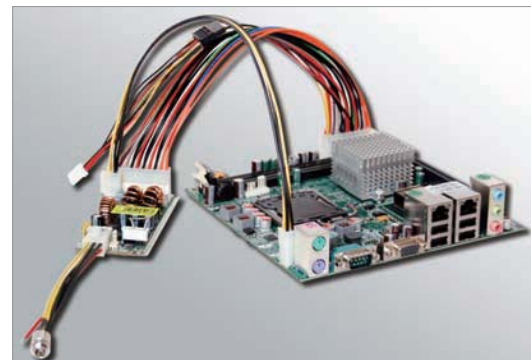
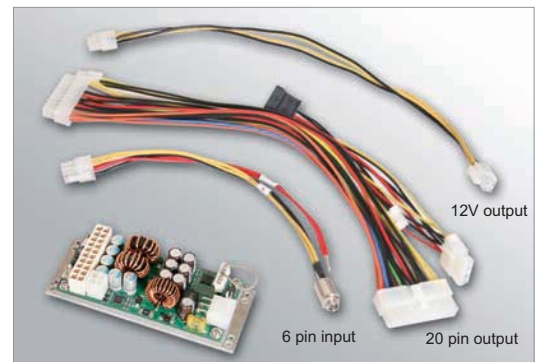
## CHARACTERISTICS

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



# GADIWA-N2360

360W Mini-Redundant PSU,  
18~30VDC Wide-Rang/input,  
ATX/output



GADIWA-N2360 360W DC-DC PS/2 mini redundant is an innovation stage to Portwell. It's not only a design of fan-less but also with 3+1 modules in PS/2 size. GADIWA-N2360 provides MCU and LED alarm design to help you monitor system status and installation; it also provides connector customization to meet any critical application. GADIWA-N2360 is made & tested by automatic production line; therefore, can provide high quality and performance.

## FEATURES

- 360W DC-DC PS/2 mini-redundant suitable for embedded system
- 18V~30V wide-input, plug into ATX connector fit automotive and boat
- Compact and fan-less design fulfill mission-critical application
- LED alarm is easy for installation and maintenance
- MCU design help to monitor system status, temperature and performance

## SPECIFICATION

Input Voltage	18~30VDC
Input Current	17.6 A
Efficiency	85%
Holdup Time	16 ms. at full load
Over Voltage Protection	3.3V@4.5V; 5V@7V; 12V@15V
Temperature/Humidity	Operating: 0 ~ 45°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	150 x 150.1 x 86 mm

## DC OUTPUT

	+5V	+3.3V	+12V	-5V	-12V	+5Vsb
Max. Load	21A	15A	18A	0.5A	0.1A	2A
Min. Load	0A	0A	0A	0A	0A	0A
Load Reg.	±5%	±5%	±5%	±10%	±10%	±5%
Line Reg.	±5%	±5%	±5%	±10%	±10%	±5%
Ripple	10mv	10mv	10mv	10mv	10mv	10mv
Noise	30mv	25mv	30mv	20mv	20mv	25mv

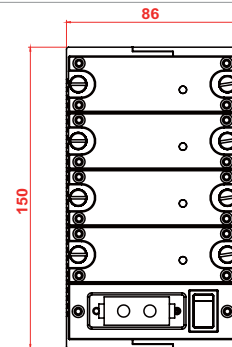
## ORDERING GUIDE

- **GADIWA-N2360**  
360W Mini-Redundant PSU, 18~30VDC Wide-Rang/input, ATX/output

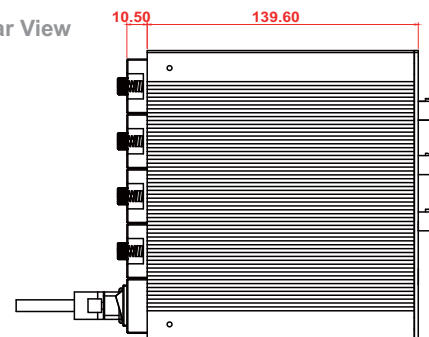
## Installation Image



Front View



Rear View



# ORION-A2501

250W 1U ATX power supply with active PFC



## 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

## 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
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"

# ORION-A1501

150W 1U ATX power supply with active PFC



## 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%

## 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"

# 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: 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)	81.5 x 150 x 40.5 mm; 3.2" x 5.9" x 1.6"

## FEATURES

- 1U 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
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

- 1U 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; 3.94" x 8.3" 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 output is 18A

## 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-D3501P 350W 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 standby output is 18A
- Max. +5V load output is 40A

## 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	> 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, TUV
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 standby output is 30A

## 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
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. +12V output is 38A

## 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-D3002DDP 300W -38VDC to -72VDC input DC/DC mini-redundant ATX power supply



## SPECIFICATION

Input Voltage	-38~-72VDC
Input Current	11A
Efficiency	> 58%
Holdup Time	16 ms. at full load
Over Voltage Protection	3.3V@4.5V; 5V@7V; 12V@16V
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	150 x 183 x 86 mm; 5.9" x 7.2" x 3.4"

## FEATURES

- Mini-redundant DC to DC power supply suitable for 2U and larger chassis
- Active PFC, full-range input
- -38VDC to -72VDC input for telecommunication applications
- Test equipment for telecommunication applications

## ORDERING GUIDE

- **ORION-D3002DDP**  
300W DC-DC W/Active PFC, redundant power supply

## DC OUTPUT

	+5V	+3.3V	+12V	-5V	-12V	+5Vsb
Max. Load	30A	22A	11A	1A	1A	1.5A
Min. Load	2A	0.3A	0.5A	0.05A	0.05A	0A
Load Reg.	±5%	±5%	±5%	±10%	±10%	±5%
Line Reg.	±5%	±5%	±5%	±10%	±10%	±5%
Ripple	50mv	50mv	120mv	130mv	100mv	50mv
Noise	100mv	100mv	150mv	200mv	200mv	100mv

