

Industrial **System** Solution Guide

EDGE Computing

SMART
FACTORY





About Portwell

Portwell, Inc. was founded in 1993 and entered the Industrial PC market in 1995 by developing single-board computers. Today, our continuous development of leading-edge products has not only resulted in strong growth in market shares and revenue but established Portwell as a major worldwide supplier of specialty computing application platforms and services. Portwell, Inc. is an Associate member of the Intel® Internet of Things Solutions Alliance. From modular components to market-ready systems, Intel® and the 250+ global member

companies of the Intel® Internet of Things Solutions Alliance provide scalable, interoperable solutions that accelerate deployment of intelligent devices and end-to-end analytics. Portwell, Inc. is also a member of the selected group of Intel® Applied Computing Platform Providers (IACPP), as well as Advanced Telecom Computing Architecture (ATCA) and an executive member of PCI Industrial Computer Manufacturing group (PICMG).



Portwell Engine (PE) Building

Portwell, Inc. has worldwide operations in the U.S.A., Taiwan, Japan, Korea, China, Netherlands, United Kingdom, Germany and India. Whether you are working on a computer board or turnkey system, Portwell is the perfect partner to help you deliver your products to the market on time as well as maintain longevity of product. With 28 years experience in the design and manufacturing of specialty computer boards and systems, Portwell not only provides a one-stop resource for off-the-shelf products, but also supplies custom-built solutions and a global logistics services to suit your needs.

Portwell OEM and ODM solutions satisfy your needs in retail automation, medical equipment, industrial automation,

infotainment, communication, and network security markets. Encouraged by our flexible business support, manufacturing excellence, and compliance with high quality and environmental standards such as ISO 14001/13485/9001/45001/28000, OHSAS and RoHS, customers have taken advantage of our dedicated and sophisticated engineering resource to satisfy their requirements for the design, manufacturing and logistics of application-specific computer boards, customized computer chassis, and specific computer system configurations. Whether you are working on a Medical Single Board Computer or Internet Security Appliance, Portwell is, again, the perfect partner to help you deliver your products to the market on time and stay one step ahead of the competition.

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

■ Complete Product Portfolio

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

■ Implement Latest Intel Technology

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

■ Faster Time-to-Market

Portwell's experienced engineers, complete product solutions,

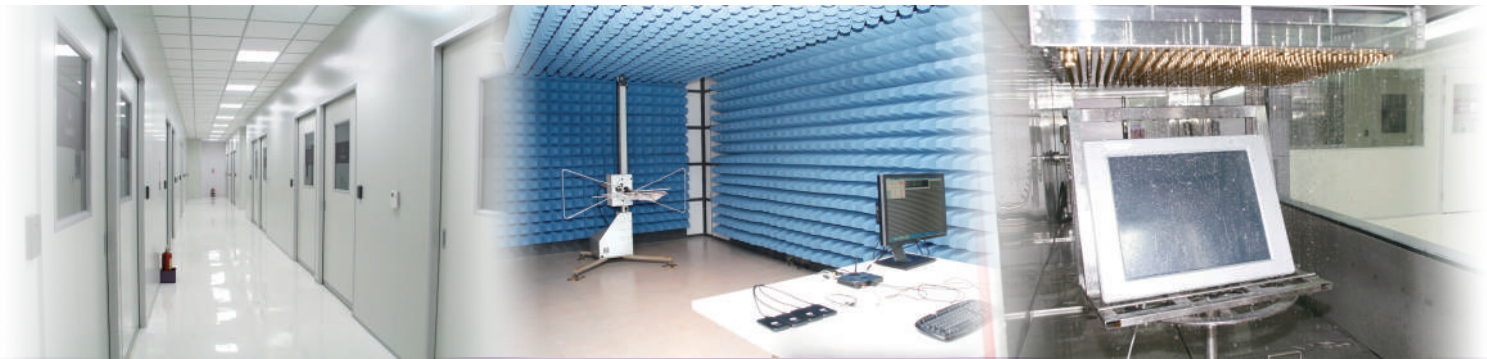
global operation and flexible business service help you meet the time-to-market requirement and reduce your new product introduction cycles as well as the costs of conducting business.

■ Leading Edge Innovator

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

■ Committed to Customer Satisfaction

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



Consulting • Design • Product • Manufacturing • Logistics



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

Share for Success

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

Design, Develop, and Deliver

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

Portwell Manufacturing Excellence

- We supply component inventory management with automation.

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

Portwell Global Presence

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



System Production Flow



IPQC

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



Visual Inspection

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



Assembly

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

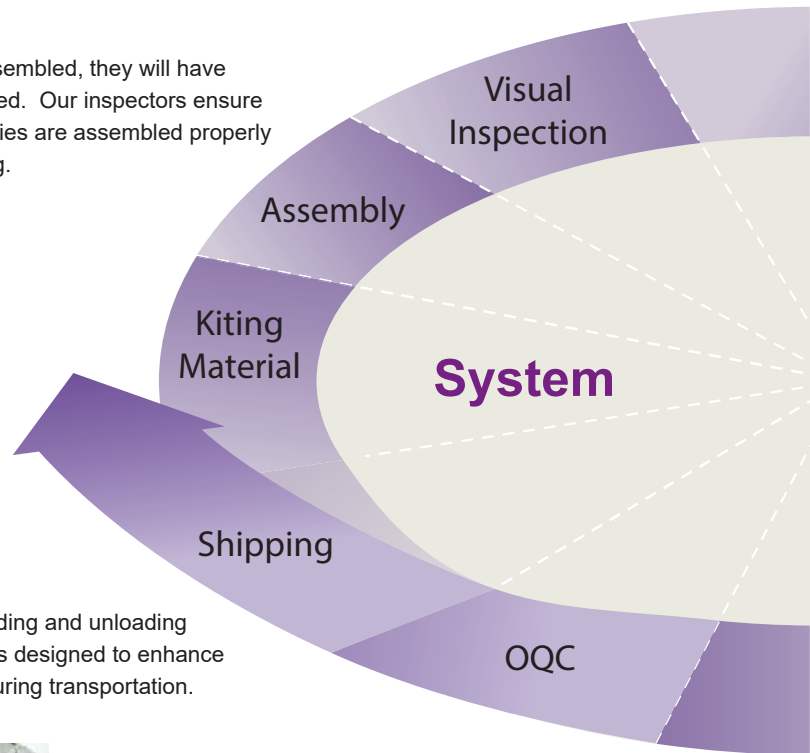
Shipping

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



OQC

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



Certifications

ISO 45001 is a standard which represent her highly regards labors' safety, the commitment to employees' health management and continuously improvement to the company and society.



Certifications

The ISO 14000 environmental management standards exist to help organizations minimize how their operations negatively affect the environment and comply with applicable laws, regulations, and other environmentally oriented requirements and continually improve in the above.



Basic Function Test

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



Dynamic Burn In Test

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



Advanced Function Test

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



Packing

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



FQC

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



Certifications

ISO 9001 deals with the fundamentals of quality management systems, including the eight management principles on which the family of standards is based.



Certifications

ISO 13485 is an ISO standard that represents the requirements for a comprehensive management system for the design and manufacture of medical devices.

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19" 4U industrial rack-mount chassis



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



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



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GADIWA-R9141

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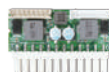
140W DC/DC 9~32V input/ 12V output Board type Regulator



GADIWA-R9142

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140W DC/DC 9~32V input/ 24V output Board type Regulator



GADIWA-M1120

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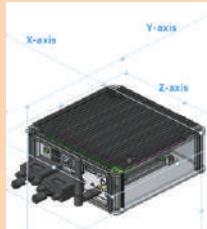
Quality Assurance

① Design & Analysis

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

At the development stage the product design also involves the material and assembly important for production, with the focus on Design for Manufacturability (DFM). This develops simple, consistent and efficient system structures and endows the product with a stable quality.

With experienced engineering team and complete 3D circuit and layout development facility, Portwell is able to supply more efficient system development and support customers in "Design Win."



Design & analysis is performed by 3D workstation. (WEBS-2190)



Circuit design & layout by advanced tools. (NANO-6060)

② Thermal Design

Thermal Design Concept

Thermal control is the key to all future industrial appliances. Portwell knows this and has focused many hours of research and put immense efforts upon thermal solutions.

Based on our findings and experience, many components on the motherboard demonstrated wide temperature changes which affected the operating temperature endurance of the board and the system.

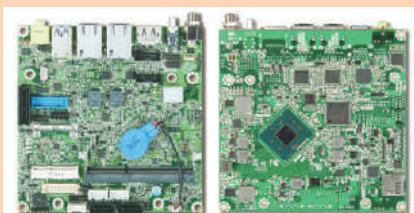
The CPU T-junction temperature, for example, will dramatically increase around 30 to 40 degrees Celsius from power-on to full loading under ambient temperature. This means the CPU T-junction could reach between 90 and 100 degrees Celsius when the ambient temperature is at 60 degrees Celsius. Moreover, the CPU T-junction temperature is capable of an additional 5 degrees Celsius, which exceeds CPU specifications, due to its fan-less chassis.

In our labs, we saw these symptoms and developed unique solutions. Thermal design and component placement on a motherboard go hand in hand. Therefore, heat ventilation in a chassis is necessary for fan-less systems.

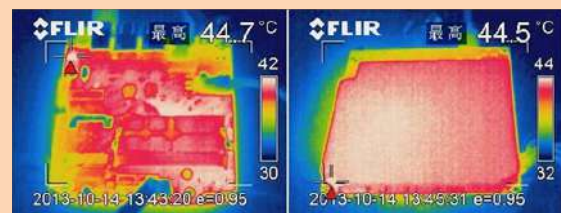
Some manufactures will claim they have solved the heat dissipation problem based on their calculations and data sets, but "seeing is believing!" So test your systems in our certified and advanced labs and see if your systems meet your specifications.

Since there is no fan and airflow inside the fan-less WEBS systems, handling the thermal output becomes one of the most important concerns. System heat comes from ICs on the embedded board and this is pre-determined by Intel®. Therefore, the key to developing a reliable fan-less system is determined by two major factors.

First is to balance the heat on the embedded board and make sure it does not accumulate. Determining the thermal balance for the hot components is a prime concern. The picture below shows the heat situation of the NANO-6060, NANO-ITX embedded board used in the WEBS-2190 system. The heat in this example is arranged and balanced for superior dissipation in a fan-less system design.



NANO-6060 M/B

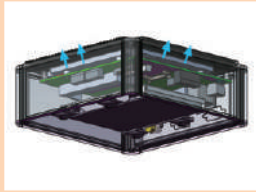


Thermal image of NANO-6060 M/B

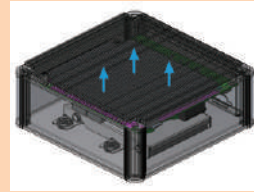


Quality Assurance

Second is to maximize the arrangement of heat dissipation by system design. WEBS systems are designed with an all-aluminum chassis that is ideal for heat dissipation. Heat sinks link the ICs on the embedded board and the aluminum chassis for direct heat transference. The heat transfers from the heat spreader 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.



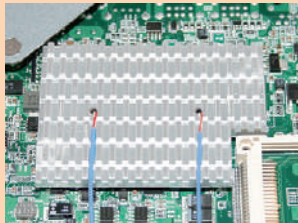
WEBS-2190 Heat-flow (Bottom)



WEBS-2190 Heat-flow (Top)

③ Thermal Validation

After completing the thermal design, the WEBS system undergoes thermal validation by following Intel's thermal guide. The system is tested inside the calibrated chamber with defined temperatures. The efficacy of the WEBS system is further improved when the temperature of any component is over specification. Thermal tests are conducted until all the major ICs are below thermal specification.



Holes are made on the heat sink and thermal sensor cables are added for measuring the temperature

④ Safety & Reliability Validation

In addition to the thermal validation, the WEBS systems undergo safety assessment and tests and achieve CE and FCC certification. Testing includes ESD, EMI and EMC.

To ensure product quality, complete quality assurance tests are performed during both the development and the manufacturing phases for all system-level products. Portwell WEBS systems are tested and comply with safety regulations, and are reliable to be used in the harsh environments.

-Based on customer's requirements, Portwell can do additional tests with a NRE (non-recurring engineering) charge.



ESD Test



EMI Test



EMI Test



Vibration Test



Shock Test



Packing Vibration Test



Packing Drop Test

Portwell Intelligent System

WEBS: Portwell Intelligent Fan-less System

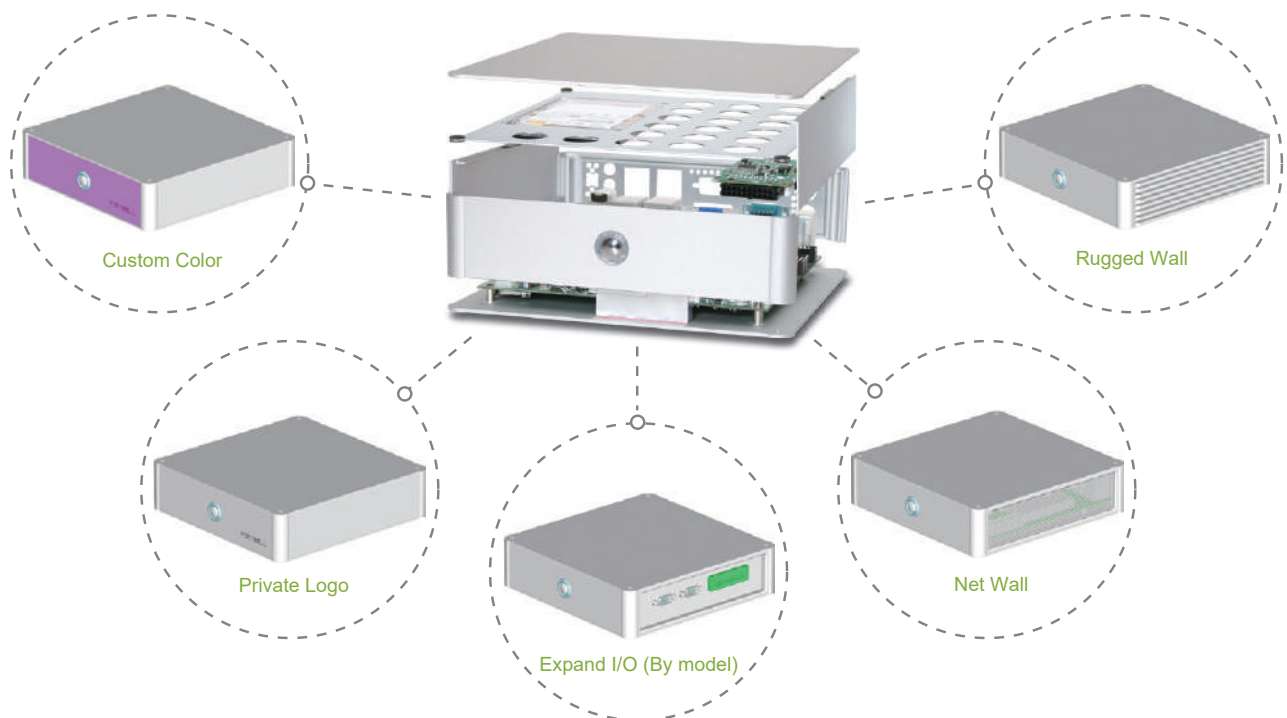
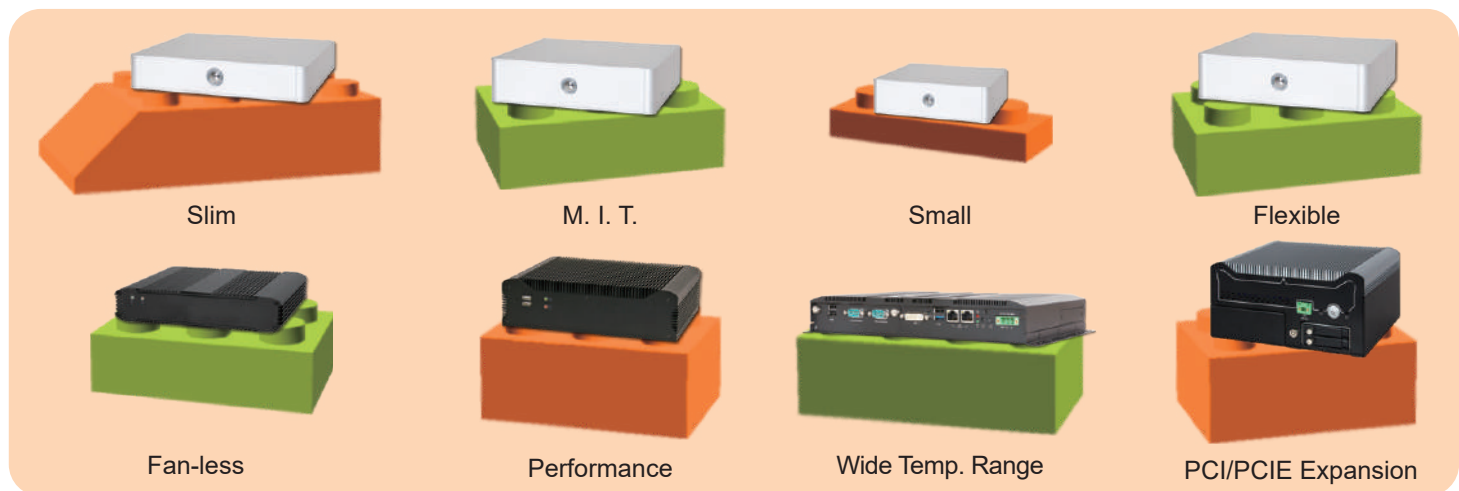
Compact, Flexible, Rugged Computing Systems

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

To meet these harsh environmental parameters, each WEBS computing system is designed by precise thermal simulation and verification to make the system stable and user friendly.

The all-aluminum chassis design provides effective heat dissipation and transfers the heat out of the system quickly and easily.

Built with the latest Intel® chipsets, the WEBS systems feature not only superior performance but also low power consumption. They are suitable for energy-critical applications and environmental friendly.





Embedded System



Model		LYNX-6110	LYNX-612A	LYNX-612B
M/B		LSMC-M1012	LSMC-M1012	LSMC-M1012
Form Factor		SMARC	SMARC	SMARC
System	CPU	Intel® Celeron® N3350, 2 cores, 1.1GHz/2.4 GHz, 6W TDP	Intel® Celeron® N3350, 2 cores, 1.1GHz/2.4 GHz, 6W TDP	Intel® Celeron® N3350, 2 cores, 1.1GHz/2.4 GHz, 6W TDP
	BIOS	AMI UEFI	AMI UEFI	AMI UEFI
	Memory	LPDDR4/4GB	LPDDR4/4GB	LPDDR4/4GB
	Graphic Controller	Intel® HD Graphics 500	Intel® HD Graphics 500	Intel® HD Graphics 500
	Super I/O	EC	EC	EC
	Storage	32GB onboard eMMC 5.0 flash	32GB onboard eMMC 5.0 flash	32GB onboard eMMC 5.0 flash 1x M.2 Key B 2242 for storage
External I/O	Serial	N/A	1 x RS-232/422/485 (BIOS configurable)	1 x CANbus
	USB	2x USB 3.0	2x USB 3.0	2x USB 3.0
	Display	DP	DP	DP
	Ethernet	Intel® I210AT x 2	Intel® I210AT x 4(Isolation LANx 2)	Intel® I210AT x 2 Intel® I210IT x 2
	PS/2	N/A	N/A	N/A
	Audio	N/A	N/A	N/A
	D I/O	N/A	N/A	8-bit GPIO
Expansion		1x M.2 Key E 2230 for wireless module	1x M.2 Key E 2230 for wireless module	1x M.2 Key E 2230 for wireless module 1x M.2 Key B 2242 for storage 1x full-size Mini-PCle
PWR	System	DC 12~30V	DC 12~30V	DC 12~30V
Environment	OP Temp.	0°C ~ 50°C	0°C ~ 50°C	0°C ~ 50°C
	Storage Temp.	-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 85°C
	Humidity	95%@40°C, non-condensing	95%@40°C, non-condensing	95%@40°C, non-condensing
	Vibratoin	5Grms/10-500Hz, IEC 60068-2-6	5Grms/10-500Hz, IEC 60068-2-6	5Grms/10-500Hz, IEC 60068-2-6
	Shock	50G, 11 msec, IEC 60068-2-27	50G, 11 msec, IEC 60068-2-27	50G, 11 msec, IEC 60068-2-27
Mechanical	Dimension(WxDxH)	100 x 92 x 40 mm	100 x 92 x 53.5 mm	100 x 92 x 53.5 mm
	Weight	1.42 Kg	1.53 Kg	1.53 Kg
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Embedded System



Model		LYNX-612D	LYNX-612E	LYNX-612G	WEBS-13D1
M/B		LSMC-M1012	LSMC-M1012	LSMC-M1012	PEB-2773
Form Factor		SMARC	SMARC	SMARC	3.5" ECX
System	CPU	Intel® Celeron® N3350, 2 cores, 1.1GHz/2.4 GHz, 6W TDP	Intel® Celeron® N3350, 2 cores, 1.1GHz/2.4 GHz, 6W TDP	Intel® Celeron® N3350, 2 cores, 1.1GHz/2.4 GHz, 6W TDP	Intel® Atom® Dual/Quad Core E3900 Series Processor
	BIOS	AMI UEFI	AMI UEFI	AMI UEFI	AMI UEFI
	Memory	LPDDR4/4GB	LPDDR4/4GB	LPDDR4/4GB	DDR3L/8GB
	Graphic Controller	Intel® HD Graphics 500	Intel® HD Graphics 500	Intel® HD Graphics 500	Intel® Gen 9 Graphics
	Super I/O	EC	EC	EC	EC ITE IT8528 + Fintek F81216
	Storage	32GB onboard eMMC 5.0 flash	32GB onboard eMMC 5.0 flash 1x M.2 Key B 2242 for storage	32GB onboard eMMC 5.0 flash 1x M.2 Key B 2242 for storage	1x 2.5" SATA HDD/SSD 1x mSATA
External I/O	Serial	N/A	1x RS-232, 1x RS-232/422/485 (BIOS Configurable)	2x RS-232 on RJ45	1x RS-232/422/485 3x RS-232
	USB	2x USB 3.0	2x USB 3.0	2x USB 3.0 4x USB 2.0	2x USB 3.0 ports on Rear I/O 4x USB 3.0 ports on Front I/O
	Display	DP	DP	DP	HDMI, DP
	Ethernet	Intel® I210AT x 2 Intel® I210IT x 3(802.3af PoE GbE)	Intel® I210AT x 2	Intel® I210AT x 2	Intel® I210IT x 2
	PS/2	N/A	N/A	N/A	N/A
	Audio	N/A	N/A	N/A	Line-out, Line-in, Mic-in
	D I/O	N/A	N/A	N/A	8-bit Digital I/O
Expansion		1x M.2 Key E 2230 for wireless module	1x M.2 Key E 2230 for wireless module 1x M.2 Key B 2242 for storage 1x full-size Mini-PCle	1x M.2 Key E 2230 for wireless module 1x M.2 Key B 2242 for storage 1x full-size Mini-PCle	2x Mini-PCle socket
PWR	System	DC 12~30V	DC 12~30V	DC 12~30V	DC 12V ~ 24V
Environment	OP Temp.	0°C ~ 50°C	0°C ~ 50°C	0°C ~ 50°C	-20°C ~ 60°C
	Storage Temp.	-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 80°C
	Humidity	95%@40°C, non-condensing	95%@40°C, non-condensing	95%@40°C, non-condensing	95%@40°C non-condensing
	Vibratoin	5Grms/10-500Hz, IEC 60068-2-6	5Grms/10-500Hz, IEC 60068-2-6	5Grms/10-500Hz, IEC 60068-2-6	5Grms/10-500Hz IEC 60068-2-6
	Shock	50G, 11 msec, IEC 60068-2-27	50G, 11 msec, IEC 60068-2-27	50G, 11 msec, IEC 60068-2-27	50G, 11 msec IEC 60068-2-27
Mechanical	Dimension(WxDxH)	100 x 92 x 53.5 mm	100 x 92 x 53.5 mm	100 x 92 x 53.5 mm	200 × 150 × 80 mm
	Weight	1.53 Kg	1.53 Kg	1.53 Kg	2 Kg
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Embedded System



Model		WEBS-2110	WEBS-21G0	WEBS-21D0	WEBS-2190
M/B		NANO-6063	NANO-6051	NANO-6062	NANO-6060
Form Factor		NANO-ITX	NANO-ITX	NANO-ITX	NANO-ITX
System	CPU	Intel Atom® Dual/Quad-core x6000E family SoC	Intel® 8 th Generation Whiskey lake-U series Processor Core i5/i3 processor (15W TDP)	Atom® E3950 1.80GHz Atom® E3940 1.60GHz	Atom® E2827 1.75GHz Atom® E3845 1.91GHz
	BIOS	AMI UEFI	AMI UEFI	AMI UEFI	Phoenix UEFI
	Memory	DDR4/32GB	DDR4 SO-Dimms/Up to 32GB	DDR3L/8GB	DDR3L/4GB
	Graphic Controller	Intel® Graphics Gen 11 gfx	Intel® UHD Graphics 620/610	Intel® Gen 9 Graphics	Intel® Gen 7 Graphics
	Super I/O	EC	EC	EC ITE IT8528	EC ITE IT8528
	Storage	1x SATA III port 1x mSATA socket 1x Micro-SD socket	1x M.2 Key M 2280 for storage	1x 2.5" SATA HDD/SSD 1x mSATA, 1x SD	1x 2.5" SATA HDD/SSD 1x Micro-SD
External I/O	Serial	1x RS-232/422/485	1x RS-232/422/485 (BIOS Configurable)	1x RS-232/422/485	1x RS-232/422/485
	USB	2x USB3.0	3x USB 3.0 (Rear I/O)	2x USB 3.0	2x USB 3.0
	Display	VGA, DP, HDMI	2x mini DP	VGA, DP	VGA, DP
	Ethernet	Intel® I210 GbE controller and MaxLinear GPY215 GbE PHY	Intel® I219LM + I210AT	Intel® I210IT x 2	Intel® I210IT x 2
	PS/2	N/A	N/A	N/A	N/A
	Audio	Line-out	Combo Jack Line-out, Mic-in	Line-out	Line-out
	D I/O	N/A	N/A	N/A	N/A
Expansion		1x M.2 Type E socket 1x full size mini-PCIe socket	1x M.2 Key E 2230 for wireless module	1x M.2 Key E 2230 for wireless module 1x Mini-PCIe socket	1x Half-size Mini-PCIe
PWR	System	DC 12V	DC 12V	DC 12V ~ 24V	DC 12V
Environment	OP Temp.	-20°C ~ 60°C	0°C ~ 50°C	-20°C ~ 60°C	-25°C ~ 60°C
	Storage Temp.	-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 80°C	-40°C ~ 80°C
	Humidity	95%@40°C non-condensing	95%@40°C non-condensing	95%@40°C non-condensing	95%@40°C, non-condensing
	Vibratoin	5Grms/10-500Hz IEC 60068-2-06	3Grms/10-500Hz IEC 60068-2-6	5Grms/10-500Hz IEC 60068-2-6	5Grms/10-500Hz IEC 60068-2-6
	Shock	50G, 11 msec IEC 60068-2-27	50G, 11 msec IEC 60068-2-27	50G, 11 msec IEC 60068-2-27	50G, 11 msec IEC 60068-2-27
Mechanical	Dimension(WxDxH)	150 x 150 x 66 mm	150 x 150 x 62.6 mm	150 x 150 x 66 mm	150 x 150 x 53 mm
	Weight	1.4 Kg	2 Kg	2 Kg	1.3 Kg
Page		27	28	29	30



