AAEON®
an ASUS assoc.co.



Embedded Platforms

Premier Source For Embedded Computing Products

2019 AAEON

Product Catalog

www.aaeon.com

Focus • Agility • Competitiveness

A Leader and Partner in Embedded Computing Platforms

We have a relentless drive for excellence and passion for unsurpassed service.



Established in 1992, AAEON is one of the leading designers and manufacturers of professional intelligent IoT solutions and advanced industrial computing platforms today. Committed to innovative engineering, AAEON provides integrated solutions including industrial motherboards and systems, industrial displays, rugged tablets, embedded controllers, network appliances and related accessories. We also work with premier OEM/ODMs and system integrators around the world. Offering x86-based platforms from Intel® Atom™ all the way to Intel® Xeon processors, and in desktop, 1U and 2U form factors, AAEON's team of experienced engineers has helped dozens of companies around the globe deploy reliable appliances with faster times to market and lower development costs based on state-of-the-art hardware platforms, unmatched service quality and long-term support.

As an Associate Member of the Intel® Internet of Things Solutions Alliance, AAEON offers customized end-to-end services from initial product conceptualization and board product development to mass manufacturing and after-sales service programs.

At AAEON, we take the environment seriously, and all of our products are compliant with RoHS regulations. We are dedicated to the sustainability of the Earth, and all of our products conform to applicable laws and regulations.

AAEON Core Values

Reliability:

Delivering dependable products in a timely manner

Integrity:

Valuing business integrity and ethics

Innovation:

Turning cutting-edge concepts into reality

Note: All specifications are subject to change without notice.

About AAEON









System Level Products

AAEON is committed to delivering high-quality intelligent system products, such as Rugged Panel PCs, Expandable Industrial Computers, Full HD Infotainment Displays, Rugged Tablets, Embedded PCs and related accessories, for use in all aspects of sectors including Digital Signage, Transportation, Industrial Automation, Healthcare, Hospitality, Harbor/Marine, Military/Government, Public Safety and Energy.

AAEON has the capability to customize services for a range of embedded computers and system products according to customer requirements and specifications. To help large customers with volume production, AAEON also provides an end-to-end Design Manufacturing Service (DMS) that begins with design and goes through to contract manufacturing. Quality assurance of our system products ensures excellent product performance and is the key to our success and growing global customer base.

Board Level Products

Embedded boards are the beating heart of every computer system. AAEON offers a diverse range of different embedded boards to consolidate your systems. Our products include Compact Boards, 3.5" Sub-Compact Boards, EPIC boards, PICO-ITX boards, COM Express Modules, PC/104 Modules, PC/104 Peripheral Modules, IoT Node/Gateway Boards, and full-sized & half-sized SBCs.

With the advent of the fourth industrial revolution, more commonly known as Industry 4.0, the optimization of automation processes and productivity is becoming more relevant than ever before. Embedded single boards provide an easily configurable and efficient solution to consolidating industrial platforms and infrastructure in fields such as smart cities, smart building management, smart transportation, energy-efficient grids, POS and digital signage, and the medical industry.

AAEON's boards are designed for superior environmental resilience. The WiTAS (Wide Temperature Assurance Services) line can be used within a temperature range of -40°C~85°C and is specifically built to combat harsh environments, operating at peak efficiency in both bitterly cold and blisteringly hot spaces. Our WiTas products are also ideal for IoT uses and are designed for minimum maintenance and maximum ruggedness.

2018
- AAEON awarded a 2018 Vision Systems Design Award
- AAEON awarded three 2018 COMPUTEX d&i Awards
- AAEON awarded the 27th Taiwan Symbol of Excellence Award

2017
- AAEON awarded the 26th Taiwan Symbol of Excellence Award
- AAEON went public on the Taiwan Stock Exchange
- AAEON awarded a 2017 COMPUTEX d&i Award
- AAEON awarded the 2017 Smart City Innovative Application Award

2016
- AAEON awarded the 25th Taiwan Symbol of Excellence Award
- AAEON awarded a 2016 ICT Month Innovative Elite Top 100 Award
- AAEON awarded the 2016 Excellence in Corporate Social Responsibility Award
- AAEON awarded a 2016 outstanding Enterprises of the Year Golden Peak Award
- AAEON awarded the Transcend Most Valued Partner Award

2015
- AAEON awarded the 23rd Taiwan Symbol of Excellence Award
- AAEON awarded the Microsoft Partner of Year 2015 Award
- AAEON awarded the Outstanding Business Achievement Award

2014
- AAEON awarded the 22nd Taiwan Symbol of Excellence Award
- AAEON awarded the Intel® IoT Solutions Alliance Member Performance Award

2013
- AAEON awarded the Computex Taipei 2013 Best Choice of the Year Award
- AAEON awarded the 21st Taiwan Symbol of Excellence Award
- AAEON awarded the Microsoft Silver Partner Award

2012
- AAEON awarded the Computex Taipei 2012 Best Choice Award of the Year Golden Award
- AAEON awarded the 20th Taiwan Symbol of Excellence Award
- AAEON awarded the Microsoft® Windows® Embedded Partner of Year 2012
- AAEON awarded the Intel® Best Customer Award

2011
- AAEON awarded the Taiwan Excellence Achievement Award
- AAEON awarded the 19th Taiwan Symbol of Excellence Award
- AAEON awarded the Siemens Star Supplier 2011 Award
- AAEON awarded the Computex Taipei 2011 Best Choice of the Year Award
- AAEON joined ASUSTeK Computer Inc. (ASUS)

2010
- AAEON awarded the 18th Taiwan Symbol of Excellence Award
- AAEON awarded the 2009 Growth in Intel® Atom™ Co-selling Award

2009
- AAEON awarded the Taiwan Superior Brand Award
- AAEON awarded the 17th Taiwan Symbol of Excellence Award
- AAEON awarded the 17th MOEA's Joint Award

2008
- AAEON awarded the Intel® Marketing Development Funds Award of Excellence
- AAEON awarded the 8th Industrial Sustainable Excellence Award
- AAEON awarded the 16th Taiwan Symbol of Excellence Award
- AAEON awarded the INFO TECH 100 TAIWAN Award

2007
- AAEON awarded the Intel® Marketing Development Funds Award of Excellence
- AAEON awarded the Intel® Greatest Co-Selling Growth Award of Excellence
- AAEON received ISO 13485 medical certification
- AAEON awarded the 15th Taiwan Symbol of Excellence Award
- AAEON awarded the Computex Taipei Best Choice of the Year Award

2006
- AAEON awarded the 14th Taiwan Symbol of Excellence Award

2005
- AAEON awarded the Computex Taipei Best Choice of the Year Award
- AAEON established a U.S. West Coast sales office in Brea, California
- AAEON moved its European branch to the Netherlands

2004
- AAEON Technology (Su Zhou factory) received 3C and ISO-9001 certification
- AAEON set up a Singapore office

2003
- AAEON became an Associate Member of the Intel® Embedded Alliance

2002
- AAEON received TL9000-H certification
- AAEON became a member of the Intel® ACPP Program

2001
- AAEON Technology Inc. was established in Su Zhou, China
- AAEON became a publicly traded company on the Taiwan Stock Exchange
- AAEON set up a European office in Limburg, Germany

2000
- AAEON acquired Astech Technology Inc. to form the core of its panel PC Division

1999
- AAEON was listed as an OTC (Over The Counter) stock company
- The AAEON Foundation was established to promote humanitarian work and technological education

1998
- AAEON established sales offices in Europe and China

1997
- AAEON-USA, the premier off-shore branch office was established in New Jersey

1992
- AAEON established its first office in Taipei, Taiwan

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A member of the ASUS Group: A strong high-tech conglomerate

ASUS Technology and Financing

AAEON Design Flexibility and Domain Know-how



OEM/ODM Capability

The OEM/ODM service has been a key factor in AAEON's phenomenal growth over the past 10 years. AAEON offers design services for full custom requirements as well as modification services for its off-the-shelf products. Whatever you need, AAEON has the experience and expertise to help you create or modify products to perfectly fit your requirements.

Product Innovation

AAEON's integration expertise is integral to product designs that have the most desirable built-in features, saving customers valuable design and customization time. AAEON's OEM/ ODM capabilities help us meet customers' exact specifications and requirements. In addition, AAEON has invested aggressively in R&D capabilities and will continue to do so to maintain a competitive advantage for new designs. In cooperation with premier technology vendors, AAEON participates in vendor early access programs to provide the latest technology to its customers.

Market Focus

AAEON has established a worldwide reputation for exceptional domain know-how. This expertise has enabled AAEON to secure a solid position in Machine and Factory Automation, as well as the Chemical Industry. Additionally, AAEON's cutting edge products meet the specific requirements of the Digital Signage, Transportation, Industrial Automation, Medical, Harbor/Marine, Military/Government, Public Safety and Energy sectors.

R&D Strength

AAEON takes great pride in its World Class R&D aptitudes. With more than 20% of AAEON's workforce employed in R&D and 10% of annual sales revenue invested in this field, AAEON is prepared to handle the most demanding designs based on the latest technologies. With our strong background in innovation, AAEON has been granted a raft of design patents around the world.

Design Capability

From our core competence of single board computer design, AAEON has expanded its capabilities to award-winning Panel PC System Design, BIOS Engineering with multi-vendor expertise, Mechanical Design, Peripheral Device Design, Design Verification and in-house EMI/EMC Debugging.

Manufacturing Capability

AAEON has manufacturing facilities located in Taipei, Taiwan and Suzhou, China. To become the leading supplier of Industrial Computers, AAEON has created manufacturing facilities with flexible layouts and expansion capabilities to easily address the demand for increased production capacity. Drawing upon the skills of its professional and experienced personnel to develop an efficient production system, AAEON has the ability to respond rapidly to customer requests for standard or customized IPC products.



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Quality Assurance

AAEON's Quality Assurance Closed Loop Feedback System provides solid and consistent feedback through the design, manufacturing and service stages to ensure continuous progress and meet customer expectations. The three stages of the Quality Assurance System are Design Quality Assurance (DQA), Manufacturing Quality Assurance (MQA) and Service Quality Assurance (SQA).

DQA

Design Quality Assurance starts at the conceptual stage of a project and covers the product development stage to ensure the utmost quality throughout the process. AAEON's safety and environmental test labs ensure our products meet the requirements of CE/UL/FCC/CCC standards. All AAEON products go through an extensive and comprehensive test plan for compatibility, function, performance and usability. Therefore, AAEON customers can always expect to receive well-designed, high-quality products.

MQA

Manufacturing Quality Assurance is carried out in accordance with ISO 9001, ISO 13485, ISO 14001 certification standards. All AAEON products are built using production and quality testing equipment in a static-free environment. Additionally, these products go through rigorous tests on the production line and dynamic aging in the burn-in room. AAEON's Total Quality Control (TQC) program includes Incoming Quality Control (IQC), In-Process Quality Control (IPQC) and Final Quality Control (FQC). Periodic training, auditing and facility calibration are strictly implemented to ensure all quality standards are followed to meet customers' requirements. The Quality Control Team constantly communicates with R&D to improve product performance and compatibility.

SQA

Service Quality Assurance includes technical support and a repair service. With SQA, AAEON can serve its customers and also receive their feedback and work with R&D and Manufacturing to strengthen AAEON's response time in resolving customer concerns and improve service levels.

Technical Support

The backbone of customer support is a team of professional Application Engineers who provide customers with real-time technical support. Their expertise is shared through internal knowledge management and links to the website for online nonstop service and solutions.

Repair Service

With an efficient eRMA system and RMA service policy, AAEON's RMA Team is able to ensure prompt, high-quality product repair and replacement services with a short turnaround time.

Quality Certification



AAEON has acquired many official certifications to maintain its quality system.

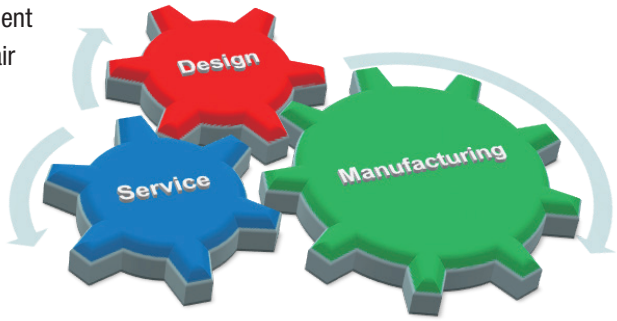
ISO 9001:	QMS Standards, 2015
ISO 13485:	QMS Standards, 2003
ISO 14001:	EMS Standards, 2015
3C:	China Compulsory Certification
CE/FCC:	All AAEON products undergo and meet CE and FCC test standards which prove their design quality and integrity

Design Manufacturing Service

The Design Manufacturing Service (DMS) offers exceptional end-to-end services from product conceptualization to product development and then manufacturing and service programs. All services are linked together through a comprehensive process and closely monitored by dedicated professionals to guarantee the highest level in product quality, reliability and durability.

- Product Conceptualization
- Electronic Circuit Development
- PCB Layout
- Component Qualification
- Mechanical Design
- Prototype Building
- Compatibility, Reliability and Qualification Testing
- Certification and Processing (Agency Approvals)
- Manufacturing Design
- Packaging and Enclosure Design

- Customer Service Management
- Customer and Channel Repair
- Logistics Extension
- Refurbishment
- Return Processing
- Troubleshooting Support
- Upgrades
- Warranty Management
- Spare Parts Management



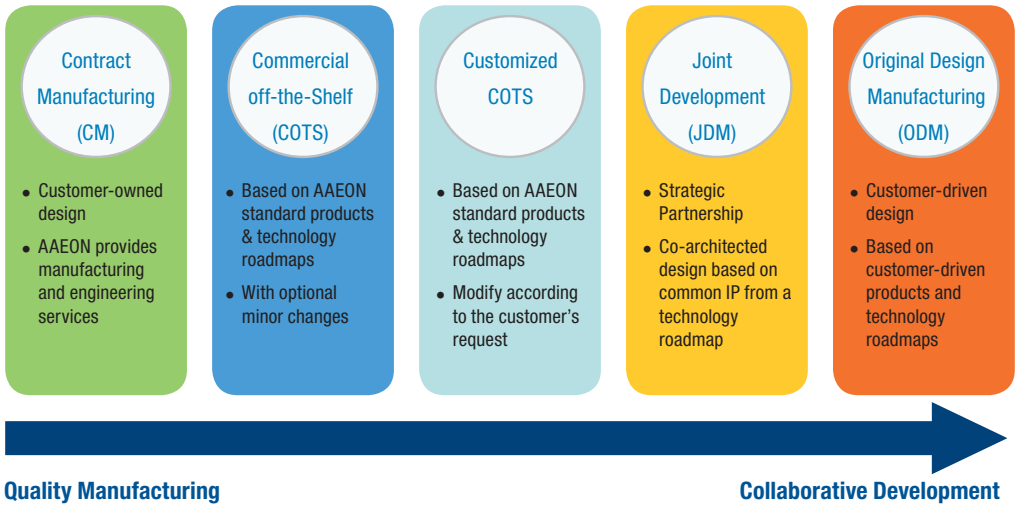
- PCBA Assembly
- System Manufacturing
- Component and Subsystem Assembly
- Functional Testing
- Engineering Change Management
- BTO (Build to Order)
- Supplier Qualification
- Warehousing
- Failure Analysis

Collaboration Models

Customers can entrust AAEON with the manufacturing of their existing products, customize existing AAEON COTS (Commercial-off-the-Shelf) products, or jointly develop new products with the expertise of a dedicated project team that will oversee the project from product conceptualization to on-time delivery of the goods. AAEON DMS handles Large-Volume as well as Low-Volume-High-Mix projects, satisfying the needs of our customers for every kind of computing platform requirement.

Areas of Expertise

- Retail
- Transportation
- Energy
- Automation
- Medical and Healthcare
- Networking



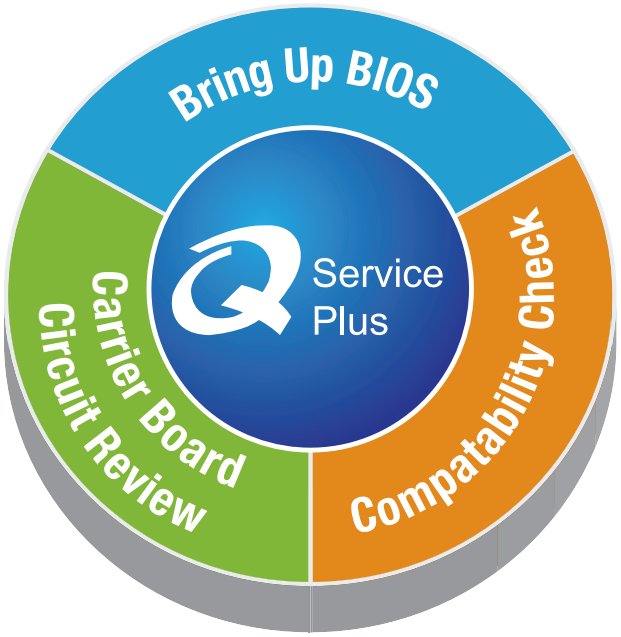
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Service Plus



What is Q Service Plus?

Q Service is a Quick and Quality Service for reducing the time spent on troubleshooting and expediting the development process. With COM technology getting more and more complex and versatile, product failure can originate from numerous sources and may be difficult to identify. AAEON's Q Service Plus helps our customers to improve new products' times to market with AAEON's full support from Hardware, Software and Firmware R&D resources.

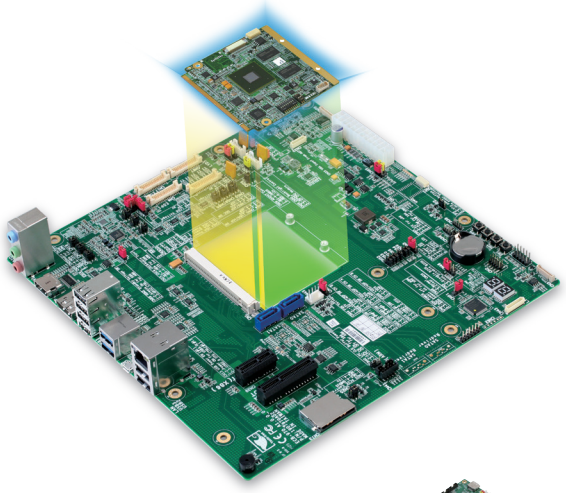


Q Service Plus Commitment:

- Quick carrier board schematic review within FIVE working days -Absolutely FREE!
- Quick delivery of a bring up BIOS - within FIVE working days, absolutely FREE!
- Quick compatibility and reliability debug services and feedback within 72 hours
- Quick arrangement for on-site service and consultation

Benefits:

- Worry-free upgrades
- Faster time to market
- Cost savings
- Reduced design risks
- Long-term support



AAEON Carrier Board Design Service

With over 20 years of quality design and manufacturing experience, AAEON provides professional carrier board design services according to the customer's specifications and passes all compatibility and functional tests required in the process. There are also default carrier boards available for evaluation purposes.


NanoCOM Module

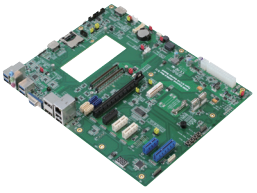

Qseven Module


COM Module


SMARC Module


ETX Module


XTX Module


Carrier Board

Note: All specifications are subject to change without notice.

Wide Temperature Embedded Computing

Applications of embedded computing systems continue to improve the quality and convenience of our lives. As the global population increases, there are greater demands on resources, and the need for automation and computing capability in remote regions will grow. To address a demand for computers that operate in extreme environments, platforms must follow design methodologies for wide temperature range use. In addition, testing and product qualification must follow more stringent criteria to assure continuous operation. As the core of any embedded system, the CPU board plays perhaps the most critical role and, therefore, requires careful design and validation for wide temperature capabilities.

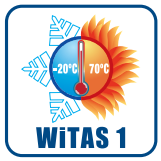
AAEON has been designing and manufacturing quality embedding products for over two decades. Our accumulated experience in all aspects of the embedded electronics market puts us in a strong position to develop wide temperature CPU boards and systems.

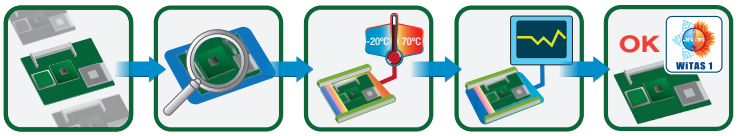
AAEON's WiTAS (Wide Temperature Assurance Service) program produces boards in two temperature range categories:

-20°C to 70°C (-4°F ~ 158°F) = WiTAS 1
-40°C to 85°C (-40°F ~ 185°F) = WiTAS 2

Processes for WiTAS Production

WiTAS 1 Production

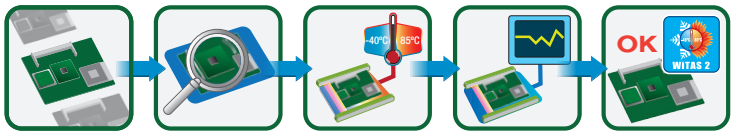




Assembled CPU Board | Power-On Function Test | Wide Temperature Screen Test (-20°C to 70°C) | Full Function Test | WiTAS 1 Verified Products

WiTAS 2 Production





Assembled CPU Board | Power-On Function Test | Wide Temperature Screen Test (-40°C to 85°C) | Full Function Test | WiTAS 2 Verified Products

Boards that pass -20°C to 70°C (-4°F ~ 158°F) thermal tests are given a WiTAS 1 designation, and boards that endure -40°C to 85°C (-40°F ~ 185°F) tests are assigned a WiTAS 2 designation, as part of AAEON's special service assurance of wide temperature durability and reliability. This, in conjunction with the use of durable components throughout the duration of testing, allows AAEON to enhance the longevity of its boards and systems.

Application

Applications for WiTAS CPU boards can be found in a range of industries and markets:

- Transportation: Trains, Ships, Airplanes and Traffic Surveillance Systems
- Factory Automation: Power Stations, Steel Manufacturing
- Military: Field Electronic Devices, Controllers
- Energy: Windmill Controllers, Solar Energy Controllers
- Environmental: Climate, Water, Air Quality
- Anti-dust, Fanless Applications: Medical, Chemical and Pharmaceutical Factories







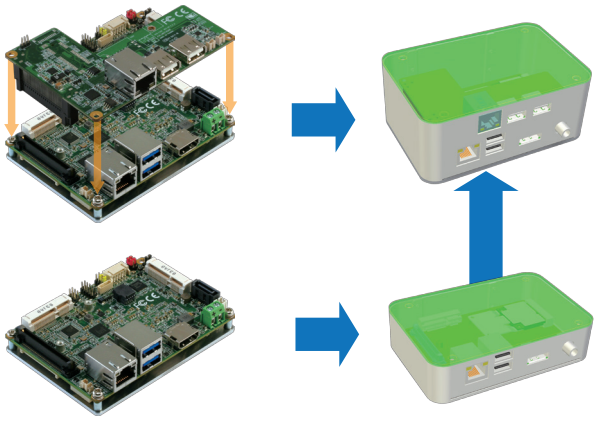


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BIO Board Design Service

The BIO interface, or board-to-board I/O interface, is AAEON's latest innovation in product customization. The BIO board is designed with compactness in mind and is highly customizable for a plethora of add-on features such as MiniCards, USBs, COM and PoE (Power over Ethernet) ports.



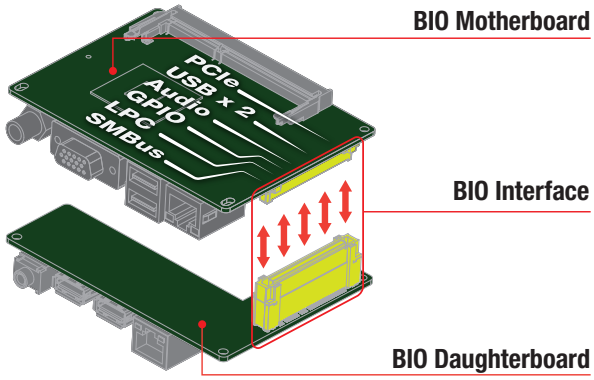


BIO Standardized Pin Definition

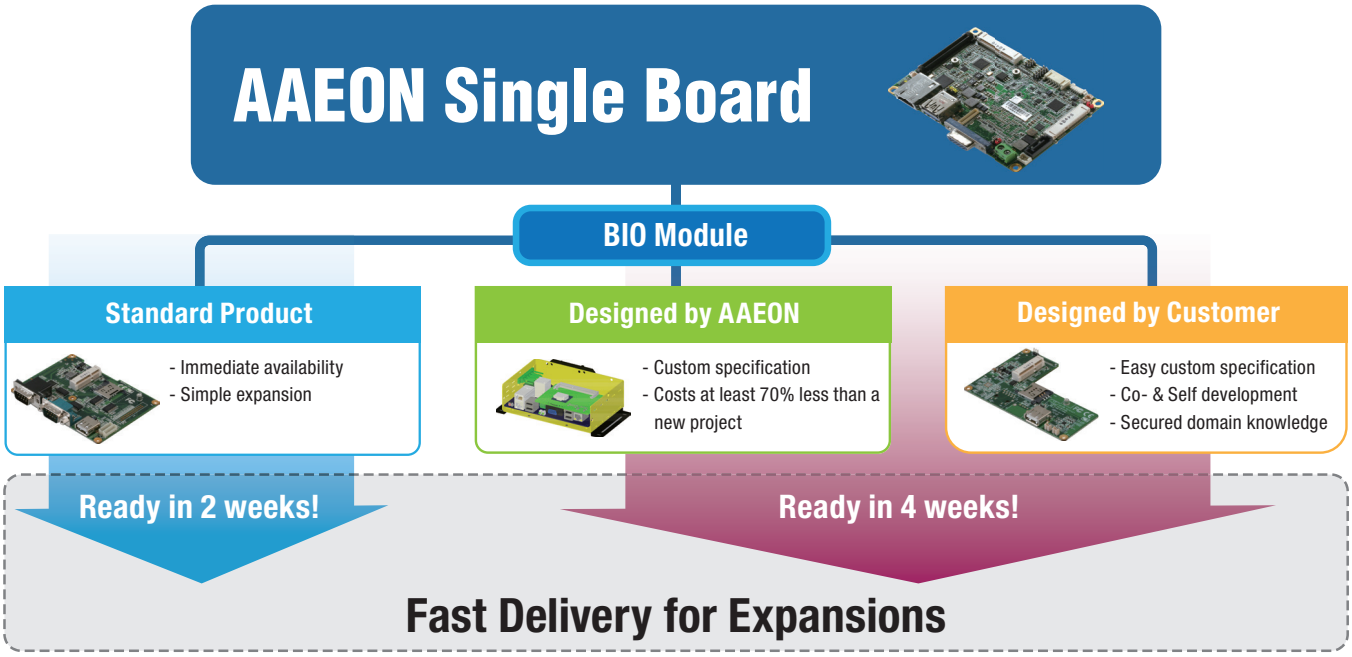
While there are many ways in which a product can be customized, AAEON recommends the BIO daughterboards, a series of daughterboards equipped with AAEON's Board-to-board Interface for AAEON's Standard Products. Simple in design and made to order, these boards take the time and effort out of customization by bypassing the traditional process of re-specifying, building, and testing. Just pick the features you want, build the board, connect it to the motherboard and your solution is ready. No fuss, no muss.

Some key features include:

- Universal screw holes on both the motherboard and daughterboard
- Flexible to demands of vertical markets
- Easy thermal and system assembly



Customization Made Easy



AAEON's Embedded OS Solution

AAEON provides Embedded OS Solutions to customers who are in need of OS customization. AAEON's Embedded OS Solutions are designed to shorten times to market and save our customers' time and R&D resources.

Windows® Embedded Products

Windows 10 IoT

Windows® 10 IoT Enterprise 2016/2019

Windows Embedded 8

- Windows Embedded 8.1 Industry
- Windows Embedded 8 Standard
- Windows Embedded 8.1 Pro
- Windows Embedded 8.1 Handheld

Windows Embedded 7

- Windows Embedded Enterprise 7
- Windows Embedded POSReady 7
- Windows Embedded Standard 7

Windows Embedded Compact 7

- Windows Embedded Compact 7

Windows Server 2012 R2

- Windows Server 2012 R2 for Embedded Systems

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AAEON's Embedded OS Solution

Embedded OS Main Features

OS Family	Windows® Embedded CE	Windows® Embedded Standard	Windows® Embedded POS Ready	Windows® Embedded Enterprise
Features	Simple Customization	Full Customization	Simple Installation	Full Function
Windows® Product Sku	Windows® CE 6.0 Windows® Embedded Compact 7	Windows® Embedded Standard 2009 Windows® Embedded Standard 7 Windows® Embedded Standard 8	WEPOS 1.1 POSReady 7 POSReady 2009 Windows® Embedded Industry 8.1 Pro Retail	Windows® 7 Professional Windows® 8.1 Professional Windows® 10 IoT Enterprise 2016/2019
CPU Type	ARM/ MIPS/ SH4/ X86	x86	x86	x86
Development Tool	Customization Image	Customization Image	CD Installation	CD Installation
Development Time	Long	Short	None	None
Maintenance Cost	High	Middle	Low	Low
Embedded Features	Custom Shell	Custom Shell/ EWF/ FBWF/ USB Boot/ HORM	Custom Shell/ FBWF/ USB Boot	Standard Shell/ UWF

AAEON Embedded OS Solution

Chipset	Windows® Embedded Standard 2009	Windows® Embedded Standard 7	Windows® Embedded 8 Standard	Windows® CE 6.0	Windows® Embedded Compact 7	Windows® 10 IoT Enterprise
Intel® 7th KabyLake (Q170/H110/C236)	—	—	—	—	—	✓
Intel® 6th SkyLake (Q170/H110/C236)	—	✓	✓	—	—	✓
Intel® 5th Broadwell (5010U/5350U/5650U/D1548/D1518)	—	✓	✓	—	—	✓
Intel® 4th Hasewell (QM87/Q87/H81)	—	✓	✓	—	—	—
Intel® 3rd IvyBridge (QM77/Q77/HM76/B75)	✓	✓	✓	—	—	—
Intel® 2nd SandyBridge (QM67/Q67/H61/QM57/Q57)	✓	✓	✓	—	—	—
Intel® ApolloLake (N4200/N3350/E3930/E3940/E3950)	—	✓	✓	—	—	✓
Intel® Braswell (N3060/N3160/X5-E8000/N3710)	—	✓	✓	—	—	✓
Intel® Baytrail (J1900/N2000/E3800)	—	✓	✓	—	✓	—
Intel® TunnelCreek (E620/E640/E660/E680)	✓	✓	—	—	✓	—
Intel® Pinewview (N450/D410/D510/D525/N455/D425)	✓	✓	—	✓	—	—
Intel® Cedarview (D2550/N2800/N2600)	✓	✓	—	✓	—	—
AMD Geode (LX700/LX800/LX900)	—	✓	—	✓	—	—
AMD T56N/T40R/T40E/T16R	✓	✓	✓	✓	✓	—

Note 1: Former Windows® Embedded XP
Note 2: Former Windows® Embedded

Hi-Safe is a free and powerful program providing SDKs for UIs running Microsoft® Windows® operating systems. It allows end users to easily develop their own UI software to monitor vital systems such as the processor, RAM and VGA. It monitors received data about the Super I/O, fan, temperature and voltage, offers configuration options for Digital I/O pin direction and data patterns, provides watchdog timer and fan speed settings, SMBus base address detection and device ID settings. Hi-Safe also offers two modes for backlight display control if one uses the LVDS interface. Based on the user interface SDK, no coding is needed, and customers can create their own customized user interface by using the function codes provided by AAEON.



Hi-Safe Advantages

- **Faster time to market**
- **Easy to use**



System Information:

Displays CPU, VGA and RAM information



Smart Fan:

Retrieves fan and temperature data; sets the fan speed into the smart fan mode



Hardware Monitor:

Retrieves super I/O, fan, temperature and voltage data



SM Bus:

Read and write SMbus device and detects SMbus base address automatically



DIO:

Obtain DIO information: set the pin direction and pin data



Backlight Controller:

Controls the backlight display; two modes



Watchdog:

Set the system reboot timer

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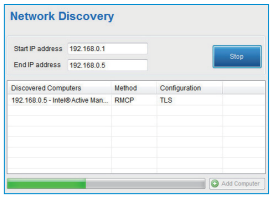
AAEON Hi-Manager

Hi-Manager is a tool based on the Intel® Active Management Technology 11.0 (iAMT 11.0) and has backward compatibility with earlier versions of iAMT. This allows users to locate all iAMT devices within the intranet, power On/Off target devices remotely, set power On/Off scheduling, arrange device groupings for better management, offer event logs and timer settings to wake up devices at specified times, recover systems that have crashed from virtual CD-ROM, remote KVM management and access to target device hardware information for asset management. Hi-Manager can be installed on all AAEON platforms and can remotely manage AAEON client devices that use Intel® Q77, Q87, QM77, QM87 chipsets and run Microsoft® Windows® XP, Windows® 7 Operating Systems.

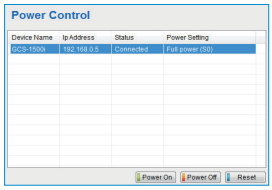


Hi-Manager Advantages

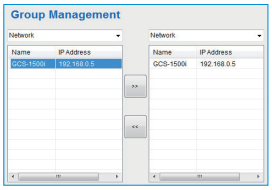
- **Easy-to-use and build custom applications**
- **Supports AAEON products with iAMT**
- **In-depth technical support**



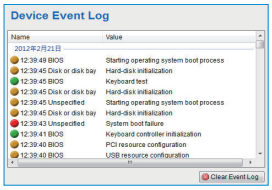
Network Discovery:
AMT device discovery



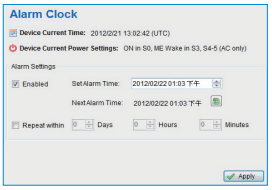
Power Control:
Powers On/Off the target device



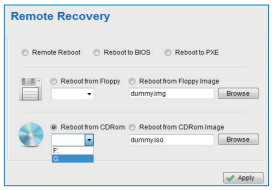
Group Management:
Arrange devices in this function



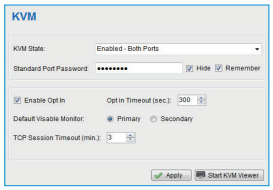
Event Log:
Logs boot records of the selected device



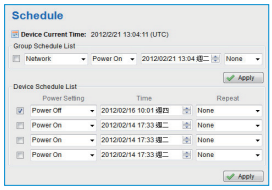
Alarm Clock:
Sets timer to wake up a sleeping device



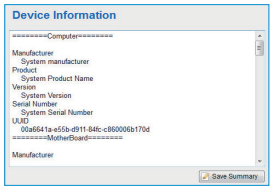
Remote Recovery:
Mounts boot image or physical CD-Rom to target device



KVM:
Controls remotely from the target device



Schedule:
Schedules the power On/ Off target devices



Device Information:
Shows target device assets

Intel® Active Management Technology Features

Intel® Chipset	QM67/ Q77/ QM77/ HM76/ B75A/ Q87/ QM87/QM170/Q370
Intel® AMT Version	7.0/8.0/9.0/10.0/11.0
HW Inventory	✓
SW Inventory	✓
Power State Management	✓
System Defense	✓
Remote Configuration	✓
Remote Boot Option	✓
KVM Redirection	✓
KVM Remote Control	✓
ME Wake on LAN	✓
Proactive Security Block, HW-Based and Remote Management Recovery	✓
Host-Based Provisioning	✓
Enhanced System Defense Filters	✓

Note: All specifications are subject to change without notice.



Compact Boards

8" x 5.25" compact-sized computer boards apply advanced embedded technology, providing stable and solid computing engines for Factory Automation, KIOSK and POS (Point of Sale) markets.



EPIC Boards

The EPIC form factor embedded single board computer is designed to fulfill increasing high performance demands and flexible expansions. The size of the EPIC board (4.53" x 6.50") makes it an ideal size to fit into space-constrained applications requiring stackable I/O expansions. EPIC also offers features such as low power consumption and PC/104+ slots to satisfy varying customer requirements.



SubCompact Boards

AAEON's expertise in space constrained design helped to create these small yet powerful computer boards. At just 5.75" x 3.5", AAEON's SubCompact boards are uniquely suited for mobile and low-power devices.



PC/104 Modules

These ultra-compact stackable computer modules come with PC/104, PC/104+ or PCI-104 connectors for flexible function expansion. AAEON offers different performance levels of PC/104 CPU modules and a variety of PC/104 peripherals to meet your application requirements. Furthermore, the cutting-edge PCI/104-Express interface CPU module will provide for the next era of applications.



Pico-ITX Boards

AAEON Pico-ITX boards are ideal for fanless, low power consumption and space limited equipment in the Embedded Market. It is equipped with the most standard I/O connectors along the rear I/O edge and rich features, such as HDMI, USB, COM, SATA, and Mini Card, to reduce the cost of system integration.



COM Express CPU Modules

The PICMG standard for Computer-On-Modules (COMs) is based on serial differential signaling technology and legacy PC peripheral interfaces. Besides PCI, LPC and IDE, COM Express incorporates interfaces including PCI Express, Serial ATA, USB 2.0/3.0, LVDS and Serial DVO. COM Express delivers performance, flexibility, quick time to market, safeguards R&D investment and lowers the total cost of ownership.

Note: All specifications are subject to change without notice.



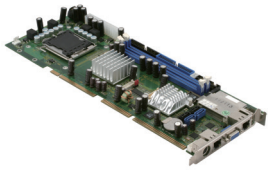
ETX/XTX/Qseven/SMARC CPU Modules

AAEON's ETX/XTX/Qseven/SMARC modules fulfill the need for upgradability with offerings from entry-level performance to the latest high-end processors and technologies.



Industrial Motherboards

AAEON's Industrial Motherboard line focuses on the most popular form factors: Nano ITX, Mini-ITX, MicroATX and ATX. These form factors are ideal in the KIOSK, POS, Panel PC, Vending Machine, Banking Machine, Medical and Gaming industries. PCI, PCI-E, Mini-Card, M.2 and Mini-PCI bus interfaces are provided. In addition, more standard I/O connectors are arranged at the rear/front I/O to save cost and ease in-system design.



Full-Size SBCs

Our PICMG computer boards feature strong and reliable performance. Accompanied by our AAEON backplane and chassis, these complete systems are ideal for CTI (Communication Telecom Industry) and Mail Server solutions.



Half-Size SBCs

Half-Size CPU cards offer ISA, PCISA and PCI interface. AAEON delivers a wide range of product selections for embedded applications.



Peripheral Modules

The Mini-PCI, Mini Card form factor Peripheral Modules provide easy and cost-effective function expansion for things such as serial ports, LAN ports, USB ports, IEEE-1394a ports, SATA ports, Capture functions, TTL/DVI Conversion module, and CAN bus.



Smart Display Modules

Intel® Smart Display Modules, or SDMs, are changing the face of the digital display industry. Their slim form factor gives developers greater flexibility when panel design and enables a new generation of ultraslim devices. With SDMs sharing a standard design specification, system upgrades and modifications can be achieved by simply plugging in a new module, and their ease of use also helps to reduce maintenance costs.

Index

1 Compact Boards

PCM-QM77	Compact Board with 3rd Generation Intel® Core™ i7/i5/i3/Celeron® Mobile Processor	01-1

2 EPIC Boards

EPIC-KBS9	EPIC Board with 6th/7th Generation Intel® Core™ i-S series Processor (Socket Type)	02-1
EPIC-KBS8	EPIC Board with 6th/7th Generation Intel® Core™ i-S series Processor (Socket Type)	02-3
EPIC-KBS7	EPIC Board with 6th/7th Generation Intel® Core™ i-S series Processor (Socket Type)	02-5
EPIC-BDU7	EPIC Board with 5th Generation Intel® Core™ i Series ULT Processor SoC	02-7
EPIC-QM77	EPIC Board with Onboard Intel® Core™ i7-3555LE/ Celeron® 847E Processor	02-9
EPIC-QM57	EPIC Express Board with Intel® Core™ i7/ i5/ Celeron® (32nm) Processor	02-11
EPIC-BT07	EPIC Board with Intel® Atom™/ Celeron® Processor SoC	02-13
EPIC-CV07	EPIC Board with Onboard Intel® Atom™ D2550/N2600 Processor	02-15
EPIC-KBS9-PUC	EPIC-KBS9 with 6th/7th Generation Intel® Core™ i7/i5/i3/Celeron® S-Series Processor	02-17

3 SubCompact Boards

GENE-KBU6	3.5" SubCompact Board with 7th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC	03-1
GENE-SKU6	3.5" SubCompact Board with Intel® Core™ i7/i5/i3/Celeron® Processor SoC	03-3
GENE-QM77 Rev.A	3.5" SubCompact Board with 3rd Generation Intel® Core™ i7/i5/i3 Mobile Processor	03-5
GENE-QM77 Rev.B	3.5" SubCompact Board with Onboard Intel® Core™ i7-3555LE/ Celeron® 847E Processor	03-7
GENE-GLK7	3.5'' Subcompact Board with Onboard Intel® J5005/N4000 Processor SoC	03-9
GENE-APL5	3.5" SubCompact Board with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC	03-11
GENE-APL6	3.5" SubCompact Board with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC	03-13
GENE-APL7	3.5" SubCompact Board with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC	03-15
GENE-BSW5	3.5" SubCompact Board with Intel® Pentium & Celeron® N3000 Series Processor SoC	03-17
GENE-BT04	3.5" SubCompact Board with Intel® Celeron® J1900/N2807 Processor SoC	03-19
GENE-BT05	3.5" SubCompact Board with Intel® Atom™ and Celeron® Processor SoC	03-21
GENE-BT06	3.5" SubCompact Board with Intel® Atom™ E3845/ E3825 and Celeron® Processor SoC	03-23
GENE-BT07	3.5" SubCompact Board with Intel® Celeron® J1900 Processor SoC	03-25
GENE-CV05	3.5" SubCompact Board with Intel® Atom™ D2550/N2800/N2600 Processor	03-27
GENE-A55E	3.5" SubCompact Board with AMD G-series T16R Processor	03-29
GENE-5315 Rev.A	3.5" SubCompact Board with AMD Geode™ LX Series Processor	03-31
GENE-5315 Rev.B	3.5" SubCompact Board with AMD Geode™ LX Series Processor	03-33

4 PC/104 Modules

PFM-CVS Rev.A	PC/104+ Module with Intel® Atom™ N2600 Processor	04-1
PFM-CVS Rev.B	PC/104+ Module with Intel® Atom™ N2600 Processor with Intel® LAN Chip	04-3
PFM-541I	PC/104 Module with Onboard AMD Geode™ LX800 Processor	04-5
PFM-540I Rev.A	PC/104 Module with AMD Geode™ LX Processor	04-7
PFM-540I Rev.B	PC/104 Module with AMD Geode™ LX Processor with Intel® LAN Chip	04-9

5 Smart Display Modules

ASDM-L-CFS	Intel® Smart Display Module-Large Size with 8th Generation Intel® Core™ I-S series Processor (Socket Type)	05-1
ASDM-S-KBU	Intel® Smart Display Module-Small Size with 6/7th Generation Intel® Core™ I-U series Processor SoC	05-3
ASDM-S-CRB	Carrier Board for Intel® Smart Display Module Rev.2.0	05-5
ASDM-chassis	Carrier Board for Intel® Smart Display Module Rev.2.0	05-7
ASDM-S-APL	Intel® Smart Display Module-Small Size with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC	05-9

6 Pico-ITX Boards

PICO-KBU4	Pico-ITX Board with 7th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC	06-1
PICO-APL1	Pico-ITX Board with Intel® Atom™ E3900/ Pentium® N4200/ Celeron® N3350 Processor SoC	06-3
PICO-APL3	Pico-ITX Board with Intel® Pentium® N4200/ Celeron® N3350/ Atom™ Processor SoC	06-5
PICO-APL4	Pico-ITX Board with Intel® Atom™/ Pentium® N4200/ Celeron® N3350 Processor SoC	06-7
PICO-BSW1	Pico-ITX Board with Intel® Atom™ x5-E8000/ Pentium®/ Celeron® N3000 Series Processor SoC	06-9
PICO-BT01	Pico-ITX Board with Intel® Atom™/ Celeron® Processor SoC	06-11
PICO-CV01	Pico-ITX Fanless Board with HDMI and Intel® Atom™ N2600 Processor	06-13
PICO-HD01	Pico-ITX Fanless Board with HDMI and AMD G-Series T40E/T40R Processor	06-15
PICO-APL1-SEMI	Pico-ITX Embedded Barebone Kit with Intel® Atom™ Processor SoC	06-17
PICO-APL3-SEMI	Pico-ITX Embedded Barebone Kit with Intel® Atom™ Processor SoC	06-19
PICO-APL4-SEMI	Pico-ITX TurnKit with Intel® Atom™/ Pentium® N4200/ Celeron® N3350 Processor SoC	06-21
PICO-KBU4-SEMI	Pico-ITX TurnKit with 7th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC	06-23

About AAEON	00-1
Milestones	00-3
Operation Strength	00-4
OEM/ODM Capability	00-4
Core Competence	00-5
Quality Assurance	00-6
Design Manufacturing Service	00-7
Q Service Plus	00-8
Wide Temperature Assurance Service (WiTAS)	00-9
BIO Board Design Service	00-10
AAEON's Embedded OS Solution	00-11
AAEON Hi-Safe	00-13
AAEON Hi-Manager	00-14
Board Product Lines	00-15
Index	00-17

Index

7 Pico-ITX Boards-BIO

BIO-ST01-L1U2	2.5" BIO Daughter Board with Gigabit LAN and USB	07-1
BIO-ST01-M1U1	2.5" BIO Daughter Board with Mini-Card, SIM and USB	07-2
BIO-ST02-C4M1	2.5" BIO Daughter Board with COM x 4, Mini-Card, SIM and USB	07-3
BIO-ST03-P2U1	3.5" BIO Daughter Board with PoE, USB 3.0	07-4
BIO-ST02-C14-D32	2.5" BIO Daughter Board with 14 COM, 32bit DIO, LAN and USB 3.0	07-5

8 COM Express CPU Modules

COM-CFHB6	COM Express Type 6 with 8th Gen Intel® Core™ CPU	08-1
COM-SKHB6/KBHB6	COM Express Type 6 Basic Size with 6th/7th Gen Intel® Core™ i-series Processor	08-3
COM-SKUC6/KBUC6	COM Express Type 6 Compact Size with 6th/7th Gen Core U-series Processor	08-5
COM-APLC6	COM Express Type 6 with Intel® Atom™ E39xx Series Processor SoC	08-7
COM-BT	COM Express Type 6 CPU Module with Onboard Intel® Atom™/ Celeron® Processor SoC	08-9
COM-BYTC2	COM Express Type 2 Compact Size with Intel® Atom™/ Celeron® Processor	08-11
NanoCOM-SKU	COM Express Type 10 with Intel® 6th Gen Core™ ULT Series Processor	08-13
NanoCOM-KBU	COM Express Type 10 with 7th Generation Intel® Core™ ULT Series Processor	08-15
NANOCOM-KBU-A20	COM Express Type 10 with 7th Generation Intel® Core™ ULT Series Processor	08-17
NanoCOM-APL	COM Express Type 10 Module with Intel® Atom™ Processor SoC	08-19
NanoCOM-BT/BT4	COM Express Type 10 CPU Module with Onboard Intel® Atom™ Processor SoC	08-21

9 COM Carrier Boards

ECB-916M Rev.B11	COM Express Carrier Board for PICMG COM.0 R2.0 Type 2	09-1
ECB-920A	Universal Type 1/6/10 Carrier Board	09-3

10 ETX CPU Modules

ETX-A55E	ETX CPU Module with Onboard AMD® G-series APU	10-1
ETX-701	ETX CPU Module with AMD Geode™ LX Series Processor	10-3

11 ETX Carrier Board

ECB-902M	ETX Carrier Board	11-1

12 RISC Board

RICO-3288	Pico-ITX Fanless Board with HDMI and Rockchip ARM Cortex™-A17 Quad-core Processor	12-1
RICO-3399	Pico-ITX Fanless Board with Rockchip ARM Dual-Core Cortex-A72 and Quad-Core Cortex-A53	12-3

13 Industrial Motherboards

NITX-SKL1	6th Generation Intel® Core™ 15W Processor Nano-ITX Board with HDMI x 2, LAN Port x 2, COM Port x 1 and USB Port x 4	13-1
EMB-APL1	Mini-ITX Embedded Motherboard with Intel® N3350(DC)/N4200(QC)/E3930(DC) Processor	13-3
EMB-APL3	Mini-ITX Embedded Motherboard with Intel® N3350(DC)/N4200(QC)/E3930(DC) Processor	13-5
EMB-BSW1	Thin Mini-ITX Embedded Motherboard with Intel® N3710/N3060 Processor, SATA 6.0 Gb/s x 3, USB x 6 (up to 10)	13-7
EMB-BSW2	Mini-ITX Embedded Motherboard with Intel® N3060 (DC) Processor	13-9
EMB-BT1	Mini-ITX Embedded Motherboard with Intel® Celeron® J1900/N2807/ Atom™ E3845/E3825 Processor, SATA3 x 2, SATA2 x 2, USB x 8	13-11
EMB-BT2	Mini-ITX Embedded Motherboard with Intel® Celeron® J1900 Processor, SATA2 x 2, USB 2.0 x 10, Dual LVDS	13-13
EMB-BT4	Thin Mini-ITX Embedded Motherboard with Intel®Celeron® J1900/N2807 Processor, SATA 6.0 Gb/s x 2, SATA 3.0 Gb/s x 2, USB x 8	13-15
MIX-KLUW1	Mini-ITX, 14nm, FCBGA1356 7thGen Intel® Core™ processor family, 15~25W TDP	13-17
MIX-H310A1	Mini-ITX with 8th Gen Intel® Core Processor Family, Max. 65W TDPs, Giga-LAN x 4	13-19
MIX-H310D1	Mini-ITX with Intel® 8th Generation Core™ LGA1151 Socket Processor, Max. 65W TDPs, 12V DC Power input	13-21
MIX-Q370A1	Mini-ITX with 8th Gen Intel® Core Processor Family, Max. 65W TDPs, Giga-LAN x 4	13-23
MIX-Q370D1	Mini-ITX with 8th Gen Intel® Core Processor Family, DDR4 DRAM, USB x 10, Max. 65W TDPs	13-25
EMB-Q170A	6th/7th Generation Intel® Core™ i Series, LGA1151 Socket Processor, Max. 65W TDPs, M.2 x 1, SATA 6.0 Gb/s x 2, USB x 10	13-27
EMB-Q170B	6th/7th Generation Intel® Core™ i Series, LGA1151 Socket Processor, Max. 65W TDPs, M.2 x 2, SATA 6.0 Gb/s x 2, USB x 10	13-29
EMB-Q170C	6th/7th Generation Intel® Core™ i Series, LGA1151 Socket Processor, Max. 65W TDPs, M.2 x 1, SATA 6.0 Gb/s x 6	13-31
EMB-H110B	6th/7th Generation Intel® Core™ i Series, LGA1151 Socket Processor, Max. 65W TDPs, SATA 6.0 Gb/s x 2, USB x 8	13-33
EMB-Q87A	Thin Mini-ITX Embedded Motherboard with 4th Generation Intel® Core™ i Series Processor, 12~24V DC Wide Range Power Input	13-35

INDEX

Index

EMB-H81A	Mini-ITX with LGA1150 Socket for 4th Generation Intel® Core™ i Series Processor, SATA 6.0 Gb/s x 2, SATA 3.0Gb/s x 2, USB x 9	13-37
EMB-H81B	Thin Mini-ITX Embedded Motherboard with 4th Generation Intel® Core™ i Series Processor, 12V~24V Wide Range Power Input	13-39
EMB-QM87A	Embedded Motherboard with Onboard 4th Generation Intel® BGA 1364 Processor & iAMT Support	13-41
EMB-QM77	Embedded Motherboard with 3rd Generation Intel® Core™ i7/i5/Celeron® Quad Core/Dual Core™ Processor	13-43
EMB-QM67	Embedded Motherboard with Socket G2 (rPGA988B) 2nd Generation Intel® Core™ i7/i5/Celeron® QC/ DC Processor	13-45
IMBA-Q170A	ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 DRAM, USB x 14, Supports iAMT 11.0	13-47
IMBA-H110A	ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 Max. 32GB, M.2 x 1, USB x 10	13-49
IMBA-Q87A	ATX Industrial Motherboard with 4th Generation Intel® LGA1150 Processor, SATA3 x 6, PCI x 5, Multiple Display Ports, Supports iAMT 9.0	13-51
IMBA-Q77	ATX Industrial Motherboard with 3rd Generation Intel® Core™ i7/i5/i3 Processor	13-53
IMBA-967	ATX Industrial Motherboard with Intel® Core™ i7/i5/i3 Processor	13-55
IMBM-Q170A	Micro-ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 DRAM, USB x 14, Supports iAMT 11.0	13-57
IMBM-H110A	Micro-ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 DRAM, M.2 x 1, USB x 10	13-59
IMBM-Q87A	Micro-ATX Industrial Motherboard with 4th Generation Intel® LGA1150 Processor, SATA3 x 5, Multiple Display Ports, Supports iAMT 9.0	13-61
IMBM-H81B	Micro-ATX with 4th Generation Intel® Core™ Processor, DDR3 DRAM, USB x 14	13-63
MAX-Q370A	Micro-ATX Industrial Motherboard with 8th Generation Intel® Core™ Processor, DDR4 DRAM, Multiple Display Ports, Supports iAMT 12.0	13-65
MAX-H310A	Micro-ATX Industrial Motherboard with 8th Generation Intel® Core™ Processor, DDR4 DRAM, Supports iAMT 12.0	13-67
MIX-KLUD1	Mini-ITX, 14nm, FCBGA1356 7thGen Intel® Core™ processor family, 15~25W TDP	13-69
MAX-C246A	Micro-ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Multiple Display Ports, Supports iAMT 12.0	13-71
ATX-Q370A	ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Supports iAMT 12.0, and Intel® CNVi WLAN Card, Option: LAN x 3, Type-C Alternate (Display + Data USB31 Gen2) Function	13-73
ATX-C246A	ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Supports iAMT 12.0, and Intel® CNVi WLAN Card, Option: LAN x 3, Type-C Alternate (Display + Data USB31 Gen2) Function	13-75

14 Networking Motherboards

FWB-2250	4 LAN Ports Networking Motherboard with Intel® Atom™ E3815 Processor SoC	14-1
FWB-7250	4 LAN Ports Networking Motherboard with Intel® Celeron® J1900 Porcessor SoC	14-3

15 Full-size SBC-PICMG1.0 SBC

FSB-B75G	Full-Size SBC with 3rd Generation Intel® Core™ i7/i5/i3 LGA 1155 Processor	15-1

PICMG 1.0 Backplanes

BP-214SG-P12	Rackmount, PICMG 1.0, 14-Slot Backplane, 12 PCI, 2 ISA, Single Segment	15-3
BP-214SG-P7	Rackmount, PICMG 1.0, 14-Slot Backplane, 7 PCI, 6 ISA, Single Segment	15-3
BP-214SG-P4	Rackmount, PICMG 1.0, 14-Slot Backplane, 4 PCI, 9 ISA, Single Segment	15-3
BP-208SG-P7	Wallmount, PICMG 1.0, 8-Slot Backplane, 7 PCI, Single Segment	15-4
BP-208SG-P4	Wallmount, PICMG 1.0, 8-Slot Backplane, 4 PCI, 3 ISA, Single Segment	15-4
BP-206SG-P4	Wallmount, PICMG 1.0, 6-Slot Backplane, 4 PCI, 2 ISA, Single Segment	15-4
BP-206SG-P2	Wallmount, PICMG 1.0, 6-Slot Backplane, 2 PCI, 3 ISA, Single Segment	15-5

16 Half-size SBC - ISA

HSB-800I	ISA Half-Size SBC with AMD Geode™ LX800 Processor	16-1

PICMG 1.0 Backplanes

BP-204SI	Wallmount, ISA, 4-Slot Backplane, 4 ISA, Single Segment	16-3
BP-206SI	Wallmount, ISA, 6-Slot Backplane, Single Segment	16-3
BP-214SI-V61	Rackmount, ISA, 14-Slot Backplane, 14 ISA, Single Segment	16-4

17 IoT Gateway/Node Boards

SRT-3352	Standard Gateway Board With Onboard ARM Cortex-A8 800 MHz RISC Processor	17-1
AIOT-ILND01	LoRa Long Range Radio Node	17-3
AIOT-MSSP01	Mini SSP Vending Control Board	17-5
SCA-M429	Carrier Board With Onboard ARM Cortex M4 MCU + FPU	17-7
SRT-3352C	Compact Gateway Board With Onboard ARM Cortex-A8 800 MHz RISC Processor	17-9

About AAEON	00-1
Milestones	00-3
Operation Strength	00-4
OEM/ODM Capability	00-4
Core Competence	00-5
Quality Assurance	00-6
Design Manufacturing Service	00-7
Q Service Plus	00-8
Wide Temperature Assurance Service (WiTAS)	00-9
BIO Board Design Service	00-10
AAEON's Embedded OS Solution	00-11
AAEON Hi-Safe	00-13
AAEON Hi-Manager	00-14
Board Product Lines	00-15
Index	00-17

Index

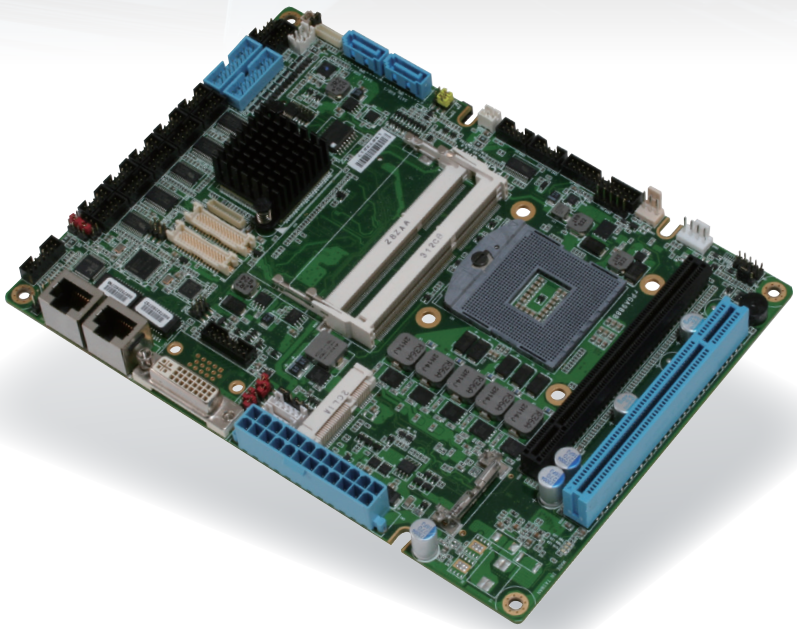
18 AI Edge Computing Solutions

AI Core XM 2280	AI Edge Computing Board with Intel® Movidius™ Myriad™ X VPU, MYDX x 2	18-1
AI Core X	AI Edge Computing Board with Intel® Movidius™ Myriad™ X VPU, MYDX x 1	18-2
AI Core XM 2230	AI Edge Computing Board with Intel® Movidius™ Myriad™ X VPU, MYDX x 1	18-3
AI Core XM 2242	AI Edge Computing Board with Intel® Movidius™ Myriad™ X C0 VPU, MYDX x 1	18-4
AI Core XP4/XP8	AI Edge Computing Board with Intel® Movidius™ Myriad™ X VPU, MYDX x 4/8	18-5

INDEX

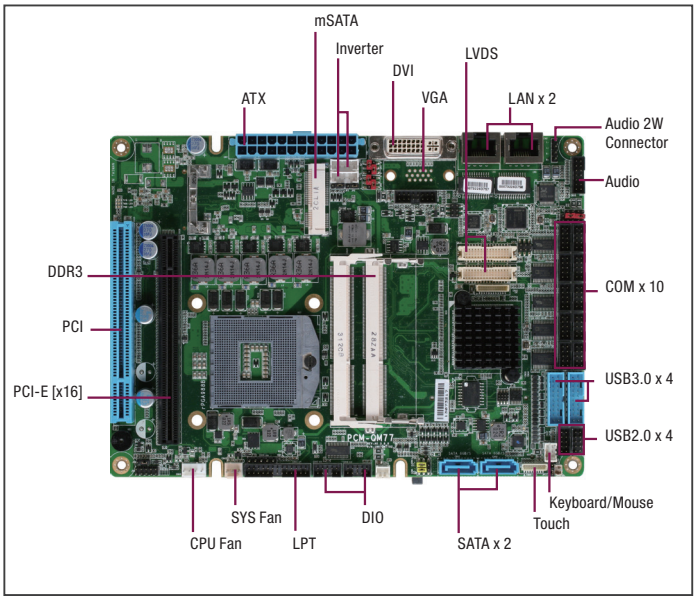
Compact Boards

01



PCM-QM77

Compact Board with 3rd Generation Intel® Core™ i7/i5/i3/Celeron® Mobile Processor



Features

- Intel® 3rd Generation Core™ i7/i5/i3/Celeron® PGA Processor
- Intel® 3rd Generation Core™ i Series + QM77/HM76
- 204-pin SODIMM DDR3/L 1333/1600 MHz x 2, Up to 16 GB
- Intel® 82579LM x 1/ Intel® 82583V x 1, 10/100/1000Base-TX Ethernet, RJ-45 x 2
- Up to 24-bit Dual-Channel LVDS x 2, CRT, DVI
- 2CH HD Audio
- SATA 6.0 Gb/s x 2, mSATA x 1, CFast™ x 1
- USB 3.0 x 4, USB2.0 x 4, COM x 10, 16-bit Digital I/O
- Mini-Card x 1, Touch (Optional), TPM, PCI, PCI-E [x16], SIM Card, LPT
- AT/ATX Power Input (Default ATX)
- Supports iAMT8.0 and RAID 0,1 for QM77 Chipset
- Supports AAEON Hi-Safe/Hi-Manager SDK & Utility

Specifications

System	
Form Factor	5.25" Compact Board
CPU	Intel® Core™ i7/i5/i3/Celeron® IVY bridge and Sandy Bridge (Socket-G2 based)
CPU Frequency	Up to 2.5 GHz
Chipset	Intel® QM77/HM76
Memory Type	DDR3 1066/1333/1600, SODIMM x 2 up to 16G
Max. Memory Capacity	8 GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	ATX
Power Supply Type	ATX
Power Consumption (Typical)	—
Dimension (L x W)	8" x 5.75" (203mm x 146mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	60,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Core™ i7/i5/i3 integrated
Video Output	CRT, LVDS LCD, DVI-I
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	Intel® 82579LM x 1, Intel® 82583V x 1, 10/100/1000Base-TX need Pin header for LAN
Audio	Realtek ALC892, 2.1CH
USB Port	USB3.0 x 4, USB 2.0 x 4
Serial Port	RS-232 x 8, RS-232/422/485 x 2
Parallel Port	SPP/EPP/ECP x 1 or FDD Function
HDD Interface	SATA 3.0 x 2, SATA 2.0 x 2
FDD Interface	—
SSD	CFast,mSATA
Expansion Slot	PCI-Express [x16], Mini-Card or mSATA, PCI, Mini PCI Digital I/O (8 in/8 out) iAMT 8.0 support 5V/12V Voltage output
PWM LCD Support	—
DIO	16-bit
TPM	Optional
Touch	Optional

Packing List

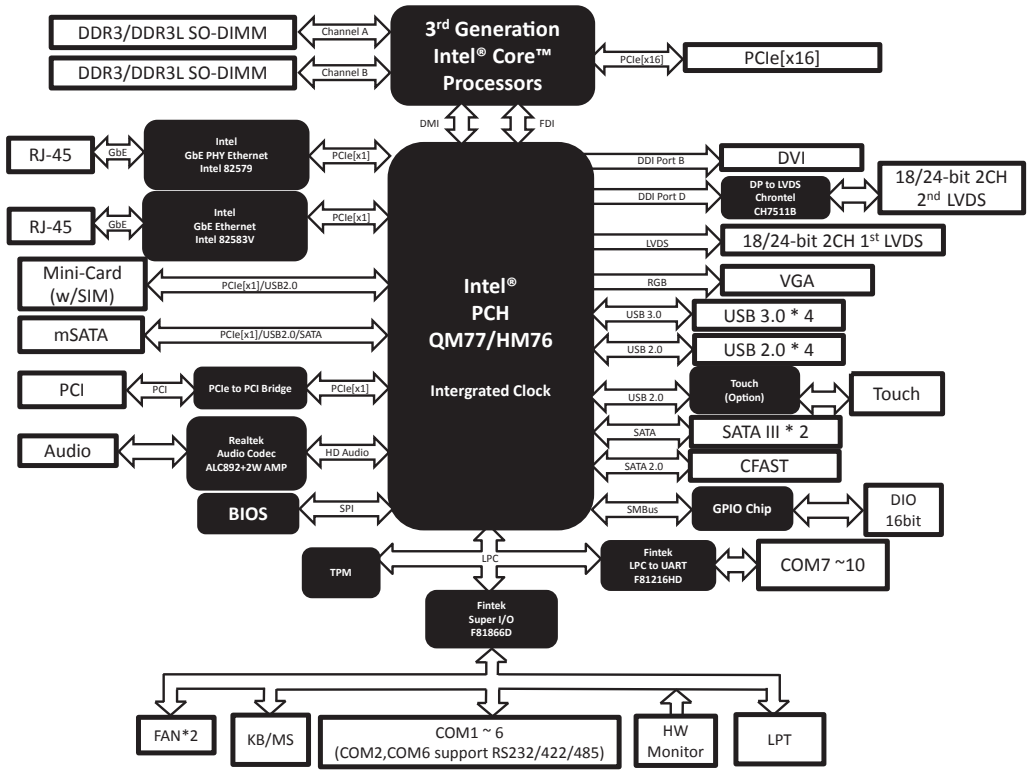
- Jumper Cap
- CPU Cooler FAN + Heatsink
- Product DVD
- PCM-QM77

Optional Accessories

- **1701100206**
  COM Port Cable 20cm
- **1700200401**
  USB3.0 Cable 40cm x 2
- **1709100201**
  USB2.0 Cable 20cm
- **1700060152**
  PS2 KB/MS Cable 15cm
- **1709070500**
  SATA Cable 50cm
- **1702150155**
  SATA HDD Power Cable 15cm
- **1700140510**
  Audio Cable 51cm
- **1700160201**
  VGA Cable 20cm
- **1701260200**
  Parallel Port Cable 20cm

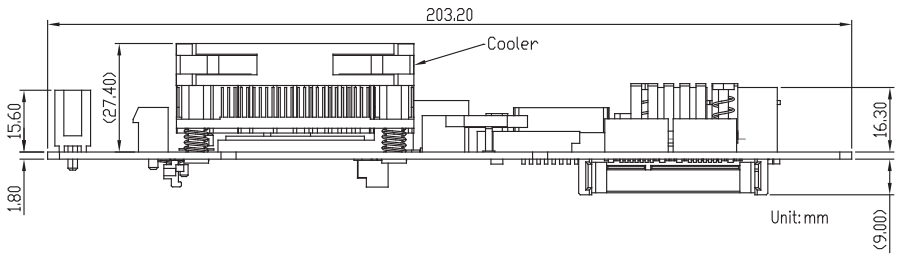
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

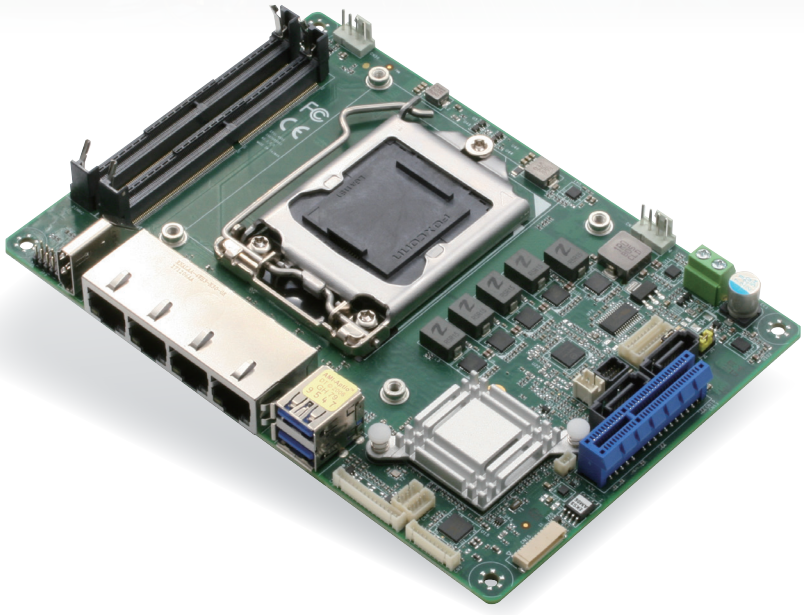


Ordering Information

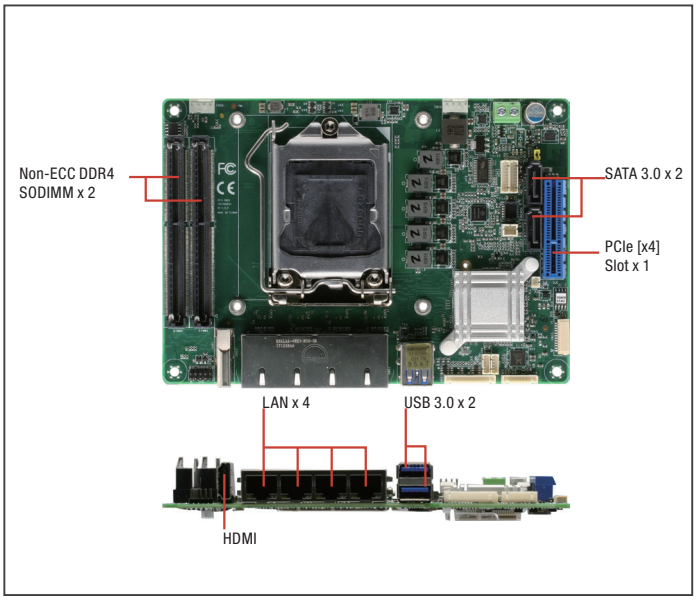
Part Number	CPU	Memory	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
PCM-QM77-A10	Socket 988B	DDR3 x 2 (Max. 16 GB)	Fan	CRT+DVI, CRT+LVDS, DVI+LVDS	24b, 2CH	SATA x 2, mSATA/ Mini-Card x 1	GbE x 2	USB3.0 x 4 UBS2.0 x 4	8	2	PCI-Express [x16], PCI x 1 Mini-Card x 1, SIM x 1	ATX	0°C ~ 60°C	TPM DIO 16-bit, LPT

EPIC Boards

02



EPIC Board with 6th/7th Generation Intel® Core™ i-S series Processor (Socket Type)



Features

- 6th/7th Generation Intel® Core™ i-S series Processor (Socket Type)
- DDR4 (Non-ECC) SODIMM x 2, 2133MHz, up to 32G
- VGA (Internal)/HDMI Display
- USB 3.0 x 2 (Rear IO), USB 2.0 x 2 (Internal)
- mSATA/Mini-PCIe Full Size x 1 (Default: mSATA, Optional for Mini-PCIe by BOM Change)
- Audio Codec with Amp, SATA 6.0 Gb/s x 2, GPIO x 8, RS-232/422/485 x 2 (Internal)
- 12V Only

Specifications

System	
Form Factor	4" EPIC Board
CPU	CPU Socket Type
CPU Frequency	6th/7th Generation Intel® Core™ i3/i5/i7/Celeron® (Support up to 65W SKU)
Chipset	H110/H170/Q170 (6W)
Memory Type	DDR4 (Non-ECC) SODIMM x 2, 2133MHz, up to 32GB
Max. Memory Capacity	Up to 32GB
BIOS	AMI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V, AT/ATX
Power Supply Type	AT/ ATX
Power Consumption (Typical)	—
Dimension (L x W)	4.53" x 6.50" (115 mm x 165 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	—
Certification	CE/FCC
Display	
VGA/LCD Controller	6th/7th Generation Intel® Core™ i3/i5/i7/Celeron®
Video Output	HDMI (Rear), VGA (Internal Only)
Backlight Inverter Supply	—
I/O	
Ethernet	Intel® i211 Gigabit Ethernet x 4
Audio	ALC269 (With Amp)
USB Port	USB3.0 x 2 (Real IO) USB2.0 x 2 (Internal)
Serial Port	COM x 2 (All Internal), RS-232/422/485
Parallel Port (printer port)	—
HDD Interface	SATA 3.0 x 2
SSD	mSATA x 1 (Full size)
Expansion Slot	Mini-card x 1 (Full Size) (No SIM) PCIe[x4] Slot x 1
DIO	8-bit
TPM	—
Touch	—
SIM	—



Packing List

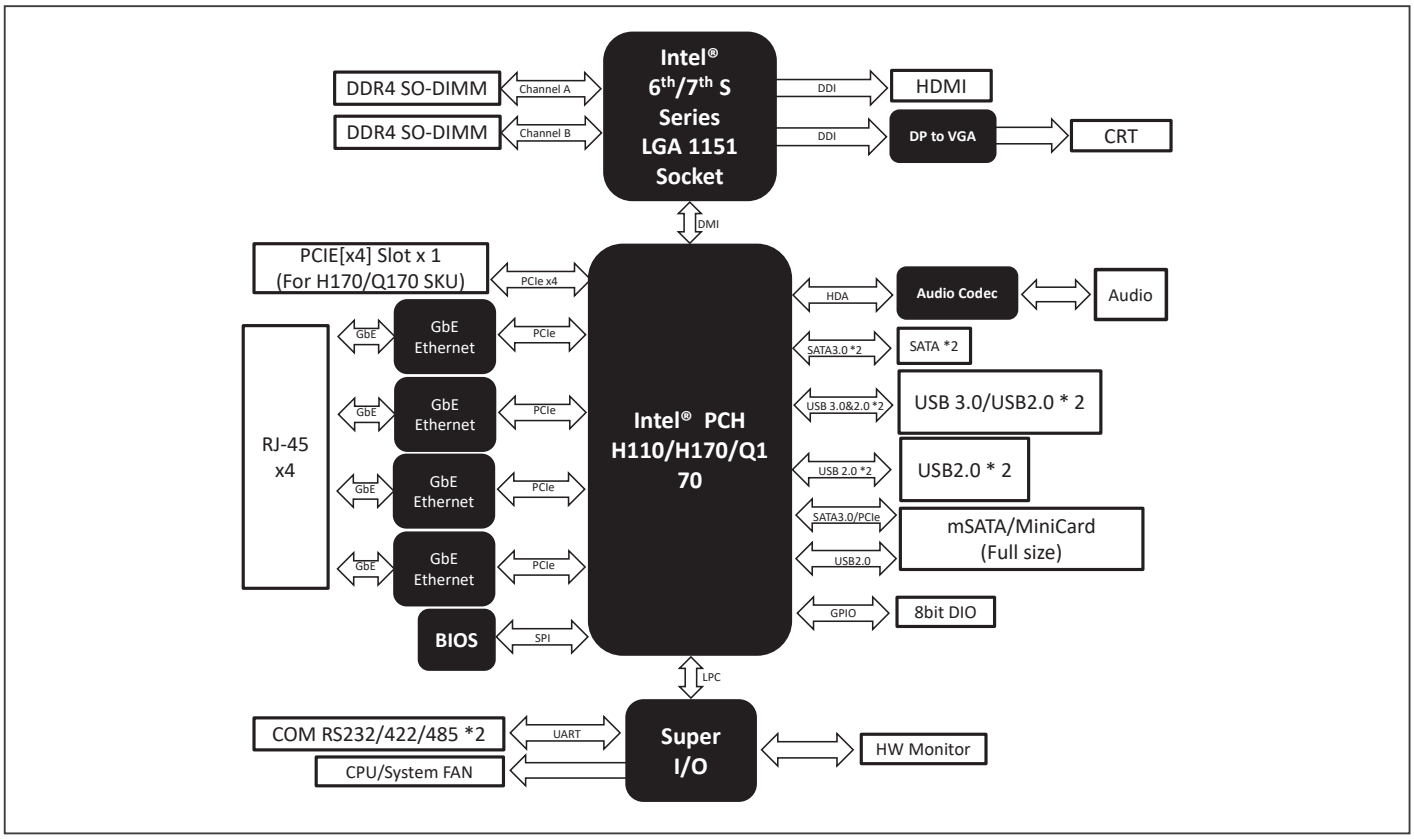
- SATA Cable, Length 50cm (1709070500)
- SATA Power Cable, Length 15cm (1702150155)
- Jumper Cap (9657666600)
- Product DVD
- EPIC-KBS9

Optional Accessories

Part Number	Description	QTY
1702002010	Power Cable (2pin), Length 10cm	1
1709100254	Audio Cable (3pin), Length 25cm	1
1700050207	USB Cable (5pin), Length 20cm	2
1701090150	COM Cable (9pin), Length 15cm	2
1704150153	Internal VGA Cable	1
EPIC-KBS9-FAN01	CPU Cooler, for LGA115X, 12V/4P PWM, AL, for EPIC-KBS9	1

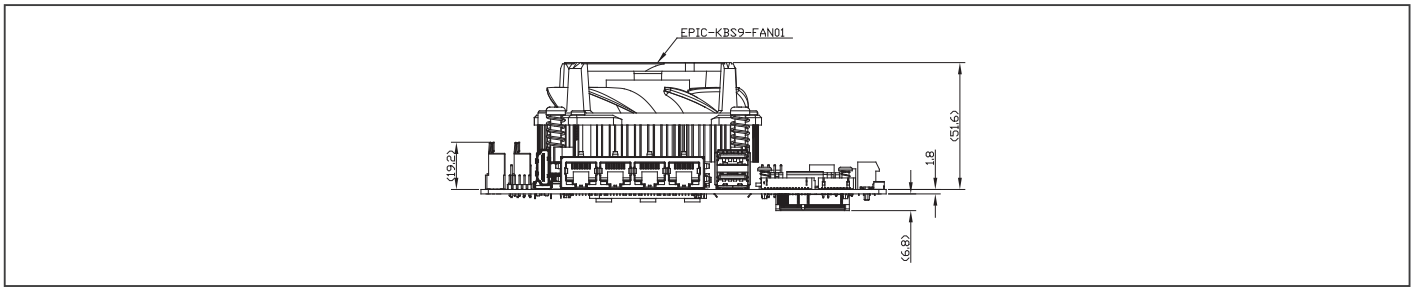
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