# ORION-D3502P

350W ATX 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
- 350W output
- Active PFC, full-range input

## ORDERING GUIDE

- ORION-D3502P  
350W PS/2, w/active PFC, ATX power supply

## 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 switching  
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	> 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 86 mm; 5.9" x 7.5" x 3.4"

## 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

## 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 1.57"

## 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%

# Adapter

## APH-3019-40W



### 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



### 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



### 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-3011-150W



### 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	AREMO-2173-MX	AREMO-2173P	AREMO-2173EB	AREMO-3194	AREMO-3194E	AREMO-4196	RPC-500NC	PRC-4207	AREMO-6163	AREMO-8164
ATX M/B				V	V	V	V	V		
Micro ATX	V			V	V	V	V	V		
Server Board						V		V		
PEB-7710	V									
PBP-05V464/J			V							
PBP-06P3									V	
PBP-06P4										
PBP-06P564		V							V	
PBP-06V4		V								
PBP-08A7										V
PBP-08P3										V
PBP-08P4										V
PBP-13D4						V	V	V		
PBP-14A7						V	V	V		
PBP-14AC						V	V	V		
PBP-14AC-B						V	V	V		
PBP-14P4						V	V	V		
PBP-14PD64						V			V	
PBP-14R4						V	V	V		
PBP-18D4										
PBP-19AC										
PBP-19AI										
PBP-19P4										
PBPE-06V		V								
PBPE-13A8								V		
ORION-D4602P		V	V		V	V	V	V	V	V
ORION-300DX/24/48	V	V	V		V	V	V	V	V	V
ORION-D4201P						V	V	V	V	V
ORION-B3501P				V						
ORION-B3502				V						
ORION-D3502P		V	V		V	V	V	V	V	V
ORION-D3501P	V	V	V		V	V	V	V	V	V
ORION-D4601P		V	V		V	V	V	V	V	V
ORION-D5501P		V	V		V	V	V	V	V	V
FSP350-60GLC	V	V	V		V	V	V	V	V	V

# Accessory

## 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.

## Display Solution

### Panel Kit service

Portwell focus on AUO Industrial Flat Panel Display featuring high brightness, 3-year longevity and great price competition. We manage standard kits in stock to fulfill customers' time-critical orders. We also provide panel kit by different makers like Sharp, Toshiba, NEC and LG to meet different requirements per specific applications. To order, customers may fill out a special panel support request form and send it through to our account sales.

#### Standard Panel Kit for Power Embedded System Board for AUO LCD

Panel Model	AUO 8.4" G084SN05 V0	AUO 10.4" G104SN03 V0	AUO 12.1" G121SN01 V0	AUO 15" G150XG01 V0	AUO 17" M170EG01 V0	AUO 19" M190EN04 V1	AUO 20.1" M201UN02 V2
PEB-3715	AL1-052	AL1-050	AL1-051	AL1-047	AL1-053	AL1-062	AL1-061
PEB-3730/32	AL1-056	AL1-054	AL1-055	AL1-048	AL1-057	AL1-069	AL1-060
PEB-3718	AL1-070	AL1-071	AL1-072	AL1-073	x	x	x

### Touch Screen service

Portwell works with worldwide touch screen makers like Elo/Tyco and 3M. For cost effective solution, Portwell provides feasibility for

- 1 Required communication interface for Touch board, like RS232 or USB
- 2 Required size of Touch screen
- 3 Required actual application for suitable touch screen model, like resistive or capacitive



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.

## 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	Φ 55.5x11.3 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 mmH <sub>2</sub> O (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

## ORDERING GUIDE

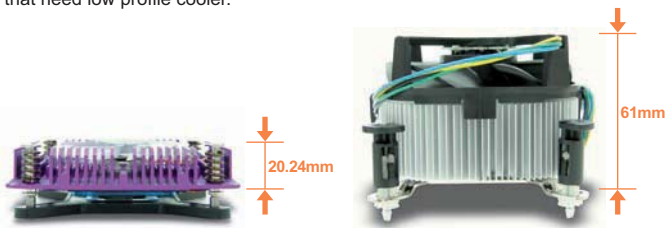
Part #	Model Name & Description
B9970620	<b>EZCool</b> High efficiency and low profile cooler for Core™ 2 Duo processor

## FEATURES

Along with Intel®'s Core™ Mircoarchitecture and advanced manufacturing technologies, processor Thermal Design Power (TDP) was lower from 85~130W to 65W only, and even lower for single core processor in Q3 this year. As a result, Portwell is able to design a reliable cooler that can fits most applications demanding.

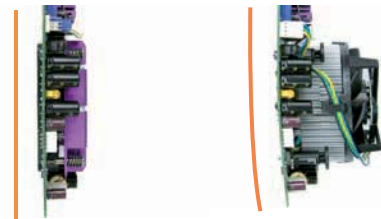
### Compact Size

EZCool is just one of third height of boxed cooler that benefits applications that need low profile cooler.



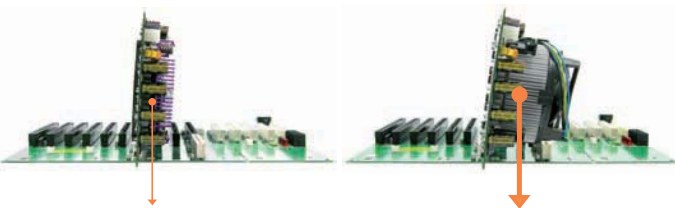
### Bending Prevention

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.



# IPS SOLUTION GUIDE




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