Embedded System



Model		WEBS-35C1	WEBS-35C3	WEBS-35C6
M/B		WADE-8017	WADE-8017	WADE-8017
Form Factor		Mini-ITX	Mini-ITX	Mini-ITX
System	CPU	Intel® 6 th Generation Desktop Core™ Processor	Intel® 6 th Generation Desktop Core™ Processor	Intel® 6 th Generation Desktop Core™ Processor
	Chipset	Q170	Q170	Q170
	BIOS	AMI UEFI	AMI UEFI	AMI UEFI
	Memory	DDR4/32GB	DDR4/32GB	DDR4/32GB
	Graphic Controller	Intel® Gen 9 Graphics	Intel® Gen 9 Graphics	Intel® Gen 9 Graphics
	Super I/O	EC ITE IT8528 + Fintek F81216	EC ITE IT8528 + Fintek F81216	EC ITE IT8528 + Fintek F81216
	Storage	2x 2.5" SATA HDD/SSD 1x mSATA	2x 2.5" SATA HDD/SSD 1x mSATA	2x 2.5" SATA HDD/SSD 1x mSATA
External I/O	Serial	4x RS-232 2x RS-232/422/485	4x RS-232 2x RS-232/422/485	4x RS-232 2x RS-232/422/485
	USB	2x USB 2.0 4x USB 3.0	2x USB 2.0 4x USB 3.0	4x USB 3.0
	Display	VGA, DP, HDMI	VGA, DP, HDMI	VGA, DP, HDMI
	Ethernet	Intel® I219LM + I210AT	Intel® I219LM + I210AT	Intel® I219LM+I210AT
	PS/2	N/A	N/A	N/A
	Audio	Line-in, Line-out, Mic-in	Line-in, Line-out, Mic-in	Line-out, Line-in, Mic-in
	D I/O	8-bit Digital I/O	8-bit Digital I/O	8-bit Digital I/O
Expansion		1x Full-size Mini-PCIe 1x M.2 Key E 2230 for wireless module	1x Full-size Mini-PCIe 1x M.2 Key E 2230 for wireless module Multi PCIe+PCI options	1x Full-size Mini-PCIe 1x M.2 Key E 2230 for wireless module Multi PCIe option
PWR	System	DC 12V ~ 36V	DC 12V ~ 36V	DC 12V ~ 36V
Environment	OP Temp.	-20°C ~ 50°C	-20°C ~ 50°C	-20°C ~ 50°C
	Storage Temp.	-40°C ~ 80°C	-40°C ~ 80°C	-40°C ~ 80°C
	Humidity	95%@40°C, non-condensing	95%@40°C, non-condensing	95%@40°C, non-condensing
	Vibratoin	5Grms/10-500Hz IEC 60068-2-6	5Grms/10-500Hz IEC 60068-2-6	1Grms/10-500Hz IEC 60068-2-6
	Shock	50G, 11 msec IEC 60068-2-27	50G, 11 msec IEC 60068-2-27	50G, 11 msec IEC 60068-2-27
Mechanical	Dimension(WxDxH)	253 x 201 x 123 mm	253 x 201 x 123 mm	253 x 255 x 210 mm
	Weight	7 Kg	7 Kg	9 Kg
Page		32	33	34



Embedded System



Model		WEBS-45H1	WEBS-45H3	WEBS-85H1	WEBS-85H2
M/B		WADE-8212	WADE-8212	Proprietary	Proprietary
Form Factor		Mini-ITX	Mini-ITX	Proprietary	Proprietary
System	CPU	10 th Gen Intel® Core™ Processors (TDP 35W)	10 th Gen Intel® Core™ Processors (TDP 35W)	10 th Gen Intel® Core™ Processors (TDP 35W)	10 th Gen Intel® Core™ Processors
	Chipset	Q470E	Q470E	W480E	W480E
	BIOS	AMI uEFI BIOS	AMI uEFI BIOS	AMI uEFI BIOS	AMI uEFI BIOS
	Memory	DDR4/64GB	DDR4/64GB	DDR4/64GB	DDR4/64GB
	Graphic Controller	Intel® UHD 630 Graphics	Intel® UHD 630 Graphics	Intel® UHD 630 Graphics	Intel® UHD 630 Graphics
	Super I/O	F81966D-I	F81966D-I	NCT6779D	NCT6779D
	Storage	2x 2.5" SSD slots	2x 2.5" SSD slots	1x Type II CFast slot 2x 2.5" SSD slots	1x Type II CFast slot 2x 2.5" SSD slots
External I/O	Serial	5 x COM ports (2 x RS- 232/422/485)	5 x COM ports (2 x RS- 232/422/485)	4x COM port (1x RS- 232/422/485, CANbus (2.0 A/B)	4x COM port (1x RS- 232/422/485, CANbus (2.0 A/B)
	USB	4x USB 3.2 Gen 1 4x USB 2.0	4x USB 3.2 Gen 1 4x USB 2.0	2x USB 3.2 Gen 2 4x USB 3.2 Gen 1	2x USB 3.2 Gen 2 4x USB 3.2 Gen 1
	Display	VGA, DP, HDMI	VGA, DP, HDMI	DP, HDMI 2.0, HDMI 1.4	DP, HDMI 2.0, HDMI 1.4
	Ethernet	Intel® I219LM and Intel® I225LM Ethernet controller	Intel® I219LM and Intel® I225LM Ethernet controller	3x Gigabit Ethernet (Intel® I210-IT)	3x Gigabit Ethernet (Intel® I210-IT)
	PS/2	N/A	N/A	N/A	N/A
	Audio	Line-out / Mic-in	Line-out / Mic-in	Mic-in / Line-Out	Mic-in / Line-Out
	D I/O	4 x GPI, 4 x GPO	4 x GPI, 4 x GPO	8-bit Digital I/O	8-bit Digital I/O
Expansion		1x M.2 E Key socket 1x M.2 M Key socket 1x M.2 B Key socket 1x SIM Card socket	2x PCIe Expansion slot option 1x M.2 E Key socket 1x M.2 M Key socket 1x M.2 B Key socket 1x SIM Card socket	1x Mini PCIe socket 1x M.2 2242/60/80 M key socket 1x M.2 2230 E key socket	3x PCIe Expansion Slot option 1x Mini PCIe socket 1x M.2 2242/60/80 M key socket 1x M.2 2230 E key socket
PWR	System	DC 12~36V	DC 12~36V	DC 9~36V	DC 9~36V
Environment	OP Temp.	-20°C ~ 60°C	-20°C ~ 60°C	-20°C ~ 60°C	-20°C ~ 60°C
	Storage Temp.	-40°C ~ 80°C	-40°C ~ 80°C	-40°C ~ 80°C	-40°C ~ 80°C
	Humidity	95%@40°C, non-condensing	95%@40°C, non-condensing	95%@60°C, non-condensing	95%@60°C, non-condensing
	Vibratoin	1Grms/10-500Hz IEC 60068-2-06	1Grms/10-500Hz IEC 60068-2-06	1Grms/10-500Hz IEC 60068-2-06	1Grms/10-500Hz IEC 60068-2-06
	Shock	50G, 11 msec IEC 60068-2-27	50G, 11 msec IEC 60068-2-27	50G, 11 msec IEC 60068-2-27	50G, 11 msec IEC 60068-2-27
Mechanical	Dimension(WxDxH)	253 x 201.2 x 111.8 mm	253 x 201.2 x 150 mm	210 x 250 x 119.7 mm	210 x 250 x 176.2 mm
	Weight	5.5 Kg	8 Kg	4.5 Kg	7 Kg
Page		35	36	37	38



Embedded System



Model		RICH-33B0-8171	RICH-33B0-8171-S	RICH-33D0-8172	RICH-61D0
M/B		WADE-8171	WADE-8171	WADE-8172	WUX-3350
Form Factor		Mini-ITX	Mini-ITX	Mini-ITX	NUC
System	CPU	Intel® Celeron® N3000 Series Processor	Intel® Celeron® N3000 Series Processor	Intel® Celeron® N3350, 2 cores 1.1GHz/2.4 GHz, 6W TDP	Intel® Atom® Apollo Lake SOC (N3350/N4200) supports Dual/Quad Core (up to 10W) with 2MB Cache
	BIOS	AMI UEFI	AMI UEFI	AMI UEFI	AMI UEFI
	Memory	DDR3L/8GB	DDR3L/8GB	DDR3L SO-Dimms/Up to 16GB	DDR3L SO-Dimms/Up to 8GB
	Graphic Controller	Intel® HD Graphics Family	Intel® HD Graphics Family	Intel® HD Graphics 500	Intel® HD Graphics 500/505
	Super I/O	Nuvoton NCT6106D	Nuvoton NCT6106D	EC	EC
	Storage	1x 2.5" SATA HDD/SSD 1x mSATA	1x 2.5" SATA HDD/SSD 1x mSATA	1x SATA III port, 1x M.2 socket Key M 2280 with SATA signal for SSD	1x SATA III port, 1x Micro-SD 3.0 socket Support Onboard eMMC 5.0 (32G/64G)
External I/O	Serial	3x RS-232 3x RS-232/422/485	3x RS-232/422/485	2x RS-232/422/485 (BIOS Configurable) 4x RS-232	1x RS-232
	USB	4x USB 2.0 4x USB 3.0	4x USB3.0	3x USB 3.0 (Rear I/O) 2x USB 3.0 (Optional Front I/O)	4x USB 3.0
	Display	VGA, HDMI	VGA, HDMI	HDMI, VGA	HDMI, DP
	Ethernet	Realtek® RTL8111G x 2	Realtek RTL8111G x 2	Realtek® RTL8111G	Realtek® RTL8111H
	PS/2	K/B x1, Mouse x1	K/B x1, Mouse x1	PS2	N/A
	Audio	Line-out, Mic-in	Line-out, Mic-in	Line-out, Mic-in	Mic-in or Line-out
	D I/O	N/A	N/A	8 bit GPI/GPO	N/A
Expansion		1x Full-size Mini-PCle	1x Full-size Mini-PCle	1x M.2 Key E 2230 for wireless module, 1x full/half-size Mini-PCle 1x PCIe x1 slot (Gen2, 5GT/s)	1x M.2 Key E 2230 for wireless module support WiFi, BT, 3G & 4G
PWR	System	DC 12V, 19V~24V	DC 12V ~ 24V	DC 12V, 19V~24V	DC 12V~19V
Environment	OP Temp.	0°C ~ 50°C	0°C ~ 50°C	0°C ~ 50°C	0°C ~ 60°C
	Storage Temp.	-20°C ~ 80°C	-20°C ~ 80°C	-40°C ~ 80°C	-40°C ~ 80°C
	Humidity	95%@40°C non-condensing	95%@40°C, non-condensing	95%@40°C non-condensing	95%@40°C non-condensing
	Vibratoin	5Grms/10-500Hz IEC 60068-2-6	5Grms/10-500Hz	5Grms/10-500Hz IEC 60068-2-6	5Grms/10-500Hz IEC 60068-2-6
	Shock	50G, 11 msec, IEC 60068-2-27	50G, 11 msec	50G, 11 msec, IEC 60068-2-27	50G, 11 msec, IEC 60068-2-27
Mechanical	Dimension(WxDxH)	200 x 200 x 45 mm	200 x 200 x 45 mm	200 x 200 x 45 mm	113 x 135 x 41 mm
	Weight	2 Kg	2 Kg	2 Kg	2 Kg
Page		40	41	42	43



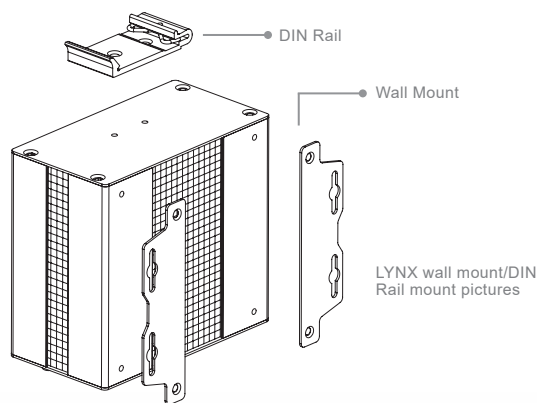
Design Concept for LYNX Series

LYNX Series Edge Computing

LYNX-6000 Series is a new generation of palm-sized, ready-to-use industrial IoT gateway solutions based on Intel Celeron® N3350 CPU (formerly Apollo Lake platform) and also certified by Microsoft® Azure® IoT that provides a scalable infrastructure for data, virtual machines, server and front-end applications. It also provides a rich portfolio of ultra-small form factor IoT appliances that offer a variety of features including low power consumption connectivity and expansion, ruggedized design, and industrial regulatory compliance.

① Palm-sized Cube

LYNX series provide 2 different dimensions with less than 0.5 liters capacity, with the ingenious mechanical design with aluminum chassis, it's also easy to assemble in space constrain factory environment, flexible wall mount or DIN Rail mount



② Flexible I/O Expansion

LYNX-6000 Series design with small footprint LYNX-6110, and also expandable to fit in different applications with different I/O board, such as Edge Computing, IoT Gate Way, PoE Gateway, PLC control and AGV controller, we also provide customized service with unlimited I/O features.

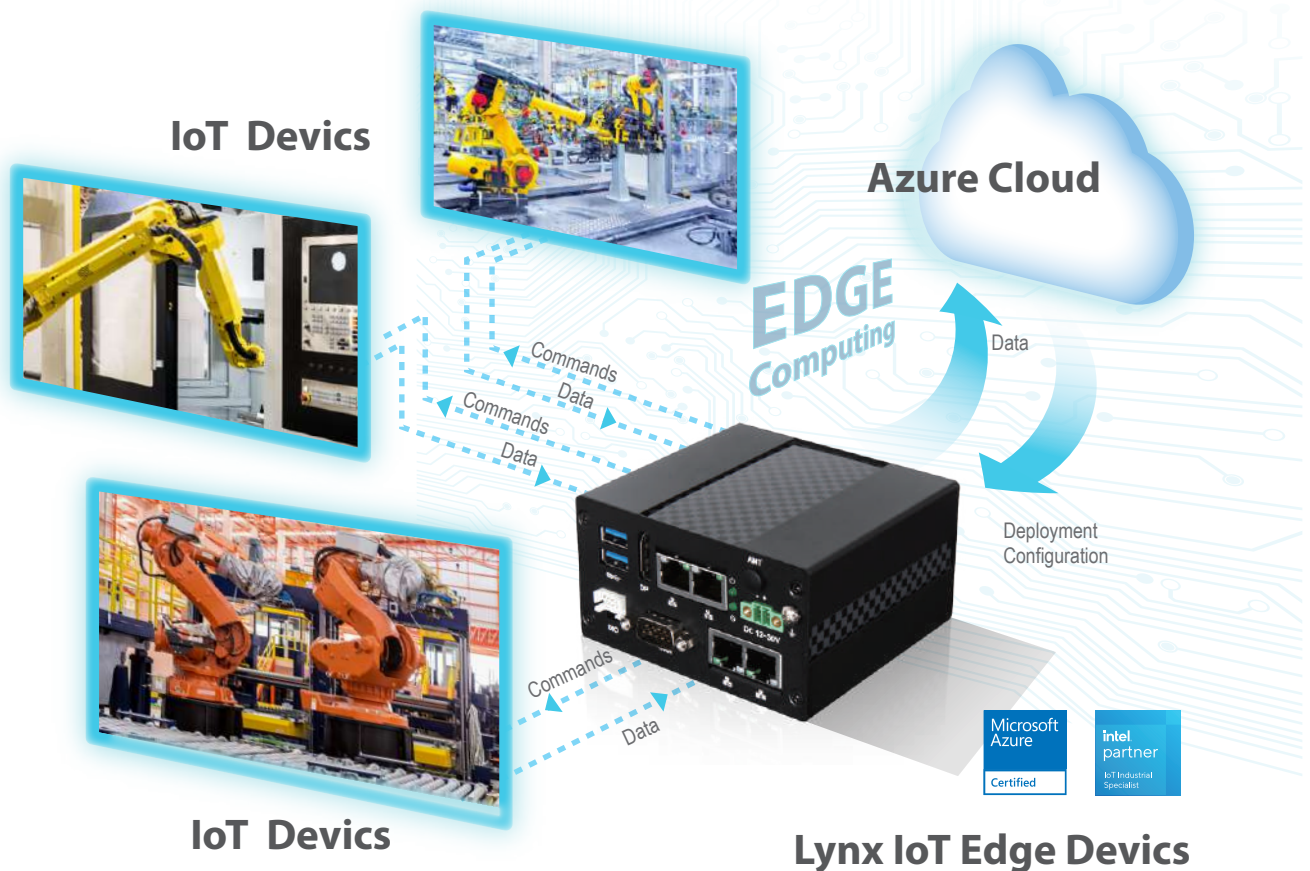


LYNX Series Palm-Sized Power

Design Concept for LYNX Series

3 Microsoft Azure IoT Edge

LYNX-6000 Series certified with Microsoft Azure IoT Edge, customer can easily deploy cloud intelligence to local LYNX-6000 Series IoT edge device. LYNX-6000 Series is a fully controlled service built into the Azure IoT hub. Customer can deploy their cloud workloads (artificial intelligence, Azure and third-party services, or business logic) to execute on Internet of Things (IoT) edge devices through standard containers. By moving specific workloads to LYNX-6000 Series, customers' edge device spend less time to communicate with the cloud, respond to local changes more quickly, and even operate reliably under long-term offline conditions.



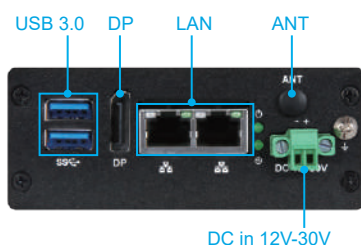
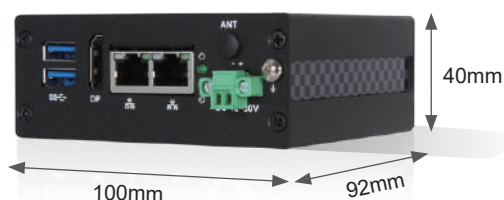
4 Industrial Environment EMC

LYNX-6000 Series certificated with heavy Industrial Environment of EMC(EN 61000-6-4 and EN 61000-6-2) to meet industrial harsh environment. Its closed fan-less chassis design makes LYNX featuring with low maintenance, ideal for reliable operation in industrial production environment.



LYNX-6110

Embedded Palm-Sized System with Intel® Celeron® N3350 based SMARC Board



The LYNX-6110 basic model include Intel Celeron N3350 processor (Apollo Lake platform); onboard 4GB LPDDR4 DRAM (up to 8GB); onboard 32GB eMMC 5.0 (up to 256GB); operation at <10W for energy efficiency; 2x GbE LAN, 2x USB 3.0, 1x DP with resolution up to 4K; 1x M.2 Key E 2230 for wireless module; wide power input ranges from 12-30 VDC; ruggedized, fan-less and advanced thermal design; DIN-rail and wall mount options; certified with heavy industry EMC and EMI class B; and optional wide operating temperature support and customized appearance service.

FEATURES

- Supports Intel® Apollo Lake series processor
- Onboard 4GB LPDDR4 non-ECC DRAM, up to 8GB
- Onboard 32GB eMMC 5.0 (up to 256GB)
- Certified with heavy industry EMC and EMI class B
- Wide power input ranges from 12-30 VDC
- 1xAntenna hole for WiFi module to use

ORDERING GUIDE

AS5-3571	(R).ATO. LYNX-6110-4G-32G. SFF IPC system with LSMC-M1012-N3350-4G-32G, 4G LPDDR4, 32G 3D TLC eMMC, TPM
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System

M/B	LSMC-M1012
CPU	Intel® Celeron® N3350, 2 cores, 1.1 GHz / 2.4 GHz, 6W TDP
BIOS	AMI uEFI BIOS
System Memory	Onboard 4GB LPDDR4 non-ECC DRAM, up to 8GB
Storage	Onboard 32GB eMMC 5.0 (up to 256GB)
Watchdog Timer	Programmable watchdog timer, time out period from 1 sec. to 255 secs.
Expansion	1x M.2 Key E 2230 for wireless module

External I/O

Display	1x DP, resolution up to 4096x2160
USB	2x USB 3.0 ports
Ethernet	2x Gigabit Ethernet (Intel® I210AT)
Other	1x Antenna hole for WiFi module

Power Supply Unit

Power Input	DC 12V~30V via Power Terminal Block
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Environmental

Operation Temperature	0°C ~ 50°C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/10-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

Mechanical

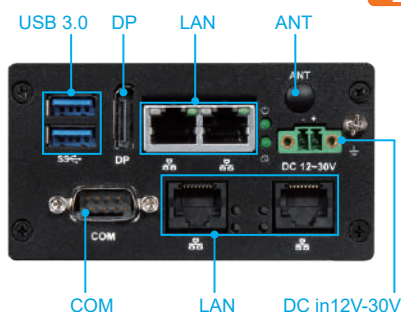
Dimension	100(W) x 92(D) x 40(H) mm
Weight	1.42 Kg
Mounting	Wall/DIN Rail mounting





LYNX-612A

Embedded Palm-Sized System with Intel® Celeron® N3350 based SMARC Board



System

M/B	LSMC-M1012
CPU	Intel® Celeron® N3350, 2 cores, 1.1GHz / 2.4 GHz, 6W TDP
BIOS	AMI uEFI BIOS
System Memory	Onboard 4GB LPDDR4 non-ECC DRAM, up to 8GB
Storage	Onboard 32GB eMMC 5.0 (up to 256GB)
Watchdog Timer	Programmable watchdog timer, time out period from 1 sec. to 255 secs.
Expansion	1x M.2 Key E 2230 for wireless module

Adapting low power Intel® Apollo Lake processor, LYNX-612A is equipped with 4x LAN (2x isolated LAN) to connect multi local area network devices in different electric noise environment. One legacy RS-232/422/485 also helps communicate machine to machine, collect all edge devices data for analysis, and then forward analysis result to control center as an edge controller.

FEATURES

- Supports Intel® Apollo Lake series processor
- Onboard 4GB LPDDR4 non-ECC DRAM, up to 8GB
- Onboard 32GB eMMC 5.0 (up to 256GB)
- Certified with heavy industry EMC and EMI class B
- Wide power input ranges from 12-30 VDC
- 2 Isolation LAN
- 1x Antenna hole for WiFi module to use

ORDERING GUIDE

AS5-3584	(R). ATO. LYNX-612A-4G-32G. SFF IPC system with LSMC-M1012-N3350-4G-32G, 4G LPDDR4, 32G 3DTLC eMMC, TPM, Expanded with Carrier Board A (LSMC-C302A)
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External I/O

Serial Port	1 x RS-232/422/485 (BIOS configurable)
Display	1x DP, resolution up to 4096x2160
USB	2x USB 3.0 ports
Ethernet	4x Gigabit Ethernet (Intel® I210AT)(2 with Isolation)
Other	1x Antenna hole for WiFi module

Power Supply Unit

Power Input	DC 12V~30V via Power Terminal Block
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Environmental

Operation Temperature	0°C ~ 50°C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/10-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

Mechanical

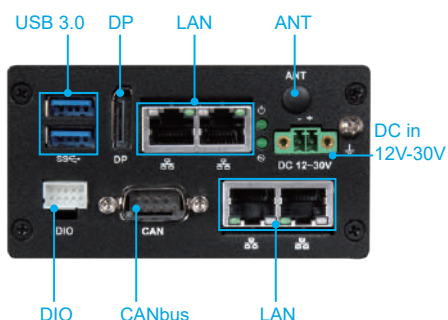
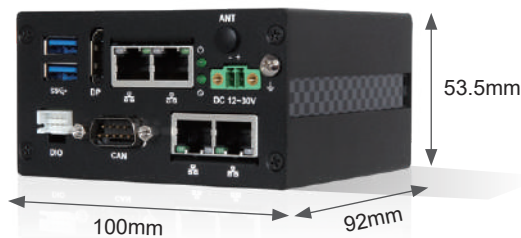
Dimension	100(W) x 92(D) x 53.5(H) mm
Weight	1.53 Kg
Mounting	Wall/DIN Rail mounting





LYNX-612B

Embedded Palm-Sized System with Intel® Celeron® N3350 based SMARC Board



System

M/B	LSMC-M1012
CPU	Intel® Celeron® N3350, 2 cores, 1.1 GHz / 2.4 GHz, 6W TDP
BIOS	AMI uEFI BIOS
System Memory	Onboard 4GB LPDDR4 non-ECC DRAM, up to 8GB
Storage	Onboard 32GB eMMC 5.0 (up to 256GB) 1x M.2 Key B 2242 for storage
Watchdog Timer	Programmable watchdog timer, time out period from 1 sec. to 255 secs.
Expansion	- 1x M.2 Key E 2230 for wireless module - 1x full-size Mini-PCle for 4G module

LYNX-612B is a compact PC with CANbus, which can connect and communicate with different electronic units. Its 8-bit GPIO pins also provide a programmable interface to read the state of a binary input device or control the on/off state of a binary output device. By supporting 4x LAN in palm-sized dimension, it can easily work as IoT gateway in a small space for automation applications.

FEATURES

- Supports Intel® Apollo Lake series processor
- Onboard 4GB LPDDR4 non-ECC DRAM, up to 8GB
- Onboard 32GB eMMC 5.0 (up to 256GB)
- Certified with heavy industry EMC and EMI class B
- Wide power input ranges from 12-30 VDC
- 4x RJ45 LAN
- Support CAN bus
- Support 8-bit GPIO
- 1x Antenna hole for WiFi and 4G module to use

ORDERING GUIDE

AS5-3583	(R). ATO. LYNX-612B-4G-32G. SFF IPC system with LSMC-M1012-N3350-4G-32G, 4G LPDDR4, 32G 3DTLC eMMC, TPM, Expanded with Carrier Board B (LSMC-C302B)
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External I/O

Display	1x DP, resolution up to 4096x2160
USB	2x USB 3.0 ports
Ethernet	- 2x Gigabit Ethernet (Intel® I210AT) - 2x Gigabit Ethernet (Intel® I210IT)
GPIO	8-bit GPIO
Other	- 1x Antenna hole for WiFi module - 1x CAN bus

Power Supply Unit

Power Input	DC 12V~30V via Power Terminal Block
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Environmental

Operation Temperature	0°C ~ 50°C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Gms/10-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

Mechanical

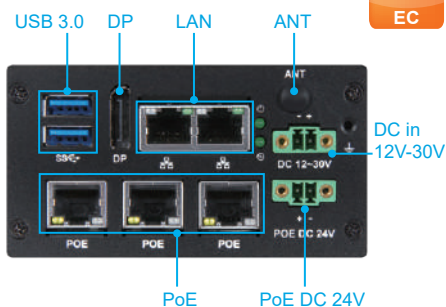
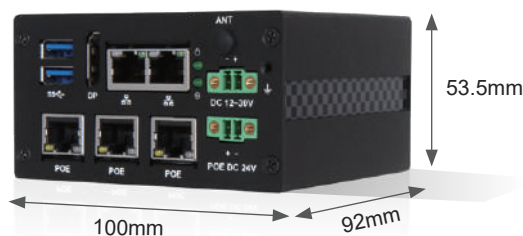
Dimension	100(W) x 92(D) x 53.5(H) mm
Weight	1.53 Kg
Mounting	Wall/DIN Rail mounting





LYNX-612D

Embedded Palm-Sized System with Intel® Celeron® N3350 based SMARC Board



System

M/B	LSMC-M1012
CPU	Intel® Celeron® N3350, 2 cores, 1.1GHz / 2.4 GHz, 6W TDP
BIOS	AMI uEFI BIOS
System Memory	Onboard 4GB LPDDR4 non-ECC DRAM, up to 8GB
Storage	Onboard 32GB eMMC 5.0 (up to 256GB)
Watchdog Timer	Programmable watchdog timer, time out period from 1 sec. to 255 secs.
Expansion	1x M.2 Key E 2230 for wireless module

As a compact, fan-less and cable-less PC adapting low power Intel® Apollo Lake processor, LYNX-612D is targeted as PoE gateway. Three PoE LAN ports allow it to easily connect with multi cameras and PoE devices. With Microsoft Azure Edge device certification, it's easy to deploy complex event processing, machine learning, image recognition, and other high value AI without writing it in-house.