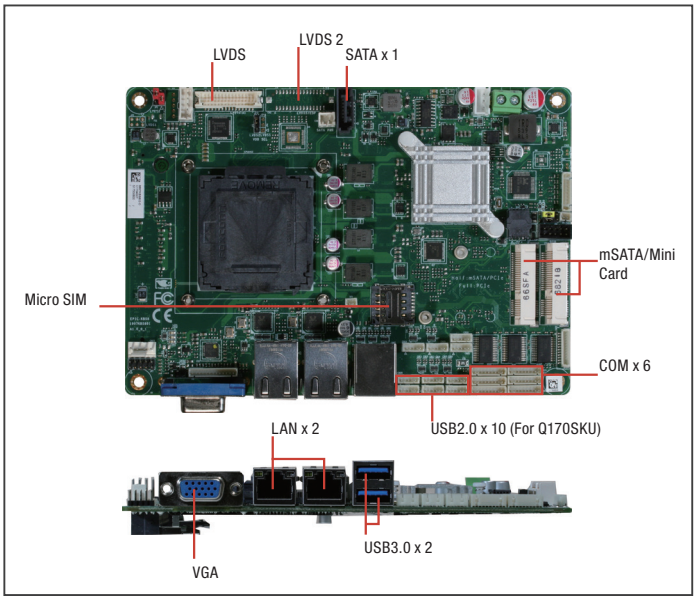
Unit: mm



Ordering Information

Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Operating Temp	Others
EPIC-KBS9-A10-0001 (H110)	LGA1151 (Socket Type)	DDR4 x2 (Max 32G)	FAN	HDMI (Rear) x 1 VGA (Internal) x1	SATAIII x 2	GbE x 4	USB3.0 x 2 (Rear) USB2.0 x 2 (Internal)	—	2	mSATA/MiniCard x 1 (Full) (by BOM change for mPCIe)	+12V	0°C ~ 60°C	Audio, DIO x 8
EPIC-KBS9-A10-0002 (H170)	LGA1151 (Socket Type)	DDR4 x2 (Max 32G)	FAN	HDMI (Rear) x 1 VGA (Internal) x1	SATAIII x 2	GbE x 4	USB3.0 x 2 (Rear) USB2.0 x 2 (Internal)	—	2	PCIe[x4] x1 mSATA/MiniCard x 1 (Full) (by BIOS change for mPCIe)	+12V	0°C ~ 60°C	Audio, DIO x 8
EPIC-KBS9-A10-0003 (Q170)	LGA1151 (Socket Type)	DDR4 x2 (Max 32G)	FAN	HDMI (Rear) x 1 VGA (Internal) x1	SATAIII x 2	GbE x 4	USB3.0 x 2 (Rear) USB2.0 x 2 (Internal)	—	2	PCIe[x4] x1 mSATA/MiniCard x 1 (Full) (by BIOS change for mPCIe)	+12V	0°C ~ 60°C	Audio, DIO x 8

EPIC Board with 6th/7th Generation Intel® Core™ i-S series Processor (Socket Type)



Features

- 6th/7th Generation Intel® Core™ i-S series Processor (Socket Type)
- 9-24V Wide DC Input or 12V Only (Optional), Non-ECC DDR4 SODIMM x 1 (Up to 16 GB)
- VGA/LVDS1/LVDS2 Display (LVDS1 Co-design with eDP, VGA with Internal and Rear Design)
- USB 3.0 x 2, USB 2.0 up to 10 Ports
- mSATA Half-size x 1, Mini-Card Full-size x 1 with UIM
- HDA, SATA 6.0 Gb/s x 1, GPIO x 8, COM x 6 (COM2-5 with 5V/12V/RI Design)
- Optional: SPK Amplifier, I2S Design

Specifications

System	
Form Factor	4" EPIC Board
CPU	CPU Socket Type
CPU Frequency	6th/7th Generation Intel® Core™ i3/i5/i7/Celeron® (Support up to 54W SKU)
Chipset	H110/Q170 (6W)
Memory Type	DDR4 (Non-ECC) SODIMM x 1, 2133MHz
Max. Memory Capacity	Up to 16GB
BIOS	AMI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	9-24V (Optional: 12V)
Power Supply Type	AT/ ATX
Power Consumption (Typical)	—
Dimension (L x W)	4.53" x 6.50" (115 mm x 165 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	—
Certification	CE/FCC
Display	
VGA/LCD Controller	6th/7th Generation Intel® Core™ i3/i5/i7/Celeron®
Video Output	VGA/LVDS1 (Optional: LVDS2/eDP)
Backlight Inverter Supply	Max. 12V, 2A
I/O	
Ethernet	LAN x 2 (Rear IO)
Audio	REALTEK ALC892 (Optional: 2W Amp, I2S)
USB Port	Rear I/O: USB3.0 x 2 Internal: USB2.0 x 10 (for Q170 SKU)
Serial Port	COM x 6 (All internal, COM2: RS-232/422/485, COM2-5 5V/12V/RI)
Parallel Port (printer port)	—
HDD Interface	SATA 3.0 x 1
SSD	mSATA x 1 (Half size, optional for Mini-card)
Expansion Slot	Mini-card x 1 (Full size)
DIO	8-bit
TPM	—
Touch	—
SIM	Micro SIM (Optional)



Packing List

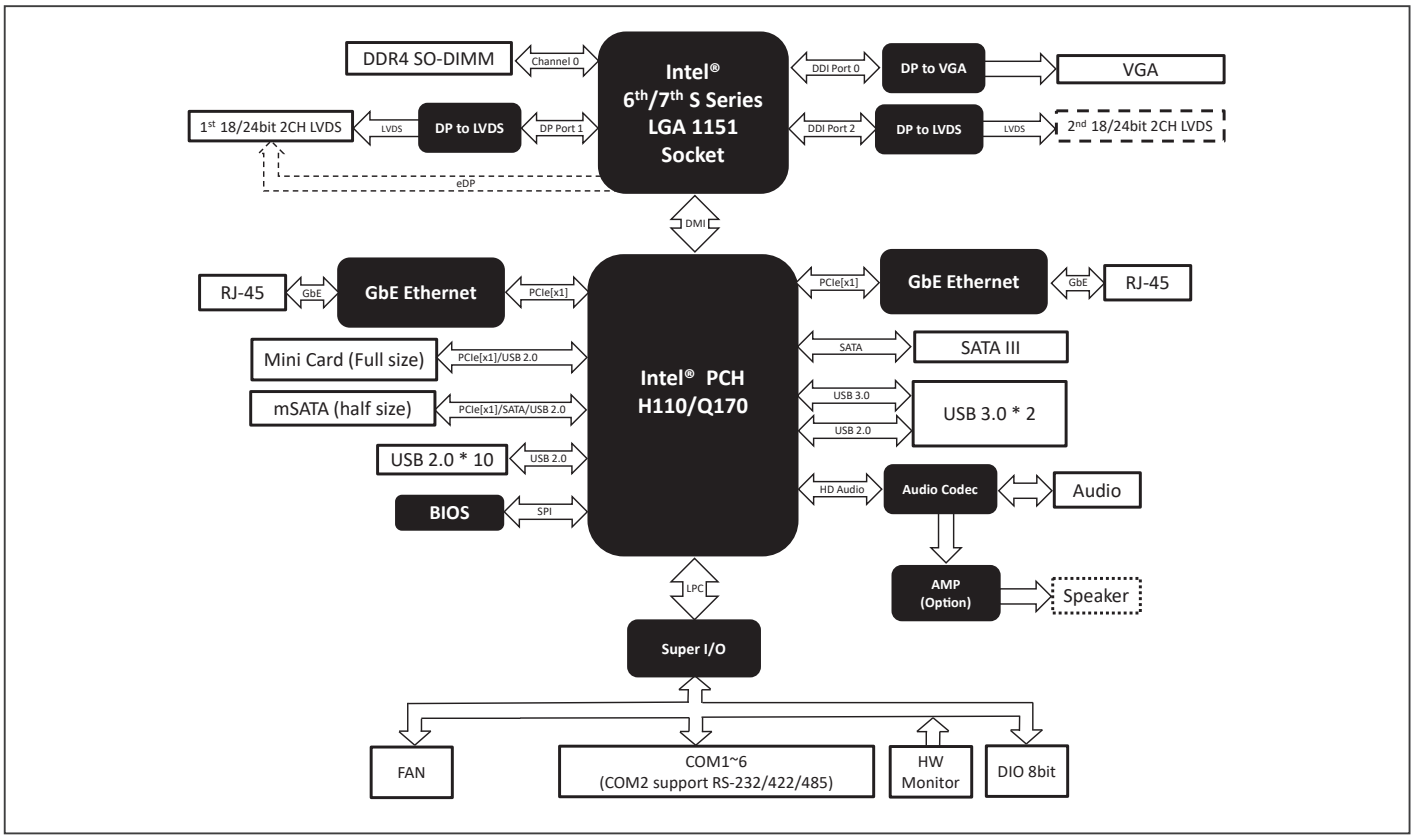
- SATA Cable, Length 50cm (1709070500)
- SATA Power Cable, Length 15cm (1702150155)
- Jumper Cap (9657666600)
- Product DVD
- EPIC-KBS8

Optional Accessories

Part Number	Description	QTY
1702002010	Power Cable (2pin), Length 10cm	1
1709100254	Audio Cable (3pin), Length 25cm	1
1700050207	USB Cable (5pin), Length 20cm	10
1701090150	COM Cable (9pin), Length 15cm	4
1704150153	Internal VGA Cable	1
EPIC-KBS7-FAN01	79*79*61mm.Silver.Recommended for operating temperature 0°C ~ 60°C (35/54W)	1
EPIC-KBS7-FAN02	60*60*30mm.Silver.Recommended for operating temperature 0°C ~ 55°C (35W)	1

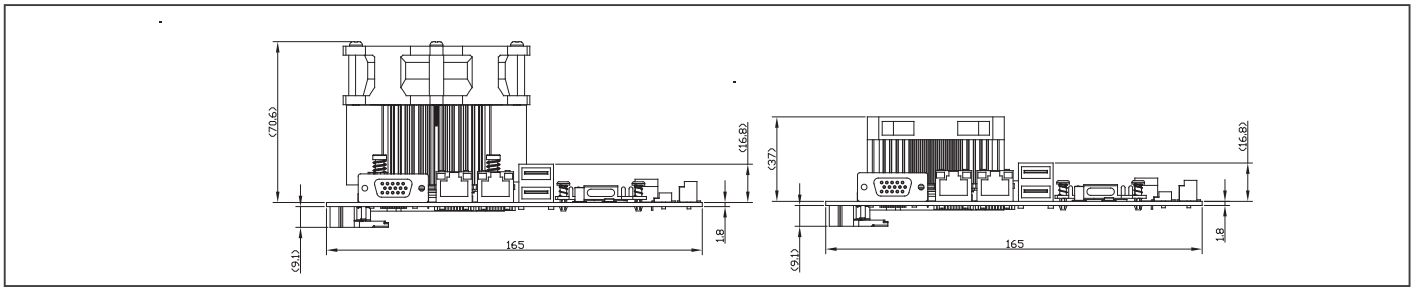
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

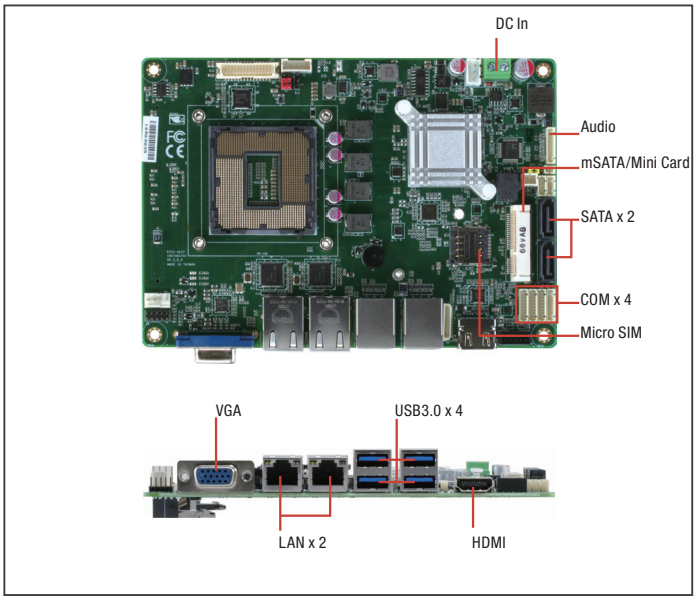
Unit: mm



Ordering Information

Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Operating Temp	Others
EPIC-KBS8-A10-0001 (Standard, H110)	LGA1151 (Socket Type)	DDR4 (Max 16G)	FAN	VGA + LVDS1	SATA 6.0 Gb/s x 1 mSATA x 1 (Half size) (by BOM change for mPCIe)	GbE x 2	USB3.0 x 2 (Rear) USB2.0 x 6 (Internal)	5	1	MiniCard x 1 (Full)	9-24V	0°C ~ 60°C	Audio, DIO x 8
EPIC-KBS8-A10-0002 (Advanced, Q170)	LGA1151 (Socket Type)	DDR4 (Max 16G)	FAN	VGA + LVDS1 + LVDS2	SATA 6.0 Gb/s x 1 mSATA x 1 (Half size) (By BIOS select for mPCIe)	GbE x 2	USB3.0 x 2 (Rear) USB2.0 x 10 (Internal)	5	1	MiniCard x 1 (Full)	9-24V	0°C ~ 60°C	Audio, Micro-SIM, DIO x 8

EPIC Board with 6th/7th Generation Intel® Core™ i-S series Processor (Socket Type)



Features

- 6th/7th Generation Intel® Core™ i-S series Processor (Socket Type)
- 12V, 9-24V Wide Voltage, Non-ECC DDR4 SODIMM x 1 (Up to 16 GB)
- Basic VGA/HDMI/LVDS Display
- USB 3.0 x 4, USB 2.0 x 2, Good for Machine Vision
- mSATA/Mini-PCIe Full Size x 1 (Default: mSATA, BOM change for H110)
  mSATA/Mini-PCIe Full Size x 1 (Default: mSATA, BIOS Selection for Q170)
- HDA, SATA x 2, GPIO x 8, COM x 4

Specifications

System	
Form Factor	4" EPIC Board
CPU	6th/7th Generation CPU (Socket Type, TDP 35W, 54W Only)
CPU Frequency	6th/7th Generation Intel® Core™ i3/i5/i7/Celeron®
Chipset	H110, Q170 (6W)
Memory Type	DDR4 (Non-ECC), 2133MHz
Max. Memory Capacity	Up to 16GB
BIOS	AMI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	12V or 9-24V (Default)
Power Supply Type	AT/ ATX
Power Consumption (Typical)	50W@Full loading
Dimension (L x W)	4.53" x 6.50" (115mm x 165mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	110,000
Certification	CE/FCC
Display	
VGA/LCD Controller	6th/7th Generation Intel® Core™ i3/i5/i7/Celeron®
Video Output	CRT/LVDS/HDMI
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	LAN x 2 (Real IO) (i211 x 2)
Audio	ALC892, no Amp
USB Port	USB3.0 x 4 (Real IO) USB2.0 x 2 (Internal)
Serial Port	COM x 4 (COM2: RS-232/422/485)
Parallel Port	—
HDD Interface	SATA 3.0 x 2, SATA Power (5V)
SSD	mSATA x 1 (optional for mini-Card)
Expansion Slot	Mini-card x 1, Micro SIM x 1 (Optional)
DIO	8-bit
TPM	—
Touch	—
SIM	—



Packing List

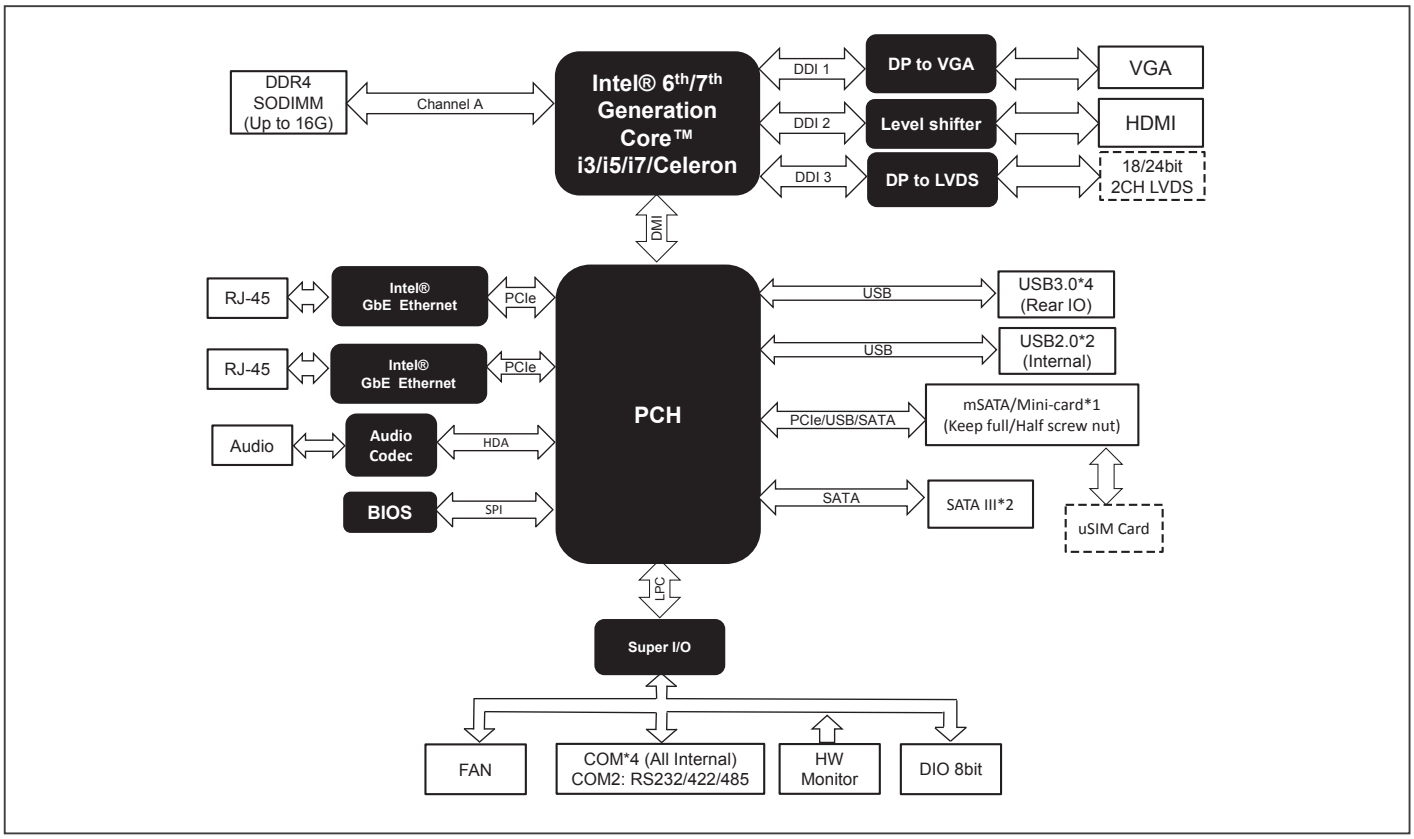
- SATA Cable, Length 50cm (1709070500)
- SATA Power Cable, Length 15cm (1702150155)
- Jumper Cap (9657666600)
- Product DVD
- EPIC-KBS7

Optional Accessories

Part Number	Description	QTY
1702002010	Power Cable (2pin), Length 10cm	1
1709100254	Audio Cable (3pin), Length 25cm	1
1700050207	USB Cable (5pin), Length 20cm	2
1701090150	COM Cable (9pin), Length 15cm	4
EPIC-KBS7-FAN01	79*79*61mm. Silver. Recommended for operating temperature 0°C ~ 60°C (54W/35W)	1
EPIC-KBS7-FAN02	60*60*30mm.Silver.Recommended for operating temperature 0°C ~ 55°C (35W)	1

Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

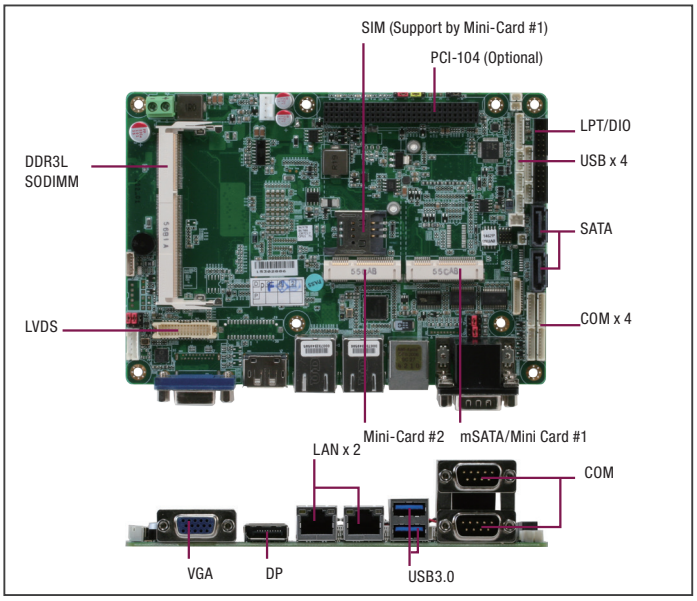


Ordering Information

Part Number	CPU	Memory	Thermal	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Operating Temp	Others
EPIC-KBS7-A10-0001 (Standard, H110)	LGA1151 (Socket Type)	DDR4 (Max 16G)	FAN	VGA + HDMI	—	SATA x 2	GbE x 2	USB3.0 x 4 USB2.0 x 2	3	1	mSATA x 1 (Mini-PCIe by BOM Change)	9-24V	0°C ~ 60°C	DIO x 8
EPIC-KBS7-A10-0002 (Advanced, Q170)	LGA1151 (Socket Type)	DDR4 (Max 16G)	FAN	VGA + LVDS + HDMI	24bit, 2CH	SATA x 2	GbE x 2	USB3.0 x 4 USB2.0 x 2	3	1	mSATA/miniCard x 1	9~24V	0°C ~ 60°C	Micro-SIM, DIO x 8

*BIOS is ready for 6th Gen. and 7th Gen. chipset, please makes sure to use latest BIOS on website.

EPIC Board with 5th Generation Intel® Core™ i Series ULT Processor SoC



Features

- **Onboard 5th Generation Intel® Core™ i Series ULT Processor SoC**
- **DDR3L 1600 MHz SODIMM x 1, Up to 8 GB**
- **Gigabit Ethernet x 2, RJ-45 x 2**
- **VGA, LVDS, DP, LVDS (Optional), eDP (Optional)**
- **SATA 6.0 Gb/s x 2, mSATA/Mini-Card x 1 (Full Size)**
- **USB 3.0 x 2 , USB 2.0 x 4**
- **RS-232 x 4, RS-232/422/485 x 2**
- **Optional Touch Screen, TPM and PCI-104**
- **Mini-Card x 1, SIM x 1**
- **9-24V Operation**
- **15W TDP**
- **SoC Solder Up Design**

Specifications

System	
Form Factor	4" EPIC Board
CPU	5th Generation Intel® Core™ i3/i5/i7 ULT Processor SoC
CPU Frequency	Up to 2.2 GHz
Chipset	5th Generation Intel® Core™ i series ULT Processor SoC
Memory Type	DDR3L 1333/1600, SODIMM x 1
Max. Memory Capacity	Up to 8GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V or 9-24V AT/ATX (default)
Power Supply Type	AT/ ATX
Power Consumption (Typical)	38.8W
Dimension (L x W)	4.53" x 6.50" (115 mm x 165 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	63,000
Certification	CE/FCC
Display	
VGA/LCD Controller	5th Generation Intel® Core™ i series ULT Processor SoC
Video Output	Triple independent Displays VGA, LVDS, DP, LVDS (Optional), eDP (Optional)
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	Intel® WGI211AT x 1/ WGI218LM x 1, RJ-45 x 2
Audio	High Definition Audio Interface
USB Port	USB2.0 x 4 USB3.0 x 2
Serial Port	COM: RS-232 x 4 COM2, COM3: RS-232/422/485 x 2 (Ring/+5V/+12V)
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	SATA 3.0 x 2
SSD	mSATA (Share with full-size Mini-Card by BIOS)
Expansion Slot	Mini Card x 1, SIM x 1 PCI-104 (Optional) 16-bit DIO or LPT PS/2 x 1
DIO	16-bit
TPM	Optional
Touch	Optional
SIM	—

Packing List

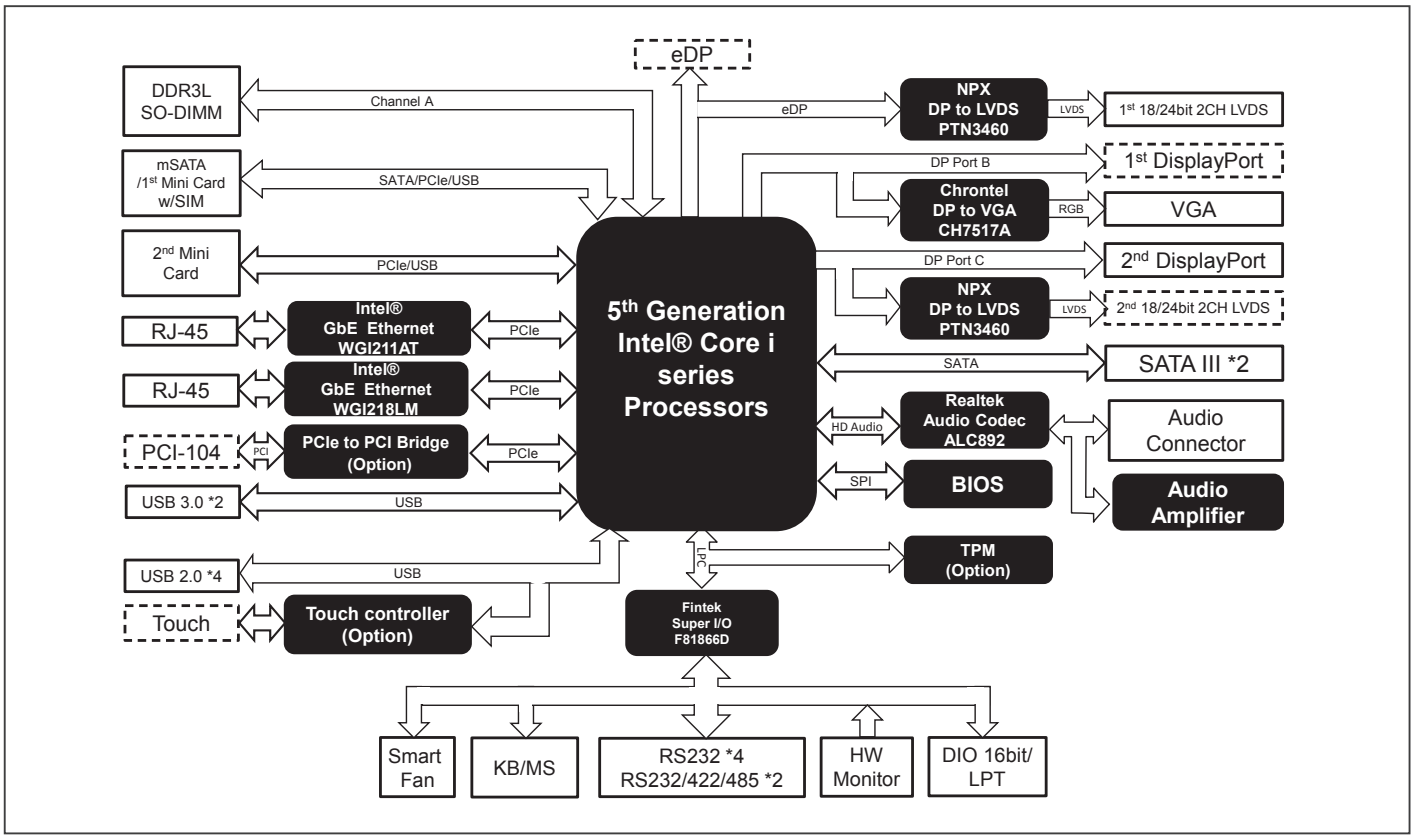
- **1709070500**
  SATA Cable, Length 50 cm
- **1702150155**
  SATA Power Cable, Length 15 cm
- **M10BDU7000**
  Heat Spreader
- **9657666600**
  Jumper Cap
- **Product DVD**
- **EPIC-BDU7**

Optional Accessories

Part Number	Description	QTY
1702040151	Power Cable (4pin), Length 15cm (Optional)	1
1702002010	Power Cable (2pin), Length 10cm	1
1709100254	Audio Cable (3pin), Length 25cm	1
1700050207	USB Cable (5pin), Length 20cm	4
1701260200	LPT Cable (25pin), Length 20cm	1
1700060155	PS/2 & KB Cable (6pin), Length 15cm	1
1701090150	COM Cable (9pin), Length 15cm	4
PER-A138	CPU Cooler (Used with heat spreader), the same as PER-A115	1

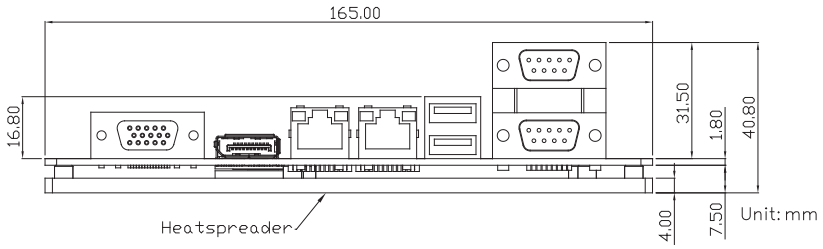
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

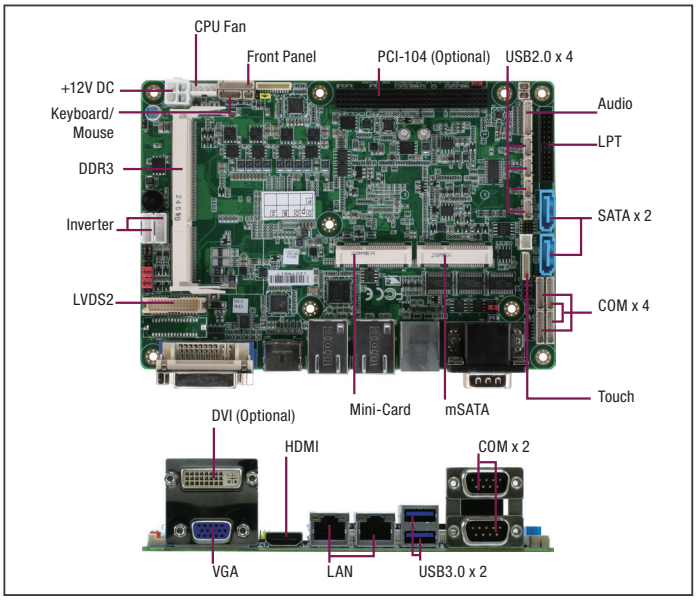
Unit: mm



Ordering Information

Part Number	CPU	Memory	Thermal	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
EPIC-BDU7-A11-0001	Dual Core i3-5010U (2.1GHz)	DDR3L (Max 8GB)	Heat Spreader	LVDS + CRT + DP	LVDS1 18/24 bit 2CH	SATA x 2, mSATA x 1	GbE x 2	USB3.0 x 2 UBS2.0 x 4	4	2	Mini Card x 1	9~24V (ATX)	0°C ~ 60°C	DIO 16-bit, Audio
EPIC-BDU7-A11-0003	Dual Core i7-5650U (2.2 GHz, up to 3.1GHz)	DDR3L (Max 8GB)	Heat Spreader	CRT + LVDS + DP	LVDS1 24b 2CH	SATA x 2, mSATA x 1	GbE x 2	USB3.0 x 2, UBS2.0 x 4	4	2	Mini Card x 1, SIM x1	9~24V (ATX)	0°C ~ 60°C	DIO 16-bit, Audio
EPIC-BDU7W1-A11-0003	Dual Core i7-5650U (2.2 GHz, up to 3.1GHz)	DDR3L (Max 8GB)	Fanless	CRT + LVDS + DP	LVDS1 24b 2CH	SATA x 2, mSATA x 1	GbE x 2	USB3.0 x 2, UBS2.0 x 4	4	2	Mini Card x 1, SIM x1	9~24V (ATX)	WITAS 1 (-20°C~70°C)	DIO 16-bit, Audio

EPIC Board with Onboard Intel® Core™ i7-3555LE/ Celeron® 847E Processor



Features

- Onboard Intel® Core™ i7-3555LE/ Celeron® 847E Processor
- Intel® 3rd Generation Core™ i Series + QM77/HM76
- 204-pin SODIMM DDR3 1333/1600 MHz, Up to 8 GB
- Intel® 82579LM x 1/ Intel® 82583V x 1, 10/100/1000Base-TX Ethernet, RJ-45 x 2
- 18/24-bit Single/Dual-Channel LVDS, CRT, DVI-I (Optional), HDMI
- 2CH HD Audio
- SATA 6.0 Gb/s x 2, mSATA (Full-Size) Slot x 1
- USB 3.0 x 2, USB2.0 x 4, COM x 6
- Mini-Card x 1, 16-bit Digital I/O Co-lay with LPT, PCI-104 (Optional), TPM (Optional), Touch (Optional)
- +12V, AT/ATX (Default)
- CPU and PCH On Solder Side For Easy System Integration
- Supports Triple Simultaneous Display
- Supports iAMT8.0 and RAID 0,1 For QM77 Chipset
- Supports AAEON Hi-Safe/Hi-Manager SDK & Utility

Specifications

System	
Form Factor	4" EPIC Board
CPU	Intel® Core™ i7/i5/i3/Celeron® (BGA based, 25W)
CPU Frequency	Up to 2.5 GHz
Chipset	Intel® PCH QM77/HM76
Memory Type	DDR3 1066/1333/1600, SODIMM x 1
Max. Memory Capacity	Up to 8G
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	DC12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	—
Dimension (L x W)	4.53" x 6.50" (115mm x 165mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	—
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Core™ i7/i5/i3 integrated
Video Output	CRT+2 LVDS(eDP+Internal LVDS), CRT+HDMI, CRT+DVI, DVI+HDMI
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	Intel® 82579LM x 1/Intel® 82583V x 1 10/100/1000Base-TX
Audio	High Definition Audio Interface
USB Port	USB2.0 x 4 USB3.0 x 2
Serial Port	RS-232 x 5 , RS-232/422/485 x 1(COM2)
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	SATA3 x 2
SSD	mSATA x 1
Expansion Slot	Mini Card x 1 16-bit DIO or LPT PCI-104
DIO	16-bit
TPM	Optional
Touch	Optional
SIM	—



Packing List

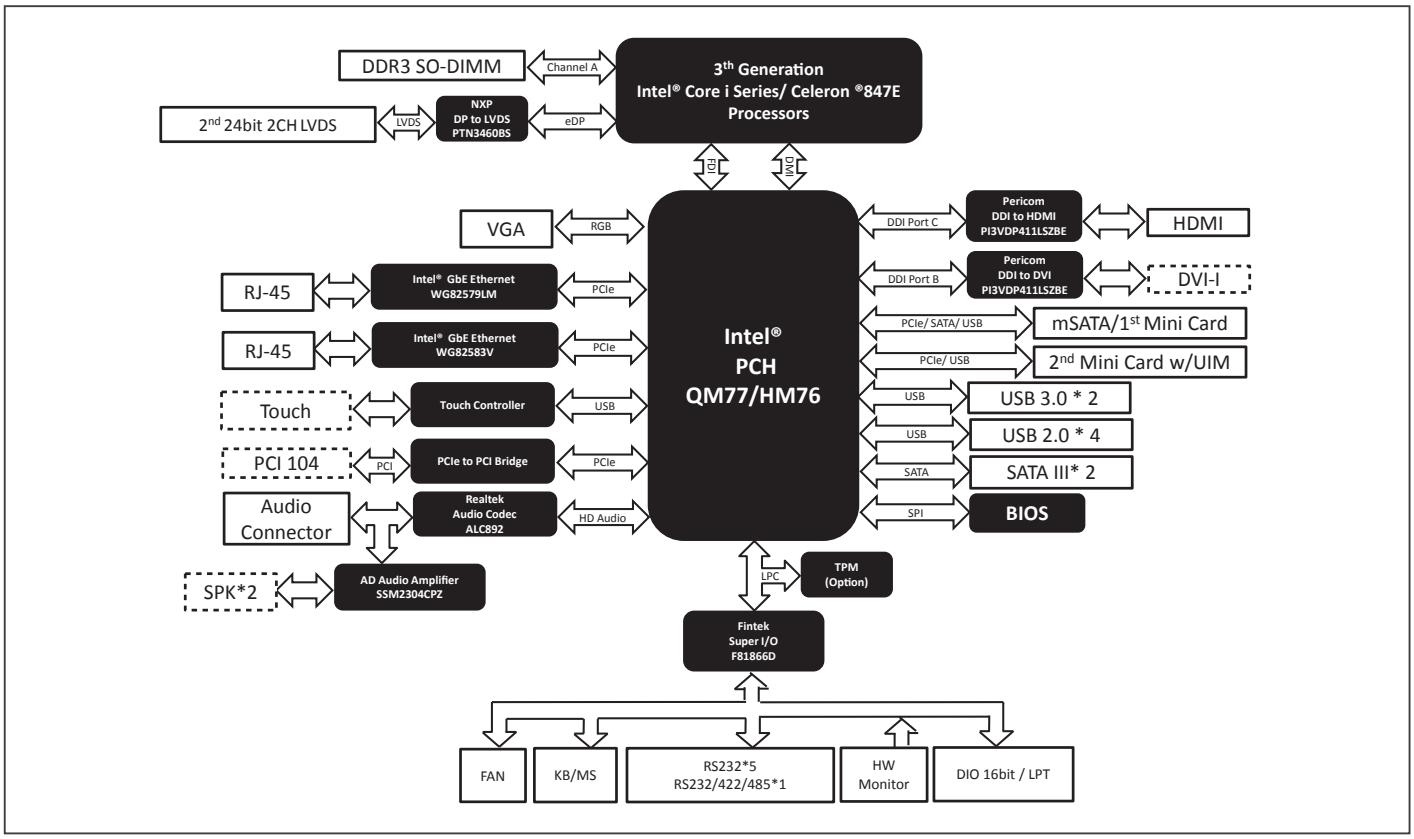
- **1709070500**
  SATA Cable
- **1702150155**
  SATA Power Cable
- **9657666600**
  Jumper Cap
- **M10QM7700**
  Heat Spreader
- **Product DVD**
- **EPIC-QM77**

Optional Accessories

- **1701260200**
  DIO/LPT, 20cm
- **1700060155**
  PS/2 Keyboard and Mouse, 15cm
- **1701090150**
  COM Port Cable, 15cm
- **1702150155**
  SATA Power Cable, 15cm
- **1700050207**
  USB Cable, 20cm
- **1709100254**
  Audio Cable, 51cm
- **PER-A138**
  CPU Cooler (Used with Heatspreader)

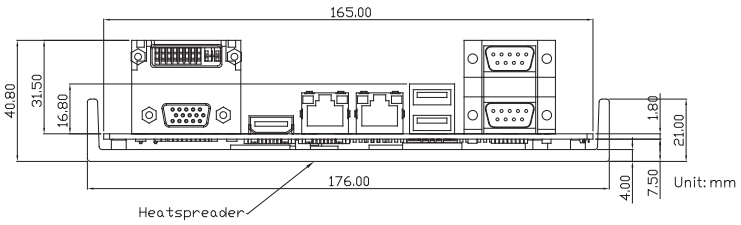
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



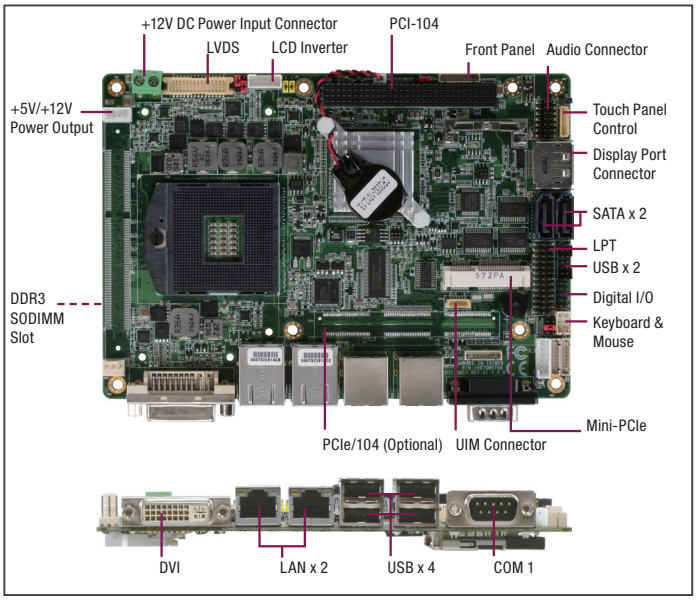
Ordering Information

Part Number	CPU	Memory	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
EPIC-QM77-A10	i7-3555LE	DDR3 (Max. 8 GB)	Heat Spreader	CRT + LVDS, CRT + HDMI, LVDS + HDMI, CRT + LVDS + HDMI	24b, 2CH	SATA x 2, mSATA/Mini-Card x 1	GbE x 2	USB3.0 x 2 UBS2.0 x 4	5	1	Mini-Card x 1	+12V (ATX)	0°C ~ 60°C	LPT or DIO 16-bit, Audio, PS/2
EPIC-QM77-A10-01	Celeron® 847E	DDR3 (Max. 8 GB)	Heat Spreader	VGA + DVI VGA +HDMI VGA + LVDS DVI + HDMI DVI + LVDS HDMI + LVDS	24b, 2CH	SATA x 2, mSATA/Mini-Card x 1	GbE x 2	USB3.0 x 2 UBS2.0 x 4	5	1	Mini-Card x 1, PCI-104	+12V (ATX)	0°C ~ 60°C	LPT or DIO 16-bit, Audio, PS/2

Remark: * Heatspreader Surface Temperature Under 0°C ~ 70°C

EPIC-QM57

EPIC Express Board with Intel® Core™ i7/ i5/ Celeron® (32nm) Processor



Features

- Intel® Core™ i7/ i5/ Celeron® (32nm) Processor
- Intel® QM57
- DDR3 800/1066 MHz SODIMM, Up to 4 GB, 8 GB (Optional)
- Gigabit Ethernet x 2, RJ-45 x 2
- Up to 18/24-bit Dual-channel LVDS LCD, CRT, DVI, DisplayPort™ (Optional)
- High Definition Audio (HDA)
- SATA 3.0 Gb/s x 2, Type 2 CompactFlash™
- USB2.0 x 6, COM x 4, 8-bit Digital I/O
- PCI-104, PCIe/104 (Optional), Mini-Card x 1
- Supports iAMT6.0, RAID 0 & 1 (Optional)
- +12V, AT/ATX

Specifications

System	
Form Factor	4" EPIC Board
CPU	Intel® Core™ i7/ i5 (Socket-988)
CPU Frequency	Up to 2.66 GHz
Chipset	Intel® QM57
Memory Type	DDR3 (800/1066), SODIMM x 1
Max. Memory Capacity	4 GB
BIOS	AMI 8 MB
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V
Power Supply Type	AT/ATX
Power Consumption (Typical)	—
Dimension (L x W)	4.53" x 6.50" (115mm x 165mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	70,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Core™ i7/i5 Mobile
Video Output	CRT, LVDS, DVI, Display Port
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	10/100/1000Base-TX x 2, Intel® 82577LM, Intel® 82574L
Audio	High Definition Audio (HDA)
USB Port	USB2.0 x 6
Serial Port	RS-232 x 3, RS-232/422/485 x 1
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	SATA 2 x 2
SSD	CompactFlash™
Expansion Slot	PCI/104-Express (PCI-Express & PCI-104)
DIO	8-bit
TPM	—
Touch	Yes
SIM	—

Packing List

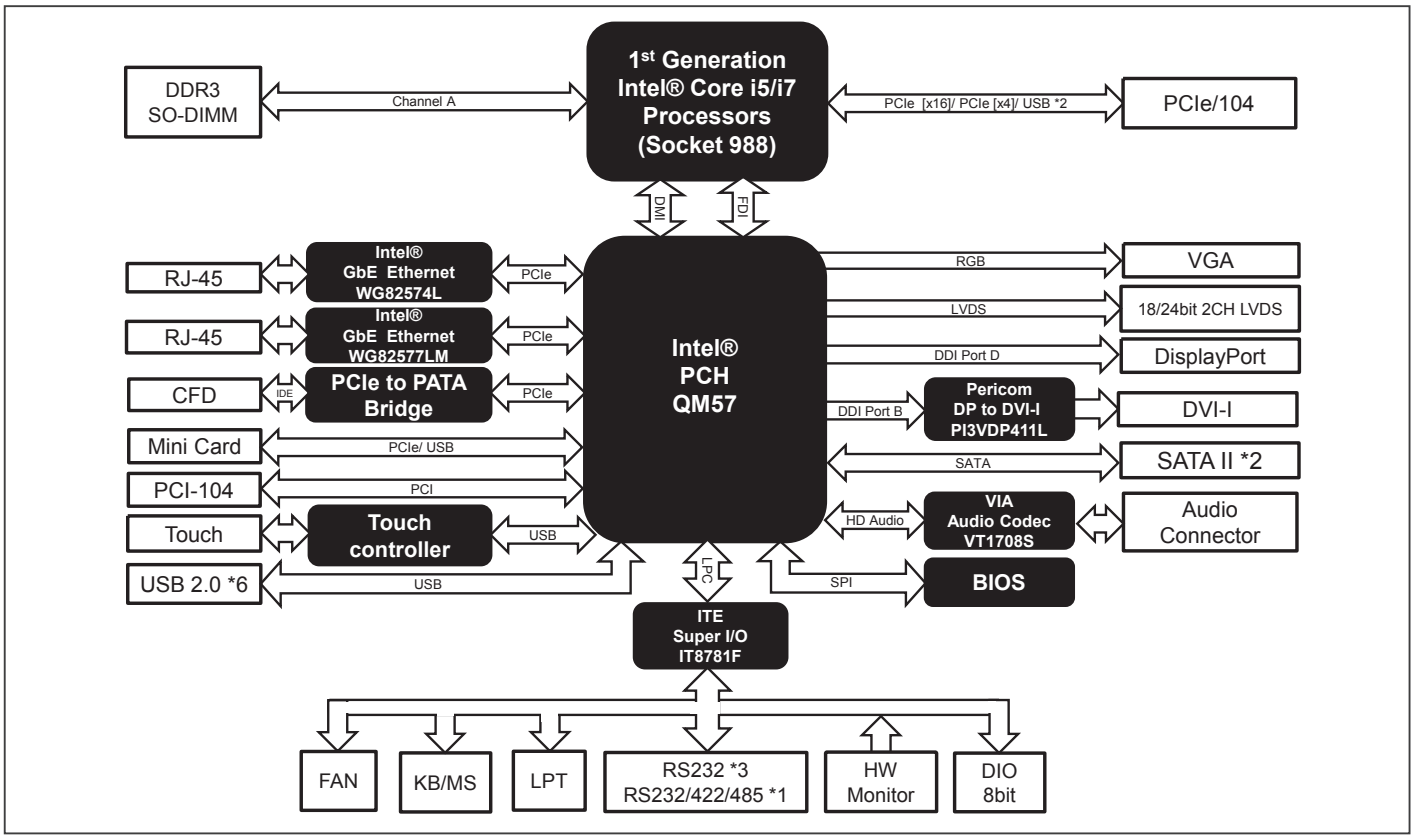
- **1654929900**
  DVI to CRT Adapter
- **1700060157**
  Keyboard/ Mouse Cable
- **17592QM575**
  CPU Cooler
- **Product DVD**
- **EPIC-QM57**

Optional Accessories

- **1700290150**
  DVI-I to DVI + VGA Cable, Length 15cm
- **1700060157**
  KB/Mouse Cable
- **TF-PER-C41C-A10**
  4 COM Ports Mini-Card

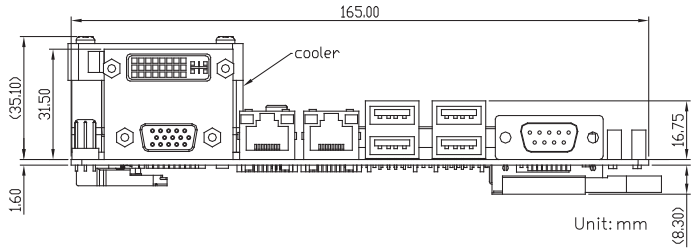
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

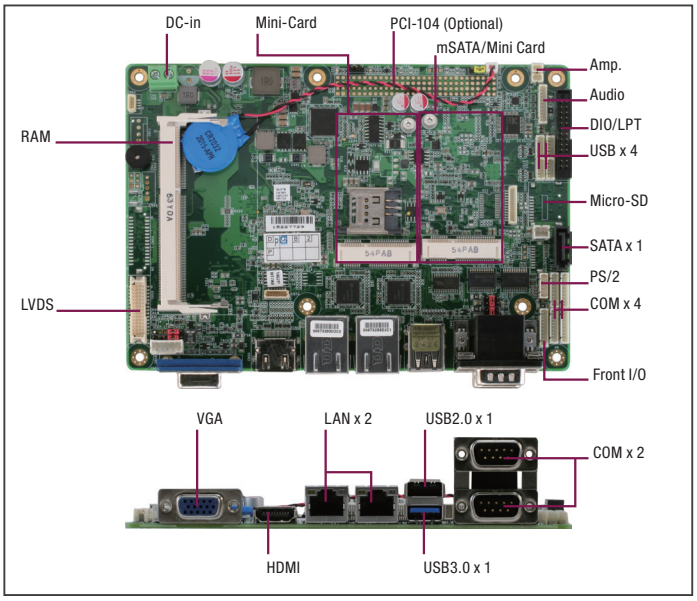
Unit: mm



Ordering Information

Part Number	CPU	Memory	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
EPIC-QM57-A12	Socket 988	DDR3 (Max. 4 GB)	Fan	DVI+ LVDS	24b 2CH	SATA x 2, CF x 1	GbE x 2	UBS2.0 x 6	3	1	Mini-Card x 1, PCI-104 x1	+12V (ATX)	0°C ~ 60°C	LPT, DIO 8-bit, Audio, PS/2

EPIC Board with Intel® Atom™/ Celeron® Processor SoC

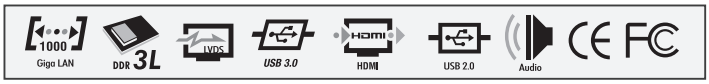


Features

- Onboard Intel® Atom™ E3845/ Celeron® J1900, N2807 Processor SoC
- DDR3L 1333MHz SoDIMM x 1, Up to 8GB
- LVDS 24-bit Dual Channel
- Dual Display Configuration: VGA+ LVDS, VGA + HDMI or HDMI + LVDS
- SATA 3.0Gb/s x 1, mSATA/ Mini-Card x 1, Micro-SD Slot x 1 (E3800 Series Only)
- USB 3.0 x 1, USB2.0 x 5, RS-232 x 4, RS-232/422/485 x 2 (COM2, COM3)
- Mini-Card x 1, SIM x 1, PCI-104 (Optional)
- 16-bit Digital IO/LPT, SMBus x 1, I2C (Optional)
- Audio 2CH, 2W Audio Amp., TPM (Optional), Touch Controller (Optional)
- 9 ~ 24VDC Wide Range or 12VDC Power Input
- SoC Processor on Solder Side Design

Specifications

System	
Form Factor	4" EPIC Board
CPU	Intel® Atom™/ Celeron® E3845/J1900/N2807
CPU Frequency	Up to 2.0 GHz
Chipset	Intel® Atom™/ Celeron® SoC
Memory Type	DDR3L 1333, SODIMM x 1
Max. Memory Capacity	Up to 8G
BIOS	AMI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V or 9-24V AT/ATX (default)
Power Supply Type	AT/ ATX
Power Consumption (Typical)	11.8W
Dimension (L x W)	4.53" x 6.50" (115 mm x 165 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	110,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Atom™/ Celeron® SoC
Video Output	CRT, LVDS, HDMI
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	Intel® i211 Gigabit Ethernet, RJ-45 x 2
Audio	High Definition Audio Interface
USB Port	USB2.0 x 5 USB3.0 x 1
Serial Port	COM1, 4, 5, 6 : RS-232 x 4 COM2, 3 : RS-232/422/485 x 1 (Ring/ +5V/ +12V)
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	SATA 2.0 x 1
SSD	mSATA x 1 (Share with half-size Mini-Card by BOM)
Expansion Slot	Mini-Card x 1, Micro-SD x 1 (Only E3800 series) PCI-104 x 1 (optional) 16-bit DIO or LPT SMbus x 1, I2C x 1 (optional), PS/2 x 1
DIO	16-bit
TPM	Optional
Touch	Optional
SIM	—



Packing List

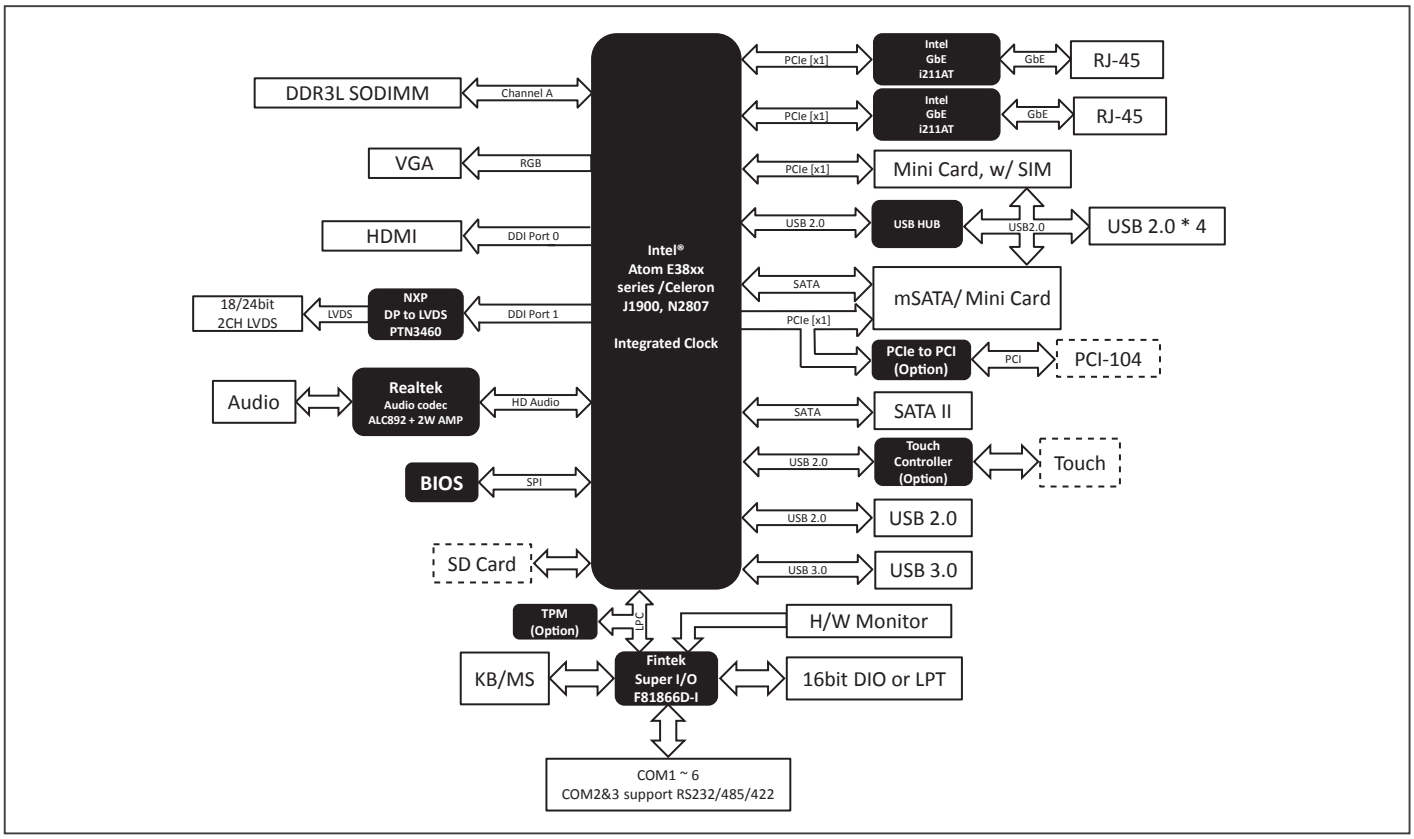
- **1709070500**
  SATA Cable
- **1702150155**
  SATA Power Cable
- **M10BT07010**
  Heat-Spreader
- **Product DVD**
- **EPIC-BT07**

Optional Accessories

Part Number	Description	QTY
170204010R	2-Pin Power in to 4-Pin Housing Cable	1
1709100254	Audio Cable	1
1701260200	DIO/LPT Cable	1
1700050207	USB Cable	4
1700060155	PS/2 KB/Mouse Cable	1
1701090150	COM Cable	4
EPIC-BT07-HSK01	Metal, Al, Heat Sink, 165*95*14mm, Silver, EPIC-BT07 (Used with heatspreader)	1

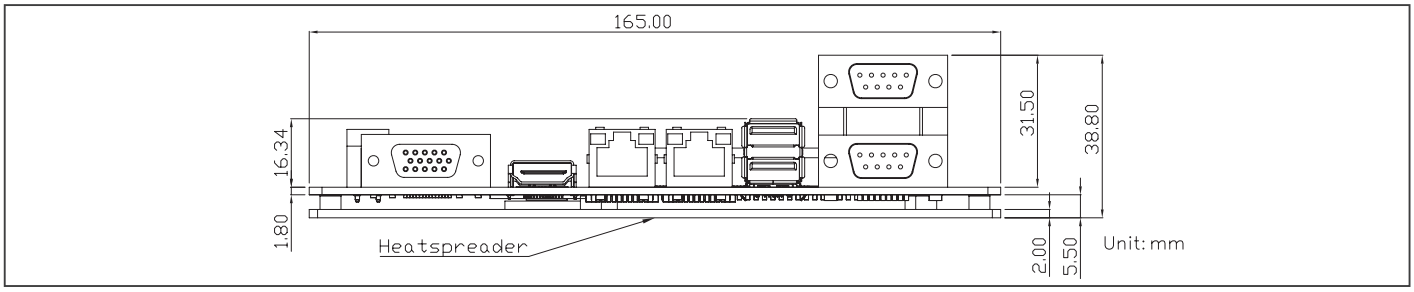
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

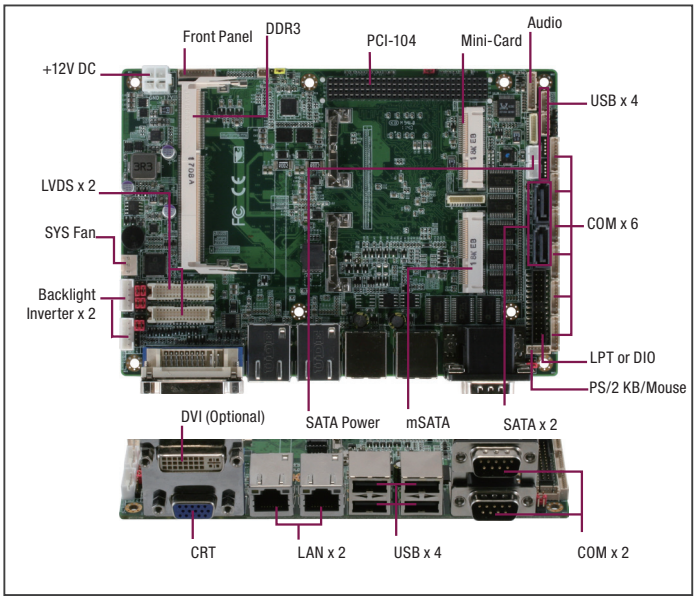
Unit: mm



Ordering Information

Part Number	CPU	Memory	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Operating Temp	Others
EPIC-BT07-A10-0001	Atom™ E3845 (10W)	DDR3L (Max. 8GB)	Heat-Spreader (Heat-sink option)	VGA+LVDS, VGA+HDMI, LVDS+HDMI	24b, 2CH	SATA 2 x 1, mSATA x 1	GbE x 2	USB3.0 x 1 UBS2.0 x 5	4	2	Mini-Card x 1, SIM x 1, PCI-104 x 1, Micro-SD x 1	9-24VDC, AT/ATX	0°C ~ 60°C	16CH DIO or LPT, Audio, 2W Amp, PS/2, SMbus
EPIC-BT07-A10-0002	Celeron® J1900 (10W)	DDR3L (Max. 8GB)	Heat-Spreader (Heat-sink option)	VGA+LVDS, VGA+HDMI, LVDS+HDMI	24b, 2CH	SATA 2 x 1, mSATA x 1	GbE x 2	USB3.0 x 1 UBS2.0 x 5	4	2	Mini-Card x 1, SIM x 1	9-24VDC, AT/ATX	0°C ~ 60°C	16CH DIO or LPT, Audio, 2W Amp, PS/2, SMbus
EPIC-BT07-A10-0003	Celeron® N2807 (4.3W)	DDR3L (Max. 4GB)	Heat-Spreader (Heat-sink option)	VGA+LVDS, VGA+HDMI, LVDS+HDMI	24b, 2CH	SATA 2 x 1, mSATA x 1	GbE x 2	USB3.0 x 1 UBS2.0 x 5	4	2	Mini-Card x 1, SIM x 1	9-24VDC, AT/ATX	0°C ~ 60°C	16CH DIO or LPT, Audio, 2W Amp, PS/2, SMbus
EPIC-BT07W2-A10-0001	Atom™ E3845 (10W)	DDR3L (Max. 8GB)	Heat-Spreader (Heat-sink option)	VGA+LVDS, VGA+HDMI, LVDS+HDMI	24b, 2CH	SATA 2 x 1, mSATA x 1	GbE x 2	USB3.0 x 1 UBS2.0 x 5	4	2	Mini-Card x 1, SIM x 1, PCI-104 x 1, Micro-SD x 1	9-24VDC, AT/ATX	-40°C ~ 85°C	16CH DIO or LPT, Audio, 2W Amp, PS/2, SMbus

EPIC Board with Onboard Intel® Atom™ D2550/N2600 Processor



Features

- Onboard Intel® Atom™ D2550/N2600 Processor
- Intel® Atom™ D2550/N2600 + NM10
- 204-pin DDR3 800 (N2600)/ 1066 (D2550) MHz SODIMM x 1, Up to 2 GB (N2600)/ 4 GB (D2550)
- Reatek 8111E for 10/1000/1000Base-TX, RJ-45 x 2
- 18/24-bit Single/Dual-Channel LVDS, CRT, DVI-I (Optional)
- 2CH HD Audio
- SATA 3.0 Gb/s x 1, mSATA/Mini-Card Slot x 1
- USB 2.0 x 7, COM x 8, 16-bit Digital I/O
- Mini-Card x 1
- +12V, AT/ATX
- CPU and PCH On Solder Side For Easy System Integration
- Supports AAEON SDK Utility: Hi-Safe

Specifications

System	
Form Factor	4" EPIC Board
CPU	Intel® Atom™ D2550/N2800/N2600
CPU Frequency	1.6 GHz ~ 2.13 GHz
Chipset	Intel® Atom™ D2550/N2600 + NM10
Memory Type	DDR3 800/1066 MHz
Max. Memory Capacity	Up to 4G
BIOS	AMI 4MB
Wake on LAN	Yes
Watchdog Timer	255 Level
Power Requirement	+12V
Power Supply Type	AT/ATX
Power Consumption (Typical)	—
Dimension (L x W)	4.53" x 6.50" (115mm x 165mm)
Operating Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C); -4 °F ~ 158 °F (-20 °C ~ 70 °C) For WiTAS 1
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operating Humidity	10~80%, non-condensing
MTBF (Hours)	—
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Atom™ D2550/ N2600 integrated
Video Output	CRT, LVDS, DVI (optional, need to change connector)
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	Giga LAN Realtek 8111E x 2
Audio	ALC662 co-lay ALC886/892
USB Port	USB 2.0 x 7
Serial Port	RS-232 x 7, RS-232/422/485 x 1 (COM 2)
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	SATA 2.0 x 1
SSD	mSATA
Expansion Slot	PCI-104 x 1 Mini-Card x 2 (One support mSATA) Touch Panel feature (Optional) 8 pin DIO 4 in/4out
DIO	16-bit
TPM	—
Touch	Yes
SIM	—



Packing List

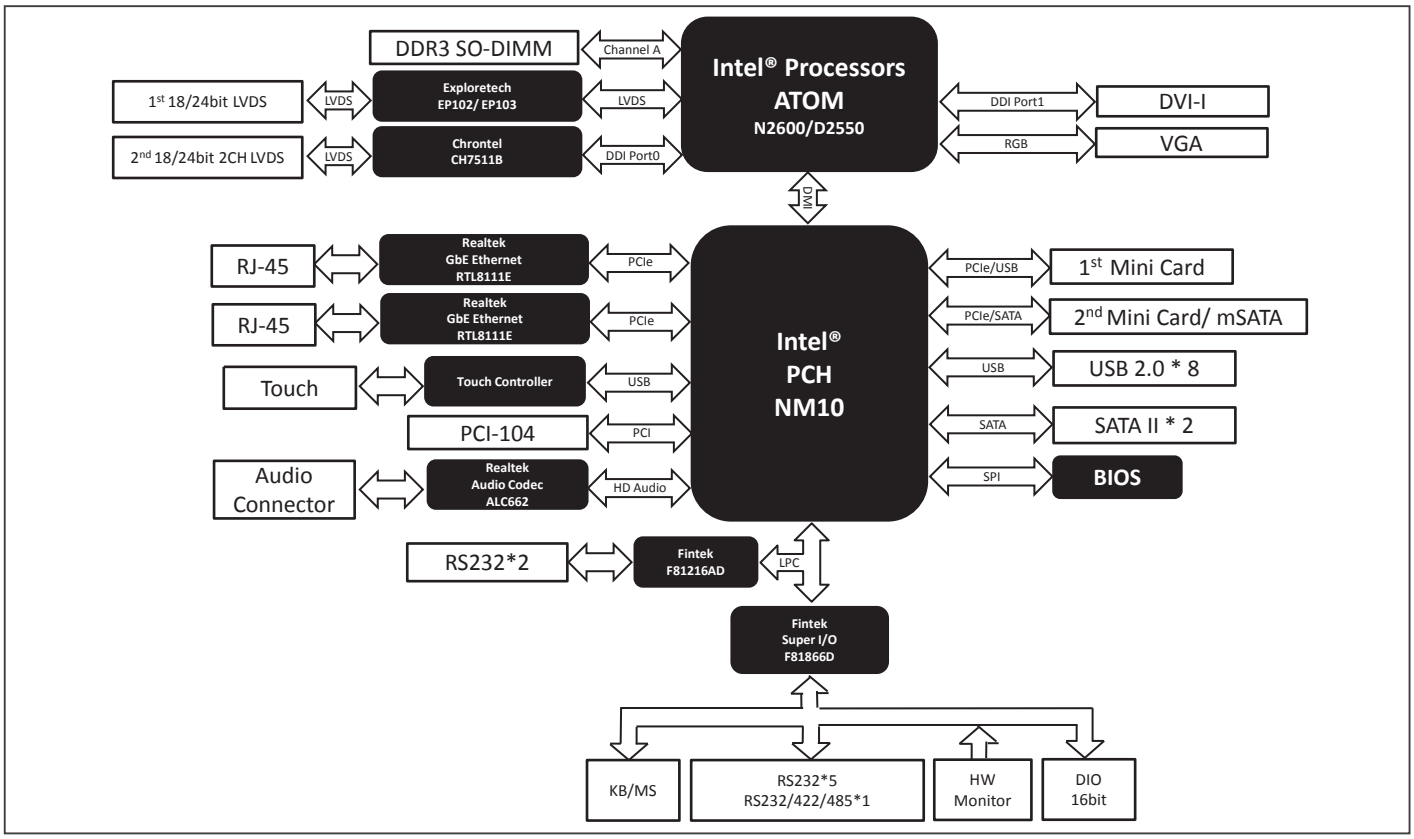
- **1709070500**
  SATA Cable
- **1702150155**
  SATA Power Cable
- **9657666600**
  Jumper Cap
- **M10CV0700**
  Heat Spreader
- **EPIC-CV07**

Optional Accessories

- **1701260200**
  Flat Cable, 25P D-Sub Female, 26P 2.00mm Pitch Housing, 20cm
- **1700060155**
  KB & PS/2 Mouse Cable, 6P Pitch=1.25mm Housing x 1, 15cm, for PFM-945C
- **1701010150**
  Flat Cable, 10P Pitch=1.25mm Housing x 1, 15cm, for PFM-945C
- **1700050207**
  Flat Cable for USB, 5P Pitch=1.25mm Housing x 1, 20cm, for PFM-945C
- **1701090150**
  Flat Cable for COM, D-Sub 9(M), 9P Housing, 9P 1.25mm Pitch Housing, 15cm
- **1702150155**
  Power Cable, 15P SATA(F), 2P 2.0mm Housing (PH), 15cm
- **1709100254**
  Audio Cable, 14P Pitch=1.25mm Housing x 1, 51cm, for PFM-945C

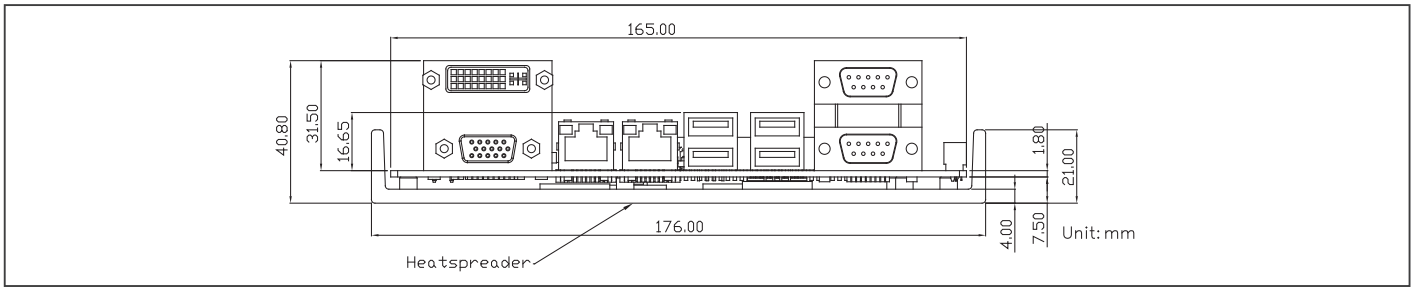
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	Memory	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
EPIC-CV07-A10-10	Atom™ D2550	DDR3 (Max. 4 GB)	Fanless	CRT+ LVDS1, CRT+ LVDS2	LVDS1 18b 1CH, LVDS2 24b 2CH	SATA x 1, mSATA/Mini-Card x 1	GbE x 2	UBS2.0 x 7	7	1	Mini-Card x 1, PCI-104 x1	+12V (ATX)	0°C ~ 60°C	LPT or DIO 16-bit, Audio, PS/2
EPIC-CV07-A10-11	Atom™ N2600	DDR3 (Max. 2 GB)	Fanless	CRT+ LVDS1	LVDS1 18b 1CH	SATA x 1, mSATA/Mini-Card x 1	GbE x 2	UBS2.0 x 8	5	1	Mini-Card x 1	+12V (ATX)	0°C ~ 60°C	LPT or DIO 16-bit, Audio, PS/2
EPIC-CV07W1-A10-11	Atom™ N2600	DDR3 (Max. 2 GB)	Fanless	CRT+ LVDS1	LVDS1 18b 1CH	SATA x 1, mSATA/Mini-Card x 1	GbE x 2	UBS2.0 x 8	5	1	Mini-Card x 1	+12V (ATX)	-20°C ~ 70°C	LPT or DIO 16-bit, Audio, PS/2

Note:
Intel® Atom™ Processor D2000 series and N2000 series (CV) do NOT support DMA function that may affect ECP mode of Parallel port.

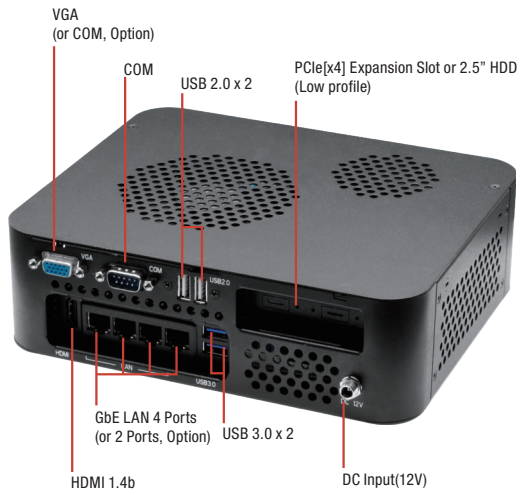
Remark: * Heatspreader Surface Temperature Under 0°C ~ 70°C

EPIC-KBS9 with 6th/7th Generation Intel® Core™ i7/i5/i3/Celeron® S-Series Processor

Front View



Rear View



Features

- DDR4 Non-ECC SODIMM Slot x 2, up to 32GB
- GbE LAN x 4 (4 ports as default, 2 ports as option), HDMI 1.4 x 1
- mSATA/Mini-PCIe Full Size x 1 (Default: mSATA, Optional for Mini-PCIe by BOM Change)
- USB3.0 x 2 (Rear IO), USB2.0 x 2 (Internal)
- RS-232/422/485 x 1 + VGA x1
- PCIe[x4] expansion slot or 2.5" HDD space
- Lockable DC 12V



I/O	RS-232/422/485 x 1 + VGA x 1 as default (2 ports RS-232/422/485 as option) USB 3.0 x 2 (Real IO) USB 2.0 x 2 (From internal header) HDMI1.4 x 1 (Native) GbE LAN x 4 (4 ports as default, 2 ports as option) Power button x 1 Power DC input x 1
Expansion	Mini-PCIe slot (Share with mSATA as above) PCIe[x4] Slot x 1 (Q170 and H170 SKU)
Indicator	Power LED on power button
Power Requirement	12V with lockable DC jack
Mechanical	
Mounting	VESA Mount (100 x 100 mm, 94 x 94 mm)
Dimensions (W x H x D)	216 x 180 x 65 mm (Unit size) 32 x 29 x 13.5 cm (With Packing)
Gross Weight	6.6 lb (3 kg)
Net Weight	4.4 lb (2 kg)
Environmental	
Operating Temperature	32°F ~ 104°F (0°C ~ 50°C)
Storage Temperature	-4°F ~ 176°F (-20°C ~ 80°C)
Storage Humidity	0 ~ 90% @ 40°C, non-condensing
Anti-Vibration	1 Grms/ 5 ~ 500Hz/ operation – with mSATA
Certification	CE/FCC class A

Specifications

System	
CPU	CPU Socket Type
CPU Frequency	7th Generation Intel® Core™ Processor family: Intel® Core™ i7-7700, 3.6 GHz(65W) Intel® Core™ i7-7700T, 2.9 GHz(35W) Intel® Core™ i5-7500, 3.4 GHz(65W) Intel® Core™ i5-7500T, 2.8 GHz(35W) Intel® Core™ i3-7101E, 3.9 GHz(54W) Intel® Core™ i3-7101TE, 3.4 GHz(35W) Intel® Celeron® G3930TE, 2.7 GHz(35W) 6th Generation Intel® Core™ Processor family: Intel® Core™ i7-6700, 3.4 GHz(65W) Intel® Core™ i7-6700TE, 2.4 GHz(35W) Intel® Core™ i5-6500, 3.2 GHz(65W) Intel® Core™ i5-6500TE, 2.3 GHz(35W) Intel® Core™ i3-6100, 3.7 GHz(65W) Intel® Core™ i3-6100TE, 2.7 GHz(35W) Intel® Celeron® G3900TE, 2.3 Ghz(35W) (Support 35-65W)
Chipset	H110/H170/Q170 (TDP: 6W)
System Memory	DDR4 (Non-ECC) Memory slot x 2, up to 32GB
Display Interface	HDMI x 1, VGA x 1
Storage Device	Full size mSATA x1 (Default) or 2.5" HDD x 1 (Optional)
Ethernet	Intel® I211, 10/100/1000Base-TX x 4 (4 ports as default, 2 ports as option)

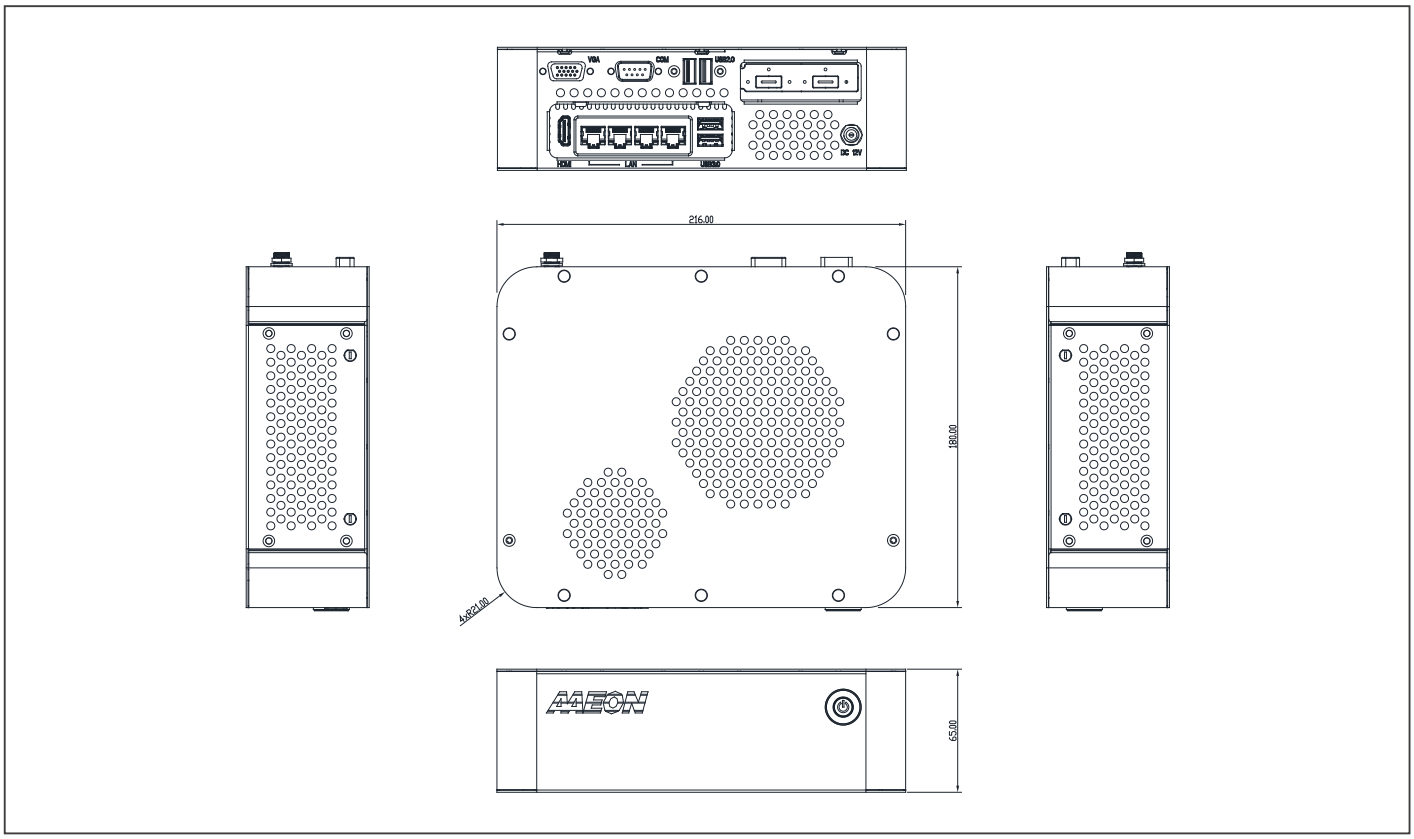
Packing List

- EPIC-KBS9-PUC

Note: All specifications are subject to change without notice.