FEATURES

- Supports Intel® Apollo Lake series processor
- Onboard 4GB LPDDR4 non-ECC DRAM, up to 8GB
- Onboard 32GB eMMC 5.0 (up to 256GB)
- Wide power input ranges from 12-30 VDC
- 5x RJ45 LAN (3x PoE)
- 1x Antenna hole for WiFi module to use

ORDERING GUIDE

AS5-3585	(R). ATO. LYNX-612D-4G-32G. SFF IPC system with LSMC-M1012-N3350-4G-32G, 4G LPDDR4, 32G 3DTLC eMMC, TPM, Expanded with Carrier Board D (LSMC-C304)
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External I/O

Display	1x DP, resolution up to 4096x2160
USB	2x USB 3.0 ports
Ethernet	2x Gigabit Ethernet (Intel® I210AT)
PoE	3x PoE(802.3af Power total 31W)(Intel® I210IT)
Other	1x Antenna hole for WiFi module

Power Supply Unit

Power Input	DC 12V~30V via Power Terminal Block
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Environmental

Operation Temperature	0°C ~ 50° C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/10-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

Mechanical

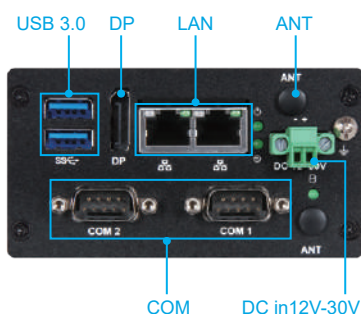
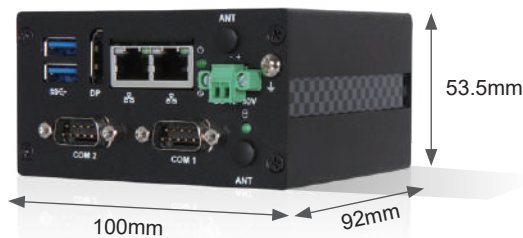
Dimension	100(W) x 92(D) x 53.5(H) mm
Weight	1.53 Kg
Mounting	Wall/DIN Rail mounting





LYNX-612E

Embedded Palm-Sized System with Intel® Celeron® N3350 based SMARC Board



System

M/B	LSMC-M1012
CPU	Intel® Celeron® N3350, 2 cores, 1.1 GHz / 2.4 GHz, 6W TDP
BIOS	AMI uEFI BIOS
System Memory	Onboard 4GB LPDDR4 non-ECC DRAM, up to 8GB
Storage	- Onboard 32GB eMMC 5.0 (up to 256GB) - 1x M.2 Key B 2242 for storage
Watchdog Timer	Programmable watchdog timer, time out period from 1 sec. to 255 secs.
Expansion	- 1x M.2 Key E 2230 for wireless module - 1x full-size Mini-PCle for 4G module

External I/O

Serial Port	- 1 x RS-232 - 1 x RS-232/422/485 (BIOS Configurable)
Display	1x DP, resolution up to 4096x2160
USB	2x USB 3.0 ports
Ethernet	2x Gigabit Ethernet (Intel® I210AT)
Other	1x Antenna hole for WiFi module

Power Supply Unit

Power Input	DC 12V~30V via Power Terminal Block
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Environmental

Operation Temperature	0°C ~ 50°C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/10-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

Mechanical

Dimension	100(W) x 92(D) x 53.5(H) mm
Weight	1.53 Kg
Mounting	Wall/DIN Rail mounting

LYNX-612E with enriched legacy industrial control interfaces is designed as a software-defined gateway for a variety of industrial automation environments. In addition to common features, it includes 1x Full-size Mini-PCle and 1x M.2 key B 2242 for expansion (such as storage, Wi-Fi, Bluetooth®, LoRa or LTE modules), 1x RS-232 and 1x RS-232/422/485 (BIOS configurable).

FEATURES

- Supports Intel® Apollo Lake series processor
- Onboard 4GB LPDDR4 non-ECC DRAM, up to 8GB
- Onboard 32GB eMMC 5.0 (up to 256GB)
- Certified with heavy industry EMC and EMI class B
- Wide power input ranges from 12-30 VDC
- Support 2x COM ports
- 1x Antenna hole for WiFi and 4G module to use

ORDERING GUIDE

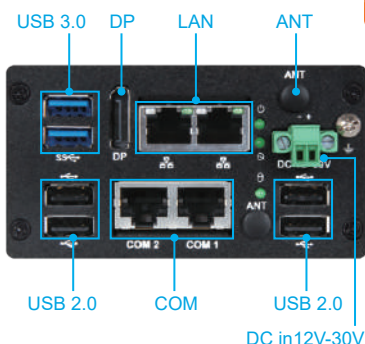
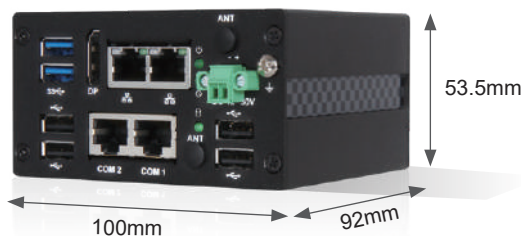
AS5-3569	(R). ATO. LYNX-612E-4G-32G. SFF IPC system with LSMC-M1012-N3350-4G-32G, 4G LPDDR4, 32G 3D TLC eMMC, TPM, Expanded with Carrier Board E(LSMC-C303)
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LYNX-612G

Embedded Palm-Sized System with Intel® Celeron® N3350 based SMARC Board



System

M/B	LSMC-M1012
CPU	Intel® Celeron® N3350, 2 cores, 1.1GHz / 2.4 GHz, 6W TDP
BIOS	AMI uEFI BIOS
System Memory	Onboard 4GB LPDDR4 non-ECC DRAM, up to 8GB
Storage	- Onboard 32GB eMMC 5.0 (up to 256GB) - 1x M.2 Key B 2242 for storage
Watchdog Timer	Programmable watchdog timer, time out period from 1 sec. to 255 secs.
Expansion	- 1x M.2 Key E 2230 for wireless module - 1x full-size Mini-PCIe for 4G module

External I/O

Serial Port	2x RS-232 on RJ45
Display	1x DP, resolution up to 4096x2160
USB	2x USB 3.0 ports, 4x USB 2.0 ports
Ethernet	4x Gigabit Ethernet (Intel® I210AT)
Other	1x Antenna hole for WiFi module

Power Supply Unit

Power Input	DC 12V~30V via Power Terminal Block
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Environmental

Operation Temperature	0°C ~ 50°C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/10-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

Mechanical

Dimension	100(W) x 92(D) x 53.5(H) mm
Weight	1.53 Kg
Mounting	Wall/DIN Rail mounting

LYNX-612G is designed for the compact IoT gateway that requires enriched I/O ports for expansion or connectivity. Certified by by Microsoft® Azure® IoT, it has been pre-tested and verified to work with Microsoft® Azure® IoT devices, allowing businesses to reach customers where they are, work with an ecosystems of devices and platforms and enable faster time to production.

FEATURES

- Supports Intel® Apollo Lake series processor
- Onboard 4GB LPDDR4 non-ECC DRAM, up to 8GB
- Onboard 32GB eMMC 5.0 (up to 256GB)
- Certified with heavy industry EMC and EMI class B
- Wide power input ranges from 12-30 VDC
- Support 2x COM ports
- 1x Antenna hole for WiFi and 4G module to use

ORDERING GUIDE

AS5-3570	(R). ATO. LYNX-612G-4G-32G. SFF IPC system with LSMC-M1012-N3350-4G-32G, 4G LPDDR4, 32G 3DTLC eMMC, TPM, Expanded with Carrier Board G (LSMC-C305)
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Rugged Concept

WEBS 1000 series is a rugged box PC series which is used in digital signage, transportation and industrial applications. The WEBS rugged series is an anti-vibration/shock certified wide temperature embedded system. Its compact and exclusively mechanical design facilitate conveniences for system integration.

COMPACT

WEBS has ingenious mechanical design which gives consideration small dimension, superior heat dissipation, flexible wall mounting or panel mounting, and intuitive system installation.

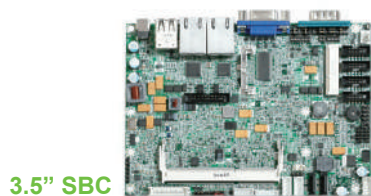


Anti-Vibration & Anti-Shock Design

With the rugged design, the WEBS series is reliable in industrial environments to resist strong vibration and can be used as a core computer requiring to be installed on a moving object. Whole of the system can pass 5Grms vibration and 50G shock testing, providing a reliable platform for any industrial applications.

Hot-Swap of Entry 3.5" ECX & MINI-ITX

With common mechanical design for 3.5" ECX & Mini-ITX board, our customer can easily to integrate Portwell's board to design their customized system. They can save development time and cost on their new product..



3.5" SBC

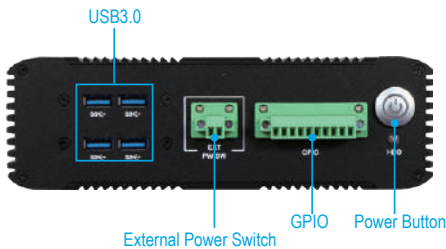
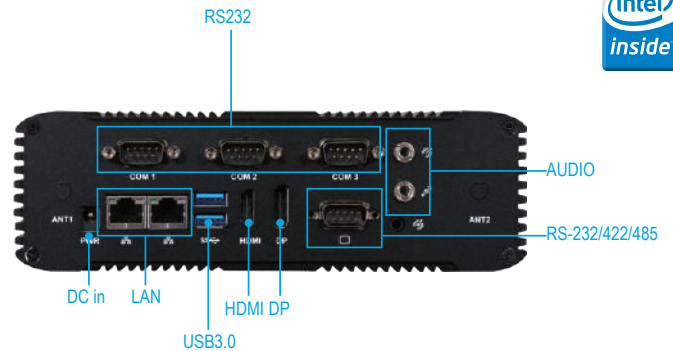


Mini-ITX



WEBS-13D1

Embedded Rugged Fan-less System with Intel® Atom® E3900 Series based 3.5" ECX Board



The WEBS-13D1 adopts Intel® Atom® Dual/Quad Core™ processor E3900 series and takes its advantages to develop Portwell Design on the system. The CPU/chipset on the backside of the board is good for system thermal design. The perfect thermal solution can easily solve the thermal of CPU. The external power switch is an another plus factor. The WEBS-13D1 is a great platform for kiosk, digital signage, and automation applications.

FEATURES

- Support Intel® Apollo Lake series processor
- Support DDR3L-1866/1600 non-ECC SDRAM
- Support dual displays including DP and HDMI
- Support Mini-PCIe / mSATA (Dual Mini-PCIe socket)
- Support 4x COM ports(1x RS-232/422/485)
- 2x Antenna hole for WiFi or 3G/GPS module to use

ORDERING GUIDE

AS5-3523	(R).ATO. WEBS-13D1. 3.5" System
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System

M/B	PEB-2773
CPU	Intel® Atom® Dual/Quad Core E3900 Series Processor (up to 12W) (E3950)
BIOS	AMI UEFI BIOS
Memory	Single 204 pin SODIMM socket support 1333/1600/1866 MH/z up to 8GB
Storage	- 1x 2.5" SATA HDD/SSD - 1x mSATA
Watchdog Timer	Programmable watchdog timer, time out period from 1 sec to 255 secs.
H/W Status Monitor	- Temperature (CPU & System) - Voltage (CPU Vcore, 12V, 5V, 3.3V, 1.35V)
Expansion	2x Mini-PCIe socket (Full-size support mSATA / Half-size support WiFi/BT)

External I/O

Serial Port	1x RS-232/422/485, 3x RS-232
Display	1x DP, 1x HDMI
USB	6x USB3.0
Audio	Line-in / Line-out / Mic-in
Ethernet	2x Gigabit Ethernet (Intel® I210IT)
GPIO	1x Programmable 8-bit Digital I/O
Other	- 2x Antenna hole for WiFi or 4G/GPS module - 1x EXT Power Switch

Power Supply Unit

Power Input	DC 12V~24V via DC Jack
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Environmental

Operation Temperature	-20°C ~ 60°C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/10-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

Mechanical

Dimension	200(W) × 150(D) × 80(H) mm
Weight	2 Kg
Mounting	Wall, Panel mounting



Brick Concept

As well as stable quality requirements, users are always looking for a unique product to differentiate them from their competitors. To simplify system customization, Portwell created the Brick concept, an intelligent structure for the WEBS systems that builds the WEBS chassis using three simple elements: wall, pillar and cover. This makes the chassis flexible and easy for customization by following customer's requirements. The illustration below shows the segments for customization.

* May necessitate extra cost and MOQ for an individual customization.



With its flexible structure, a Portwell WEBS system can adjust the size of its form-factor to supply a customized chassis for the customer. The three system sizes below illustrate the standard WEBS system form-factors. Customer can adapt any model to suit their applications. (Size unit is mm)



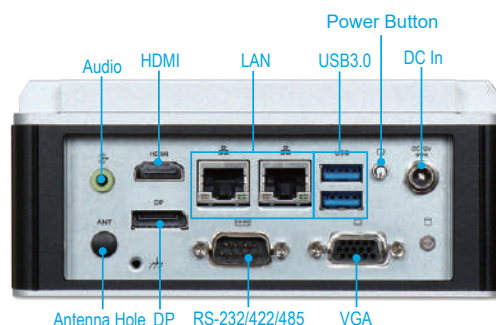
Configuration

- **Full System:** Chassis + (Power Module) + Adaptor + Cable + Embedded Board + Memory + HDD/CF
- **Bare System (by request only):** Chassis + (Power Module) + (Adaptor) + Cable + Embedded Board

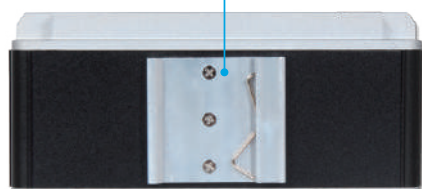


WEBS-2110

Embedded Compact Fan-less System with Intel® Atom® x6000E Series based NANO-ITX Board



DIN-Rail Mounting Bracket (optional)



The WEBS-2110 takes advantage of Intel® Atom® x6000E series processor technologies, especially its vastly superior Dual/Quad-Core™ processing power and capability. The low power, cost-effective processor with high performance is of great use to build up a compact system, WEBS-2110, which supports wide operating temperature from -20°C to 60°C for fan-less applications in harsh environment, such as Industrial Automation, Medical, Networking, Kiosk and Digital Signage.

FEATURES

- Powered by Intel® Atom® Elkhart Lake Dual/Quad-core™ x6000E Series SoC
- Support 1x 2.5" SSD, 1x mSATA, 1x Micro SD
- Triple Display by VGA, DP, HDMI
- 1x M.2 and 1x Full-size Mini-PCIe socket (Choose either mSATA or mini-PCIe by BIOS)
- Support Wall mount and DIN Rail mount
- Wide Operating Temperature support (-20~60°C) with Fan-less design
- DC 12V power input



System

M/B	NANO-6063
CPU	Intel Atom® Dual/Quad-core x6000E family SoC (up to 12W)
BIOS	AMI UEFI BIOS
Memory	DDR4 3200 MT/s Non-ECC SO-DIMM up to 32GB
Storage	- 1x SATA III port - 1x mSATA socket (Choose either mSATA or mini-PCIe by BIOS) - 1x Micro-SD socket
Watchdog Timer	Programmable by embedded controller
H/W Status Monitor	System monitor (Voltage and Temperature)
Expansion	- 1x M.2 Type E socket - 1x full size mini-PCIe socket (Choose either mSATA or mini-PCIe by BIOS) - 2x USB 3.2 Gen 2 ports on board with header (10Gbps)

External I/O

Serial Port	1x RS-232/422/485 on board connector (selected by BIOS)
Display	1x VGA, 1x DP, 1x HDMI
USB	2x USB 3.2 Gen 2 ports (10Gbps)
Audio	Audio jack on rear I/O with Line-out and on board pin header with Line-in, Line-out, and Mic-in
Ethernet	- Intel® I210 GbE controller and MaxLinear GPY215 GbE PHY - Dual RJ45 connectors on rear I/O with two LED indicators
Other	TPM 2.0 on board

Power Supply Unit

Power Input	DC 12V
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Environmental

Operation Temperature	-20°C~60°C
Storage Temperature	-40°C~85°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/10~500Hz, IEC 60068-2-6
Operation Shock	50G, 11msec, IEC 60068-2-27

Mechanical

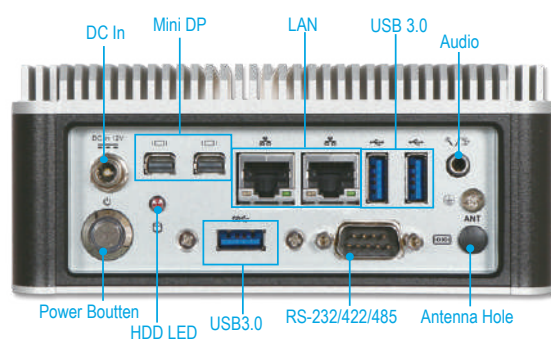
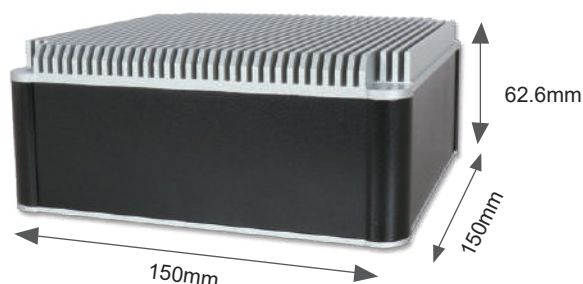
Dimension	150 x 150 x 66mm
Weight	1.4 Kg
Mounting	Wall, DIN-rail mounting





WEBS-21G0

Embedded Compact Fan-less System with Intel®
Whiskey Lake-U Core™ i Soc based NANO-ITX Board



The WEBS-21G0 builds on Intel® Whiskey Lake-U Core™ i SoC and takes advantages of Intel® Core™ mobile technologies that can support superior processing power and capability. Support two Gigabit Ethernet ports, two mini DP ports and M.2 2280 key M for storage. The WEBS-21G0 is an ideal platform which with high performance for fan-less applications in harsh environment, such as POS, kiosk, digital signage, transportation and automation.

FEATURES

- Supports Intel® Whiskey Lake-U series processor
- 1x DDR4 2400 non-ECC SO-DIMM, Up to 32GB
- 1x M.2 key M 2280 for storage
- Supports Dual mini DP ports
- 1x Antenna hole for WiFi module
- IP 40 Rating

ORDERING GUIDE

AS5-3587	(R).ATO.WEBS-21G0.NANO-ITX System.
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System

M/B	NANO-6051
CPU	Intel® 8th Generation Whiskey lake-U series Processor Core i5/i3 processor (15W TDP)
BIOS	AMI uEFI BIOS
Memory	1x DDR4 2400 non-ECC SO-DIMM, Up to 32GB
Storage	1x M.2 key M 2280
Watchdog Timer	Programmable watchdog timer, time out period from 1 sec. to 255 secs.
Expansion	1x M.2 Key E 2230 for wireless module

External I/O

Serial Port	1x RS-232/422/485 (BIOS Configurable)
Display	2x mini DP, resolution up to 4096x2304
USB	3x USB 3.0 ports
Audio	1x Combo Audio jack on rear I/O with Line-out / Mic in
Ethernet	2x Gigabit Ethernet (Intel® I219LM + I210AT)
Other	- 1x Antenna hole for WiFi module

Power Supply Unit

Power Input	DC 12V via DC Jack
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Environmental

Operation Temperature	0°C ~ 50°C
Storage Temperature	-40°C ~ 85°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	3Grms/10-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

Mechanical

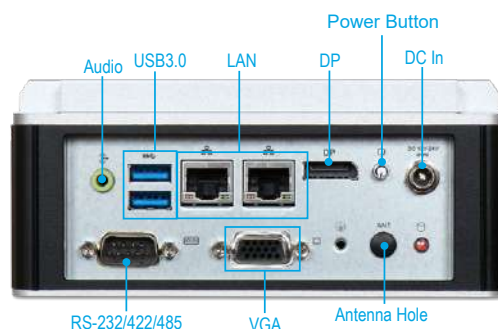
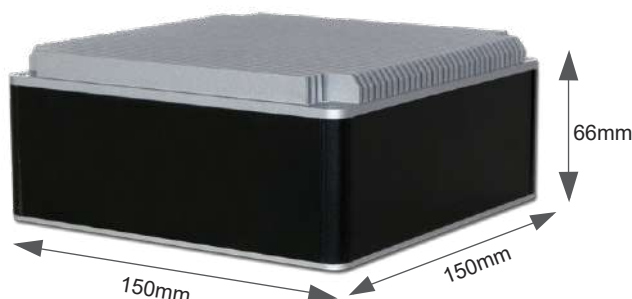
Dimension	150(W) x 150(D) x 62.6(H) mm; 5.9"(W) x 2.5"(D) x 2.1"(H)
Weight	2 Kg
Mounting	Wall/DIN Rail mounting



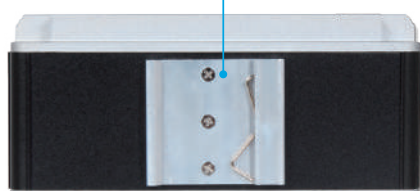


WEBS-21D0

Embedded Compact Fan-less System with Intel® Atom® E3900 Series based NANO-ITX Board



DIN-Rail Mounting Bracket (optional)



The WEBS-21D0 takes advantage of Intel® Atom® E3900 series processor technologies, especially its vastly superior Quad-Core™ processing power and capability. The low power, cost-effective processor with high performance is of great use to build up a compact system, WEBS-21D0, which supports wide operating temperature from -25°C to 60°C for fan-less applications in harsh environment, such as kiosk, digital signage, transportation and factory automation.

FEATURES

- Powered by Intel® Atom® Apollo Lake Dual/Quad-core™ E3900 Series SoC
- Support 1x 2.5" HDD/SSD, 1x mSATA, 1x Micro SD
- Dual Display by VGA, DP
- 1x M.2 and 1x Full-size Mini-PCle socket (co-lay with mSATA)
- Support Wall mount, Panel/VESA mount and DIN Rail mount
- Wide Operating Temperature support (-20~60°C) with Fan-less design
- Wide Range DC 12V ~ 24V power input

ORDERING GUIDE

AS5-3568	(R). ATO. WEBS-21D0. NANO-ITX system.
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System

M/B	NANO-6062
CPU	- Intel® Atom® x7-E3950, 1.6GHz, 2M L2 Cache, up to 2.0GHz, 12W TDP (4C/4T) - Intel® Atom® x5-E3940, 1.6GHz, 2M L2 Cache, up to 1.8GHz, 9.5W TDP (4C/4T)
BIOS	AMI UEFI BIOS (SPI ROM)
Memory	Single 204-pin SODIMM sockets supports DDR3L 1866/1600 MT/s SDRAM up
Storage	1x 2.5" SATA HDD/SSD, 1x mSATA, 1x SD card
Watchdog Timer	Programmable by embedded controller
H/W Status Monitor	- Temperature (CPU & System) - Voltage (CPU Vcore, 12V, 5V, 3.3V, 1.35V)
Expansion	- One M.2 socket (Type E) - One full size Mini-PCle socket (co-lay with mSATA)

External I/O

Serial Port	1x RS-232/422/485 (Selected by BIOS)
Display	1x VGA, 1x DP
USB	2x USB3.0
Audio	1x Line-out
Ethernet	2x Gigabit Ethernet (Intel® I210IT)
Other	- TPM 2.0 on board - 1x Antenna hole for wireless solution

Power Supply Unit

Power Input	DC 12V~24V
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Environmental

Operation Temperature	-20°C~60°C
Storage Temperature	-40°C~85°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/10~500Hz, IEC 60068-2-6
Operation Shock	50G, 11msec, IEC 60068-2-27

Mechanical

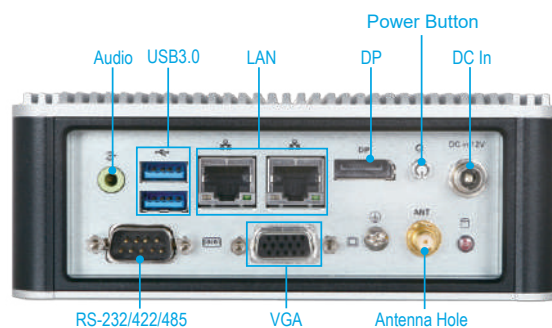
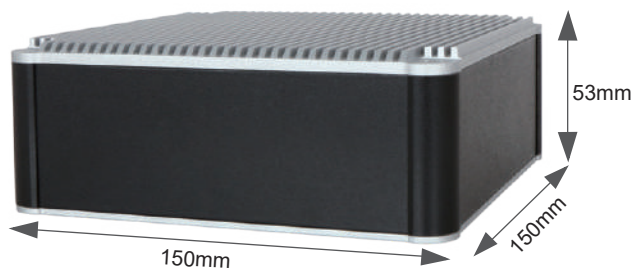
Dimension	150 x 150 x 66mm
Weight	2 Kg
Mounting	Wall, DIN-rail mounting





WEBS-2190

Embedded Compact Fan-less System with Intel®
Atom® E3800 Series based NANO-ITX Board



The WEBS-2190 builds on Intel® Baytrail SoC and takes advantages of Intel® Atom® E3800 Series processor technologies, especially its vastly superior Quad-Core processing power and capability. The cost-effective CPU with high performance is of great use to build up a compact system, the WEBS-2190, it supports a wide temperature from -25°C to 60°C for fan-less applications in harsh environment, such as POS, kiosk, digital signage, transportation and automation.

FEATURES

- Fan-less and cable-less & small and exquisite design
- Fan-less solution with Quad/Dual-Core CPU
- Intel® Baytrail SoC base platform
- 1x Half-size Mini-PCle socket (USB + PCIe x1 signal)
- 1x Antenna hole for WiFi or 3G/GPS module to use
- OP Vibration: 5Grms/10~500Hz
- OP Shock: 50G, 11msec
- IP40 Rating

ORDERING GUIDE

AS5-3367	(R).ATO.WEBS-2190.NANO-ITX System.
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System

M/B	NANO-6060
CPU	- Intel® Atom® E3845, 2M L2 Cache, 1.91GHz, 10W TDP (4C/4T) - Intel® Atom® E3827, 1M L2 Cache, 1.75GHz, 8W TDP (2C/2T)
BIOS	Phoenix UEFI BIOS (SPI ROM)
System Memory	Single 204-pin SO-DIMM socket supports DDR3L 1066/1333 up to 8GB
Storage	1x 2.5" SATA HDD/SSD, 1x Micro SD card
Watchdog Timer	Programmable via S/W from 1 sec. to 255 sec.
H/W Status Monitor	- Temperature (CPU & System) - Voltage (CPU Vcore, VBAT, 5VSB, 12V, 5V, 3.3V)
Expansion	1x Half-size Mini-PCle socket

External I/O

Serial Port	1x RS-232/422/485 (Selected by BIOS)
Display	1x VGA, 1x DP
USB	2x USB3.0 (Optional kit: additional 2x USB3.0 ;Expande 2x USB2.0 by customizing)
Audio	Line-out
Ethernet	2x Gigabit Ethernet (Intel® I210IT)
Other	1x Antenna hole for WiFi or 3G/GPS module

Power Supply Unit

Power Input	DC 12V
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Environmental

Operation Temperature	-25°C ~ 60°C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/10-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

Mechanical

Dimension	150(W) x 150(D) x 53(H) mm; 5.9"(W) x 5.9"(D) x 2.1"(H)
Weight	1.3 Kg
Mounting	Wall, Panel, and DIN Rail mounting



Design Concept for WEBS-35C3

Portwell's WEBS-35C3 is a high performance fanless Box PC, powered by the Intel® 6th Skylake S Core™ i7/i5/i3/Pentium/Celeron processor.

WEBS-35C3 incorporate Intel® desktop processor technology and Portwell's innovative PCI/PCIe expansion modularization design to construct a reliable and versatile embedded system. Using Intel® 6th generation processor with integrated Gen 9 graphics, the WEBS-35C3 provides nearly double graphics performance over its predecessor. This platform natively supports new features such as USB3.0, SATA3 and DDR4 2133/1866.

This newest system adapted Portwell's innovative Box PC structure. The modularized expansion architecture can reduce the thermal effect between add-on card and system, so that your system can always work in expected thermal condition.

Product Highlight

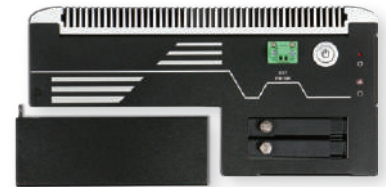
(1) Portwell Power-Optimized & Value-Optimized Performance Platforms

Instead of adopting a mobile CPU like a traditional embedded system, WEBS-35C3 utilizes a 35W Intel® desktop CPU and Intel® Q170 chipset, which is more economical compared to its mobile counterpart and provides great efficacy as well as low power consumption; this makes WEBS-35C3 not only competitive but outstanding in the market. The system further takes advantage of the Intel® Core™ processor technologies supporting dual channel DDR4 memory up to 32GB.