Dimension

Unit: mm



Ordering Information

Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232/422/485	Expansion Slot	Power	Operating Temp
EPIC-KBS9-PUC-A10-0002 (H170)	—	DDR4 SO-DIMM x 2 (up to 32 GB)	FAN	HDMI1.4 VGA	SATA 3.0 x 1	GbE x 4	USB3.0 x 2 USB2.0 x 2	1	PCIe[x4] x1, mSATA /MiniCard x 1 (Full) (by BIOS change for mPCIe)	+12V	0°C ~ 50°C
EPIC-KBS9-PUC-A10-0003 (Q170)	—	DDR4 SO-DIMM x 2 (up to 32 GB)	FAN	HDMI1.4 VGA	SATA 3.0 x 1	GbE x 4	USB3.0 x 2 USB2.0 x 2	1	PCIe[x4] x1, mSATA /MiniCard x 1 (Full) (by BIOS change for mPCIe)	+12V	0°C ~ 50°C
EPIC-KBS9-PUC-A10-0004 (H110)	—	DDR4 SO-DIMM x 2 (up to 32 GB)	FAN	HDMI1.4 VGA	SATA 3.0 x 1	GbE x 4	USB3.0 x 2 USB2.0 x 2	1	mSATA /MiniCard x 1 (Full) (by BOM change for mPCIe)	+12V	0°C ~ 50°C

Optional Accessories

Part Number	Description	QTY
125530060A	Power Adapter.12V/5A.60W. FSP.FSP060-DIBAN2	1
1255900842	Power Adapter. 12V.7A.84W. FSP.FSP084-DIBAN2	1
1255300960	Power Adapter.12V/8A.96W. FSP.FSP096-AHAN3	1
1702031802	PWR Cord (US Type)	1
1702031803	PWR Cord (Europe Type)	1
170203180E	PWR Cord (Japan)	1
9741EPIC01	VESA Bracket Kit	1
9741KBS903	Wall mount Kit	1
9697T45701-S	PER-T457 module for TPM 2.0	1
1703120250	TPM Cable (25cm)	1

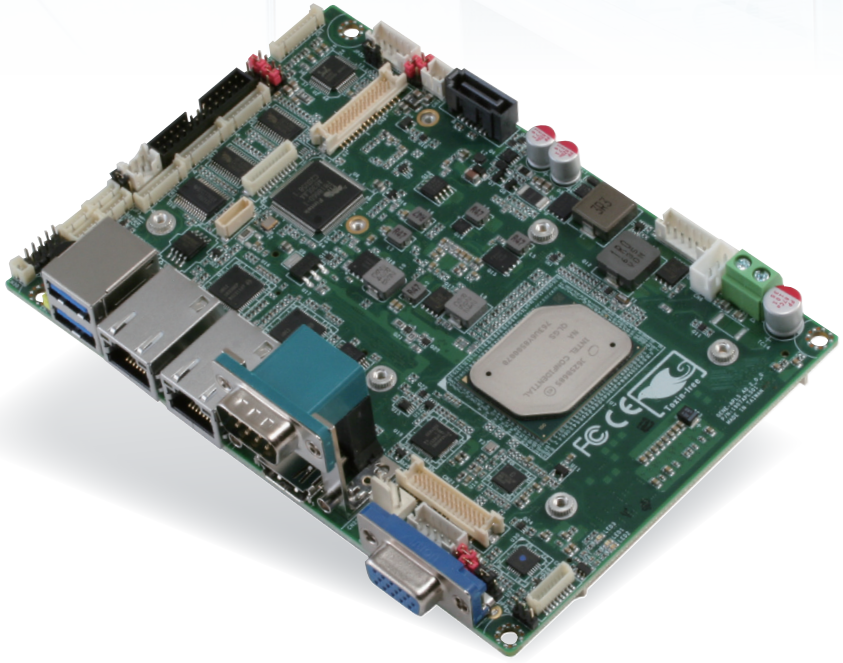
Expansion kit

Part Number	Description	Note
9741KBS900	Graphics card Riser Kit	Graphics card not included (GT 1030 Low Profile D4 2G Graphics AAEON PN: 9686103002)
9741KBS901	Riser USB 2port Kit	Riser USB PN: PER-T500-A10-00
9741KBS902	put 2.5" HDD Kit	2.5" HDD not included

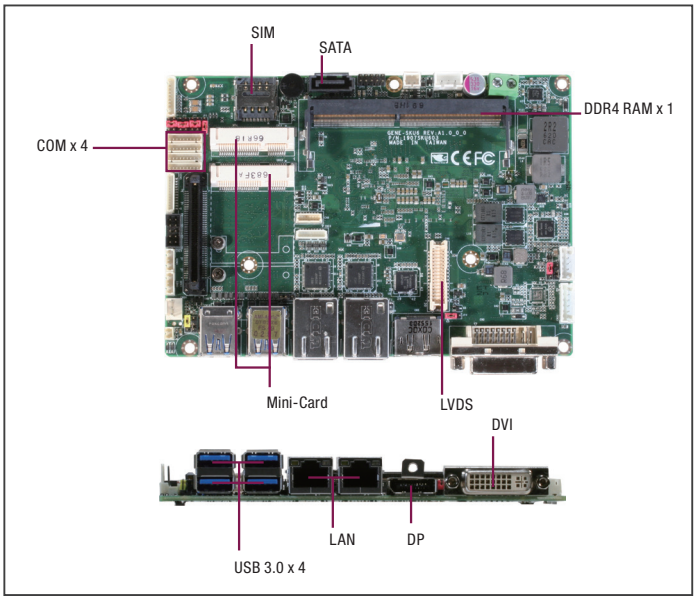
Note: Expansion kits are optional and either or solution.
9741KBS900/9741KBS901 are for H170/Q170 SKU selection only).
Welcome to contact AAEON for further frame grabber required.

SubCompact Boards

03



3.5” SubCompact Board with 7th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC

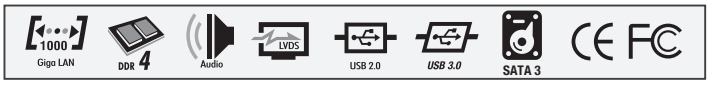


Features

- 7th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC
- DDR4 1866/2133, SODIMM x 1
- DVI, 18/24-bit Dual-Channel LVDS
- 2 CH Audio
- SATA 6.0 Gb/s x 1 & mSATA (Share with Half-size Mini-Card and Selective by BIOS)
- Supports 8-bit Digital I/O, USB 2.0 x 2 , USB 3.0 x 4
- COM x 4 (RS-232 x 1, RS-232/422/485 x 3)
- Mini-Card Slot x 1 (Full size), TPM, SIM
- Wide DC Support 9~36V, +12V Only (Optional)
- 4/5/8-wire Resistive Touch Screen Controller
- BIO Connector for Daughter Board
- Solder Design for System Assembly and Thermal

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	7th Generation Intel® Core™ i7-7600U Processor SoC
CPU Frequency	Up to 3.9GHz
Chipset	7th Generation Intel® Processor SoC
Memory Type	DDR4 1866/2133, SODIMM x 1
Max. Memory Capacity	Up to 16GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+9 ~ 36V or +12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Intel® i7-7600U, DDR4 2400MHz 16GB, 1.85A@ +12V
Dimension (L x W)	5.75" x 4" (146 mm x 101.7 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 81°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	123,000
Certification	CE/FCC
Display	
VGA/LCD Controller	7th Generation Intel® Processor SoC
Video Output	DVI-D,LVDS,DP (Default) DVI-I,LVDS (Optional,DP Colay with VGA)
Backlight inverter supply	Yes
I/O	
Ethernet	Intel® i210/i211, 10/100/1000Base-TX, RJ-45 x 2
Audio	High Definition Audio Interface
USB Port	USB 3.0 x 4, USB 2.0 x 2
Serial Port	RS-232 x 1, RS-232/422/485 x 3
Parallel Port	—
HDD Interface	SATA 3.0 x 1, +5V SATA power connector x 1
FDD Interface	—
SSD	mSATA (Shared with half-size MiniCard and Selected by BIOS)
Expansion Slot	BIO x 1 Mini-Card x 2 and default is mSATA x 1 (Half-size), Mini-Card x 1 (Full-size)
DIO	8-bit
SIM	x 1
TPM	TPM 2.0 x 1
Touch	x 1



Packing List

- GENE-KBU6 with Heatspreader

Optional Accessories

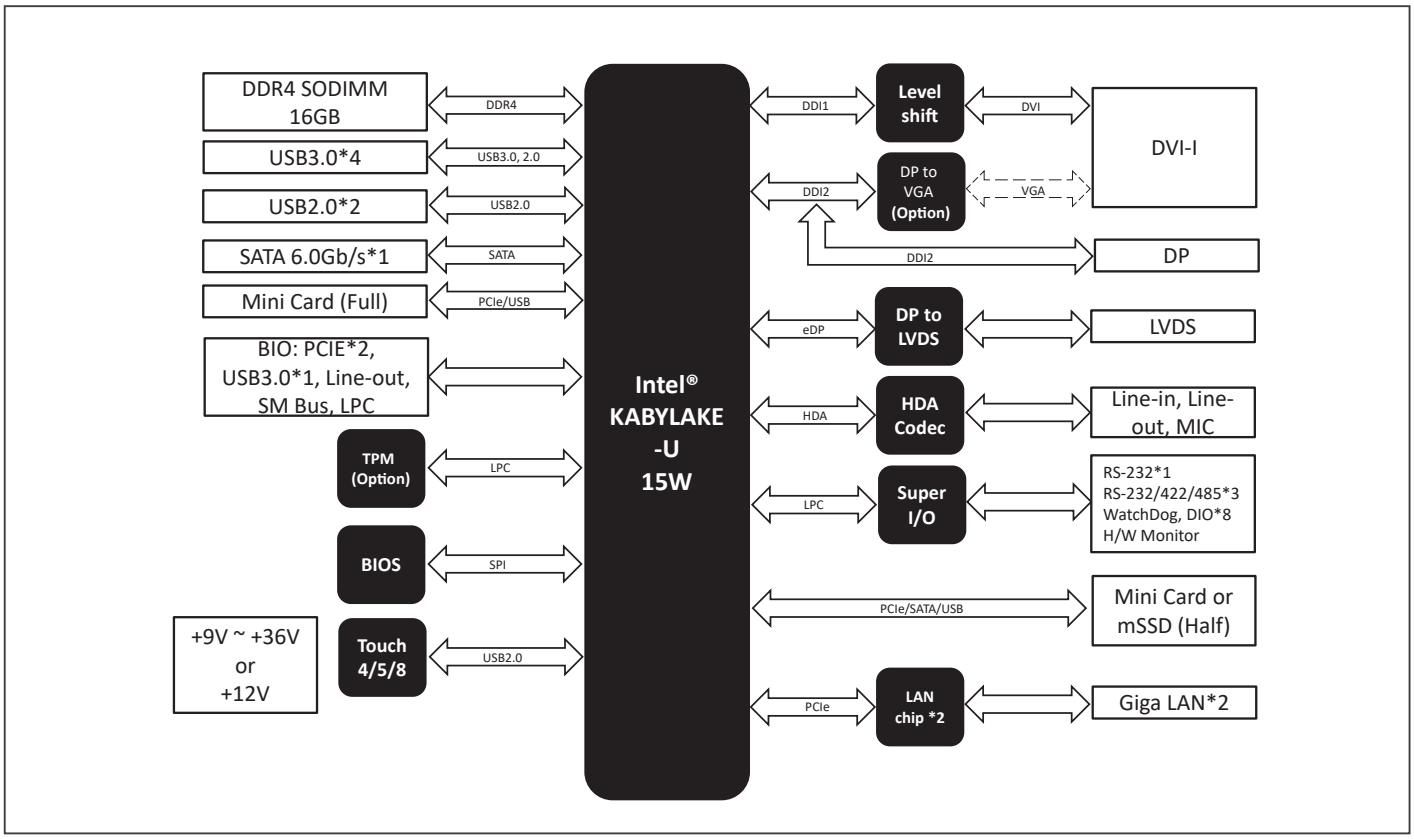
Part Number	Description	QTY
1700050207	(TF)USB CABLE, 1 x 5P Pitch=1.25mm Housinh, 20cm, for PFM-945C	2
1701090150	(TF)Flat Cable, D-Sub 9(M), 9P Housing, 9P 1.25mm pitch Housing, 15cm	4
1709100254	(TF)PHONE JACK Cable, 3P AUDIO JACK, 1 x 10P 1.25mm HOUSING(F), 25cm	1
1702150155	(TF)Power Cable, 15P SATA(F), 2P 2.0mm Housing(PH), 15cm	1
170220020B	(TF)Power Cable, 20P ATX(M), 4P 5.08mm Housing(F), +3P 2.5mm Housing (XH), 20cm	1
1702002010	(TF)Power CABLE, 1 x 2P Pitch=5.0mm Housing, 10cm, for PFM-945C, (12V only)	1
GENE-KBU6-FAN01	CPU Cooler, 3P, 5000RPM, A1.0, REV. A1.0	1
GENE-KBU6-HSK02	Heatsink, 146 x 101.6 x 29mm, Silver, for GENE-KBU6	1
GENE-KBU6-HSK03	Heatsink for DDR4 SO-DIMM	1

CPU Support Chart

CPU	Base Frequency/ Turbo Boost GHz	Core/ Thread	Last Level Cache	TDP	Graphic
i7-7600U	2.8/3.9	2/4	4M	15W	GT2 - 620
i5-7300U	2.6/3.5	2/4	3M	15W	GT2 - 620
i3-7100U	2.4	2/4	3M	15W	GT2 - 620
C-3965U	2.2	2/2	2M	15W	GT1 - 610

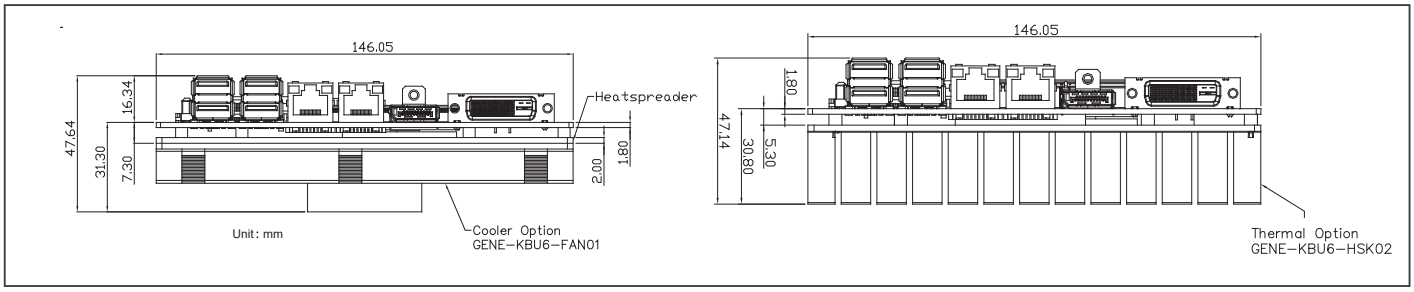
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

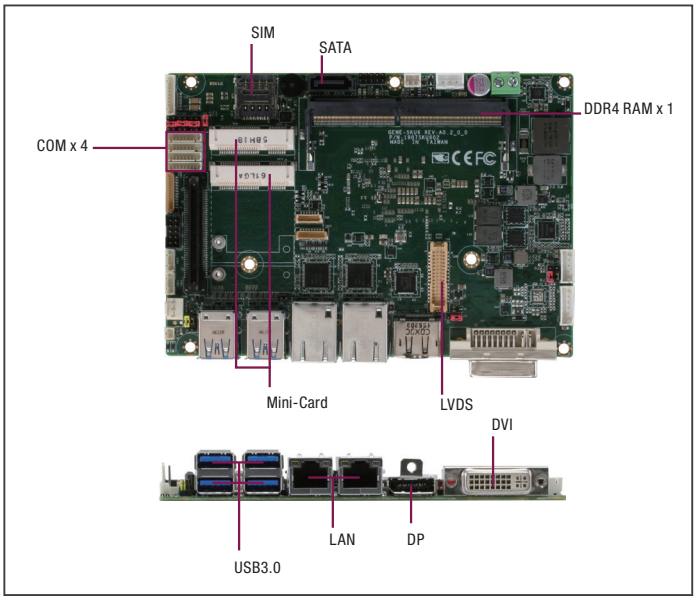
Unit: mm



Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-KBU6-A10-0001	Intel® i7-7600U	Fanless	DVI-D+LVDS+DP	18/24-bit, 2CH	SATA x 1, mSATA x 1	GbE x 2	USB 3.0 x 4, USB 2.0 x 2	1	3	MiniCard x 1 (Full-size)	9~36V	0°C ~ 60°C	DIO x 8, SIM, Touch Controller, TPM

3.5” SubCompact Board with Intel® Core™ i7/i5/i3/Celeron® Processor SoC

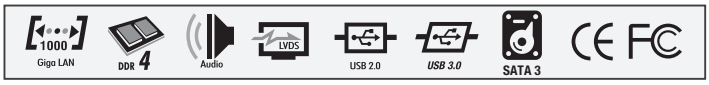


Features

- Intel® Core™ i7/i5/i3/Celeron® Processor SoC
- DDR4 1866/2133, SODIMM x 1
- DVI, DP, 18/24-bit Dual-Channel LVDS
- 2 CH Audio
- SATA 6.0 Gb/s x 1 & mSATA (Shared with Half-size Mini-Card and Selected by BIOS)
- Supports 8-bit Digital I/O, USB 2.0 x 2 , USB 3.0 x 4
- COM x 4 (RS-232 x 1, RS-232/422/485 x 3)
- Mini-Card Slot x 1 (Full size), TPM, SIM
- Wide DC Support 9~36V, +12V Only (Optional)
- 4/5/8-wire Resistive Touch Screen Controller
- BIO Connector for Daughter Board
- Solder Design for System Assembly and Thermal

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	6th Generation Intel® Core™ i7-6600U/i5-6300U Processor SoC
CPU Frequency	Up to 3.0GHz
Chipset	6th Generation Intel® Core™ i7-6600U/i5-6300U Processor SoC
Memory Type	DDR4 1866/2133, SODIMM x1
Max. Memory Capacity	Up to 16 GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+9~36V or +12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Intel® i7-6600U, DDR4 2133MHz 16GB, 1.75A@ +12V
Dimension (L x W)	5.75" x 4" (146 mm x 101.7 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 81°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	123,000
Certification	CE/FCC
Display	
VGA/LCD Controller	6th Generation Intel® Core™ Processor SoC
Video Output	DVI-D,LVDS,DP (Default) DVI-I,LVDS (Optional,DP Colay with VGA)
Backlight inverter supply	Yes
I/O	
Ethernet	Intel® i210/i211, 10/100/1000Base-TX, RJ-45 x 2
Audio	High Definition Audio Interface
USB Port	USB 3.0 x 4 USB 2.0 x 2
Serial Port	RS-232 x 1, RS-232/422/485 x 3
Parallel Port	—
HDD Interface	SATA 3.0 x 1 +5V SATA power connector x 1
FDD Interface	—
SSD	mSATA (Shared with Half-size Mini-Card and Selected by BIOS)
Expansion Slot	BIO x 1 mSATA x 1 (Half-size), Mini-Card x 1 (Full-size)
DIO	8-bit
SIM	x 1
TPM	TPM2.0
Touch	x 1



Packing List

- GENE-SKU6 with Heatspreader

Optional Accessories

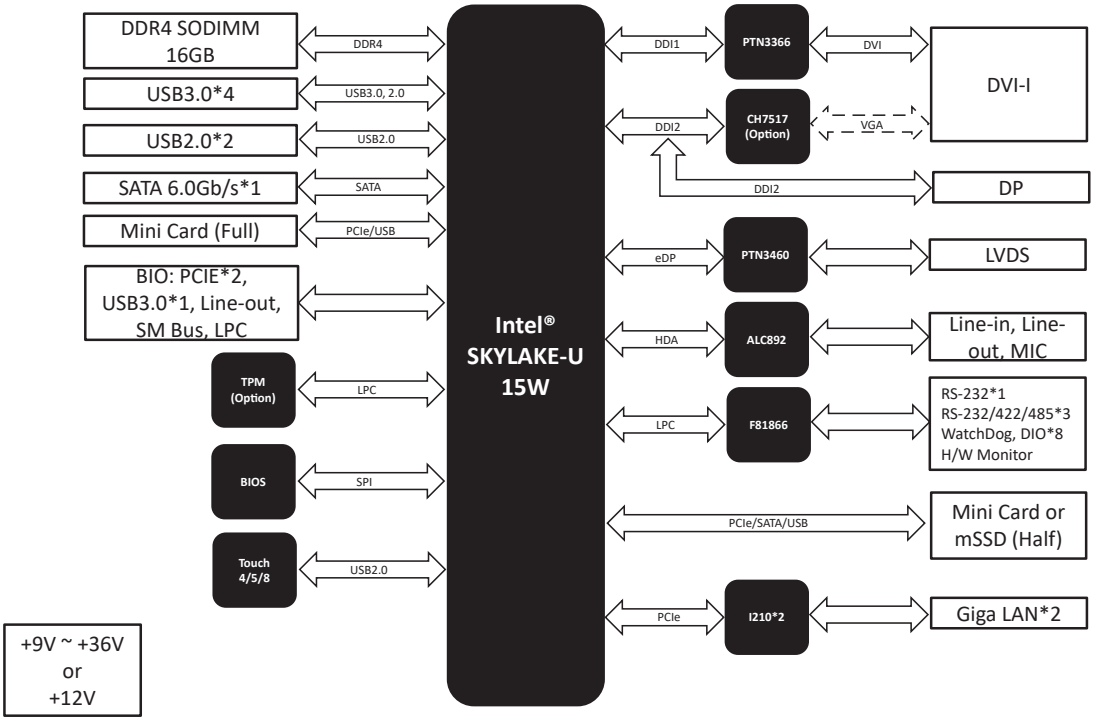
Part Number	Description	QTY
1700050207	(TF)USB CABLE.1*5P Pitch=1.25mm Housinh.20cm.for PFM-945C	2
1701090150	(TF)Flat Cable.D-Sub 9(M).9P Housing.9P 1.25mm pitch Housing.15cm	4
1709100254	(TF)PHONE JACK Cable.3P AUDIO JACK.1*10P 1.25mm HOUSING(F).25cm	1
1702150155	(TF)Power Cable.15P SATA(F).2P 2.0mm Housing(PH).15cm	1
170220020B	(TF)Power Cable.20P ATX(M).4P 5.08mm Housing(F).+3P 2.5mm Housing(XH).20cm	1
1702002010	(TF)Power CABLE.1*2P Pitch=5.0mm Housing.10cm.for PFM-945C.(12V only)	1
GENE-SKU6-FAN01	CPU Cooler, 3P, 5000RPM, A1.0, REV. A1.0	1
GENE-SKU6-HSK01	Al, Heatsink, 146 x 80 x 14mm, Silver, REV. A1.0	1
GENE-SKU6-HSK02	Heatsink, 146 x 101.6 x 29mm, Silver, for GENE-SKU6	1
GENE-SKU6-HSK03	Heat Sink.72*28*10mm.GENE-SKU6.SODIMM DDR4	1

OS Support Chart

CPU	Base Frequency/ Turbo Boost GHz	Core/ Thread	Last Level Cache	TDP	Graphic
i7-6600U	2.6/3.4	2/4	4M	15W	GT2 - 520
i5-6300U	2.4/3.0	2/4	3M	15W	GT2 - 520
i3-6100U	2.3	2/4	3M	15W	GT2 - 520
C-3955U	2	2/2	2M	15W	GT1 - 510

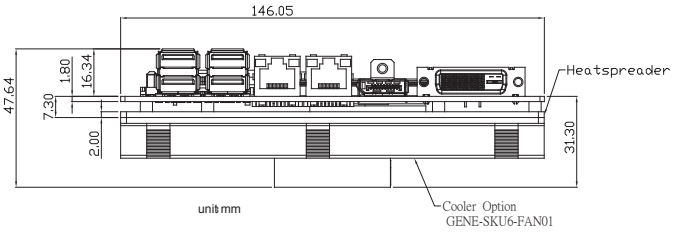
Note: All specifications are subject to change without notice.

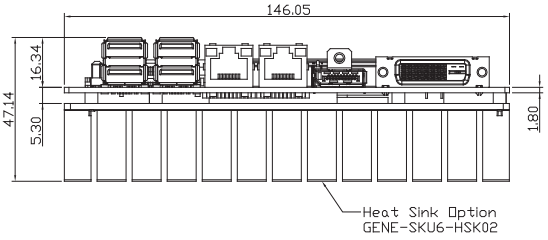
Block Diagram



Dimension

Unit: mm



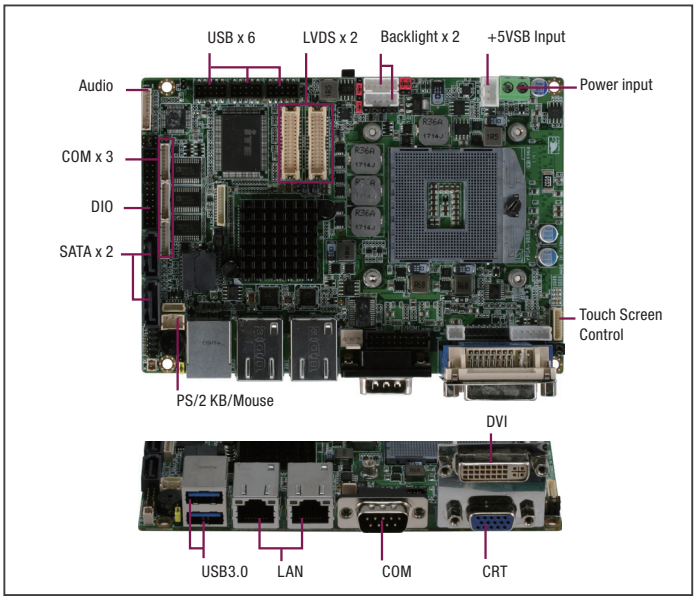


Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-SKU6-A10-0001	Intel® i5-6300U	Fanless	DVI-D+LVDS+DP	18/24-bit, 2CH	SATA x 1 mSATA x 1	GbE x 2	USB 3.0 x 4 USB 2.0 x 2	1	3	MiniCard x 1 (Full-size)	9~36V	0°C ~ 60°C	DIO x 8, SIM, Touch Controller, TPM
GENE-SKU6-A10-0002	Intel® i7-6600U	Fanless	DVI-D+LVDS+DP	18/24-bit, 2CH	SATA x 1 mSATA x 1	GbE x 2	USB 3.0 x 4 USB 2.0 x 2	1	3	MiniCard x 1 (Full-size)	9~36V	0°C ~ 60°C	DIO x 8, SIM, Touch Controller, TPM
GENE-SKU6W1-A10-0002	Intel® i7-6600U	Fanless	DVI-D+LVDS+DP	18/24-bit, 2CH	SATA x 1 mSATA x 1	GbE x 2	USB 3.0 x 4 USB 2.0 x 2	1	3	MiniCard x 1 (Full-size)	9~36V	-20°C ~ 70°C	DIO x 8, SIM, Touch Controller, TPM
GENE-SKU6-A10-0003	Intel® i3-6100U	Fanless	DVI-D+LVDS+DP	18/24-bit, 2CH	SATA x 1 mSATA x 1	GbE x 2	USB 3.0 x 4 USB 2.0 x 2	1	3	MiniCard x 1 (Full-size)	9~36V	0°C ~ 60°C	DIO x 8, SIM, Touch Controller, TPM

GENE-QM77 Rev. A

3.5” SubCompact Board with 3rd Generation Intel® Core™ i7/i5/i3 Mobile Processor



Features

- 3rd Generation Intel® Core™ i7/i5/i3 Mobile Processor
- Intel® QM77/HM76
- DDR3 1333/1600 MHz SODIMM, Up to 8 GB
- Gigabit Ethernet x 2, RJ-45 x 2
- CRT, 18/24-bit Dual-Channel LVDS LCD x 2, DVI
- 2CH HD Audio
- SATA 6.0 Gb/s x 2 (RAID by BIOS), CFast™ x 1
- USB 3.0 x 2, USB2.0 x 6, COM x 4, 8-bit Digital I/O
- Mini-Card x 1
- +12V Only Operation
- Supports iAMT with Intel® QM77
- Onboard 4/5/8-wire Resistive Touch Screen Controller
- AAEON Hi-Safe/Hi-Manager SDK/Utility Supported
- mSATA x 1 (Optional, Sharded Mini-Card Interface)
- IEEE 1588 Compatible

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	Intel® Core™ i7/i5/i3/Celeron® (Socket-G2 based)
CPU Frequency	Up to 2.7 GHz
Chipset	Intel® PCH QM77/MH76
Memory Type	DDR3 1333/1600, SODIMM x 1
Max. Memory Capacity	8 GB
BIOS	SPI type
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Intel® Core™ i7-3610QE 2.3 GHz, DDR3 1333 8 GB 5.2A@+12V Intel® Core™ i5-3610ME 2.7 GHz, DDR3 1333 8 GB 3.47A@+12V
Dimension (L x W)	5.75" x 4" (146mm x 101.6mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	51,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Core™ i7/i5/i3/Celeron®integrated
Video Output	CRT+LVDS, CRT+DVI, LVDS+DVI, LVDS+LVDS
Backlight inverter supply	Up to 24-bit dual-channel LVDS x 2
I/O	
Ethernet	Intel® 82579LM , Realtek RTL-8111E, 10/100/1000Base
Audio	High Definition Audio Interface
USB Port	USB2.0 x 6 , USB 3.0 x 2
Serial Port	RS-232 x 3 , RS-232/422/485 x 1
Parallel Port	SPP/EPP/ECP x 1 (sharded with DIO, By BIOS setting)
HDD Interface	SATA3.0 x 2
FDD Interface	—
SSD	CFast™ mSATA (Shared with Mini-Card by BOM)
Expansion Slot	Mini-Card x 1
DIO	8-bit
SIM	x 1
TPM	x 1
Touch	x 1

Packing List

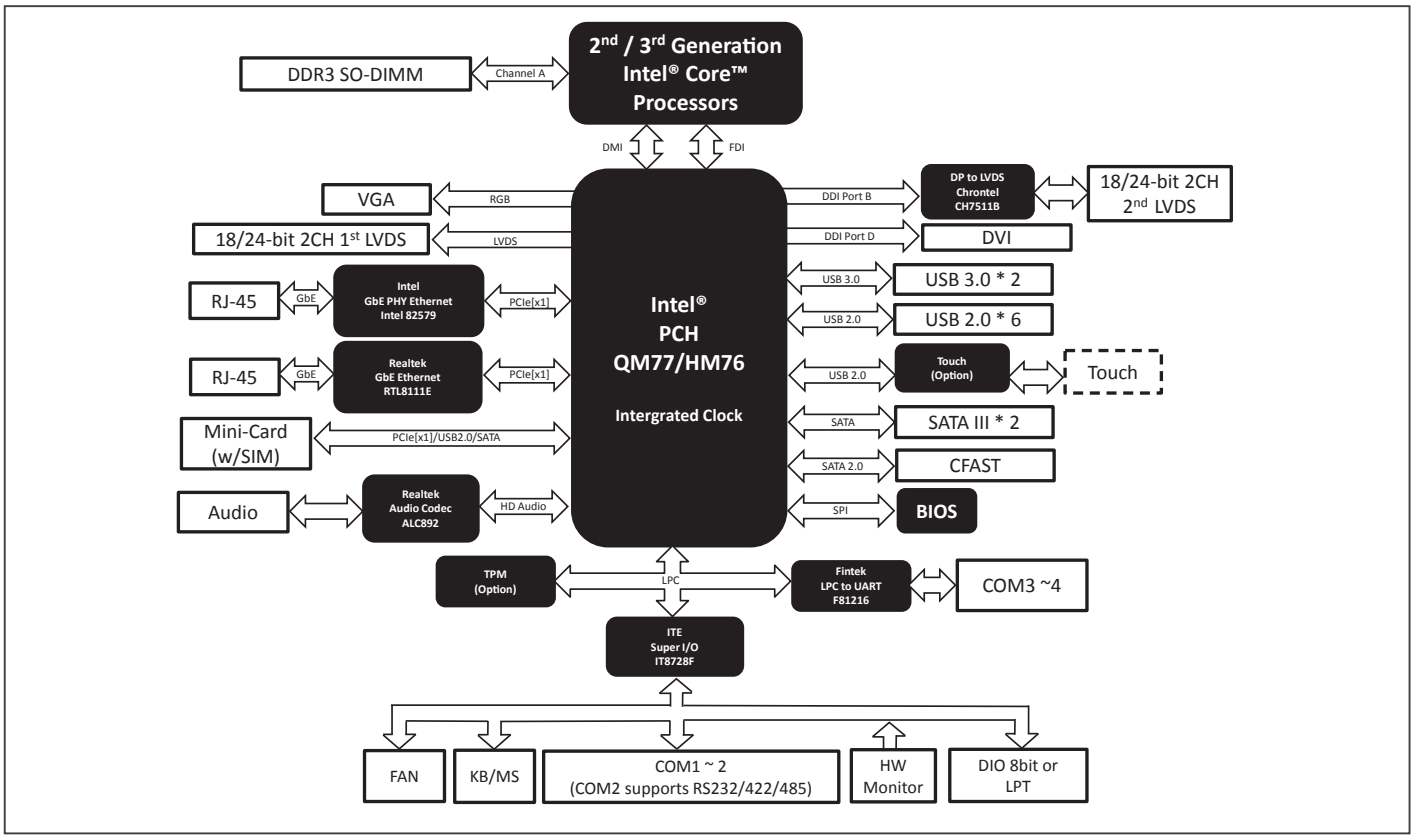
- Cooler
- GENE-QM77 Rev. A

Optional Accessories

Part Number	Description	QTY
1709100208	USB Cable, Length 20cm	1
1701090150	COM Port Cable, Length 15cm	1
1709100254	Audio Cable, Length 25cm	1
1702150155	Power Cable for 2.5” SATA Hard Disk, Length 15cm	1
1709070500	SATA Cable, Length 50cm	1
170204010R	Big Double Row 4-Pin Power Input Cable For +12V Input, Length 10cm	1
1700060157	Keyboard/Mouse Cable	1
17592QM774	CPU Cooler 47W FAN + Heatsink, 60 x 60 x 25 mm (1U)	1

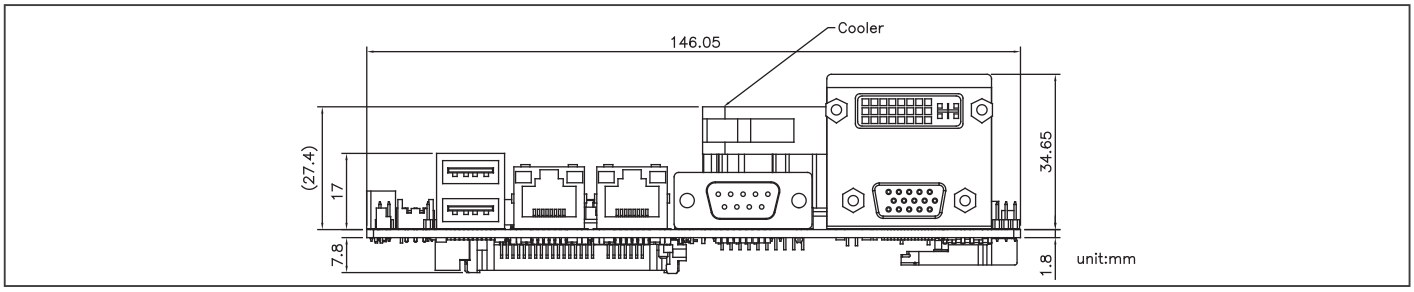
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

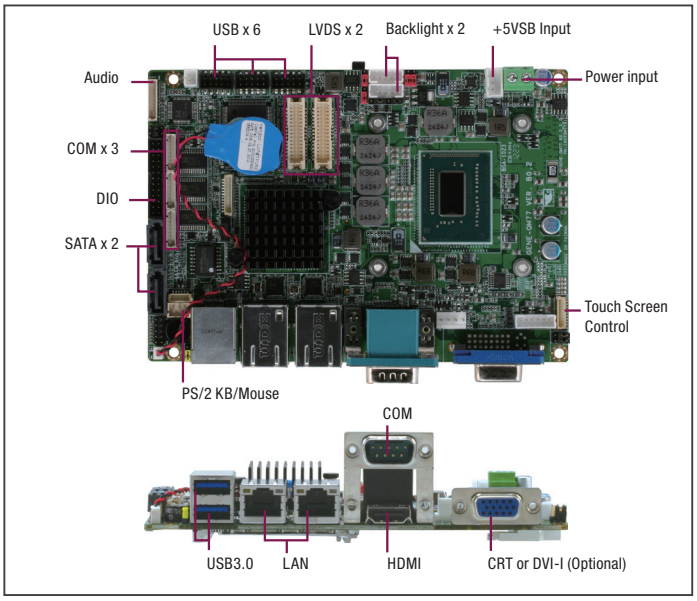
Unit: mm



Ordering Information

Part Number	CPU	Chipset	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
TF-GENE-QM77-A10	Socket	Intel® QM77	Fan	CRT + LVDS CRT+ DVI LVDS + DVI LVDS + LVDS	1st 18/24b, 2CH 2nd 18/24b, 2CH	SATA x 2 CFast™ x 1	GbE x 2	USB 3.0 x 2 UBS2.0 x 6	3	1	Mini-Card x 1	+12V, AT/ATX	0°C ~ 60°C	TPM, Touch Controller, DIO x 8
TF-GENE-QM77-A10-06	Socket	Intel® HM76	Fan	CRT + LVDS CRT+ DVI LVDS + DVI LVDS + LVDS	1st 18/24b, 2CH 2nd 18/24b, 2CH	SATA x 2 CFast™ x 1	GbE x 2	USB 3.0 x 2 UBS2.0 x 6	3	1	Mini-Card x 1	+12V, AT/ATX	0°C ~ 60°C	TPM, Touch Controller, DIO x 8

3.5” SubCompact Board with Onboard Intel® Core™ i7-3555LE/ Celeron® 847E Processor



Features

- Onboard Intel® Core™ i7-3555LE/ Celeron® 847E Processor
- Intel® QM77/HM76
- DDR3 1333/1600 MHz SODIMM x 1, Up to 8 GB
- Gigabit Ethernet x 2, RJ-45 x 2
- CRT or DVI (Optional), 18/24-bit Dual-Channel LVDS LCD x 2, HDMI
- 2CH HD Audio
- SATA 6.0 Gb/s x 2 (RAID by BIOS), CFast™ x 1
- USB 3.0 x 2, USB2.0 x 6, COM x 4, 8-bit Digital I/O
- Mini-Card x 1
- +12V Only Operation
- Supports iAMT with Intel® QM77
- Onboard 4/5/8-wire Resistive Touch Screen Controller
- AAEON Hi-Safe/Hi-Manager SDK/Utility Supported
- mSATA x 1 (Optional, Sharded Mini-Card Interface)
- IEEE 1588 Compatible

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	Intel® Core™ i7/i3/Celeron® (BGA based,17W)
CPU Frequency	Up to 1.8 GHz
Chipset	Intel® PCH QM77/HM76
Memory Type	DDR3 1066/1333/1600, SODIMM x 1
Max. Memory Capacity	8 GB
BIOS	SPI type
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Intel® Core™ i7-3555LE 2.5 GHz, DDR3 1333 8 GB 2.49A@+12V
Dimension (L x W)	5.75" x 4" (146mm x 101.6mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	50,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Core™ i7/i3/Celeron®integrated
Video Output	CRT+LVDS, CRT+DVI, CRT+HDMI, LVDS+DVI, LVDS+HDMI, DVI+HDMI, LVDS+LVDS
Backlight inverter supply	Up to 24-bit dual-channel LVDS x 2
I/O	
Ethernet	Intel® 82579LM , Realtek RTL-8111E, 10/100/1000Base
Audio	High Definition Audio Interface
USB Port	USB2.0 x 6 , USB 3.0 x 2
Serial Port	RS-232 x 3 , RS-232/422/485 x 1
Parallel Port	SPP/EPP/ECP x 1 (By BIOS setting)
HDD Interface	SATA3.0 x 2
FDD Interface	—
SSD	CFast™, mSATA (Shared with Mini-Card by BOM)
Expansion Slot	Mini-Card x 1
DIO	8-bit
SIM	x 1
TPM	x 1
Touch	x 1

Packing List

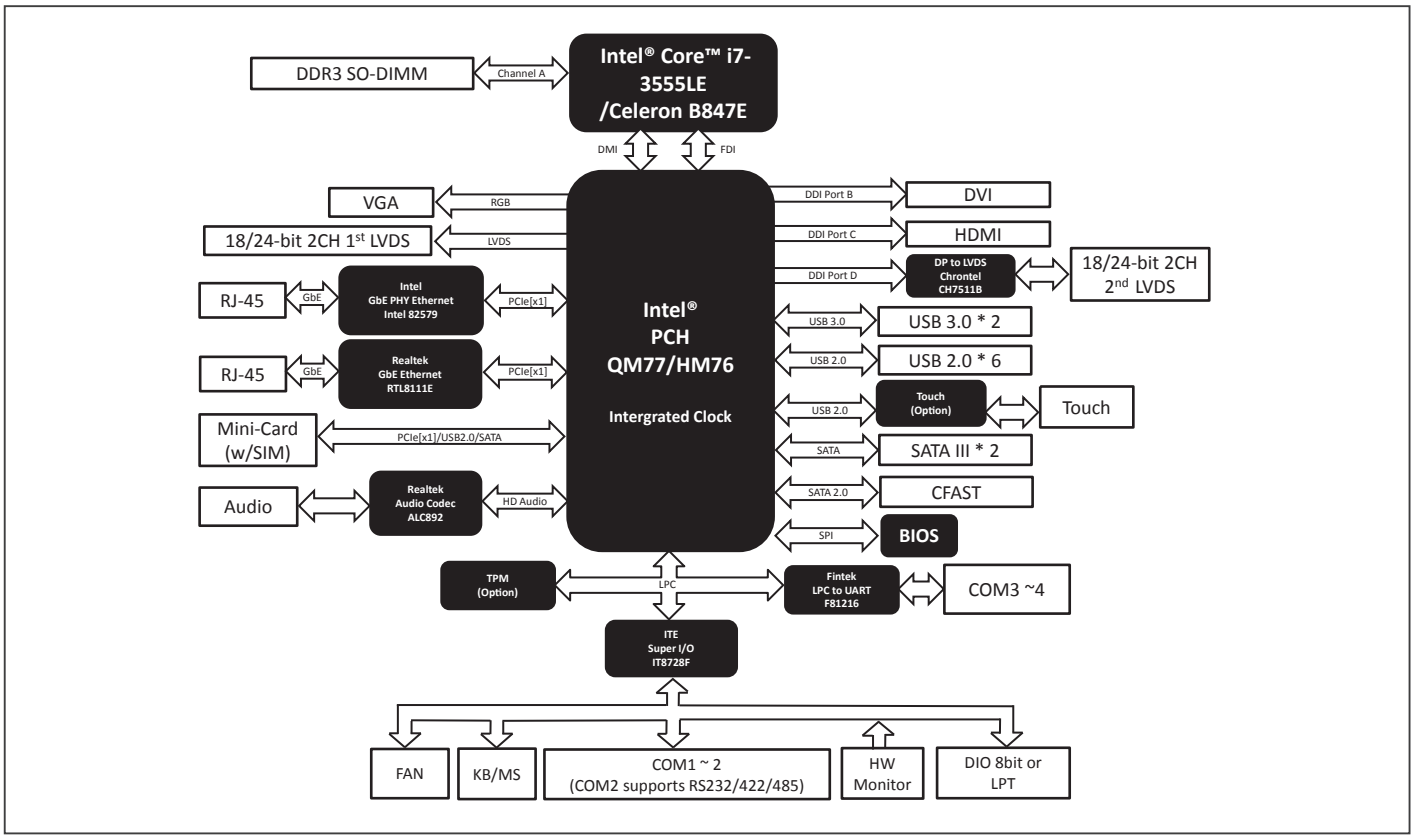
- GENE-QM77 Rev. B with Active Cooler

Optional Accessories

Part Number	Description	QTY
1709100208	USB Cable, Length 20cm	1
1701090150	COM Port Cable, Length 15cm	1
1709100254	Audio Cable, Length 25cm	1
1702150155	Power Cable for 2.5” SATA Hard Disk, Length 15cm	1
1709070500	SATA Cable, Length 50cm	1
170204010R	Big Double Row 4-Pin Power Input Cable For +12V Input, Length 10cm	1
1700060157	Keyboard/Mouse Cable	1

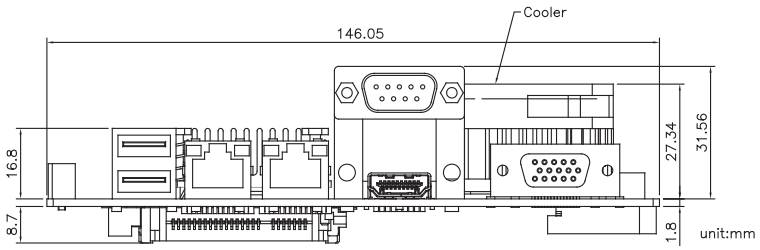
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

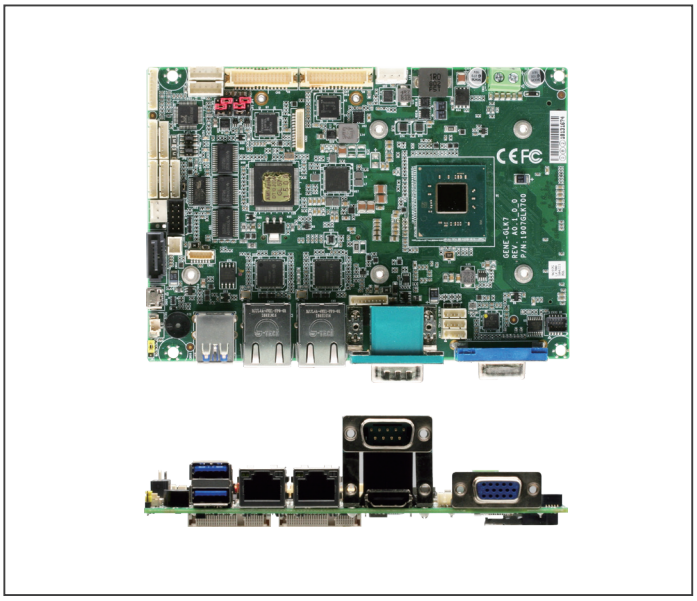
Unit: mm



Ordering Information

Part Number	CPU	Chipset	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-QM77-B10	Intel® Core™ i7-3555LE	Intel® QM77	Fan	CRT + LVDS CRT + HDMI LVDS +HDMI LVDS + LVDS	1st 18/24b, 2CH 2nd 18/24b, 2CH	SATA x 2 CFast™ x 1	GbE x 2	USB 3.0 x 2 UBS2.0 x 6	3	1	Mini-Card x 1	+12V, AT/ ATX	0°C ~ 60°C	Touch Controller, TPM, DIO x 8
GENE-QM77-B10-01	Intel® Core™ i7-3555LE	Intel® QM77	Fan	DVI + LVDS DVI + HDMI LVDS + HDMI LVDS + LVDS	1st 18/24b, 2CH 2nd 18/24b, 2CH	SATA x 2 CFast™ x 1	GbE x 2	USB 3.0 x 2 UBS2.0 x 6	3	1	Mini-Card x 1	+12V, AT/ ATX	0°C ~ 60°C	Touch Controller, TPM, DIO x 8
GENE-QM77-B10-06	Intel® Celeron® 847E	Intel® HM76	Fan	CRT+LVDS CRT + HDMI LVDS + HDMI LVDS + LVDS	1st 18/24b, 2CH 2nd 18/24b, 2CH	SATA x 2 CFast™ x 1	GbE x 2	USB 3.0 x 2 UBS2.0 x 6	2	1	Mini-Card x 1	+12V, AT/ ATX	0°C ~ 60°C	Touch Controller, DIO x 8

3.5" SubCompact Board with Onboard Intel® J5005/N4000 Processor SoC

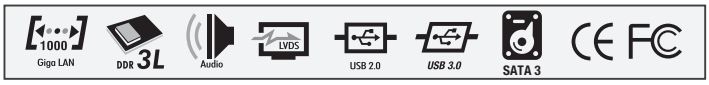


Features

- Intel® Pentium® J5005/ Celeron® N4000 Processor SoC
- DDR4 2400MHz, SODIMM x1, up to 16G
- VGA/LVDS/LVDS2 (HDMI co-layout with LVDS2)
- 2 CH Audio
- SATA III x 1
- 6 COM, 2 USB 2.0 , 2 USB 3.0 , USB2.0 OTG
- Mini Card x 1(Full size), mSATA x1 (Full size)
- DC 12V only, AT/ATX Mode
- Support 8-bit Digital I/O

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	Intel® J5005/ N4000 series SoC Processor
CPU Frequency	up to 2.8GHz
Chipset	Intel® J5005/ N4000 series SoC Processor
Memory Type	DDR4 2400MHz, SODIMM x1
Max. Memory Capacity	Up to 16GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	12V Only
Power Supply Type	AT/ ATX
Power Consumption (Typical)	TBD
Dimension (L x W)	5.75" x 4" (146mm x 101.7mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 81°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	TBD
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® J5005/ N4000 series SoC Processor
Video Output	LVDS, LVDS2, VGA (HDMI 2.0, co-layout with 2nd LVDS)
Backlight inverter supply	Yes
I/O	
Ethernet	Intel i210/I211, 10/100/1000Base, RJ 45 x2
Audio	High Definition Audio Interface
USB Port	USB 3.0 x 2 USB 2.0 x 2 USB2.0 OTG x 1
Serial Port	RS-232 x 4 , RS-232/422/485 x 2
Parallel Port	-
HDD Interface	SATA 3.0 x 1 +5V SATA power connector x 1
FDD Interface	—
SSD	mSATA x 1 (Full)
Expansion Slot	mini-card x 1 (Full)
DIO	8 Bit
SIM	x 1 (uSIM)
TPM	-
Touch	-



Packing List

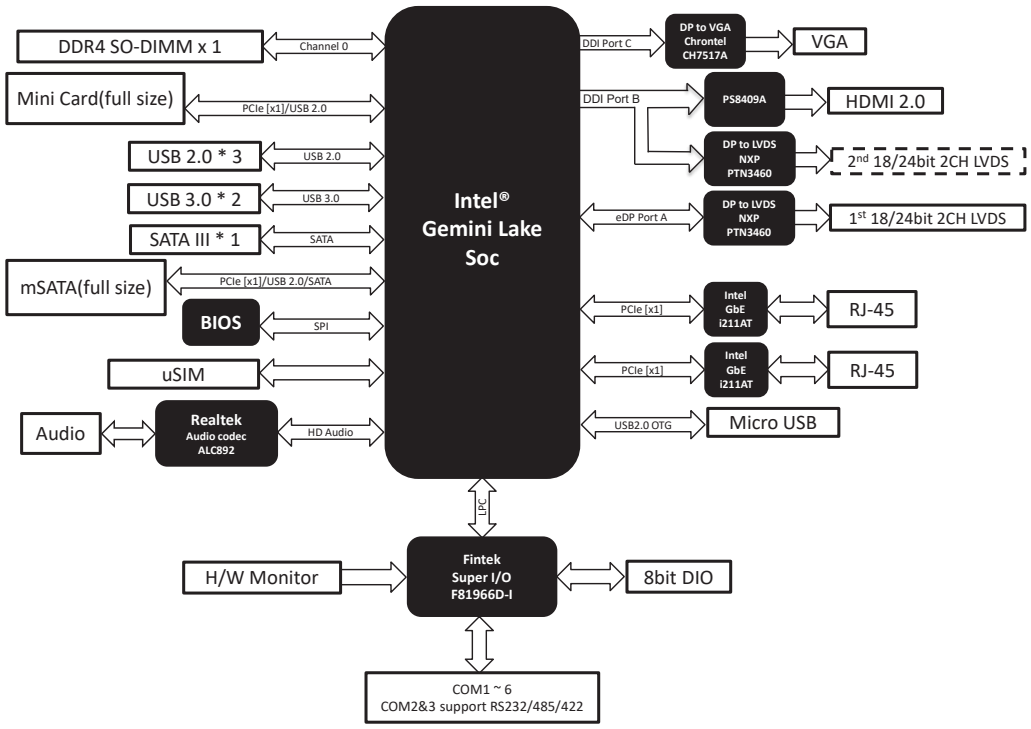
- GENE-GLK7

Optional Accessories

Part Number	Description	QTY
1700050207	(TF) USB CABLE. 1*5P Pitch=1.25mm Housinh. 20cm. for PFM-945C	8
1701090150	(TF) Flat Cable. D-Sub 9(M). 9P Housing. 9P 1.25mm pitch Housing. 15cm	10
1709100254	(TF) PHONE JACK Cable. 3P AUDIO JACK. 1*10P 1.25mm HOUSING(F). 25cm	1
1702150155	(TF) Power Cable. 15P SATA(F). 2P 2.0mm Housing(PH). 15cm	1
170204010R	(TF) Power Cable. Double 4P 5.08mm Housing(M). 10cm	1
1703120130	(TF) LPC cable. 12P. to 12P 1.0mm Housing. 13cm	1
GENE-GLK7-HSK01	Heatsink	1

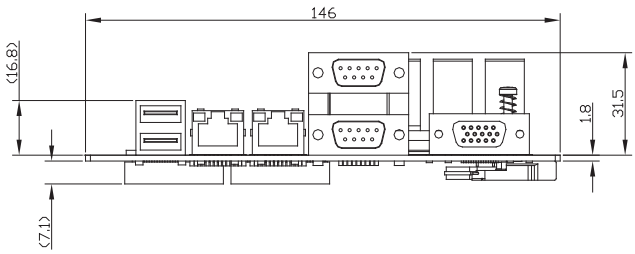
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

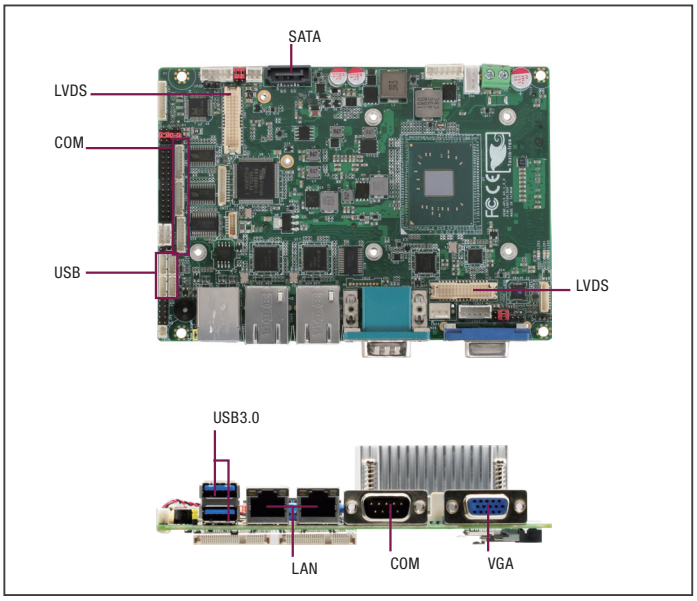
Unit: mm



Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-GLK7	TBD	Fanless	VGA/LVDS	24bit,2CH	SATA x 1 mSATA x 1 (full size)	GbE x 2	USB3.0 x 2 USB 2.0 x 3	4	2	miniCard x 1 (full size)	12V	0°C ~ 60°C	DIO x 8

3.5” SubCompact Board with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC

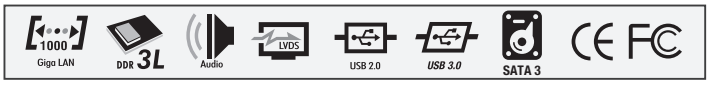


Features

- Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
- DDR3L 1866 MHz SODIMM x 1, up to 8 GB
- VGA/LVDS/LVDS2 (HDMI Co-layout with LVDS2 Optional)
- 2 CH Audio, SATA 6.0 Gb/s x 1
- Supports 8-bit Digital I/O , USB 2.0 x 4 , USB 3.0 x 2 , COM x 4
- Mini Card x 1 (Half-size), mSATA x 1 (Full size)
- DC 12V Only or +9~19V (Optional), AT/ATX Mode
- Supports TPM (Optional)
- 4/5/8-wire Resistive Touch Screen Controller (Optional)

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	Intel® Pentium® N4200/ Celeorn® N3350 Processor SoC
CPU Frequency	Up to 2.5 GHz
Chipset	Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
Memory Type	DDR3L 1866MHz, SODIMM x 1
Max. Memory Capacity	Up to 8GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V OR +9~19V (optional)
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Intel® N4200, DDR3L 1600MHz 8GB, 1.57A@ +12V
Dimension (L x W)	5.75" x 4" (146 mm x 101.7 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 81°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	128,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Atom™ N4200/ N3350 Processor SoC integrate
Video Output	VGA/LVDS/ LVDS2 (co-layout with HDMI, optional)
Backlight inverter supply	Yes
I/O	
Ethernet	Intel® i210/I211, 10/100/1000Base-TX, RJ-45 x 2
Audio	High Definition Audio Interface
USB Port	USB 3.0 x 2 USB 2.0 x 4
Serial Port	RS-232 x 2 , RS-232/422/485 x 2
Parallel Port	SPP/EPP/ECP x 1 (Option, Shared with DIO)
HDD Interface	SATA 3.0 x 1 +5V SATA power connector x 1
FDD Interface	—
SSD	mSATA
Expansion Slot	mSATA x 1 (Full-size) MiniCard x 1 (Half-size)
DIO	8-bit
SIM	x 1 (uSIM) (Optional)
TPM	TPM2.0 x 1 (Optional)
Touch	x 1 (Optional)



Packing List

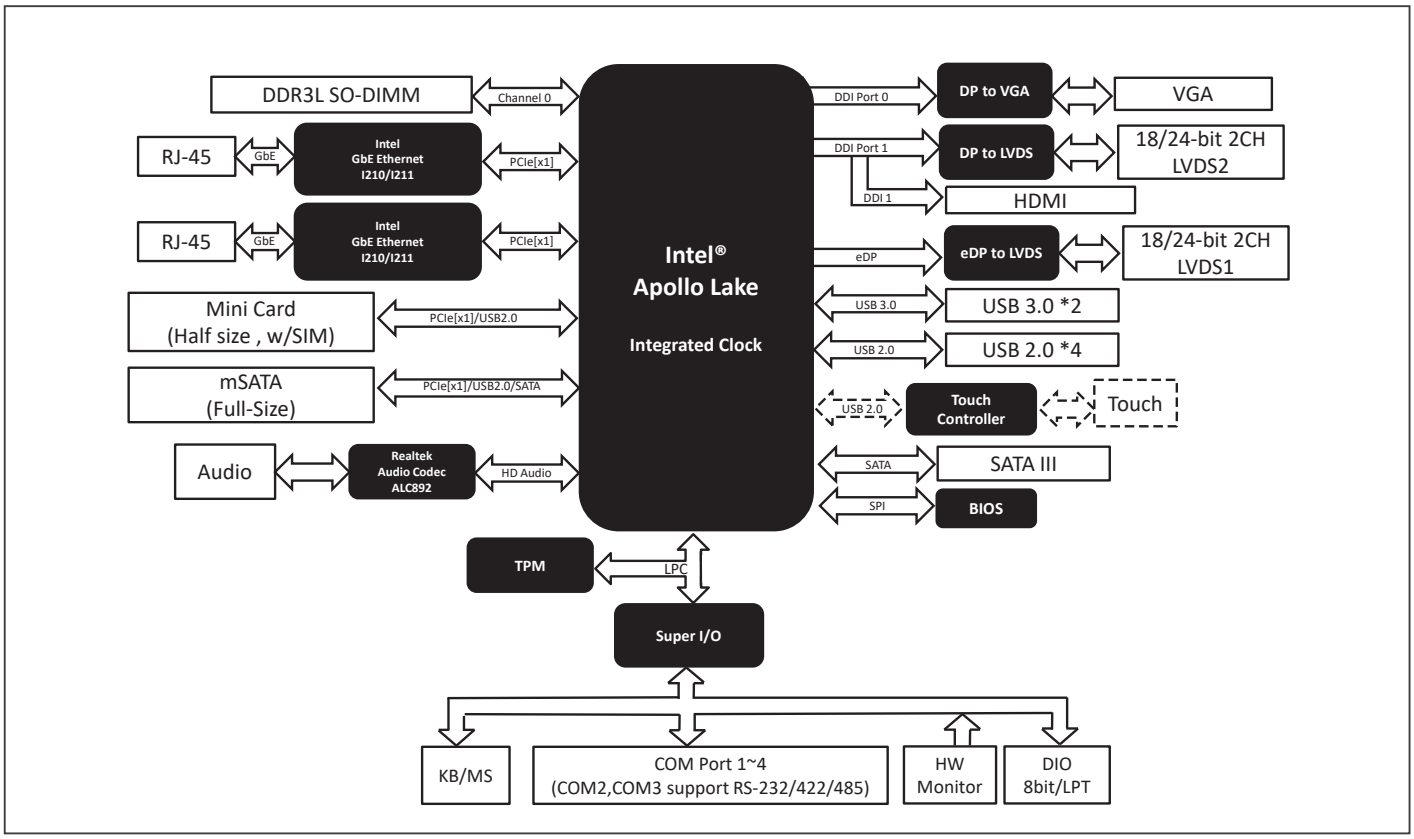
- GENE-APL5 with Heatsink

Optional Accessories

Part Number	Description	QTY
1700050207	(TF) USB CABLE.1*5P Pitch=1.25mm Housinh.20cm.for PFM-945C	4
1701090150	(TF) Flat Cable.D-Sub 9(M).9P Housing.9P 1.25mm pitch Housing.15cm	3
1709100254	(TF) PHONE JACK Cable.3P AUDIO JACK.1*10P 1.25mm HOUSING(F).25cm	1
1709070500	(TF) SATA CABLE.7P Pitch 1.27mm.50cm	1
1701260200	(TF) Flat Cable.25P D-SUB FEMALE.26P 2.00mm Pitch Housing.20cm	1
170204010R	(TF) Power Cable.Double 4P 5.08mm Housing(M).10cm	1
1702150155	(TF) Power Cable.15P SATA(F).2P 2.0mm Housing(PH).15cm	1
170220020B	(TF) Power Cable.20P ATX(M).4P 5.08mm Housing(F).+3P 2.5mm Housing(XH).20cm	1
1700060157	(TF) Cable.6P 2.0mm Housing.6P JACK W/SCREW KB&MS.15cm	1

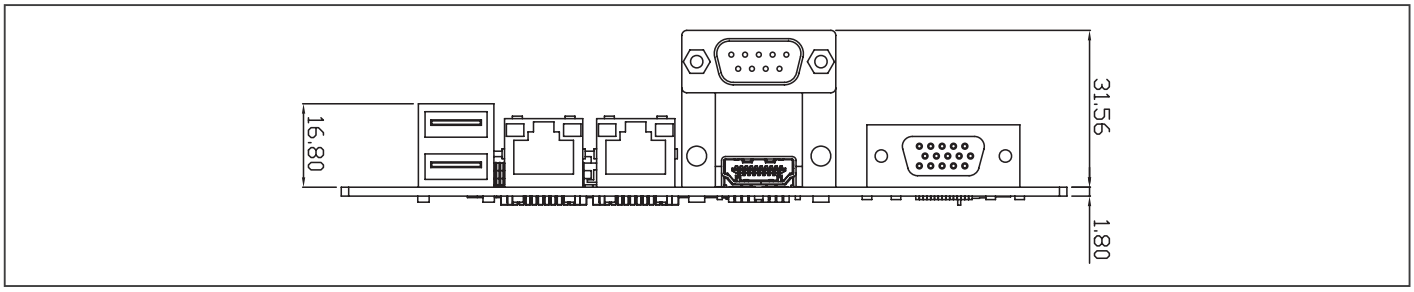
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

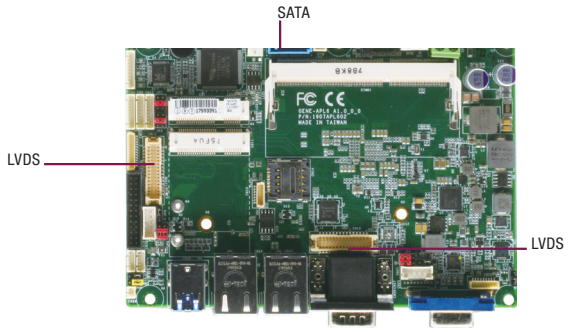
Unit: mm



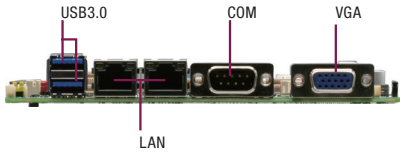
Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-APL5-A11-0001	N3350	Fanless	VGA/LVDS	24bit,2CH	SATA x 1, mSATA x 1 (Full-size)	GbE x 2	USB 3.0 x 2, USB 2.0 x 4	2	2	MiniCard x 1 (half size)	12V	0°C ~ 60°C	DIO x 8
GENE-APL5-A11-0002	N3350	Fanless	VGA/LVDS/ LVDS2	24bit,2CH	SATA x 1, mSATA x 1 (Full-size)	GbE x 2	USB 3.0 x 2, USB 2.0 x 4	2	2	MiniCard x 1 (half size)	9~19V	0°C ~ 60°C	Touch Controller, SIM, TPM, DIO x 8

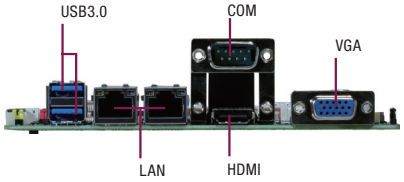
3.5” SubCompact Board with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC



Standard



With HDMI, Optional



Features

- Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
- DDR3L 1866 MHz SODIMM x 1, up to 8 GB
- VGA/LVDS/LVDS2 (HDMI Co-layout with LVDS2 Optional)
- 2 CH Audio, SATA 6.0 Gb/s x 1, eMMC up to 64G (Optional)
- Supports 8-bit Digital I/O , USB 2.0 x 2 , USB 3.0 x 2 , COM x 4
- Mini Card x 1 (Full-size), mSATA x 1 (Half-size)
- 9~36V wide DC input or +12V only (Optional), AT/ATX Mode
- Supports TPM (Optional)
- 4/5/8-wire Resistive Touch Screen Controller (Optional)



I/O	
Ethernet	Intel® i210/I211, 10/100/1000Base-TX, RJ-45 x 2
Audio	High Definition Audio Interface
USB Port	USB 3.0 x 2 USB 2.0 x 2
Serial Port	RS-232 x 2 , RS-232/422/485 x 2
Parallel Port	SPP/EPP/ECP x 1 (Option, Shared with DIO)
HDD Interface	SATA 3.0 x 1 +5V SATA power connector x 1
FDD Interface	—
SSD	eMMC 16G/32G/64G (optional)
Expansion Slot	Mini Card x 1 (Full-size) mSATA x 1 (Half-size)
DIO	8-bit
SIM	x 1 (uSIM)
TPM	TPM 2.0 x 1 (option)
Touch	x 1 (option)

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
CPU Frequency	up to 2.5GHz
Chipset	Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
Memory Type	DDR3L 1866MHz, SODIMM x 1
Max. Memory Capacity	Up to 8GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+9~36V or +12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Intel® N4200, DDR3L 1600MHz 8G, 1.55A@ +12V
Dimension (L x W)	5.75" x 4" (146 mm x 101.7 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 81°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	128,793
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
Video Output	LVDS, LVDS2, VGA (HDMI is option, co-layout with LVDS2)
Backlight Inverter Supply	Yes

Packing List

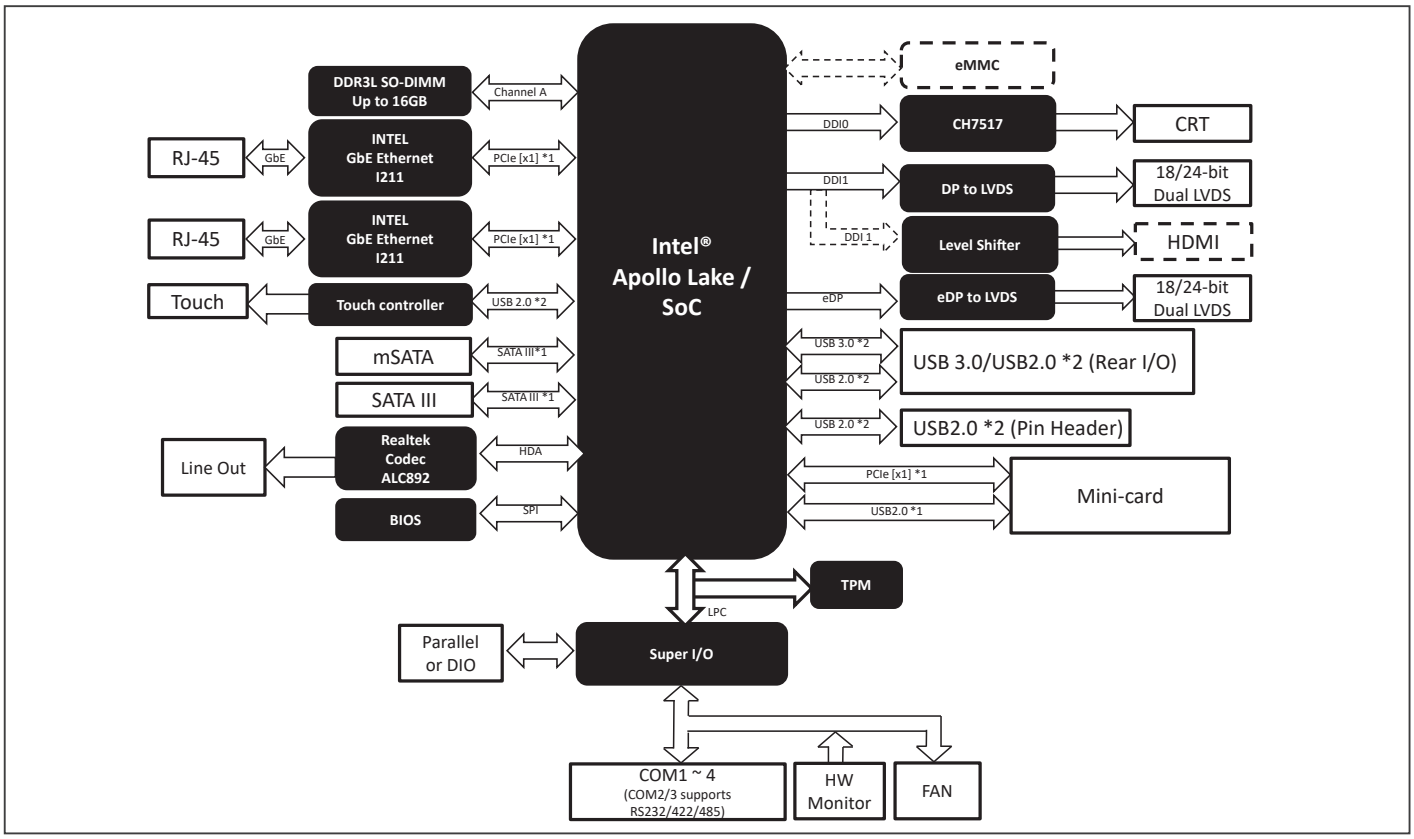
- GENE-APL6 with Heat Spreader

Optional Accessories

Part Number	Description	QTY
1700050207	(TF)USB CABLE.1*5P Pitch=1.25mm Housinh.20cm.for PFM-945C	2
1701090150	(TF)Flat Cable.D-Sub 9(M).9P Housing.9P 1.25mm pitch Housing.15cm	3
1709100254	(TF)PHONE JACK Cable.3P AUDIO JACK.1*10P 1.25mm HOUSING(F).25cm	1
1709070500	(TF)SATA CABLE.7P Pitch 1.27mm.50cm	1
1702150155	(TF)Power Cable.15P SATA(F).2P 2.0mm Housing(PH).15cm	1
170220020B	(TF)Power Cable.20P ATX(M).4P 5.08mm Housing(F).+3P 2.5mm Housing(XH).20cm	1
1702002010	(TF)Power CABLE. 1*2P Pitch=5. 0mm Housing. 10cm. for PFM-945C. (12V only)	1
GENE-APL6-HSK01	HeatSink.146X80X14mm.Silver.GENE-APL6.(used with heat spreader)	1

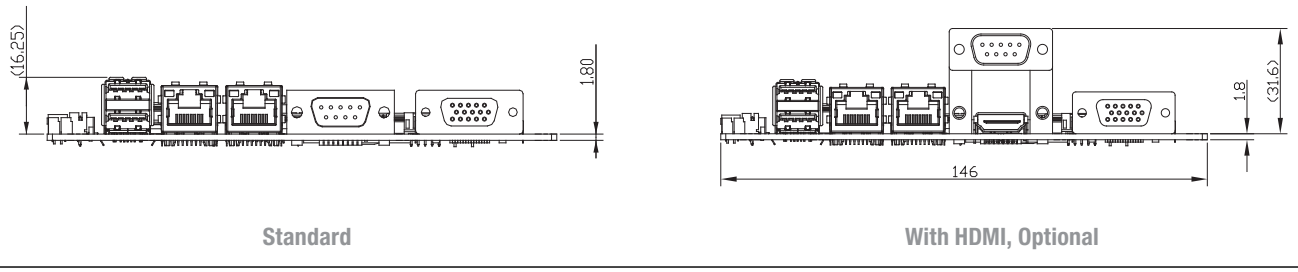
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



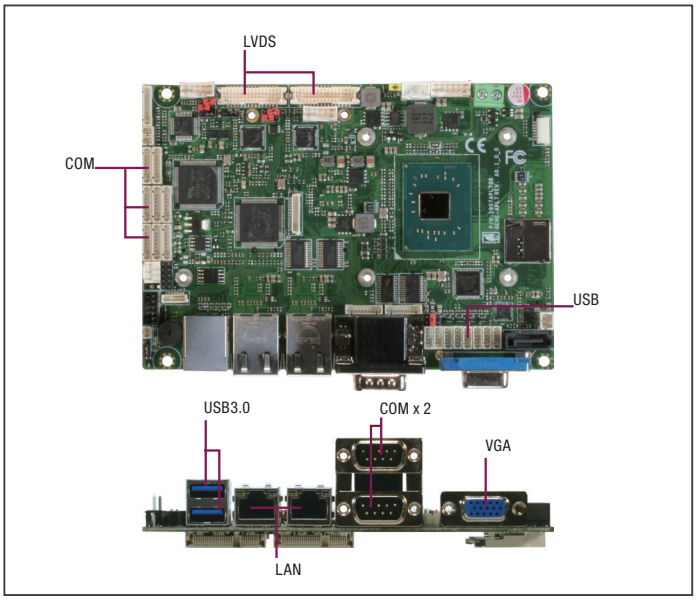
Standard

With HDMI, Optional

Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-APL6-A10-0001	N3350	HSP	VGA, LVDS, LVDS2	24bit,2CH	SATA x 1 mSATA x 1	GbE x 2	USB 3.0 x 2 USB 2.0 x 2	2	2	MiniCard x 1 (Full-size)	9~36V	0°C ~ 60°C	DIO x 8
GENE-APL6-A10-0002	N3350	HSP	VGA, LVDS, LVDS2	24bit,2CH	SATA x 1 eMMC 32G	GbE x 2	USB 3.0 x 2 USB 2.0 x 2	2	2	MiniCard x 1 (Full-size)	9~36V	0°C ~ 60°C	Touch Controller, SIM, TPM, DIO x 8

3.5” SubCompact Board with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC

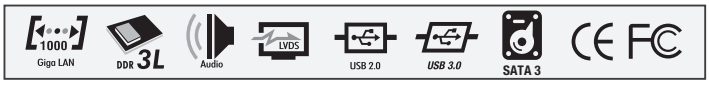


Features

- Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
- DDR3L 1866 MHz SODIMM x 1, up to 8 GB
- VGA/LVDS1/LVDS2 (LVDS1 Co-design with eDP
- SATA 6.0 Gb/s x 1, GPIO x 8
- USB 3.0 x 2, USB 2.0 x 8, COM x 12
- mSATA x 1 (Full size), Mini Card x 1 (Full size) with uSIM
- DC 12V Only, AT/ATX Mode

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
CPU Frequency	Up to 2.5 GHz
Chipset	Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
Memory Type	DDR3L 1866MHz, SODIMM x 1
Max. Memory Capacity	Up to 8GB
BIOS	AMI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	12V Only
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Intel® N4200,DDR3L 1600MHz 8GB,1.61A@+12V
Dimension (L x W)	5.75" x 4" (146 mm x 101.7 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	126,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
Video Output	VGA/LVDS1 (Option: LVDS2/eDP)
Backlight inverter supply	Max 12V, 2A
I/O	
Ethernet	Realtek RTL-8111E, RJ-45 x 2
Audio	High Definition Audio Interface (Option 2W Amp)
USB Port	Rear I/O: USB 3.0 x 2 Internal: USB2.0 x 8
Serial Port	Rear I/O: COM x 2 (COM2 is RS-232/422/485) Internal: COM x 4 (Option to COM x 10) COM2-5 support 5V/12V/RI
Parallel Port	—
HDD Interface	SATA 3.0 x 1
FDD Interface	—
SSD	mSATA x 1 (Full, optioal for mini-card)
Expansion Slot	Mini-card x 1 (Full size)
DIO	8-bit
SIM	Micro SIM x 1 (Optional)
TPM	—
Touch	—



Packing List

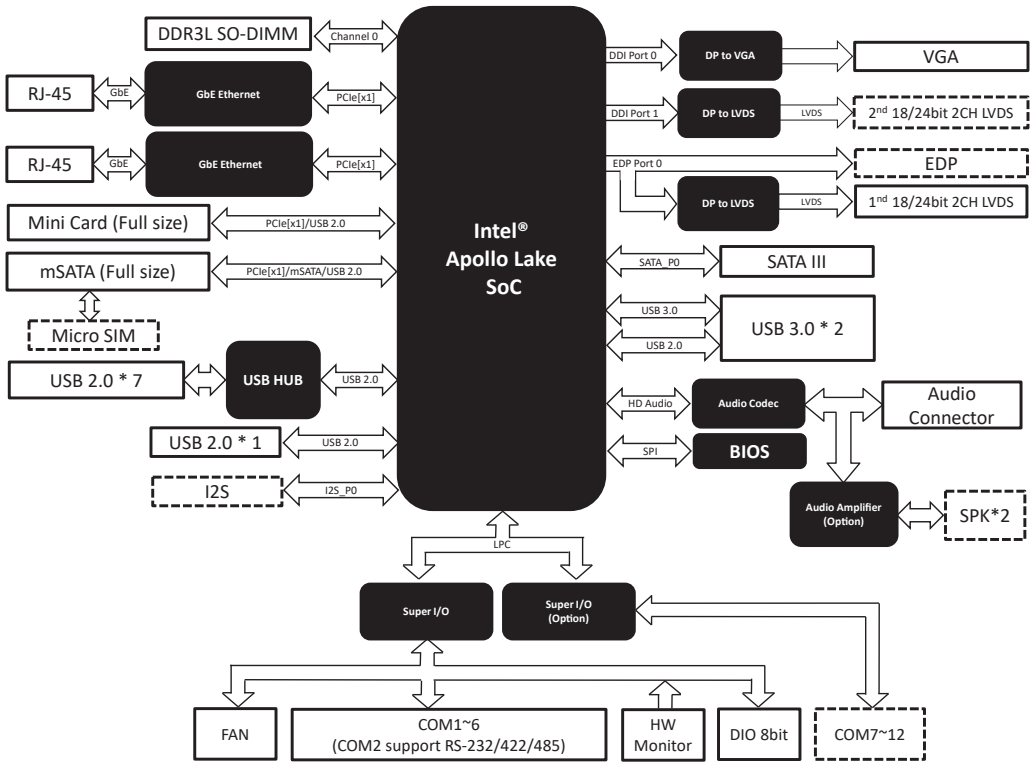
- GENE-APL7

Optional Accessories

Part Number	Description	QTY
1700050207	(TF)USB CABLE.1*5P Pitch=1.25mm Housinh. 20cm. for PFM-945C	8
1701090150	(TF)Flat Cable.D-Sub 9(M).9P Housing.9P 1.25mm pitch Housing. 15cm	10
1709100254	(TF)PHONE JACK Cable. 3P AUDIO JACK. 1*10P 1.25mm HOUSING(F). 25cm	1
1702150155	(TF)Power Cable. 15P SATA(F). 2P 2.0mm Housing(PH). 15cm	1
170204010R	(TF)Power Cable. Double 4P 5.08mm Housing(M). 10cm	1
1709150151	(TF)CRT CABLE. 1*13P Pitch=1.25mm Housing. 15cm (VGA D-SUB connector co-layout with internal pin header by option)	1
GENE-APL7-HSK01	Heatsink	1

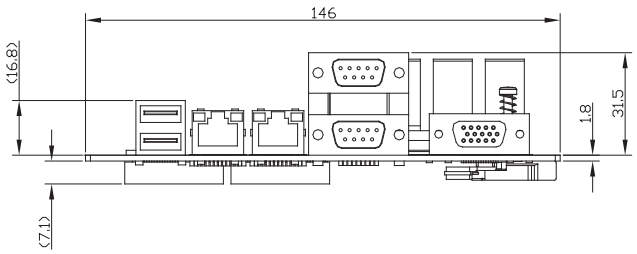
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

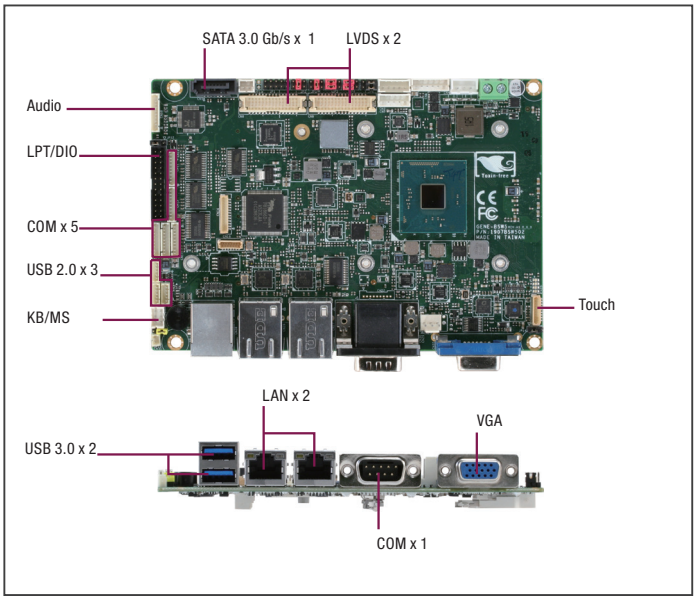
Unit: mm



Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-APL7-A10-0001	N3350	w/o HS	VGA/LVDS	24bit,2CH	SATA x 1 mSATA x 1 (full size)	GbE x 2	USB 3.0 x 2 USB2.0 x 8	5	1	MiniCard x 1 (Full)	12V	0°C ~ 60°C	Audio, DIO x 8
GENE-APL7-A10-0002	N3350	w/o HS	VGA/LVDS/ LVDS2	24bit,2CH	SATA x 1 mSATA x 1 (full size)	GbE x 2	USB 3.0 x 2 USB2.0 x 8	11	1	MiniCard x 1 (Full)	12V	0°C ~ 60°C	Micro SIM, DIO x 8, Audio, 2W AMP

3.5” SubCompact Board with Intel® Pentium & Celeron® N3000 Series Processor SoC



Features

- Onboard Intel® Pentium®/Celeron® N3000 Series Processor SoC
- DDR3L 1600 SODIMM x 1, Up to 8 GB
- Gigabit Ethernet x 2
- Multiple Display in 18/24-bit 2CH LVDS, VGA, HDMI (optional, occupied with LVDS x 1)
- 2CH HD Audio
- Mini-Card x 1 (Full-Size)
- mSATA x 1 (Shared with Mini-Card, Half-size)
- USB 3.0 x 2, USB2.0 x 3, COM x 6, Digital I/O 8-bit
- +12V DC, AT/ATX

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	Intel® Pentium® & Celeron® M/D Processor SoC
CPU Frequency	Up to 2.6 GHz
Chipset	Intel® Pentium® & Celeron® M/D Processor SoC
Memory Type	DDR3L 1600, SODIMM x 1
Max. Memory Capacity	Up to 8 GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Intel® Celeron® N3160 (2M Cache, up to 2.24 GHz, DDR3L 1600MHz, 8GB, 0.65A@+12V)
Dimension (L x W)	5.75" x 4" (146mm x 101.7mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 81°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	81,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Pentium® & Celeron® M/D SoC
Video Output	LVDS x 2 + VGA (HDMI is optional, shared with LVDS2)
Backlight inverter supply	Up to 24-bit dual-channel LVDS
I/O	
Ethernet	Realtek RTL-8111E, 10/100/1000Base-TX, RJ-45 x2
Audio	High Definition Audio Interface
USB Port	USB 3.0 x 2 USB2.0 x 3
Serial Port	RS-232/422/485 x 2, RS-232 x 4
Parallel Port	SPP/EPP/ECP x 1 (Option, Shared with DIO)
HDD Interface	SATA 3.0 x 1
FDD Interface	—
SSD	mSATA x 1 (Half-size)
Expansion Slot	Mini-Card x 1(Full-size)
DIO	8-bit
SIM	x 1
TPM	—
Touch	x 1 (USB interface)

Packing List

- GENE-BSW5 with Passive Heatsink

Optional Accessories

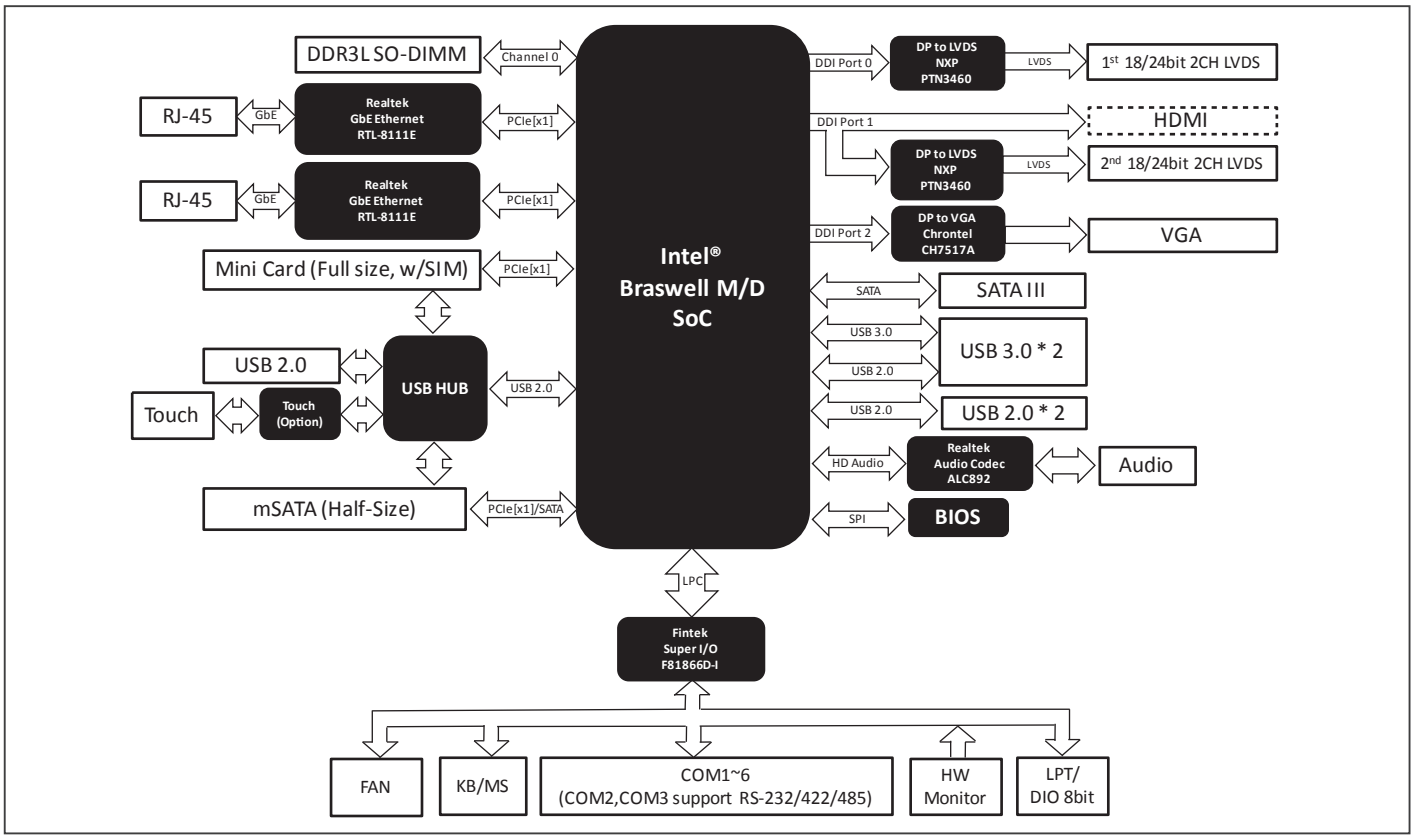
Part Number	Description	QTY
1702150155	(TF)Power Cable.15P SATA(F).2P 2.0mm Housing(PH).15cm	1
170220020B	(TF)Power Cable.20P ATX(M).4P 5.08mm Housing(F).+3P 2.5mm Housing (XH).20cm	1
1709070500	(TF)SATA CABLE.7P Pitch 1.27mm.50cm	1
170204010R	(TF)Power Cable.Double 4P 5.08mm Housing(M).10cm	1
1709100254	(TF)PHONE JACK Cable.3P AUDIO JACK.1*10P 1.25mm HOUSING(F).25cm	1
1701090150	(TF)Flat Cable.D-Sub 9(M).9P Housing.9P 1.25mm pitch Housing.15cm	5
1701260200	(TF)Flat Cable.25P D-SUB FEMALE.26P 2.00mm Pitch Housing.20cm	1
1703120130	(TF)LPC cable.12P.to 12P 1.0mm Housing.13cm	1
1700050207	(TF)USB CABLE.1*5P Pitch=1.25mm Housinh.20cm.for PFM-945C	3
1700060152	(TF)Cable.6P 2.0mm Housing.W/O NOSE.6P MDM-6S KB&MS.15cm	1
175011901M	(TF)BATTERY.3V.w/Wire 110mm.MITSUBISHI.Longtrump.CR2032-HAT00(MLF)	1

OS Support

Part Number	Description
OS-W10E-600-01809-MUI	Windows® 10 IoT Ent LTSC 2019 MultiLang OEI Entry (ESD) , EPKEA,64bit
OS-W10E-300-01809-MUI	Windows® 10 IoT Ent LTSC 2019 MultiLang OEI Entry (ESD) , EPKEA,32bit

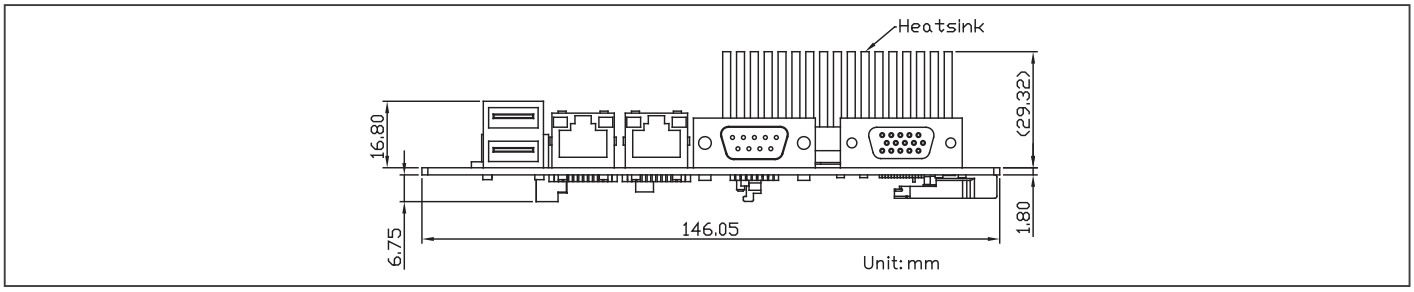
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

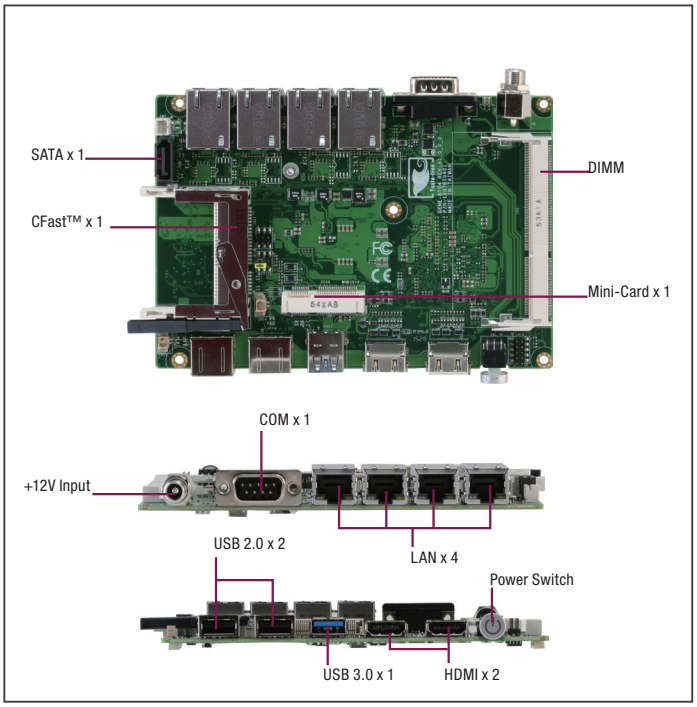
Unit: mm



Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-BSW5-A11-0001	N3160	Fanless	VGA/LVDS	24bit,2CH	SATA x 1, mSATA x 1 (half size)	GbE x 2	USB3.0 x 2 USB2.0 x 3	2	2	miniCard x 1 (Full)	12V	0°C ~ 60°C	DIO x 8
GENE-BSW5-A11-0002	N3160	Fanless	VGA/LVDS/LVDS2	24bit,2CH	SATA x 1 mSATA x 1 (half size)	GbE x 2	USB3.0 x 2 USB 2.0 x 3	4	2	miniCard x 1 (Full)	12V	0°C ~ 60°C	Touch Controller, SIM, DIO x 8

3.5” SubCompact Board with Intel® Celeron® J1900/N2807 Processor SoC



Features

- Intel® Celeron® J1900/ N2807 Processor SoC
- DDR3L 1333 SODIMM slot x1, Max. up to 8GB
- Intel® LAN i211AT x4 Gigabit Ethernet, RJ-45 x 4
- HDMI x 2: HDMI 1 (w/ Audio), HDMI 2 (w/o Audio)
- USB 2.0 x 2, USB 3.0 x 1, COM x 1
- Mini-Card x 1 (Full-size)
- SATA 2.0 x 1
- DC 12V ATX Mode
- 12 ~ 24V DC Input, ATX Mode

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	Intel® Celeron® J1900/ N2807 Processor SoC
CPU Frequency	Up to 2.0GHz
Chipset	Intel® Celeron® J1900/ N2807 Processor SoC
Memory Type	DDR3L 1333, SODIMM x 1
Max. Memory Capacity	Up to 8G
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V ~ +24V
Power Supply Type	ATX mode
Power Consumption (Typical)	Intel® N2807, DDR3L 1600MHz 4G, 0.65A@ +12V
Dimension (L x W)	5.75" x 4" (146mm x 101.6mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	155,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Celeron® J1900/ N2807 Processor SoC
Video Output	HDMI x 2: HDMI 1(w/Audio), HDMI 2(w/o Audio)
Backlight inverter supply	—
I/O	
Ethernet	Intel® I211AT(or 210), 10/100/1000Base-TX, RJ-45 x 4
Audio	High definition audio interface
USB Port	USB2.0 x 2 , USB 3.0 x 1
Serial Port	RS-232 x 1
Parallel Port	—
HDD Interface	SATA 2.0 x 1
FDD Interface	—
SSD	CFast™ x 1
Expansion Slot	Mini-Card x 1 (for USB only)
DIO	4 Bit
SIM	x 1
TPM	x 1
Touch	—

Packing List

- **1702041004**
  Power Cable
- **GENE-BT04 with Heatspreader**

Optional Accessories

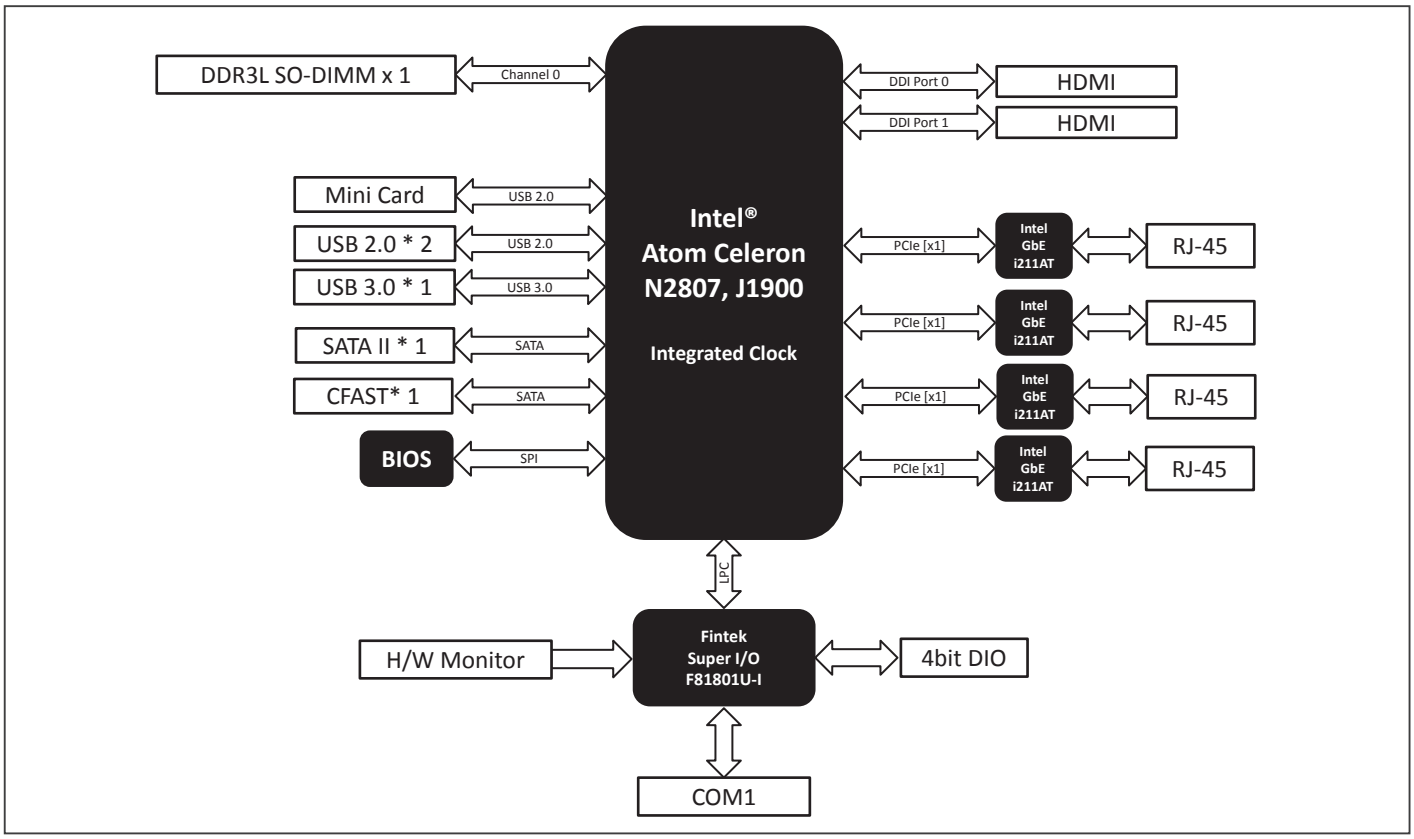
Part Number	Description	QTY
1709070500	(TF)SATA CABLE, 7P Pitch 1.27mm, 50cm	1
1702150155	(TF)Power Cable, 15P SATA(F), 2P 2.0mm Housing(PH), 15cm	1

OS Support

Part Number	Description
OS-W10R-600-00000-EN	Windows 10 IoT Enterprise.for Retail or ThinClients.64bit MultiLang. (EngFreChiTChiSJanKor)

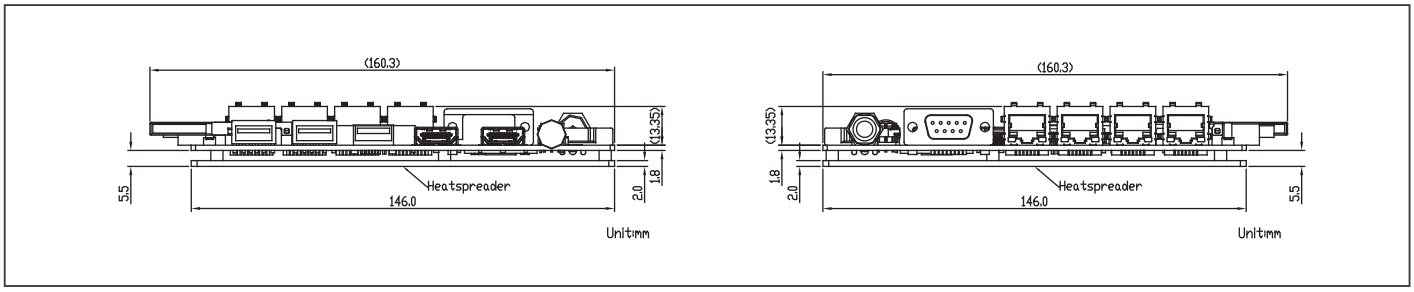
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

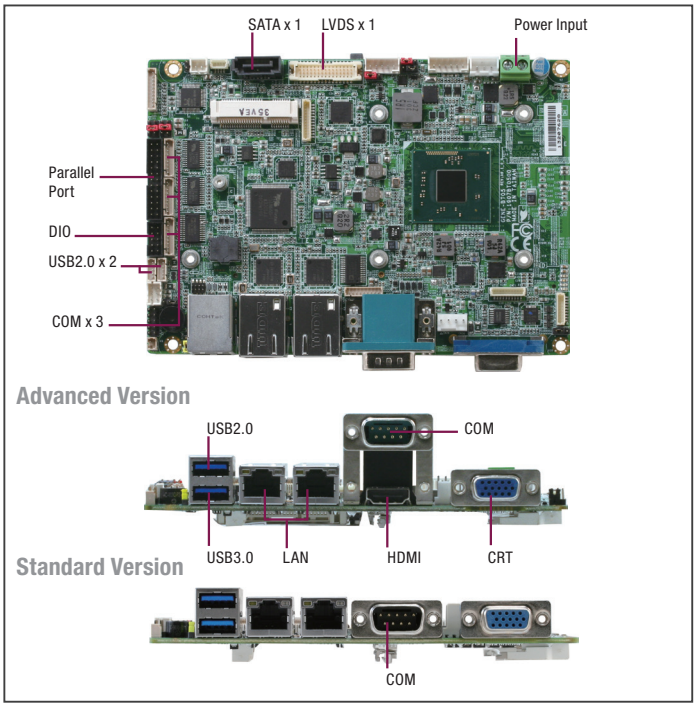


Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-BT04-A11-0001	Intel® Celeron® N2807	Fanless	HDMI x 2	—	SATA x 1	GbE x 4	USB 3.0 x 1 USB 2.0 x 2	1	—	Mini-Card x 1 (Full)	12V ~ 24V	0°C ~ 60°C	DIO x 4
GENE-BT04-A11-0002	Intel® Celeron® J1900	Fanless	HDMI x 2	—	SATA x 1	GbE x 4	USB 3.0 x 1 USB 2.0 x 2	1	—	Mini-Card x 1 (Full)	12V ~ 24V	0°C ~ 60°C	DIO x 4

GENE-BT05

3.5” SubCompact Board with Intel® Atom™ and Celeron® Processor SoC



Features

- Onboard Intel® Atom™ and Celeron® Processor SoC
- DDR3L 1066/1333 MHz SODIMM x 1, Up to 8 GB
- Gigabit Ethernet x 2, RJ-45 x 2
- CRT, 18/24-bit Dual-Channel LVDS LCD, HDMI
- 2CH HD Audio
- SATA 3.0 Gb/s x 1, CFast™ x 1
- USB 3.0 x 1, USB2.0 x 3, COM x 4, 8-bit Digital I/O
- Mini-Card x 2 (Full-size x 1, Half-size x 1)
- DC 12V, AT/ATX Mode
- Onboard 4/5/8-wire Resistive Touch Screen Controller (Optional)
- AAEON Hi-Safe/SDK/Utility Supported
- mSATA x 1 (Optional, Share Mini-Card Interface)
- Onboard Trusted Platform Module (Optional)

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	Intel® N2930/N2807/J1900/E3845/E3825
CPU Frequency	Up to 2.0GHz
Chipset	Intel® N2930/N2807/J1900/E3845/E3825
Memory Type	DDR3L 1066/1333, SODIMM x 1
Max. Memory Capacity	Up to 8GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V
Power Supply Type	AT/ATX
Power Consumption (Typical)	Intel® N2930, DDR3L 1600MHz 8G, 0.65A@+12V
Dimension (L x W)	5.75" x 4" (146 mm x 101.6 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) or WiTAS 2 (E3825)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	111,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® N2930/N2807/J1900/E3845/E3825
Video Output	CRT+LVDS, HDMI+LVDS , CRT+HDMI
Backlight inverter supply	Up to 24-bit dual-channel LVDS x 1
I/O	
Ethernet	Intel® I211 (or 210), 10/100/1000Base-TX, RJ-45 x 2
Audio	High definition audio interface
USB Port	USB2.0 x 3 , USB 3.0 x 1
Serial Port	RS-232 x 2 , RS-232/422/485 x 2
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	SATA 2.0 x 1
FDD Interface	—
SSD	CFast™ (alternative with mSATA by BOM and also occupy one Mini-Card location)
Expansion Slot	Mini-Card x 2 (Full-size x 1, Half-size x 1)
DIO	8-bit
SIM	x 1
TPM	x 1
Touch	x 1

Packing List

- GENE-BT05 with Passive Heatsink

Optional Accessories

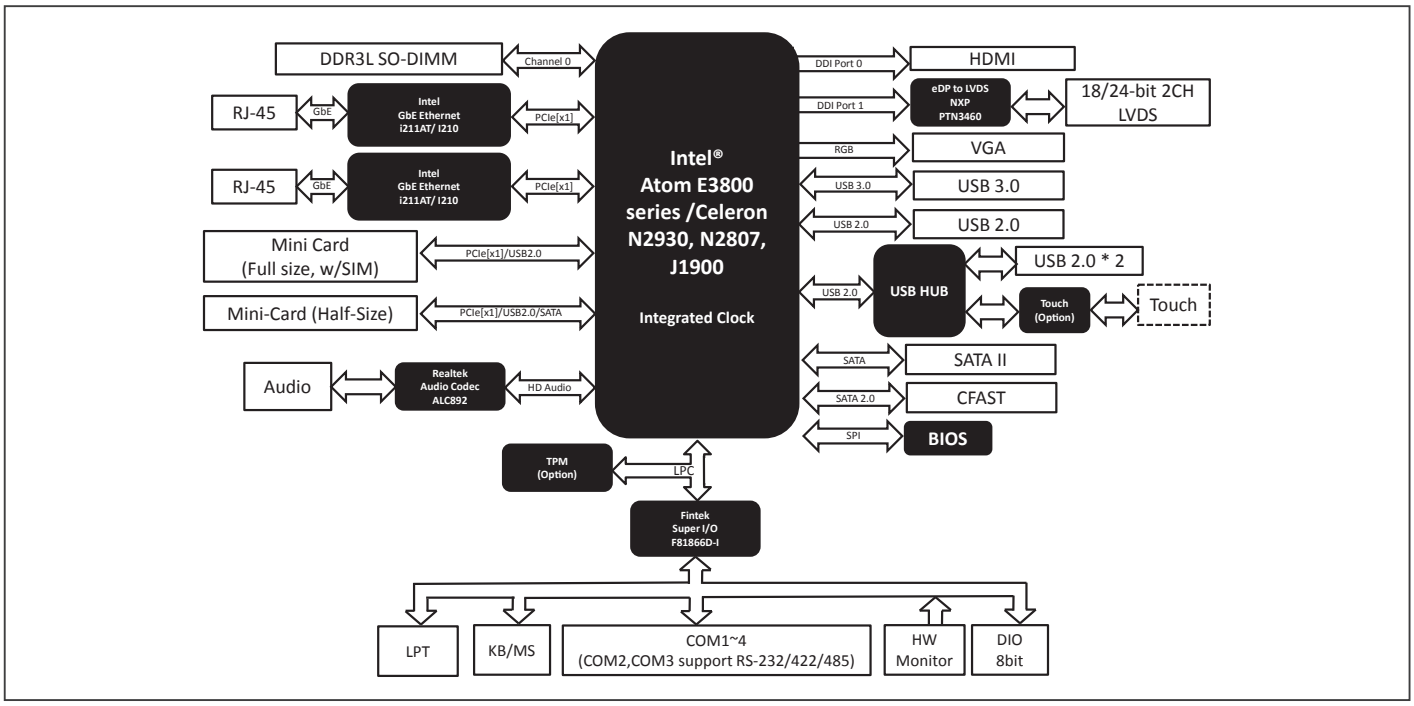
Part Number	Description	QTY
1700050207	(TF)USB CABLE, 1*5P Pitch=1.25mm Housinh, 20cm, for PFM-945C	2
1701090150	(TF)Flat Cable, D-Sub 9(M), 9P Housing, 9P 1.25mm pitch Housing, 15cm	3
1709100254	(TF)PHONE JACK Cable, 3P AUDIO JACK, 1*10P 1.25mm HOUSING(F), 25cm	1
1709070500	(TF)SATA CABLE, 7P Pitch 1.27mm, 50cm	1
1701260200	(TF)Flat Cable, 25P D-SUB FEMALE, 26P 2.00mm Pitch Housing, 20cm	1
170204010R	(TF)Power Cable, Double 4P 5.08mm Housing(M), 10cm	1
1702150155	(TF)Power Cable, 15P SATA(F), 2P 2.0mm Housing(PH), 15cm	1
170220020B	(TF)Power Cable, 20P ATX(M), 4P 5.08mm Housing(F), +3P 2.5mm Housing(XH), 20cm	1
1700060157	(TF)Cable, 6P 2.0mm Housing, 6P JACK W/SCREW KB&MS, 15cm	1

OS Support

Part Number	Description
OS-W10R-600-00000-EN	Windows 10 IoT Enterprise, for Retail or ThinClients, 64bit MultiLang. (EngFreChiTChiSJanKor)
OS-WE8S-600-GBT5A-EN	Windows Embedded 8 Standard, x64 Full size English.
OS-WS7E-600-GBT5A-EN	Windows Embedded Standard 7, E SKU x64 Full size English.

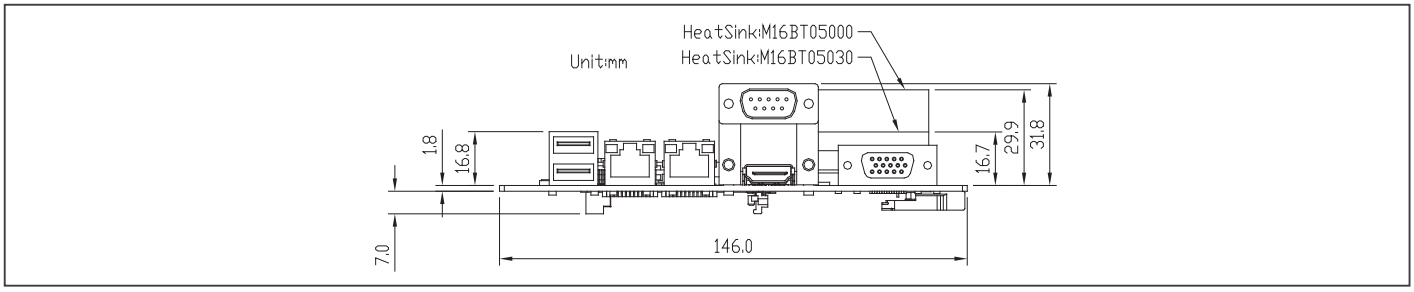
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

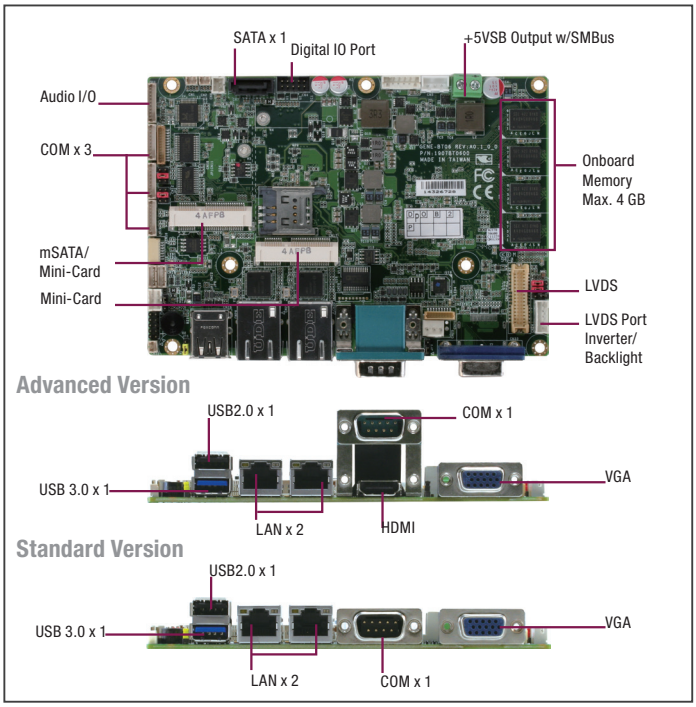
Unit: mm



Ordering Information

Part Number	CPU	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-BT05-A10-0001	Intel® Celeron® N2930	Fanless	CRT + LVDS, LVDS + HDMI, HDMI + CRT	24bit, 2CH	SATA x 1, CFast™ x 1	Gbe x 2	USB 3.0 x 1, UBS2.0 x 3	2	2	Mini Card x 2 (Full-Size x 1, Half-Size x 1)	+12V, AT/ATX	0°C ~ 60°C	TPM, Touch, SIM, DIO x 8
GENE-BT05-A10-0002	Intel® Celeron® N2930	Fanless	CRT + LVDS	24bit, 2CH	SATA x 1 mSATA x 1 (Half Size)	Gbe x 2	USB 3.0 x 1, UBS2.0 x 3	2	2	Mini Card x 1 (Full-Size)	+12V, AT/ATX	0°C ~ 60°C	DIO x 8
GENE-BT05-A10-0003	Intel® Celeron® N2807	Fanless	CRT + LVDS, LVDS + HDMI, HDMI + CRT	24bit, 2CH	SATA x 1, CFast™ x 1	Gbe x 2	USB 3.0 x 1, UBS2.0 x 3	2	2	Mini Card x 2 (Full-Size x 1, Half-Size x 1)	+12V, AT/ATX	0°C ~ 60°C	TPM, Touch, SIM, DIO x 8
GENE-BT05-A10-0004	Intel® Celeron® N2807	Fanless	CRT + LVDS	24bit, 2CH	SATA x 1 mSATA x 1 (Half Size)	Gbe x 2	USB 3.0 x 1, UBS2.0 x 3	2	2	Mini Card x 1 (Full-Size)	+12V, AT/ATX	0°C ~ 60°C	DIO x 8
GENE-BT05-A10-0005	Intel® Atom™ E3845	Fanless	CRT + LVDS, LVDS + HDMI, HDMI + CRT	24bit, 2CH	SATA x 1, CFast™ x 1	Gbe x 2	USB 3.0 x 1, UBS2.0 x 3	2	2	Mini Card x 2 (Full-Size x 1, Half-Size x 1)	+12V, AT/ATX	0°C ~ 60°C	TPM, Touch, SIM, DIO x 8
GENE-BT05-A10-0006	Intel® Atom™ E3845	Fanless	CRT + LVDS	24bit, 2CH	SATA x 1 mSATA x 1 (Half Size)	Gbe x 2	USB 3.0 x 1, UBS2.0 x 3	2	2	Mini Card x 1 (Full-Size)	+12V, AT/ATX	0°C ~ 60°C	DIO x 8
GENE-BT05-A10-0007	Intel® Atom™ E3825	Fanless	CRT + LVDS, LVDS + HDMI, HDMI + CRT	24bit, 2CH	SATA x 1, CFast™ x 1	Gbe x 2	USB 3.0 x 1, UBS2.0 x 3	2	2	Mini Card x 2 (Full-Size x 1, Half-Size x 1)	+12V, AT/ATX	0°C ~ 60°C	TPM, Touch, SIM, DIO x 8
GENE-BT05-A10-0008	Intel® Atom™ E3825	Fanless	CRT + LVDS	24bit, 2CH	SATA x 1 mSATA x 1 (Half Size)	Gbe x 2	USB 3.0 x 1, UBS2.0 x 3	2	2	Mini Card x 1 (Full-Size)	+12V, AT/ATX	0°C ~ 60°C	DIO x 8
GENE-BT05-A10-0009	Intel® Celeron® J1900	Fanless	CRT + LVDS, LVDS + HDMI, HDMI + CRT	24bit, 2CH	SATA x 1, CFast™ x 1	Gbe x 2	USB 3.0 x 1, UBS2.0 x 3	2	2	Mini Card x 2 (Full-Size x 1, Half-Size x 1)	+12V, AT/ATX	0°C ~ 60°C	TPM, Touch, SIM, DIO x 8
GENE-BT05-A10-0010	Intel® Celeron® J1900	Fanless	CRT + LVDS	24bit, 2CH	SATA x 1 mSATA x 1 (Half Size)	Gbe x 2	USB 3.0 x 1, UBS2.0 x 3	2	2	Mini Card x 1 (Full-Size)	+12V, AT/ATX	0°C ~ 60°C	DIO x 8
GENE-BT05W2-A10-0006	Intel® Atom™ E3845	Fanless	CRT + LVDS	24bit, 2CH	SATA x 1 mSATA x 1 (Half Size)	Gbe x 2	USB 3.0 x 1, UBS2.0 x 3	2	2	Mini Card x 1 (Full-Size)	+12V, AT/ATX	WTAS 2(-40°C~85°C)	DIO x 8
GENE-BT05W2-A10-0008	Intel® Atom™ E3825	Fanless	CRT + LVDS	24bit, 2CH	SATA x 1 mSATA x 1 (Half Size)	Gbe x 2	USB 3.0 x 1, UBS2.0 x 3	2	2	Mini Card x 1 (Full-Size)	+12V, AT/ATX	WTAS 2(-40°C~85°C)	DIO x 8

3.5” SubCompact Board with Intel® Atom™ E3845/ E3825 and Celeron® Processor SoC



Features

- Intel® Atom™ E3845/ E3825 and Celeron® Processor SoC
- Onboard DDR3L Memory Max. 4 GB
- CRT, 18/24-bit Dual-Channel LVDS LCD, HDMI (DP Sharded with HDMI/CRT, Optional)
- 2 CH Audio
- SATA 3.0 Gb/s x 1 & mSATA (Sharded with Mini-Card)
- Supports 8-bit Digital I/O, USB2.0 x 3 , USB 3.0 x 1
- RS-232 x 2, RS-232/422/485 x 2
- Mini-Card Slot x 2 (Full-size x 1, Half-size x 1)
- Wide DC Support 9~24V
- Supports TPM (Optional)
- 4/5/8-wire Resistive Touch Screen Controller (Optional)
- Solder Design For System Assembly and Thermal

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	Intel® Atom™ E3845/E3825
CPU Frequency	Up to 2.0GHz
Chipset	Intel® Atom™ series Processor SoC
Memory Type	Onboard DDR3L 1066/1333
Max. Memory Capacity	Up to 4GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Wide DC support 9~24V
Power Supply Type	AT/ATX
Power Consumption (Typical)	Intel® E3845, Onboard DDR3L 1600MHz 4G, 0.64A@+12V
Dimension (L x W)	5.75" x 4" (146 mm x 101.6 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) or WiTAS 2 (TBD)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	110,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Atom™ Processor SoC
Video Output	CRT+LVDS, HDMI+LVDS , CRT+HDMI
Backlight inverter supply	18/24-bit dual-channel LVDS LCD
I/O	
Ethernet	Intel® I211 (or 210), 10/100/1000Base-TX, RJ-45 x 2
Audio	High definition audio interface
USB Port	USB2.0 x 3 , USB 3.0 x 1
Serial Port	RS-232 x 2 , RS-232/422/485 x 2
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	SATA 2.0 x 1
FDD Interface	—
SSD	mSATA (Half-size, shared with Mini-Card)
Expansion Slot	Mini-Card x 1 (Full-size)
DIO	8-bit
SIM	x 1
TPM	x 1
Touch	x 1

Packing List

- GENE-BT06 with Heatspreader

Optional Accessories

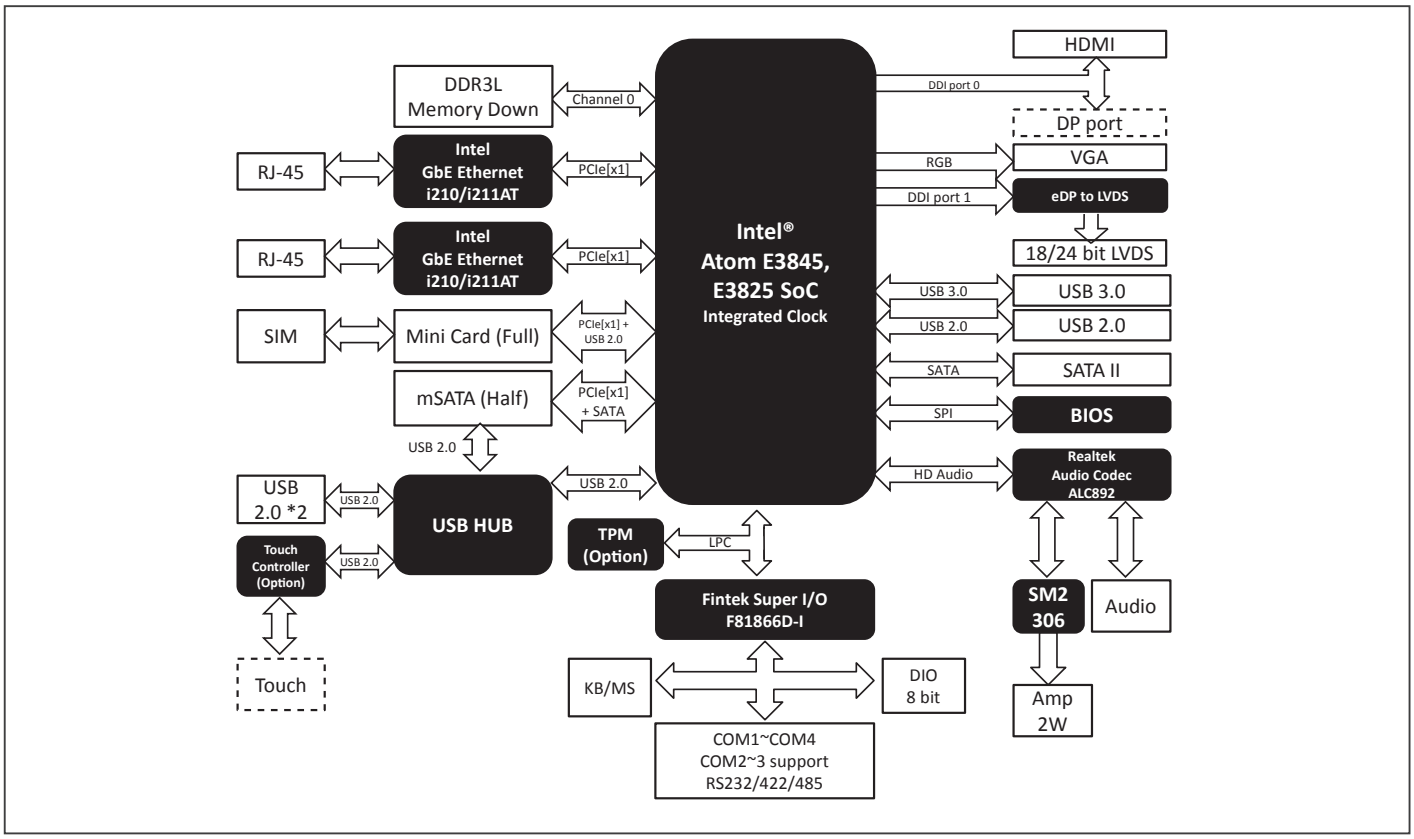
Part Number	Description	QTY
1700050207	(TF)USB CABLE, 1*5P Pitch=1.25mm Housinh, 20cm, for PFM-945C	2
1701090150	(TF)Flat Cable, D-Sub 9(M), 9P Housing, 9P 1.25mm pitch Housing, 15cm	3
1709100254	(TF)PHONE JACK Cable, 3P AUDIO JACK, 1*10P 1.25mm HOUSING(F), 25cm	1
1702150155	(TF)Power Cable, 15P SATA(F), 2P 2.0mm Housing(PH), 15cm	1
170220020B	(TF)Power Cable, 20P ATX(M), 4P 5.08mm Housing(F), +3P 2.5mm Housing (XH), 20cm	1
1700060157	(TF)Cable, 6P 2.0mm Housing, 6P JACK W/SCREW KB&MS, 15cm	1
1702002010	(TF)Power CABLE, 1*2P Pitch=5.0mm Housing, 10cm, for PFM-945C.(12V only)	1
175011901C	(TF)BATTERY, 3V, MAXELL, CR2032M1S8-LF	1

OS Support

Part Number	Description
OS-W10R-600-00000-EN	Windows 10 IoT Enterprise, for Retail or ThinClients, 64bit MultiLang. (EngFreChiTChiSJanKor)

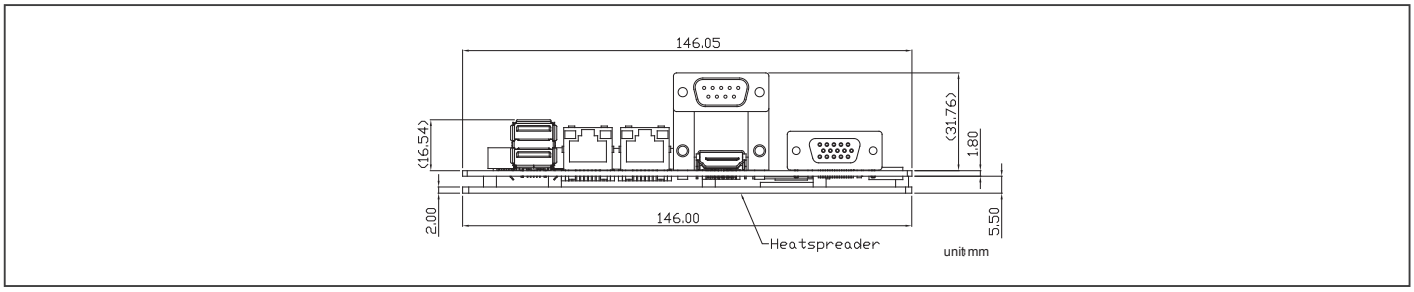
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

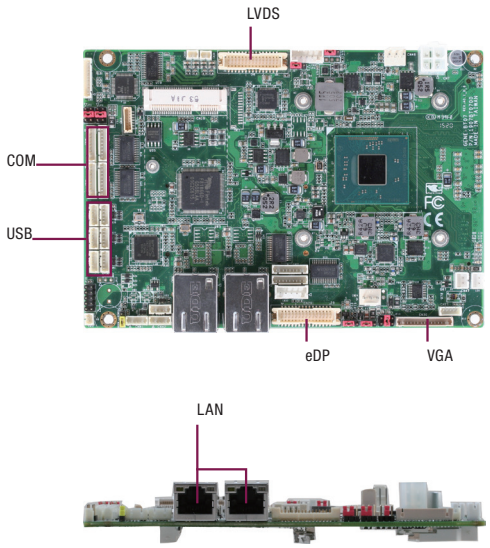
Unit: mm



Ordering Information

Part Number	CPU	Fan/ Fanless	Memory	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-BT06-A11-0001	Intel® Atom™ E3825	Fanless	Onboard 2GB	VGA, LVDS	24bit, 2CH	SATA x 1 mSATA x 1 (half size)	GbE x 2	USB 3.0 x 1 USB 2.0 x 3	2	2	MiniCard x 1 (Full)	9~24V	0°C ~ 60°C	DIO x 8
GENE-BT06-A11-0002	Intel® Atom™ E3845	Fanless	Onboard 4GB	VGA, LVDS, HDMI	24bit, 2CH	SATA x 1 mSATA x 1 (half size)	GbE x 2	USB 3.0 x 1 USB 2.0 x 3	2	2	MiniCard x 1 (Full)	9~24V	0°C ~ 60°C	Touch Controller, TPM, SIM, DIO x 8
GENE-BT06W2-A11-0001	Intel® Atom™ E3825	Fanless	Onboard 2GB	VGA, LVDS	24bit, 2CH	SATA x 1 mSATA x 1 (half size)	GbE x 2	USB 3.0 x 1 USB 2.0 x 3	2	2	MiniCard x 1 (Full)	12V	WTAS 2 (-40°C~85°C)	DIO x 8
GENE-BT06W2-A11-0002	Intel® Atom™ E3845	Fanless	Onboard 4GB	VGA, LVDS, HDMI	24bit, 2CH	SATA x 1 mSATA x 1 (half size)	GbE x 2	USB 3.0 x 1 USB 2.0 x 3	2	2	MiniCard x 1 (Full)	12V	WTAS 2 (-40°C~85°C)	Touch Controller, TPM, SIM, DIO x 8

3.5” SubCompact Board with Intel® Celeron® J1900 Processor SoC



Features

- Intel® Celeron® J1900 Processor SoC
- DDR3L 1333 SODIMM Memory Max. up to 8GB
- VGA, LVDS, eDP (optional, support by BOM change)
- 2 CH Audio, Support 8ohm/2W Speaker
- 9 USB 2.0 , 6 COM
- Mini-Card Slot x 1 (Full-size), mSATA x 1(Half-size)
- DC 12V AT/ATX Mode

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	Intel® Celeron® J1900 Processor SoC
CPU Frequency	Up to 2.0 GHz
Chipset	Intel® Celeron® J1900 Processor SoC
Memory Type	DDR3L 1333MHz SODIMM x 1
Max. Memory Capacity	Up to 8GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V
Power Supply Type	AT/ ATX Mode
Power Consumption (Typical)	Intel® Celeron® J1900, DDR3L 1600MHz 8G, 1.06A@+12V
Dimension (L x W)	5.75" x 4" (146 mm x 101.7 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	40°F ~ 176°F (-40°C ~ 81°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	204,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Celeron® J1900 Processor SoC
Video Output	VGA, LVDS, eDP (optional, support by BOM change)
Backlight inverter supply	18/24-bit dual channel LVDS LCDs
I/O	
Ethernet	RTL8111E, RJ-45 x 2
Audio	Realtek ALC892 CODEC, MIC-In AMP TI3113, Support 8ohm/4W speaker
USB Port	USB2.0 x 9
Serial Port	RS-232 x 6
Parallel Port	—
HDD Interface	—
FDD Interface	—
SSD	mSATA x 1 (half size)
Expansion Slot	Mini-Card x 1 (Full-size)
DIO	—
SIM	—
TPM	—
Touch	Reserve USB2.0 x 1 connector to expend

Packing List

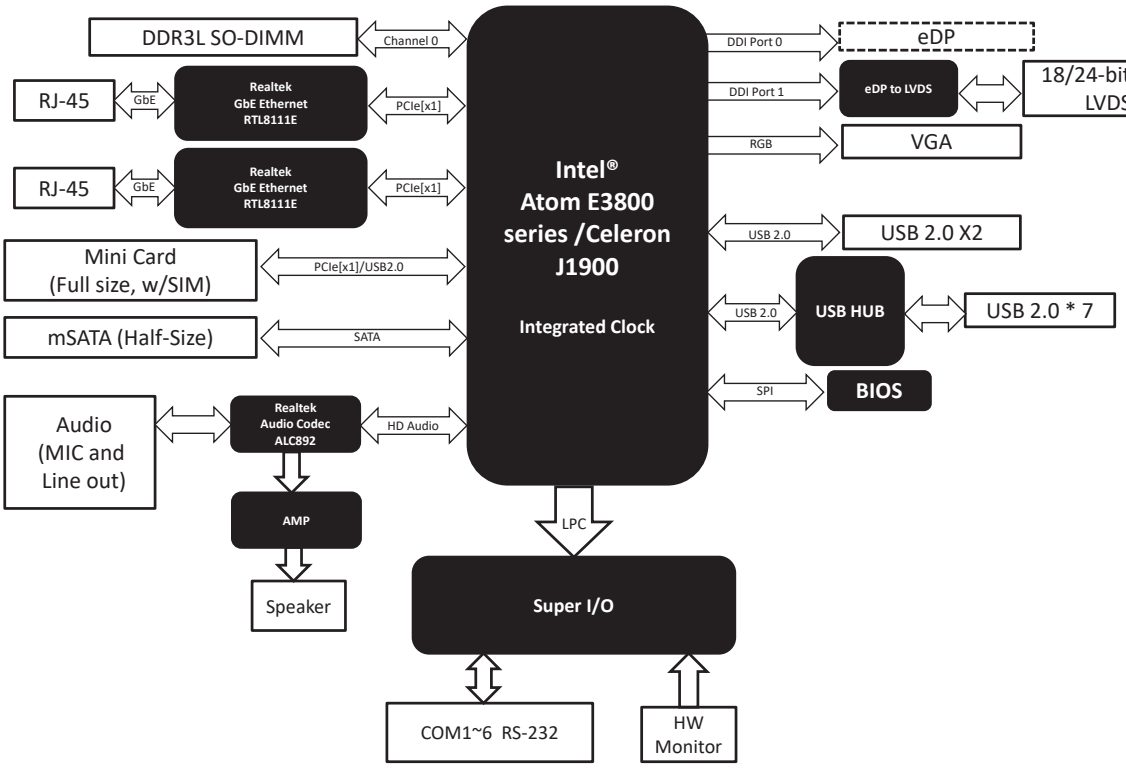
- GENE-BT07

Optional Accessories

Part Number	Description	QTY
1709100254	(TF)PHONE JACK Cable. 3P AUDIO JACK. 1*10P 1. 25mm HOUSING(F). 25cm	1
1700050207	(TF)USB CABLE. 1*5P Pitch=1. 25mm Housinh. 20cm. for PFM-945C	9
1701090150	(TF)Flat Cable. D-Sub 9(M). 9P Housing. 9P 1. 25mm pitch Housing. 15cm	6
1704150153	(TF)CRT CABLE. 1*15P Pitch=1. 25mm. Housing. 15cm	1
GENE-BT07-HSK03	Heat Sink.60*60*25mm.Silver.GENE-BT07	1

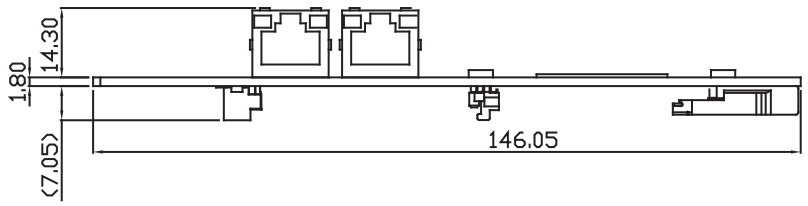
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

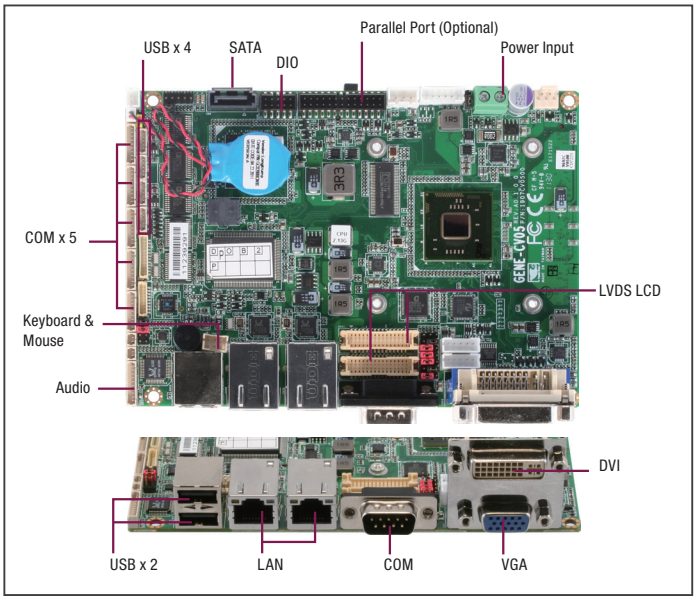
Unit: mm



Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-BT07-A11-0001	Intel®Celeron® J1900	Fanless	CRT + LVDS	24bit,2CH	mSATA x 1 (Half-size)	Gbe x 2	UBS2.0 x 9	6	—	Mini Card x 1 (Full-Size)	+12V, AT/ATX	0°C ~ 60°C	SIM

3.5” SubCompact Board with Intel® Atom™ D2550/N2800/N2600 Processor



Features

- Intel® Atom™ D2550/N2800/N2600 Processor
- Intel® NM10
- DDR3 800/1066 SODIMM x 1, Up to 4 GB For Intel® Atom™ D2550/ N2800 and Up to 2 GB For Intel® Atom™ N2600
- Gigabit Ethernet x 2, RJ-45 x 2
- CRT, DVI, 18/24-bit Single Channel LVDS LCD + 18/24-bit Dual-Channel LVDS LCD For Intel® Atom™ D2550 CRT, DVI, 18-bit Single Channel LVDS LCD + 18/24-bit Dual-Channel LVDS LCD For Intel® Atom™ N2800/N2600
- 2CH HD Audio + 2W Amplifier
- SATA 3.0 Gb/s x 1, CFast™ x 1
- USB2.0 x 6, COM x 6, 8-Bit Digital I/O, Parallel x 1 (Optional)
- Onboard 4/5/8-wire Resistive Touch Screen Controller
- Mini-Card x 1
- +12V Only Operation
- Onboard Trusted Platform Module (Optional)
- mSATA x 1 (Optional, Sharded Mini-Card Interface)
- AAEON Hi-Safe SDK/ Utility Supported

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	Intel® Atom™ D2550/N2800/N2600
CPU Frequency	Up to 1.86GHz
Chipset	Intel® NM10
Memory Type	DDR3 800/1066, SODIMM x 1
Max. Memory Capacity	4 GB
BIOS	SPI type
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Intel® Atom™ N2800, DDR3 1333 4 GB 1.00A@+12V Intel® Atom™ N2600, DDR3 1066 2 GB 0.87A@+12V Intel® Atom™ D2550, DDR3 1333 4 GB 1.24A@+12V
Dimension (L x W)	5.75" x 4" (146 mm x 101.6 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	62,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Atom™ D2550/N2800/N2600 integrated
Video Output	CRT+LVDS, CRT+DVI, LVDS+DVI, LVDS+LVDS
Backlight inverter supply	Up to 24-bit Dual-Channel LVDS
I/O	
Ethernet	Realtek RTL 8111E x 2 ,10/100/1000Base-TX, RJ-45 x 2
Audio	High definition audio interface
USB Port	USB2.0 x 6
Serial Port	RS-232 x 5 , RS-232/422/485 x 1
Parallel Port	SPP/EPP/ECP x 1 (Shared with COM6 by BOM)
HDD Interface	SATA2.0 x 1
FDD Interface	—
SSD	CFast™ (alternative with mSATA by BOM and also occupy one Mini-Card location)
Expansion Slot	Mini-Card x 1
DIO	8-bit
SIM	x 1
TPM	x 1
Touch	x 1



Packing List

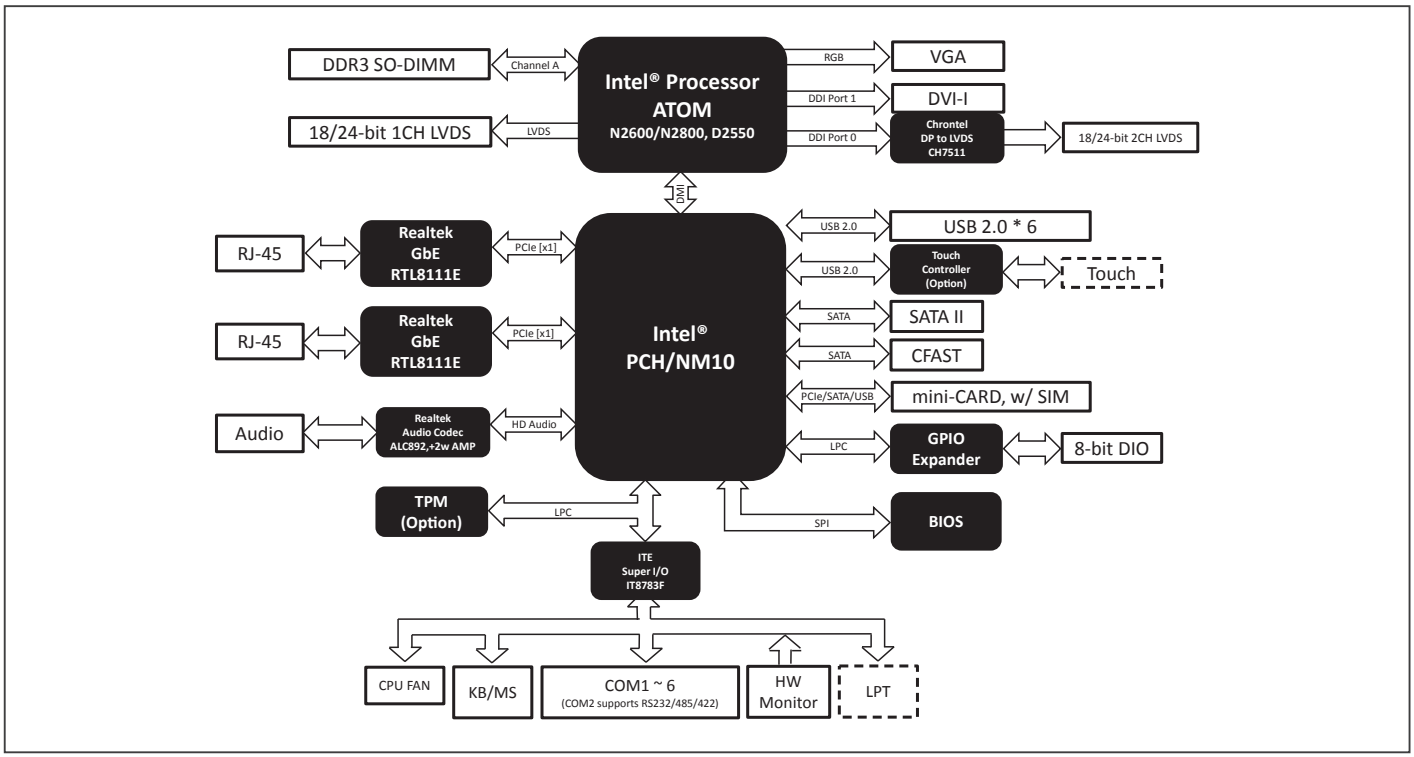
- GENE-CV05 with Passive Heatsink

Optional Accessories

Part Number	Description	QTY
1700050207	USB Cable, Length 20cm	1
1701090150	COM Port Cable, Length 15cm	1
1709100254	Audio Cable, Length 25cm	1
1709070500	SATA Cable, Length 50cm	1
1701260200	Parallel Port Cable, Length 20cm	1
170204010R	Big Double Row 4-Pin Power Input Cable For +12V Input, Length 10cm	1
1702150155	Power Cable for 2.5" SATA Hard Disk, Length 15cm	1
170220020B	Conversion Cable ATX Power Supply, Length 20cm	1
1700060157	Keyboard/Mouse Cable	1
205AGCV5A1	WES7 Japanese	1

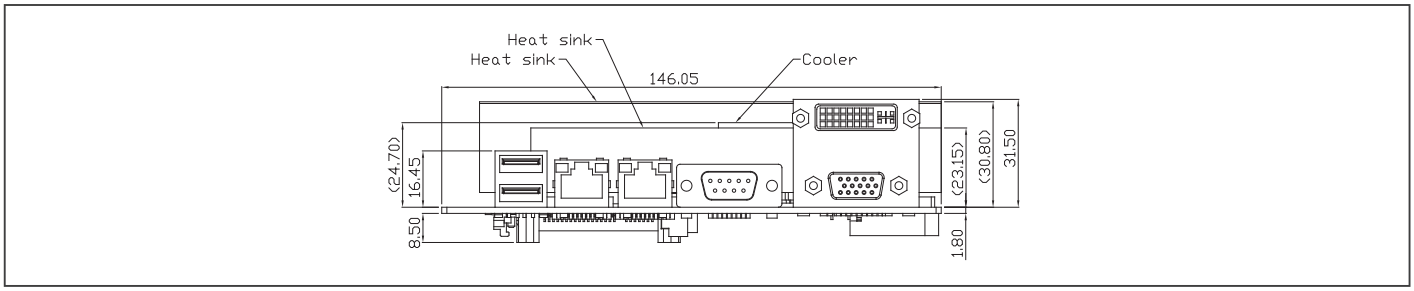
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

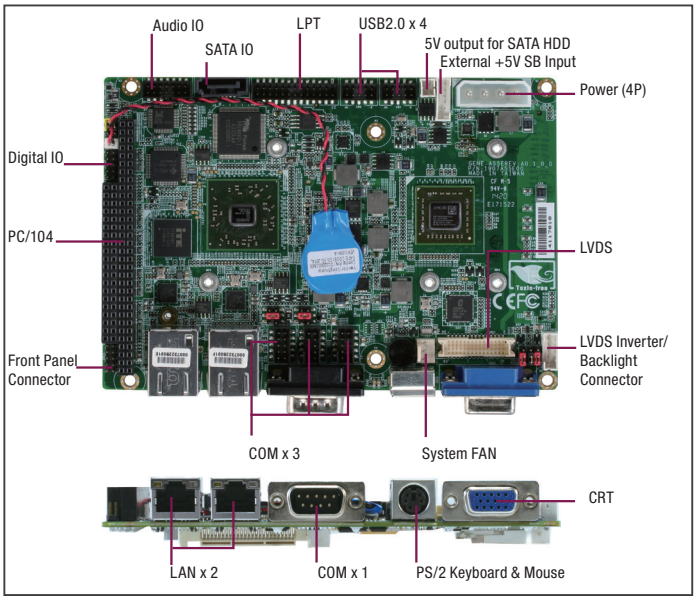


Ordering Information

Part Number	CPU	Chipset	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-CV05-A11-0001	Intel® Atom™ N2800	NM10	Fanless	CRT + LVDS (1 or 2) CRT + DVI LVDS (1 or 2) + DVI LVDS 1 + LVDS 2	1st 18b, 1CH 2nd 24b, 2CH	SATA x 1 CFast™ x 1	GbE x 2	UBS2.0 x 6	5	1	Mini Card x 1	+12V, AT/ATX	0°C ~ 60°C	Touch Controller, SIM, DIO x 8
GENE-CV05-A11-0002	Intel® Atom™ N2600	NM10	Fanless	CRT + LVDS (1 or 2) CRT + DVI LVDS (1 or 2) + DVI LVDS 1 + LVDS 2	1st 18b, 1CH 2nd 24b, 2CH	SATA x 1 CFast™ x 1	GbE x 2	UBS2.0 x 6	5	1	Mini Card x 1	+12V, AT/ATX	0°C ~ 60°C	Touch Controller, SIM, DIO x 8
GENE-CV05-A11-0003	Intel® Atom™ N2600	NM10	Fanless	CRT + LVDS	18b, 1CH	SATA x 1 CFast™ x 1	GbE x 2	UBS2.0 x 6	3	1	Mini Card x 1	+12V, AT/ATX	0°C ~ 60°C	SIM, DIO x 8
GENE-CV05W2-A11-0003	Intel® Atom™ N2600	NM10	Fanless	CRT + LVDS	18b, 1CH	SATA x 1 CFast™ x 1	GbE x 2	UBS2.0 x 6	3	1	Mini Card x 1	+12V, AT/ATX	WTAS 2 (-40°C~85°C)	SIM, DIO x 8

Note:
Intel® Atom™ Processor D2000 series and N2000 series (CV) do NOT support DMA function that may affect ECP mode of Parallel port.
D2550 support by project, please contact your sales.