(2) Innovative Expansion Cassette

Providing an expansion slot inside a fanless computer is easy, but the real challenge is to deal with the heat generated by add-on card. That's why we design our patent expansion cassette for WEBS-35C3 expansion version. By creating an isolated chamber to accommodate add-on card separately, WEBS-35C3 can effectively minimize the thermal interference and maintain system stability. Additional thermal solution, such as customized heat-spreader can be applied inside cassette to realize a truly rugged fanless system with diversified add-on cards.



(3) Wide Range DC Power Input

The WEBS-35C3 accepts wide range DC power input, allowing it to be powered with multiple options, no matter if 12V, 24V, 19V or 36V power adapter is available. Besides, the wide range DC power input enables product usage in a variety of situations.



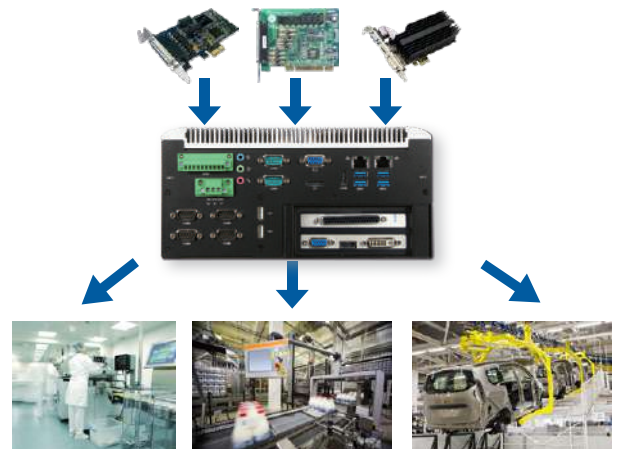
Product Feature

WEBS-35C3 is easy installation and maintenance. With improving chassis design, user can replace memory, CPU, mini-PCIe module and M.2 module on their demand by just removing top cover.

This system provides rich I/O interfaces and faster connectivity. Three independent displays(DP/HDMI/VGA), two Gigabit Ethernet, two RS-232/422/485 ports, four RS-232 ports, two USB2.0, four USB3.0, one 8-bits GPIO port and Mic-in/Line-in/Line-out.

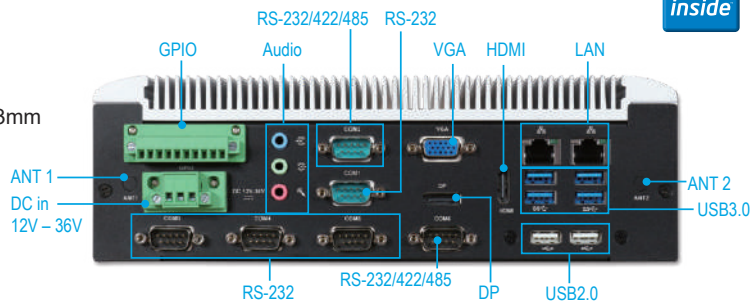
Optional wireless, 4G and LTE module can be added via a Mini-PCIe socket or M.2 socket and additional function can be added via two PCIe x4 or one PCIe x4 + one PCI or two PCIe x16 expansion slot.

The WEBS-35C3 serves performance and graphic demanding application targeted at factory automation and industrial automation, which requires additional control feature via expansion slots.



WEBS-35C1

Embedded Rugged Fan-less System with
Intel® 6th Skylake-S Core™ i3/i5/i7 based
Mini-ITX Board



The WEBS-35C1 builds on Intel® desktop Q170 chipset and takes advantages of Intel® Core™ i3/i5/i7 desktop processor technologies that can support dual DDR4 memory. Support two Gigabit Ethernet ports, one M.2 socket and one Mini-PCIe socket. The WEBS-35C1 is an ideal platform with rich I/O and high resolution for POS, kiosk, digital signage, and surveillance security monitoring applications.

FEATURES

- Intel® Core™ i High performance Fan-less Embedded Box PC
- 6th generation Intel® Skylake-S Core™ i3/i5/i7 Desktop processor (Quad-Core CPU supported)
- Dual UB-DIMM DDR4 up to 32GB
- 2x 2.5" SATA HDD/SSD, 1x mSATA
- Rich I/O is good for versatile applications
- 1x M.2 socket, 1x Full-size Mini-PCIe socket
- Rugged design is good for using in harsh environment

ORDERING GUIDE

AS5-3460

(R).ATO.WEBS-35C1.Embedded rugged fan-less system with Intel Skylake-S Core i3/i5/i7 based MINI-ITX system.

System

M/B	WADE-8017
System Chipset	Intel® Q170
CPU	<ul style="list-style-type: none"> - Intel® Core™ i7-6700TE, 2.4GHz, 8M L2 Cache, up to 3.40 GHz, 35W TDP (4C/8T) - Intel® Core™ i5-6500TE, 2.3GHz, 6M L2 Cache, up to 3.30 GHz, 35W TDP (4C/4T) - Intel® Core™ i3-6100TE, 2.7GHz, 4M L2 Cache, 35W TDP (2C/4T) - Intel® Pentium® G4400TE, 2.9GHz, 3M L2 Cache, 35W TDP (2C/2T) - Intel® Celeron® G3900TE, 2.3GHz, 2M L2 Cache, 35W TDP (2C/2T)
BIOS	AMI UEFI BIOS (SPI ROM)
System Memory	Dual 260-pin UB-DIMM socket supports DDR4 2133/1866 Non-ECC up to 32GB
Storage	2x 2.5" SATA HDD/SSD, 1x mSATA (via mini-PCIe socket)
Watchdog Timer	Programmable via S/W from 1 sec. to 255 min.
H/W Status Monitor	<ul style="list-style-type: none"> - Temperature (CPU & System) - Speed (CPU Fan & System Fan) - Voltage (CPU Vcore, 12V, 5V, 3.3V, VDIMM)
Expansion	<ul style="list-style-type: none"> - 1x M.2 socket (Type E) with PCIe1, USB2.0, SDIO, UART, or I2C signal - 1x Full-size Mini-PCIe socket (can switch to mSATA)

External I/O

Serial Port	6x COM port (2x RS-232/422/485 selectable by BIOS, 4x RS-232)
Display	1x VGA, 1x DP, 1x HDMI
USB	4x USB3.0, 2x USB2.0
Audio	Line-in / Line-out / Mic-in
Ethernet	2x Gigabit Ethernet (Intel® I219LM and Intel® I210AT)
GPIO	1x Programmable 8-bit Digital I/O
Other	<ul style="list-style-type: none"> - 2x Antenna hole for WiFi, 3G/GPS or 4G LTE module - 1x EXT Power Switch

Power Supply Unit

Power Input	DC 12V ~ 36V with 3-pin Terminal Block Connector
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Environmental

Operation Temperature	-20°C ~ 50°C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/10-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

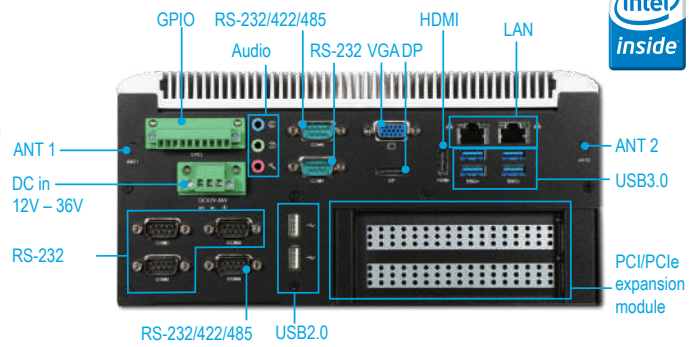
Mechanical

Dimension	253(W) x 201(D) x 83(H) mm
Weight	4.5 Kg
Mounting	Wall mounting



WEBS-35C3

Embedded Rugged Fan-less System with
Intel® 6th Skylake-S Core™ i3/i5/i7 based
Mini-ITX Board



The WEBS-35C3 builds on Intel® desktop Q170 chipset and takes advantages of Intel® Core™ i3/i5/i7 desktop processor technologies that can support dual DDR4 memory. Support two Gigabit Ethernet ports, different add-on card expansion options, one M.2 socket and one Mini-PCIe socket. The WEBS-35C3 is an ideal platform with rich I/O and high resolution for POS, kiosk, digital signage, and surveillance security monitoring applications.

FEATURES

- Intel® Core™ i High performance Fan-less Embedded Box PC
- 6th generation Intel® Skylake-S Core™ i3/i5/i7 Desktop processor (Quad-Core CPU supported)
- Dual UB-DIMM DDR4 up to 32GB
- 2x 2.5" SATA HDD/SSD, 1x mSATA
- Rich I/O is good for versatile applications
- 1x M.2 socket, 1x Full-size Mini-PCIe socket
- Different add-on card expansion options
- Innovative PCI/PCIe expansion module is easy for add-on cards installation and replacement
- Rugged design is good for using in harsh environment

ORDERING GUIDE

AS5-3459	(R).ATO.WEBS-35C3. (x4 type) Embedded rugged fan-less system with Intel Skylake-S Core i3/i5/i7 based MINI-ITX system.
AS5-3463	(R).ATO.WEBS-35C3. (x16 type). Embedded rugged fan-less system with Intel Skylake-S Core i3/i5/i7 based MINI-ITX system.

System

M/B	WADE-8017
System Chipset	Intel® Q170
CPU	<ul style="list-style-type: none"> - Intel® Core™ i7-6700TE, 2.4GHz, 8M L2 Cache, up to 3.40 GHz, 35W TDP (4C/8T) - Intel® Core™ i5-6500TE, 2.3GHz, 6M L2 Cache, up to 3.30 GHz, 35W TDP (4C/4T) - Intel® Core™ i3-6100TE, 2.7GHz, 4M L2 Cache, 35W TDP (2C/4T) - Intel® Pentium® G4400TE, 2.9GHz, 3M L2 Cache, 35W TDP (2C/2T) - Intel® Celeron® G3900TE, 2.3GHz, 2M L2 Cache, 35W TDP (2C/2T)
BIOS	AMI UEFI BIOS (SPI ROM)
Memory	Dual 260-pin UB-DIMM socket supports DDR4 2133/1866 Non-ECC up to 32GB
Storage	2x 2.5" SATA HDD/SSD, 1x mSATA (via mini-PCIe socket)
Watchdog Timer	Programmable via S/W from 1 sec. to 255 sec
H/W Status Monitor	<ul style="list-style-type: none"> - Temperature (CPU & System) - Speed (CPU Fan & System Fan) - Voltage (CPU Vcore, 12V, 5V, 3.3V, VDIMM)
Expansion	<ul style="list-style-type: none"> - 1x M.2 socket (Type E) with PCIe x1, USB2.0, SDIO, UART, or I2C signal - 1x Full-size Mini-PCIe socket (can switch to mSATA) - Expansion slot option: <ul style="list-style-type: none"> 2x PCIe x16 slot (PCIe x8 Signal) or 2x PCIe x4 slot (PCIe x1 Signal) or 1x PCIe x4 slot (PCIe x1 Signal) + 1x PCI slot

External I/O

Serial Port	6x COM port (2x RS-232/422/485 selectable by BIOS, 4x RS-232)
Display	1x VGA, 1x DP, 1x HDMI
USB	4x USB3.0, 2x USB2.0
Audio	Line-in / Line-out / Mic-in
Ethernet	2x Gigabit Ethernet (Intel® I219LM and Intel® I210AT)
GPIO	1x Programmable 8-bit Digital I/O
Other	<ul style="list-style-type: none"> - 2x Antenna hole for WiFi, 3G/GPS or 4G LTE module - 1x EXT Power Switch

Power Supply Unit

Power Input	DC 12V ~ 36V with 3-pin Terminal Block Connector
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Environmental

Operation Temperature	-20°C ~ 50°C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	95% @ 40°C, non-condensing
Operation Vibration	5Grms/10-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

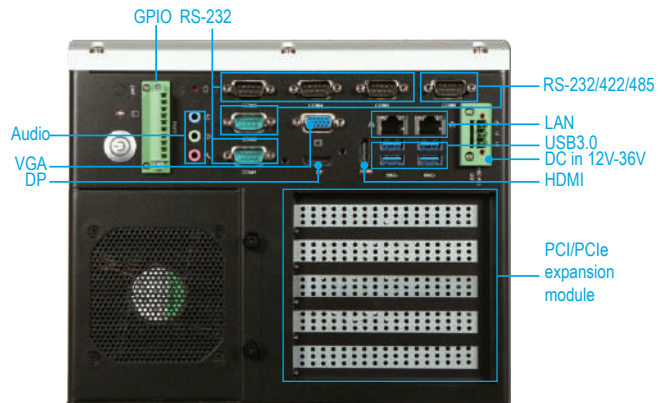
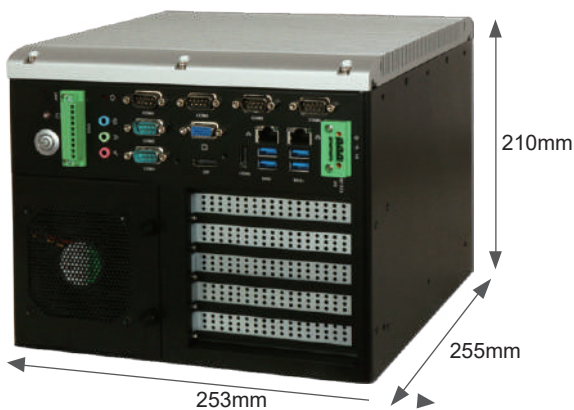
Mechanical

Dimension	253(W) x 201(D) x 123(H) mm
Weight	7 Kg
Mounting	Wall mounting



WEBS-35C6

Embedded Rugged Fan-less System with Intel® 6th Skylake-S Core™ i3/i5/i7 based Mini-ITX Board



The WEBS-35C6 builds on Intel® desktop Q170 chipset and takes advantages of Intel® Core™ i3/i5/i7 desktop processor technologies that can support dual DDR4 memory. Support two Gigabit Ethernet ports, different add-on card expansion options, one M.2 socket and one Mini-PCIe socket. The WEBS-35C6 is an ideal platform with rich I/O and high resolution for POS, kiosk, digital signage, and surveillance security monitoring applications.

FEATURES

- Intel® Core™ i High performance Fan-less Embedded Box PC
- 6th generation Intel® Skylake-S Core™ i3/i5/i7 Desktop processor (Quad-Core CPU supported)
- Dual UB-DIMM DDR4 up to 32GB
- 2x 2.5" SATA HDD/SSD, 1x mSATA
- Rich I/O is good for versatile applications
- 1x M.2 socket, 1x Full-size Mini-PCIe socket
- Different add-on card expansion options
- Innovative PCI/PCIe expansion module is easy for add-on cards installation and replacement
- Rugged design is good for using in harsh environment

ORDERING GUIDE

AS5-3522	(R).ATO. WEBS-35C6. Embedded rugged fan-less system with Intel Skylake-S Core i3/i5/i7 based MINI-ITX system.
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System

M/B	WADE-8017
System Chipset	Intel® Q170
CPU	<ul style="list-style-type: none"> - Intel® Core™ i7-6700TE, 2.4GHz, 8M L2 Cache, up to 3.40 GHz, 35W TDP (4C/8T) - Intel® Core™ i5-6500TE, 2.3GHz, 6M L2 Cache, up to 3.30 GHz, 35W TDP (4C/4T) - Intel® Core™ i3-6100TE, 2.7GHz, 4M L2 Cache, 35W TDP (2C/4T) - Intel® Pentium® G4400TE, 2.9GHz, 3M L2 Cache, 35W TDP (2C/2T) - Intel® Celeron® G3900TE, 2.3GHz, 2M L2 Cache, 35W TDP (2C/2T)
BIOS	AMI UEFI BIOS
Memory	Dual 260-pin UB-DIMM socket supports DDR4 2133/1866 Non-ECC up to 32GB
Storage	2x 2.5" SATA HDD/SSD, 1x mSATA (via mini-PCIe socket)
Watchdog Timer	Programmable via S/W from 1 sec. to 255 sec
H/W Status Monitor	<ul style="list-style-type: none"> - Temperature (CPU & System) - Voltage (CPU Vcore, 12V, 5V, 3.3V, 1.35V)
Expansion	<ul style="list-style-type: none"> - 1x M.2 socket (Type E) with PCIe x1, USB2.0, SDIO, UART, or I2C signal - 1x Full-size Mini-PCIe socket (can switch to mSATA) - 1x PCIe x8 slot (PCIe x8 Signal) - 2x PCIe x4 slot (PCIe x4 Signal) - 2x PCIe x4 slot (PCIe x1 Signal)

External I/O

Serial Port	6x COM port (2x RS-232/422/485 selectable by BIOS, 4x RS-232)
Display	1x VGA, 1x DP, 1x HDMI
USB	4x USB3.0
Audio	Line-in / Line-out / Mic-in
Ethernet	2x Gigabit Ethernet (Intel® I219LM and Intel® I210AT)
GPIO	1x Programmable 8-bit Digital I/O
Other	1x Antenna hole for WiFi, 3G/GPS or 4G LTE module

Power Supply Unit

Power Input	DC 12V ~ 36V with 3-pin Terminal block Connector
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Environmental

Operation Temperature	-20°C ~ 50°C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	1Grms/10-500Hz, IEC 60068-2-06
Operation Shock	50G, 11 msec, IEC 60068-2-27

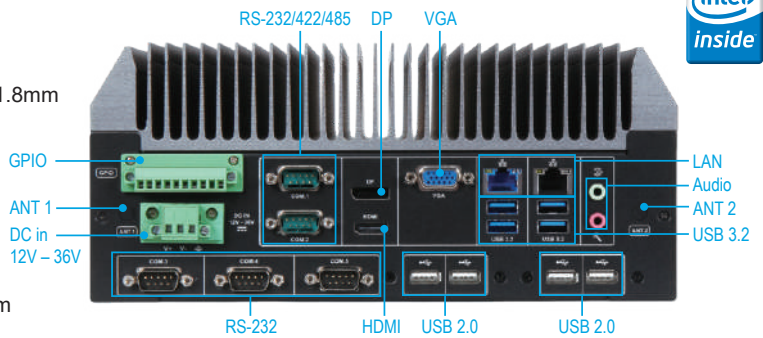
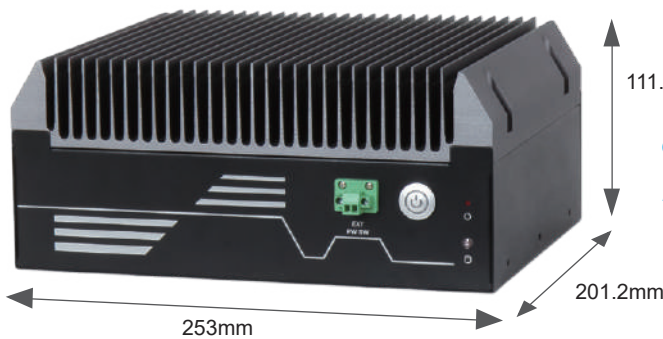
Mechanical

Dimension	253mm x 255mm x 210mm
Weight	9 Kg
Mounting	Wall mounting



WEBS-45H1

Embedded Rugged Fan-less System with 10th Generation Intel® Core™ i3/i5/i7/i9 based Mini-ITX Board



The WEBS-45H1 builds on Intel® desktop Q470E chipset and takes advantages of 10th Generation Intel® Core™ i3/i5/i7/i9 processors technologies that can support dual DDR4 memory and 2x 2.5" SSD slots for storage. Support two Gigabit Ethernet ports, One M.2 E Key, One M.2 M Key and one M.2 B Key socket. The WEBS-45H1 is an ideal platform with rich I/O and high resolution for POS, kiosk, digital signage, and factory automation applications.

FEATURES

- Support 10th Generation Intel® Core™ i3/i5/i7/i9 processors
- Support 64GB DDR4 2400/2666 Non-ECC SDRAM
- Support triple displays including HDMI, DP and VGA
- Support One M.2 E Key, One M.2 M Key and one M.2 B Key socket
- Support 5 x COM ports (2 x RS-232/422/485)
- 2x Antenna hole for WiFi or 4G/GPS module to use
- Onboard TPM 2.0

System

M/B	WADE-8212
CPU	10 th Gen Intel® Core™ Processors CPU in LGA1200 package (35W TDP)
BIOS	AMI UEFI BIOS
Memory	Up to 64GB DDR4 2400/2666 Non-ECC SDRAM on two SO-DIMM sockets
Storage	2x 2.5" SSD slots
Watchdog Timer	Programmable by embedded controller
TPM	TPM 2.0
H/W Status Monitor	System monitor (Voltage, Temperature)
Expansion	- 1x M.2 E Key 2230 with PCIe x1, CNV1 and USB2.0 for Wireless - 1x M.2 M Key 2242/2260/2280 with PCIe x4 and SATA3 for SSD - 1x M.2 B Key 3042/3052 with USB 3.0 Signal - 1x SIM Card socket

External I/O

Serial Port	5 x COM ports(2 x RS- 232/422/485)
Display	- 1x HDMI 2.0a, resolution up to 4096x2160 @60Hz - 1x DisplayPort 1.2, resolution up to 4096x2160 @60Hz - 1x VGA, resolution up to 1920x1200 @60Hz
USB	- 4x USB 3.2 Gen 1 - 4x USB 2.0
Audio	Audio Jack with Line-out / Mic-in with Realtek ALC887 Audio controller
Ethernet	- Intel® I219LM and Intel® I225LM Ethernet controller - 2x RJ45 connectors
GPIO	1x Programmable 8-bit Digital I/O
Other	- 2x Antenna hole for WiFi or 4G/GPS module - 1x EXT Power Switch

Power Supply Unit

Power Input	DC 12V ~ 36V with 3-pin Terminal Block Connector
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Environmental

Operation Temperature	-20°C ~ 60°C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	40°C, 95%RH non-condensing
Operation Vibration	1Grms/10-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

Mechanical

Dimension	253(W) x 201.2(D) x 111.8(H) mm
Weight	5.5 Kg
Mounting	Wall mounting





WEBS-45H3

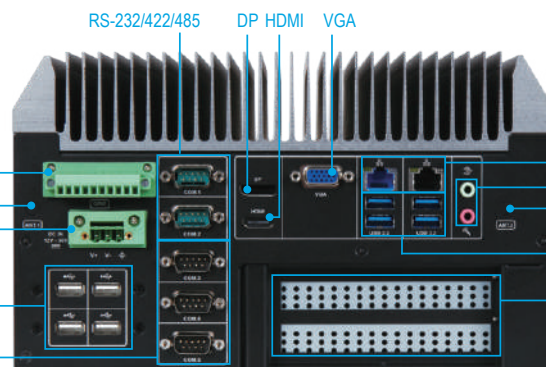
Embedded Rugged Fan-less System with 10th Generation Intel® Core™ i3/i5/i7/i9 based Mini-ITX Board



253mm

150mm

201.2mm



The WEBS-45H3 builds on Intel® desktop Q470E chipset and takes advantages of 10th Generation Intel® Core™ i3/i5/i7/i9 desktop processor technologies that can support dual DDR4 memory and 2x 2.5" SSD slots for storage. Support two Gigabit Ethernet ports, 2xPCIe Expansion slot option, One M.2 E Key, One M.2 M Key and one M.2 B Key socket. The WEBS-45H3 is an ideal platform with rich I/O and high resolution for POS, kiosk, digital signage, and factory automation applications.

FEATURES

- Support 10th Generation Intel® Core™ i3/i5/i7/i9 processors
- Different add-on card expansion options
- Support 64GB DDR4 2400/2666 Non-ECC SDRAM
- Support triple displays including HDMI, DP and VGA
- Support One M.2 E Key, One M.2 M Key and one M.2 B Key socket
- Support 5 x COM ports(2 x RS-232/422/485)
- 2x Antenna hole for WiFi or 4G/GPS module to use
- Onboard TPM 2.0

System

M/B	WADE-8212
CPU	10 th Gen Intel® Core™ Processors CPU in LGA1200 package (35W TDP)
BIOS	AMI UEFI BIOS
Memory	Up to 64GB DDR4 2400/2666 Non-ECC SDRAM on two SO-DIMM sockets
Storage	2x 2.5" SSD slots
Watchdog Timer	Programmable by embedded controller
TPM	TPM 2.0
H/W Status Monitor	System monitor (Voltage, Temperature)
Expansion	- 2x PCIe x16 slot (PCIe x8 Signal) - 1x M.2 E Key 2230 with PCIe x1, CNVI and USB2.0 for Wireless - 1x M.2 M Key 2242/2260/2280 with PCIe x4 and SATA3 for SSD - 1x M.2 B Key 3042/3052 with USB 3.0 Signal - 1x SIM Card socket

External I/O

Serial Port	5x COM ports(2x RS-232/422/485)
Display	- 1x HDMI 2.0a , resolution up to 4096x2160 @60Hz - 1x DisplayPort 1.2 , resolution up to 4096x2160 @60Hz - 1x VGA , resolution up to 1920x1200 @60Hz
USB	- 4x USB 3.2 Gen 1 - 4x USB 2.0
Audio	Audio Jack with Line-out / Mic-in with Realtek ALC887 Audio controller
Ethernet	Intel® I219LM and Intel® I225LM Ethernet controller
GPIO	1x Programmable 8-bit Digital I/O
Other	- 2x Antenna hole for WiFi or 4G/GPS module - 1x EXT Power Switch

Power Supply Unit

Power Input	DC 12V ~ 36V with 3-pin Terminal Block Connector
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Environmental

Operation Temperature	-20°C ~ 60°C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	40°C, 95%RH non-condensing
Operation Vibration	1Grms/10-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

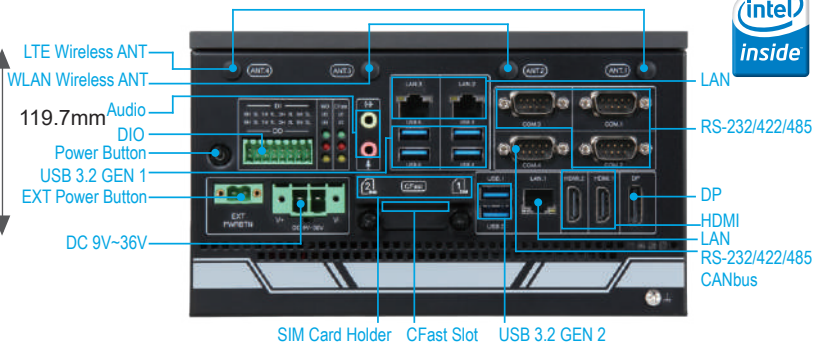
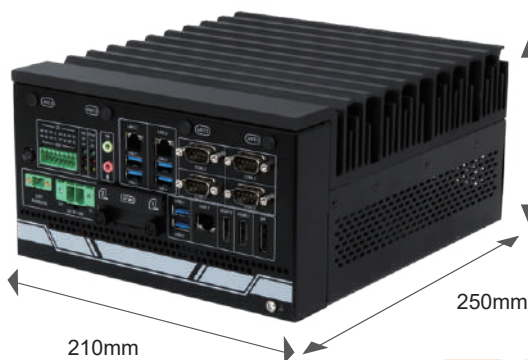
Mechanical

Dimension	253(W) x 201.2(D) x 150(H) mm
Weight	8 Kg
Mounting	Wall mounting



WEBS-85H1

Embedded Rugged Fan-less System with
10th Generation Intel® Core™ i3/i5/i7/i9 based
Proprietary Board



The WEBS-85H1 builds on Intel® desktop W480E chipset and takes advantages of 10th Generation Intel® Core™ i3/i5/i7/i9 processors technologies that can support dual DDR4 memory. Support three Gigabit Ethernet ports, one M.2 M Key socket, one M.2 E Key socket and one Mini-PCIe socket. The WEBS-85H1 is an ideal platform with rich I/O and high resolution for POS, kiosk, digital signage, factory automation and surveillance security monitoring applications.