3.5” SubCompact Board with AMD G-series T16R Processor

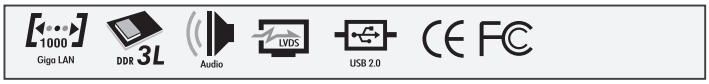


Features

- AMD G-series T16R Single Core 615 MHz Processor
- AMD A55E
- DDR3L SODIMM 1066 MHz Memory, Max. 4 GB
- Gigabit Ethernet x 2
- VGA, 18/24-bit Dual-channel LVDS LCD
- 2CH HD Audio
- SATA 3.0 Gb/s x 1 & CompactFlash™ x 1
- PC/104 Interface Support
- Supports 8-bit Digital I/O, USB2.0 x 4, COM x 4, LPT x 1
- Mini-Card Slot x 1
- +5V Input, AT/ATX

Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	AMD G-Series T16R/T40R/T56N
CPU Frequency	615MHz up to dual core 1G
Chipset	AMD A55E
Memory Type	DDR3L 1066MHz, SODIMM x 1
Max. Memory Capacity	4 GB
BIOS	SPI type
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+5V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	AMD G-T16R, DDR3 1333MHz 4GB, 2.20A@+5V
Dimension (L x W)	5.75" x 4" (146 mm x 101.6 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	148,000
Certification	CE/FCC
Display	
VGA/LCD Controller	AMD Radeon HD 6250
Video Output	CRT, LVDS, TTL LCD
Backlight inverter supply	Up to 24-bit dual-channel LVDS
I/O	
Ethernet	Realtek RTL-8111E, 10/100/1000Base-TX x2
Audio	High definition audio interface
USB Port	USB2.0 x 4
Serial Port	RS-232 x 2, RS-232/422/485 x 2
Parallel Port	SPP/ECP/EPP X 1 (Sharded with DIO)
HDD Interface	SATA2.0 x 1
FDD Interface	—
SSD	CompactFlash™
Expansion Slot	Mini-Card x 1, PC/104
DIO	8-bit
SIM	x 1
TPM	—
Touch	x 1



Packing List

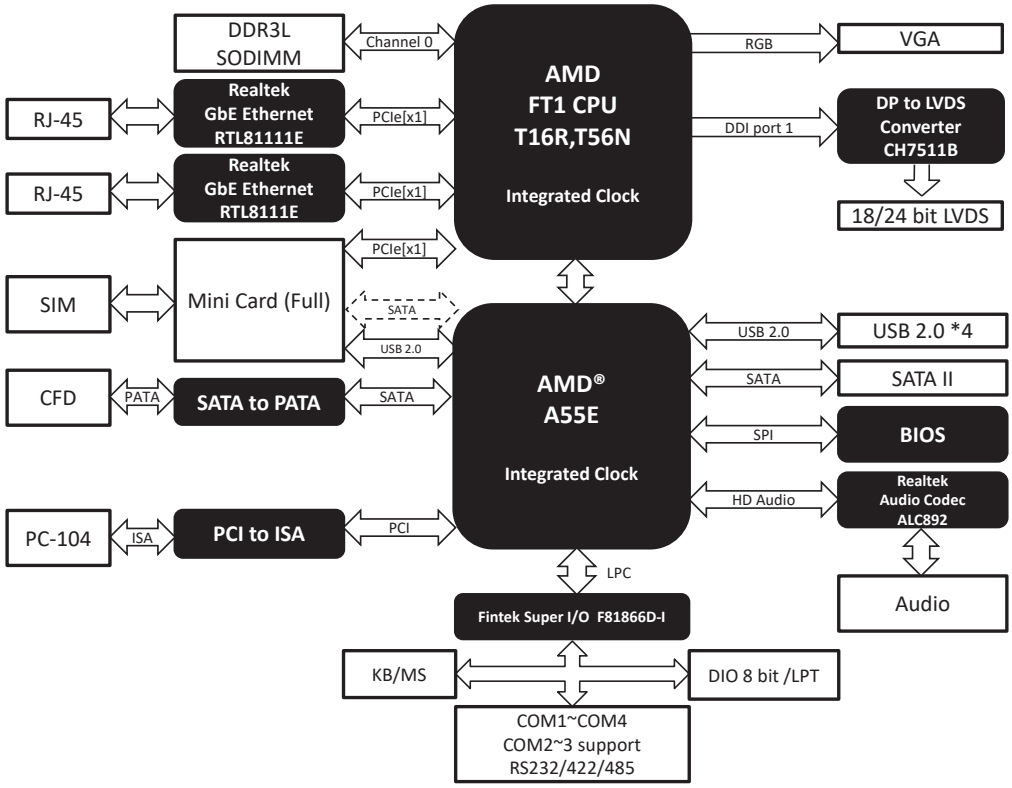
- Product DVD
- GENE-A55E with Passive Heatsink

Optional Accessories

Part Number	Description	QTY
1702200205	(TF)Power Cable, 20P ATX(M), 4P 5.08mm Housing(F), +6P 2.0mm Housing, 20cm	1
170204010A	(TF)Power Cable, 4P Housing(F), Dual 4P Housing(M), 10cm, For GENE-9455	1
1701260200	(TF)Flat Cable, 25P D-SUB FEMALE.26P 2.00mm Pitch Housing, 20cm	1
1701100206	(TF)Flat Cable, 9P DB 9P MALE, 10P 2.00mm Pitch Housing, 20cm	3
1700140510	(TF)Cable, 4P/2.54 Housing RCA Jack x 3, 14P/2.0 Housing, 51cm, for Audio I/O	1
1709100201	(TF)USB Cable, 20cm, 2.0mm, W/Bracket	2
1702150155	(TF)Power Cable, 15P SATA(F), 2P 2.0mm Housing(PH), 15cm	1
1700060192	(TF)Cable, 6P-6P-6P, 19cm, IVORY PS2/KB & Mouse	1
175011901C	(TF)Battery, 3V, Maxell, CR2032M1S8-LF	1
1709070500	(TF)SATA CABLE.7P Pitch 1.27mm.50cm	1

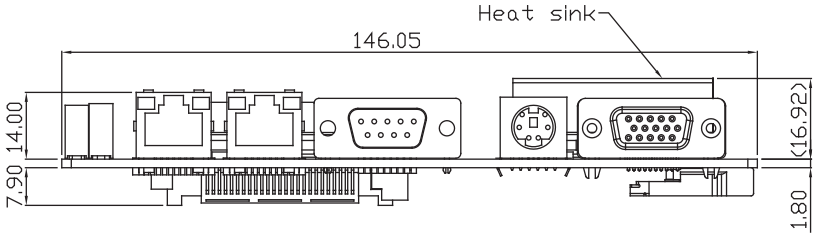
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

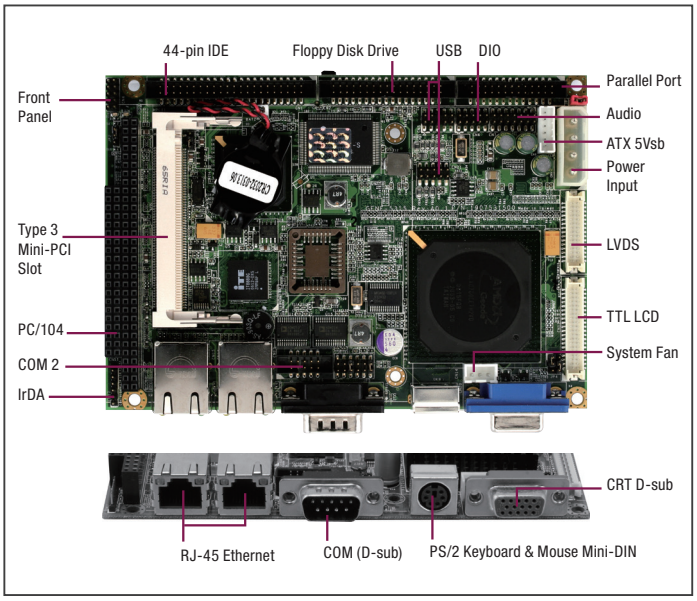
Unit: mm



Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-A55E-A11-0001	AMD G-T16R	Fanless	VGA/LVDS	24b, 2CH	SATA x 1, CompactFlash™ x 1	GbE x 2	UBS2.0 x 4	2	2	Mini-Card co-layout with mSATA, PC/104 x 1, LPC connector	+5V, AT/ATX	0°C ~ 60°C	DIO x 8

3.5” SubCompact Board with AMD Geode™ LX Series Processor

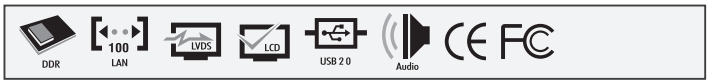


Features

- Onboard AMD Geode™ LX800 Processor
- AMD Geode™ LX + CS5536
- DDR 333 MHz SODIMM, Up to 1 GB or DDR 400 MHz SODIMM, Up to 512 MB
- 10/100Base-TX Ethernet x 2, RJ-45 x 2
- Up to 24-bit Single Channel LVDS/ TTL LCD & CRT
- AC97 Codec 2CH Audio
- EIDE x 1, Floppy Disk Drive x 1, CompactFlash™ x 1
- COM x 2, Parallel x 1, USB2.0 x 4, 8-bit Digital I/O
- Mini-PCI And PC/104 Expansions
- +5V Only Operation

Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	Onboard AMD Geode™ LX 800
CPU Frequency	500 MHz
Chipset	AMD Geode™ LX
Memory Type	DDR333 SODIMM x 1 (DDR400 optional)
Max. Memory Capacity	1 GB
BIOS	Award 1 MB
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+5V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	LX 800 500 MHz, DDR400 1 GB, 1.17A@+5V
Dimension (L x W)	5.75" x 4" (146 mm x 101.6 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), -4°F ~ 158°F (-20°C ~ 70°C) for WiTAS 1
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	90,000
Certification	CE/FCC
Display	
VGA/LCD Controller	AMD Geode™
Video Output	CRT, TTL LCD, LVDS LCD
Backlight inverter supply	Up to 24-bit single channel TTL/LVDS
I/O	
Ethernet	10/100Base-TX x 2, Realtek RTL 8139DL
Audio	High Definition Audio Interface
USB Port	USB2.0 x 4
Serial Port	RS-232 x 1, RS-232/422/485 x 1
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	UDMA33 x 1
FDD Interface	FDD x 1
SSD	CompactFlash™
Expansion Slot	Mini-PCI, PC/104
DIO	8-bit
SIM	—
TPM	—
Touch	—



Packing List

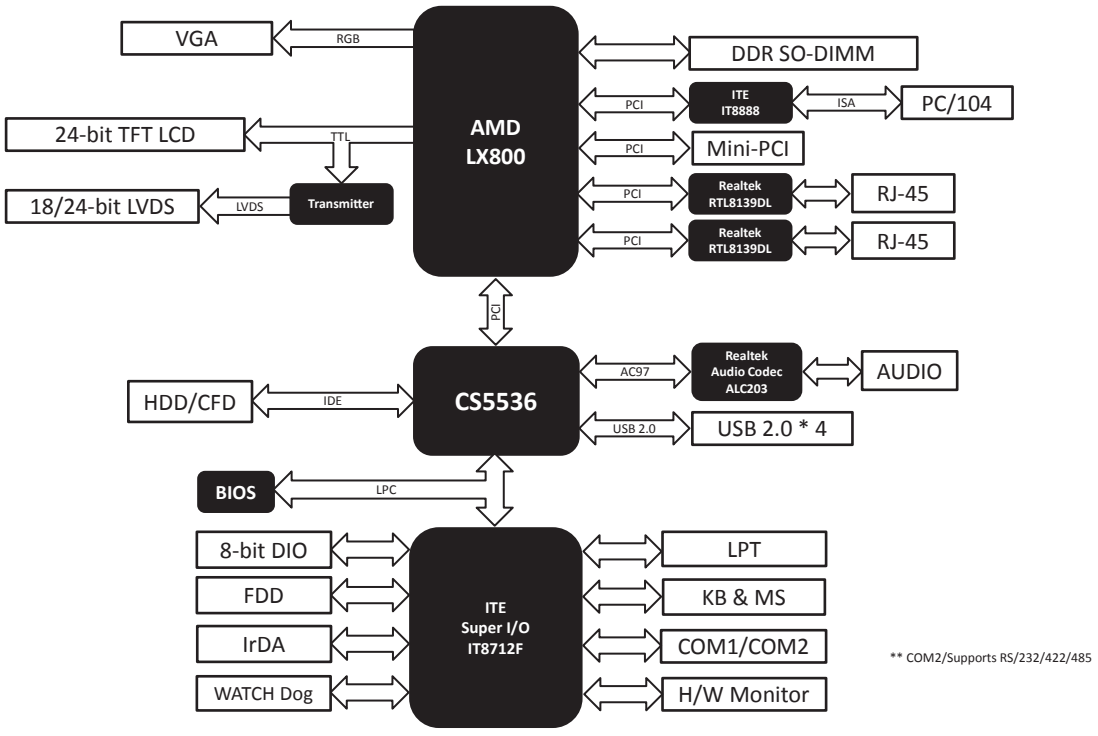
- **9681531501**
  Cable Kit for GENE-5315
  - 1700060192 Keyboard & Mouse Cable
  - 1709100201 USB Cable
  - 1701440500 IDE Cable
- **9657666600**
  Jumper Cap
- **Product CD**
- **GENE-5315 Rev. A**

Optional Accessories

Part Number	Description	QTY
1702200205	Conversion Cable for ATX Power Supply, Length 20cm	1
1709140181	Audio Cable, Length 18cm	1
1709100208	USB Cable, Length 20cm	1
1701100206	COM Port Cable, 9P DB Male, Length 20cm	1
1701260201	Parallel Port Cable, Length 20 cm	1
1701340600	Floppy Cable, Length 60 cm	1

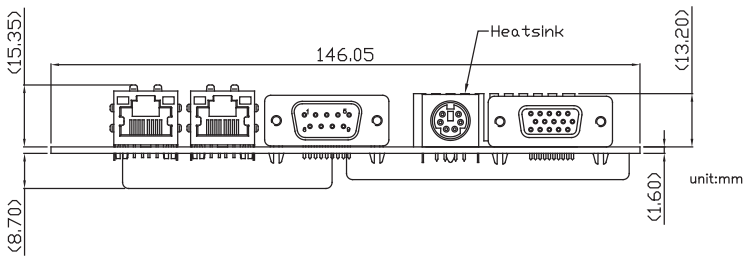
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

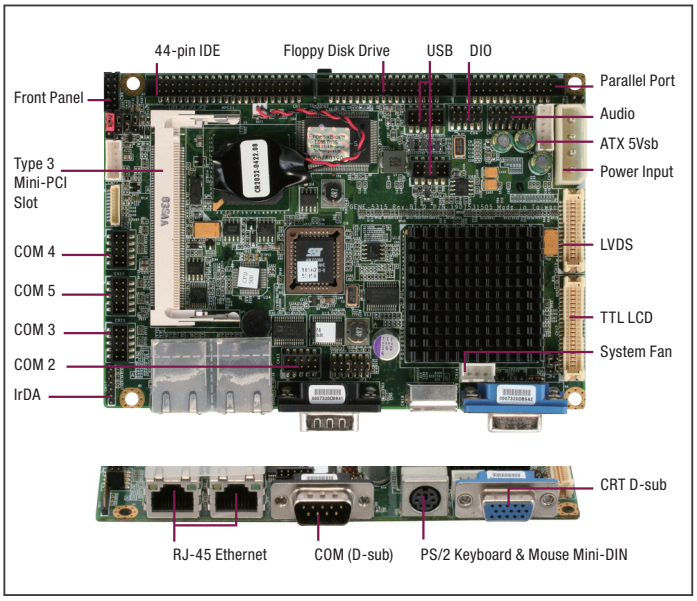


Ordering Information

Part Number	CPU	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
TF-GENE-5315-A11	AMD Geode™ LX800	Fanless	CRT + LVDS CRT + TTL	24b,1CH	EIDE x 1 Floppy x 1 CompactFlash™ x 1	FE x 2	UBS2.0 x 4	1	1	Mini-PCI x 1 PC/104 x 1	+5V, AT/ATX	0°C ~ 60°C	DIO x 8
TF-GENE-5315-A11-01	AMD Geode™ LX800	Fanless	CRT + LVDS CRT + TTL	18b, 1CH	EIDE x 1 Floppy x 1 CompactFlash™ x 1	FE x 2	UBS2.0 x 4	1	1	Mini-PCI x 1 PC/104 x 1	+5V, AT/ATX	0°C ~ 60°C	DIO x 8

GENE-5315 Rev. B

3.5” SubCompact Board with AMD Geode™ LX Series Processor

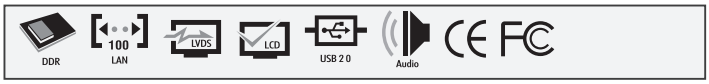


Features

- Onboard AMD Geode™ LX800 Processor
- AMD Geode™ LX + CS5536
- DDR 333 MHz SODIMM x 1, Up to 1 GB or DDR 400 MHz SODIMM x 1, Up to 512 MB
- 10/100Base-TX Ethernet x 2, RJ-45 x 2
- Up to 24-bit Single Channel LVDS/ TTL LCD & CRT
- AC97 Codec 2CH Audio
- EIDE x 1, Floppy Disk Drive x 1, CompactFlash™ x 1
- COM x 5, Parallel x 1, USB2.0 x 4, 8-bit Digital I/O
- Mini-PCI x 1
- +5V Only Operation

Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	Onboard AMD Geode™ LX 800
CPU Frequency	500 MHz
Chipset	AMD Geode™ LX
Memory Type	DDR333 SODIMM x 1 (DDR400 optional)
Max. Memory Capacity	1 GB
BIOS	Award 1 MB
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+5V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	LX 800 500 MHz, DDR400 1 GB, 1.17A@+5V
Dimension (L x W)	5.75" x 4" (146 mm x 101.6 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), -4°F ~ 158°F (-20°C ~ 70°C) for WiTAS 1
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	90,000
Certification	CE/FCC
Display	
VGA/LCD Controller	AMD Geode™
Video Output	CRT, TTL LCD, LVDS LCD
Backlight inverter supply	Up to 24-bit single channel TTL/LVDS
I/O	
Ethernet	10/100Base-TX x 2, Realtek RTL 8139DL
Audio	High Definition Audio Interface
USB Port	USB2.0 x 4
Serial Port	RS-232 x 4 & TTL UART x 1, RS-232/422/485 x 1
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	UDMA33 x 1
FDD Interface	FDD x 1
SSD	CompactFlash™
Expansion Slot	Mini-PCI
DIO	8-bit
SIM	—
TPM	—
Touch	—



Packing List

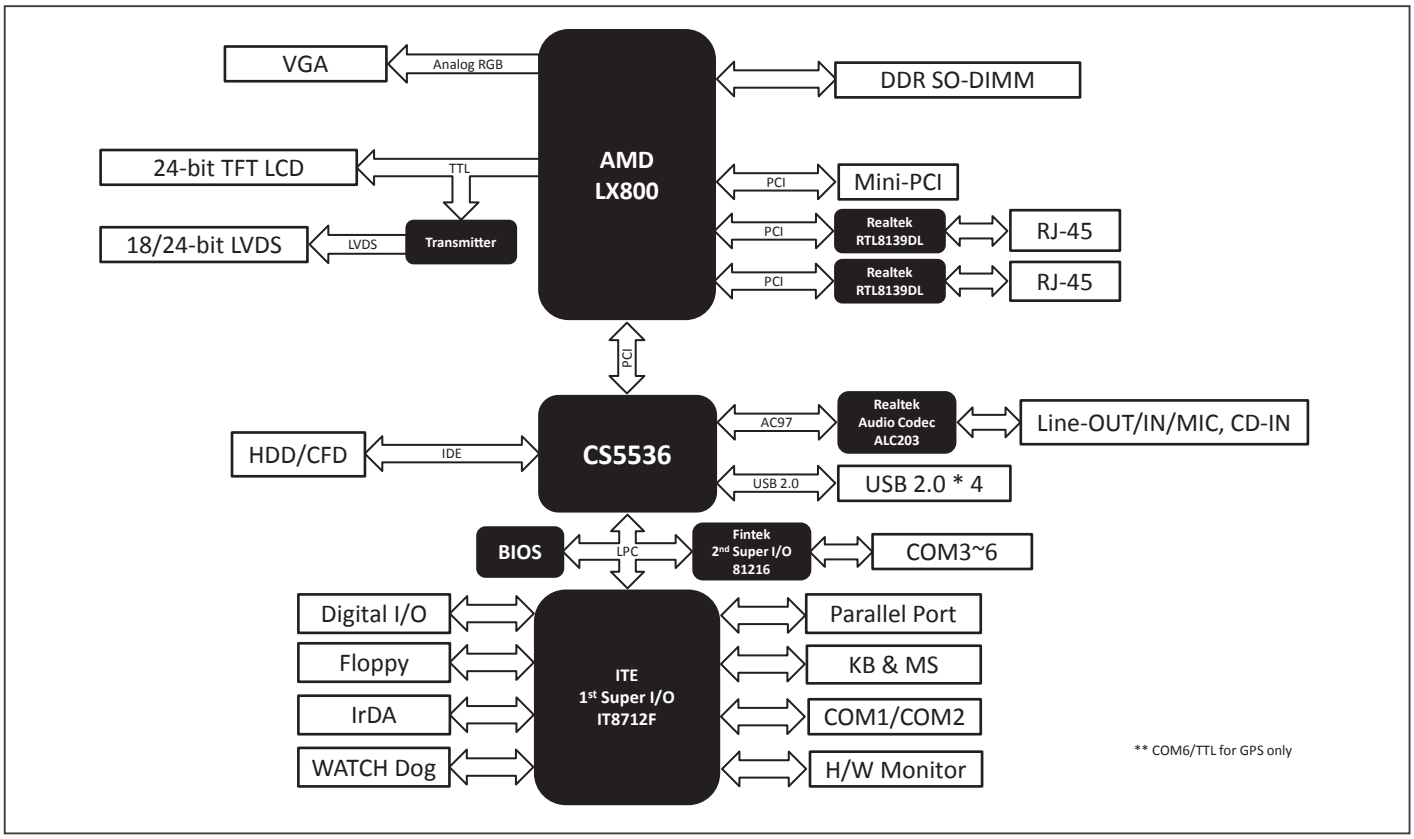
- **9681531501**
  Cable Kit for GENE-5315
  - 1700060192 Keyboard & Mouse Cable
  - 1709100201 USB Cable
  - 1701440500 IDE Cable
- **9657666600**
  Jumper Cap
- **Product CD**
- **GENE-5315 Rev. B**

Optional Accessories

Part Number	Description	QTY
1702200205	Conversion Cable for ATX Power Supply, Length 20cm	1
1709140181	Audio Cable, Length 18cm	1
1709100208	USB Cable, Length 20cm	1
1701100206	COM Port Cable, 9P DB Male, Length 20cm	1
1701260201	Parallel Port Cable, Length 20 cm	1
1701340600	Floppy Cable, Length 60 cm	1

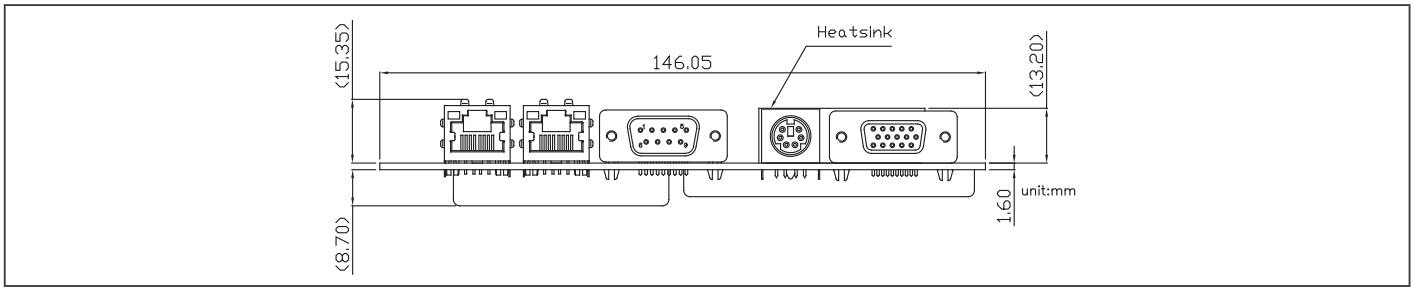
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

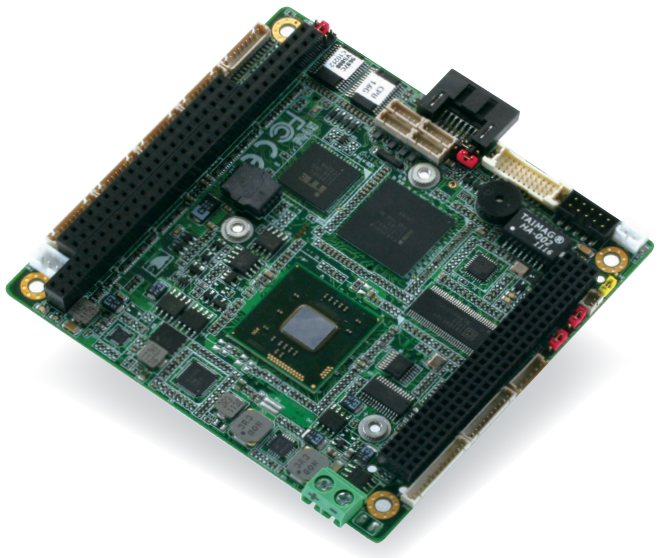


Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
TF-GENE-5315-B10	AMD Geode™ LX800	Fanless	CRT + LVDS CRT + TTL	24b,1CH	EIDE x 1 Floppy x 1 CompactFlash™ x 1	FE x 2	UBS2.0 x 4	4	1	Mini-PCI x 1	+5V, AT/ATX	0°C ~ 60°C	DIO x 8
TF-GENE-5315-B10-01	AMD Geode™ LX800	Fanless	CRT + LVDS CRT + TTL	18b, 1CH	EIDE x 1 Floppy x 1 CompactFlash™ x 1	FE x 2	UBS2.0 x 4	4	1	Mini-PCI x 1	+5V, AT/ATX	0°C ~ 60°C	DIO x 8
TF-GENE-5315W1-B10	AMD Geode™ LX800	Fanless	CRT + LVDS CRT + TTL	24b,1CH	EIDE x 1 Floppy x 1 CompactFlash™ x 1	FE x 2	UBS2.0 x 4	4	1	Mini-PCI x 1	+5V, AT/ATX	WiTAS 1 (-20°C ~ 70°C)	DIO x 8
TF-GENE-5315W1-B10-01	AMD Geode™ LX800	Fanless	CRT + LVDS CRT + TTL	18b, 1CH	EIDE x 1 Floppy x 1 CompactFlash™ x 1	FE x 2	UBS2.0 x 4	4	1	Mini-PCI x 1	+5V, AT/ATX	WiTAS 1 (-20°C ~ 70°C)	DIO x 8

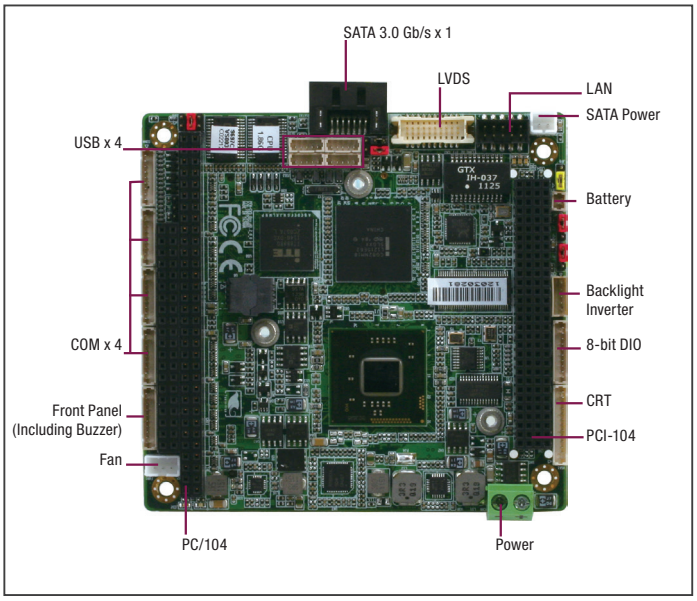
PC/104 Modules

04



PFM-CVS Rev. A

PC/104+ Module with Intel® Atom™ N2600 Processor



Features

- Intel® Atom™ N2600 Dual Core 1.6 GHz Processor
- Intel® Atom™ N2600 + NM10
- 204-pin DDR3 800/1066 MHz SODIMM x 1, Up to 2 GB
- 10/100/1000Base-TX Ethernet x 1
- CRT, 18-bit Single Channel LVDS LCD
- SATA 3.0 Gb/s x 1
- USB2.0 x 4, COM x 4
- PC/104+ Slot, Half-Size mSATA x 1/ Mini-Card (Optional)
- +12V Only Operation
- AAEON Hi-Safe SDK/Utility Supported

Specifications

System	
Form Factor	PC/104+
CPU	Intel® Atom™ N2600 Processor
CPU Frequency	1.6GHz
Chipset	NM10
Memory Type	SODIMM DDR 3
Max. Memory Capacity	2GB
BIOS	AMI 32MB
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	12V
Power Supply Type	AT / ATX
Power Consumption (Typical)	<15W (Atom™ 1.6 GHz, DDR3 1066 2GB)
Dimension (L x W)	3.55" x 3.77"(90mm x 96mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -20°F ~ 158°F (-20°C ~ 70°C) -40°F ~ 176°F (-40°C ~ 80°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	70,000
Certification	CE/FCC Class A
Display	
VGA/LCD Controller	Intel® Atom™ N2600 integrated
Video Output	CRT, LVDS
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	Intel® 8111E, 10/100/1000Base-TX x 1
Audio	—
USB Port	USB 2.0 x 4
Serial Port	RS-232 x 3, RS-232/422/485 x 1
Parallel Port	—
HDD Interface	SATA 3.0 Gb/s x 1
FDD Interface	—
SSD	—
Expansion Slot	PC/104 +, Mini-Card/mSATA
PWM LCD Support	—
DIO	8-bit
TPM	—
Touch	—

Packing List

- **9657666600**
  Jumper Cap
- **Product CD**
- **PFM-CVS Rev. A with Heatsink**

Optional Accessories

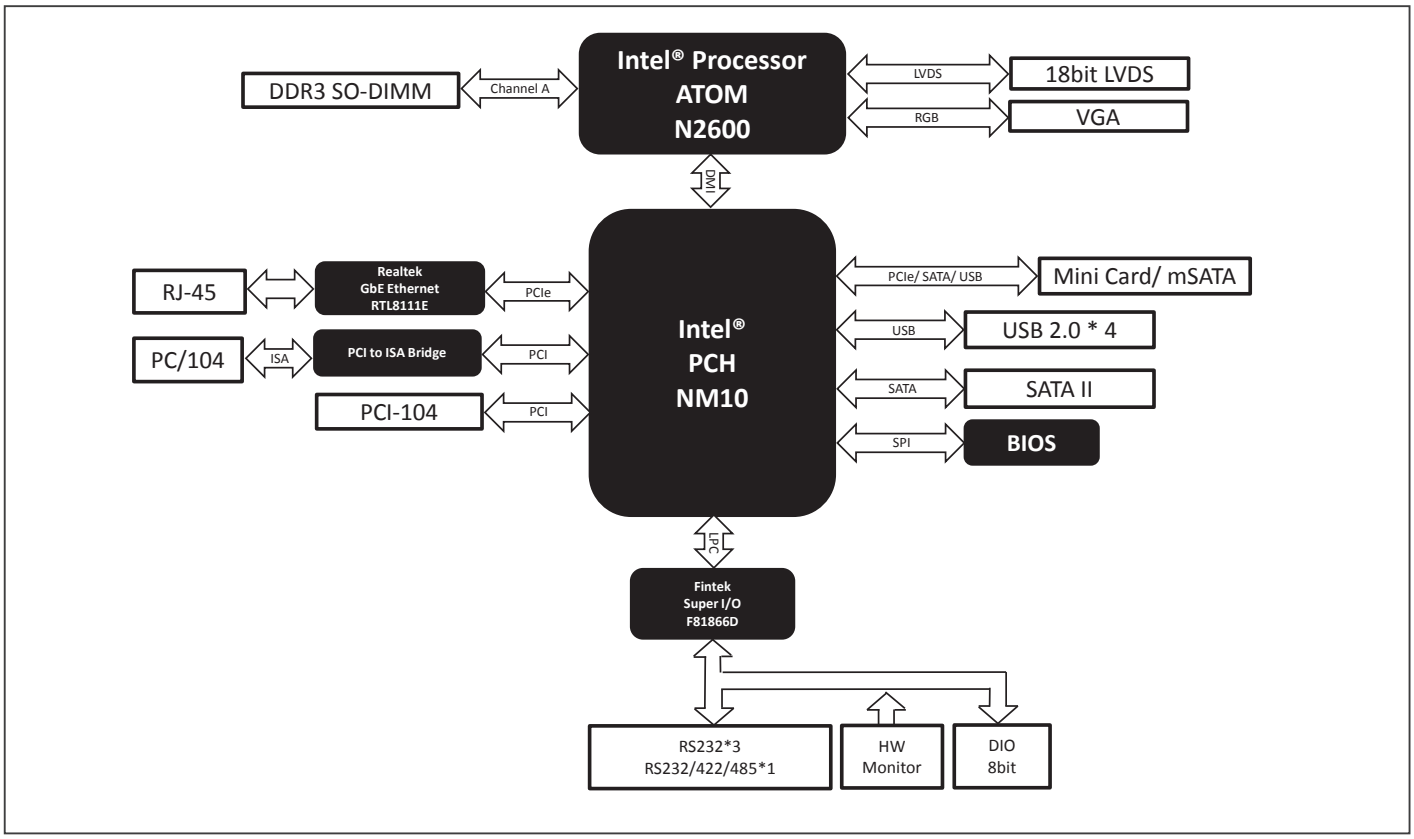
- **9681CVS000**
  (TF) Cable Kit for PFM-CVS-A10-10

Cable Kit

Part Number	Description	Quantity
1702002010	(TF)Power Cable, 1 x 2P Pitch=5.0mm Housing, 10cm (12V only)	1
1709150151	(TF)CRT Cable, 1 x 13P Pitch=1.25mm Housing,15cm	1
1701010150	(TF)FLAT Cable, 1 x 10P Pitch=1.25mm Housing, 15cm	1
1700100201	(TF)LAN Cable, RJ45 10P 2.0mm Housing, 20cm	1
1705050153	(TF)Inverter Cable, 1 x 5P Pitch=1.5mm Housing, 15cm	1
1700050207	(TF)USB Cable, 1 x 5P Pitch=1.25mm Housing, 20cm	4
1701090150	(TF)Flat Cable, D-Sub 9(M), 9P Housing, 9P 1.25mm pitch Housing, 15cm	4
1709070500	(TF)SATA Cable, 7P Pitch 1.27mm, 50cm	1
1702150155	(TF)Power Cable, 15P SATA (F), 2P 2.0mm Housing (PH), 15cm	1
1701100155	(TF)Flat Cable, Front Panel 10P, Pitch=1.25mm Housing, 15cm	1
1703020156	(TF)Buzzer Cable, 2P, Pitch=1.25mm Housing, 15cm	1

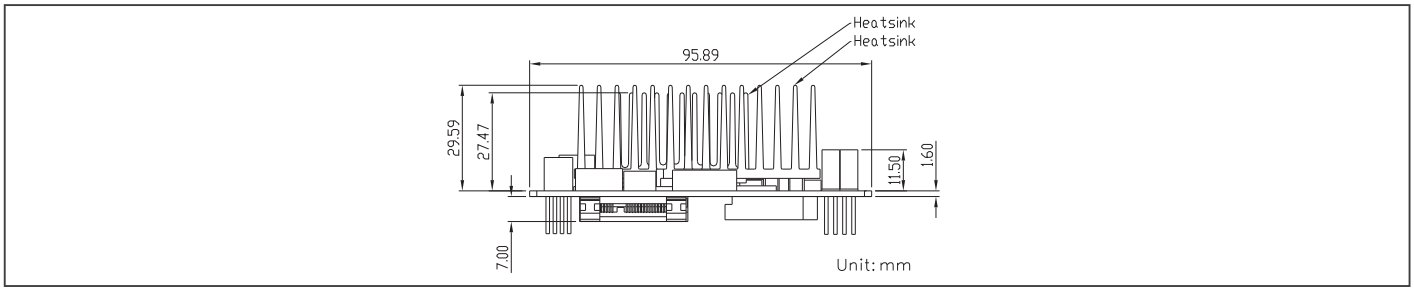
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

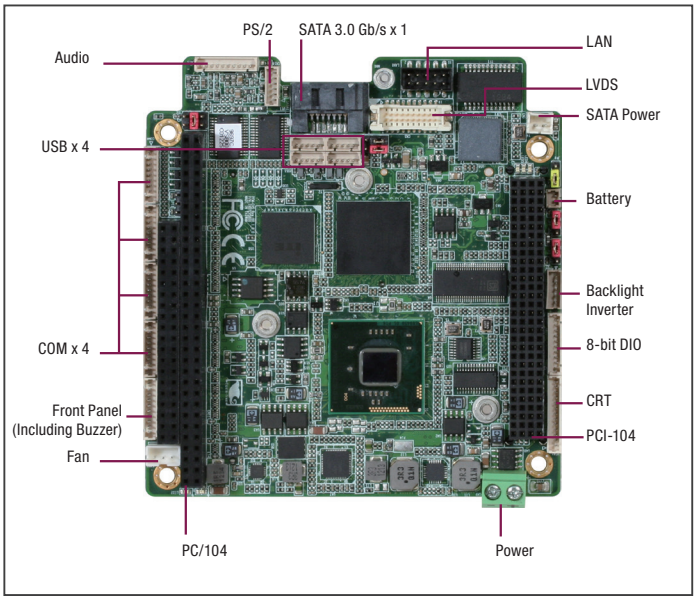


Ordering Information

Part Number	CPU	RAM	Fan/ Fanless	Storage	Display	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp.
TF-PFM-CVS-A10-10	Intel® Atom™ N2600	SODIMM	Fanless	SATA x 1, mSATA x 1 (Half-size)	CRT + LVDS	18b, 1CH	GbE x 1	4	3	1	PC/104+	+12V, AT/ATX	0°C ~ 60°C
TF-PFM-CVSW1-A10-10	Intel® Atom™ N2600	SODIMM	Fanless	SATA x 1, mSATA x 1 (Half-size)	CRT + LVDS	18b, 1CH	GbE x 1	4	3	1	PC/104+	+12V, AT/ATX	WiTAS 1 (-20°C ~ 70°C)

PFM-CVS Rev. B

PC/104+ Module with Intel® Atom™ N2600 Processor with Intel® LAN Chip



Features

- Intel® Atom™ N2600 Dual Core 1.6 GHz Processor
- Intel® Atom™ N2600 + NM10
- 204-pin DDR3 800/1066 MHz SODIMM x 1, Up to 2 GB
- 10/100/1000Base-TX Ethernet x 1
- CRT, 18-bit Single Channel LVDS LCD
- 2CH HD Audio
- SATA 3.0 Gb/s x 1
- USB2.0 x 4, COM x 4
- PC/104+ Slot, Full-Size mSATA x 1/ Mini-Card (Optional)
- +12V Only Operation
- AAEON Hi-Safe SDK/Utility Supported

Specifications

System	
Form Factor	PC/104+
CPU	Intel® Atom™ N2600 Processor
CPU Frequency	1.6 GHz
Chipset	NM10
Memory Type	SODIMM DDR3
Max. Memory Capacity	2GB
BIOS	AMI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	12V
Power Supply Type	AT / ATX
Power Consumption (Typical)	14W
Dimension (L x W)	3.55" x 3.77" (90mm x 96mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -20°F ~ 158°F (-20°C ~ 70°C) -40°F ~ 176°F (-40°C ~ 80°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	70,000
Certification	CE/FCC Class A
Display	
VGA/LCD Controller	Intel® Atom™ N2600 integrated
Video Output	CRT, LVDS
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	Intel® 82583V, 10/100/1000Base-TX x 1
Audio	ALC892
USB Port	USB 2.0 x 4
Serial Port	RS-232 x 3, RS-232/422/485 x 1
Parallel Port	—
HDD Interface	SATA 3.0 Gb/s x 1
FDD Interface	—
SSD	—
Expansion Slot	PC/104-Plus, mini Card/ mSATA (switch by R)
PWM LCD Support	—
DIO	8-bit
TPM	—
Touch	—

Packing List

- **9657666600**
  Jumper Cap
- **Product CD**
- **PFM-CVS Rev. B with Heatsink**

Optional Accessories

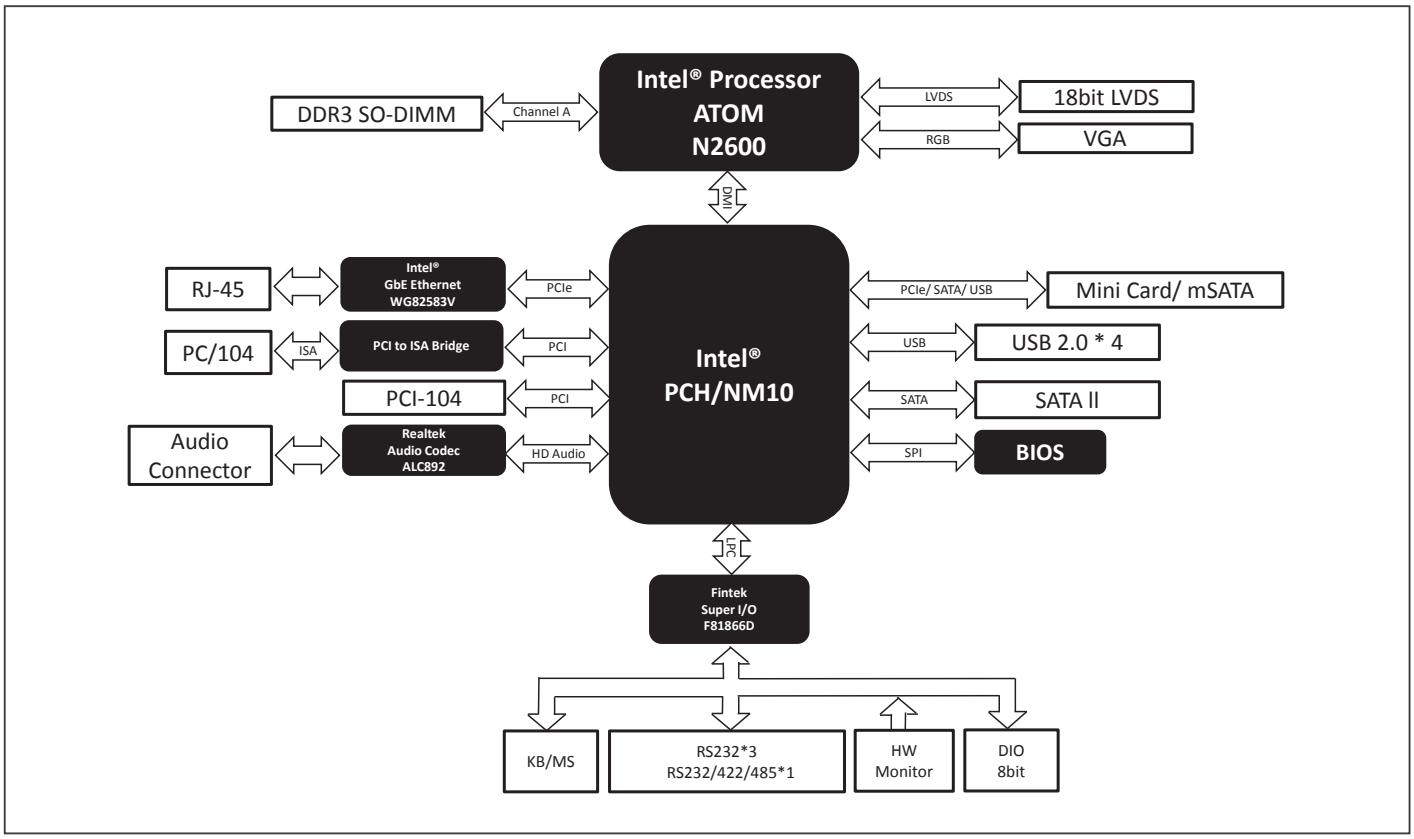
- **9681CVS000**
  (TF) Cable Kit for PFM-CVS

Cable Kit

Part Number	Description	Quantity
1702002010	(TF)Power Cable, 1 x 2P Pitch=5.0mm Housing, 10cm (12V only)	1
1709150151	(TF)CRT Cable, 1 x 13P Pitch=1.25mm Housing,15cm	1
1701010150	(TF)FLAT Cable, 1 x 10P Pitch=1.25mm Housing, 15cm	1
1700100201	(TF)LAN Cable, RJ45 10P 2.0mm Housing, 20cm	1
1705050153	(TF)Inverter Cable, 1 x 5P Pitch=1.5mm Housing, 15cm	1
1700050207	(TF)USB Cable, 1 x 5P Pitch=1.25mm Housing, 20cm	4
1701090150	(TF)Flat Cable, D-Sub 9(M), 9P Housing, 9P 1.25mm pitch Housing, 15cm	4
1709070500	(TF)SATA Cable, 7P Pitch 1.27mm, 50cm	1
1702150155	(TF)Power Cable, 15P SATA (F), 2P 2.0mm Housing (PH), 15cm	1
1701100155	(TF)Flat Cable, Front Panel 10P, Pitch=1.25mm Housing, 15cm	1
1703020156	(TF)Buzzer Cable, 2P, Pitch=1.25mm Housing, 15cm	1

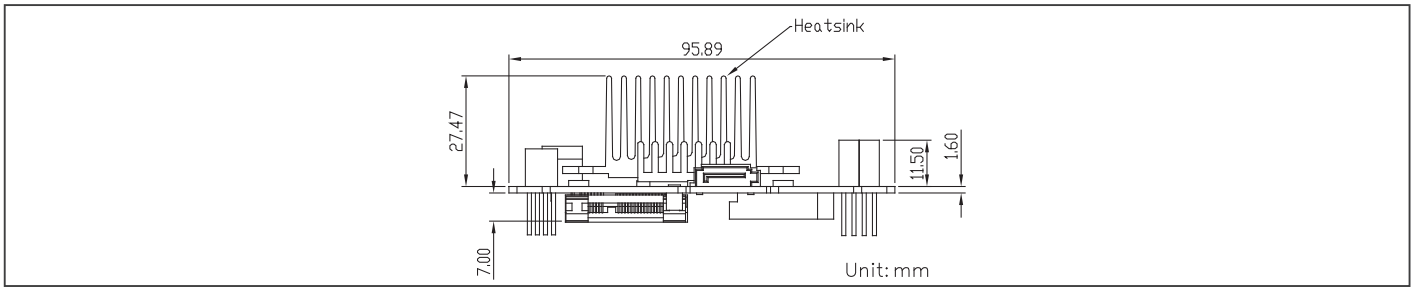
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

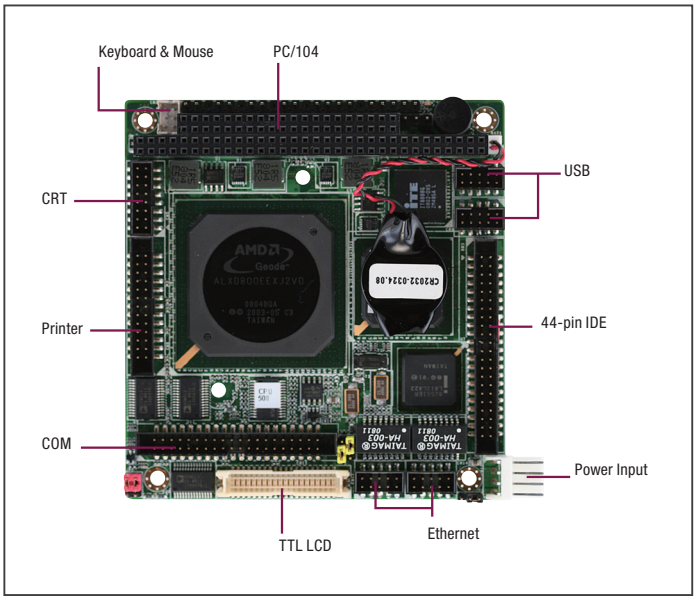
Unit: mm



Ordering Information

Part Number	CPU	RAM	Fan/ Fanless	Storage	Display	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp.
PFM-CVS-B10	Intel® Atom™ N2600	SODIMM	Fanless	SATA x 1, mSATA x 1 (Full size)	CRT + LVDS	18b, 1CH	GbE x 1	4	3	1	PC/104+	+12V, AT/ATX	0°C ~ 60°C
PFM-CVSW2-B10	Intel® Atom™ N2600	SODIMM	Fanless	SATA x 1 mSATA x 1 (Full Size)	CRT + LVDS	18b, 1CH	GbE x 1	4	3	1	PC/104+	+12V, AT/ATX	WiTAS 2 (-40°C ~ 85°C)

PC/104 Module with Onboard AMD Geode™ LX800 Processor



Features

- Onboard AMD Geode™ LX800 Processor
- AMD Geode™ LX800 + CS5536
- Onboard DDR 333 MHz Memory 256 MB
- 10/100Base-TX Ethernet x 2
- CRT & Up To 24-bit TTL LCD Support
- EIDE x 1, CompactFlash™ x 1
- USB2.0 x 4, COM x 4, Parallel x 1
- PC/104 Expansion
- +5V Only Operation, AT Power Type

Specifications

System	
Form Factor	PC/104
CPU	Onboard AMD Geode™ LX 800
CPU Frequency	500 MHz
Chipset	AMD Geode™ LX 800 + CS5536
Memory Type	Onboard DDR333 Memory up to 256 MB
Max. Memory Capacity	256 MB
BIOS	Award Plug & Play BIOS - 1 MB ROM
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+5V
Power Supply Type	AT
Power Consumption (Typical)	AMD Geode™ LX 800 500 MHz, DDR333 256 MB 1.83A@+5V
Dimension (L x W)	3.55" x 3.77" (90mm x 96mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	90,000
Certification	CE/FCC
Display	
VGA/LCD Controller	AMD Geode™ LX 800
Video Output	CRT, TTL LCD
Backlight Inverter Supply	—
I/O	
Ethernet	Intel® 82551ER, 10/100Base-TX, RJ-45 x 2
Audio	—
USB Port	USB2.0 x 4
Serial Port	RS-232 x 3, RS-232/422/485 x 1
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	UDMA33 x 1
FDD Interface	—
SSD	CompactFlash™
Expansion Slot	PC/104
PWM LCD Support	—
DIO	—
TPM	—
Touch	—

Fanless DDR USB 2.0 100 LAN LCD CE FC

Packing List

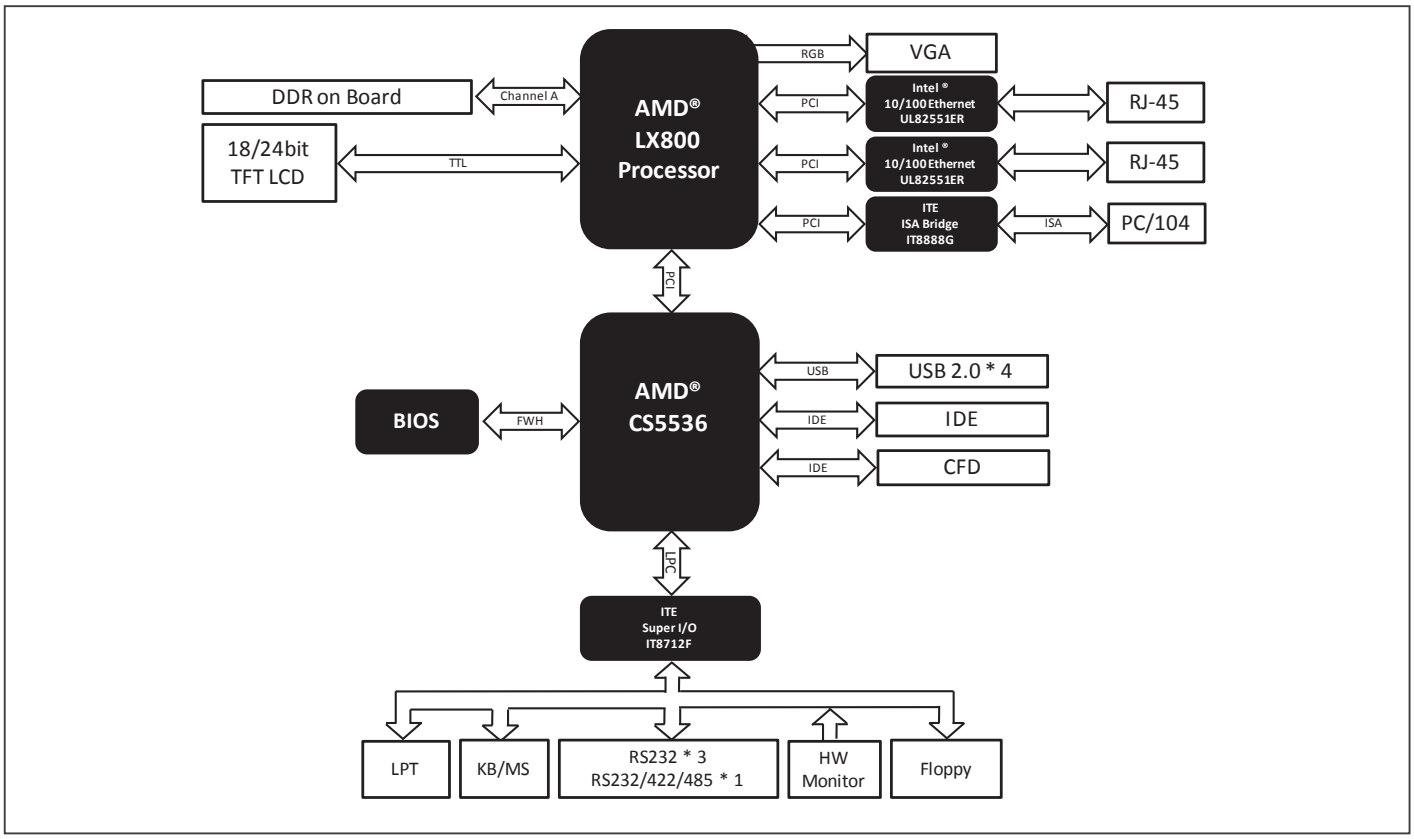
- Cable Kit
- Product CD
- PFM-541I with Heatsink

Optional Accessories

Part Number	Description	Quantity
PFM-P13DW2-A10	PC/104 Board Power Supply Module with +5V & +12V Output PC/104, Rev. A1.0 WiTAS 2	1
PCM-3538T-A10	TTL to LVDS Transmitter Module Rev. A1.0	1
1709100201	USB Cable, Length 20cm	1
1701260201	Printer Port Cable, Length 20cm	1
1700100200	LAN Cable, Length 20cm	1
1701400205	COM Cable, Length 20cm	1
1700160201	VGA Cable, Length 20cm	1

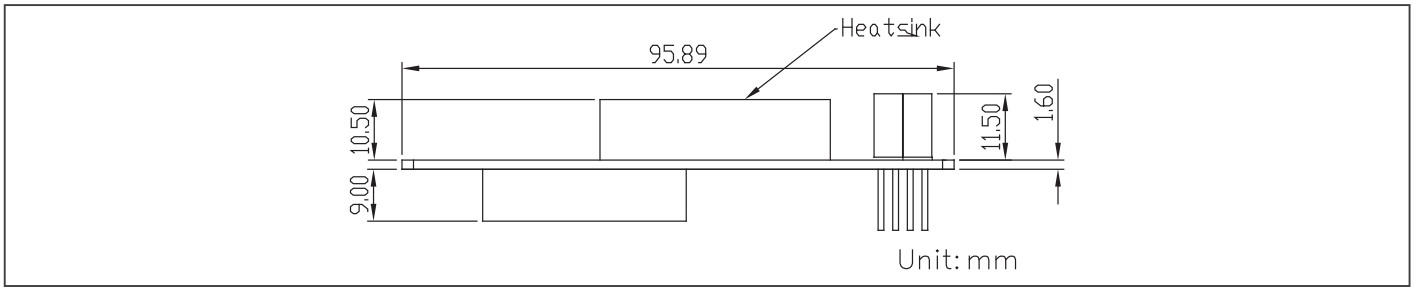
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

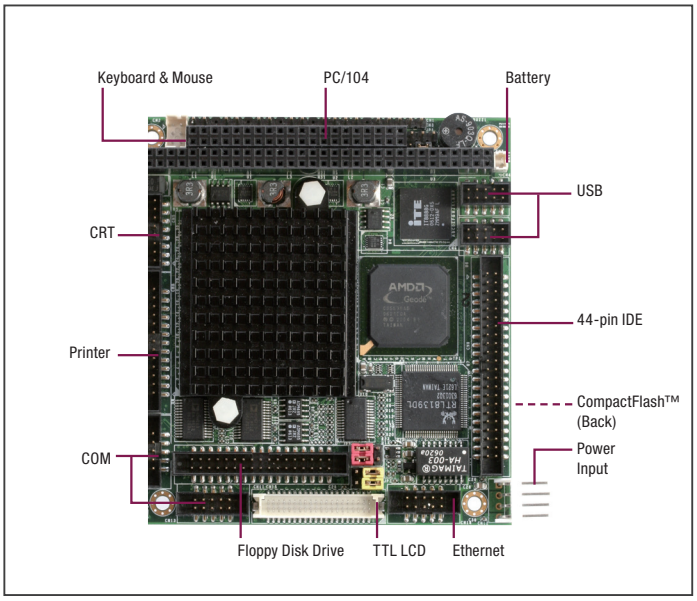


Ordering Information

Part Number	CPU	RAM	Fan/ Fanless	Storage	Display	LVDS	LAN	USB	RS-232	RS-232/422/485	Parallel	Expansion Slot	Power	Temp.
TF-PFM-541I-A10	AMD Geode™ LX800	256 MB	Fanless	EIDE x 1, CompactFlash™ x 1	CRT + TTL	18/24b, 1CH	FE x 2	4	3	1	1	PC/104	+5V/AT	0°C ~ 60°C

PFM-540I Rev. A

PC/104 Module with AMD Geode™ LX Processor



Features

- Onboard AMD Geode™ LX800 Processor
- AMD Geode™ LX800 + CS5536
- DDR 333 MHz SODIMM x 1, Up to 1 GB or DDR 400 MHz SODIMM x 1, Up to 512 MB
- 10/100Base-TX Ethernet x 1
- 18/24-bit TTL LCD Support
- EIDE x 1, CompactFlash™ x 1
- USB2.0 x 4, COM x 2, and Parallel x 1
- PC/104 Expansion
- +5V Only Operation, AT Power Type
- Low Power Consumption

Specifications

System	
Form Factor	PC/104
CPU	Onboard AMD Geode™ LX 800
CPU Frequency	500 MHz
Chipset	AMD Geode™ LX 800 + CS5536
Memory Type	DDR333/400, SODIMM x 1, (512 MB for DDR400)
Max. Memory Capacity	1 GB
BIOS	Award 512 KB
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+5V
Power Supply Type	AT
Power Consumption (Typical)	AMD Geode™ LX 800 500 MHz, DDR400 512 MB, 1.53A@+5V
Dimension (L x W)	3.55" x 3.77" (90mm x 96mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	100,000
Certification	CE/FCC
Display	
VGA/LCD Controller	AMD Geode™ LX 800
Video Output	CRT, TTL LCD
Backlight Inverter Supply	—
I/O	
Ethernet	10/100Base-TX x 1, Realtek RTL 8139DL
Audio	—
USB Port	USB2.0 x 4
Serial Port	RS-232 x 1, RS-232/422/485 x 1
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	UDMA33 x 1
FDD Interface	FDD x 1
SSD	CompactFlash™
Expansion Slot	PC/104
PWM LCD Support	—
DIO	—
TPM	—
Touch	—

Fanless DDR USB 2.0 100 LAN LCD CE FC

Packing List

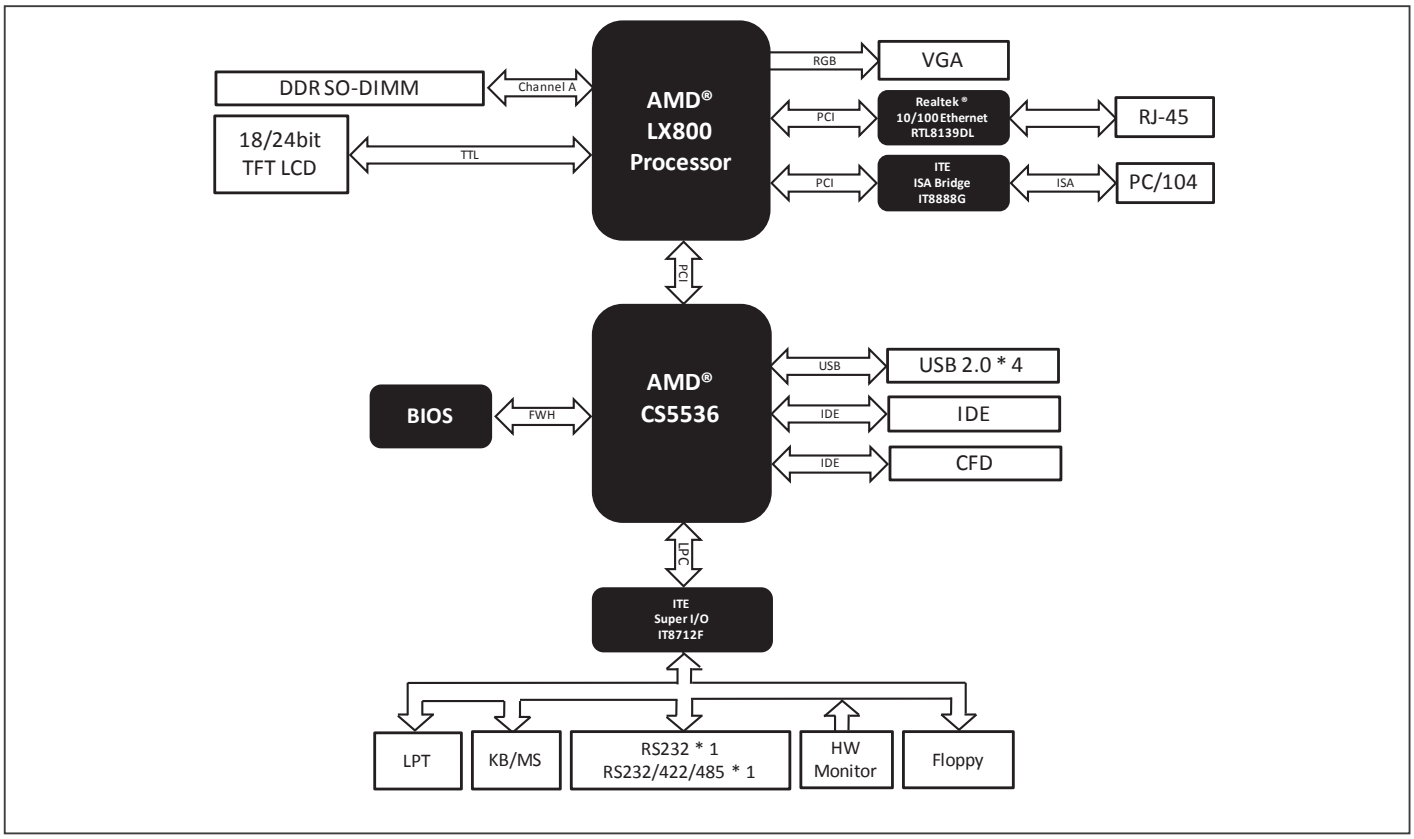
- **9681540I00**
  Cable Kit for PFM-540I Rev.A
  - 1701100207 RS-232 Cable x 2
  - 1701440350 44-pin IDE Cable x 1
  - 1700060152 Keyboard & Mouse Cable x 1
  - 1700100200 LAN Cable x 1
  - 1709100201 USB Cable x 2
  - 1701260201 Printer Port Cable x 1
  - 1700160201 VGA Cable, Length 20cm
- **Product CD**
- **PFM-540I Rev. A**

Optional Accessories

- **PCM-3538T-A10**
  TTL to LVDS Transmitter Module Rev. A1.0

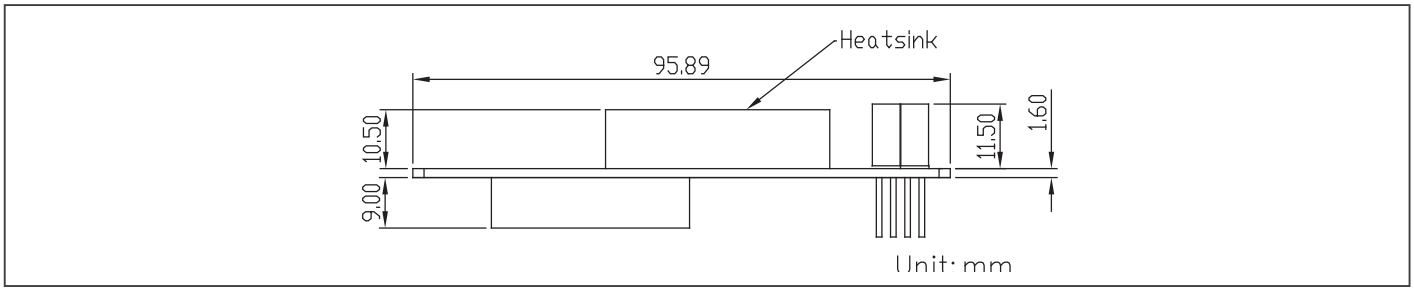
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

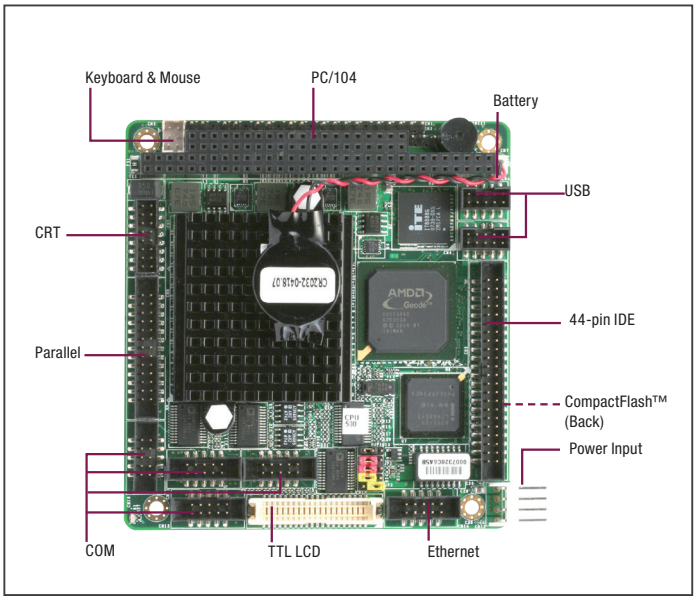


Ordering Information

Part Number	CPU	RAM	Fan/ Fanless	Storage	Display	LVDS	LAN	USB	RS-232	RS-232/422/485	Parallel	Expansion Slot	Power	Temp.
TF-PFM-540I-A10	AMD Geode™ LX800	SODIMM	Fanless	EIDE x 1, CompactFlash™ x 1 FDD x 1	CRT + TTL	18/24b, 1CH	FE x 1	4	1	1	1	PC/104	+5V/AT	0°C ~ 60°C

PFM-540I Rev. B

PC/104 Module with AMD Geode™ LX Processor with Intel® LAN Chip



Features

- Onboard AMD Geode™ LX800 Processor
- AMD Geode™ LX800 + CS5536
- DDR 333 MHz SODIMM x 1, Up to 1 GB or DDR 400 MHz SODIMM x 1, Up to 512 MB
- 10/100Base-TX Ethernet x 1
- 18/24-bit TTL LCD Support
- EIDE x 1, CompactFlash™ x 1
- USB2.0 x 4, COM x 4 And Parallel x 1
- PC/104 Expansion
- +5V Only Operation, AT Power Type
- Low Power Consumption

Specifications

System	
Form Factor	PC/104
CPU	Onboard AMD Geode™ LX 800
CPU Frequency	500 MHz
Chipset	AMD Geode™ LX 800 + CS5536
Memory Type	DDR333/400, SODIMM x 1, (512 MB for DDR400)
Max. Memory Capacity	1 GB
BIOS	Award 512 KB
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+5V
Power Supply Type	AT
Power Consumption (Typical)	AMD Geode™ LX 800 500 MHz, DDR400 512 MB, 1.53A@+5V
Dimension (L x W)	3.55" x 3.77" (90mm x 96mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	100,000
Certification	CE/FCC
Display	
VGA/LCD Controller	AMD Geode™ LX 800
Video Output	CRT, TTL LCD
Backlight Inverter Supply	—
I/O	
Ethernet	Intel® 82551ER, 10/100Base-TX
Audio	—
USB Port	USB2.0 x 4
Serial Port	RS-232 x 3, RS-232/422/485 x 1
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	UDMA33 x 1
FDD Interface	FDD x 1
SSD	CompactFlash™
Expansion Slot	PC/104
PWM LCD Support	—
DIO	—
TPM	—
Touch	—



Packing List

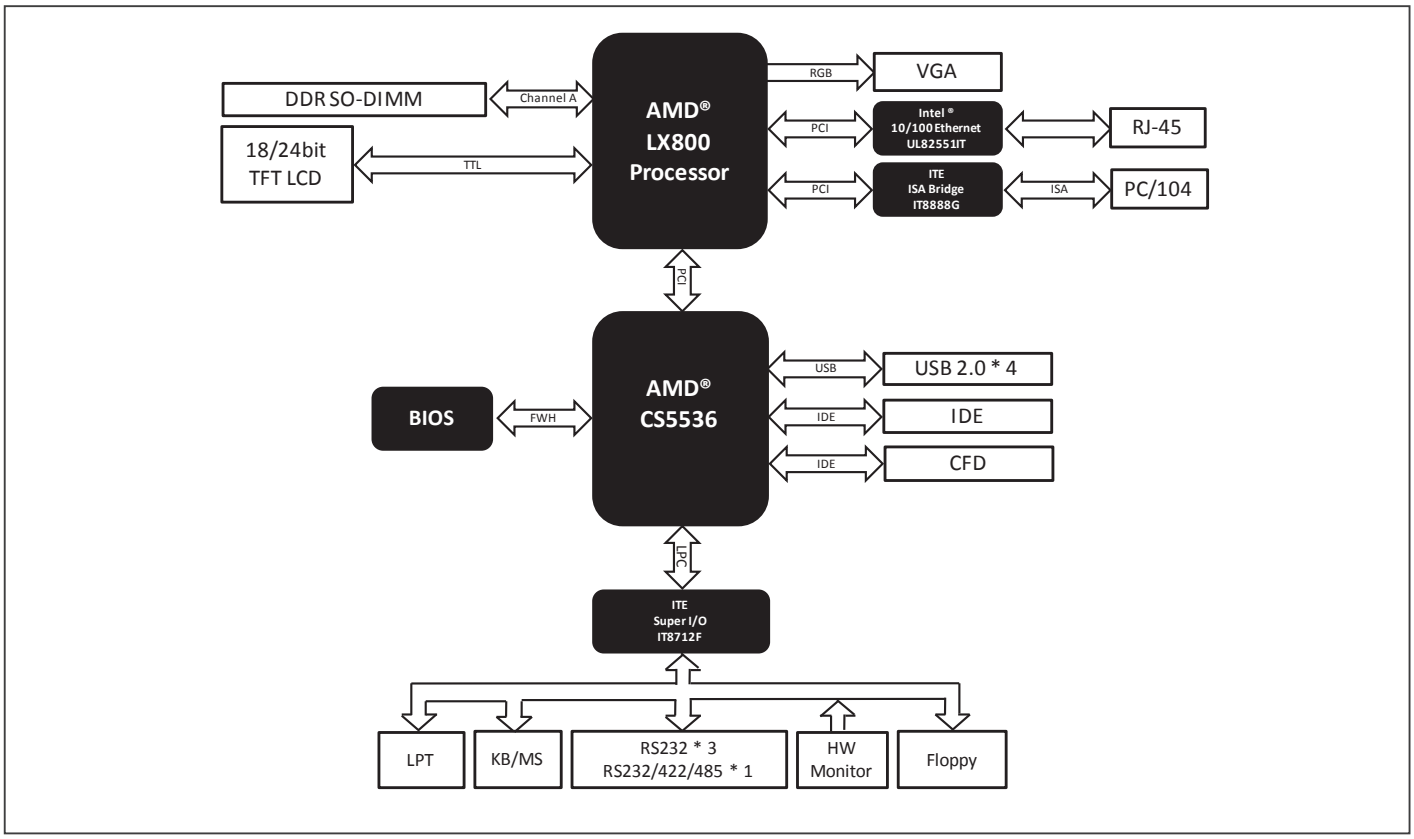
- **9681540I02**
  Cable Kit for PFM-540I Rev.B
  - 1701440350 44-pin IDE Cable x 1
  - 1700060152 Keyboard & Mouse Cable x 1
  - 1709100201 USB Cable x 1
  - 1700160201 VGA Cable, Length 20cm
- **Product CD**
- **PFM-540I Rev.B**

Optional Accessories

Part Number	Description	Quantity
1701100207	RS-232 Cable	1
1700100200	LAN Cable	1
1701260200	Printer Cable	1
1709100201	USB Cable	1
PCM-3538T-A10	TTL to LVDS Transmitter Module Rev. A1.0	1

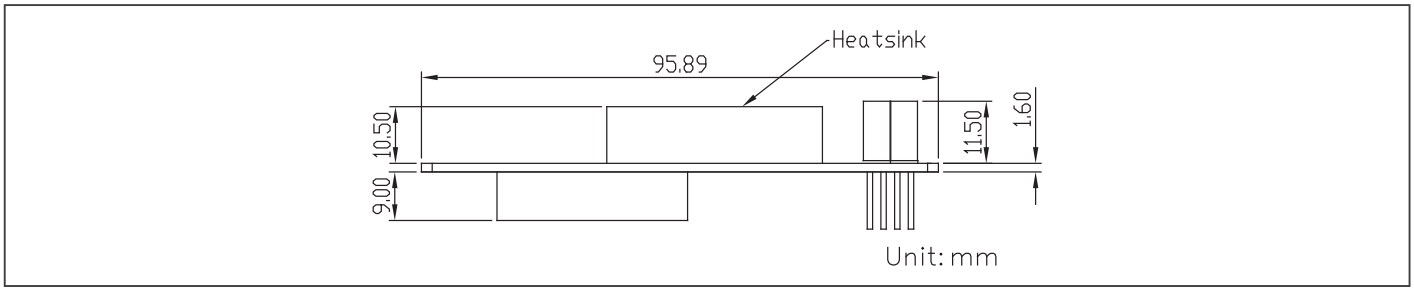
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

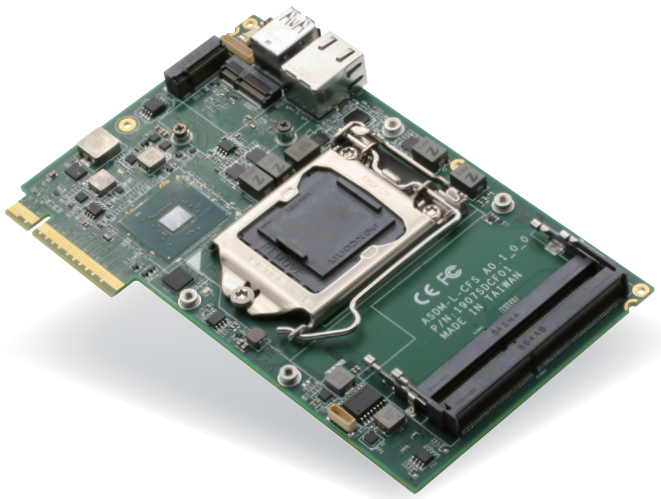


Ordering Information

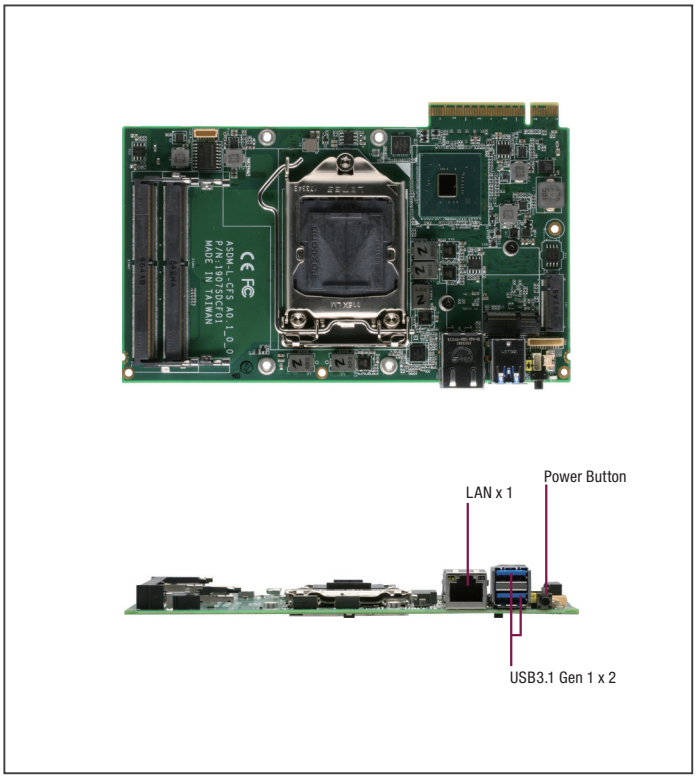
Part Number	CPU	RAM	Fan/Fanless	Storage	Display	LVDS	LAN	USB	RS-232	RS-232/422/485	Parallel	Expansion Slot	Power	Temp.
TF-PFM-540I-B10	AMD Geode™ LX800	SODIMM	Fanless	EIDE x 1, CompactFlash™ x 1,	CRT + TTL	18/24b, 1CH	FE x 1	4	3	1	1	PC/104	+5V/AT	0°C ~ 60°C

Smart Display Modules

05



Intel® Smart Display Module-Large Size with 8th Generation Intel® Core™I-S series Processor (Socket Type)



Features

- **Intel® Smart Display Module-Large Size**
- **Intel® 8th Generation Core™I-S series Processor (Socket Type)**
- **DDR4 2666 SO-DIMM x 2**
- **M.2 2242 (B key) x 1, M.2 2230 (E-Key) x 1**
- **USB3.1 Gen 1 x 2; LAN I219, RJ45 x 1**
- **HDMI 2.0 x 1, DP1.2 x 1 (through Edge Connector)**

Specifications

System	
Form Factor	Intel SDM-L Module
CPU	Intel® Core™ i7-8700T/ i5-8500T/ i3-8100T Processor
CPU Frequency	i7-8700T up to 4.0 GHz i5-8500T up to 3.5 GHz i3-8100T up to 3.1 GHz
Chipset	Intel® Chipsets H310/ Q370
Memory Type	260P DDR4 2666 SO-DIMM x 2
Max. Memory Capacity	Up to 32GB
BIOS	AMI BIOS
Wake On LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	12V DC from the Docking Board through the Edge Connector
Power Supply Type	AT/ATX
Power Consumption (Typical)	Intel® Core™ i7-8700T, DDR4 64G, 5.5A@12V
Dimension (L x W x H)	3.94" x 6.89" x 0.79" (100 mm x 175 mm x 20 mm)
Operating Temperature	32°F ~ 131°F (0°C ~ 55°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	—
Certification	CE/FCC
Display	
Controller	Intel® UHD Graphics 630
Video Output	HDMI 2.0 x 1 DP1.2 x 1 (through Edge connector)
Audio	Through HDMI, DP by edge connector
I/O	
Ethernet	LAN I219, RJ45 x 1
USB Port	USB3.1 Gen 1 x 2 / USB 3.1 Gen 2 support by Q370
Storage	M.2 2242 B-Key
Expansion Slot	M.2 2230 (E-Key) TPM2.0(optional)

Packing List

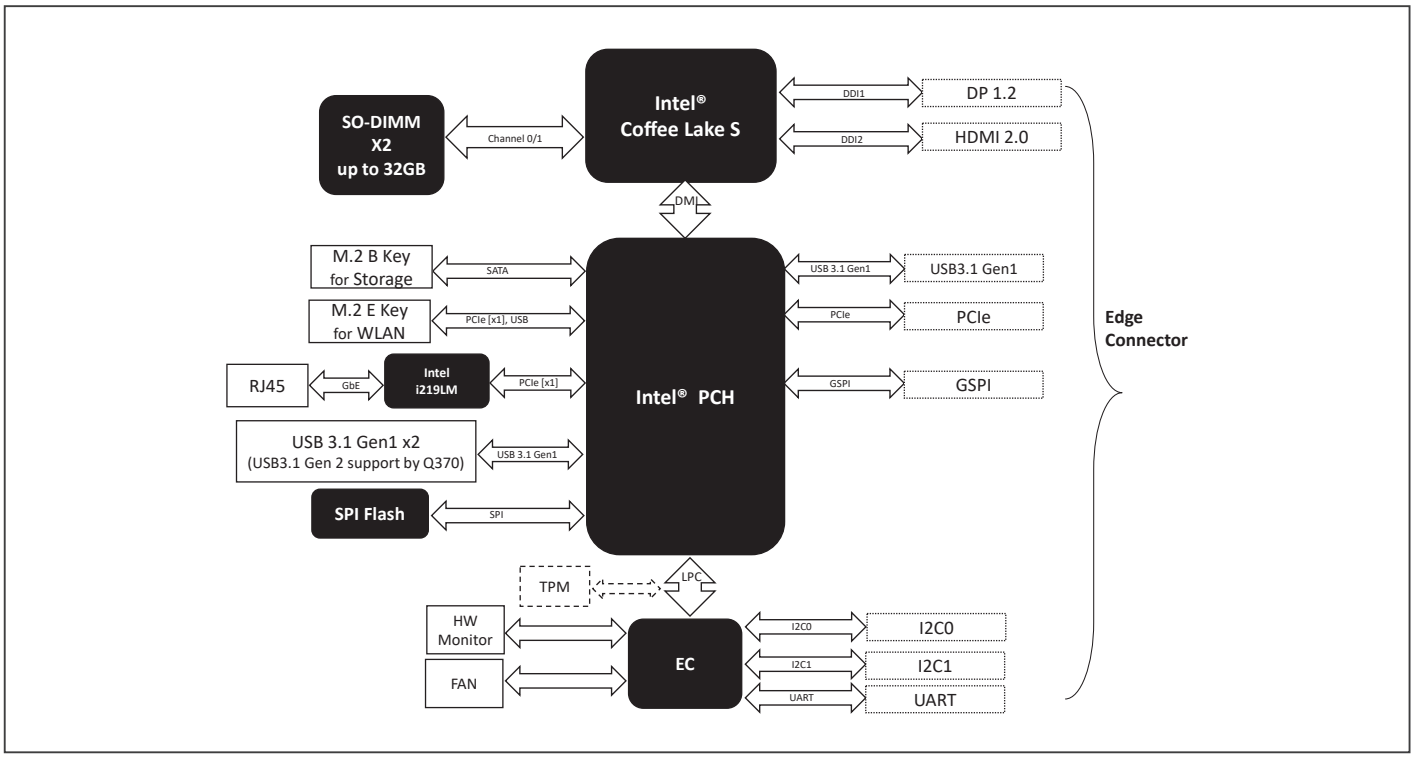
- **ASDM-L-CFS**

Optional Accessories

Part Number	Description	Qty
ASDM-L-CFS-FAN01	FAN+Heat Sink	1
ASDM-L-BRKT01	Bracket for SDM-L module	1

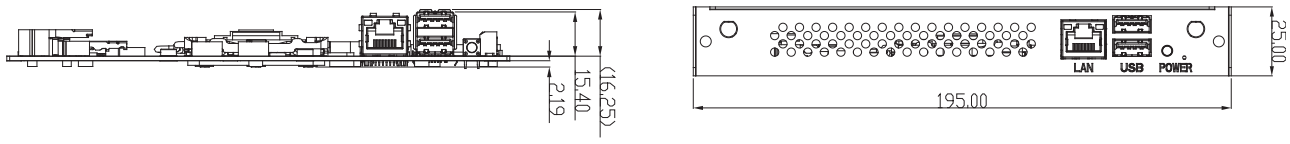
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

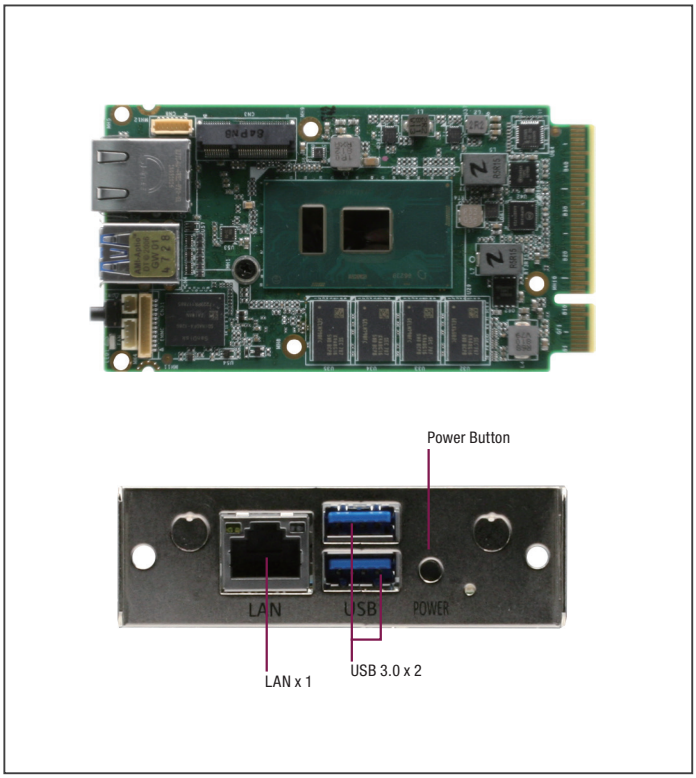
Unit: mm



Ordering Information

Part Number	CPU	Intel Chipset	Fan/Fanless	Display	Storage	LAN	USB	Expansion Slot	Power	Power Temp	Others
ASDM-L-CFS	Socket	H310	Fan	HDMI+ DP	M.2 (B-key) x 1	GbE x 1	USB3.1 Gen 1 x 2	M.2 (E-key) x 1	+12V, AT/ATX from PIB	0°C ~ 55°C	-

Intel® Smart Display Module-Small Size with 6/7th Generation Intel® Core™I-U series Processor SoC



Features

- **Intel® Smart Display Module- Small Size**
- **Intel® 6/7th Generation Core™I-U series Processor SoC**
- **Onboard DDR4 up to 8GB**
- **Onboard eMMC up to 128G**
- **M.2 2230 (E-Key) x 1**
- **USB 3.1 Gen1 x 2; LAN I211, RJ45 x 1**
- **HDMI 1.4 x1, DP1.2 x1 (through Edge Connector)**

Specifications

System	
Form Factor	Intel® SDM-S Module
CPU	7th Generation Intel® Core™ i7-7600U/ i5-7300U/ i3-7100U/ Celeron® 3965U SoC
CPU Frequency	i7-7600U up to 3.9 GHz i5-7300U up to 3.5 GHz i3-7100U up to 2.4 GHz Celeron 3965U up to 2.2 GHz
Chipset	7th Generation Intel® Core™ i7-7600U/ i5-7300U/ i3-7100U/ Celeron® 3965U SoC
Memory Type	onboard DDR4
Max. Memory Capacity	Up to 8GB
BIOS	AMI BIOS
Wake On LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	12V DC from the Docking Board through the Edge Connector
Power Supply Type	AT/ATX
Power Consumption (Typical)	Intel® Core™ i7-7600U, DDR4 4G, 64G eMMC, 2.4A @ 12V
Dimension (L x W x H)	3.94" x 2.36" x 0.79" (100 mm x 60 mm x 20 mm)
Operating Temperature	32°F ~ 131°F (0°C ~ 55°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	—
Certification	CE/FCC
Display	
Controller	7th Generation Intel® Core™ : Intel® HD Graphics 620 Intel® Celeron: intel® HD Graphics 610
Video Output	HDMI 1.4 x 1 (through Edge connector) DP1.2 x 1 (through Edge connector)
Audio	Through HDMI, DP by edge connector
I/O	
Ethernet	Intel I211, RJ45 x 1
USB Port	USB 3.1 Gen1 x 2
Storage	eMMC 32/64/128G
Expansion Slot	M.2 2230 (E-Key)

Packing List

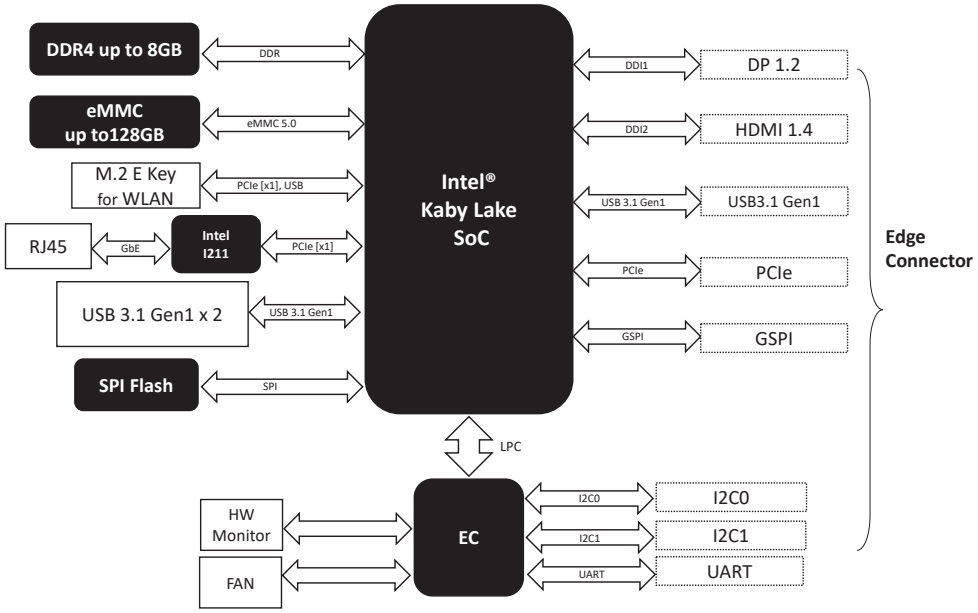
- **ASDM-S-KBU**

Optional Accessories

Part Number	Description	Qty.
ASDM-S-KBU-FAN01	FAN+Heat Sink	1
ASDM-S-BRKT01	Bracket for SDM-S module	1

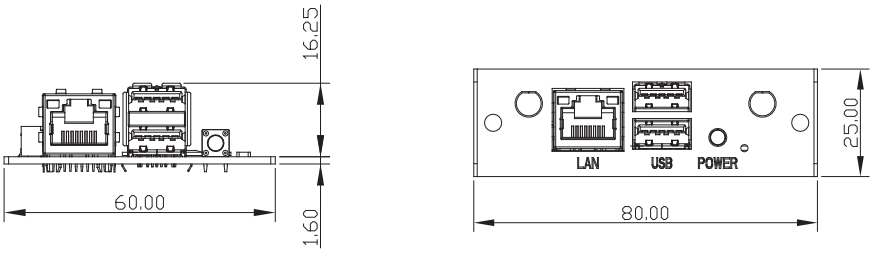
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

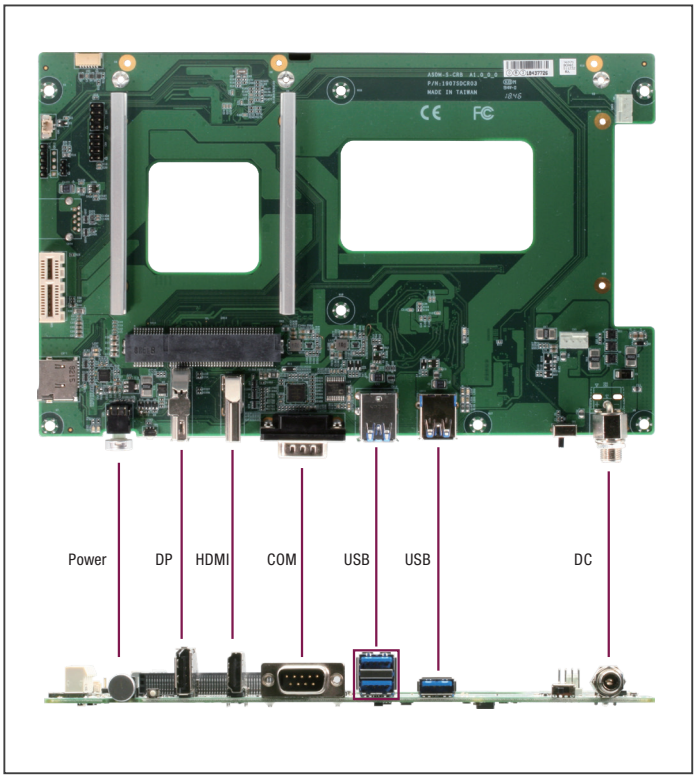
Unit: mm



Ordering Information

Part Number	CPU	Fan/Fanless	Display	Memory	Storage	LAN	USB	Expansion Slot	Power	Power Temp	Others
ASDM-S-KBU-A10-0001	Intel ® Core i5-7300U	Fan	HDMI+ DP	onboard DDR4 4G	onbaord eMMC 64G	GbE x 1	USB 3.1 Gen1 x 2	M.2 (E-key) x 1	+12V, AT/ATX from PIB	0°C ~ 55°C	—

Carrier Board for Intel® Smart Display Module Rev.2.0



Features

- Intel® Smart Display Module carrier board
- HDMI, DP output
- USB3.1 Gen 1 x 3, RS-232 x 1 (Only Tx/Rx)
- PCIE[x1] Slot x 1
- Micro SD 3.0 x 1

Specifications

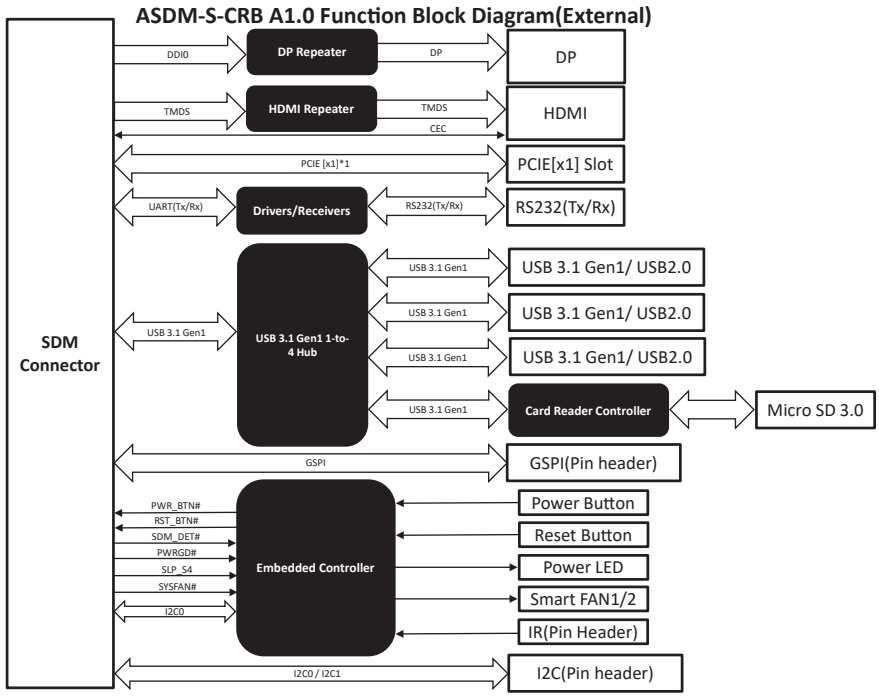
System	
Form Factor	AAEON SDM carrier board
Power Supply Type	AT (ATX is option)
Dimension (L x W x H)	5.51" x 8.86" (140 mm x 225 mm)
Operating Temperature	32°F ~ 131°F (0°C ~ 55°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	TBD
Certification	CE/FCC
Display	
Display Interface	HDMI, DP (support version depends on SDM module boards' chipset original signal)
Audio	Through HDMI, DP by edge connector
I/O	
Switch/ Button	Power button x 1 Reset button x 1
Power input	DC Jack x 1 (co-layout with phoenix connector, by option)
USB Port	USB3.1 Gen1 x 3
Serial Port	RS-232 x 1 (Only Tx/Rx)
Expansion Slot	Intel SDM socket slot I2C GSPI Smart fan PCIE[x1] Slot x 1 Micro SD 3.0 x 1

Packing List

- ASDM-S-CRB
- 9789ASDM00 rail kit

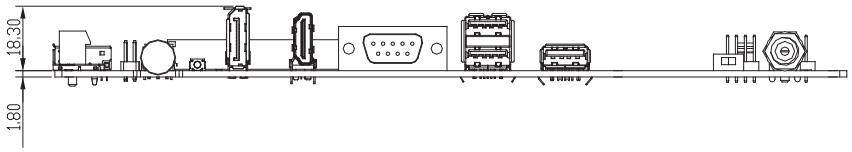
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

- **ASDM-S-CRB-A10-0001**

Carrier Board for Intel® Smart Display Module Rev.2.0



Features

- Enclosure for Intel® Smart Display Large/ Small size Module
- HDMI, DP output
- USB3.0 x 3, RS-232 x 1 (Only Tx/Rx)
- PCIe[x1] Slot x 1 (Optional)
- Micro SD 3.0 x 1 (Optional)

Specifications

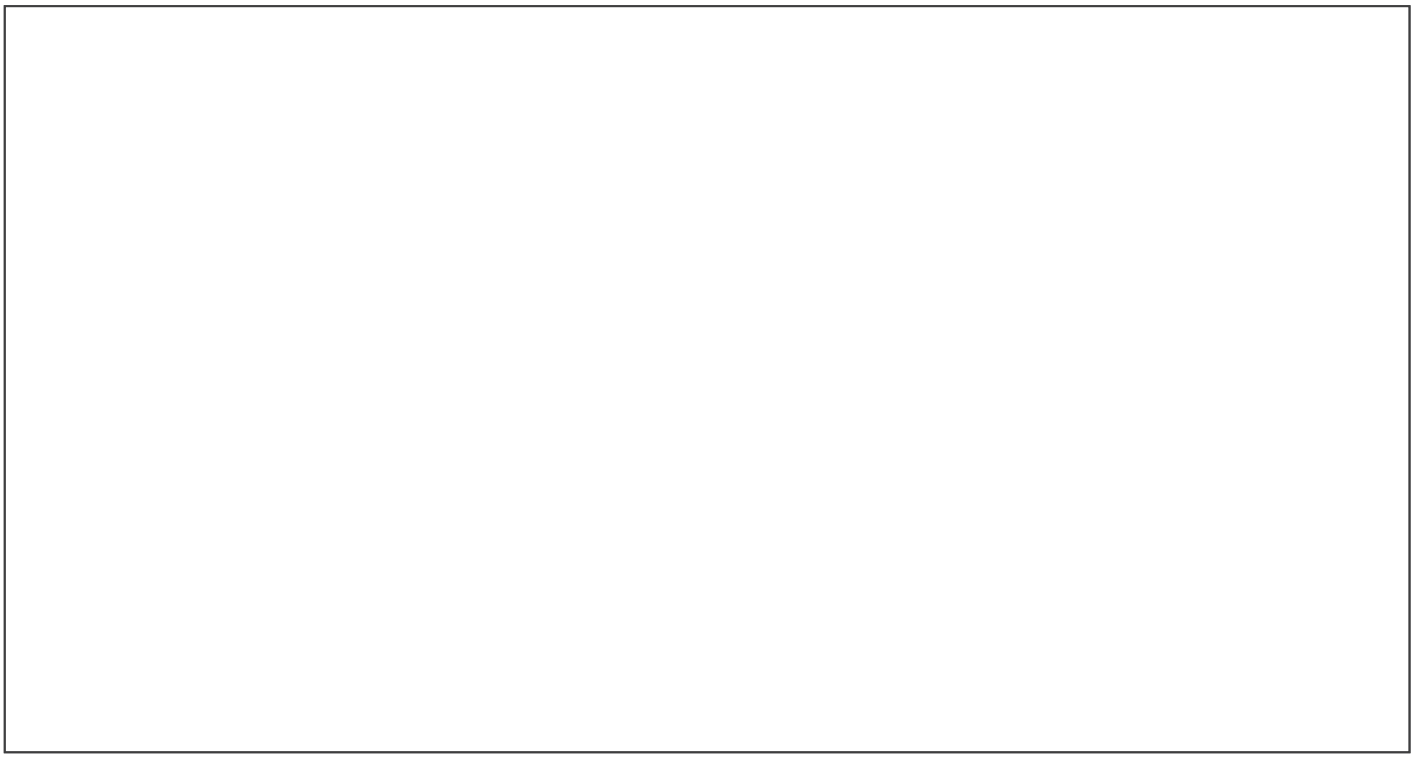
System	
Form Factor	AAEON SDM chassis with Intel SDM module
Power Supply Type	AT (ATX is option)
Dimension (L x W x H)	144mm x 231mm x 40mm
Operating Temperature	0°C ~ 55°C
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	TBD
Certification	CE/FCC
Display	
Display Interface	HDMI, DP (support version depends on SDM module boards' chipset original signal)
Audio	Through HDMI, DP by edge connector
I/O	
Switch/ Button	Power button x 1 Reset button x 1
Power input	DC Jack x 1(co-layout with phoenix connector, by option)
USB Port	USB3.0 x 3
Serial Port	RS-232 x 1 (Only Tx/Rx)
Expansion Slot	Intel SDM socket slot I2C GSPI Smart fan PCIE[x1] Slot x 1 (Optional) Micro SD 3.0 x 1 (Optional)

Packing List

- **ASDM-S-CRB**
  9789ASDM00 rail kit

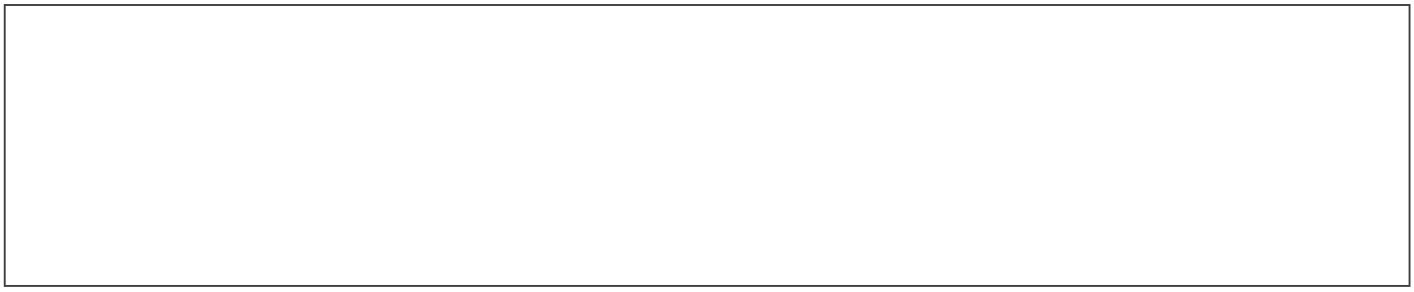
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

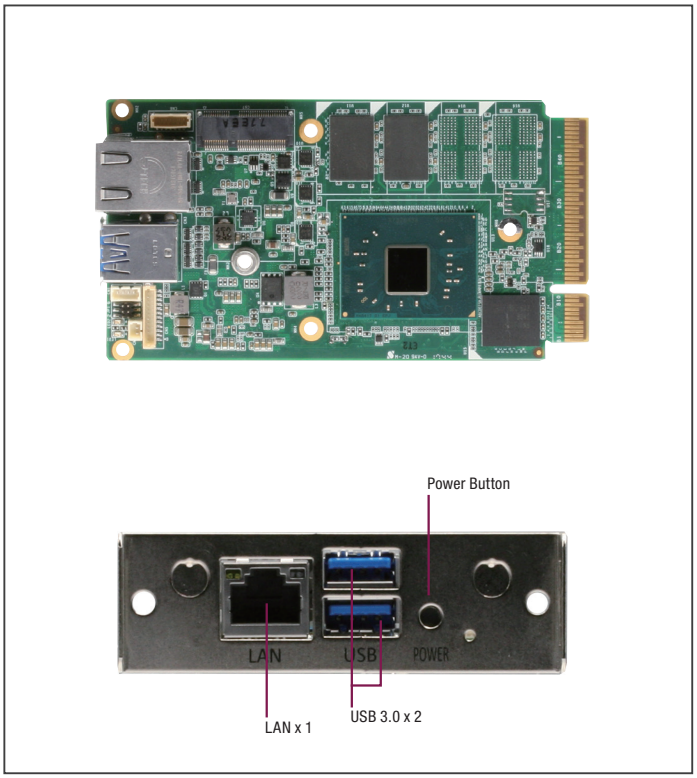
Unit: mm



Ordering Information

- ASDM-S-CRB-A10-0001

Intel® Smart Display Module-Small Size with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC



Features

- Intel® Smart Display Module- Small Size
- Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
- Onboard LPDDR4 up to 8GB
- Onboard eMMC up to 128G
- M.2 2230 (E-Key) x 1
- USB 3.0 x 2; LAN I211, RJ45 x 1
- HDMI x1, DP1.2 x1

Specifications

System	
Form Factor	Intel SDM-S Module
CPU	Intel® Pentium® N4200/ Celeron®N3350/ Intel Atom® E3900 Series SoC
CPU Frequency	Up to 2.5 Ghz
Chipset	Intel® Pentium® N4200/ Celeron®N3350/ Intel Atom® E3900 Series SoC
Memory Type	onboard LP DDR4
Max. Memory Capacity	Up to 8G
BIOS	AMI BIOS
Wake On LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	12V DC from the Docking Board through the Edge Connector
Power Supply Type	AT/ATX
Power Consumption (Typical)	Intel® Pentium® N4200, LPDDR4 8G, 5.5A@12V
Dimension (L x W x H)	100mm x 60mm x 20mm
Operating Temperature	0~55 degree
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	239,000 hours
Certification	CE/FCC
Display	
Controller	Intel® Pentium® N4200/ Celeron®N3350/ Intel Atom® E3900 Series SoC
Video Output	1x HDMI 1.4 1x DP1.2 (through Edge connector)
Audio	Through HDMI, DP by edge connector
I/O	
Ethernet	LAN I211, RJ45 x 1
USB Port	USB3.0 x 2
Storage	eMMC 32/64/128G
Expansion Slot	M.2 2230 (E-Key)

Packing List

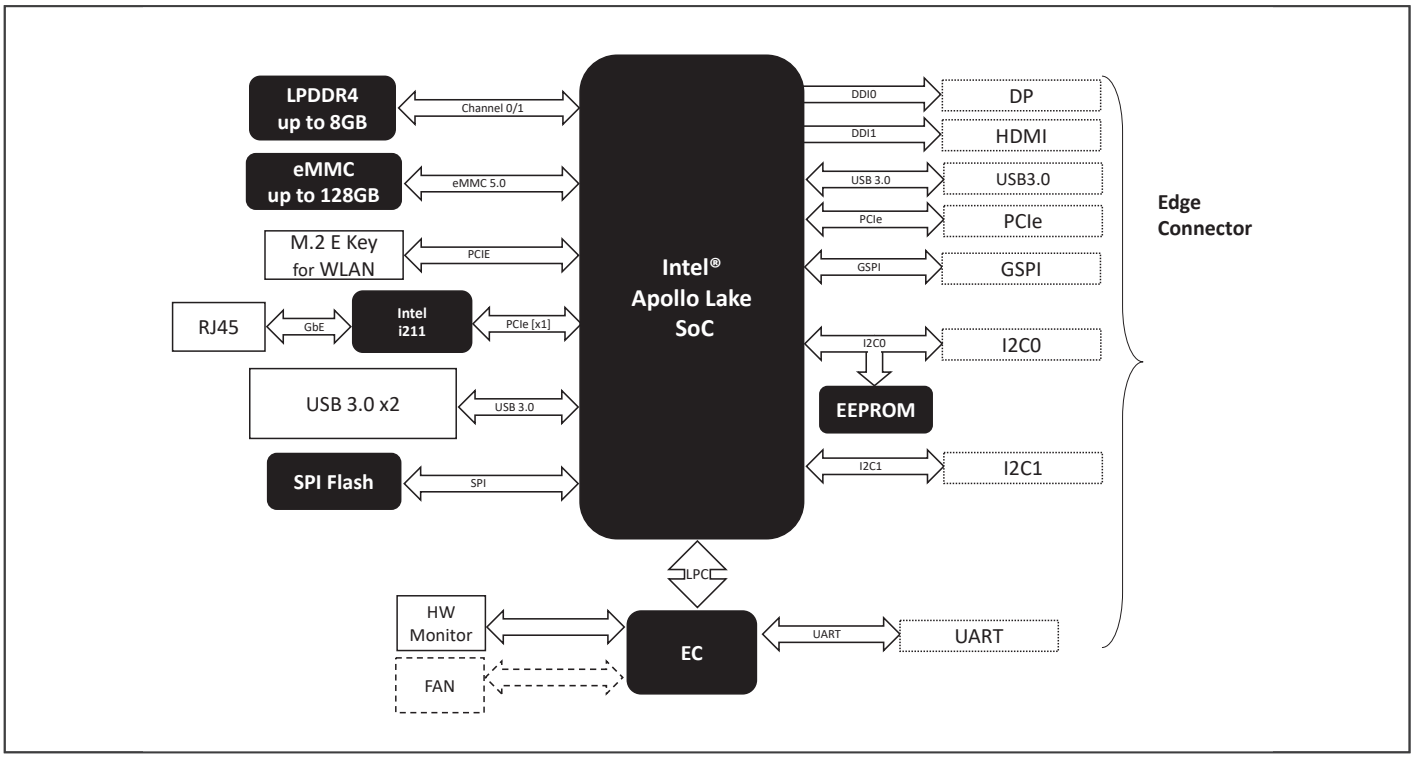
- ASDM-S-APL

Optional Accessories

Part Number	Description	Qty.
ASDM-S-APL-FAN01	FAN+Heat Sink	1
ASDM-S-APL-HSK01	Heat sink	1
ASDM-S-BRKT01	Bracket for SDM-S module	1

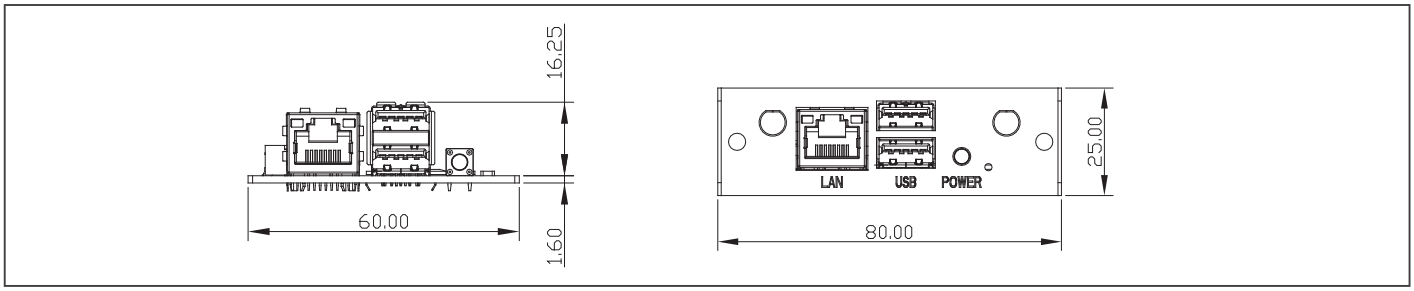
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

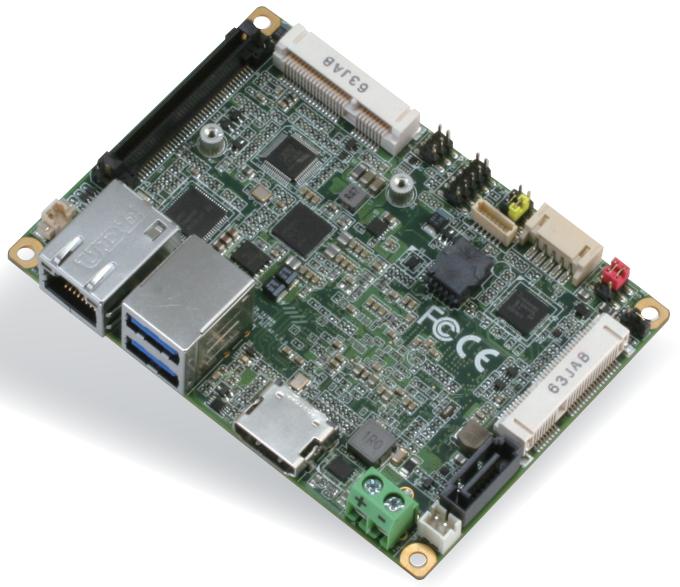


Ordering Information

Part Number	CPU	Fan/Fanless	Display	Memory	Storage	LAN	USB	Expansion Slot	Power	Power Temp	Others
ASDM-S-APL-A10-0001	Intel Pentium N4200	Fan	HDMI+ DP	onboard LPDDR4 4G	onboard eMMC 64G	GbE x 1	USB3.0 x 2	M.2 (E-key) x 1	+12V, AT/ATX from PIB	0°C ~ 55°C	—

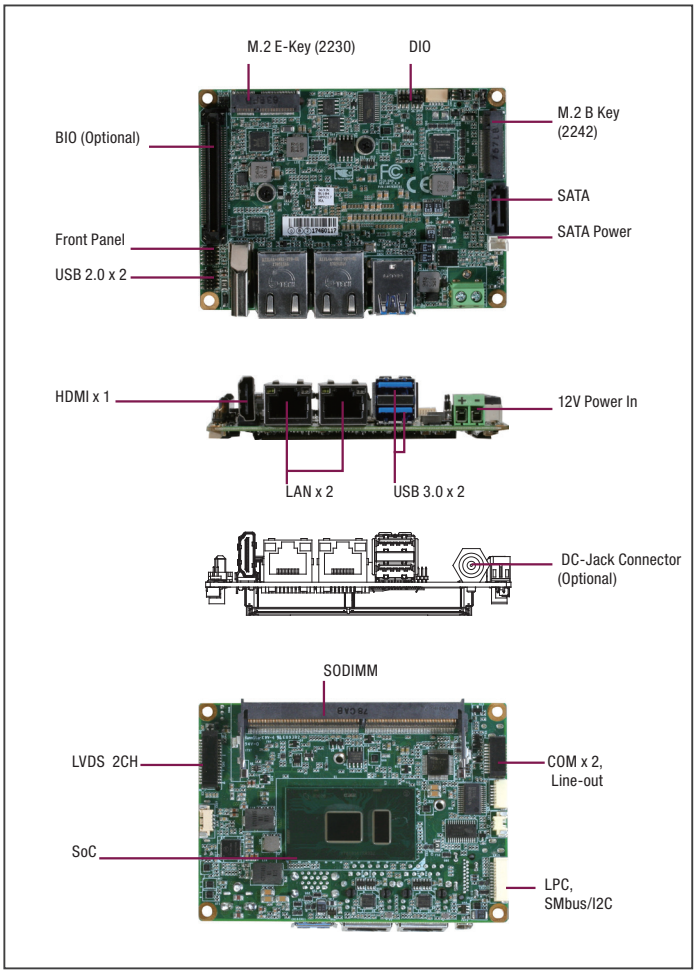
Pico-ITX Boards

06



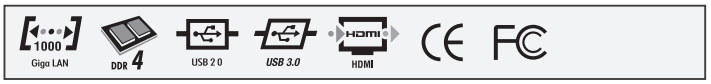
PICO-KBU4

Pico-ITX Board with 7th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC



Features

- 7th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC
- DDR4 SODIMM Slot x 1, up to 16 GB
- Dual Gigabit Ethernet Support
- HDMI 1.4b, LVDS 2CH Display
- USB 3.0 x 2, USB 2.0 x 2, SATA 6.0Gb/s x 1
- COM1: RS-232; COM2: RS-232/422/485
- M.2 B Key (2242) x 1, M.2 E Key (2230) x 1
- BIO (Optional)



Display	
Chipset	7th Generation Intel® Core™ i processor U series, Intel® i7-7600U, i5-7300U, i3-7100U series & Celeron® 3965U (Optional)
Resolution	LVDS (18/24-bit 2CH) 1920 x 1200 HDMI 1.4b up to 4096 x 2304 (4K) DDI (BIO)
LCD Interface	18/24-bit 2CH LVDS
I/O	
Storage/SSD	SATA 6.0 Gb/s x 1, M.2 B-key (2242)
Ethernet	Realtek 8111G Gigabit Ethernet 10/100/1000Base-TX, RJ-45 x 2
USB Port	USB 3.0 x 2 Rear I/O, USB 2.0 x 2 Pin header
Serial Port	COM1: RS-232 x 1, COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V)
Audio	Line-out x1
DIO	4-bit (2-in, 2-out)
Expansion Slot	M.2 E-Key (2230), BIO (optional), I2C x 1 or Smbus x 1
SIM	—
TPM	—
Touch	—

Specifications

System	
Form Factor	Pico-ITX
CPU	7th Generation Intel® Core™ i processor U series, Intel® i7-7600U, i5-7300U, i3-7100U series & Celeron® 3965U (optional)
CPU Frequency	Up to 3.9/2.8 GHz
Chipset	7th Generation Intel® Core™ i processor U series, Intel® i7-7600U, i5-7300U, i3-7100U series & Celeron® 3965U (optional)
Memory Type	DDR4 1866/2133MHz SODIMM x 1, Max. 16 GB
Max. Memory Capacity	Up to 16 GB
BIOS	AMI/SPI
Wake On LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V AT/ATX (default)
Power Supply Type	AT/ATX (default)
Power Consumption (Typical)	i7-7600@DDR4 16GB, 12V@2.3A
System Cooling	Heat-spreader, heatsink & cooler (Smart FAN) optional
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0,55 lb (0.25 Kg)
Operating Temperature	32˚F ~ 140˚F (0˚C ~ 60˚C)
Storage Temperature	-40˚F ~ 176˚F (-40˚C ~ 80˚C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	163,000
Certification	CE, FCC

Packing List

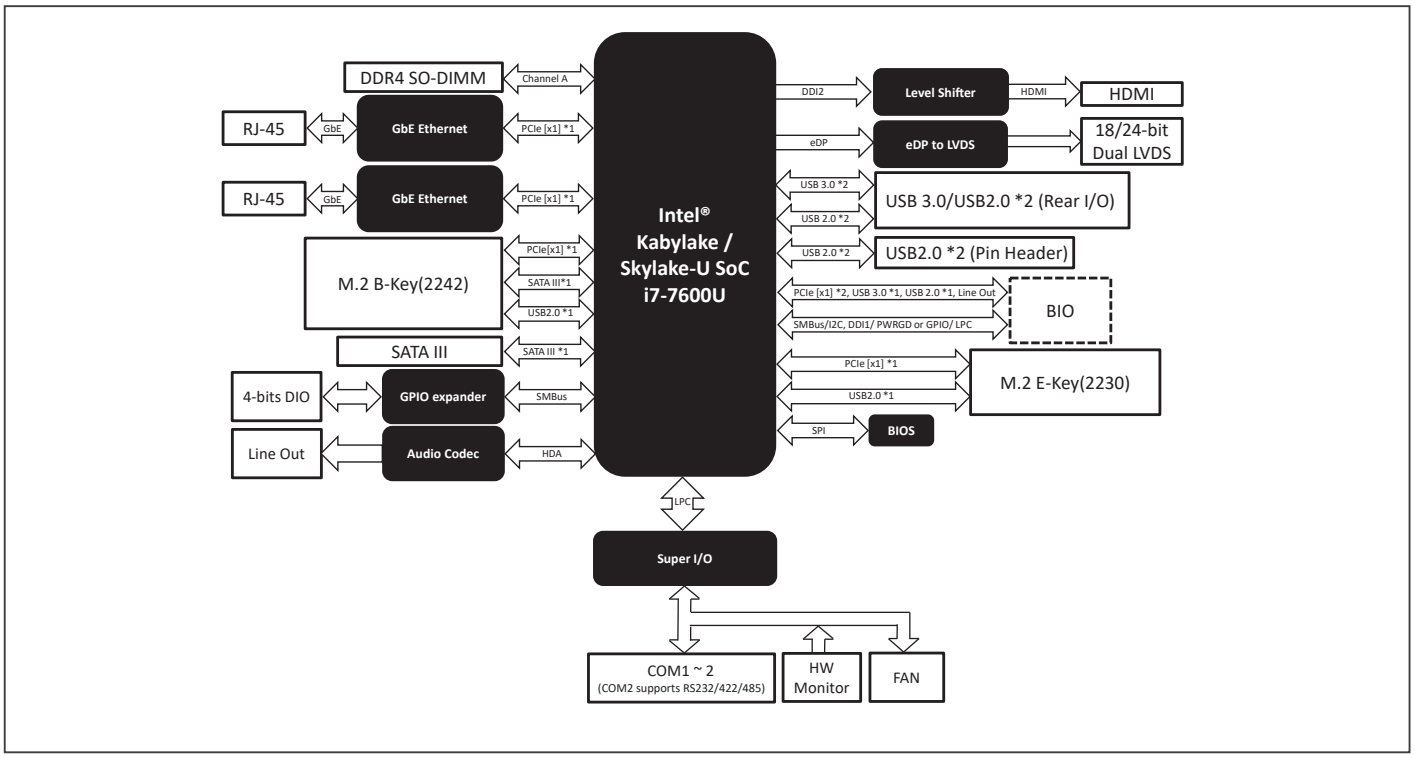
- PICO-KBU4

Optional Accessories

Part Number	Description	Qty.
1709070500	SATA CABLE. 7P Pitch. 27mm. 50cm	1
1702150155	SATA Power Cable, 15cm	1
170010010D	USB cable (2 Port), 10cm	1
1701200101	Cable for COM x 2 & line-out, 10 cm	1
PICO-KBU4-HSP01	Heat-spreader for PICO-KBU4	1
PICO-KBU4-FAN01	Integrated Cooler for PICO-KBU4, assemble with PICO-KBU4 directly.	1

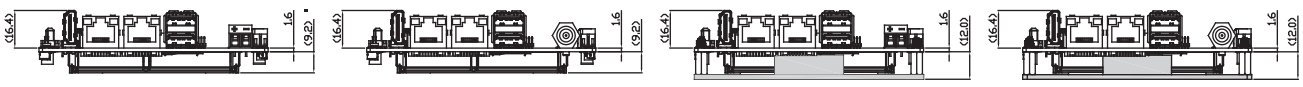
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Without Heat-spreader

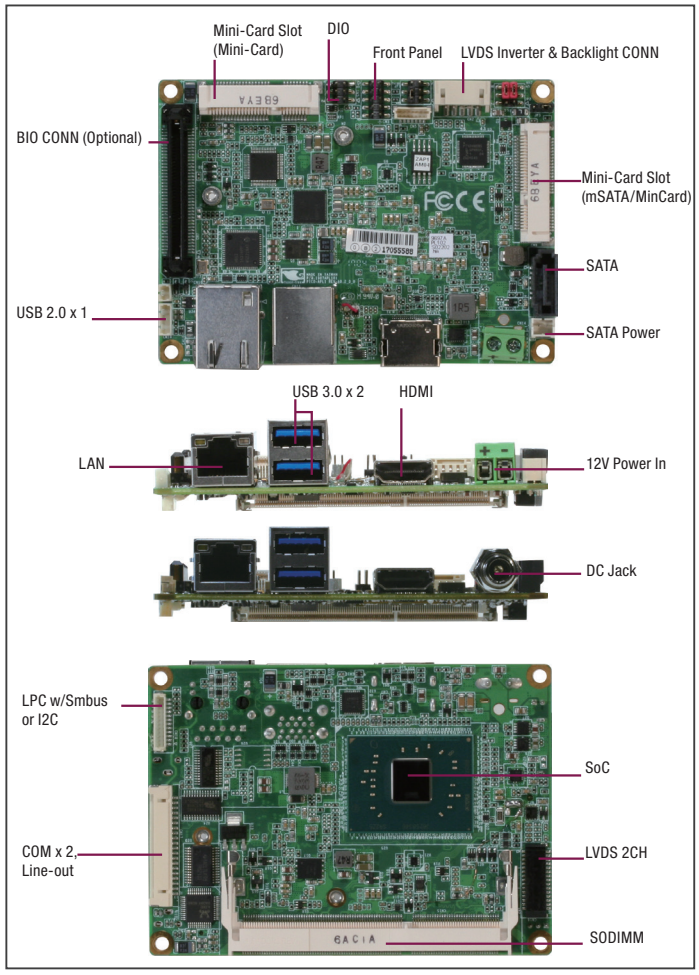
With Heat-spreader

* DC Jack is optional

Ordering Information

Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
PICO-KBU4-A10-0001	Celeron ® 3965	DDR4 Socket	optional	HDMI x 1 LVDS x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.0 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (Terminal block)	0°C ~ 60°C	DIO x 4 bit BIO (Optional)
PICO-KBU4-A10-0002	i3-7100U	DDR4 Socket	optional	HDMI x 1 LVDS x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.0 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (Terminal block)	0°C ~ 60°C	DIO x 4 bit BIO (Optional)
PICO-KBU4-A10-0003	i5-7300U	DDR4 Socket	optional	HDMI x 1 LVDS x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.0 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1 BIO x 1	+12V (Terminal block)	0°C ~ 60°C	DIO x 4 bit
PICO-KBU4-A10-0004	i7-7600U	DDR4 Socket	optional	HDMI x 1 LVDS x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.0 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1 BIO x 1	+12V (Terminal block)	0°C ~ 60°C	DIO x 4 bit
PICO-KBU4-A10-0005 (6th Gen)	Celeron® 3955	DDR4 Socket	optional	HDMI x 1 LVDS x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.0 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (Terminal block)	0°C ~ 60°C	DIO x 4 bit BIO (Optional)
PICO-KBU4-A10-DC06	I3-7100U	DDR4 Socket	optional	HDMI x 1 LVDS x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.0 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (DC Jack)	0°C ~ 60°C	DIO x 4 bit BIO (Optional)
PICO-KBU4-A10-0007 (6th Gen)	I5-6300U	DDR4 Socket	optional	HDMI x 1 LVDS x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.0 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1 BIO x 1	+12V (Terminal block)	0°C ~ 60°C	DIO x 4 bit

Pico-ITX Board with Intel® Atom™ E3900/ Pentium® N4200/ Celeron® N3350 Processor SoC



Features

- **Intel® Atom™ E3900/ Pentium® N4200/ Celeron® N3350 Processor SoC**
- **DDR3L 1867 MHz SODIMM x 1, Up to 8 GB**
- **18/24-bit Dual Channel LVDS LCD (Optional)**
- **Supports Triple Display (Optional)**
- **HDMI 1.4b Supports 3840 x 2160 (4K x 2K)**
- **SATA 6.0Gb/s x 1, mSATA (Full Size) x 1**
- **Intel® Gigabit Ethernet x 1, RJ-45 x1**
- **USB 3.0 x 2, USB 2.0 x 1**
- **RS-232 x 1, RS-232/422/485 x 1 (Optional by Cable)**
- **Mini-Card x 1 (Half-Size)**
- **Digital I/O 4-bit**
- **BIO Connector for Daughter Board (Optional)**

I/O	
Storage/SSD	SATA 6.0Gb/s x 1, mSATA or Mini-PCIe by BOM (Full size) x 1
Ethernet	Intel® Gigabit Ethernet i210AT, 10/100/1000Base-TX, RJ-45 x 1
USB Port	USB 3.0 x 2, Rear IO, USB 2.0 x 1
Serial Port	COM1: RS-232 x 1, COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V)
Audio	Line-out x1
DIO	4-bit (2-in, 2-out)
Expansion Slot	Mini Card (Half-size) x 1, BIO (optional) x 1, I2C or SMBus x 1
SIM	—
TPM	—
Touch	—

Specifications

System	
Form Factor	Pico-ITX
CPU	Intel® Atom™ E3900/ Pentium® N4200/ Celeron® N3350 Processor SoC
CPU Frequency	Up to 2.0GHz
Chipset	Intel® Atom™ E3900/ Pentium® N4200/ Celeron® N3350 Processor SoC
Memory Type	204-pin DDR3L SODIMM x 1,DDR3L 1867MHz, Max. 8GB
Max. Memory Capacity	Up to 8GB
BIOS	AMI/SPI
Wake On LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V AT/ATX (default)
Power Supply Type	AT/ATX (default)
Power Consumption (Typical)	Intel® N3350 Processor, DDR3L 8GB 0.91A@+12V
System Cooling	Heat-spreader/ heatsink optional
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.55 lb (0.25 kg)
Operating Temperature	32 °F~ 140 °F (0°C ~ 60°C),
Storage Temperature	-40 °F ~ 176 °F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	170,000
Certification	CE,FCC
Display	
Chipset	Intel® Atom™ E3900/ Pentium® N4200/ Celeron® N3350 Processor SoC
Resolution	LVDS (18/24bit 2CH) 1920 x 1200 (optional) HDMI 1.4b up to 3840 x 2160 DDI (BIO)
LCD Interface	18/24bit 2CH LVDS

Packing List

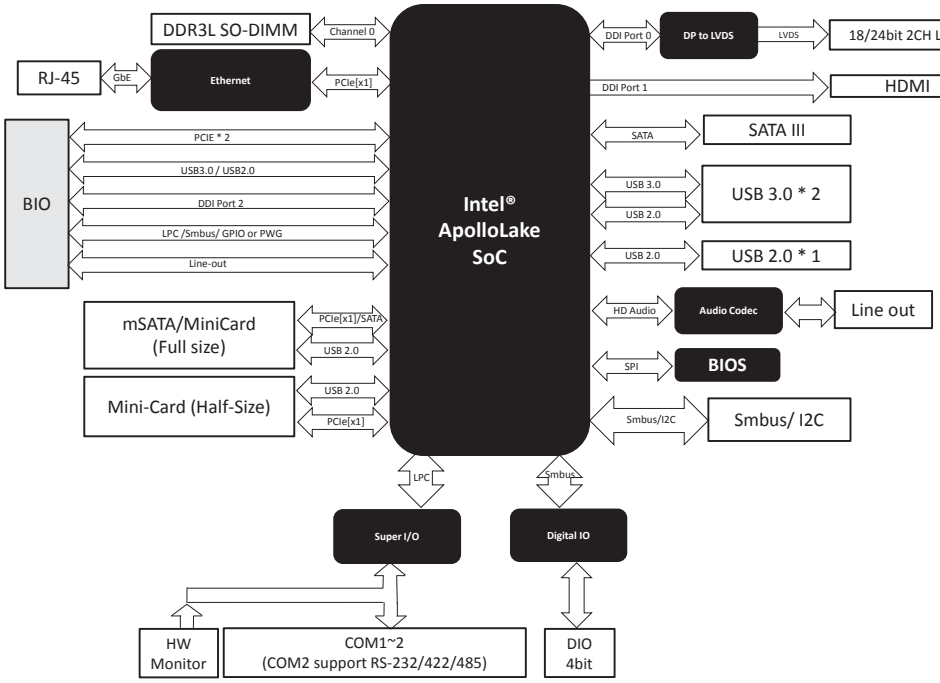
- **1703200153 (Optional by model)**
  COM x 2, Line-out Cable
- **PICO-APL1**

Optional Accessories

Part Number	Description	Qty.
1709070500	SATA CABLE.7P Pitch 1.27mm.50cm	1
1702150155	SATA Power Cable	1
1700050207	USB cable 20cm	1
1703200153	COM x 2, line-out cable	1
PICO-APL1-HSP01	Heat-spreader	1
PICO-APL1-HSK02	Heat-sink, to be used with Heat-spreader	1

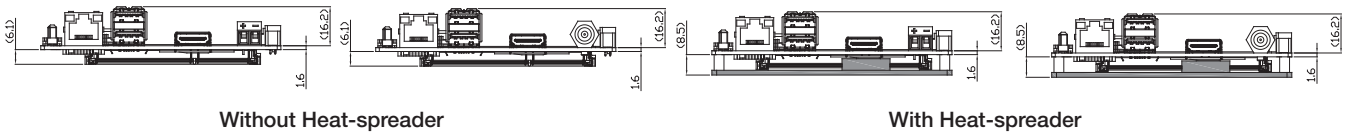
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Without Heat-spreader

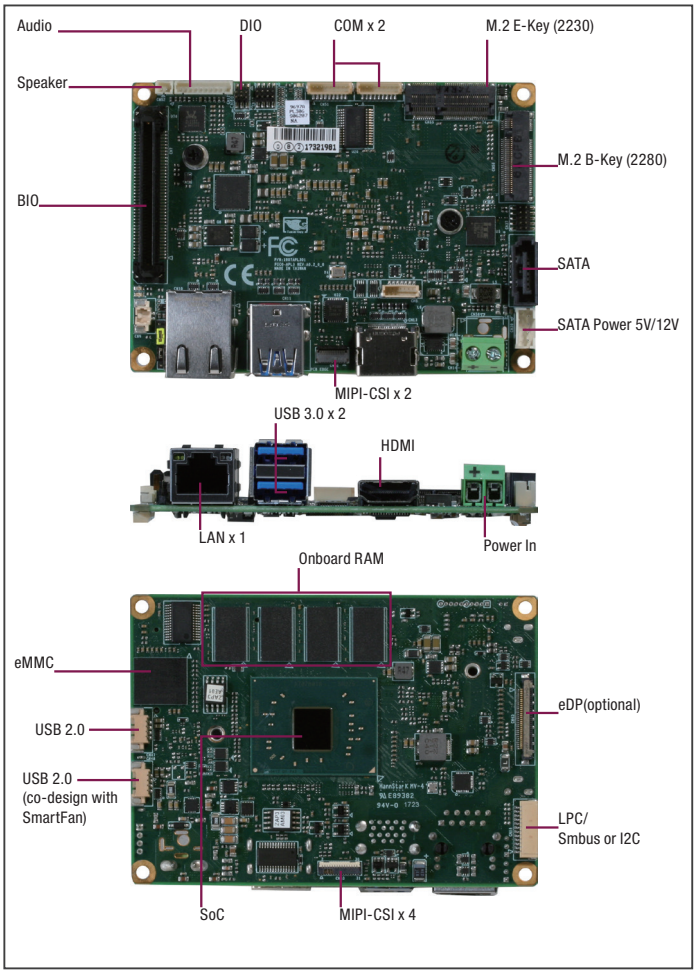
With Heat-spreader

Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp.	Others
PICO-APL1-A10-0001	N4200	W/o Heat-spreader	LVDS/HDMI	24bit, 2CH	SATA x 1, mSATA x 1 (Full-size)	GbE x 1	USB 3.0 x 2 USB 2.0 x 1	1	1	miniCard x 1 (Half-size)	12V Phoenix Terminal	0°C ~ 60°C	DIO x 4, Line-out
PICO-APL1-A10-0002	N3350	W/o Heat-spreader	HDMI	—	SATA x 1, mSATA x 1 (Full-size)	GbE x 1	USB 3.0 x 2 USB 2.0 x 1	(Optional the COM cable)	(Optional the COM cable)	miniCard x 1 (Half-size)	12V DC-Jack	0°C ~ 60°C	DIO x 4
PICO-APL1-A10-0003	N3350	W/o Heat-spreader	LVDS/HDMI	24bit, 2CH	SATA x 1, mSATA x 1 (Full-size)	GbE x 1	USB 3.0 x 2 USB 2.0 x 1	1	1	miniCard x 1 (Half-size)	12V Phoenix Terminal	0°C ~ 60°C	DIO x 4, Line-out, BIO

Remark: Heatspreader and cooler is recommended as the thermel solution.

Pico-ITX Board with Intel® Pentium® N4200/ Celeron® N3350/ Atom™ Processor SoC



Features

- Intel® Pentium® N4200/ Celeron® N3350/ Atom™ Processor SoC
- Onboard Storage eMMC 32GB (Optional to 16GB/64GB/128GB)
- Onboard DDR3L 2GB or 4GB
- Single Gigabit Ethernet Support
- HDMI 1.4b, eDP for Display
- BIO Reserved (Optional)
- USB 3.0 x 2, USB 2.0 x 2, SATA 6.0Gb/s x 1
- M.2 B Key (2280) x 1, M.2 E Key (2230) x 1
- Onboard HDA Audio Supports (Line in, Line-out, MIC)
- MIPI-CSI 2 Lanes x 1 for 2M Camera (Optional)
- MIPI-CSI 4 Lanes x 1 for 8M Camera (Optional)

Specifications

System	
Form Factor	Pico-ITX
CPU	Intel® Atom™ Processor SoC
CPU Frequency	Up to 2.4 GHz
Chipset	Intel® Atom™ Processor SoC
Memory Type	Onboard DDR3L 2GB (Optional to 4GB)
Max. Memory Capacity	Up to 4GB
BIOS	AMI/SPI
Wake On LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V, AT/ATX
Power Supply Type	Lockable & phoenix Terminal co-lay
Power Consumption (Typical)	Intel® N4200 processor, DDR3L 4GB, 1.1A@12V
System Cooling	Heat-spreader, heatsink & cooler (Optional)
Dimension	3.94" x 2.84" (100 mm x 72 mm)
Gross Weight	0.55 lb (0.25 kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	110,000
Certification	CE,FCC
Display	
Chipset	Intel® Atom™ Processor SoC
Resolution	HDMI 1.4b: 3840 x 2160@30Hz Internal eDP: 3840 x 2160@60Hz (Optional) DDI (Optional from BIO)
LCD Interface	eDP

I/O	
Storage/SSD	SATA 6.0Gb/s x 1, 5V/12V Power reserved M.2 2280 (B Key) x 1 eMMC 16GB (optional to 32GB/64GB/128GB)
Ethernet	Realtek 8111G x 1
USB Port	USB 3.0 x 2 Rear IO USB 2.0 x 2 (Internal, co-use with FAN connector)
Serial Port	COM1: RS-232 COM2: RS-232
Audio	ALC269 (Included Amp)
DIO	4-bit
Expansion Slot	M.2 2230 x 1 (E-Key) BIO x 1 (Optional) I2C, Smbus, I2S MIPI-CSI x 2 Lanes (Optional) MIPI-CSI x 4 Lanes (Optional)
SIM	—
TPM	TPM2.0 (Optional)
Touch	—

Packing List

- PICO-APL3

Optional Accessories

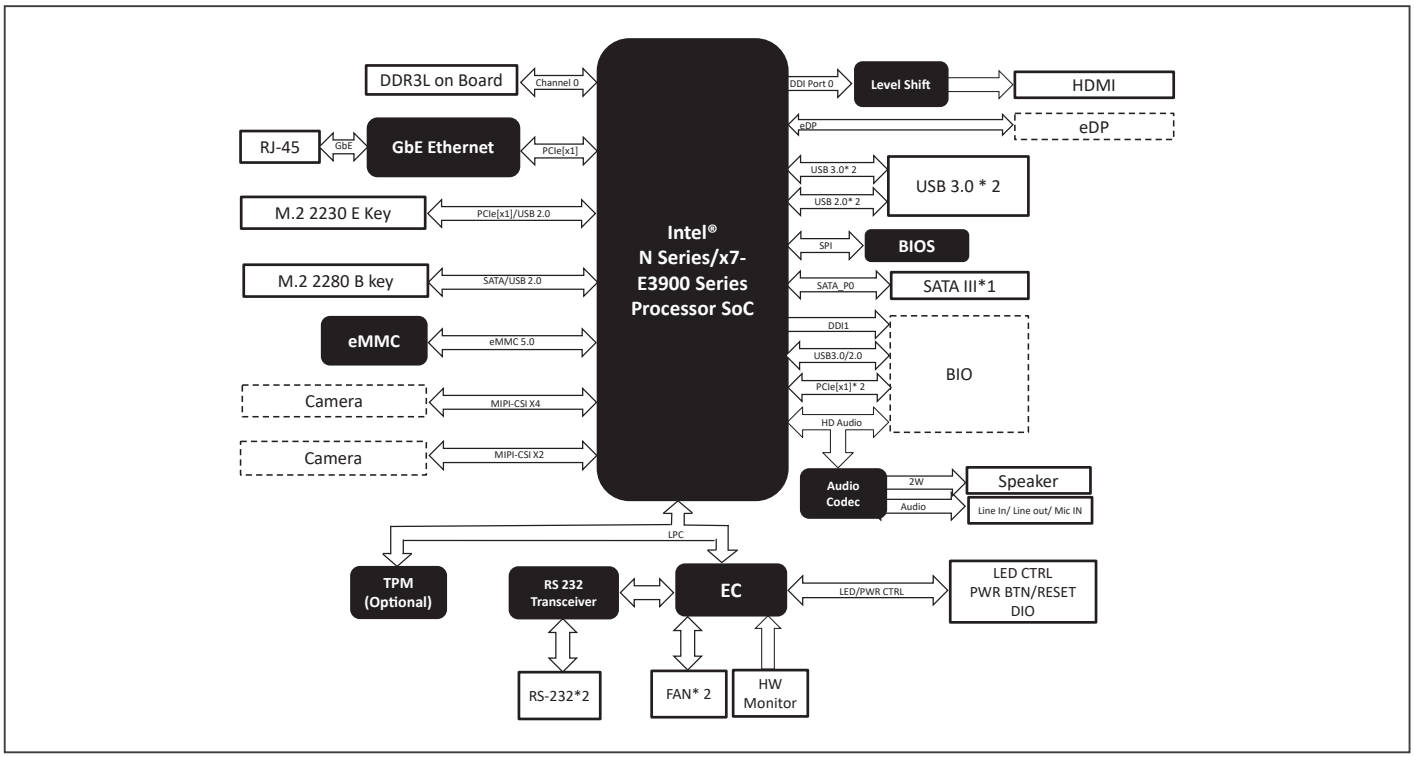
Part Number	Description	Qty
1709070500	(TF) SATA Cable, 50cm	1
1702150155	(TF) SATA Power Cable, 15cm	1
PICO-APL3-HSK01	Heatsink, used with heat spreader	1
PICO-APL3-HSP01	Heat Spreader	1
1700040151	(TF) USB Cable, 15cm	2
1701090122	(TF)Flat Cable, D-Sub 9P(M), 9P 1.0mm Housing, 12cm	2
1709100254	(TF) Phone Jack Cable, 25cm	1
1255300408	(TF)Power Adapter, 12V, 40W, FSP, FSP040-RHAN2.9NA0404990, ESD	1
1702030176	(TF)Power Cable, 3P DC jack, TERMINAL*2.17cm, TKS-G21-LN05	1

*Please refer to PICO-APL3-SEMI page for further option.

*eDP cable custom by required.

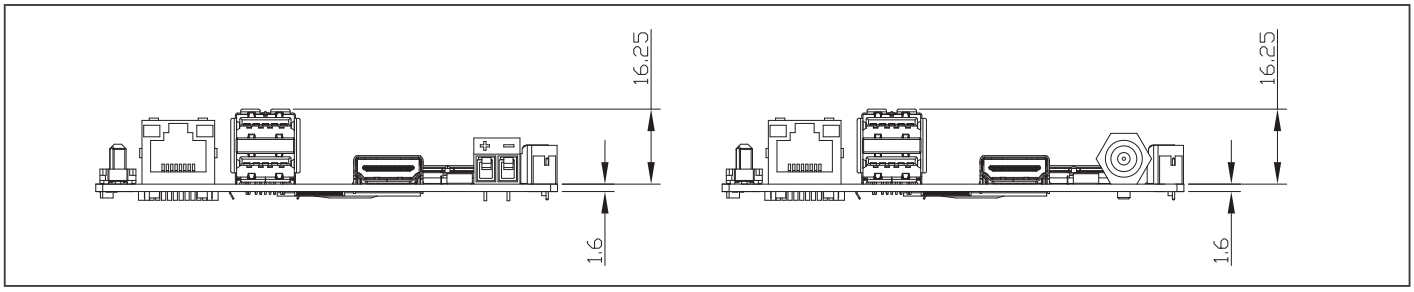
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

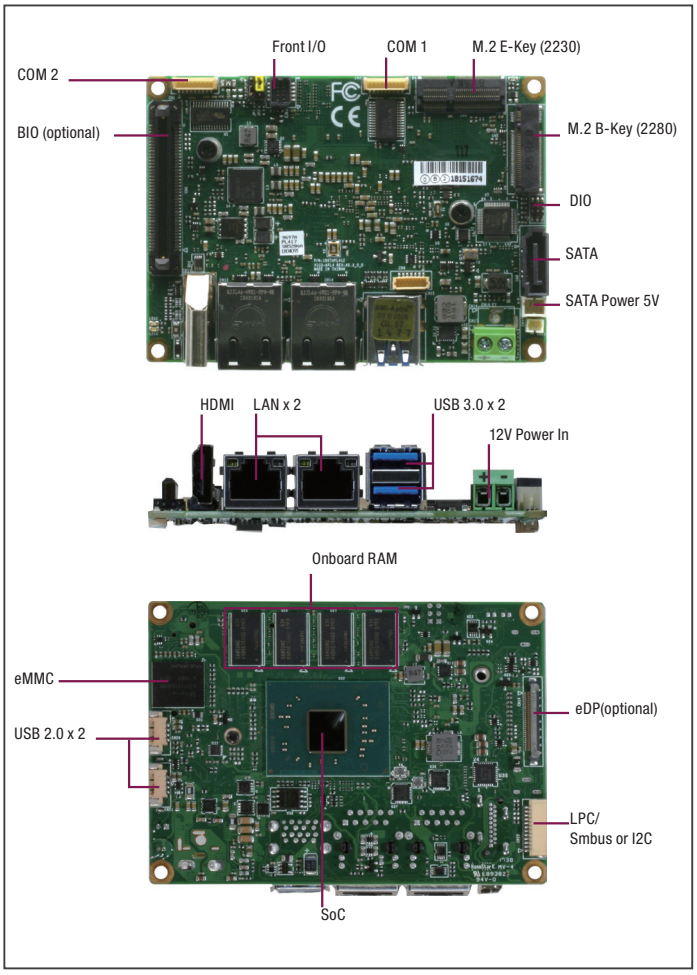
Unit: mm



Ordering Information

Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp.	Others
PICO-APL3-A10-0001	Celeron® N3350 (Dual Core)	Onboard DDR3L 2GB	W/o Heatspreader	HDMI x 1	SATA 3.0 x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 1	USB 3.0 x 2 (Rear) USB 2.0 x 2 (Internal)	2	—	M.2 2230 (E Key) x 1	+12V (Phoenix Terminal)	0°C ~ 60°C	DIO 4 bit Full Audio with Amp
PICO-APL3-A10-0002	Celeron® N3350 (Dual Core)	Onboard DDR3L 4GB	W/o Heatspreader	HDMI x 1 eDP x 1	SATA 3.0 x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 1	USB 3.0 x 2 (Rear) USB 2.0 x 2 (Internal)	2	—	M.2 2230 (E Key) x 1	+12V (Phoenix Terminal)	0°C ~ 60°C	DIO 4 bit Full Audio with Amp
PICO-APL3-A10-0003	Pentium® N4200 (Quad Core)	Onboard DDR3L 4GB	W/o Heatspreader	HDMI x 1	SATA 3.0 x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 1	USB 3.0 x 2 (Rear) USB 2.0 x 2 (Internal)	2	—	M.2 2230 (E Key) x 1	+12V (Phoenix Terminal)	0°C ~ 60°C	DIO 4 bit Full Audio with Amp
PICO-APL3-A10-DC04	Celeron® N3350 (Dual Core)	On board DDR3L 2GB	W/o Heatspreader	HDMI x 1	SATAIII x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 1	USB 3.0 x 2 (Rear) USB 2.0 x 2 (Internal)	2	—	M.2 2230 (E Key) x 1	+12V (DC Jack)	0°C ~ 60°C	DIO 4 bit Full Audio with Amp

Pico-ITX Board with Intel® Atom™/ Pentium® N4200/ Celeron® N3350 Processor SoC



Features

- Intel® Atom™/ Pentium® N4200/ Celeron® N3350 Processor SoC
- Onboard DDR3L 2GB (Optional to 4GB)
- Onboard Storage eMMC 16GB(Optional to 32GB/64GB/128GB)
- Dual Gigabit Ethernet Support
- HDMI 1.4b, eDP (Optional) for Display
- BIO Reserved (Optional)
- USB 3.0 x 2, USB 2.0 x 2, SATA 6.0Gb/s x 1
- M.2 B Key (2280) x 1, M.2 E Key (2230) x 1

Specifications

System	
Form Factor	Pico-ITX
CPU	Intel® Pentium® N4200 (4C. 1.1 GHz, up to 2.5 GHz, TDP 6W) Intel® Celeron® N3350 (2C. 1.1 GHz, up to 2.4 GHz, TDP 6W) Intel® Atom® x7-Series (4C. 1.6GHz, up to 2.00 GHz, TDP 12W)
CPU Frequency	Up to 2.4GHz
Chipset	Intel® SoC
Memory Type	Onboard DDR3L 2GB (Optional to 4GB)
Max. Memory Capacity	Up to 4GB
BIOS	AMI/SPI
Wake On LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V, AT/ATX
Power Supply Type	Lockable & Phoenix Terminal co-lay
Power Consumption (Typical)	Intel®Pentium®N4200@1.1GHz,DDR3L 4GB 1.43A@+12V
System Cooling	Heat-spreader, heatsink & cooler (Optional)
Dimension	3.94" x 2.84" (100 mm x 72 mm)
Gross Weight	0.55 lb (0.25 kg)
Operating Temperature	32˚F ~ 140˚F (0˚C ~ 60˚C)
Storage Temperature	-40˚F ~ 176˚F (-40˚C ~ 80˚C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	191,895
Certification	CE,FCC
Display	
Chipset	Intel® SoC
Resolution	HDMI 1.4b: 3840 x 2160@30Hz Internal eDP: 3840 x 2160@60Hz (Optional) DDI (Optional from BIO)
LCD Interface	eDP
I/O	
Storage/SSD	SATA 6.0Gb/s x 1, 5V Power reserved M.2 2280 (B Key) x 1 eMMC 16GB (optional to 32GB/64GB)
Ethernet	Realtek 8111G x 2
USB Port	USB 3.0 x 2 Rear IO USB 2.0 x 2 (Internal, co-use with FAN connector)
Serial Port	COM1: RS-232 x 1 COM2: RS-232/422/485 x 1
Audio	—
DIO	4-bit
Expansion Slot	M.2 2230 x 1 (E-Key) BIO x 1 (optional) I2C, Smbus
SIM	—
TPM	—
Touch	—

Packing List

- PICO-APL4

Optional Accessories

Part Number	Description	Qty
1709070500	(TF) SATA Cable, 50cm	1
1702150155	(TF) SATA Power Cable, 12cm	1
PICO-APL4-HSK01	Heat Sink.100*72*15.5mm.Silver.used with HSP	1
PICO-APL4-HSP01	Heat Spreader, 100 x 72 x 8.5 mm, Silver	1
1700040151	(TF) USB Cable, 15cm	2
1701090122	(TF)Flat Cable, D-Sub 9P(M), 9P 1.0mm Housing, 12cm	2
PICO-APL4-FAN01	CPU Cooler, 100*72*15.5mm, Silver, use w/HSP	1

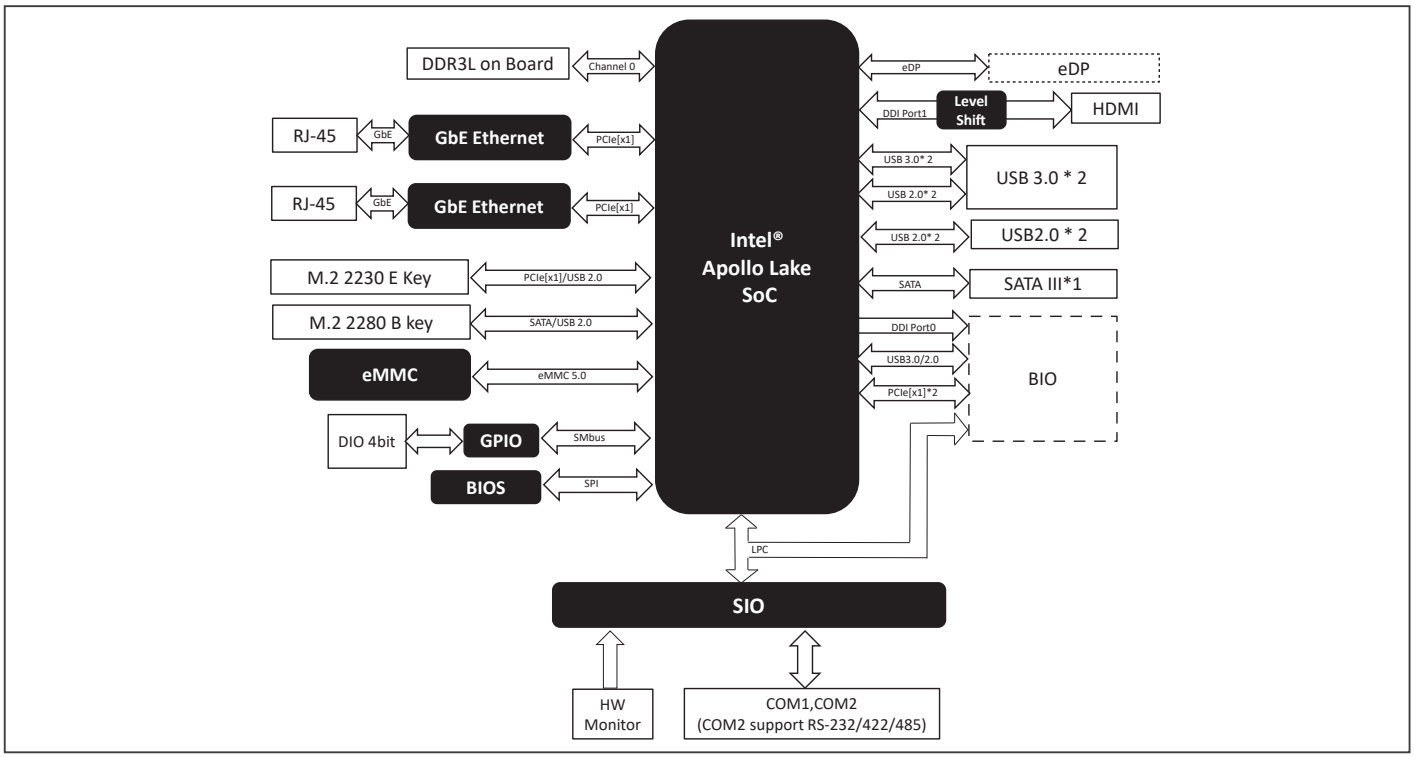
*FAN Solution will be via one of internal USB port without FAN speed control.

*Please refer to PICO-APL4-SEMI for further option.

*eDP cable custom by required

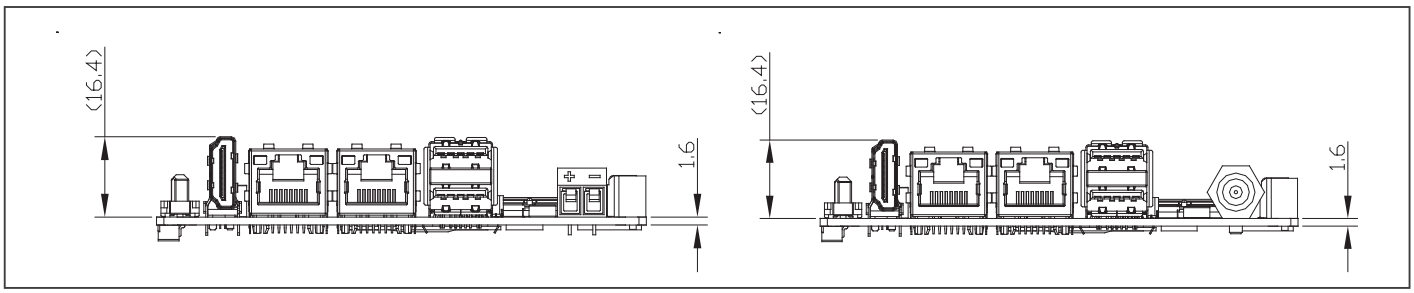
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

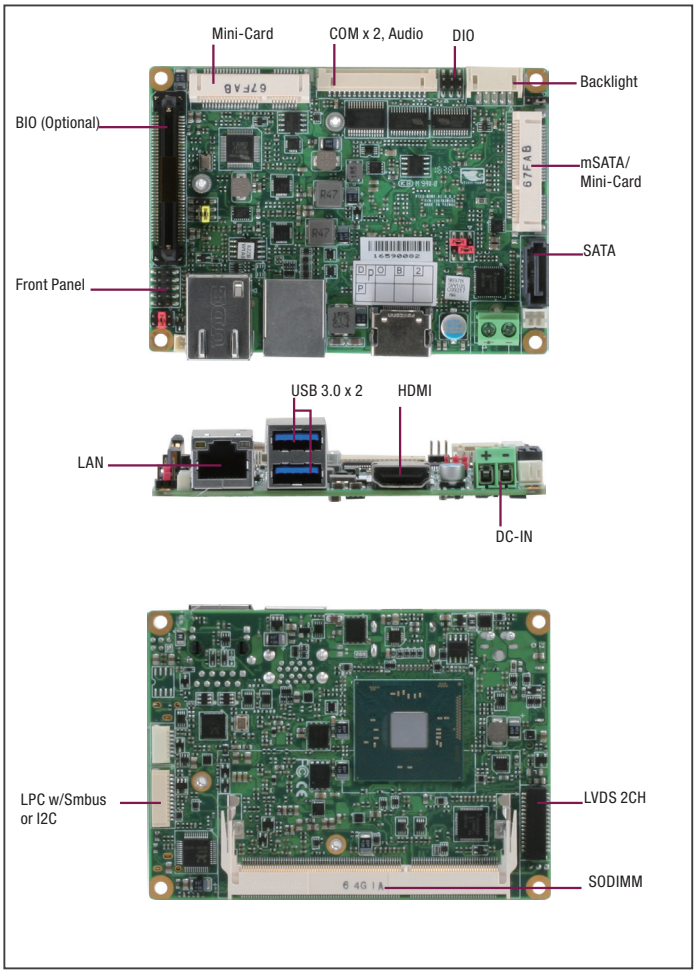


Ordering Information

Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp.	Others
PICO-APL4-A10-0001	Celeron® N3350 (Dual Core)	Onboard DDR3L 2GB	W/o Heatspreader	HDMI x 1	SATA 6.0Gb/s x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 2	USB 3.0 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (Phoenix Terminal)	0°C ~ 60°C	DIO 4 bit
PICO-APL4-A10-0002	Celeron® N3350 (Dual Core)	Onboard DDR3L 4GB	W/o Heatspreader	HDMI x 1 eDP x 1	SATA 6.0Gb/s x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 2	USB 3.0 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (Phoenix Terminal)	0°C ~ 60°C	DIO 4 bit
PICO-APL4-A10-0003	Pentium® N4200 (Quad Core)	Onboard DDR3L 4GB	W/o Heatspreader	HDMI x 1	SATA 6.0Gb/s x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 2	USB 3.0 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (Phoenix Terminal)	0°C ~ 60°C	DIO 4 bit
PICO-APL4-A10-DC04	Celeron® N3350 (Dual Core)	Onboard DDR3L 2GB	W/o Heatspreader	HDMI x 1	SATAIII x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 2	USB 3.0 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (DC Jack)	0°C ~ 60°C	DIO 4 bit

Remark: cooler is recommended as the thermel solution.