FEATURES

- Support 10th Generation Intel® Core™ i3/i5/i7/i9 processors
- Support 64GB DDR4 2400/2666 Non-ECC SDRAM
- Support triple displays including HDMI 1.4, HDMI 2.0, DP
- Support Mini-PCIe socket, M.2 2242/60/80 M-key socket and M.2 2230 E-key socket
- Support 4x COM ports (1x RS-232/422/485, CANbus (2.0 A/B) selected by on board jumper)
- 4 x Antenna hole for WiFi and 4G/GPS module to use
- Onboard TPM 2.0

System

M/B	Proprietary
CPU	10 th Generation Intel® Core™ i3/i5/i7/i9 Processors (35W TDP)
BIOS	AMI UEFI BIOS
Memory	2x SO-DIMM sockets support DDR4 2400/2666 Non-ECC Up to 64 GB
Storage	- 1x Type II CFAST slot - 2x 2.5" SSD slots
Watchdog Timer	HW WDT Enable (WDT_EN)
TPM	TPM 2.0
Expansion	- 1x Mini PCIe socket (supports mSATA or cellular module) - 1x M.2 2242/60/80 M key socket (PCIe x4 & SATA mode) - 1x M.2 2230 E key socket (supports CNVi, Wi-Fi/BT module)

External I/O

Serial Port	4x COM port (1x RS-232/422/485, CANbus (2.0A/B) selected by on board jumper)
Display	- 1x HDMI 2.0, supports up to 4096 x 2160 @ 60 Hz - 1x HDMI 1.4, supports up to 4096 x 2160 @ 30 Hz - 1x DP 1.2, supports up to 4096 x 2304 @ 60 Hz
USB	- 2x USB 3.2 Gen 2 - 4x USB 3.2 Gen 1
Audio	Mic-in / Line-Out
Ethernet	3x Gigabit Ethernet (Intel® I210-IT)
DIO	4x DI, 4 x DO
SIM	2x nano SIM card slot

Power Supply Unit

Power Input	9 to 36 VDC, 2-pin terminal block connector
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Environmental

Operation Temperature	-20°C ~ 60°C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	60°C, 95% RH non-condensing
Operation Vibration	Desk mount: 0.5 Grms (10 Hz to 500Hz) System: 1Grms (10 Hz to 500Hz)
Operation Shock	Desk mount: 15G, 11 msec System: 50G, 11 msec

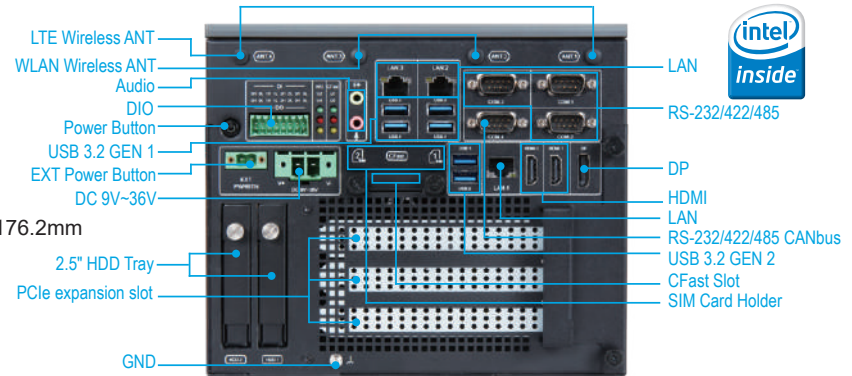
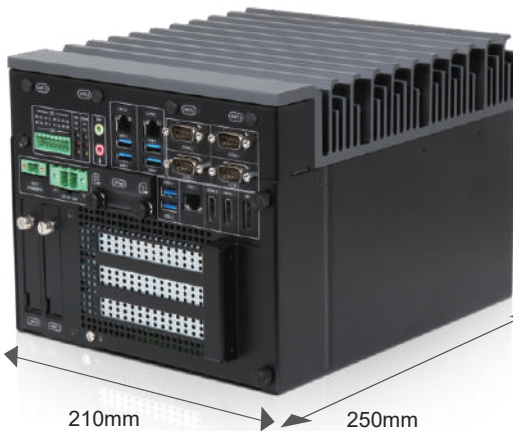
Mechanical

Dimension	210(W) x 250(D) x 119.7(H) mm
Weight	4.5 Kg
Mounting	Desk mount



WEBS-85H2

Embedded Rugged System with
10th Generation Intel® Core™ i3/i5/i7/i9
based Proprietary Board



The WEBS-85H2 builds on Intel® desktop W480E chipset and takes advantages of 10th Generation Intel® Core™ i3/i5/i7/i9 processors technologies that can support dual DDR4 memory. Support three Gigabit Ethernet ports, one M.2 M Key socket, one M.2 E Key socket, one Mini-PCIe socket and 3x PCIe Expansion Slot option. The WEBS-85H2 is an ideal platform with rich I/O and high resolution for POS, kiosk, digital signage, factory automation and surveillance security monitoring applications.

FEATURES

- Support 10th Generation Intel® Core™ i3/i5/i7/i9 processors
- Different add-on card expansion options
- Support 64 GB DDR4 2400/2666 Non-ECC SDRAM
- Support triple displays including HDMI 1.4, HDMI 2.0, DP
- Support Mini-PCIe socket, M.2 2242/60/80 M key socket and M.2 2230 E key socket
- Support 4x COM ports (1x RS-232/422/485, CANbus (2.0 A/B) selected by on board jumper)
- 4 x Antenna hole for WiFi and 4G/GPS module to use
- Onboard TPM 2.0

System

M/B	Proprietary
CPU	10 th Generation Intel® Core™ i3/i5/i7/i9 Processors
BIOS	AMI UEFI BIOS
Memory	2x SO-DIMM sockets support DDR4 2400/2666 Non-ECC Up to 64 GB
Storage	- 1x Type II CFast slot - 2x 2.5" SSD slots
Watchdog Timer	HW WDT Enable (WDT_EN)
TPM	TPM 2.0
Expansion	- 3x PCIe Expansion Slot option: - (1x PCIe x16 + 1x PCIe x4 or 2x PCIe x8 + 1x PCIe x4 (auto-detect)) - 1x Mini PCIe socket (supports mSATA or cellular module) - 1x M.2 2242/60/80 M key socket (PCIe x4 & SATA mode) - 1x M.2 2230 E key socket (supports CNVi, Wi-Fi/BT module)

External I/O

Serial Port	4x COM port (1x RS-232/422/485, CANbus (2.0 A/B) selected by on board jumper)
Display	- 1x HDMI 2.0, supports up to 4096 x 2160 @ 60 Hz - 1x HDMI 1.4, supports up to 4096 x 2160 @ 30 Hz - 1x DP 1.2, supports up to 4096 x 2304 @ 60 Hz
USB	- 2x USB 3.2 Gen 2 - 4x USB 3.2 Gen 1
Audio	Mic-in / Line-Out
Ethernet	3x Gigabit Ethernet (Intel® I210-IT)
DIO	4x DI, 4x DO
SIM	2x nano SIM card slot

Power Supply Unit

Power Input	9 to 36 VDC, 2-pin terminal block connector
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Environmental

Operation Temperature	-20°C ~ 60°C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	60°C, 95% RH non-condensing
Operation Vibration	Desk mount: 0.5 Grms (10 Hz to 500Hz) System: 1Grms (10 Hz to 500Hz)
Operation Shock	Desk mount: 15G, 11 msec System: 50G, 11 msec

Mechanical

Dimension	210(W) x 250(D) x 176.2 (H) mm
Weight	7 Kg
Mounting	Desk mount





WEBS Mounting Solution

Wall Mount Kit



WEBS-2190/21A0/21D0/21G0

System Size 150(W) x 150(D) x 53/63/66(H)mm

Ordering WEBS-2120 Wall Mount Kit

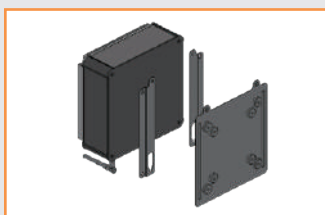


WEBS-13D1

System Size 200(W) x 150(D) x 80(H)mm

Ordering WEBS-1310 Wall Mount Kit

Panel Mount Kit



WEBS-2190/21A0

System Size 150(W) x 150(D) x 53/63(H)mm

Ordering WEBS-2120 Panel Mount Kit

Remark VESA 75/100



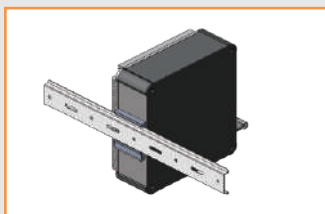
WEBS-13D1

System Size 200(W) x 150(D) x 80(H)mm

Ordering WEBS-1310 Panel Mount Kit

Remark VESA 75/100

DIN Mount Kit

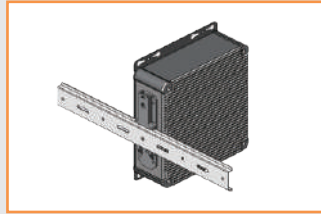


WEBS-21D0

System Size 150(W) x 150(D) x 53/63/66(H)mm

Ordering WEBS-21D0 DIN Rail Kit

Remark DIN Rail H=35mm (w/o Rail)



WEBS-2190/21D0/21G0

System Size 200(W) x 150(D) x 53/63/66(H)mm

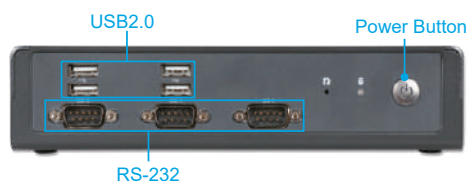
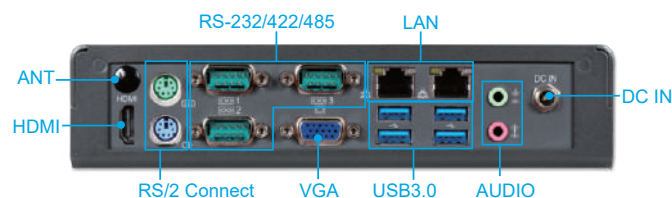
Ordering WEBS-2190 DIN Rail Kit

Remark DIN Rail H=35 mm (w/o Rail)



RICH-33B0-8171

Embedded Rugged Fan-less System
with Intel® Celeron® Processor based
Mini-ITX Board



The RICH-33B0-8171 builds on Intel® Celeron® Processor N3150, that can support dual channel DDR3L memory, support dual Gigabit Ethernet ports, one mSATA socket and one Mini-PCle socket. The RICH-33B0-8171 is ideal platform with rich I/O and high resolution for automation, POS, kiosk and digital signage applications.

FEATURES

- Fan-less system
- Intel® Celeron® Processor N3150 support
- Dual channel SO-DIMM socket up to 8G DDR3L memory
- 1x mSATA, 1x 2.5" SATA HDD/SSD (Option)
- 3x RS-232/422/485, 3x RS-232, 4x USB3.0, 4x USB2.0
- Dual Gigabit Ethernet Ports

ORDERING GUIDE

AS5-3447	(R).RICH-33B0-8171 Full. w/COMx6/USBx8/Dual LAN/PS2/Audio
AS5-3452	(R).RICH-33B0-8171-TBC. w/Ex.PSW/COMx6/USBx8/Dual LAN/PS2/Audio



System

M/B	WADE-8171
CPU	Intel® Celeron® Processor N3150
BIOS	AMI UEFI BIOS
Memory	Dual 204 pin SO-DIMM socket supports DDR3L Memory up to 8GB
Storage	- 1x mSATA socket - 1x 2.5" SATA HDD/SSD (Option)
Watchdog Timer	Programmable via S/W from 1 sec. to 255 sec.
H/W Status Monitor	Temperature (CPU & System)
Expansion	1x Full-size Mini-PCle socket (USB+PCle)

External I/O

Serial Port	6 x COM (3x RS-232/42/485, 3x RS-232)
Display	1x VGA, 1x HDMI
USB	4x USB3.0 (Rear), 4x USB2.0 (Front)
Audio	Line-in / Line-out
Ethernet	2x Gigabit Ethernet (Realtek® RTL8111G)
GPIO	N/A
Other	1x Antenna hole for WiFi or 4G/GPS module

Power Supply Unit

Power Input	DC 12V, 19V~24V
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Environmental

Operation Temperature	0°C ~ 50°C
Storage Temperature	-20°C ~ 80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/10-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

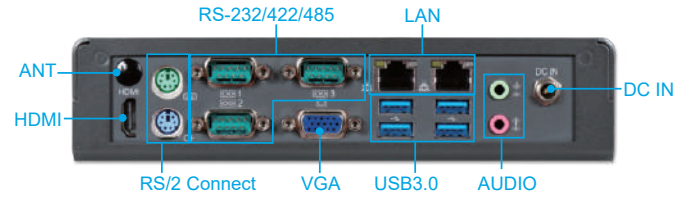
Mechanical

Dimension	200 x 200 x 45 mm
Weight	2 Kg
Mounting	Wall mounting



RICH-33B0-8171-S

Embedded Rugged Fan-less System
with Intel® Celeron® Processor based
Mini-ITX Board



The RICH-33B0-8171-S builds on Intel® Celeron® Processor N3150, that can support dual channel DDR3L memory, support dual Gigabit Ethernet ports, one mSATA socket and one Mini-PCIe socket. The RICH-33B0-8171-S is ideal platform with rich I/O and high resolution for automation, POS, kiosk and digital signage applications.

FEATURES

- Fan-less system
- Intel® Celeron® Processor N3150 support
- Dual channel SO-DIMM socket up to 8G DDR3L memory
- 1x mSATA, 1x 2.5" SATA HDD/SSD (Option)
- 3x RS-232/422/485, 4x USB3.0
- Dual Gigabit Ethernet Ports

ORDERING GUIDE

AS5-3454	(R).RICH-33B0-8171 Standard. w/COMx3/USBx4/Dual LAN/PS2/Audio
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System

M/B	WADE-8171
CPU	Intel® Celeron® Processor N3150
BIOS	AMI UEFI BIOS
Memory	Dual 204 pin SO-DIMM socket supports DDR3L Memory up to 8GB
Storage	- 1x mSATA socket - 1x 2.5" SATA HDD/SSD (Option)
Watchdog Timer	Programmable via S/W from 1 sec. to 255 sec.
H/W Status Monitor	Temperature (CPU & System)
Expansion	1x Full-size Mini-PCIe socket (USB+PCIe)

External I/O

Serial Port	3 x COM (3x RS-232/42/485)
Display	1x VGA, 1x HDMI
USB	4x USB3.0 (Rear)
Audio	Line-in / Line-out
Ethernet	2x Gigabit Ethernet (Realtek® RTL 8111G)
GPIO	N/A
Other	1x Antenna hole for WiFi or 4G/GPS module

Power Supply Unit

Power Input	DC 12V, 19V~24V
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Environmental

Operation Temperature	0°C ~ 50°C
Storage Temperature	-20°C ~ 80°C
Relative Humidity	95%@40°C, non-condensing
Operation Vibration	5Grms/10-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

Mechanical

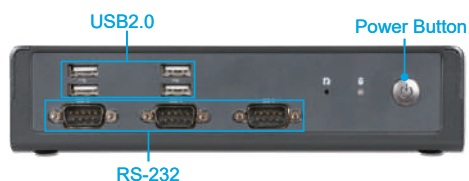
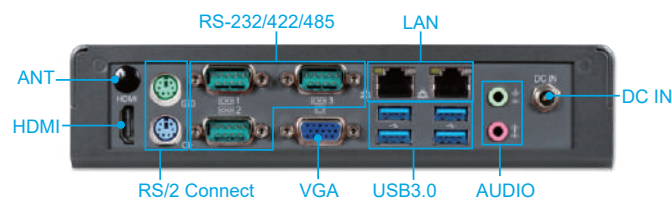
Dimension	200 x 200 x 45 mm
Weight	2 Kg
Mounting	Wall mounting





RICH-33D0-8172

Fanless Embedded System
with Intel® Celeron® Processor N3350



RICH-33D0-8172 features Intel® Celeron® processor N3350, dual-channel DDR3L memory, dual Gigabit Ethernet, 1x mSATA, and 1x Mini PCIe socket. With rich I/O and powerful graphics, RICH-33D0-8172 is an ideal platform for automation, POS, kiosk, and digital signage applications.

FEATURES

- Intel® Celeron® Processor N3350
- DDR3L 1600/1333 MHz memory, 2x 204-pin SO-DIMM sockets, up to 8GB
- 1x 2.5" SATA HDD/SSD, 1x mSATA
- 1x full/half-size Mini PCIe socket
- Up to 6 COM ports, 8 USB (4x USB 3.0 + 4x USB 2.0)

ORDERING GUIDE

AS5-3581	(R).ATO.RICH-33D0-8172 with Intel® Celeron® Processor N3350, 6x COM, 4x USB 3.0, 4x USB 2.0
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System

M/B	WADE-8172 Mini-ITX industrial motherboard
CPU	Intel® Celeron® Processor N3350, 1.1 GHz (2.4GHz turbo)
BIOS	AMI UEFI BIOS (SPI ROM)
System Memory	Dual 204 pin SO-DIMM socket supports DDR3L Memory up to 16 GB, 8 GB per DIMM
Storage	- 1x 2.5" SATA III SSD/HDD (internal) - 1x M.2 Key M 2260/2280
Watchdog Timer	Programmable 1 to 255 minutes/seconds interval
H/W Status Monitor	- Temperature (CPU & system) - Voltages (CPU Vcore, 12V, 5V, 3.3V, RAM)
Expansion	1x full/half-size Mini PCIe socket (USB + PCIe x1 signal)

External I/O

Serial Port	2x RS-232/422/485 (BIOS selectable) + 4x RS-232
Display	- 1x VGA, resolution up to 1920 x 1200 @ 60Hz - 1x HDMI, resolution up to 1920 x 1200 @ 60Hz
USB	4x USB 3.0 + 4x USB 2.0
Audio	Mic-in / Line-out
Ethernet	2x Gigabit Ethernet (Realtek® RTL 8111G)
Other	1x reserved cutout for wireless antenna

Power Supply Unit

Power Input	DC 12V, 19V~24V
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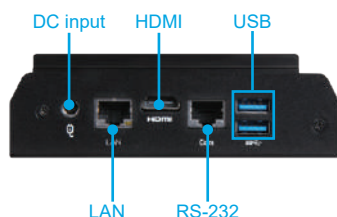
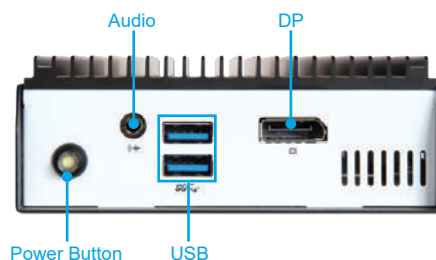
Environmental

Operation Temperature	0°C ~ 50°C
Storage Temperature	-40°C ~ 85°C
Relative Humidity	5~95%, non-condensing
Operation Vibration	5Grms/5-500Hz, IEC 60068-2-6
Operation Shock	50G, 11 msec, IEC 60068-2-27

Mechanical

Dimension	200 x 200 x 45 mm (7.9" x 7.9" x 1.8")
Weight	2.0 kg (4.4 lbs)
Mounting	Wall (optional kit required)





RICH-61D0 builds on Intel® Atom® Apollo Lake SOC supports Dual/Quad Core (up to 10W) that can support dual channel DDR3L memory. Support one Gigabit Ethernet port and one M.2 socket.

FEATURES

- Intel® Atom® 14nm SOC with Dual/Quad Core
- Dual Channel DDR3L 1866 SO-DIMM up to 8G
- Dual display by DP & HDMI up to UHD resolution
- M.2 (E+A Key), SATAIII Port and MicroSD 3.0 socket
- DC-In 12V ~19V
- CE/FCC Class B approved

ORDERING GUIDE

AS5-3537	(R).ATO.RICH-61D0. NUC System.
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System

M/B	WUX-3350/4200/3455
CPU	Intel® Atom® Apollo Lake SOC, (up to 10W)
BIOS	AMI uEFI BIOS
System Memory	Dual Channel DDR3L 1866/1600 Non-ECC SO-DIMM up to 8GB
Storage	- 1x Micro-SD 3.0 socket - Onboard 32GB eMMC 5.0 (up to 64GB)
Watchdog Time	Programmable watchdog timer, time out period from 1 sec to 255 secs.
H/W Status Monitor	- Temperature (CPU & System) - Voltage (VCC, VSB, VBAT) - CPU Fan Speed
Expansion	1x M.2 Key E 2230 for wireless module

External I/O

Serial Port	1x RS-232 on RJ45
Display	- 1x HDMI (1.4b) port on board connector, up to 3840x2160 @ 30 Mhz - 1x DP(1.2) port on rear I/O, up to 4096x2160 @ 60Mhz
USB	4x USB 3.0 ports support by stacked connector (Front + Left)
Audio	Mic-in / Line-out
Ethernet	1x Gigabit Ethernet (Realtek® RTL8111H)

Power Supply Unit

Power Input	DC 12V ~19V
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Environmental

Operation Temperature	0°C ~60°C
Storage Temperature	-40°C ~ 80°C
Relative Humidity	95%@40°C, non-condensing
Operating Vibration	5Grms/10-500Hz, IEC 60068-2-6
Operating Shock	50G, 11 msec, IEC 60068-2-27

Mechanical

Dimension	113(W) x 41(H) x 135(D) mm; 4.45"(W) x 1.6"(H) x 5.3"(D)
Weight	1.5 Kg
Mounting	Wall mounting

▾ FLEXIBLE AND UNIQUE

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

■ NEW INDUSTRIAL DESIGN (ID)

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

■ ADVANCED FUNCTIONALITY INSIDE

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

■ 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

▾ FIRST PRIORITY FOR CUSTOMERS

AREMO®

An Outstanding Chassis For All Your Needs.

Advanced
Ruggedized
Enhanced
Modulized
Optimized

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

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

Concept Design (3D): 2 working days

Mechanical Design: 5 working days

Samples Building: 14 working days



Chassis Reference Table



RPC-500NC/L



AREMO-4197



AREMO-3194



AREMO-2173P

PAGE	TYPE	MODEL	SLOT	ORDERING GUIDE	BACKPLANE			
					BP MODEL	PICMG	PCIe	PCI/PCI-X
47	4U	RPC-500NC/L	14	RPC-500NC RPC-500L RPC-500NC/B	PBPE-14AD64	1.3	2	3/8
					PBPE-13A8	1.3	4	8/0
					PBPE-13A4	1.3	8	4/0
					PBPE-12AA64	1.3	1	2/8
					PBPE-12A9	1.3	2	9/0
					PBPE-12P4	1.3	8	4/0
					PBPE-11A3	1.3	8	3/0
48	4U	RPC-500NC/L-MX	ATX	RPC-500NC-MX RPC-500L-MX RPC-500NC-MX/B				
49	4U	AREMO-4197 AREMO-4197-MX	14 ATX	AREMO-4197 AREMO-4197/B AREMO-4197-MX AREMO-4197-MX/B	PBPE-14AD64	1.3	2	3/8
					PBPE-13A8	1.3	4	8/0
					PBPE-13A4	1.3	8	4/0
					PBPE-12AA64	1.3	1	2/8
					PBPE-12A9	1.3	2	9/0
					PBPE-12P4	1.3	8	4/0
					PBPE-11A3	1.3	8	3/0
51	3U	AREMO-3194	ATX	AREMO-3194-MX AREMO-3194-MX/B AREMO-3194E-MX AREMO-3194E-MX/B				
53	2U	AREMO-2173P AREMO-2173PA	6	AREMO-2173P AREMO-2173P/B AREMO-2173PA AREMO-2173PA/B	PBPE-06V464	1.3	1	0/4
					PBPE-06V3	1.3	2	3/0
					PBPE-06V	1.3	5	
					PEP-06V4	1.0		4/0
55	2U	AREMO-2173MX	uATX					
57	Node	AREMO-6163	6	AREMO-6163 AREMO-6163/B	PBPE-06A364	1.3	2	1/2
					PBPE-06P4	1.3	1	4/0
					PBPE-06P3	1.3	2	3/0
					PBPE-06P2	1.3	3	2/0
					PBPE-05A364	1.3	1	1/2
					PBP-06P464	1.0		4/0
					PBP-06P4	1.0		4/0
					PBP-06P3	1.0		3/0
					PBP-06I	1.0		



Chassis Reference Table



AREMO-2173MX



AREMO-6163



AREMO-8164



AREMO-6182



AREMO-4184

PAGE	TYPE	MODEL	SLOT	ORDERING GUIDE	BACKPLANE			
					BP MODEL	PICMG	PCIe	PCI/PCI-X
59	Node	AREMO-8164	8	AREMO-8164 AREMO-8164/B	PBPE-08P41	1.3	3	4/0
					PBPE-08A7	1.3		7/0
					PBPE-07P4	1.3	2	4/0
					PBP-08P4	1.0		4/0
					PBP-08P3	1.0		3/0
					PBP-08I	1.0		
61	Node	AREMO-6182	6	AREMO-6182/B	PBPE-06A364	1.3	2	1/2
					PBPE-06P4	1.3	1	4/0
					PBPE-06P3	1.3	2	3/0
					PBPE-06P2	1.3	3	2/0
					PBPE-05A364	1.3	1	1/2
					PBP-06P464	1.0		4/0
					PBP-06P4	1.0		4/0
					PBP-06P3	1.0		3/0
					PBP-06I	1.0		
63	Node	AREMO-4184	12	AREMO-4184/B	(Same as AREMO-6182)			
65	Node	IRC-307	ATX	IRC-307 IRC-307-U3				
66	Node	WADE-30C0	Mini-ITX Flex-ATX	WADE-30C0				
67	Node	WADE-2231Q	Mini-ITX	WADE-2231Q				
68	Node	WADE-2232Q	Mini-ITX	WADE-2232Q				



IRC-307



WADE-30C0



WADE-2231Q



WADE-2232Q



RPC-500NC/L

19" 4U industrial rack-mount chassis



RPC-500NC/L is designed for PICMG SBC/SHB and RPC-500NC/L-MX for ATX mother boards which has maximum 14-slot expansion for PICMG backplane. It also supports PSU in PS/2 form factor that makes RPC-500NC/L the best selling 4U Rack-mount chassis for CTI, Industrial, Science, Engineering and Server applications.

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 modularized function panel for single (default) and dual (optional) systems
- ATX M/B applicable, especially for big-AT sized M/B (RPC-500L-MX)
- PS/2 redundant power supply installable

ORDERING GUIDE

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

GENERAL

Construction	Heavy-duty steel with aluminum front panel
Drive Bay	External: 3x 5.25", 1x 3.5" FDD Internal: 1x 3.5" HDD
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	1x Power On/Off, 1x HDD
Switch	1x Power On/Off, 1x System reset, 1x K/B lock
Connector	2x USB ports on the front panel
Standard Color	Beige, Black
Dimension	RPC-500NC: 482(W) x 450(D) x 177(H) mm; 19"(W) x 17.7"(D) x 7"(H) RPC-500L: 482(W) x 515(D) x 177(H) mm; 19"(W) x 20.3"(D) x 7"(H)
Weight	RPC-500NC: Net: 14 kg (30.9 lb); Gross: 15 kg (33.1 lb) RPC-500L: Net: 17.5 kg (38.6 lb); Gross: 18.5 kg (40.8 lb)
Backplane	PBPE-13A8: 14-slot [PCIe (4), PCI (8), PCI-X (0)] active PCIMG 1.3 backplane PBPE-13A4: 14-slot [PCIe (8), PCI (4), PCI-X (0)] active PCIMG 1.3 backplane PBPE-12A9: 14-slot [PCIe (2), PCI (9), PCI-X (0)] active PCIMG 1.3 backplane PBPE-12P4: 14-slot [PCIe (8), PCI (4), PCI-X (0)] PCIMG 1.3 backplane PBPE-11A3: 14-slot [PCIe (8), PCI (3), PCI-X (0)] active PCIMG 1.3 backplane

POWER SUPPLY

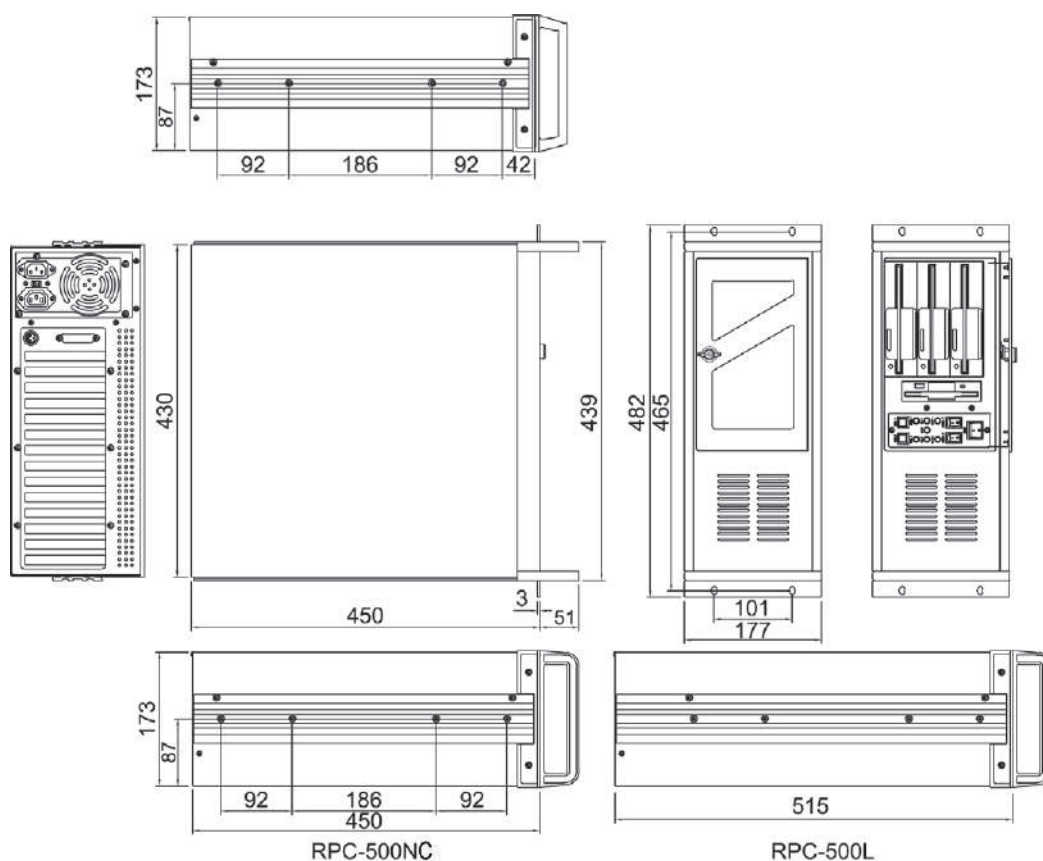
Maximum output	500W active PFC
Output Voltage & Current	+ 5V@22A; +12V1@20A; +12V2@25A; +3.3V@10A; -12V@0.3A, +5Vsb@2.5A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	50 ~ 60Hz
Input Current	10A@110V, 5A@240V
Efficiency	> 80%
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, CCC, BSMI

ENVIRONMENT

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

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

MECHANICAL DRAWING





AREMO-4197

19" 4U industrial rack-mount chassis



The AREMO-4197 and AREMO-4197-MX is 19"4U Rack-mount chassis and designed for PICMG SBC/SHB and ATX form factor with stylish front panel design, up to 14-slot expansion for PICMG backplane. AREMO-4197 series can support PS/2 PSU, two USB interface on front panel and build with replaceable air filter. AREMO-4197 series is suitable in several vertical markets, like Factory and Server applications.

FEATURES

- Two USB ports on the front panel
- 5.25" x3 + 3.5" x1 drive bays for RAID 0, 1, 5 & CD-ROM
- Traditional rack-mount handles
- PS/2 or Mini-reduncant power supply installable

ORDERING GUIDE

- **AREMO-4197**
19" 4U rack-mount chassis for PICMG backplane
- **AREMO-4197/B**
19" 4U black rack-mount chassis for PICMG backplane
- **AREMO-4197-MX**
19" 4U rack-mount chassis for ATX M/B
- **AREMO-4197-MX/B**
19" 4U black rack-mount chassis for ATX M/B

GENERAL

Construction	Heavy-duty steel with aluminum front panel
Drive Bay Internal	1x 3.5" HDD
Drive Bay External	3x 5.25"
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	1x Power On/Off, 1x HDD
Switch	1x Power On/Off, 1x System reset
Connector	2x USB ports on the front panel
Standard Color	Beige, Black
Dimension	427.5 x 520 x 177 mm
Weight	15 kg
Backplane	PBPE-13A8 14-slot [PCIe (4), PCI (8), PCI-X (0)] active PCIMG 1.3 backplane PBPE-13A4 14-slot [PCIe (8), PCI (4), PCI-X (0)] active PCIMG 1.3 backplane PBPE-12A9 14-slot [PCIe (2), PCI (9), PCI-X (0)] active PCIMG 1.3 backplane PBPE-12P4 14-slot [PCIe (8), PCI (4), PCI-X (0)] PCIMG 1.3 backplane PBPE-11A3 14-slot [PCIe (8), PCI (3), PCI-X (0)] active PCIMG 1.3 backplane

POWER SUPPLY

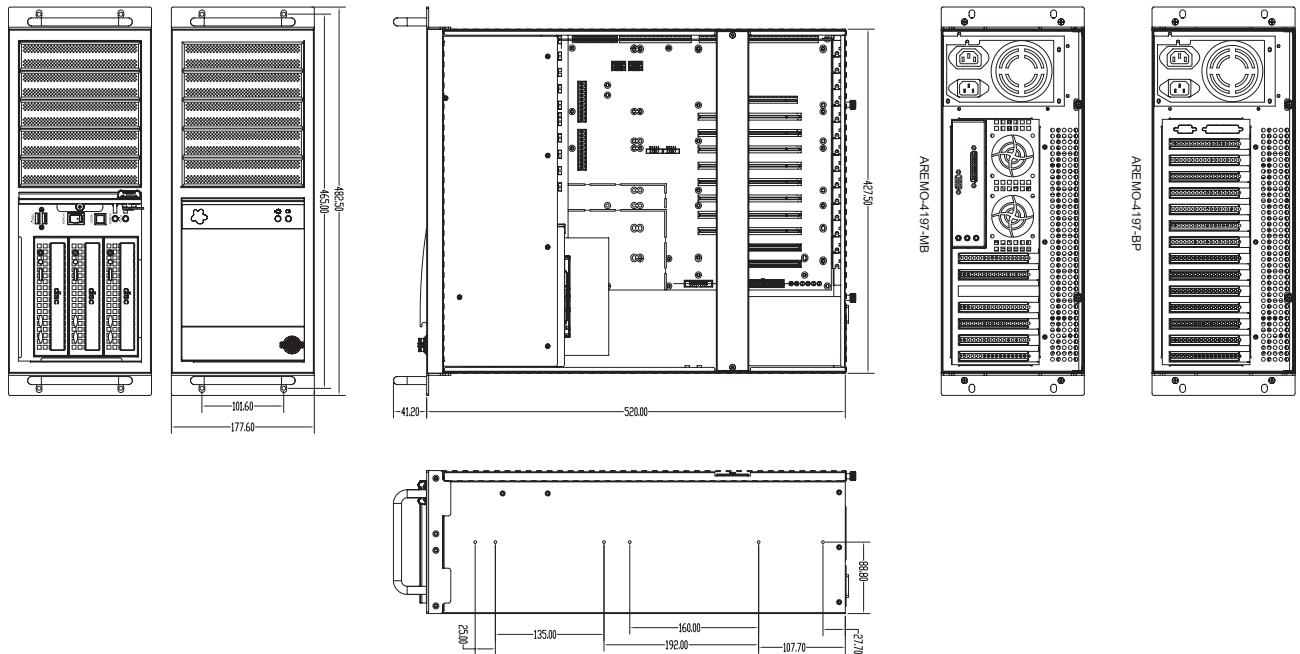
Maximum output	500W active PFC
Output Voltage & Current	+ 5V@22A; +12V1@20A; +12V2@25A; +3.3V@10A; -12V@0.3A, +5Vsb@2.5A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	50 ~ 60Hz
Input Current	10A@110V, 5A@240V
Efficiency	> 80%
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, CCC, BSMI

ENVIRONMENT

Operating Temperature	0°C ~ 50°C
Storage Temperature	0°C to 85°C
Relative Humidity	5% ~ 95%, non-condensing
Vibration	5~7 Hz: 0.5" double amplitude displacement 7~2000 Hz: 1.5g acceleration

FEATURE	BENEFITS
■ A lockable front door with thumb windows	■ Good for dust-proof & Running status visible
■ One power on/off switch with LED indicator, one reset and one K/B lock switches inside the lockable door	■ Avoid accidental reset for better running security
■ Front replaceable air filter	■ For installing dual systems and redundant power supplies more easily
■ Two ball-bearing cooling fans	■ Better ventilation to provide the system with higher reliability
■ Enhanced drive bracket to hold 3x5.25" and 1x3.5" drives (internal)	■ For integrating varied systems with higher flexibility
■ Shock-resistant cushion for the drive bracket	■ Suitable for installing RAID and CD-ROM drive
■ Two adjustable positions for hold-down card retainers	■ For fixing all the cards more flexibly and tightly
■ Changeable modularized back panel for 14-slot ISA/PICMG backplane or ATX M/B	■ Only one minute to change the back panel ■ Easy to change to different backplanes and keep stock
■ Field replaceable power supply bracket for both normal PS/2 power supply and PS/2 type redundant power supply	■ Only 3 minutes to change the defective power supply ■ Only 30 seconds to change the defective PSU module

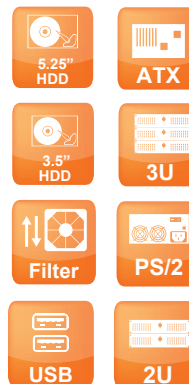
MECHANICAL DRAWING





AREMO-3194

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



AREMO-3194-MX and AREMO-3194E-MX is designed for ATX form factor mother board within 19" 3U Rack-mount. It builds two USB interface and replaceable filter on front panel. There are two color selections, silver and black for customized demanding. AREMO-3194 series can provide efficient system assembly in Industrial and Server applications.

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**
19" 3U rack-mount chassis for ATX M/B
- **AREMO-3194-MX/B**
19" 3U black rack-mount chassis for ATX M/B
- **AREMO-3194E-MX**
19" 3U rack-mount chassis for ATX M/B
- **AREMO-3194E-MX/B**
19" 3U black rack-mount chassis for ATX M/B

GENERAL

Construction	Heavy-duty steel
Drive Bay	External: 2x 5.25"+1x 3.5"; Internal: 1x 3.5"
Air Filter	Two replaceable air filters at the front
Cooling Fan	Two 8 cm ball-bearing cooling fans
Indicator	1x Power On/Off, 1x HDD
Switch	1x Power On/Off, 1x System reset
Speaker	One 8Ω speaker
Connector	2x USB ports and 1x IEEE 1394 port on the front panel
Standard Color	Silver, Black
Dimension	481.6(W) x 487.8(D) x 132.6(H) mm ; 19"(W) x 19.2"(D) x 5.22"(H)
Weight	Net: 16 kg (35.3 lb) ; Gross: 18 kg (39.7 lb)
M/B	Micro-ATX, ATX

POWER SUPPLY

Maximum output	500W active PFC
Output Voltage & Current	+ 5V@22A; +12V1@20A; +12V2@25A; +3.3V@10A; -12V@0.3A,+5Vsb@2.5A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	50 ~ 60Hz
Input Current	10A@110V, 5A@240V
Efficiency	> 80%
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, CCC, BSMI

ENVIRONMENT

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

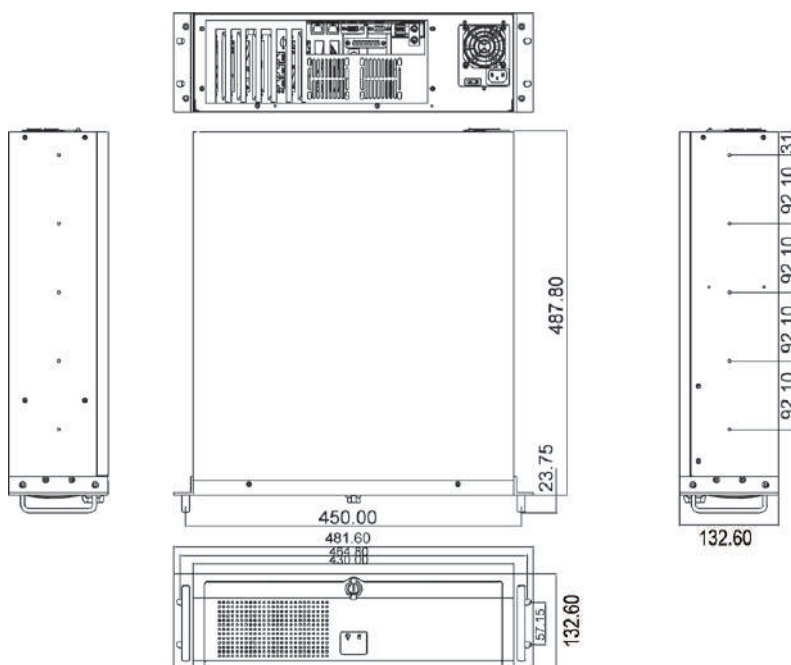


FEATURE	BENEFITS
■ 350W Active PFC power supply	■ Sufficient power source for Intel® Desktop Platform
■ Cooling tunnel design	■ Better ventilation to enhance system reliability
■ More expansion slots	■ Support up to six expansion and one AGP slots for higher expansibility
■ Two USB and one IEEE 1394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

A photograph showing the interior of a computer chassis. Two black fans are visible, mounted on the chassis. A power supply unit is also visible, connected to the fans. The chassis is open, revealing the internal components.

A close-up photograph of a control panel. On the left, there is a vertical column of controls: a small digital display at the top, followed by four circular buttons (two green, two red), and a small rectangular display at the bottom. To the right of these buttons is a large, light-colored rectangular panel with a horizontal line across its middle. A small red dot is visible on the bottom right corner of the image.

MECHANICAL DRAWING



52



AREMO-2173P

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



AREMO-2173P, 19" 2U Rack-mount, designed for PICMG 1.0/1.3 can support 6-slot backplane that also builds two hot-swap 3.5" SATA HDD driver bays and two USB interface on front panel. AREMO-2173P can equip high wattage PS/2 form factor PSU. The build-in replaceable air filters are for easy maintenance. AREMO-2173P is suitable for Factory and Server applications.

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**
19" 2U rack-mount chassis with vertical 6-slot (4x PCI) PICMG 1.3 backplane
- **AREMO-2173P/B**
19" 2U black rack-mount chassis with vertical 6-slot (4x PCI) PICMG 1.0 backplane
- **AREMO-2173PA**
19" 2U rack-mount chassis with vertical 6-slot (4x PCI) PICMG 1.3 backplane
- **AREMO-2173PA/B**
19" 2U black rack-mount chassis with vertical 6-slot (4x PCI) PICMG 1.3 backplane

GENERAL

Construction	Heavy-duty steel
Drive Bay	External: 1x Slim type CD-ROM, 2x Hot-swap 3.5" HDD
Air Filter	One external replaceable air filter
Cooling Fan	Two 7cm ball-bearing fans
Indicator	1x HDD+ 1x Power On/Off
Switch	1x Power On/Off (with a protection cap), 1x System reset
Speaker	One 8Ω speaker
Connector	2x USB ports equipped on the front panel
Standard Color	Silver, Black
Dimension	482(W) x 429.2(D) x 88.6(H) mm; 19"(W) x 16.9"(D) x 3.5"(H)
Weight	Net: 11.0 kg (23.1 lb); Gross: 12.0 kg (25.3 lb)
Backplane	PBPE-06V464: 6-slot [PCIe (1), PCI (0), PCI-X (4)] PICMG 1.3 backplane PBPE-06V3: 6-slot [PCIe (2), PCI (3), PCI-X (0)] PICMG 1.3 backplane PBPE-06V: 6-slot [PCIe (5)] PICMG 1.3 backplane PBPE-06V4: 6-slot [PCI (4), PCI-X (0)] PICMG 1.0 backplane

POWER SUPPLY

PLUTO-D3501PJ optional

Maximum output	350W active PFC
Output Voltage & Current	+5V@12A; +12V1@18A; +12V2@18A; +3.3V@18A; -12V@0.3A, +5Vsb@2.5A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	50 ~ 60Hz
Input Current	8A@115V, 8A@230V
Efficiency	> 80%
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, VCCI, 80PLUS
Temperature/Humidity	Operating: 5°C ~ 50°C, 20% ~ 85%RH Storage: -40°C ~ 70°C, 10% ~ 95%RH
Dimension (WxDxH)	150 x 140 x 86 mm; 5.9" x 5.5" x 3.4"

ENVIRONMENT

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

FEATURE	BENEFITS
■ 350W Active PFC power supply	■ Sufficient power source for Intel® Desktop Platform
■ Two 7cm high speed fans	■ Better ventilation to enhance system reliability
■ Two swappable SATA HDD drive bays	■ Easy to access HDD drives
■ Up to 5 PCI expansion slots	■ For system function expansion
■ Front replaceable air filters	■ Easy cleaning

REFINEMENT



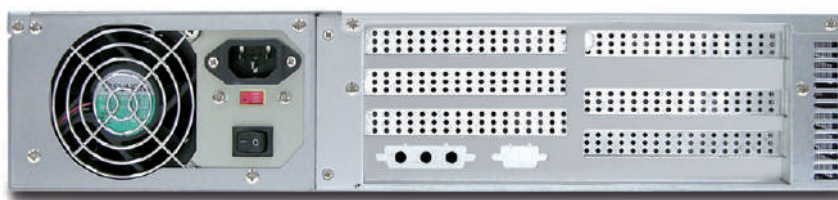
Thumb Lock
Convenient to operate or protect the system



Two Swappable SATA HDD Drives
Easy to access HDD drives

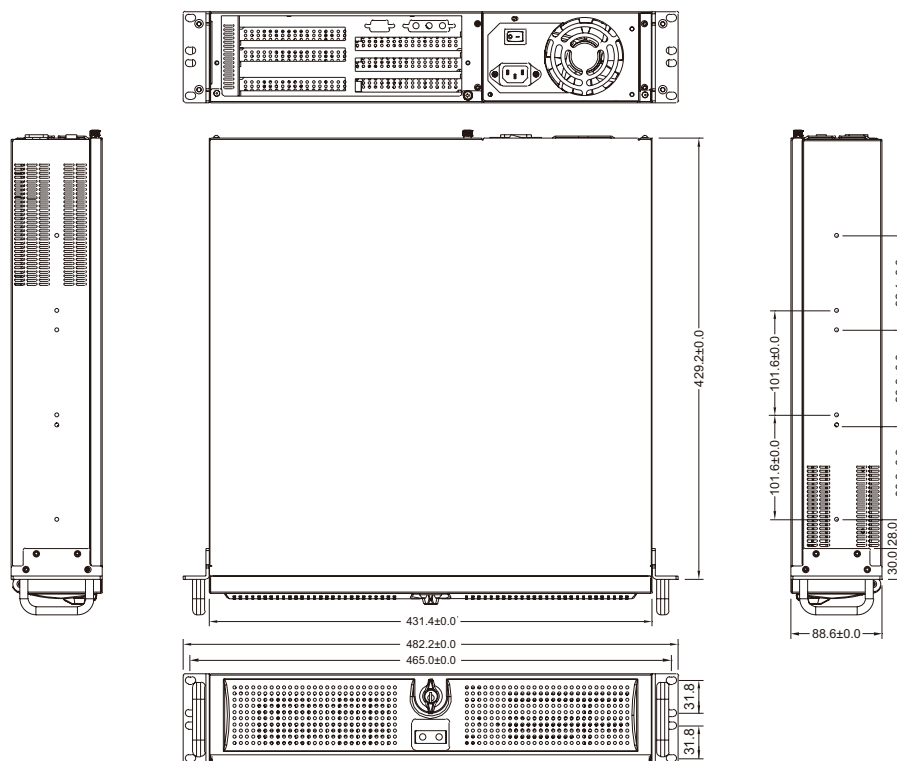


Front Replaceable Air Filters/Fans
Convenient to change air filters or fans when needed



Rear View

MECHANICAL DRAWING





AREMO-2173MX

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



AREMO-2173MX, 19" 2U Rack-mount, designed for Micro-ATX and Mini-ITX can support up to 4 low profile add-on cards that also builds two hot-swap 3.5" SATA HDD driver bays and two USB interface on front panel. AREMO-2173MX can equip high wattage PS/2 form factor PSU. The build-in replaceable air filters are for easy maintenance. AREMO-2173MX is suitable for Factory and Server applications.

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**
19" 2U rack-mount chassis for micro-ATX or mini-TX M/B
- **AREMO-2173MX/B**
19" 2U black rack-mount chassis for micro-ATX or mini-TX M/B

GENERAL

Construction	Heavy-duty steel
Drive Bay	External: 1x Slim type CD-ROM, 2x Hot-swap 3.5" HDD
Air Filter	One external replaceable air filter
Cooling Fan	Two 7cm ball-bearing fans
Indicator	1x HDD+ 1x Power On/Off
Switch	1x Power On/Off (with a protection cap), 1x System reset
Speaker	One 8Ω speaker
Connector	2x USB ports equipped on the front panel
Standard Color	Silver, Black
Dimension	482(W) x 429.2(D) x 88.6(H) mm; 19"(W) x 16.9"(D) x 3.5"(H)
Weight	Net: 11.0 kg (23.1 lb); Gross: 12.0 kg (25.3 lb)

POWER SUPPLY

PLUTO-D3501PJ optional

Maximum output	350W active PFC
Output Voltage & Current	+5V@12A; +12V1@18A; +12V2@18A; +3.3V@18A; -12V@0.3A, +5Vsb@2.5A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	50 ~ 60Hz
Input Current	8A@115V, 8A@230V
Efficiency	> 80%
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, VCCI, 80PLUS
Temperature/Humidity	Operating: 5°C ~ 50°C, 20% ~ 85%RH Storage: -40°C ~ 70°C, 10% ~ 95%RH
Dimension (WxDxH)	150 x 140 x 86 mm; 5.9" x 5.5" x 3.4"

ENVIRONMENT

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



AREMO-2173MX

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

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

REFINEMENT



Thumb Lock

Convenient to operate or protect the system



Two Swappable SATA HDD Drives

Easy to access HDD drives



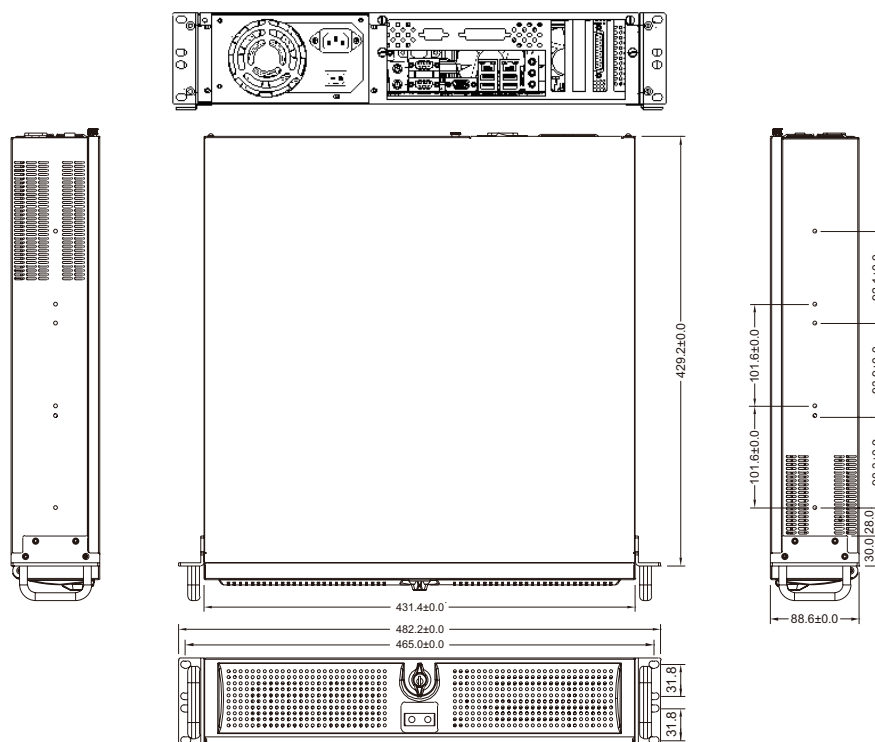
Front Replaceable Air Filters/Fans

Convenient to change air filters or fans when needed



Rear View

MECHANICAL DRAWING

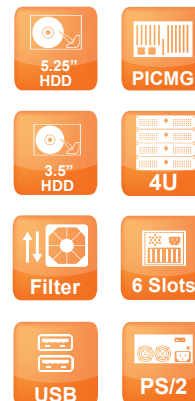


Unit: mm



AREMO-6163

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



AREMO-6163 is designed for PICMG 1.0/1.3 with 6-slot backplane that is 4U full size industrial node chassis built with one 5.25" HDD driver space for CD/DVD-ROM, two internal 3.5" HDD driver bays and replaceable air filter for easy maintenance. AREMO-6163 equips two USB interface on front panel, and also high wattage PS/2 form factor PSU. The compact size feature of AREMO-6163 is suitable for Industrial and Engineering applications.

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 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**
6-slot full-size industrial node chassis with 6-slot (3xPCI) PICMG backplane
- **AREMO-6163/B**
6-slot full-size industrial black node chassis with 6-slot (4xPCI) PICMG backplane

GENERAL

Construction	Heavy-duty steel
Drive Bay	External: 1x 5.25" Internal: 2x 3.5" HDD
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	1x Power On/Off, 1x HDD
Switch	1x Power On/Off, 1x System reset
Speaker	One 8Ω speaker
Connector	2x USB ports on the front panel
Standard Color	Silver, Black
Dimension	260(W) x 420.5(D) x 172(H) mm; 10.24"(W) x 16.56"(D) x 6.77"(H)
Weight	Net: 8.5 kg (18.7 lb); Gross: 9.5 kg (20.9 lb)
Backplane	PBP-06P4: 6-slot [PCIe (1), PCI (4), PCI-X (0)] PICMG 1.0 backplane PBP-06P3: 6-slot [PCIe (2), PCI (3), PCI-X (0)] PICMG 1.0 backplane PBP-06P2: 6-slot [PCIe (3), PCI (2), PCI-X (0)] PICMG 1.0 backplane

POWER SUPPLY

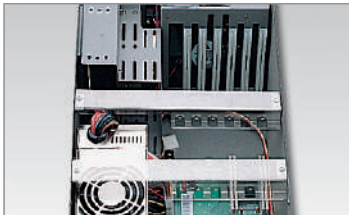
Maximum output	350W active PFC
Output Voltage & Current	+5V@12A; +12V1@18A; +12V2@18A; +3.3V@18A; -12V@0.3A, +5Vsb@2.5A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	50 ~ 60Hz
Input Current	8A@115V, 8A@230V
Efficiency	> 80%
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, VCCI, 80PLUS
Temperature/Humidity	Operating: 5°C ~ 50°C, 20% ~ 85%RH Storage: -40°C ~ 70°C, 10% ~ 95%RH

ENVIRONMENT

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

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

REFINEMENT



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

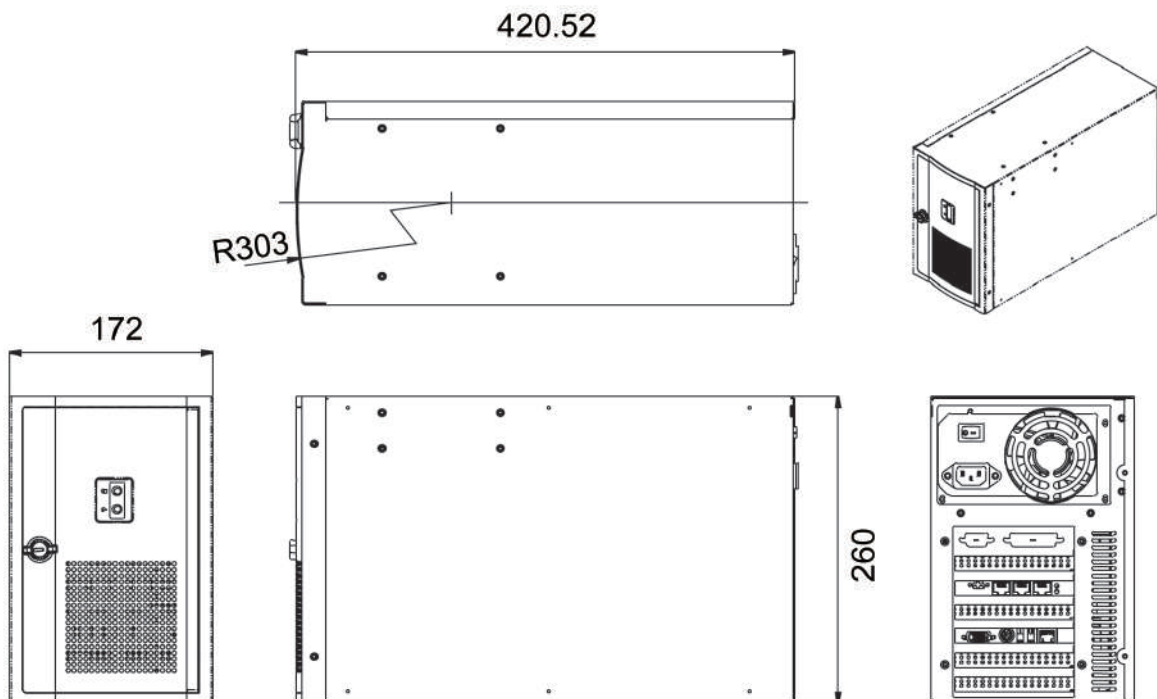


Plastic Fan Filter
For easy cleaning and replace



New HDD Drive Design
Easy to install HDD drives

MECHANICAL DRAWING



Unit: mm



AREMO-8164

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



AREMO-8164 is designed for PICMG 1.0/1.3 with 8-slot backplane that is 4U full size industrial node chassis built with two 5.25" HDD driver space for CD/DVD-ROM, two internal 3.5" HDD driver bays and replaceable air filter for easy maintenance. AREMO-8164 equips two USB interface on front panel, and also high wattage PS/2 form factor PSU. The compact size feature of AREMO-8164 is suitable for Industrial and Engineering applications.