Pico-ITX Board with Intel® Atom™ x5-E8000/ Pentium®/ Celeron® N3000 Series Processor SoC



Features

- **Onboard Intel® Atom™ x5-E8000/ Pentium®/ Celeron® N3000 Series Processor SoC**
- **DDR3L 1600/1066 SODIMM x 1, Up to 8 GB**
- **LVDS up to 48-bit (2CH)**
- **Supports Triple Displays (Optional)**
- **HDMI Up to 3840 x 2160 (4K) Resolution**
- **SATA 3.0 x 1, mSATA (Full Size) x 1 or MiniCard x 1 (Optional)**
- **Gigabit Ethernet x 1, RJ-45 x 1**
- **USB 3.0 x 2**
- **RS-232 x 1, RS-232/422/485 x 1**
- **Mini-Card x 1 (Half-Size)**
- **Digital I/O 4-bit**
- **BIO Connector for Daughter Board (Optional)**

Specifications

System	
Form Factor	Pico-ITX
CPU	Intel® N3160 Quad Core 1.6GHz (6W), Intel® N3060 Dual Core 1.6GHz (6W), Intel® X5-E8000 Quad Core 1.04GHz (5W)
CPU Frequency	Up to 2.24 GHz
Chipset	Intel® N3160 Quad Core 1.6GHz (6W), Intel® N3060 Dual Core 1.6GHz (6W), Intel® X5-E8000 Quad Core 1.04GHz (5W)
Memory Type	204-pin DDR3L SODIMM x 1, DDR3L 1600, Max. 8GB
Max. Memory Capacity	Up to 8GB
BIOS	AMI/SPI
Wake On LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V DC
Power Supply Type	AT/ATX (default) optional lockable connector
Power Consumption (Typical)	Intel® Pentium® N3160@ DDR3L-1600MHz 8GB, 0.91A@+12V
System Cooling	Heat-spreader; Heat-sink & cooler (optional)
Dimension	3.94" x 2.84" (100 mm x 72 mm)
Gross Weight	0.44 lb (0.2 kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	100,000
Certification	CE,FCC

Display	
Chipset	Intel® N3160 Quad Core 1.6GHz (6W), Intel® N3060 Dual Core 1.6GHz (6W), Intel® X5-E8000 Quad Core 1.04GHz (5W)
Resolution	LVDS (18/24bit 2CH) 1920 x 1200 HDMI up to 3840 x 2160 (4K) DDI (optional by BIO board)
LCD Interface	18/24-bit 2CH LVDS
I/O	
Storage/SSD	SATA 6.0Gb/s x 1, mSATA/MiniCard (Full size) x 1
Ethernet	Realtek RTL 8111E, 10/100/1000Base-TX, RJ-45 x 1
USB Port	USB 3.0 x 2 Rear I/O
Serial Port	COM1: RS-232 x 1, COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V)
Audio	Line-out x 1
DIO	4-bit (2-in, 2-out)
Expansion Slot	Mini Card(Half-size) x 1, BIO x 1, I2C x 1 or Smbus x 1, LPC
SIM	—
TPM	—
Touch	—

Packing List

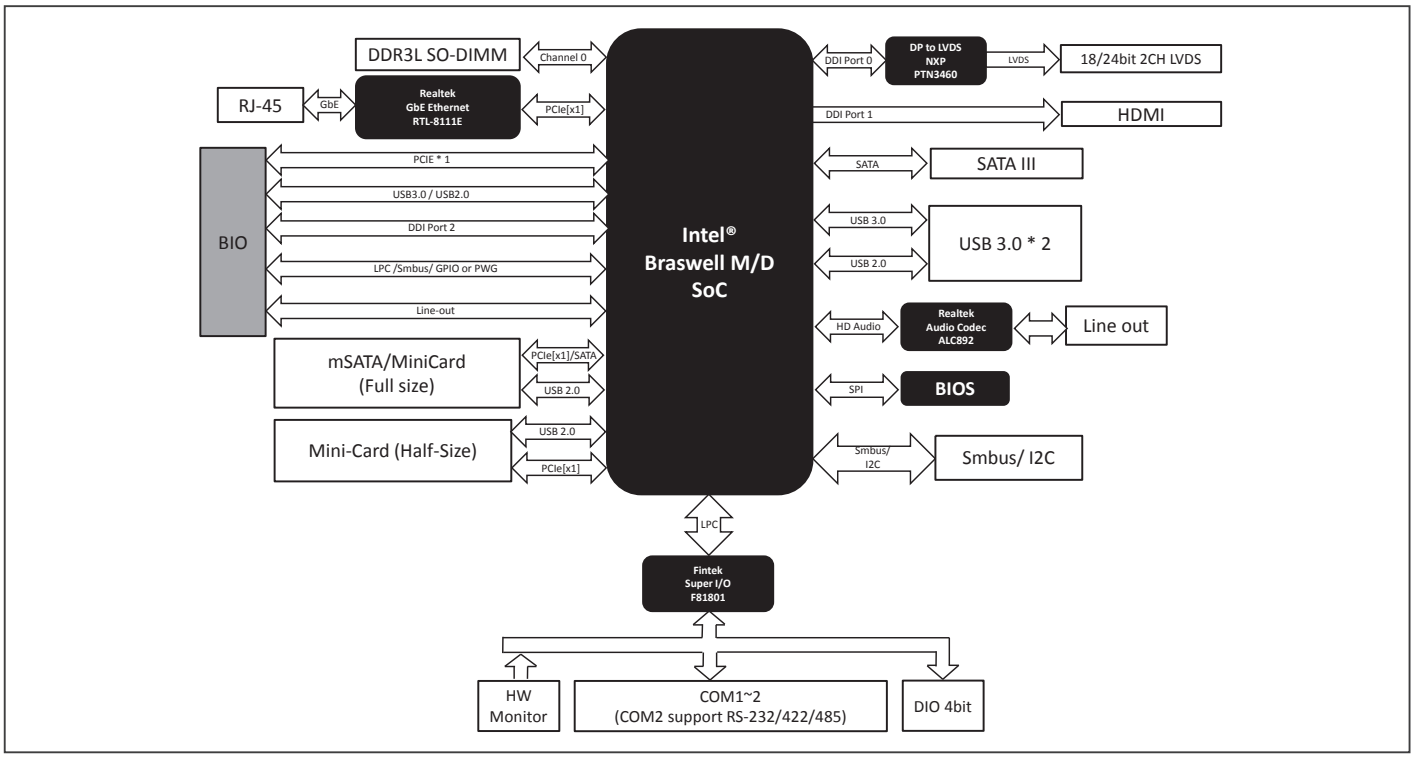
- **M10BT01010**
  Heat Spreader
- **1703200153**
  COM x 2, Line-out Cable
- **PICO-BSW1**

Optional Accessories

Part Number	Description	Qty.
1709070500	(TF)SATA CABLE.7P Pitch 1.27mm.50cm	1
1702150155	(TF)SATA Power Cable	1
1702040167	Power/FAN Cable 16cm	1
PICO-BSW1-FAN01	CPU Cooler.84*53*22.2mm.Silver.used with HSP	1
PICO-BSW1-HSK01	Heat Sink.100*72*15.5mm.Silver.used with HSP	1

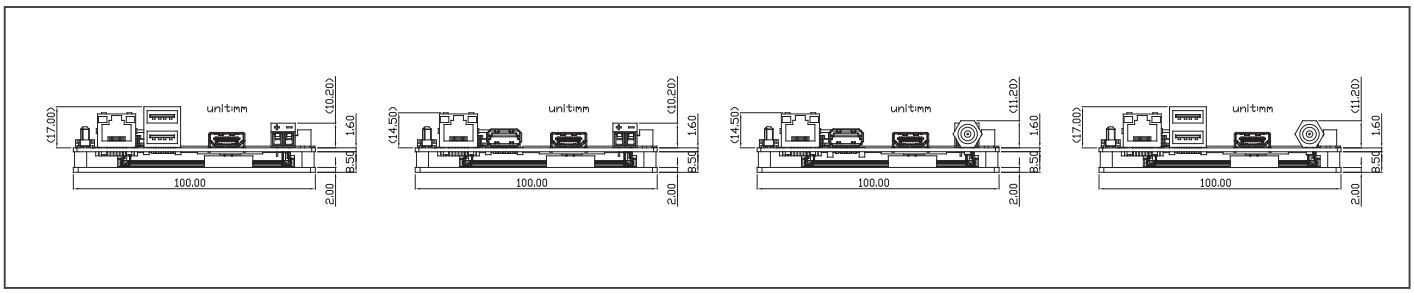
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

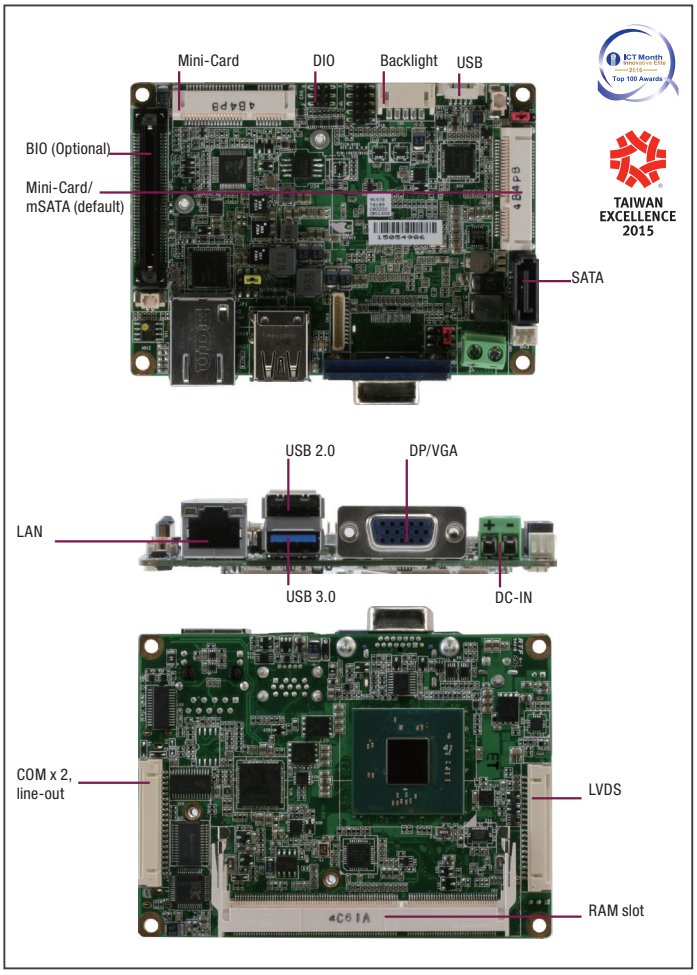


Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp.	Others
PICO-BSW1-A10-0001	N3160	Heat-Spreader	LVDS/HDMI	24bit,2CH	SATA x 1, mSATA x 1 (Full-size)	GbE x 1	USB 3.0 x 2	1	1	miniCard x 1 (Half-size)	12V (Terminal block)	0°C ~ 60°C	BIO x 1, DIO x 4, Line-out
PICO-BSW1-A10-0002	X5-E8000	Heat-Spreader	LVDS/HDMI	24bit,2CH	SATA x 1, mSATA x 1 (Full-size)	GbE x 1	USB 3.0 x 2	1	1	miniCard x 1 (Half-size)	12V (Terminal block)	0°C ~ 60°C	DIO x 4, Line-out

PICO-BT01

Pico-ITX Board with Intel® Atom™/ Celeron® Processor SoC



Features

- Onboard Intel® Atom™ E3800/ Celeron® J1900/N2807 Processor SoC
- DDR3L 1066/1333 MHz SODIMM x 1, Up to 8 GB
- 18/24-bit LVDS LCD, CRT Co-lay Display Port
- SATA 3.0Gb/s x 1, Mini-Card(Full size)/mSATA(default) x 1
- USB 3.0 x 1, USB 2.0 x 2
- Gigabit Ethernet x 1, RJ-45 x 1
- RS-232 x 1, RS-232/422/485 x 1
- Mini-card x 1 (Half size)
- 4-Bit Digital I/O
- BIO Connector for Daughter Board Optional

I/O	
Storage/SSD	SATA 3.0Gb/s x 1, Mini-Card(Full size)/mSATA(default) x 1
Ethernet	Intel Gigabit Ethernet, 10/100/1000Base-TX x 1 (Atom E series with I210IT, Celeron J/N series with I211AT)
USB Port	USB 3.0 x 1 Rear IO, USB 2.0 x 1 Rear IO and x 1 Pin header
Serial Port	RS-232 x 1, RS-232/422/485 x 1 (Ring /+5V/+12V)
Audio	Line-out x 1
DIO	4-bit (2-in, 2-out)
Expansion Slot	Mini-Card (Half-size) x 1, BIO x 1
SIM	Option by BIO Board
TPM	—
Touch	—

Specifications

System	
Form Factor	Pico-ITX
CPU	Onboard Intel® Atom™ E3845/ Celeron® J1900/N2807 Processor SoC
CPU Frequency	Up to 2.0 GHz
Chipset	Intel® E3845/J1900/N2807
Memory Type	204-pin DDR3L SODIMM x 1, DDR3L 1066/1333, Max. 8GB
Max. Memory Capacity	Up to 8GB
BIOS	AMI/SPI
Wake On LAN	Yes
Watchdog Timer	255 levels
Power Requirement	+12VDC
Power Supply Type	AT/ATX (default) optional lockable connector
Power Consumption (Typical)	Intel® Celeron® J1900 2.0GHz ,DDR3L 1333 MHz 8 GB 1.14A@+12V
System Cooling	Heat-spreader, heatsink or cooler optional
Dimension	3.94" x 2.84" (100 mm x 72 mm)
Gross Weight	0.88lb (0.4 kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) or WiTAS 1 (-20˚C ~ 70˚C)
Storage Temperature	-40˚F ~ 176˚F (-40˚C ~ 80˚C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE,FCC
Display	
Chipset	Intel® E3845/J1900/N2807
Resolution	VGA up to 2048 x 1152 @60Hz or DP up to 2560 x 1400 @60Hz LVDS (18/24-bit) up to 1400 x 900 @60Hz
LCD Interface	18/24-bit Single LVDS

Packing List

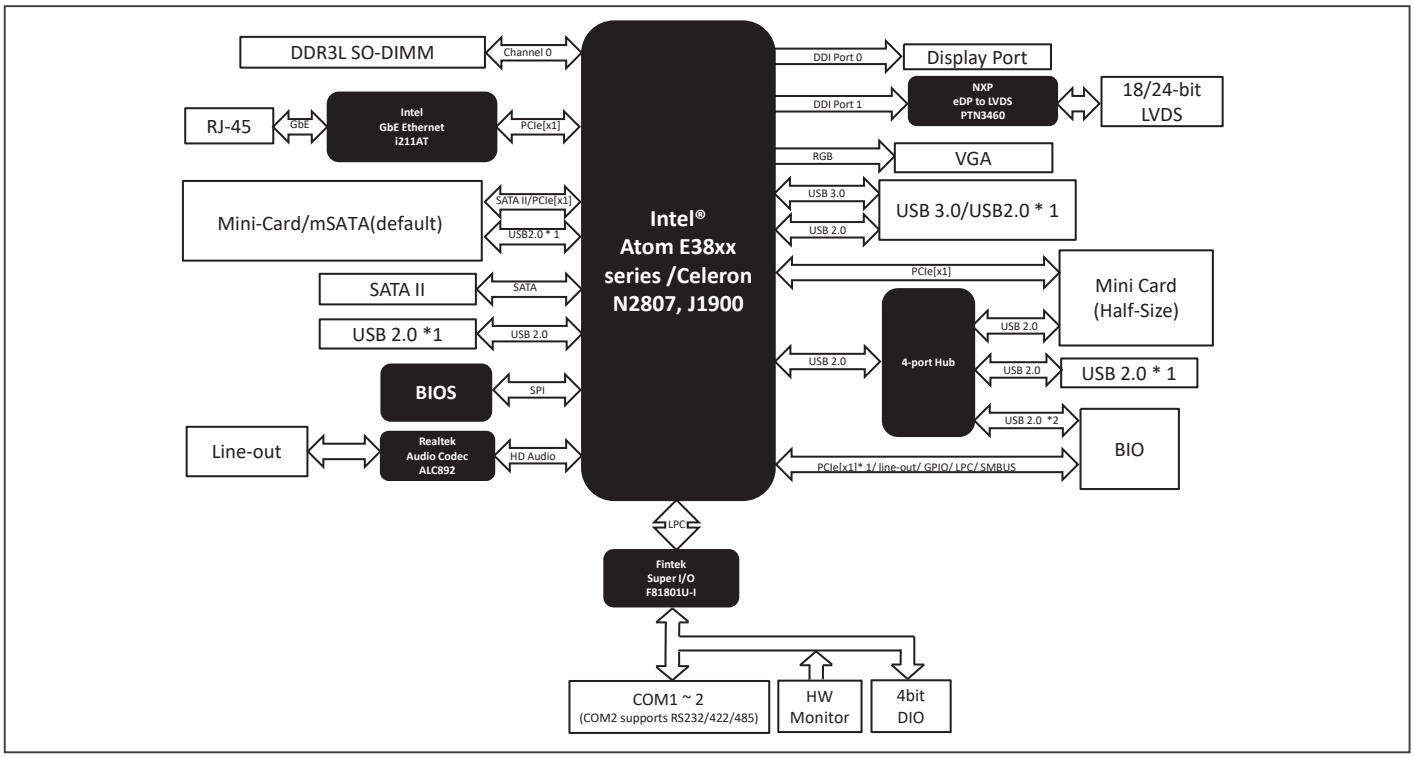
- **PICO-BT01-HSP01**
  Heat Spreader
- **1703200153**
  COM x 2, Line-out Cable
- **PICO-BT01**

Optional Accessories

Part Number	Description	Qty.
1709070500	SATA Cable	1
1702150155	SATA Power Cable	1
1702040167	Power/FAN Cable 16cm	1
PICO-BT01-FAN01	CPU Cooler.84*53*22.2mm.Silver.used with HSP	1
PICO-BT01W1-HSK01	Heatsink for E3845 WiTAS1. To be used with heat Spreader.	1
PICO-BT01-HSK01	Heatsink for standand product.To be used with heat Spreader.	1
1700050207	USB Cable 20cm	—

Note: All specifications are subject to change without notice.

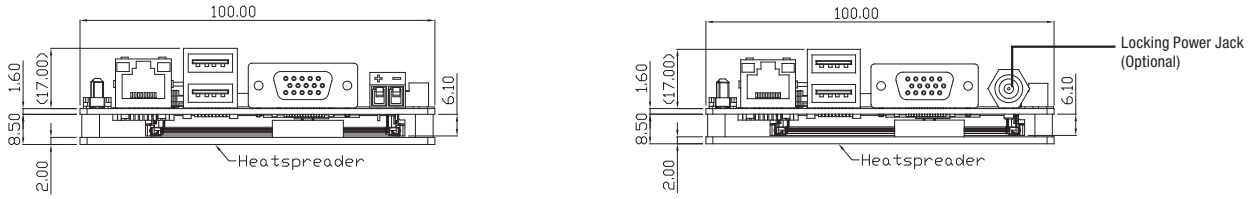
Block Diagram



Dimension

Unit: mm

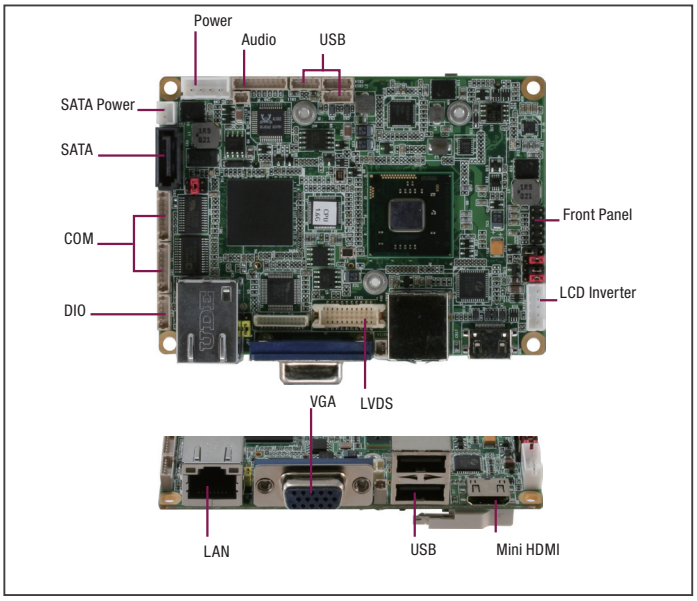
Standard model with Heat-Spreader



Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp.	Others
PICO-BT01-A11-0002	Celeron® N2807 (Dual Core)	DDR3L, Max. 4GB	Heat-spreader	DP+LVDS	24bit 1CH	SATAII x 1, Mini-Card (Full size)/mSATA (default) x 1	GbE x 1	USB 3.0 x 1, UBS2.0 x 2	1	1	Mini-card x 1 (Half size), DIO 4-bit	+12V (Terminal block)	32°F ~ 131°F (0°C ~ 60°C)	Line-out
PICO-BT01-A11-0003	Atom™ E3845 (Quad Core)	DDR3L, Max. 8 GB	Heat-spreader	CRT+LVDS	24bit 1CH	SATAII x 1, Mini-Card (Full size)/mSATA (default) x 1	GbE x 1	USB 3.0 x 1, UBS2.0 x 2	1	1	Mini-card x 1 (Half size), DIO 4-bit	+12V (Terminal block)	32°F ~ 131°F (0°C ~ 60°C)	Line-out, BIO x 1
PICO-BT01-A11-0004	Atom™ E3825 (Dual Core)	DDR3L, Max. 4GB	Heat-spreader	DP+LVDS	24bit 1CH	SATAII x 1, Mini-Card (Full size)/mSATA (default) x 1	GbE x 1	USB 3.0 x 1, UBS2.0 x 2	1	1	Mini-card x 1 (Half size), DIO 4-bit	+12V (Terminal block)	32°F ~ 131°F (0°C ~ 60°C)	Line-out
PICO-BT01-A11-0005	Celeron® J1900 (Quad Core)	DDR3L, Max. 8 GB	Heat-spreader	CRT+LVDS	24bit 1CH	SATAII x 1, Mini-Card (Full size)/mSATA (default) x 1	GbE x 1	USB 3.0 x 1, UBS2.0 x 2	1	1	Mini-card x 1 (Half size), DIO 4-bit	+12V (Terminal block)	32°F ~ 131°F (0°C ~ 60°C)	Line-out
PICO-BT01W2-A11-0003	Atom™ E3845 (Quad Core)	DDR3L, Max. 8 GB	Heat-spreader	CRT+LVDS	24bit 1CH	SATAII x 1, Mini-Card (Full size)/mSATA (default) x 1	GbE x 1	USB 3.0 x 1, UBS2.0 x 2	1	1	Mini-card x 1 (Half size), DIO 4-bit	+12V (Terminal block)	WiTAS 2 (-40°C ~ 85°C)	Line-out, BIO x 1
PICO-BT01W2-A11-0004	Atom™ E3825 (Quad Core)	DDR3L, Max. 8 GB	Heat-spreader	DP+LVDS	24bit 1CH	SATAII x 1, Mini-Card (Full size)/mSATA (default) x 1	GbE x 1	USB 3.0 x 1, UBS2.0 x 2	1	1	Mini-card x 1 (Half size), DIO 4-bit	+12V (Terminal block)	WiTAS 2 (-40°C ~ 85°C)	Line-out, BIO x 1

Pico-ITX Fanless Board with HDMI and Intel® Atom™ N2600 Processor



Features

- Intel® Atom™ N2600 Processor Up to 1.6 GHz
- 204-pin DDR3 800 MHz SODIMM x 1, Up to 2 GB
- Gigabit Ethernet x 1, RJ-45 x 1
- Mini HDMI Support
- 18-bit Single Channel LVDS LCDs
- HD Audio for Line-in/out & Mic
- mSATA/ Mini-Card (Half-size) x 1, SATA 2 x 1
- USB 2.0 x 5, COM x 2, 4-bit Digital I/O
- +12V Power Input

Specifications

System	
Form Factor	Pico-ITX
CPU	Intel® Atom™ N2600 Processor
CPU Frequency	1.6GHz Dual Core
Chipset	N2600 + NM10
Memory Type	SODIMM DDR3 1066MHz
Max. Memory Capacity	2 GB
BIOS	AMI 32MB
Wake On LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V only
Power Supply Type	AT / ATX
Power Consumption (Typical)	Intel® Atom™ N2600 1.6GHz,DDR3 800MHz 2GB, 0.83A@12VDC
System Cooling	Faness, Heat-sink
Dimension	3.94" x 2.84" (100 mm x 72 mm)
Gross Weight	1.1 lb (0.5 kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), -4°F ~ 158°F (-20°C ~ 70°C) WiTAS 1
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	95,000
Certification	CE,FCC
Display	
Chipset	Intel® Atom™ N2600
Resolution	VGA up to 1920x 1200 @60Hz uHDMI up to 1920 x 1200 @60Hz LVDS (18bit) up to 1366 x768 @60Hz
LCD Interface	18bit Single Channel LVDS with PWM function
I/O	
Storage/SSD	SATA 3.0Gb/s x 1, mSATA/Mini-Card x 1
Ethernet	Realtek RTL 8111E, 10/100/1000Base-TX x 1
USB Port	USB 2.0 x 5
Serial Port	RS-232 x 1, RS-232/422/485 x 1
Audio	Audio Buzzer x 1, HD Audio Codec(ALC662) for Mic-in/Line-in/Line-out
DIO	4-bit (2-in, 2-out)
Expansion Slot	—
SIM	—
TPM	—
Touch	—

Packing List

- **170204010S**
  MB Power Cable
- **1709070500**
  SATA data Cable
- **1702150155**
  SATA Power Cable
- **M16CV01040**
  Low profile standard heat-sink for PICO-CV01-A10-11
- **M16CV01020**
  WiTAS I heat-sink for PICO-CV01W1-A10-10
- **Product DVD**
- **PICO-CV01**

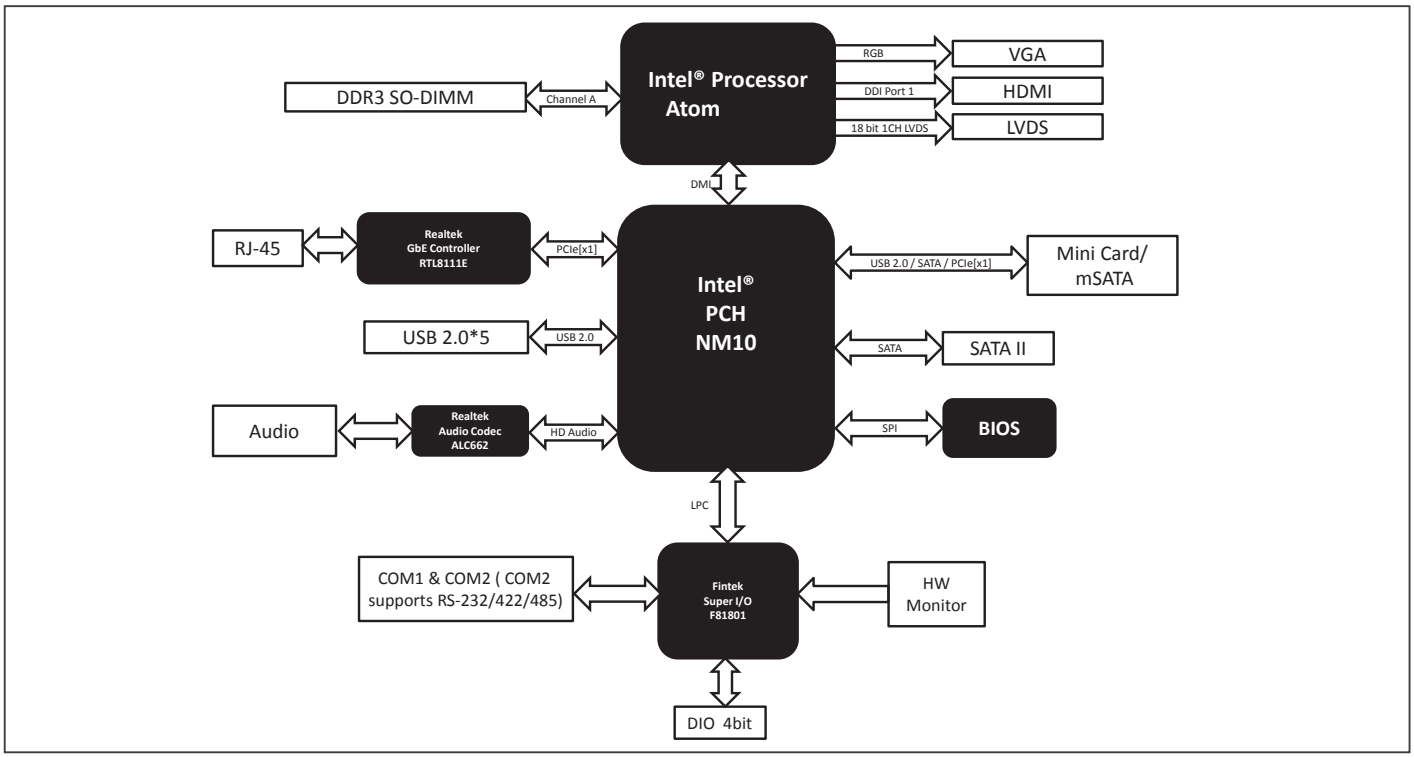
Remark: The packing list includes one heat-sink only.

Optional Accessories

Part Number	Description	Qty.
1700050207	USB Cable, Length 20cm	3
1701090150	COM Cable, Length 15cm	2
1709100254	AUDIO Cable, Length 25cm	1
1701100156	Front Panel Cable, Length 15cm	1
170302010C	Buzzer Cable	1

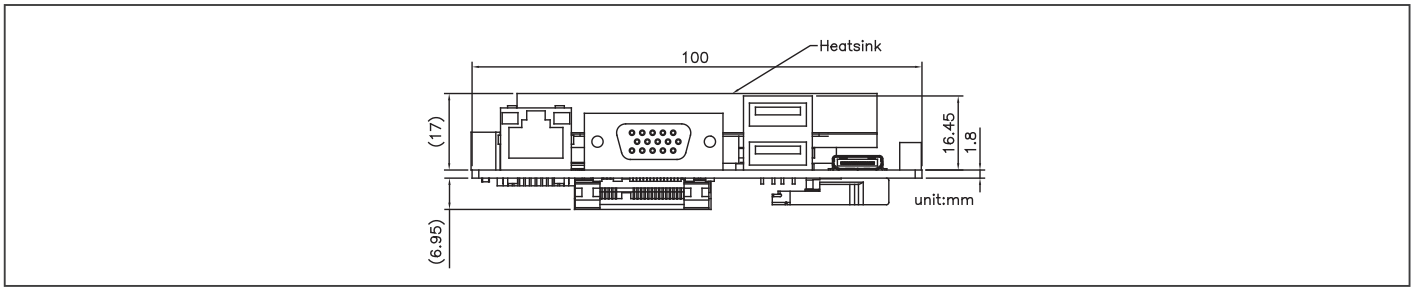
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

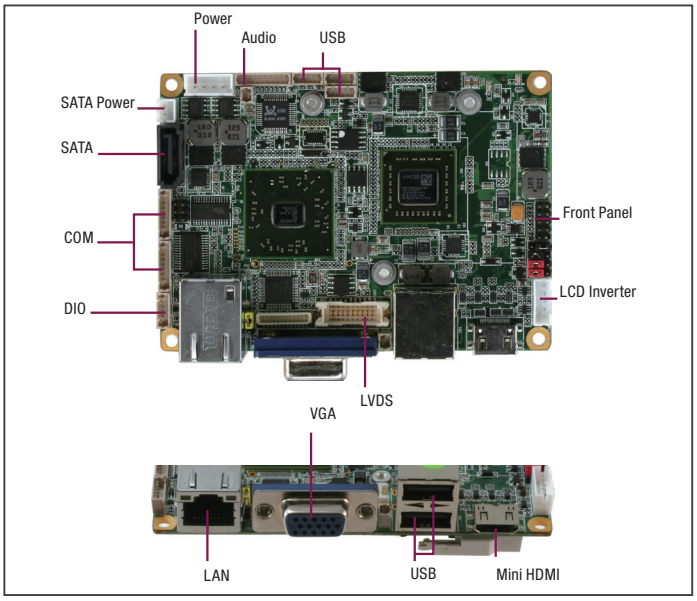


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp	Others
PICO-CV01-A10-11	Atom™ N2600	DDR3	Fanless	CRT+ LVDS, CRT+ mHDMI	18b 1CH	SATA 2 x 1, mSATA/Mini-Card x 1	GbE x 1	UBS2.0 x 5	1	1	DIO 4-bit	+12V (ATX)	32°F ~ 131°F (0°C ~ 60°C)	Audio
PICO-CV01W1-A10-10	Atom™ N2600	DDR3	Fanless	CRT+ LVDS, CRT+ mHDMI	18b 1CH	SATA 2 x 1, mSATA/Mini-Card x 1	GbE x 1	UBS2.0 x 5	1	1	DIO 4-bit	+12V (ATX)	-4°F ~ 158°F (-20°C ~ 70°C) (WiTAS 1)	Audio

Note:
Intel® Atom™ Processor D2000 series and N2000 series (CV) do NOT support DMA function that may affect ECP mode of Parallel port.

Pico-ITX Fanless Board with HDMI and AMD G-Series T40E/T40R Processor



Features

- Onboard AMD G-Series T40E/T40R Single/Dual Processor
- AMD G-Series CPU + A50M
- 204-pin DDR3 1066 MHz SODIMM x 1, Up to 4 GB
- Gigabit Ethernet x 1, RJ-45 x 1
- CRT, 18-bit Single Channel LVDS, Mini HDMI
- 2CH HD Audio
- SATA 3.0 Gb/s x 1, mSATA (Half-Size) Slot x 1 (Shared with Mini-Card)
- USB 2.0 x 5, COM x 2, 4-bit Digital I/O
- +12V Operating

Specifications

System	
Form Factor	Pico-ITX
CPU	AMD G-series T40E (Dual Core)/T40R (Single Core) Processor
CPU Frequency	1.0 GHz Dual Core
Chipset	G-Series T40E+ A50M
Memory Type	SODIMM DDR3 1066MHz
Max. Memory Capacity	4 GB
BIOS	AMI 32MB
Wake On LAN	YES
Watchdog Timer	255 Levels
Power Requirement	+12V only
Power Supply Type	AT/ATX
Power Consumption (Typical)	AMD T-40R 1.0 GHz, DDR3 1066MHz 2GB, 0.91A@12V DC
System Cooling	Faness, Heat-sink
Dimension	3.94" x 2.84" (100 mm x 72 mm)
Gross Weight	1.1 lb (0.5 kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	89,000
Certification	CE,FCC
Display	
Chipset	Integrated decoders in AMD G-series
Resolution	VGA up to 1920x 1200 @60Hz uHDMI up to 1920 x 1200 @60Hz LVDS (18bit) up to 1366 x 768 @60Hz
LCD Interface	18bit Single Channel LVDS with PWM function
I/O	
Storage/SSD	SATA 3.0Gb/s x 1, mSATA/Mini-Card x 1
Ethernet	Realtek RTL 8111E, 10/100/1000Base-TX x 1
USB Port	USB 2.0 x 5
Serial Port	RS-232 x 1, RS-232/422/485 x 1
Audio	Audio Buzzer x 1, HD Audio Codec (ALC662) for Mic-in/Line-in/Line-out
DIO	4-bit (2-in, 2-out)
Expansion Slot	—
SIM	—
TPM	—
Touch	—



Packing List

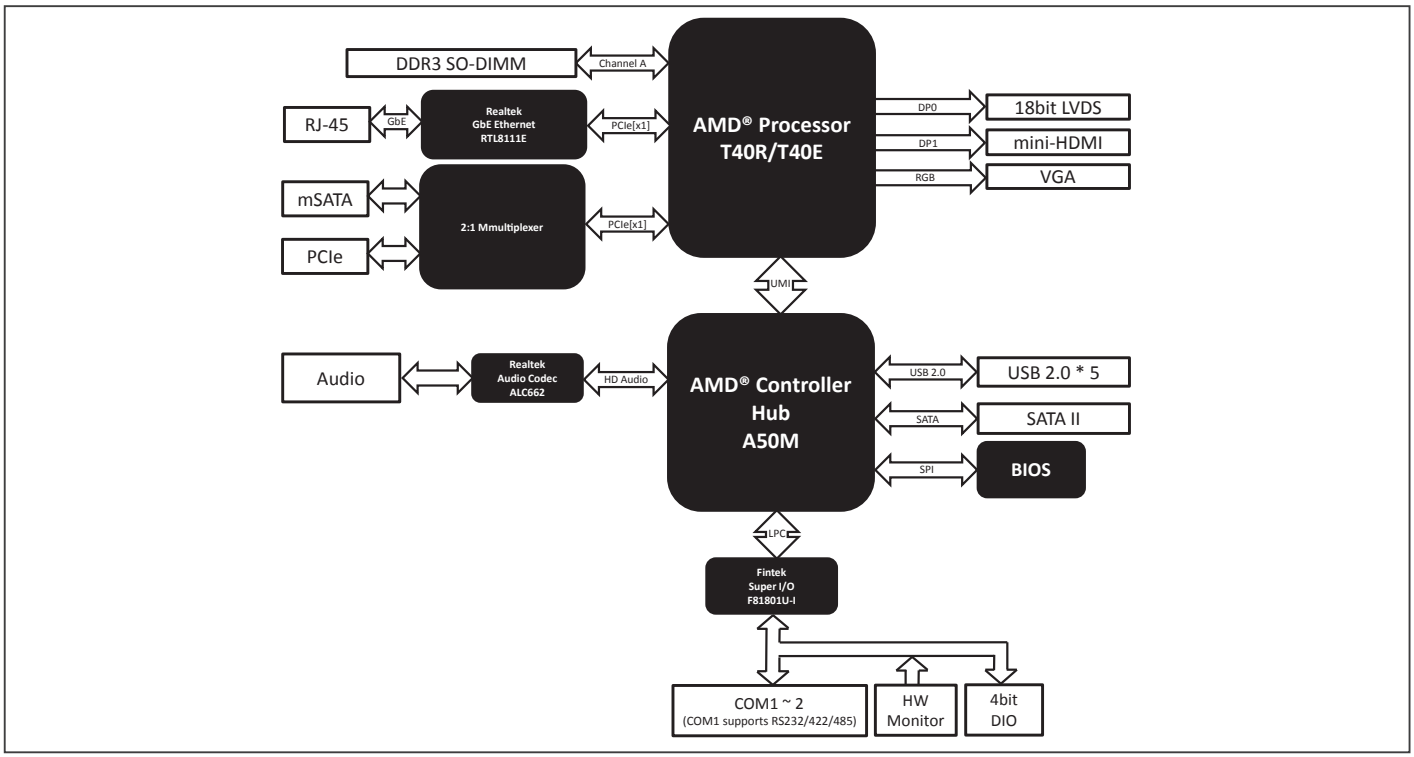
- **170204010S**
  MB Power Cable
- **1709070500**
  SATA data Cable
- **1702150155**
  SATA Power Cable
- **Product DVD**
- **PICO-HD01 w/Heatsink**

Optional Accessories

Part Number	Description	Qty.
1700050207	USB Cable, Length 20cm	1
1701090150	COM Cable, Length 15cm	2
1709100254	AUDIO Cable, Length 25cm	1
1701100156	Front Panel Cable, Length 15cm	1
170302010C	Buzzer Cable	1

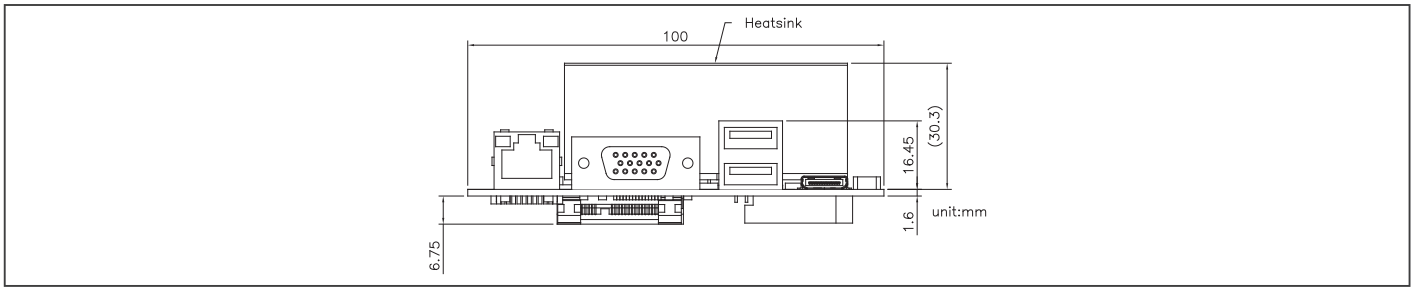
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

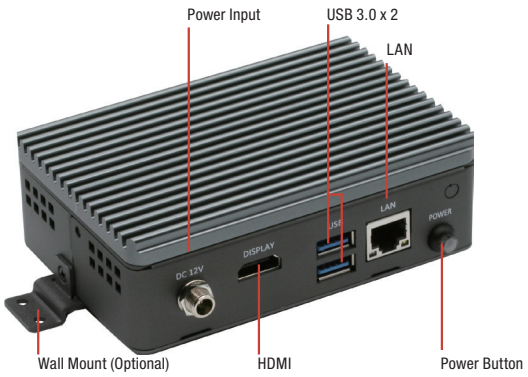


Ordering Information

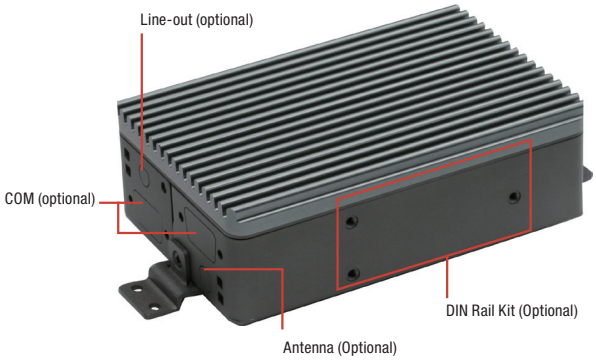
Part Number	CPU	RAM	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp.	Others
PICO-HD01-A10	AMD T40E	DDR3	Fanless	CRT+ LVDS, CRT+ mHDMI	18b 1CH	SATA 2 x 1, mSATA/Mini-Card x 1	GbE x 1	UBS2.0 x 5	1	1	DIO 4-bit	+12V (ATX)	32°F ~ 131°F (0°C ~ 60°C)	Audio
PICO-HD01-A10-01	AMD T40R	DDR3	Fanless	CRT+ LVDS, CRT+ mHDMI	18b 1CH	SATA 2 x 1, mSATA/Mini-Card x 1	GbE x 1	UBS2.0 x 5	1	1	DIO 4-bit	+12V (ATX)	32°F ~ 131°F (0°C ~ 60°C)	Audio

Pico-ITX Embedded Barebone Kit with Intel® Atom™ Processor SoC

Front View



Rear View



Features

- 270g Extreme Light System, Easy To Adapter Everywhere
- Gigabit Ethernet for Networking Connection
- USB3.0 Connectivity
- HDMI
- mSATA and miniCard Slot for WiFi/3G/4G Bluetooth Module
- Fix Holes for Antenna, Wallmount, DIN-Rail Kit Optional
- Lockable 12V DC Input

DDR 3L | 1000 Giga LAN | USB 2.0 | USB 3.0 | PCIe PCI Express | CE FC

I/O	
Storage/SSD	mSATA(Full size) x 1
USB Port	USB3.0 x 2 (Rear IO) USB2.0 x 1 (Internal option)
Serial Port	Optional
Audio	—
Expansion Slot	RS-232 x 1, RS-232422/485 x 1 (Optional)
Certification	
Certification	CE, FCC

Specifications

System	
Form Factor	Pico-ITX
Processor	Intel® Pentium® N4200 (4C. 1.1 GHz, up to 2.5 GHz, TDP 6W) (optional) Intel® Celeron® N3350 (2C. 1.1 GHz, up to 2.4 GHz, TDP 6W) *Wait for E3900 series in 2019 within ATRF according
System Memory	DDR3L SODIMM Slot x 1, Up to 8GB
Chipset	Intel® SoC
Ethernet	Intel® Gigabit Ethernet i211AT, 10/100/1000Base, RJ-45 x 1
BIOS	AMI BIOS
Wake on LAN	Yes
Watchdog Timer	255 Levels
Expansion Interface	miniCard (Half-Size) x 1
Power Requirement	Normal: +12V
Power Supply Type	Lockable
Power Consumption	N4200 @ 4GB DRAM/eMMC 32GB, 12V @1.1A (Full Loading)
System Size	4.8" x 3.15" x 1.73" (122 x 80 x 44 mm)
Gross Weight	0.59 lb (0.27 kg)
Operation Temp.	32°F~ 122°F (0°C ~ 50°C), 0.5 m/s airflow
Storage Temperature	-40˚F ~ 176˚F (-40˚C ~ 80˚C)
Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	170,000
Display	
Chipset	Intel® SoC
Video Output	HDMI 1.4
Touch	—

Packing List

- PICO-APL1 SBC x 1
- SEMI Top Chassis x 1
- SEMI Bottom Chassis x 1
- SEMI Heatsink x 1
- SEMI power button cable x 1
- Product DVD

  * Customer needs assemble by self.

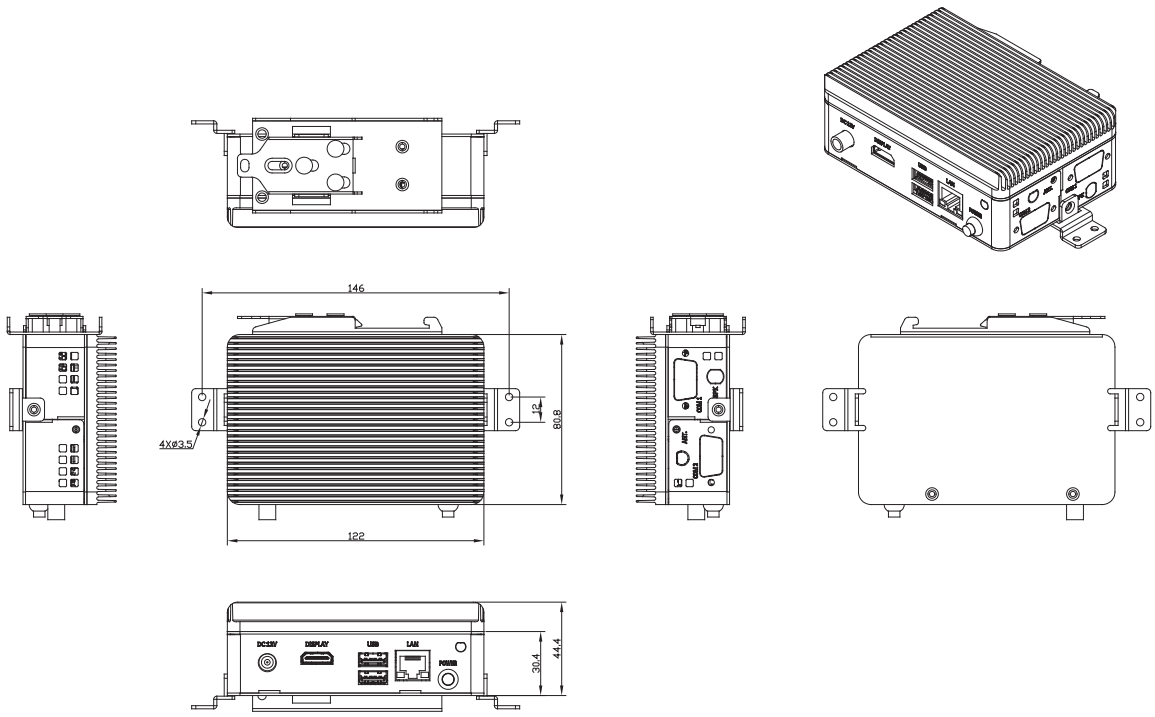
Optional Accessories

Part Number	Description	Qty.
1255300408	40W AC to DC Power Adapter	1
1702031802	Power Cord (US Type)	1
1702031803	Power Cord (European Type)	1
170203180E	Power Cord (Japan Type)	1
1703200052	COM x 2 + LINE_OUT	1
968C016G0V	SATA DOM 16GB (0°C ~ 70°C)	1
9761SMIE00	Wallmount Kit	1
9761SEMI01	DIN-Rail Mount Kit	1

Note: All specifications are subject to change without notice.

Dimension

Unit: mm



Installation Scenario

DIN-Rail Mount Illustration



Wall Mount Illustration



These are after assembly product photos, DIN Rail and Wall Mount kit are optional parts.

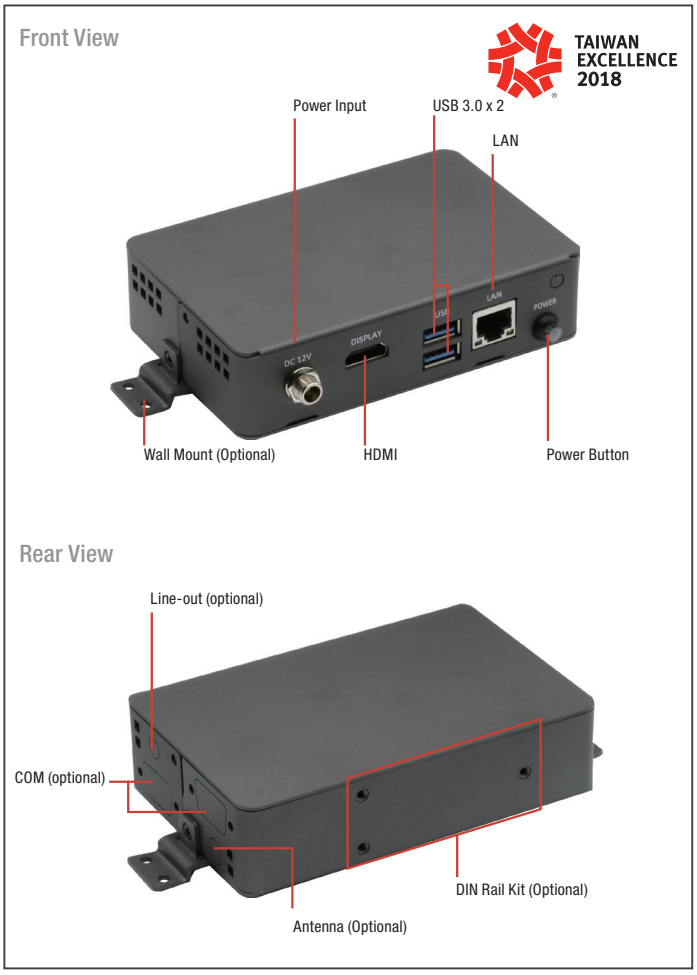
Ordering Information

Part Number	CPU	Memeory	Fan/Fanless	Display	Storage	LAN	USB	Expansion Slot	Power	Temp	Others
PICO-APL1-SEMI-A10-B002	N3350	DDR3L SODIMM Socket	Fanless	HDMI	SATA x 1, mSATA x 1 (Full-size)	GbE x 1	USB3.0 x 2, USB2.0 x 1	miniCard x 1 (Half-Size)	12V DC Jack	0°C ~ 50°C @ 0.5 m/s airflow	COM Port optional

* This is a barebone kit, customer need to do assemble after product received.

PICO-APL3-SEMI

Pico-ITX Embedded Barebone Kit with Intel® Atom™ Processor SoC



Features

- 180g Extreme Light System, Easy To Adapter Everywhere
- Gigabit Ethernet for Networking Connection
- USB3.0 Connectivity
- HDMI
- M.2 2280 (B) M.2 2230 (E) Slot for WiFi/3G/4G Bluetooth Module
- Fix Holes for Antenna, Wallmount, DIN-Rail Kit Optional
- Lockable 12V DC Input

DDR 3L | 1000 Giga LAN | USB 2.0 | USB 3.0 | PCIe PCI Express | CE FC

I/O	
Storage/SSD	M.2 2280 x 1 (B-Key) eMMC 32GB, up to 128GB (optional)
USB Port	USB3.0 x 2 (Rear IO) USB2.0 x 2 (Internal option)
Serial Port	Optional
Audio	Optional
Expansion Slot	RS-232 x 1, RS-232422/485 x 1 (Optional)
Certification	
Certification	CE, FCC

Specifications

System	
Form Factor	Pico-ITX
Processor	Intel® Pentium® N4200 (4C. 1.1 GHz, up to 2.5 GHz, TDP 6W) Intel® Celeron® N3350 (2C. 1.1 GHz, up to 2.4 GHz, TDP 6W) *Wait for E3900 series in 2019 within ATRF according
System Memory	DDR3L, memory down, up to 4GB
Chipset	Intel® SoC
Ethernet	Realtek 8111G x 1 10/100/1000Mbps, RJ-45 x 1
BIOS	AMI BIOS
Wake on LAN	Yes
Watchdog Timer	255 Levels
Expansion Interface	M.2 2230 E key (For WIFI/BT Module)
Power Requirement	Normal: +12V
Power Supply Type	Lockable
Power Consumption	N4200 @ 4GB DRAM/eMMC 32GB, 12V @1.1A (Full Loading)
System Size	4.8" x 3.15" x 1.18" (122 x 80 x 30 mm) Heatsink (optional), 14 mm
Gross Weight	0.4 lb (0.18 kg)
Operation Temp.	32°F~ 122°F (0°C ~ 50°C), 0.5 m/s airflow
Storage Temperature	-40˚F ~ 176˚F (-40˚C ~ 80˚C)
Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	110,000
Display	
Chipset	Intel® SoC
Video Output	HDMI 1.4
Touch	—

Packing List

- PICO-APL3-SEMI

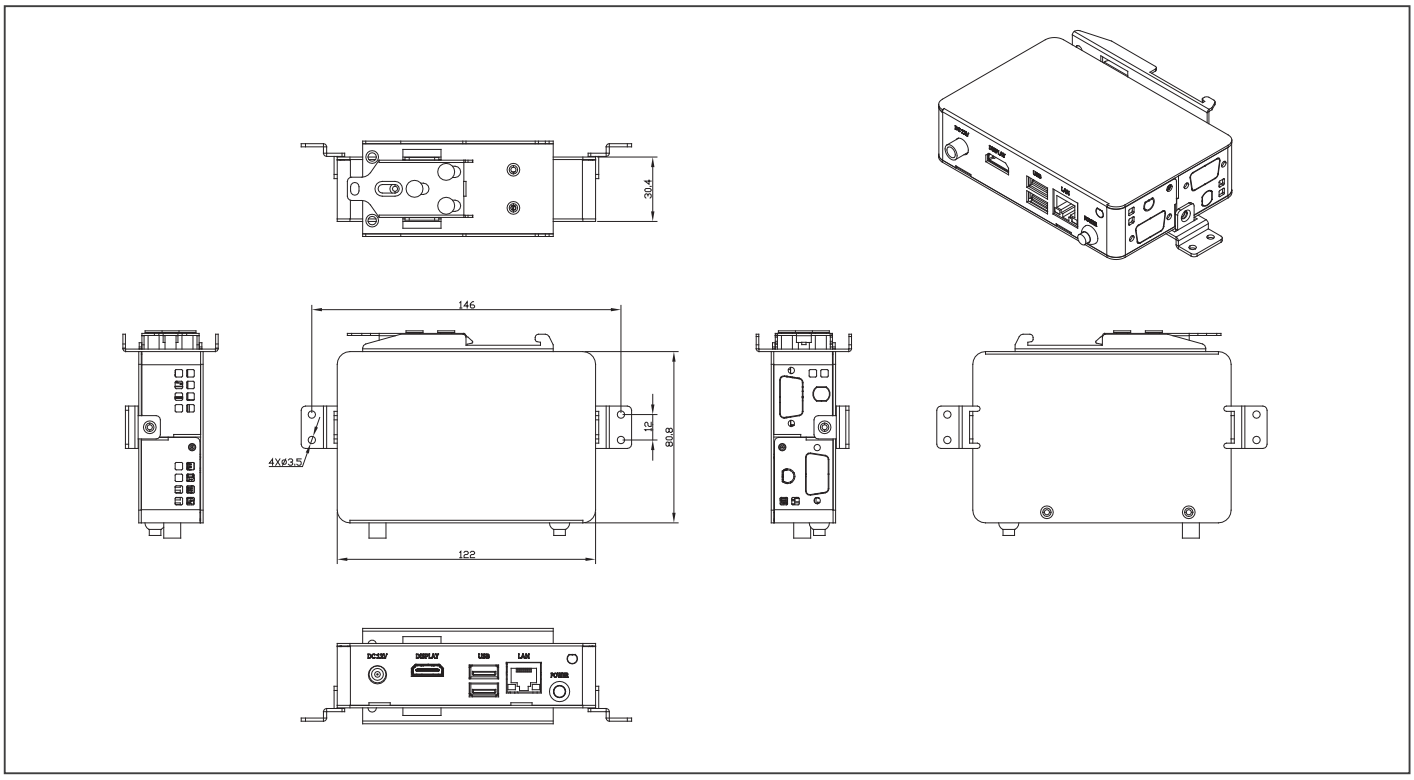
Optional Accessories

Part Number	Description	Qty.
125530040C	40W AC to DC Power Adapter	1
1702031802	Power Cord (US Type)	1
1702031803	Power Cord (European Type)	1
170203180E	Power Cord (Japan Type)	1
1701090122	COM Port Cable	2
1703100084	Audio Line-Out	1
9761SEMI00	Wallmount Kit	1
9761SEMI01	DIN-Rail Kit	1

Note: All specifications are subject to change without notice.

Dimension

Unit: mm



Installation Scenario

DIN-Rail Mount Illustration



Wall Mount Illustration



DIN Rail and Wall Mount Kit are optional parts.

Ordering Information

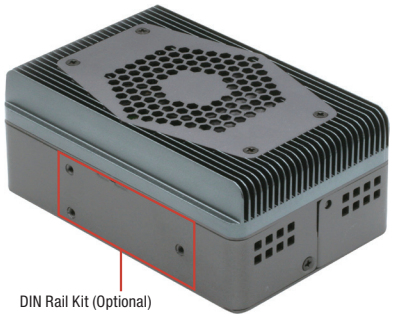
Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	Expansion Slot	Power	Power Temp	Others
PICO-APL3-SEMI-A10-S001	Celeron® N3350 (Dual Core)	On board DDR3L 2GB	Fanless	HDMI x 1	SATAIII x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 1	USB 3.0 x 2 (Rear)	M.2 2230 (E Key) x 1	+12V (ATX)	0°C ~ 50°C @ 0.5 m/s airflow	COM (Optional) Line-Out (Optional)
PICO-APL3-SEMI-A10-S002	Celeron® N3350 (Dual Core)	On board DDR3L 4GB	Fanless	HDMI x 1	SATAIII x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 1	USB 3.0 x 2 (Rear)	M.2 2230 (E Key) x 1	+12V (ATX)	0°C ~ 50°C @ 0.5 m/s airflow	COM (Optional) Line-Out (Optional)
PICO-APL3-SEMI-A10-S003	Pentium® N4200 (Quad Core)	On board DDR3L 4GB	Fanless	HDMI x 1	SATAIII x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 1	USB 3.0 x 2 (Rear)	M.2 2230 (E Key) x 1	+12V (ATX)	0°C ~ 50°C @ 0.5 m/s airflow	COM (Optional) Line-Out (Optional)

Pico-ITX TurnKit with Intel® Atom™/ Pentium® N4200/ Celeron® N3350 Processor SoC

Front View



Rear View



Features

- **Extreme light system, easy to adopt everywhere**
- **Onboard DDR3L 2GB/4G**
- **Onboard Storage eMMC 32GB**
- **GbE x 2, HDMI x 1.4**
- **M.2 2280 B key for storage**
- **M.2 2230 E key for wireless Module**
- **COM x 2 (Optional)**
- **USB3.0 x 2 (Rear IO), USB2.0 x 1 (Optional)**
- **Lockable DC 12V**

DDR 3L | 1000 Giga LAN | USB 2.0 | USB 3.0 | PCIe PCI Express | CE | FC

I/O	
Storage/SSD	M.2 2280 (B Key) x 1 eMMC 32GB, up to 128GB (optional)
USB Port	USB3.0 x 2 (Rear IO) USB2.0 x 2 (Internal option)
Serial Port	—
Audio	—
Expansion Slot	RS-232 x 1, RS-232422/485 x 1 (Optional)
Certification	
Certification	CE, FCC

Packing List

- **PICO-APL4-SEMI**

Specifications

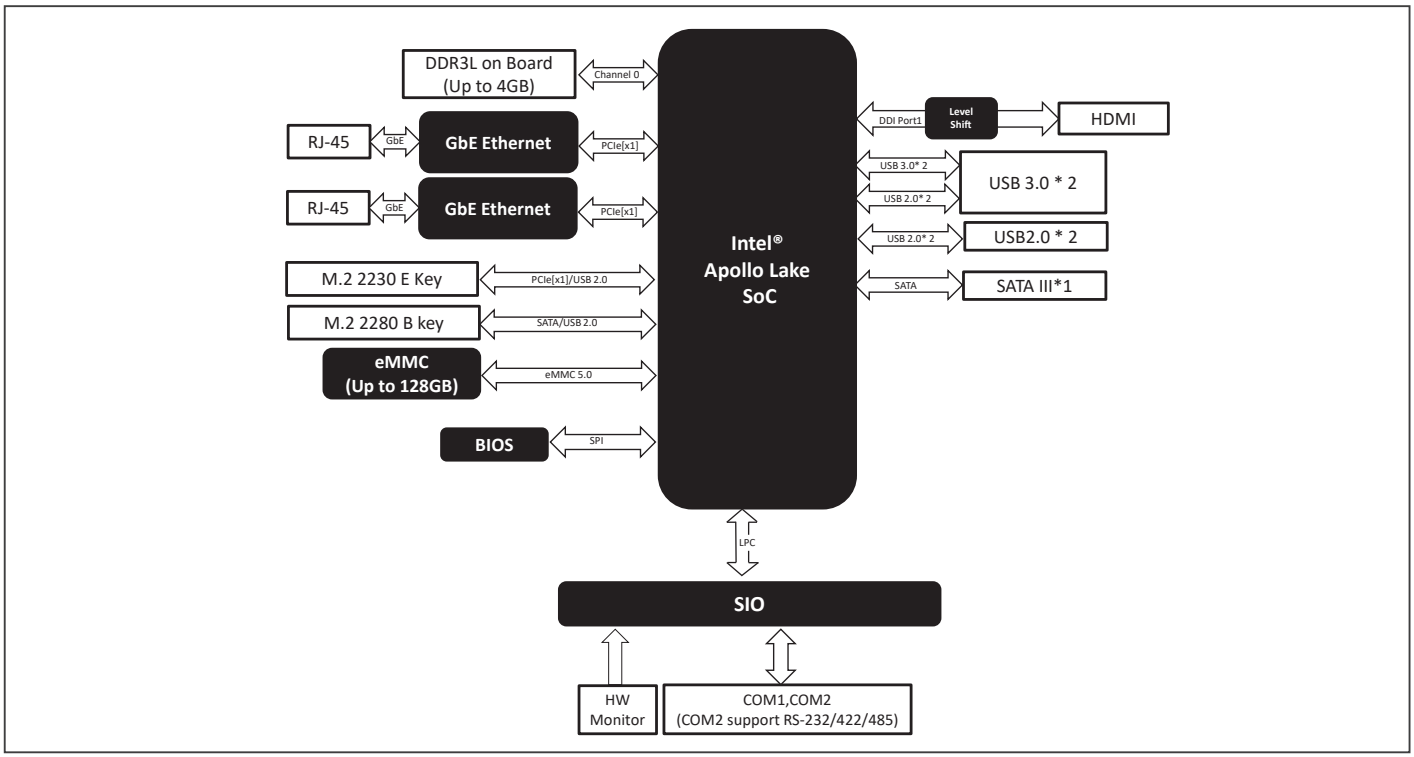
System	
Form Factor	Pico-ITX
Processor	Intel® Pentium® N4200 (4C): 1.1GHz, up to 2.5GHz, TDP 6W Intel® Celeron® N3350 (2C): 1.1GHz, up to 2.4GHz, TDP 6W *Wait for E3900 series in 2019 within ATRF according
System Memory	DDR3L, memory down, up to 4GB
Chipset	Intel® SoC
Ethernet	Realtek 8111G x 2 10/100/1000Mbps, RJ-45 x 2
BIOS	AMI BIOS
Wake on LAN	Yes
Watchdog Timer	255 Levels
Expansion Interface	M.2 2230 E key (For WIFI/BT Module)
Power Requirement	Normal: +12V
Power Supply Type	Lockable
Power Consumption	Intel®Pentium®N4200@ 1.1GHz,DDR3L 4GB 1.43A@+12V
System Size	4.8" x 3.15" x 2" (122 mm x 72 mm x 50 mm)
Gross Weight	0.88 lb (0.4 kg)
Operation Temp.	32°F~ 122°F (0°C ~ 50°C), 0.5 m/s airflow
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	191,000
Display	
Chipset	Intel® SoC
Video Output	HDMI 1.4
Touch	—

Optional Accessories

Part Number	Description	Qty.
125530040C	(TF)Power Adapter.12V.40W.FSP.FSP040-RHAN3	1
1702031802	Power Cord (US)	1
1702031803	Power Cord(European Type)	1
170203180E	Power Cord(Japan Type)	1
9761SEMI01	Din Rail Kit	1
9761SEMI00	Wall mount Kit	1
1701090122	COM Cable	2

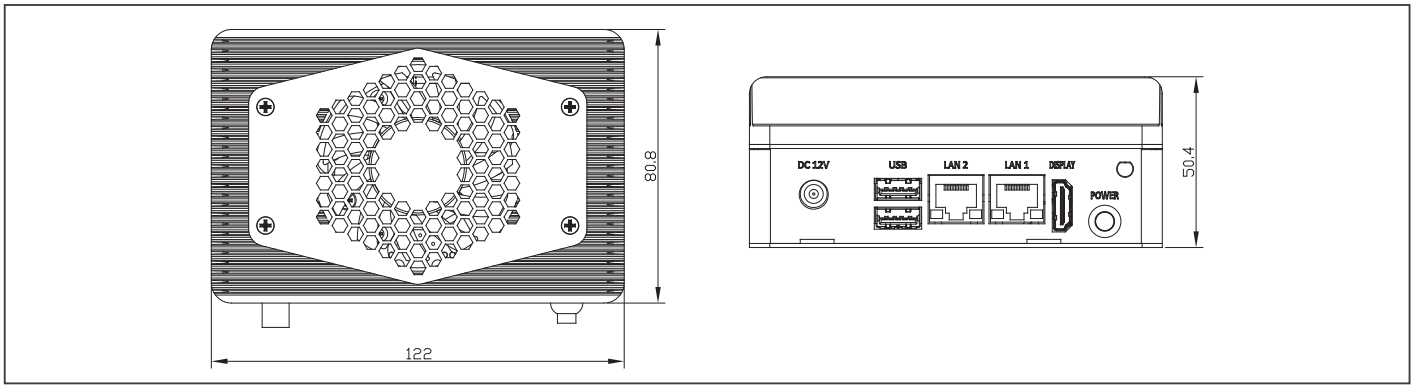
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
PICO-APL4-SEMI-A10-S003	N4200	On board DDR3L 4GB	w/Cooler	HDMI x 1	SATAIII x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 2	USB 3.0 x 2 (Rear)	--	--	M.2 2230 (E Key) x 1	+12V (ATX)	0°C ~ 50°C	--
PICO-APL4-SEMI-A10-S001	N3350	On board DDR3L 2GB	w/Cooler	HDMI x 1	SATAIII x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 2	USB 3.0 x 2 (Rear)	--	--	M.2 2230 (E Key) x 1	+12V (ATX)	0°C ~ 50°C	--

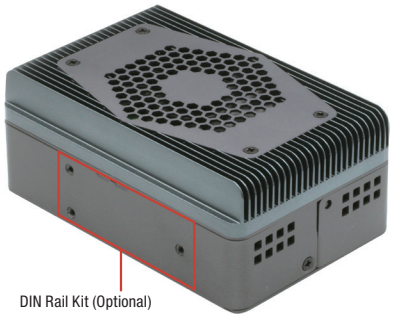
PICO-KBU4-SEMI

Pico-ITX TurnKit with 7th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC

Front View



Rear View



Features

- **Extreme light system, easy to adopt everywhere**
- **DDR4 Non-ECC SODIMM Slot x 1, up to 16GB**
- **GbE x 2, HDMI x 1.4**
- **M.2 2242 B key for storage**
- **M.2 2230 E key for wireless Module**
- **COM x 2 (Optional)**
- **USB3.0 x 2 (Rear IO), USB2.0 x 2 (Optional)**
- **Lockable DC 12V**

DDR 3L · 1000 Giga LAN · USB 2.0 · USB 3.0 · PCIe PCI Express · CE · FC

I/O	
Storage/SSD	M.2 2242 B key
USB Port	USB3.0 x 2 (Rear IO) USB2.0 x 2 (Internal option)
Serial Port	Optional
Audio	—
Expansion Slot	RS-232 x 1, RS-232422/485 x1 (Optional)
Certification	
Certification	CE, FCC

Packing List

- **PICO-KBU4-SEMI**

Specifications

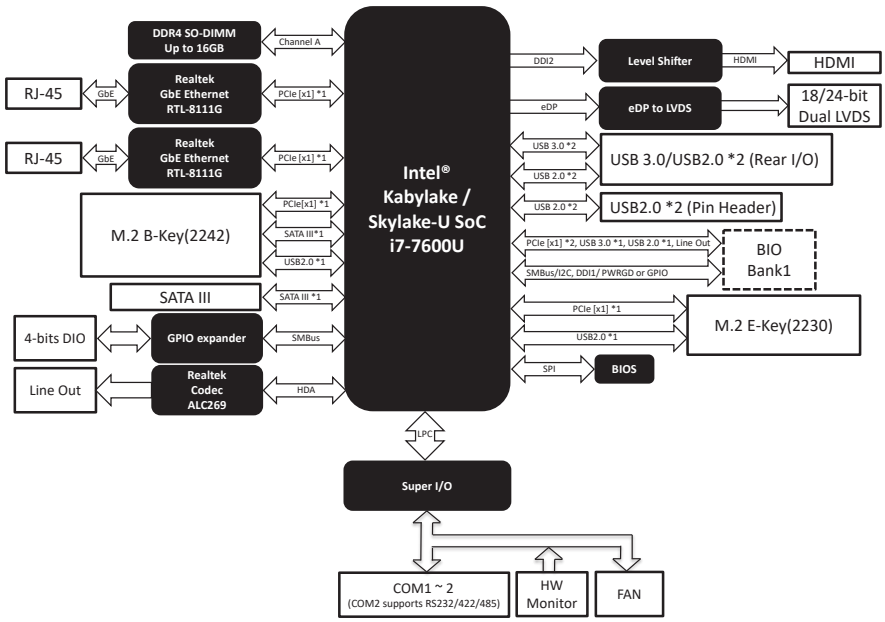
System	
Form Factor	Pico-ITX
Processor	7th Gen Intel® Core™ i processor U series
System Memory	DDR4 SODIMM Slot x 1,Up to 16 GB
Chipset	Intel® SoC
Ethernet	Realtek 8111G Gigabit Ethernet 10/100/1000Base, RJ-45 x 2
BIOS	AMI BIOS
Wake on LAN	Yes
Watchdog Timer	255 Level
Expansion Interface	M.2 2230 E key (For WIFI/BT Module)
Power Requirement	Normal: +12V
Power Supply Type	Lockable
Power Consumption	I7-7600 @ DDR4 16GB, 12V@2.3A
System Size	4.8" x 3.15" x 2" (122 x 72 x 50 mm)
Gross Weight	0.88 lb (0.4 kg)
Operation Temp.	32°F~ 122°F (0°C ~ 50°C), 0.5 m/s airflow
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	163,000
Display	
Chipset	Intel® SoC
Video Output	HDMI 1.4
Touch	—

Optional Accessories

Part Number	Description	Qty.
125530040C	(TF)Power Adapter.12V.40W.FSP.FSP040-RHAN3	1
1702031802	Power Cord (US)	1
1702031803	Power Cord(European Type)	1
170203180E	Power Cord(Japan Type)	1
1701200101	M.2 2242 -D2-B-M.64GB.SATA3,MLC	1
9761SEMI01	Din Rail Kit	1
9761SEMI00	Wall mount Kit	1

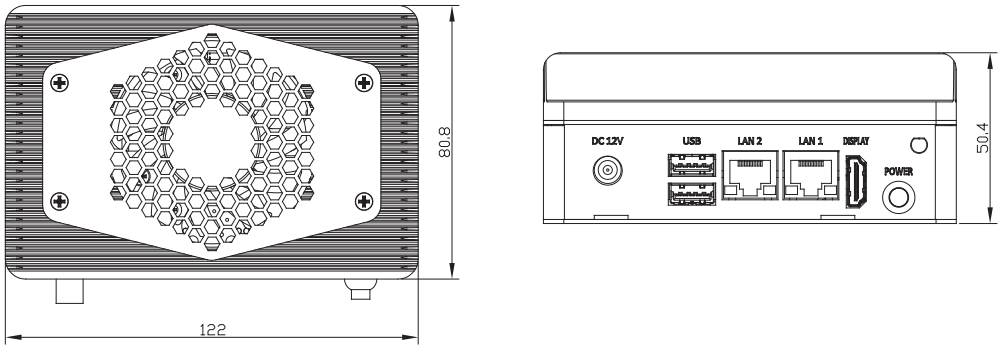
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

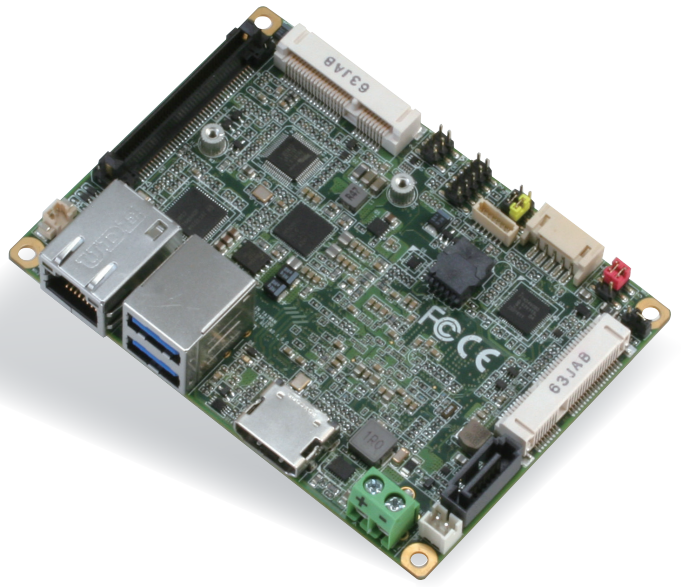


Ordering Information

Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
PICO-KBU4-SEMI-A10-B001	Celeron 3965	DDR4 Socket	w/Cooler	HDMI x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.0 x 2 (Rear)	--	--	M.2 2230 (E Key) x 1	+12V (ATX)	0°C ~ 50°C	DIO 4 bit
PICO-KBU4-SEMI-A10-B002	I3-7100U	DDR4 Socket	w/Cooler	HDMI x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.0 x 2 (Rear)	--	--	M.2 2230 (E Key) x 1	+12V (ATX)	0°C ~ 50°C	DIO 4 bit
PICO-KBU4-SEMI-A10-B003	I5-7300U	DDR4 Socket	w/Cooler	HDMI x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.0 x 2 (Rear)	--	--	M.2 2230 (E Key) x 1	+12V (ATX)	0°C ~ 50°C	DIO 4 bit
PICO-KBU4-SEMI-A10-B004	i7-7600U	DDR4 Socket	w/Cooler	HDMI x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.0 x 2 (Rear)	--	--	M.2 2230 (E Key) x 1	+12V (ATX)	0°C ~ 50°C	DIO 4 bit
PICO-KBU4-SEMI-A10-B005 (6th Gen)	Celeron 3955	DDR4 Socket	w/Cooler	HDMI x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.0 x 2 (Rear)	--	--	M.2 2230 (E Key) x 1	+12V (ATX)	0°C ~ 50°C	DIO 4 bit

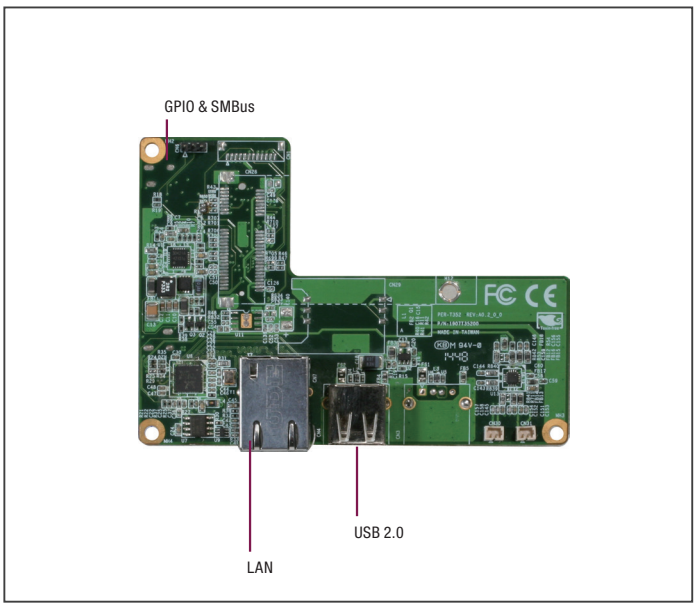
Pico-ITX Boards-BIO

07



BIO-ST01-L1U2

2.5” BIO Daughter Board with Gigabit LAN and USB



Features

- Gigabit Ethernet x 1, RJ-45 x 1
- USB 2.0 x 2
- Speaker Out with 2W Amp
- SMbus x 1
- LPC (Optional)

Specifications

System	
Form Factor	2.5" Board
BIO	80-Pin high speed board to board connector
Power Requirement	Power Supplied from MB via board to board connector
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.44 lb (0.2 kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40 °F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	—
I/O	
Ethernet	Realtek 8111E, 10/100/1000Base-TX, RJ-45 x 1
USB	USB 2.0 x 2 on rear I/O
Audio	Speaker Out with 2W Amp
Expansion Interface	SMbus x 1
PCIe	—
Serial Port	—
SIM	—
DIO	—

Packing List

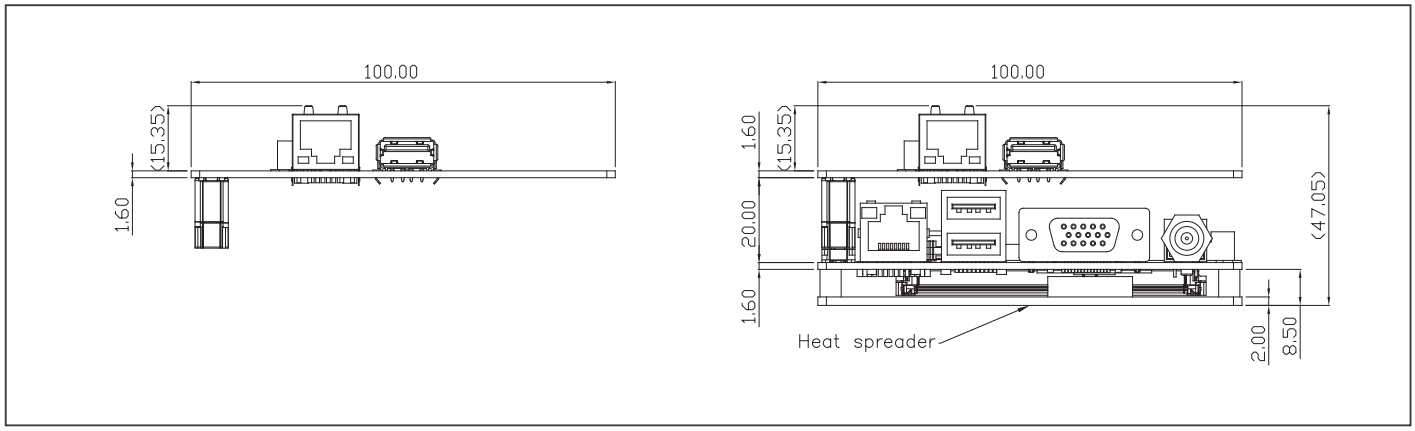
- Accessory Kit
- BIO-ST01-L1U2

Ordering Information

P/N	LAN	USB	Expansion Slot	Temp.
BIO-ST01-L1U2-A11-0001	GbE x 1	USB 2.0 x 1	Speaker Out with 2W Amp, SMbus*1	0°C ~ 60°C

Dimension

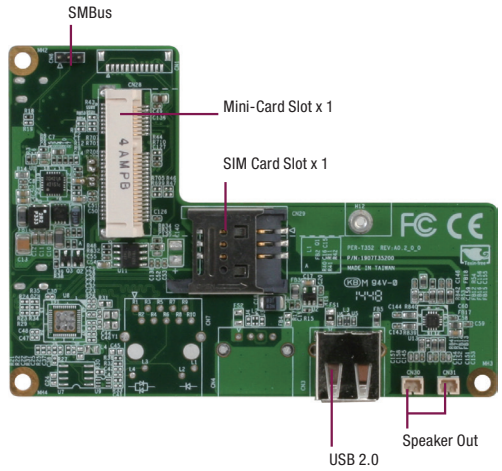
Unit: mm



Note: All specifications are subject to change without notice.