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 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/B**
8-slot full-size industrial black node chassis

GENERAL

Construction	Heavy-duty steel
Drive Bay	External: 1x 5.25" Internal: 2x 3.5" HDD
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	1x Power On/Off, 1x HDD
Switch	1x Power On/Off, 1x System reset
Speaker	One 8Ω speaker
Connector	2x 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-08P41: 8-slot [PCIe (3), PCI(4), PCI-X(0)] PICMG 1.3 backplane PBP-08A4: 8-slot [PCI(7), PCI-X(0)] active PICMG 1.3 backplane PBP-07P4 : 8-slot [PCIe (2), PCI(7), PCI-X(0)] PICMG 1.3 backplane

POWER SUPPLY

Maximum output	500W active PFC
Output Voltage & Current	+ 5V@22A; +12V1@20A; +12V2@25A; +3.3V@10A; -12V@0.3A,+5Vsb@2.5A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	50 ~ 60Hz
Input Current	10A@110V, 5A@240V
Efficiency	> 80%
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, CCC, BSMI

ENVIRONMENT

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

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

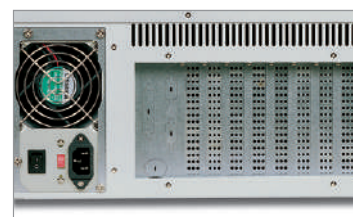
REFINEMENT



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

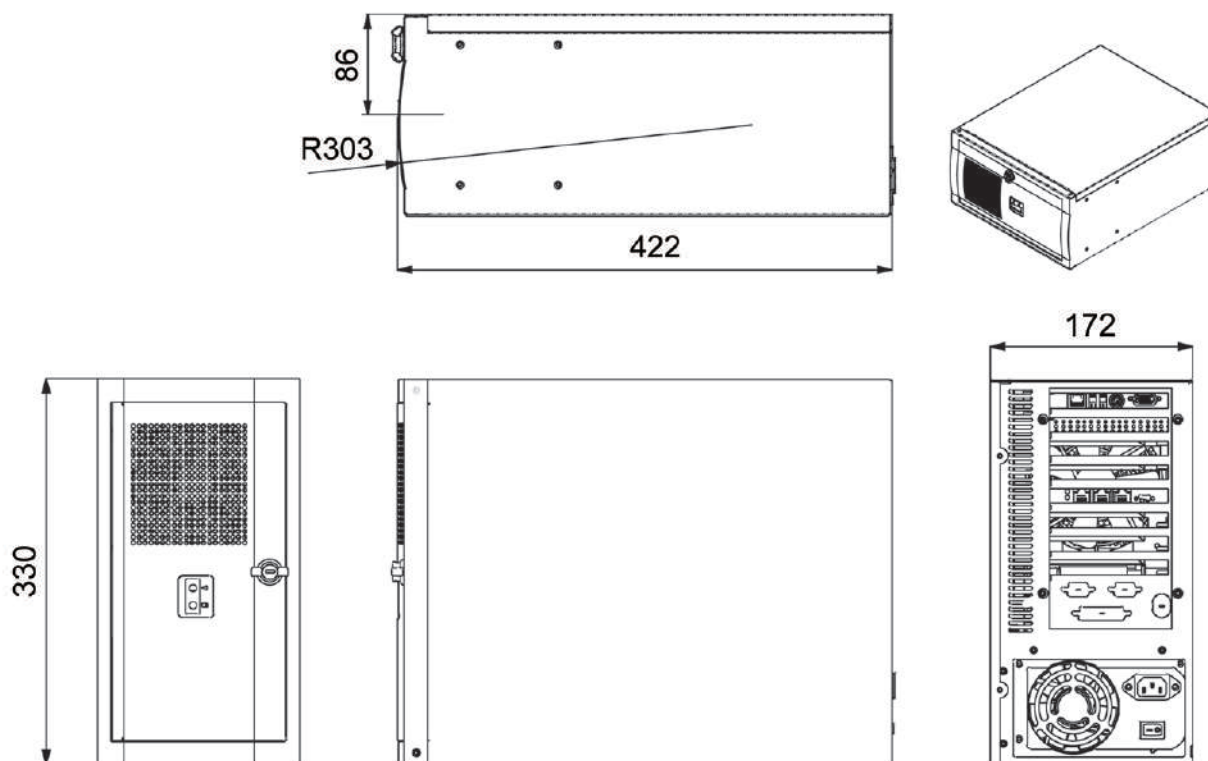


Plastic Fan Filter
For easy cleaning and replacing

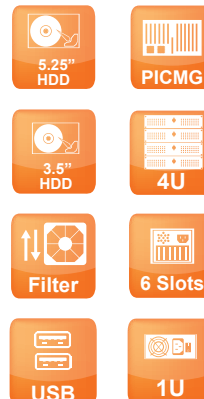


Excellent Cooling System
New slot cover for better ventilation

MECHANICAL DRAWING



Unit: mm



AREMO-6182 is designed for PICMG 1.0/1.3 with 6-slot backplane that is 4U full size industrial node chassis built with one 5.25" HDD driver space for CD/DVD-ROM, one internal 3.5" HDD driver bays and replaceable air filter for easy maintenance. AREMO-6182 equips two USB interface on front panel, and also high wattage 1U form factor PSU. The compact size feature of AREMO-6182 is suitable for Industrial and Engineering applications.

FEATURES

- One external 5.25" and one 3.5" 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 PICMG 1.0 or 1.3 backplane applicable; easy to change different backplanes

ORDERING GUIDE

- **AREMO-6182/B**
6-slot full-size industrial black node chassis adapted with 6-slot PICMG backplane

GENERAL

Construction	Heavy-duty steel
Drive Bay	External: 1x 5.25" Internal: 2x 3.5" HDD
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	1x Power On/Off, 1x HDD
Switch	1x Power On/Off, 1x System reset
Speaker	One 8Ω speaker
Connector	2x USB ports on the front panel
Standard Color	Black, Silver
Dimension	219(W) x 448(D) x 160(H) mm; 8.6"(W) x 17.6"(D) x 6.3"(H)
Weight	Net: 6.5 kg (14.3 lb); Gross: 8.0 kg (17.6 lb)
Backplane	PBP-06P4: 6-slot [PCIe (1), PCI (4), PCI (0)] PICMG 1.0 backplane PBP-06P3: 6-slot [PCIe (2), PCI (3), PCI (0)] PICMG 1.0 backplane PBP-06P2: 6-slot [PCIe (3), PCI (2), PCI (0)] PICMG 1.0 backplane

POWER SUPPLY

Maximum output	350W active PFC
Output Voltage & Current	+5V@18A; +12V1@16A; +12V2@16A; +3.3V@16A; -12V@0.3A, -5V@0.3A, +5Vsb@2.5A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63Hz
Input Current	6A@115V, 3A@230V
Efficiency	> 80%
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB
Temperature/Humidity	Operating: 0°C ~ 50°C, 5% ~ 90%RH Storage: -20°C ~ 80°C, 5% ~ 95%RH

ENVIRONMENT

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

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

REFINEMENT



Plastic Fan Filter

For easy cleaning and replacing



Can be Mounted in Different Styles

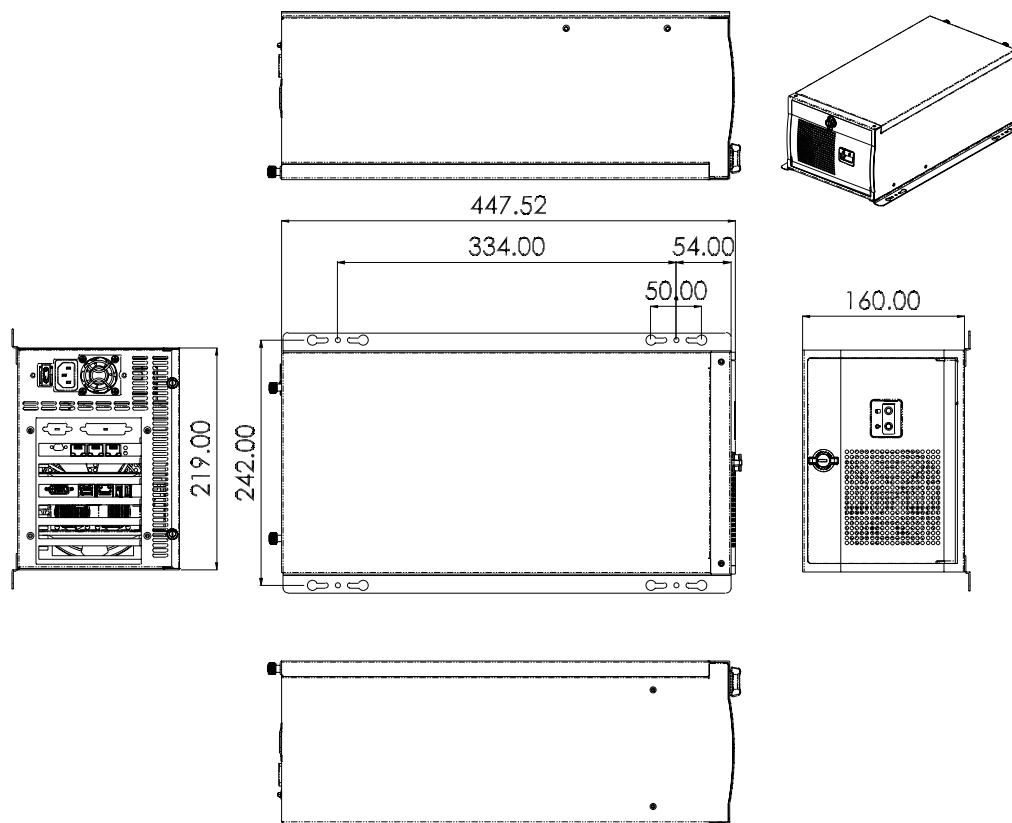
AREMO-6182 can be either vertically or horizontally installed



Dual Card Retainers

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

MECHANICAL DRAWING

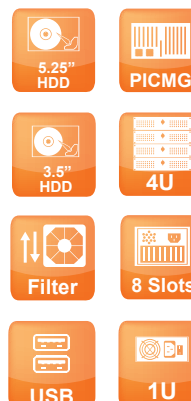


Unit: mm



AREMO-4184

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



AREMO-4184 combines double AREMO-6182 with dual system frame that lets double AREMO-6182 become 19" 4U Rack-mount size chassis designed for PICMG 1.0/1.3. It is built with one 5.25" HDD driver space for CD/DVD-ROM, one internal 3.5" HDD driver bays and replaceable air filter for easy maintenance in each AREMO-6182 which also equips two USB interface on front panel, and also high wattage 1U form factor PSU.

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**
Two sets of AREMO-6182 with black rack-mount kit, adapted with 6-slot PICMG backplane

GENERAL

Construction	Heavy-duty steel
Drive Bay	External: 1x 5.25" Internal: 2x 3.5"
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	1x Power On/Off, 1x HDD
Switch	1x Power On/Off (with a protection cap) , 1x System reset
Speaker	One 8Ω speaker
Connector	2 USB ports
Standard Color	Black
Dimension	AREMO-4184: 482(W) x 448(D) x 177(H) mm; 19"(W) x 17.6"(D) x 7"(H)
Weight	AREMO-6182: Net: 6.5 kg (14.3 lb); Gross: 8.0 kg (17.6 lb) AREMO-4184: Net: 15.5 kg (34.2 lb); Gross: 17.5 kg (38.6 lb)
Backplane	PBP-06P3: 6-slot (3xPCI) PICMG backplane PBP-06P4: 6-slot (4xPCI) PICMG backplane PBP-06I: 6-slot (6xISA) PICMG backplane

* each chassis

POWER SUPPLY

Maximum output	350W active PFC
Output Voltage & Current	+5V@18A; +12V1@16A; +12V2@16A; +3.3V@16A; -12V@0.3A, -5V@0.3A, +5Vsb@2.5A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63Hz
Input Current	6A@115V, 3A@230V
Efficiency	> 80%
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB
Temperature/Humidity	Operating: 0°C ~ 50°C, 5% ~ 90%RH Storage: -20°C ~ 80°C, 5% ~ 95%RH

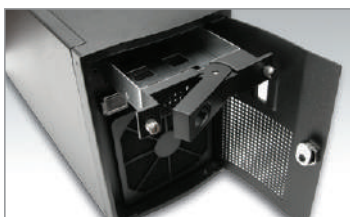
ENVIRONMENT

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



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

REFINEMENT



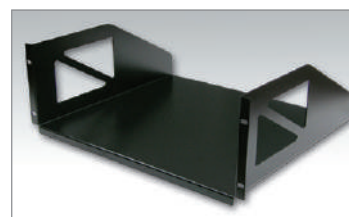
Special Configuration with EZDRV

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



Easy to Mount

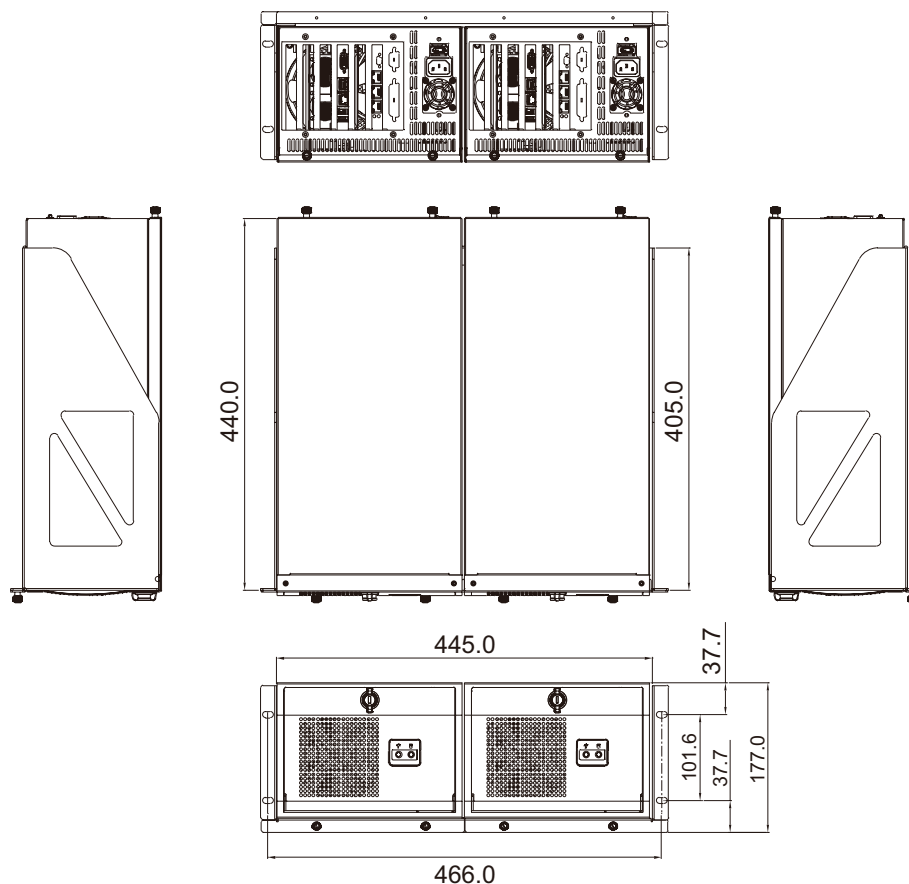
AREMO-6182 can be easily mounted on the supporter



Two become One

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

MECHANICAL DRAWING



Unit: mm



FEATURES

- Two 5.25" drive bay for CD-ROM or mobile disk (RAID1)
- One replaceable air filter for easy cleaning
- The fan filter panel can be installed in different directions
- Can be vertically or horizontally mounted, easy to fit into space limited environment
- One 12 cm ball-bearing cooling fan for better ventilation
- Two adjustable positions for hold-down card retainers provide better protection from vibration
- Field replaceable power supply bracket for both normal PS/2 and PS/2 redundant power supply, easy for changing defective power supply

ORDERING GUIDE

- **IRC-307-U3**
Industrial node chassis for ATX M/B

REFINEMENT



Easy Open

GENERAL

Construction	Heavy-duty steel
Drive Bay Internal	3.5" HDD x1
Drive Bay External	5.25" x 2 + 3.5" FDD x 1
Air Filter	One replaceable air filter at the front door
Cooling Fan	One 12 cm ball-bearing fan
Indicator	Power on/off x1, HDD x1
Switch	Power on/off x1, System reset x1
Speaker	One 8 speaker
Connector	2 USB ports
Standard Color	Dark Grey, Black
Dimension	330(W) x 408(D) x 204.2(H) mm; 13"(W) x 16.1"(D) x 8.04"(H)
Weight	9 kg (19.8 lb); Gross: 10 kg (22 lb)
Backplane	For ATX M/B

POWER SUPPLY

Maximum output	330W
Output Voltage & Current	+5V@30A, +12V@16A, +3.3V@28A, -5V@0.3A, -12V@0.8A, +5Vsb@2A
Input Voltage	90V ~ 132V, 180 ~ 264V AC selectable
Input Frequency	47 ~ 63 Hz
Input Current	10A@115V, 5A@230V
Efficiency	> 70%
MTBF	100,000 hrs
Certificatio	UL, cUL, TUV, CE, FCC

ENVIRONMENT

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



The WADE-30C0 is designed for Mini-ITX or Flex-ATX motherboard with 4-slot that is industrial node chassis built with two internal 2.5" HDD driver bays, WADE-30C0 equips two USB interface on front panel, and also high wattage Flex-ATX form factor PSU. The compact size feature of WADE-30C0 is suitable for Industrial and Engineering applications..

FEATURES

- Two hot-swap 2.5" HDD (SATA) Drive bays
- Two USB ports on the front panel
- Flex-ATX power supply installable
- One power On/Off switch with protection cap and one touch free reset for secure access

ORDERING GUIDE

- **WADE-30C0**
Mini-ITX or Flex-ATX motherboard node chassis

GENERAL

Construction	Heavy-duty steel
Drive Bay Internal	2x 2.5" HDD
Air Filter	One replaceable air filter
Indicator	1x HDD+ 1x Power On/Off
Switch	1x Power On/Off (with a protection cap), 1x System reset
Connector	2x USB ports on the front panel
Standard Color	Gray
Dimension	300(W) x 281(D) x 150(H) mm
Weight	7 kg

POWER SUPPLY

Maximum output	300W active PFC
Output Voltage & Current	+ 5V@17A; +12V1@18A; +12V2@18A; +3.3V@14A; -12V@0.8A, +5Vsb@2.0A
Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63Hz
Input Current	5A@100V, 2.5A@240V
Efficiency	> 80%
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, CCC, BSMI

ENVIRONMENT

Operating Temperature	0°C ~ 50°C
Storage Temperature	0°C to 85°C
Relative Humidity	5% ~ 95%, non-condensing
Vibration	5~7 Hz: 0.5" double amplitude displacement 7~2000 Hz: 1.5g acceleration



WADE-2231Q

Rugged and Stylish Industrial Mini-ITX Bare- Bones Chassis



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

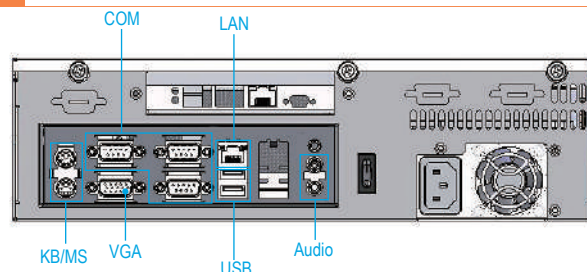
POWER SUPPLY

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	6A@115V, 3A@230V
Efficiency	>75%
Holdup Time	16ms. at full load@25°C
Over Voltage Protection	+5V@5.7~6.5V; +3.3V@3.9~4.3V; +12V@13.6~+15V
Over Power/ Load Protection	Output power over to 110%~150%
MTBF	>130,000 hrs
EMI & Safety Approval	UL, TUV, BSMI, NEMCO, FCC, CE
Temperature/Humidity	Operating: 0 ~ 40°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH

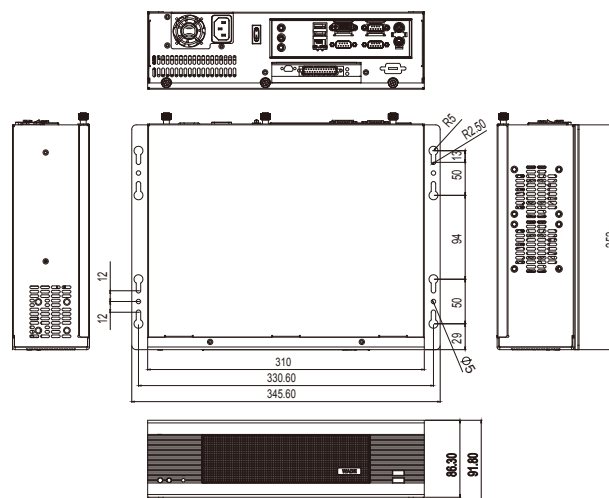
MECHANICAL & ENVIRONMENTAL

Operation Temperature	0~50°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension	310 x 252 x 86.3 (mm)
Weight	3.0 Kg

REAR I/O



ENGINEERING DRAWING



ORDERING GUIDE

- **WADE-2231Q-4410R-180X**
Rugged and stylish industrial Mini-ITX Bare-bones Chassis with PER-4410R, PCI-E x 16 riser card & 180W PSU
- **WADE-2231Q-518R-180X**
Rugged and stylish industrial Mini-ITX Bare-bones Chassis with PEP-518R, 1 slot PCI riser card & 180W PSU



The WADE-2232Q is a rugged and stylish barebones system suitable for embedded applications that stand alone or are rackmounted. Its effective ventilation is achieved by the mesh design of the front panel. No actual tool is needed to release

the top cover of chassis, simplifying integration and field service. This barebone system includes a WADE series board, 220-watt power supply, 3.5" drive bay and two PCI expansion slot.

FEATURES

- Bare-bones Chassis for Mini-ITX board
- Tool-free mechanism to open the top cover
- Rugged and stylish design
- Quick 3.5" HDD installation by releasing the top cover
- Two expansion slots

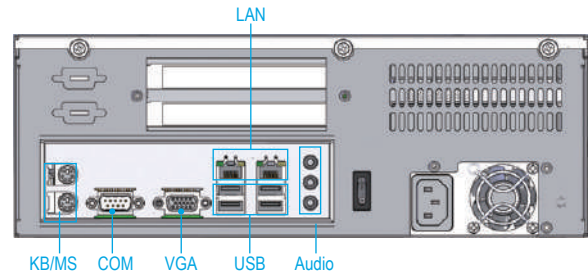
POWER SUPPLY

Input Voltage	90V ~ 264V AC, full range
Input Frequency	47 ~ 63 Hz
Input Current	5A@115V, 3A@230V
Efficiency	>80%
Holdup Time	17ms. at full load@25°C
Over Voltage Protection	+5V@5.5~6.82V; +3.3@3.5~4.8V; +12V@13.4~15.6V
Over Power/ Load Protection	Output power over to 110%~140%
MTBF	100,000 hrs
EMI & Safety Approval	UL, TUV, CE, FCC, CB, CSA, SEMKO, FIMKO, NEMCO, DIMCO
Temperature/Humidity	Operating: 0 ~ 50°C, 20 ~ 85%RH Storage: -20 ~ 80°C, 10m ~ 90%RH

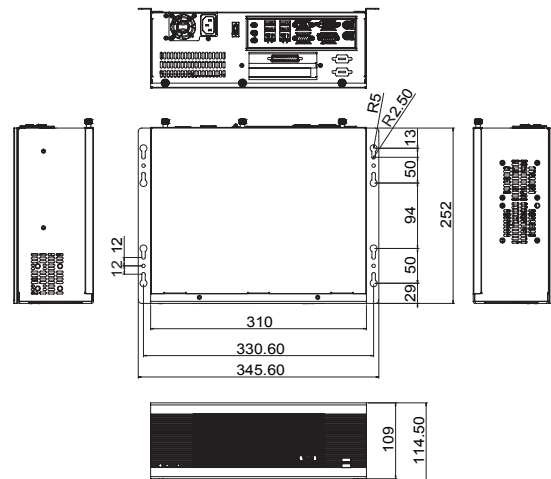
MECHANICAL & ENVIRONMENTAL

Operation Temperature	0~50°C
Storage Temperature	-20~80°C
Relative Humidity	5~95% non-condensing
Dimension	310 x 252 x 109 (mm)
Weight	3.5 Kg

REAR I/O



ENGINEERING DRAWING



ORDERING GUIDE

- **WADE-2232Q-582R-220X**
Rugged and stylish industrial Mini-ITX Bare-bones Chassis with PEP-582R, 2 slots PCI, riser card & 220W PSU
- **WADE-2232Q-592R-220X**
Rugged and stylish industrial Mini-ITX Bare-bones Chassis with PEP-592R, 2 slots (PCI-E x1, PCI x1)

About Power Supply



■ Industrial Power Supply

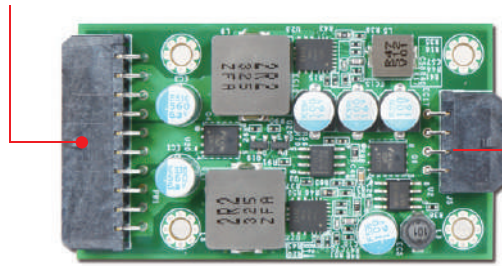
Portwell Inc. who has already set up more than 25 years is dedicated to industrial PC field for designing and manufacturing industrial standard and project based boards and systems in various form factors, rack-mount server, Box PC and Panel PC to meet customers' demanding and diversified applications. Certainly, suitable peripheral combinations, like chassis and power supply unit are included to providing more stable and higher performance total system solutions.

Since Box PC and Panel PC are almost based on system-oriented design, therefore, we know the quality of Power Supply Unit (PSU) is required. PSU to system is like the blood to body; hence, the crucial importance of PSU could not be over-emphasized. In an attempt to provide stable output and high reliability for different industrial applications such as communications, networks and servers, Portwell Inc. has done lots of related research on systems equipped with quality and reliable PSU. According to great experience in industrial fields and vertical markets; we believe that the best component bringing the best product, so we choose the components from Japanese manufacturers which are always earning high reputation of quality assurance from engineering verification and customer's feedback. Thus, in use of high quality PSU products, capacitors from Japanese brands, like NCC and RUBYCON are introduced into Portwell whole new PSU series the GADIWA, to meet demanding requirements under harsh environment.

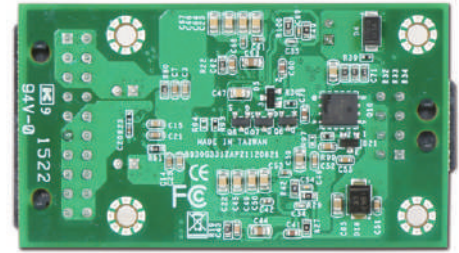


For a reliable DC power supply in industrial environment, we offer a wide range of high-quality DC power supplies in different designs and performance classes such as board type converter, board type regulator and socket type converter. Designed for 24/7 continuous operation, GADIWA series impress with precisely regulated output voltages, high efficiency, comprehensive safety functions and a rugged design for use in the industrial temperature range from -40 degree Celsius to 75 degree Celsius. Also 100% HI-POT Test, Over Temperature Protection, Short Circuit Protection, Over Voltage Protection and Over Current Protection are considered at design phase. GADIWA series can used in different application such as factory automation, smart transportation, gaming, energy, POS, kiosk, Computer vision and IIoT.

Main / Mini-Fit 20 pin
output power connector



12V / Mini-Fit 8 pin
input power connector



GADIWA-B1120 is a DC to DC 12V input board type converter. It normally support continuous 120 Watts and peak 160 Watts.

GADIWA-B1120 can save more space, less than 1U width, and cost. It's not only capability for fan-less system but also suitability for different applications. Besides, the converter is made and tested by automatic production line; therefore, it can provide high quality and better 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
- -40°C to 75°C wide temperature support

SPECIFICATION

Input Voltage	12V (+5%/-4%)
Output	120Watts/ 160Watts peak
Efficiency	>90% @ 12V
MTBF	1,226,530hrs @40°C, 353,098hrs @75°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)	38 x 68 x 12.5 mm
Operation Temperature	-40°C ~ 75°C

CHARACTERISTICS

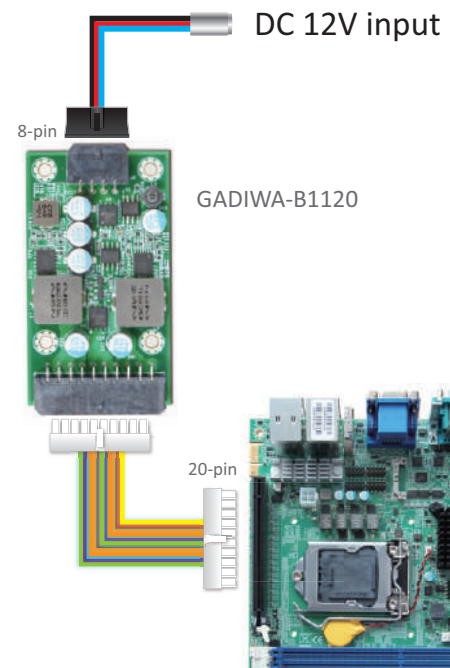
Output Voltage	Load Regulation	Cross Regulation
+12V	0~6A	6A
+5V	0~6A	6A
+3.3V	0~6A	6A
+5Vsb	0~2A	1A
-12V	0~0.1A	0.1A

ORDERING GUIDE

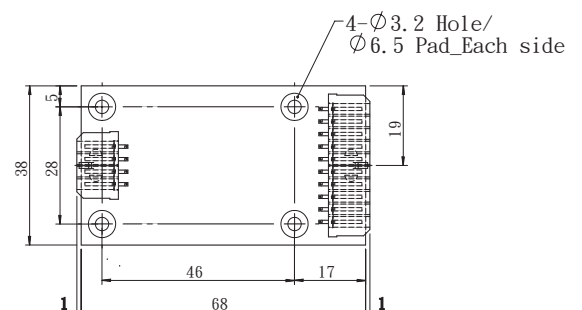
- **GADIWA-B1120**
120W DC/DC 12V/input.ATX/output.Wide Temperature.Board Type Converter



INSTALLING DEMOSTRATION



MECHANICAL DRAWING

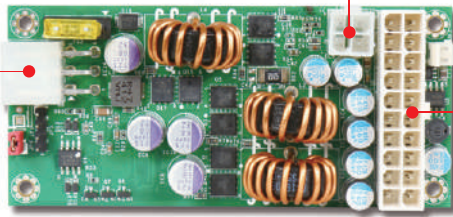


GADIWA-B9120

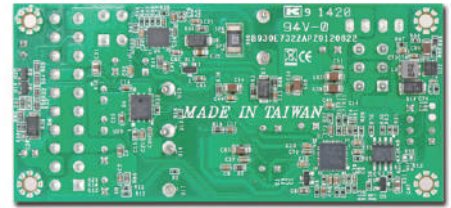
120W DC/DC 9V~29V Input/ATX output,
Board Type Converter

9V~29V / 6 pin input
power connector

12V / ATX 4 pin
output power connector



Main / Mini-Fit 20 pin
output power connector



GADIWA-B9120 is a DC to DC wide voltage input board type converter. It normally support continuous 120 Watts and peak 160 Watts.

GADIWA-B9120 can save more space and cost. It's not only capability for fan-less system but also suitability for different applications. Besides, the converter is made and tested by automatic production line; therefore, it can provide high quality and better performance.

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
- -40°C to 75°C wide temperature support

SPECIFICATION

Input Voltage	9V~29V
Output	120Watts / 160 Watts Peak
Efficiency	>90% @ 12V input, 120W output
MTBF	410,386hrs @ 55°C
EMI & Safety Approval	CE, FCC
Input Connector	9V~29V 6 pin (P/N: B6902060)
Output Connector	ATX 20 pin + 12V 4 pin
Dimension (WxDxH)	100 x 45 x 22.5 mm
Operation Temperature	-40°C ~ 75°C

CHARACTERISTICS

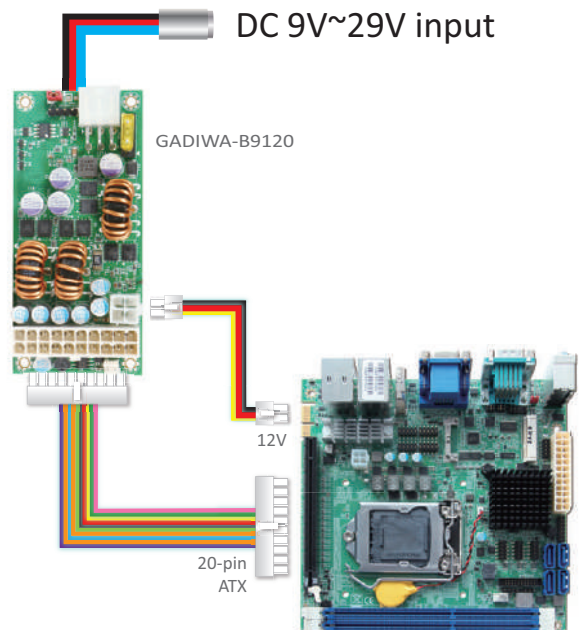
Output Voltage	Load Regulation	Cross Regulation
+12V	0~6A	6A
+5V	0~6A	6A
+3.3V	0~6A	6A
+5Vsb	0~2A(Share with +5V)	2A(Share with +5V)
-12V	0~0.1A	0.1A

ORDERING GUIDE

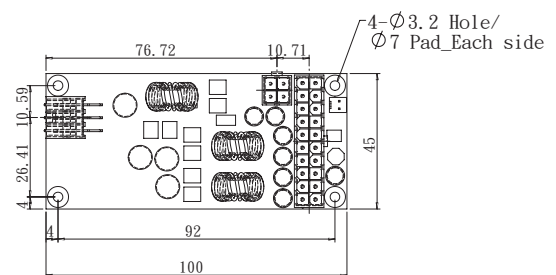
- **GADIWA-B9120**
120W DC/DC 9V~29V/wide-input.ATX/output.Wide Temperature.Board Type Converter

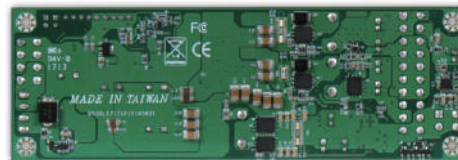


INSTALLING DEMOSTRATION



MECHANICAL DRAWING





GADIWA-B9180 is a DC to DC wide voltage input board type converter. It normally support continuous 180 Watts and peak 200 Watts. GADIWA-B9180 can save more space and cost. It's not only capability for fan-less system but also suitability for different applications. Besides, the converter is made and tested by automatic production line; therefore, it can provide high quality and better performance.

FEATURES

- Compact and user-friendly design for installation and maintenance
- 6~36V/Wide-input, plug into the ATX connector with board output
- Small size for 1U or higher system to save space
- Suitable for Car PC, Steamer, Truck, Boat and Adapter
- Socket type fuse protection
- -40°C to 75°C wide temperature support

SPECIFICATION

Input Voltage	6V~36V
Output	180 Watts / 200 Watts Peak
Efficiency	> 90% @12V input, 180W output, 25°C
MTBF	420,000hrs @ 55°C
EMI & Safety Approval	CE, FCC
Input Connector	6V~36V 8 pin
Output Connector	ATX 20 Pin + 12V 4 Pin
Dimension (WxDxH)	150 x 51 x 25 mm
Operation Temperature	-40°C to 75°C

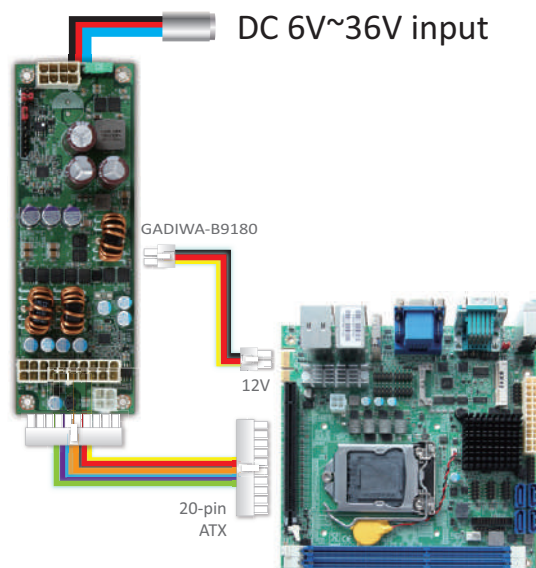
CHARACTERISTICS

Output Voltage	Load Regulation	Cross Regulation
+12V	0~8A	8A
+5V	0~9A	9A
+3.3V	0~12A	12A
+5VSB	0~2A(Share with +5V)	2A(Share with +5V)
-12V	0~0.1A	0.1A

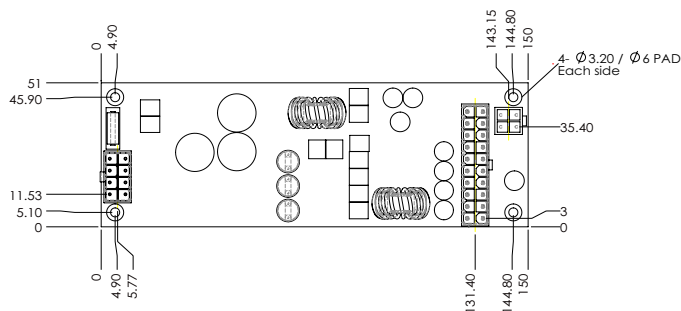
ORDERING GUIDE

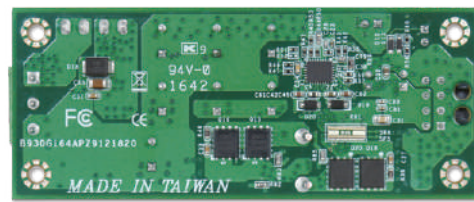
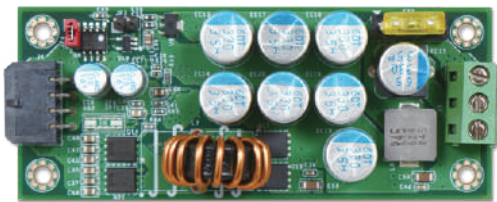
- **GADIWA-B9180**
180W DC/DC 6V~36V/wide-input.ATX/output.Wide Temperature.Board Type Converter

INSTALLING DEMOSTRATION



MECHANICAL DRAWING





GADIWA-R9141 is a DC to DC 9V~32V input to 12V output board type Regulator. It normally support continuous 140 Watts and peak 160 Watts.
GADIWA-R9141 can save more space, less than 1U width, and cost. It's not only capability for fan-less system but also suitability for different applications. Besides, the converter is made and tested by automatic production line; therefore, it can provide high quality and better performance. production line; therefore, it can provide high quality and performance.

FEATURES

- 9~32V/Wide-input, 12V/output Regulator with ATX connector with board output
- Compact and user-friendly design for installation and maintenance
- Fan-less design for mission-critical application
- -40°C to 75°C wide temperature support -40°C to 75°C wide temperature support

SPECIFICATION

Input Voltage	9V~32V
Output	12V 140Watts / 160 Watts Peak
Efficiency	> 95% @12V, 12A output, 25°C
MTBF	420,000hrs @ 55°C
EMI & Safety Approval	CE, FCC
Input Connector	9V~32V 3 pin TBC
Output Connector	Mini-Fit 8 pin
Dimension (WxDxH)	93.4 x 38 x 20 mm
Operation Temperature	-40°C to 75°C

CHARACTERISTICS

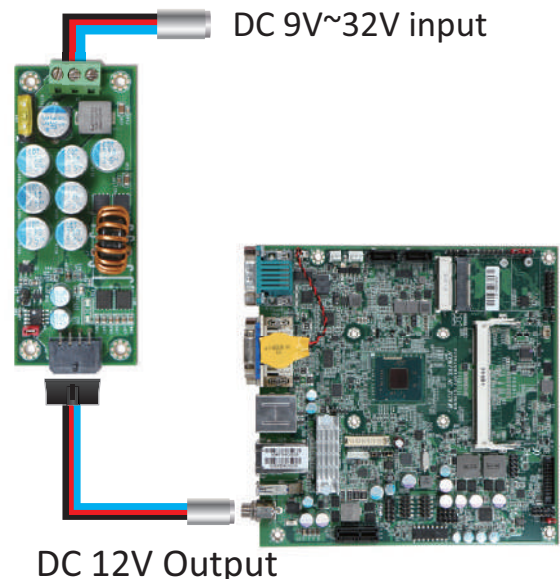
Output Voltage	Load Regulation	Cross Regulation
Output Voltage	Load Regulation	Cross Regulation
+12V	0~12A	12A

ORDERING GUIDE

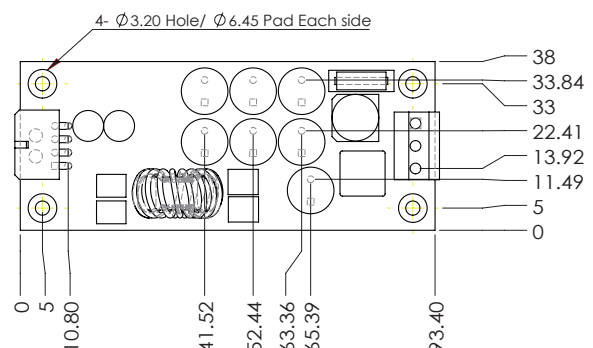
- **GADIWA-R9141**
140W 9V~32V input to 12V output DC to DC Power module.Wide Temperature

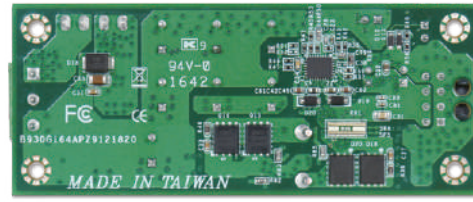
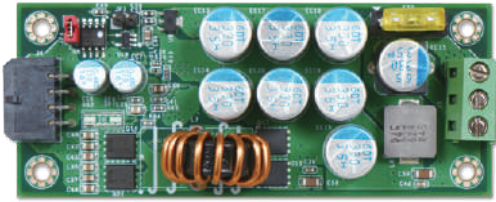


Installation Image



MECHANICAL DRAWING





GADIWA-R9142 is a DC to DC 9V~32V input to 24V output board type Regulator. It normally support continuous 140 Watts and peak 160 Watts.

GADIWA-R9142 can save more space, less than 1U width, and cost. It's not only capability for fan-less system but also suitability for different applications. Besides, the converter is made and tested by automatic production line; therefore, it can provide high quality and better performance.

FEATURES

- 9~32V/Wide-input, 24V/output Regulator with ATX connector with board output
- Compact and user-friendly design for installation and maintenance
- Fan-less design for mission-critical application
- -40°C to 75°C wide temperature support

SPECIFICATION

Input Voltage	9V~32V
Output	24V 140Watts / 160 Watts Peak
Efficiency	95% @24V, 5.833A output, 25°C
MTBF	420,000hrs @ 55°C
EMI & Safety Approval	CE, FCC
Input Connector	9V~32V 3 pin TBC
Output Connector	Mini-Fit 8 pin
Dimension (WxDxH)	93.4 x 38 x 20 mm
Operation Temperature	-40°C to 75°C

CHARACTERISTICS

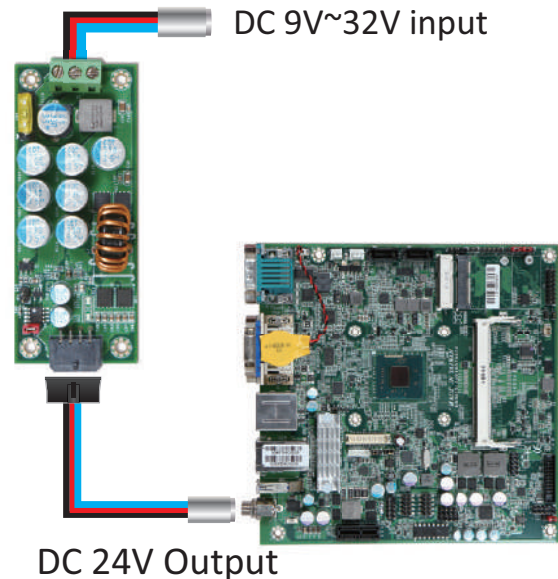
Output Voltage	Load Regulation	Cross Regulation
Output Voltage	Load Regulation	Cross Regulation
+24V	0~5.8A	5.8A

ORDERING GUIDE

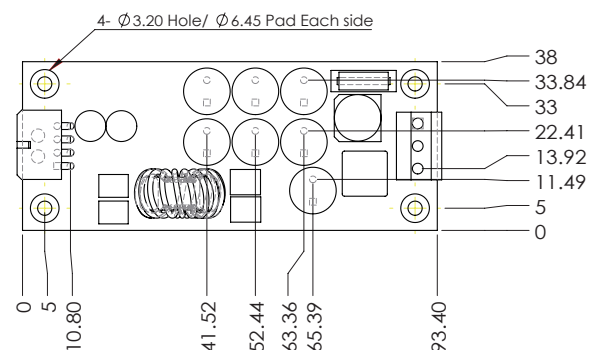
- **GADIWA-R9142**
140W 9V~32V input to 24V output DC to DC Power module. Wide Temperature

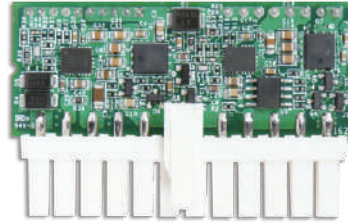
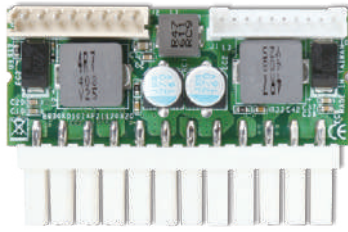


Installation Image



MECHANICAL DRAWING





GADIWA-M1120 is a DC-DC converter for socket type. It normally support 96Watts and maximum can reach to 120Watts. GADIWA-M1120 socket type design 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

- 12V DC/input, plug directly into the ATX connector with socket output
- Compact and user-friendly design for installation and maintenance
- Fan-less design for mission-critical application
- -40°C to 75°C wide temperature support

SPECIFICATION

Input Voltage	12V
Output	120Watts / 160 Watts Peak
Efficiency	> 90% @12V input, 120W output, 25°C
MTBF	420,000hrs @ 55°C
EMI & Safety Approval	CE, FCC
Input Connector	12V / DC Jack
Output Connector	ATX 24Pin Connector
Dimension (WxDxH)	35 x 56 x 23.5 mm
Operation Temperature	-40°C to 75°C

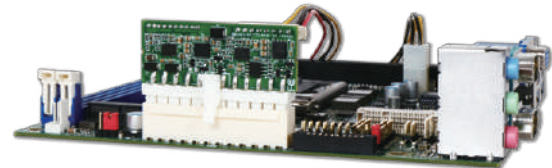
CHARACTERISTICS

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

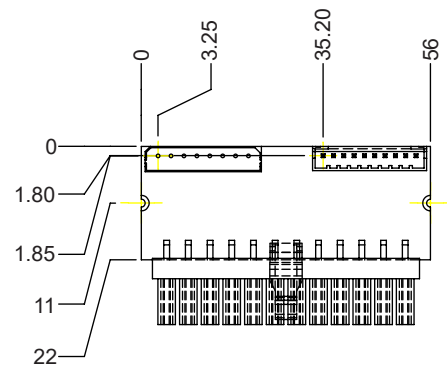
ORDERING GUIDE

- **GADIWA-M1120**
120W 12V to ATX DC to DC Power module. Wide Temperature. bulk packing

INSTALLING DEMOSTRATION



MECHANICAL DRAWING





GADIWA-N2480 480W 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-N2480 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-N2480 is made & tested by automatic production line; therefore, can provide high quality and performance.

FEATURES

- 480W DC-DC PS/2 mini-redundant suitable for embedded system
- 19.2V~28.8V 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	19.2V ~ 28.8VDC
Input Current	17.6A ~ 23.5A
Efficiency	85%
Over Voltage Protection	3.3V@3.9V; 5V@6.1V; 12V@13.8V
Temperature/Humidity	Operating: 0 ~ 45°C, 20 ~ 90%RH Storage: -20 ~ 60°C, 5 ~ 95%RH
Dimension (WxDxH)	150 x 150 x 86 mm

DC OUTPUT

	+5V	+3.3V	+12V	-12V	+5Vsb
Max. Load	18A	18A	30A	0.1A	2A
Min. Load	0A	0A	0A	0A	0A
Load Reg.	±5%	±5%	±5%	±5%	±5%
Ripple	50mv	50mv	120mv	120mv	50mv

ORDERING GUIDE

- **GADIWA-N2480**
480W Fan-less PS/2 Redundant DC-DC PSU, 19.2V~28.8VDC Input, ATX Output

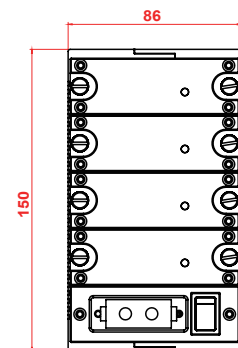


Installation Image

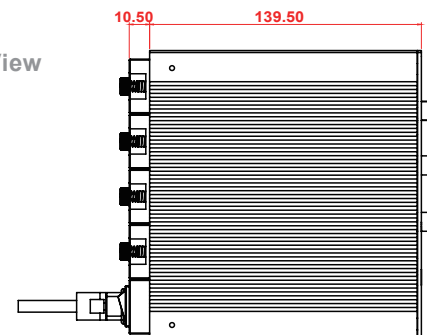


MECHANICAL DRAWING

Front View



Side View





Industrial Power Adapter

APH-3076

40W DC-Plug with Screw Power Adapter



FEATURES

- Efficiency: Meet CEC (California Energy Commission)
- Low Ripple & Noise, 120mV
- Short Circuit Protection
- Over Current Protection 5.5A(Max.)
- Over Voltage Protection 22Vdc Max. (Upper Trip limit)
- No Load Power Consumption \leq 0.06W
- DC plug with screw for securing

SPECIFICATION

AC Input Voltage	90V ~ 264V
DC Output Voltage	12V
Output Load	3.33A
Output Regulation	11.4V~12.6V
Efficiency	>86%, 115V@60Hz, 230V@50Hz
MTBF	100,000 hrs@25°C
EMI & Safety Approval	UL, cUL, TUV, CE, FCC, CB, CCC, KCC
Dimension	110(w) x 50(d) x 31.5(h) mm

APH-3070

65W DC-Plug with Screw Power Adapter



FEATURES

- Efficiency: Meet CEC (California Energy Commission)
- Low Ripple & Noise
- Short Circuit Protection
- Over Current Protection 10A(Max.)
- Over Voltage Protection 18Vdc Max. (Upper Trip limit)
- No Load Power Consumption \leq 0.5W
- DC plug with screw for securing

SPECIFICATION

AC Input Voltage	90V ~ 264V
DC Output Voltage	12V
Output Load	5.4A
Output Regulation	11.4V~12.6V
Efficiency	>88%, 115V@60Hz, 230V@50Hz
MTBF	60,000 hrs@25°C
EMI & Safety Approval	UL, cUL, TUV, CE, FCC, CB, CCC
Dimension	110(w) x 62(d) x 31.5(h) mm

APH-3075

120W DC-Plug with Screw Power Adapter



FEATURES

- Efficiency: Meet CEC (California Energy Commission)
- Low Ripple & Noise
- Short Circuit Protection
- Over Current Protection, Shutdown and no damage
- Over Voltage Protection 17Vdc Max. (Upper Trip limit)
- Over Temperature Protection (No fire, no smoke)
- No Load Power Consumption \leq 0.5W
- DC plug with screw for securing

SPECIFICATION

AC Input Voltage	90V ~ 264V
DC Output Voltage	12V
Output Load	10A
Output Regulation	11.4V~12.6V
Efficiency	>88%, 100V@60Hz, 240V@50Hz
MTBF	100,000 hrs@25°C
EMI & Safety Approval	UL, cUL, TUV, CE, FCC, CB
Dimension	171(w) x 72(d) x 42(h) mm

APH-3077

150W DC-Plug Power Adapter



FEATURES

- Efficiency: Meet CEC (California Energy Commission)
- Low Ripple & Noise
- Short Circuit Protection
- Over Current Protection, Shutdown and no damage
- Over Voltage Protection 17Vdc Max. (Upper Trip limit)
- Over Temperature Protection (No fire, no smoke)
- No Load Power Consumption \leq 0.5W
- DIN plug connector for power DIN plug (with lock)

SPECIFICATION

AC Input Voltage	90V ~ 264V
DC Output Voltage	12V
Output Load	12.5A
Output Regulation	11.4V~12.6V
Efficiency	>88%, 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

Further Contact

Completed Technical Service-In order to ensure that customers can get the right and speedy service from Portwell, we do offer the following services to meet your needs.



Logistics Service

It is not only for the scalable or world-grade customers, we offer the service to our partners who need the world-wide delivery to save time and expense.



Consulting Service

Our engineering experts provide a free service to discuss with you the projects or technologies that you need in a short period of time. Please visit Portwell web and click the button, then the on-line service will appear for you.



Product Service

We have the experienced product managers who can help you to get the right products in our list and also the related information to complete your solution.



Manufacturing Service

Portwell has the most advanced manufacturing facilities to produce the quality product for your application or business. Please pay a visit to our Portwell engine, you will know how best that we can do for you.



Design Service

If our existing products cannot meet your requirements, a customized design service can be initiated to build the exact products that you demand.

Both Portwell RDC & SIC are set for the completed service to our customers & Partners. Your any requirements or technical issues are welcome to contact us for further solution. Our service can be arranged in the following ways.

Web Service

Portwell already set up the contact for our technology service on the air. Please just visit our web on the internet and left the message for further contact by our people. Besides, you also can get the on-line consulting service via Skype or the phone if the immediate service is needed.

Extended Visits to PE

Some idea or issue is not easy to have the solution within short period of time. Portwell has the necessary facility and dormitory for customers or partners who need to stay with us for a period of time. Please contact us and our service people will give you the message for it.

Direct Contact

Portwell welcomes our customers to visit our Laboratory for the regulation test or design service. We believe that it is the fastest way to solve your questions and achieve the right solution. Just call or mail us; you will have the right service immediately.



Global Service (Telephone)

In addition, you can get immediate support via telephone. Check the web site for phone numbers.
<https://www.portwell.com.tw/portwell-worldwide/>



Technical Request

For technical support, you could reach our technical request website as follows
<https://www.portwell.com.tw/support-center/technical-request/>