BIO-ST01-M1U1

2.5” BIO Daughter Board with Mini-Card, SIM and USB



Features

- Mini-Card (Full Size) x 1, SIM slot x 1
- USB 2.0 x 1
- Speaker Out with 2W Amp
- SMbus x 1, GPIO x 1
- LPC (Optional)

Specifications

System	
Form Factor	2.5" Board
BIO	80-Pin high speed board to board connector
Power Requirement	Power Supplied from MB via board to board connector
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.44 lb (0.2 kg)
Operating Temperature	32°F ~ 140°F(0°C ~ 60°C)
Storage Temperature	-40 °F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	—
I/O	
Ethernet	—
USB	USB 2.0 x 1 on rear I/O
Audio	Speaker Out with 2W Amp
Expansion Interface	SMbus x 1
PCIe	Mini-Card x 1
Serial Port	—
SIM	SIM Slot x 1
DIO	—

Packing List

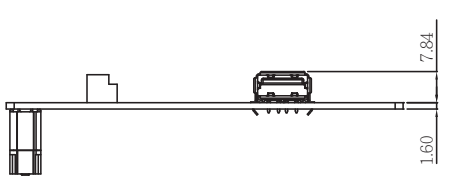
- Accessory kits
- BIO-ST01-M1U1

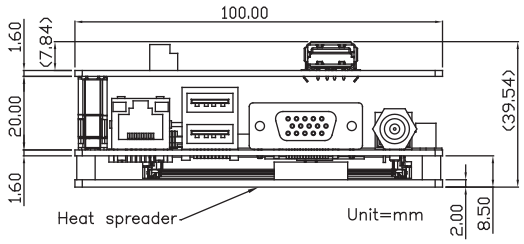
Optional Accessories

P/N	USB	Expansion Slot	Power Temp.
BIO-ST01-M1U1-A11-0001	USB 2.0 x 1	Mini-Card x 1, SIM x 1, Speaker Out with 2W Amp. x 1, SMbus	0°C ~ 60°C

Dimension

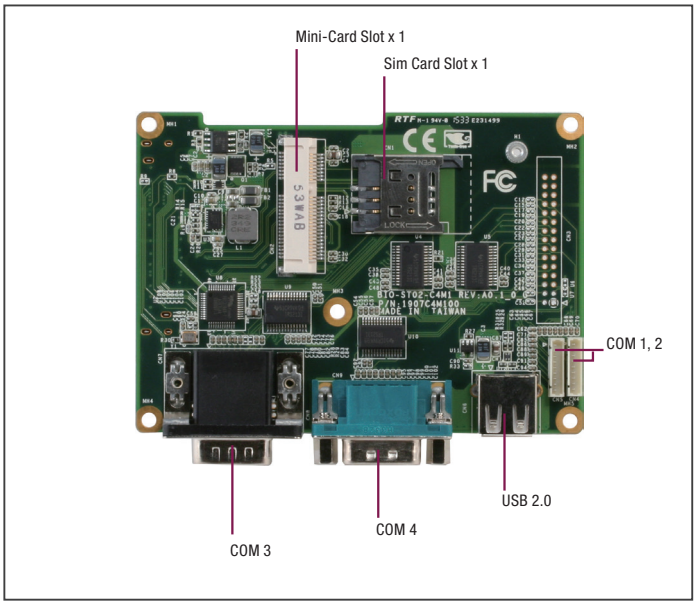
Unit: mm





BIO-ST02-C4M1

2.5" BIO Daughter Board with COM x 4, Mini-Card, SIM and USB



Features

- RS-232 x 4
- Mini-Card (Full Size) x 1 (PCIe x 1 Only)
- SIM slot x 1
- USB 2.0 x 1

Gigo LAN USB 2.0

Specifications

System	
Form Factor	2.5" Board
BIO	80-Pin high speed Board to board connector
Power Requirement	Power Supplied from MB via board to board connector
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.44 lb (0.2 Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40 °F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	—
I/O	
Ethernet	—
USB	USB 2.0 x 1 on rear I/O
Audio	—
Expansion Interface	—
PCIe	Mini-Card x 1 (full size), SIM x 1
Serial Port	COM1, COM2 RS-232 by Pin Header COM3, COM4 RS-232 on Rear I/O
SIM	—
DIO	—

Packing List

- Accessory Kit
- COM Port Cables
- BIO-ST02-C4M1

Ordering Information

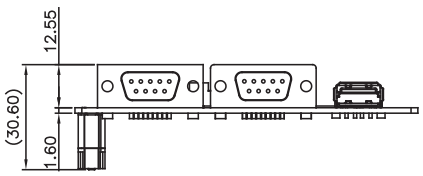
P/N	USB	RS-232	Expansion Slot	Temp.
BIO-ST02-C4M1-A10-01*	1	4	Mini-Card x 1, SIM x 1	0°C ~ 60°C

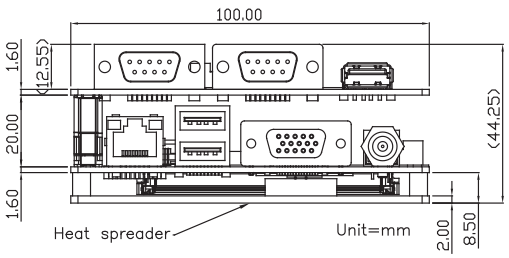
* Customized BIOS is required.

* For mini-card module expansion (via USB2.0 signal), suggest to use PICO-BT01 only.

Dimension

Unit: mm

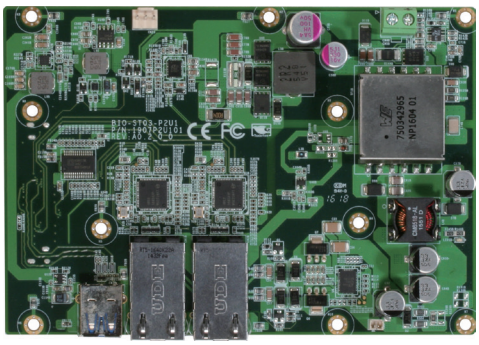


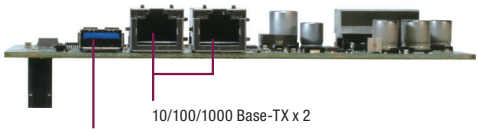


Note: All specifications are subject to change without notice.

BIO-ST03-P2U1

3.5" BIO Daughter Board with PoE, USB 3.0





Features

- Intel® i210, 10/100/1000Base-TX x 2 (Supports PoE 802.3af)
- USB 3.0 x 1
- 9~36V DC-in (+12V Only, Optional)
- Supports GENE-SKU6 and Pico-ITX Series BIO Daughter Board

1000 Giga LAN USB 2.0 CE FC

Specifications

System	
Form Factor	3.5" Board
BIO	—
Power Requirement	12V or +9 ~ 36V input (external power supply)
Dimension	5.25" x 4" (146mm x 101.6mm)
Gross Weight	0.44 lb (0.2 kg)
Operating Temperature	32°F~ 140°F (0°C ~ 60°C)
Storage Temperature	-40˚F ~ 176˚F (-40˚C ~ 80˚C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE,FCC
I/O	
Ethernet	Intel® i210/i211, 10/100/1000Base-TX x 2 (support PoE 802.3af)
USB	USB 3.0 x 1
Audio	—
Expansion Interface	—
PCIe	—
Serial Port	—
SIM	—
DIO	—

Packing List

- Accessory Kit
- BIO-ST03-P2U1

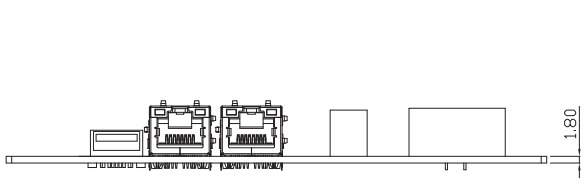
Ordering Information

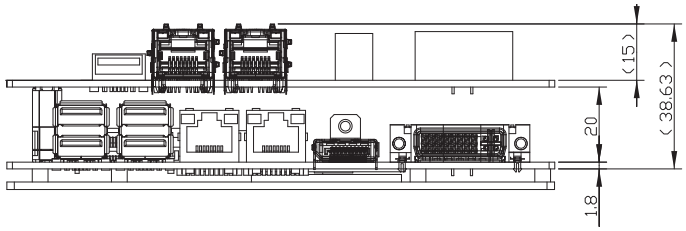
P/N	LAN	USB	Power	Temp.
BIO-ST03-P2U1	PoE x 2	USB 3.0 x 1	9~36V	0°C ~ 60°C

* Customized BIOS is required.

Dimension

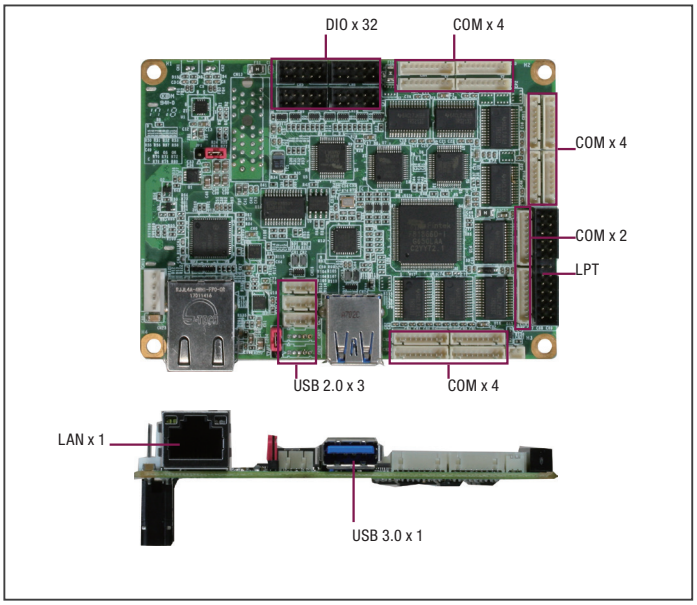
Unit: mm





BIO-ST02-C14-D32

2.5" BIO Daughter Board with 14 COM, 32bit DIO, LAN and USB 3.0



Features

- COM x 14, RS-232 only
- 32-bit DIO
- Intel® i211 Giga LAN x 1
- PCI-E [x1] Slot x 1 (Optional)
- USB 3.0 & USB 2.0 x 3
- Speaker w/2W Amp.
- LPT x 1

Specifications

System	
Form Factor	2.5" Board
BIO	80-Pin high speed board to board connector
Power Requirement	Power Supplied from MB via board to board connector
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.44 lb (0.2 kg)
Operating Temperature	32˚F ~ 140˚F (0˚C ~ 60˚C)
Storage Temperature	-40˚F ~ 176˚F (-40˚C ~ 80˚C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE,FCC
I/O	
Ethernet	Intel® i211, 10/100/1000Base-TX x 1
USB	USB 3.0 x 1 & USB 2.0 x 3 or USB 2.0 x5(for PICO-BT01)
Audio	Speaker output with 2W Amp.
Expansion Interface	PCIe [x1] x1 (optional), LPT x1
PCIe	—
Serial Port	COM x14,RS-232 by Pin Header
SIM	—
DIO	32 bits

Packing List

- **9697BIO000**
  Accessory Kits (w/ Copper Stud and Screws)
- **BIO-ST02-C14D32**

Ordering Information

Part Number	COM	DIO	LAN	PCIe	USB	LPT	Temp.
BIO-ST02-C14D32-A10-0001	RS-232 x14	x32 bit	GbE x 1	PCIe[x1]	USB 3.0 x 1 USB 2.0 x 3	x1	0°C ~ 60°C

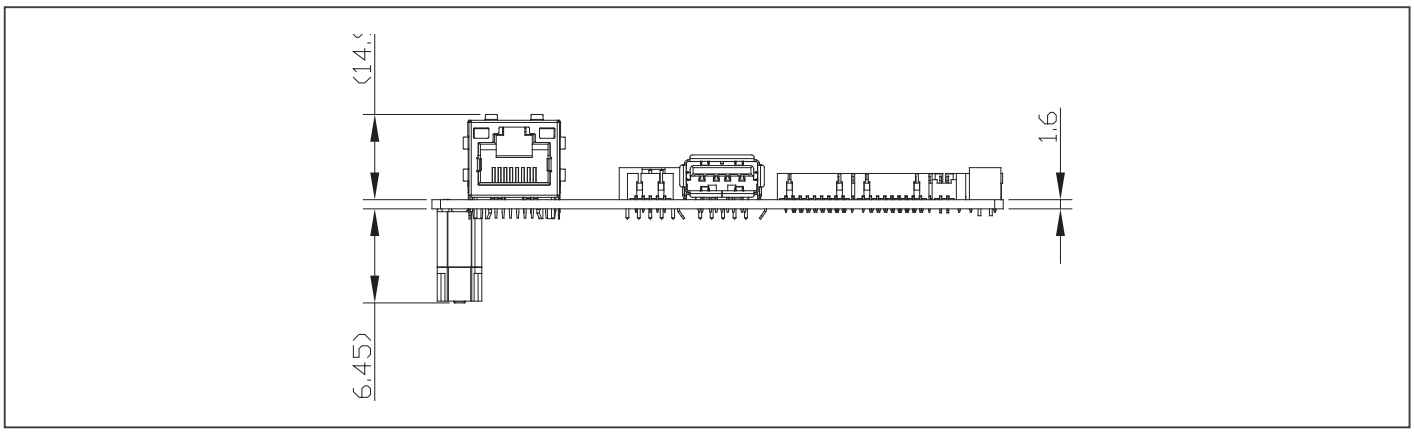
* Customized BIOS is required.

Optional Accessories

Part Number	Description	Qty.
1701090150	COM Cable 15cm	14
1700050207	USB cable 20cm	3 or 5

Dimension

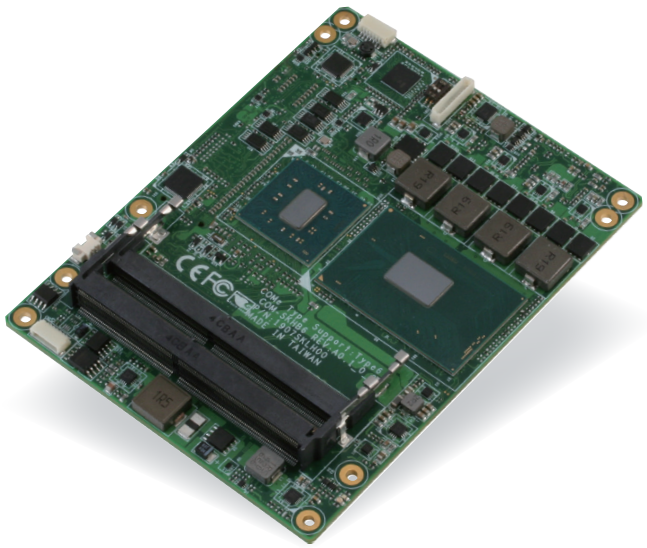
Unit: mm



Note: All specifications are subject to change without notice.

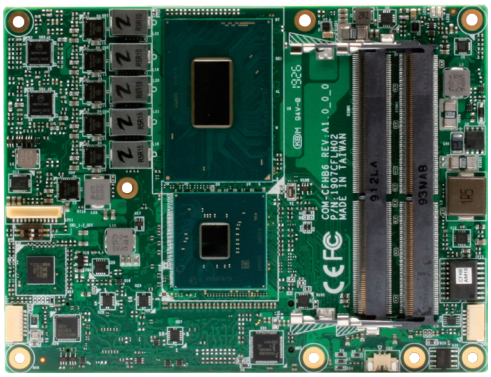
08

COM Express CPU Modules



COM-CFHB6

COM Express Type 6 Basic Size with 8th/9th Generation Intel® Core™ H-Series / Xeon™ Processors



Features

- Intel® Coffee Lake-H 8th / 9th Generation i3/i5/i7/ Xeon-E Processors
- 3x SODIMM DDR4 2666 Memory up to 48GB, ECC support (by SKU, with CM246 PCH)
- Intel I219 Gigabit Ethernet
- VGA, 18/24-bit 2ch LVDS or 4-lane eDP, DDI up to 3
- High Definition Audio Interface
- SATA x 4, USB2.0 x 8, USB 3.0 X 4
- PCI-Express [x1] x 8, PCI-Express[x16] x1
- GPIO x 8, SMbus, I2C, LPC
- COM Express Basic Size, Pin-Out Type 6, 125mmx95mm

Specifications

System	
Form Factor	COM Express Basic Size, Type 6
CPU	8th/9th Gen Intel® Core™ / Xeon™-E Series Processor (i7-8850H / i5-8400H / i3-8100H / Xeon™-E2176M)
CPU Frequency	Up to Xeon-E2176M, 6c/ 2.7GHz
Chipset	Intel® QM370/CM246 PCH
Memory Type	SO-DIMM DDR4 2666 Socket x 3
Max. Memory Capacity	up to 48GB,ECC Support (only with CM246 PCH)
BIOS	AMI BIOS, Legacy free BIOS
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Normal: +12V
Power Supply Type	AT/ATX Selection
Power Consumption (Typical)	Intel ® Xeon ® E-2176M CPU @2.70GHz, DDR4 16GB x 3, Full load: 62.4W, 5.2A@12V
Dimension (L x W)	4.92" x 3.75" (125mm x 95mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -20°C ~ 70°C by screening
Storage Temperature	-4˚F ~ 158˚F (-20˚C ~ 70˚C)
Operating Humidity	10% ~ 95% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE/FCC Class A
Display	
VGA/LCD Controller	Intel® GT2-P630 (E2176M) / GT2-630 (i7/i5/i3 Series)
Video Output	VGA, 18/24b 2ch LVDS/eDP, DDI x 2 (3rd one can be added if VGA not require)
LVDS Interface	Supports 18-bit and 24-bit dual channel
I/O	
Ethernet	Intel® Ethernet I219 GbE x 1
Audio	HD Audio
USB Port	USB 2.0 x 8 , USB 3.0 x 4
Serial Port	2-wire UART(TX/RX) x 2
HDD Interface	SATA 3 x 4
Onboard Storage	—
Expansion Slot	PCIe[x1] x 8 PCIe[x16] x 1 LPC x 1 SMBUS x 1 2-wire UART x 2
GPIO	8-bit
TPM	Support 1.2 / 2.0 (Optional)

Packing List

- COM-CFHB6-A10

Optional Accessories

- **ECB-920A-A10-0001**
  COMe Type 1/6/10.Carrier Board.ATX.GbE.8USB, 2COM.4SATA.PCIe.AT/ATX.Legacy Free.Rev. A1.0
- **COM-CFHB6-FAN01**
  CPU Cooler.FAN+Heat Sink.125*95*41.55mm for COM-CFHB6
- **COM-CFHB6-HSP01**
  Heat Spreader.125*95.Black.COM-CFHB6
- **COM-FAN01**
  CPU Cooler.125*95.Silver.use w/HSP

CPU Support Matrix

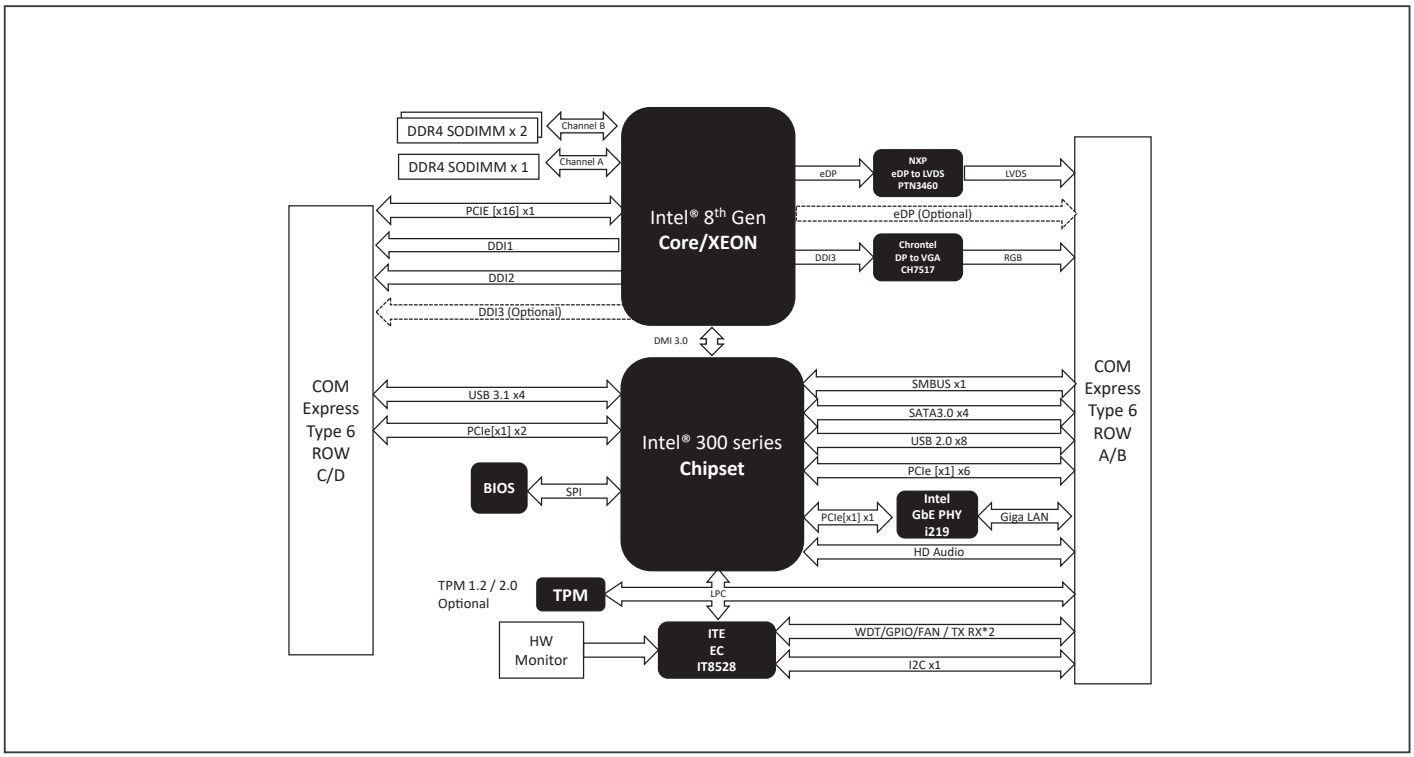
CPU	Core/Thread. Base Clock/Turbo	Cache	ECC Support	Graphic	Chipset
XEON E-2176M	6c/12t 2.7GHz/4.4GHz	12M	V	GT2-P630	CM246
i7-8850H	6c/12t 2.6GHz/4.3GHz	9M	X	GT2-630	QM370
i5-8400H	4c/8t 2.5GHz/4.2GHz	8M	X	GT2-630	QM370
i3-8100H	4c/4t 3.0GHz	6M	X	GT2-630	QM370

CPU Support Matrix 2

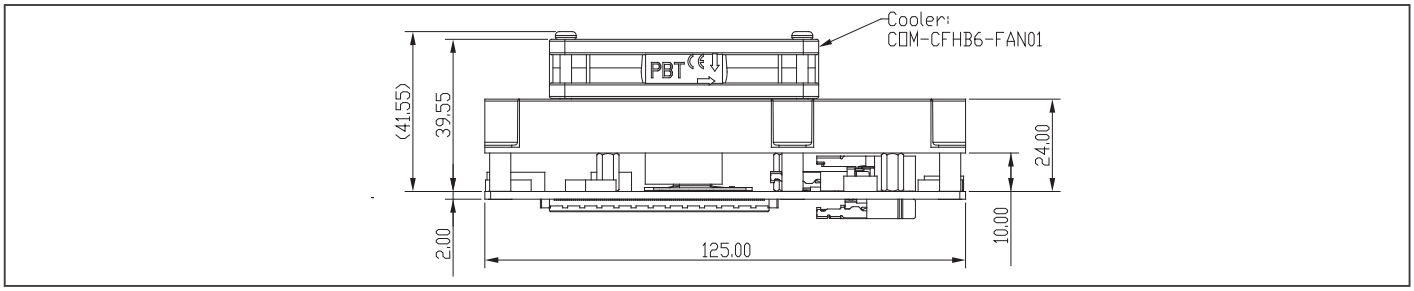
CPU	Core/Thread. Base Clock/Turbo	Cache	ECC Support	Graphic	Chipset
XEON E-2276ME/ML	6c/12t ; HE:2.8GHz/4.5GHz ;HL:2.0GHz/4.2GHz	12M	V	GT2-P630	CM246
XEON E-2254ME/ML	4c/8t; HE:2.6GHz/3.8GHz; HL:1.7GHz/3.5GHz	8M	V	GT2-P630	CM246
i7-9850HE/HL	6c/12t; HE:2.7GHz/4.4GHz; HL:1.9GHz/4.1GHz	9M	X	GT2-630	QM370
i3-9100HL	4c/4t; 3.0GHz	6M	V	GT2-630	CM246

Note: All specifications are subject to change without notice.

Block Diagram Unit: mm



Dimension Unit: mm

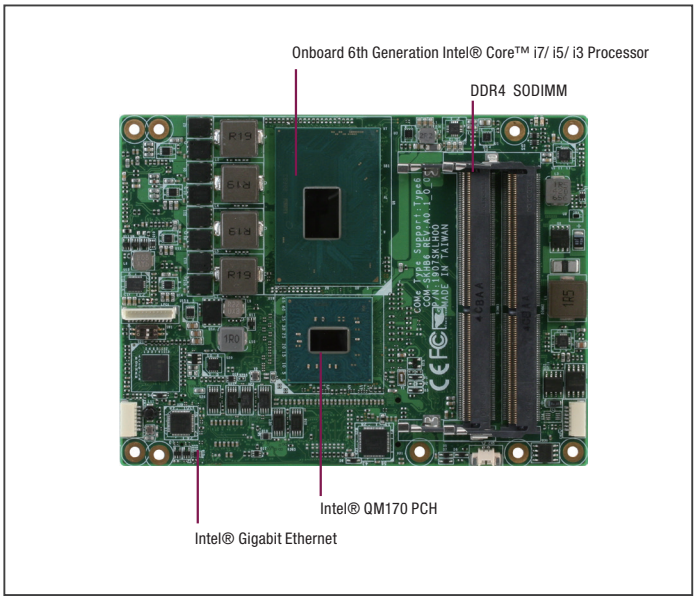


Ordering Information

Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion	Power	Temperature	Other
COM-CFHB6-A10-0001	Type 6	Xeon E-2176M	DDR4 SO-DIMM x 3	VGA, DDIx2 (up to 3)	18/24b 2ch LVDS/eDP	SATAIII x4	GbE x1	USB 2.0 x8 USB 3.1 x4	2-wire (Tx/Rx) x 2	PCIe [x1] x 8 PCIe[x16] x1 LPC x1 SMBUS x 1	+12V	0°C ~ 60°C	—
COM-CFHB6-A10-0002	Type 6	I7-8850H	DDR4 SO-DIMM x 3	VGA, DDIx2 (up to 3)	18/24b 2ch LVDS/eDP	SATAIII x4	GbE x1	USB 2.0 x8 USB 3.1 x4	2-wire (Tx/Rx) x 2	PCIe [x1] x 8 PCIe[x16] x1 LPC x1 SMBUS x 1	+12V	0°C ~ 60°C	

COM-SKHB6/KBHB6

COM Express Type 6 Basic Size with 6th/7th Gen Intel® Core™ i-series Processor



Features

- Intel® Core™ i3/i5/i7 Processor with PCH QM170/CM236
- DDR4 SODIMM x 2, up to 32 GB, ECC Supports by SKU
- Gigabit Ethernet x 1
- 18/24-bit Dual Channel LVDS LCD/eDP, DDI x 2 (up to 3), VGA, High Definition Audio Interface
- SATA x 4
- USB 2.0 x 8, USB 3.0 x 4, GPIO 8-bit, PCI-Express [x1] x 8, PCI-Express [x16] x 1
- COM Express Type 6 Basic Size 125mm x 95mm

Specifications

System	
Form Factor	COM Express Basic Size
CPU	i7-6820EQ 4c/2.7 GHz i3-6100E 2c/2.7 GHz XEON E3-1505M-V6
CPU Frequency	Up to XEON E3-1505MV6 4C/3.0 GHz
Chipset	PCH QM170 or CM236 (by sku)/CM238
Memory Type	DDR4, SODIMM x 2, ECC Supports with CM236/CM238 sku only, up to 2133
Max. Memory Capacity	32GB
BIOS	AMI BIOS, Legacy Free
Wake on LAN	Yes
Watchdog Timer	255 levels
Power Requirement	Standard: +12V
Power Supply Type	AT/ATX Selection
Power Consumption (Typical)	Intel i7-6820EQ 2.8GHz, DDR4 16GB 3.08A@12V
Dimension (L x W)	4.92" x 3.75" (125 mm x 95 mm)
Operating Temperature	32˚F ~ 140˚F (0˚C ~ 60˚C)
Storage Temperature	-4˚F ~ 158˚F (-20˚C ~ 70˚C)
Operating Humidity	10% ~90% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE/FCC Class A
Display	
VGA/LCD Controller	Onboard 6th Gen Intel® Core™ H-series Processor, GT2
Video Output	VGA, LVDS/eDP, DDI x2
LVDS Interface	—
I/O	
Ethernet	Intel® I219, Gigabit Ethernet
Audio	HD Audio
USB Port	USB 2.0 x 8, USB 3.0 x 4
Serial Port	2-Wire UART (Tx/Rx) x 2
HDD Interface	SATA x 4
Onboard Storage	—
Expansion Slot	PCIe[x16] x 1 PCIe[x1] x 8 I2C LPC SMBus
GPIO	GPIO 8-bit
TPM	Optional

Packing List

- M2.5 Screw x 5
- COM-SKHB6 or COM-KBHB6

Optional Accessories

- **ECB-920A-A10-0001**
  COM Express Type 1/6/10 Carrier Board, Gigabit Ethernet, USB, 2 COM, 4 SATA, PCIe, AT/ATX, Legacy Free, Rev. A1.0
- **COM-FAN01**
  CPU Cooler, 125 x 95 x 26.4mm, Silver, use with HSP
- **COM-SKHB6-HSP01**
  Heat Spreader, For COM-SKHB6, Onboard CPU

CPU Supports Chart

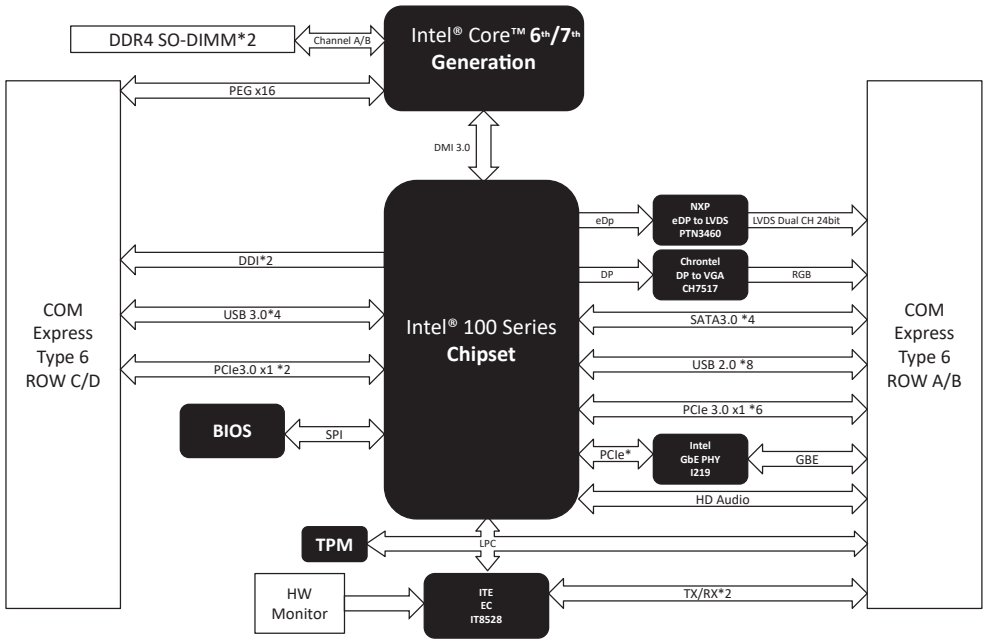
CPU	Base Frequency/ Turbo Boost GHz	Core/ Thread	Last level Cache	ECC Support/ Chipset	TDP	Graphic
E3-1505M v5	2.8/3.7	4/8	8M	Yes/CM236	45W/35W	GT2 - P530
E3-1505L v5	2/2.8	4/8	8M	Yes/CM236	25W	GT2 - P530
i7-6820EQ	2.8/3.5	4/8	8M	—	45W/35W	GT2 - P530
i7-6822EQ	2.0/2.8	4/8	8M	—	25W	GT2 - P530
i5-6440EQ	2.7/3.4	4/4	6M	—	45W/35W	GT2 - P530
i5-6442EQ	1.9/2.7	4/4	6M	—	25W	GT2 - P530
i3-6100E	2.7	2/4	3M	Yes/CM236	35W	GT2 - P530
i3-6102E	1.9	2/4	3M	Yes/CM236	25W	GT2 - P530
C-G3900E	2.4	2/2	2M	—	35W	GT1 - 510
C-G3902E	1.6	2/2	2M	—	25W	GT1 - 510

* Also equivalent to 7-series CPU

Note: All specifications are subject to change without notice.

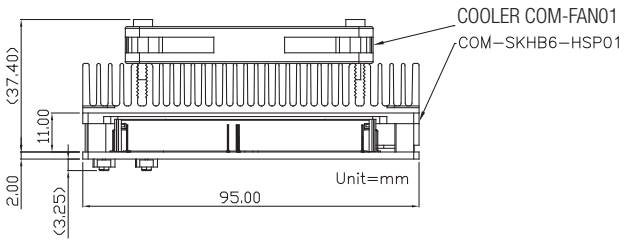
Block Diagram

Unit: mm



Dimension

Unit: mm



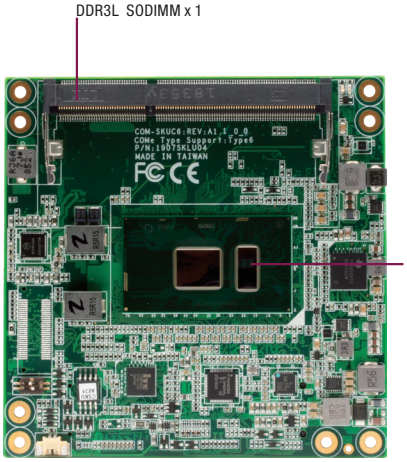
Ordering Information

Part Number	Form Factor	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion	Power	Temperature	Other
COM-KBHB6-A10-0004	6 (COM.0 Rev 3.0)	7th Gen. Intel® XEON™ 1505M v6/2.7GHz	CM238	DDR4 SODIMM x2, up to 32GB, ECC support	CRT, LVDS/eDP, DDI x2 (upto 3)	18/24b 2CH (LVDS shared with eDP)	SATA x4	GbE x1	USB 3.0 x4 USB 2.0 x8	2 (Tx/Rx)	PCI-E[x1] x8 PCI-E[x16] x1	12V	—
COM-SKHB6-A10-0001	6 (COM.0 Rev 2.1)	6th Gen. Intel® Core™ i7-6820EQ/2.8GHz	QM170	DDR4 SODIMM x2, up to 32GB	CRT, LVDS/eDP, DDI x2 (upto 3)	18/24b 2CH (LVDS shared with eDP)	SATA x4	GbE x1	USB 3.0 x4 USB 2.0 x8	2 (Tx/Rx)	PCI-E[x1] x8 PCI-E[x16] x1	12V	—
COM-SKHB6-A10-0003	6 (COM.0 Rev 2.1)	6th Gen. Intel® Core™ i3-6100E/2.7GHz	CM236	DDR4 SODIMM x2, up to 32GB, ECC support	CRT, LVDS/eDP, DDI x2 (upto 3)	18/24b 2CH (LVDS shared with eDP)	SATA x4	GbE x1	USB 3.0 x4 USB 2.0 x8	2 (Tx/Rx)	PCI-E[x1] x8 PCI-E[x16] x1	12V	—

*Other CPU sku or combination can be supported as well.

COM-SKUC6/KBUC6

COM Express Type 6 Compact Size with Intel® 6th/7th Generation Core™/Celeron™ U-Series SoC Processors



Features

- 6th/7th Generation Intel® Core™/Celeron™ i3/i5/i7 U-Series SoC
- DDR3L SODIMM x 1, up to 8 GB, non-ECC only
- Intel® I219-LM Gigabit Ethernet x 1
- 18/24-bit Dual-Channel LVDS LCD / eDP, VGA , DDI up to 2
- High Definition Audio Interface
- SATA3 x 3 (SATA Port 3 for i5 / i7 sku only)
- USB 2.0 x 8, USB 3.0 x 4, GPIO 8-bit, PCI-Express [x1] x 8
- COM Express Type 6 Compact Size 95mm x 95mm

Gigo LAN | HD Audio | DDR 3L | USB 2.0 | USB 3.0 | PCI Express

Specifications

System	
Form Factor	COM Express Compact Size, Type 6
CPU	Onboard 6th/7th Generation Intel® Core™/Celeron™ i3/i5/i7 U-series SoC Processor
CPU Frequency	Up to i7-7600U 2C/ 2.8 GHz
Chipset	Onboard 6th/7th Generation Intel® Core™/Celeron™ U-series SoC
Memory Type	DDR3L 1600, SODIMM x 1
Max. Memory Capacity	8 GB
BIOS	AMI BIOS, Legacy Free
Wake on LAN	Yes
Watchdog Timer	255 levels
Power Requirement	Nominal : +12V
Power Supply Type	AT/ATX
Power Consumption (Typical)	i7-7600U, 8GB DDR3L, full loading 1.32A@12V during 100% loading burn in test
Dimension (L x W)	3.75" x 3.75" (95 mm x 95 mm)
Operating Temperature	32˚F ~ 140˚F (0˚C ~ 60˚C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	10% ~80% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE/FCC Class A
Display	
VGA/LCD Controller	Onboard 6th Gen Intel® Core U-Series Processor, GT2-520/510 Onboard 7th Gen Intel® Core U-Series Processor, GT2-620/610
Video Output	VGA, LVDS/eDP, DDI x 1 (up to 2)
LVDS Interface	—
I/O	
Ethernet	Intel® I219-LM Gigabit Ethernet
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8, USB 3.0 x 4
Serial Port	2-Wire UART (Tx/Rx) x 2
HDD Interface	SATA3 x 2 ; i5 & i7 up to 3
Onboard Storage	—
Expansion Slot	PCIe[x1] x 8, I2C, LPC, SMBus
GPIO	GPIO 8-bit
TPM	Optional

Packing List

- COM-SKUC6 or COM-KBUC6

Optional Accessories

- **ECB-920A-A10-0001**
  COM Express Type 1/6/10 Carrier Board, Gigabit Ethernet, USB, 2 COM, 4 SATA, PCIe, AT/ATX, Legacy Free, Rev. A1.0
- **COM-FAN02**
  CPU Cooler, 95 x 95 x 26.5mm, Silver, use with HSP
- **COM-KBUC6-HSP01**
  Heatspreader, For COM-KBUC6/SKUC6, Onboard CPU

HSIO Configurable Options

PICMG PCIe No.*	Config 1 (Default)	Config 2 (Custom BIOS need)
PCIe#0	PCIe[x1]	PCIe[x4]
PCIe#1	PCIe[x1]	—
PCIe#2	PCIe[x1]	—
PCIe#3	PCIe[x1]	—
PCIe#4	PCIe[x1]	PCIe[x1]
PCIe#5	x	PCIe[x1]
PCIe#6	x	PCIe[x1]
PCIe#7	x	PCIe[x1]
GbE***	GbE	GbE
SATA#0	SATA#0	SATA#0
SATA#1	SATA#1	SATA#1
SATA#2**	SATA#2	SATA#2
Remark	6 PCIe Devices 9 PCIe Lanes	6 PCIe Devices 12 PCIe Lanes

*Only a maximum of 6 PCIe port or (Devices) or 12 PCIe Lanes can be enabled at any time
**SATA#2 default disable, SATA#2 support by i7, i5 CPU only
***5 PCIe port + GbE support as default

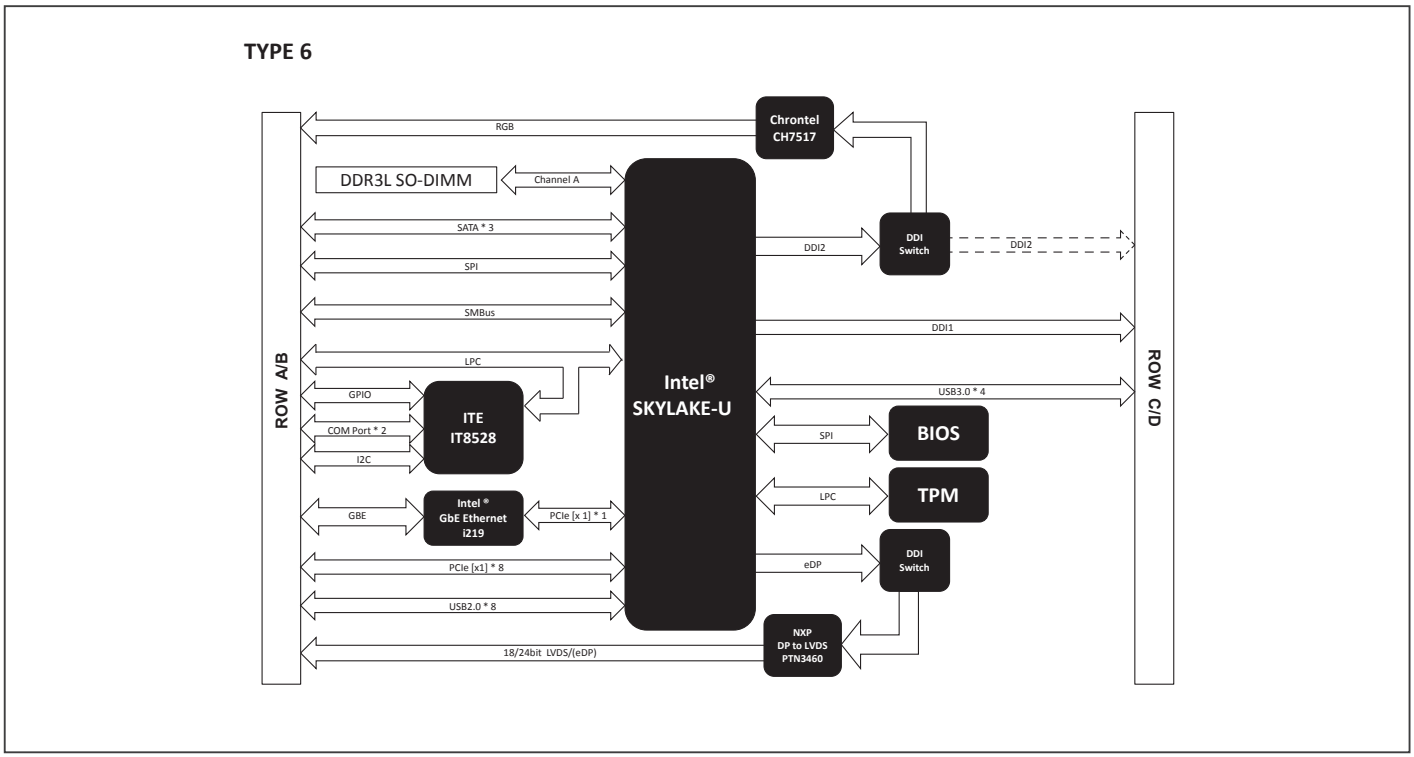
CPU Supports Chart

CPU	Base Frequency/ Turbo Boost GHz	Core/ Thread	Last level Cache	TDP	Graphic
i7-7600U	2.8 GHz / 3.9 GHz	2/4	4M	15W	GT2-620
i5-7300U	2.6 GHz / 3.5 GHz	2/4	3M	15W	GT2-620
i3-7100U	2.4 GHz	2/4	3M	15W	GT2-620
C-3965U	2.2 GHz	2/2	2M	15W	GT2-610
i7-6600U	2.6 GHz / 3.4 GHz	2/4	4M	15W	GT2-520
i5-6300U	2.4 GHz / 3.0 GHz	2/4	3M	15W	GT2-520
i3-6100U	2.3 GHz	2/4	3M	15W	GT2-520
C-3955U	2.0 GHz	2/2	2M	15W	GT2-510

Note: All specifications are subject to change without notice.

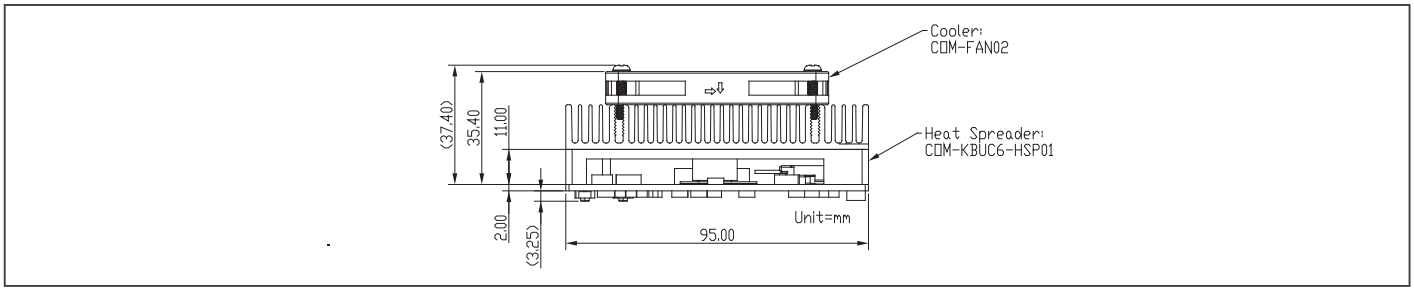
Block Diagram

Unit: mm



Dimension

Unit: mm

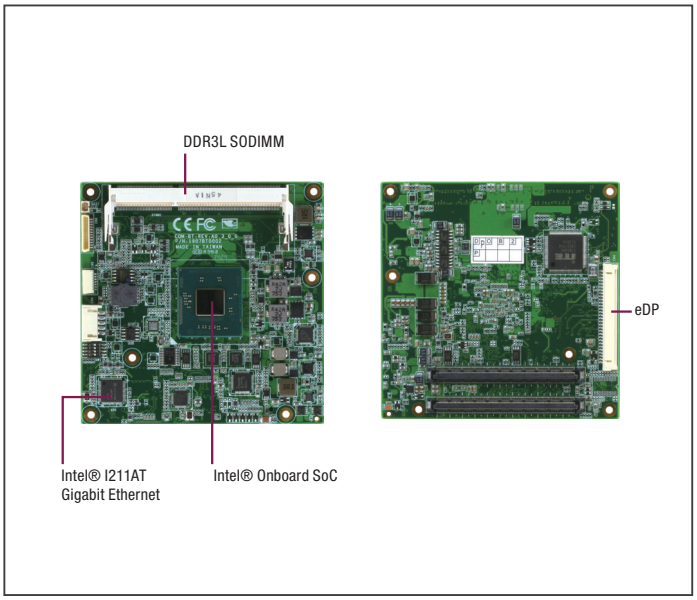


Ordering Information

Part Number	Form Factor	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion	Power	Temperature	Other
COM-KBUC6-A11-0001	COM Express Type 6	i7-7600U, 2.8 GHz	DDR3L up to 8 GB, SO-DIMM x1	CRT, LVDS/eDP, DDI x1	24bit, 2CH	SATA3 x 2 (up to 3)	GbE x 1	USB 3.0 x 4, USB 2.0 x 8	2-wire (Tx/Rx) x 2	PCIe[x1] x 8	+12V	0°C ~ 60°C	LPC, GPIO 8 bit, I2C, SMBus
COM-KBUC6-A11-0002	COM Express Type 6	i5-7300U, 2.6 GHz	DDR3L up to 8 GB, SO-DIMM x1	CRT, LVDS/eDP, DDI x1	24bit, 2CH	SATA3 x 2 (up to 3)	GbE x 1	USB 3.0 x 4, USB 2.0 x 8	2-wire (Tx/Rx) x 2	PCIe[x1] x 8	+12V	0°C ~ 60°C	LPC, GPIO 8 bit, I2C, SMBus
COM-KBUC6-A11-0003	COM Express Type 6	i3-7100U, 2.4 GHz	DDR3L up to 8 GB, SO-DIMM x1	CRT, LVDS/eDP, DDI x1	24bit, 2CH	SATA3 x 2	GbE x 1	USB 3.0 x 4, USB 2.0 x 8	2-wire (Tx/Rx) x 2	PCIe[x1] x 8	+12V	0°C ~ 60°C	LPC, GPIO 8 bit, I2C, SMBus
COM-KBUC6-A11-0004	COM Express Type 6	Celeron® 3965U, 2GHz	DDR3L up to 8 GB, SO-DIMM x1	CRT, LVDS/eDP, DDI x1	24bit, 2CH	SATA3 x 2	GbE x 1	USB 3.0 x 4, USB 2.0 x 8	2-wire (Tx/Rx) x 2	PCIe[x1] x 8	+12V	0°C ~ 60°C	LPC, GPIO 8 bit, I2C, SMBus
COM-SKUC6-A11-0001	COM Express Type 6	i7-6600U, 2.6 GHz.	DDR3L up to 8 GB, SO-DIMM x1	CRT, LVDS/eDP, DDI x1	24bit, 2CH	SATA3 x 2 (up to 3)	GbE x 1	USB 3.0 x 4, USB 2.0 x 8	2-wire (Tx/Rx) x 2	PCIe[x1] x 8	+12V	0°C ~ 60°C	LPC, GPIO 8 bit, I2C, SMBus
COM-SKUC6-A11-0002	COM Express Type 6	i5-6300U, 2.4 GHz	DDR3L up to 8 GB, SO-DIMM x1	CRT, LVDS/eDP, DDI x1	24bit, 2CH	SATA3 x 2 (up to 3)	GbE x 1	USB 3.0 x 4, USB 2.0 x 8	2-wire (Tx/Rx) x 2	PCIe[x1] x 8	+12V	0°C ~ 60°C	LPC, GPIO 8 bit, I2C, SMBus
COM-SKUC6-A11-0003	COM Express Type 6	i3-6100U, 2.3 GHz	DDR3L up to 8 GB, SO-DIMM x1	CRT, LVDS/eDP, DDI x1	24bit, 2CH	SATA3 x 2	GbE x 1	USB 3.0 x 4, USB 2.0 x 8	2-wire (Tx/Rx) x 2	PCIe[x1] x 8	+12V	0°C ~ 60°C	LPC, GPIO 8 bit, I2C, SMBus
COM-SKUC6-A11-0004	COM Express Type 6	Celeron® 3955U, 2GHz	DDR3L up to 8 GB, SO-DIMM x1	CRT, LVDS/eDP, DDI x1	24bit, 2CH	SATA3 x 2	GbE x 1	USB 3.0 x 4, USB 2.0 x 8	2-wire (Tx/Rx) x 2	PCIe[x1] x 8	+12V	0°C ~ 60°C	LPC, GPIO 8 bit, I2C, SMBus

COM-BT

COM Express Type 6 CPU Module with Onboard Intel® Atom™/ Celeron® Processor SoC



Features

- Intel® Atom™/ Celeron® Processor SoC
- DDR3L 1066/1333 MHz SODIMM x 1, Up to 8 GB
- Gigabit Ethernet with Intel® Controller
- CRT, Up to 24-bit Dual-channel LVDS, eDP (Optional), up to DDI x 2 (Share w/ eDP LVDS)
- High Definition Audio Interface
- SATA 3.0 Gb/s x 2
- USB 2.0 x 7, USB 3.0 x 1
- PCI-Express [x1] x 3
- COM Express Compact Module, Pin-out Type 6, COM.0 Rev. 2.1
- Supports Indusrtial Temperture

Specifications

System	
Form Factor	COM Express, Compact, Pin-out Type 6
CPU	Onboard Intel® Atom™ SoC
CPU Frequency	Intel® Atom™N2930 (1.83 GHz), N2807 (1.58 GHz), E3845 (1.91 GHz), E3827 (1.75 GHz), E3825 (1.33 GHz), J1900 (2.0 GHz)
Chipset	Intel® Atom™ SoC
Memory Type	DDR3L 1066/1333 MHz SODIMM x 1
Max. Memory Capacity	8 GB
BIOS	AMI BIOS
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Nominal: +12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	0.92A@12V, full load, J1900 0.48A@12V, full load, N2807
Dimension (L x W)	3.74" x 3.74" (95mm x 95mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) optional
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Atom™ SoC
Video Output	CRT, LVDS LCD, DDI
LVDS Interface	—
I/O	
Ethernet	Intel® I211, Gigabit Ethernet
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 7, USB 3.0 x 1
Serial Port	Tx/Rx x 2
HDD Interface	SATA x 2
Onboard Storage	—
Expansion Slot	PCIe [x1] x 3 (up to 3 devices) LPC SMbus I2C
GPIO	GPIO 8-bit
TPM	—

Packing List

- COM-BT Rev.A3.0

Optional Accessories

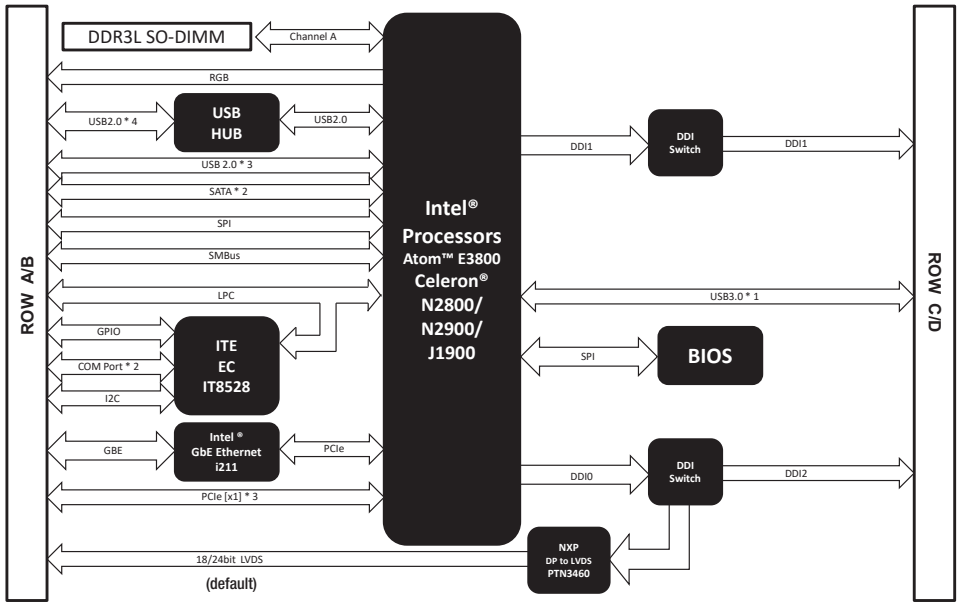
- **ECB-920A-A10-0001**
  COM Type 1/6/10 Carrier Board, ATX, GbE, 8 USB, 2 COM, 4 SATA, PCIe, AT/ATX, Legacy Free, Rev. A1.0
- **PER-A126**
  Heat Spreader, For COM-BT, Onboard CPU
- **COM-HSK02**
  Heat Sink, 95 x 95 x 26.5mm, Silver, use w/HSP
- **COM-FAN02**
  CPU Cooler, 95 x 95 x 26.5mm, Silver, use with HSP
- **COM-BT-HSK01**
  Heat Sink, 95 x 95 x 22mm, Silver, COM-BT

Note: All specifications are subject to change without notice.

Block Diagram

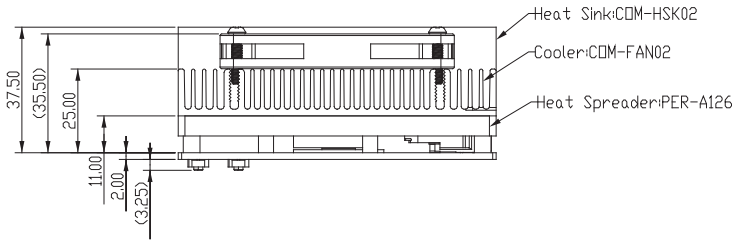
Unit: mm

TYPE 6



Dimension

Unit: mm

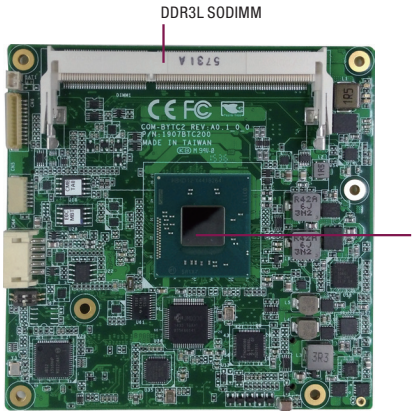


Ordering Information

Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Temp.
COM-BT-A30-0001	6 (COM.0 Rev. 2.1)	Quad Core N2930 (1.83 GHz)	DDR3L1066/1333, Max. 8 GB	VGA, HDMI, LVDS, DP, eDP (Optional)	18/24b 2CH LVDS	SATA x 2	GbE x 1	USB 3.0 x 1 USB 2.0 x 7	2 (Tx/Rx)	PCI-Express [x1] x 3, LPC bus x 1, SMBUS x 1	12V	0°C - 60°C
COM-BT-A30-0003	6 (COM.0 Rev. 2.1)	Quad Core E3845 (1.91 GHz)	DDR3L1066/1333, Max. 8 GB	VGA, HDMI, LVDS, DP, eDP (Optional)	18/24b 2CH LVDS	SATA x 2	GbE x 1	USB 3.0 x 1 USB 2.0 x 7	2 (Tx/Rx)	PCI-Express [x1] x 3, LPC bus x 1, SMBUS x 1	12V	0°C - 60°C

COM-BYTC2

COM Express Type 2 Compact Size with Intel® Atom™/ Celeron® Processor



Features

- Intel® Atom™/ Celeron® Processor SoC
- DDR3L SODIMM x 1, up to 8 GB, non-ECC Support
- Gigabit Ethernet x 1
- 18/24-bit Dual Channel LVDS LCD, VGA, eDP
- High Definition Audio Interface
- SATA x 1, PATA x 1 (1 Device)
- USB 2.0 x 7, GPIO 8-bit, PCI-Express [x1] x 2 (Optional, up to 3), 32-bit PCI x 4
- COM Express Type 2 Compact Size 95mm x 95mm

Specifications

System	
Form Factor	COM Express Compact Size
CPU	Onboard Intel® Atom™ Processor SoC
CPU Frequency	Up to J1900 1.91 GHz, Quad core
Chipset	Intel® Atom™ SoC
Memory Type	DDR3L 1066/1333, SODIMM x 1
Max. Memory Capacity	8GB
BIOS	AMI BIOS, Legacy Free
Wake on LAN	Yes
Watchdog Timer	255 levels
Power Requirement	Standard: +12V
Power Supply Type	AT/ATX Selection
Power Consumption (Typical)	1A@ 12V with J1900, full load
Dimension (L x W)	3.75" x 3.75" (95mm x 95mm)
Operating Temperature	32˚F ~ 140˚F (0˚C ~ 60˚C)
Storage Temperature	-4˚F ~ 158˚F (-20˚C ~ 70˚C)
Operating Humidity	10% ~90% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE/FCC Class A
Display	
VGA/LCD Controller	Intel® Atom™ SoC
Video Output	VGA, LVDS, eDP
LVDS Interface	—
I/O	
Ethernet	Intel® I210IT, Gigabit Ethernet
Audio	HD Audio
USB Port	USB 2.0 x 7
Serial Port	—
HDD Interface	SATA x 1, PATA x 1
Onboard Storage	—
Expansion Slot	PCIe[x1] x 2 (up to 2 devices) PCI x 4 LPC SMBus I2C
GPIO	GPIO 8-bit
TPM	Optional

Packing List

- M2.5 Screw x 5
- COM-BYTC2

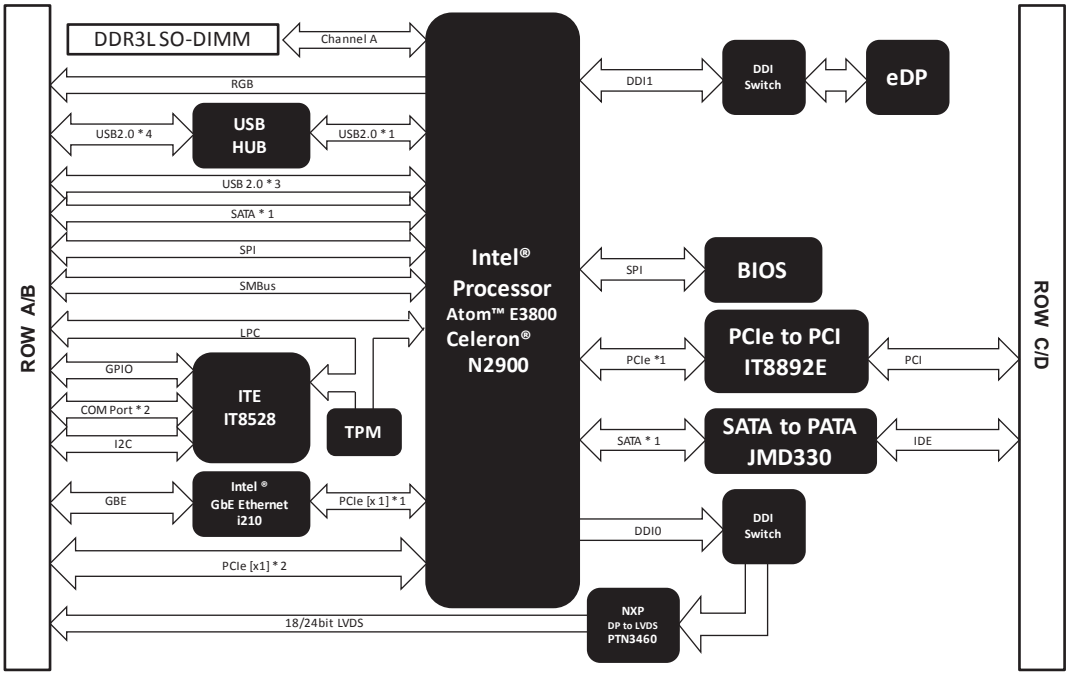
Optional Accessories

- **TF-ECB-916M-B11-01**
  COM Express Carrier board, microATX, Dual Ethernet, 2 COM (Winbond), USB, PCI-Express, AT/ATX, Rev.B1.1
- **PER-A126**
  Heat Spreader, For COM-BYTC2, Onboard CPU
- **COM-HSK02**
- **COM-FAN02**
  CPU Cooler, 95 x 95 x 26.5mm, Silver, use with HSP

Note: All specifications are subject to change without notice.

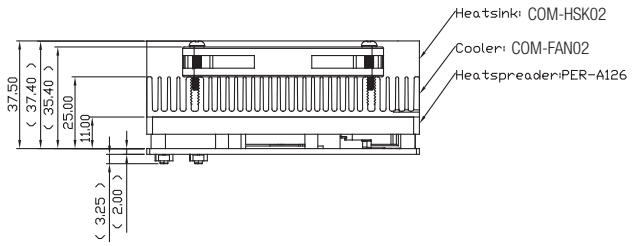
Block Diagram

Unit: mm



Dimension

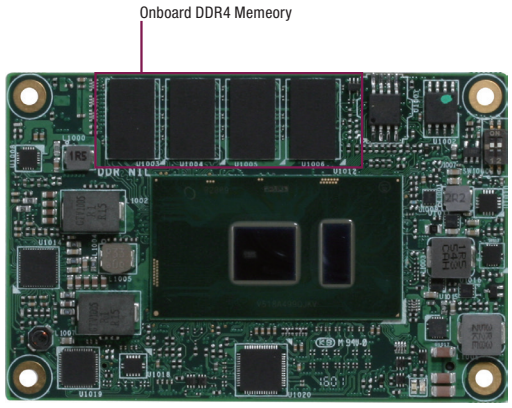
Unit: mm



Ordering Information

Part Number	Form Factor	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion	Power	Temperature	Other
COM-BYTC2-A10-0001	COM Express Type 2	J1900, 2.0 GHz	DDR3 (Max 8 GB), SODIMM x 1	CRT, LVDS/eDP	24bit, 2CH	SATA, PATA x 1	GbE x 1	USB 2.0 x 7	—	PCIe[x1] x2(up to 3), PCI	+12V (ATX)	0˚C ~ 60˚C	LPC,GPIO 8Bit, HDA, I2C, SMBus
COM-BYTC2-A10-0002	COM Express Type 2	E3845, 1.91 GHz	DDR3 (Max 8 GB), SODIMM x 1	CRT, LVDS/eDP	24bit, 2CH	SATA, PATA x 1	GbE x 1	USB 2.0 x 7	—	PCIe[x1] x2(up to 3), PCI	+12V (ATX)	0˚C ~ 60˚C	LPC,GPIO 8Bit, HDA, I2C, SMBus

COM Express Type 10 with Intel® 6th Gen Core™ ULT Series Processor



Features

- Intel® 6th Gen Core™ ULT Series CPU
- Onboard 4GB DDR4 2133 Memory
- Gigabit Ethernet x 1
- 18/24-bit Single-Channel LVDS LCDs/eDP, DDI x 1
- High Definition Audio Interface
- SATA x 2
- USB3.0 x 2, USB2.0 x 8
- PCI-Express [x1] x 4
- GPIO x 8, SMbus, I2C, LPC
- COM Express Type 10
- Mini Size, 84mm x 55mm

Specifications

System	
Form Factor	COM Express Mini size, Type 10
CPU	6th generation Intel® Core™ ULT SeriesProcessor
CPU Frequency	Up to i7-6600U, 2c/4t, 2.6GHz up to 3.4GHz
Chipset	Intel® Core™/Celeron® Processor SoC
Memory Type	Non-EEC DDR4-2133
Max. Memory Capacity	4GB DDR4 Onboard
BIOS	AMI BIOS, Legacy free
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Normal: +12V
Power Supply Type	AT/ATX
Power Consumption (Typical)	i7-6600U 12V@1.5A, i3-6100U 12V@1.42A. Under 100% loading. CPU Set to 15W TDP. CPU base frequency may change accordingly.
Dimension (L x W)	3.31" x 2.17" (84mm x 55mm)
Operating Temperature	32°F~ 140°F (0°C ~ 60°C) -40°F~ 185°F (-40°C ~ 85°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, noncondensing
MTBF (Hours)	80,000
Certification	CE/FCC Class A
Display	
VGA/LCD Controller	Onboard 6th Gen. intel® Core™ U-Series Processor, GT2-520/510
Video Output	LVDS/eDP, DDI x 1
LVDS Interface	Supports 18-bit and 24-bit Single channel
I/O	
Ethernet	Intel® I219 GbE
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8, USB 3.0 x 2
Serial Port	2-wire UART x 2 (TX/RX)
HDD Interface	SATA x 2
Onboard Storage	—
Expansion Slot	PCIe[x1] x4 (up to 4 devices) LPC SMBus I2C
GPIO	8-bit
TPM	fTPM optional

Packing List

- NANOCOM-SKU

Optional Accessories

- **ECB-920A-A10-0001**
  COMe Type 1/6/10.Carrier Board.ATX.GbE.8USB,COM.4SATA.PCIe.AT/ATX.Legacy Free.Rev. A1.0
- **NANOCOM-SKU-HSP01**
  Heat Spreader, 84 x 55 x 11 mm, black, NanoCOM-SKU
- **NANOCOM-FAN01**
  CPU Cooler, 84 x 55 x 22.2 mm, sliver, use w/ HSP
- **NANOCOM-FAN02**
  CPU cooler, 84 x 55 x 22.2 mm, silver, use w/HSP.WiTAS II

CPU Support Chart

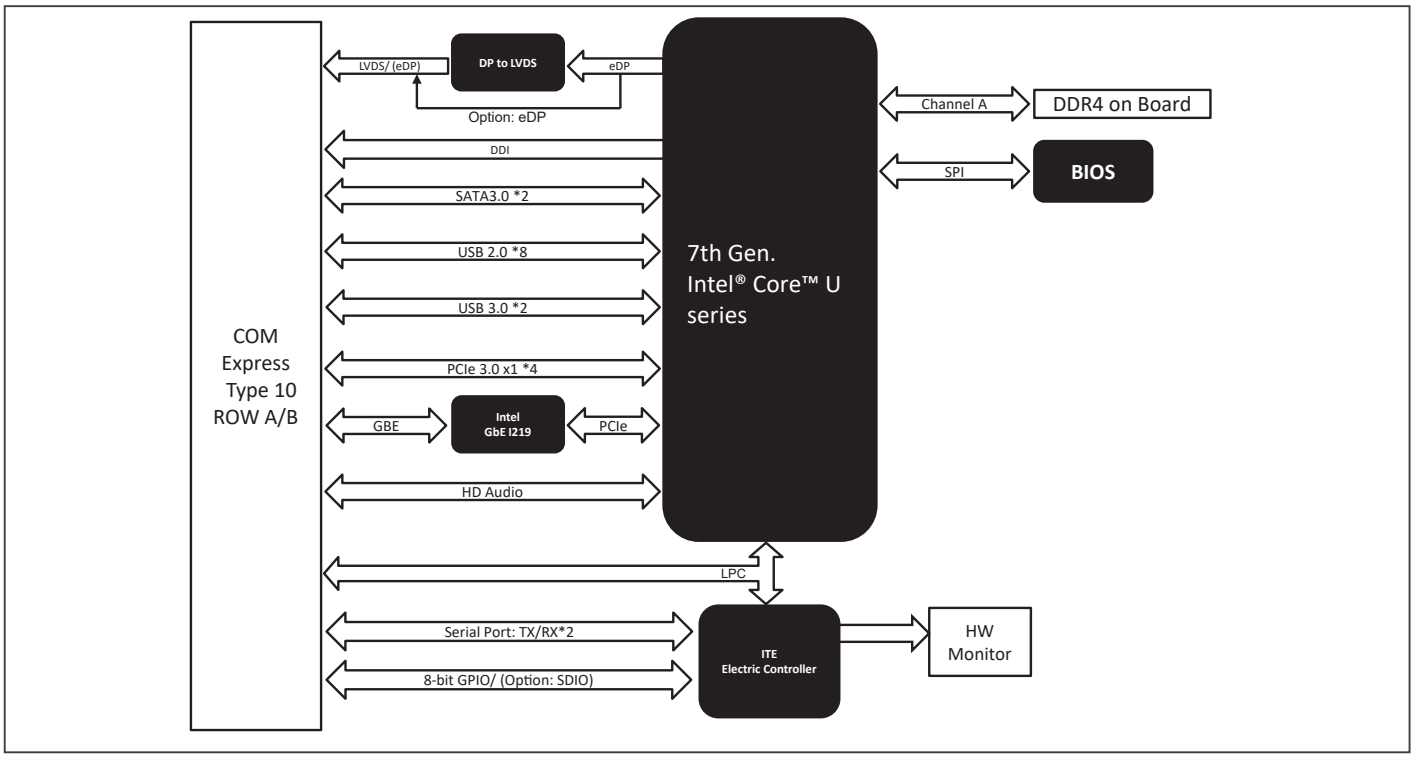
CPU	Base Frequency/ Turbo Boost GHz	Core/ Thread	Last level Cache	TDP	Graphic
i7-6600U	2.6/3.4	2/4	4M	15W	GT2 - 520
i5-6300U	2.4/3.0	2/4	3M	15W	GT2 - 520
i3-6100U	2.3	2/4	3M	15W	GT2 - 520
C-3955U	2	2/2	2M	15W	GT1 - 510

*Contact us for any questions

Note: All specifications are subject to change without notice.

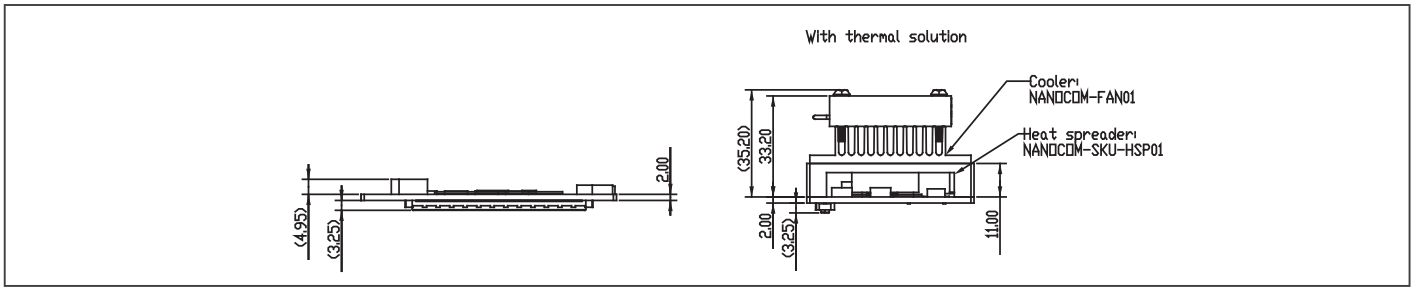
Block Diagram

Unit: mm



Dimension

Unit: mm

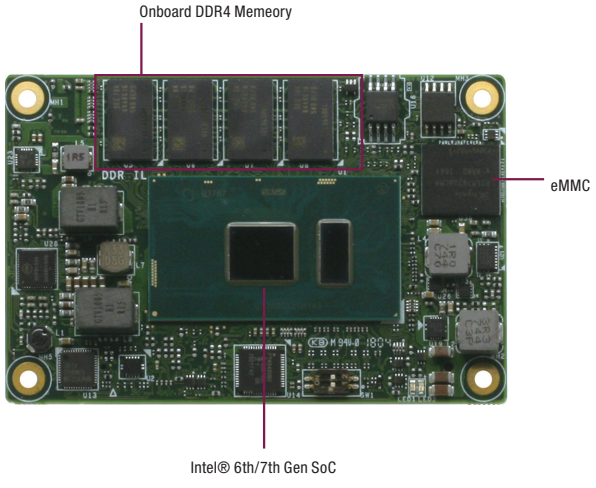


Ordering Information

Standard Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Power Temp	Others
NANOCOM-SKU-A10-0001	10 (COM.0 Rev 2.1)	6th Gen. Intel® Core™ i7-6600U 2c/2.6GHz	4GB DDR4	LVDS/(eDP), DDI x1	18/24b 1CH (LVDS share with eDP)	SATA x2	GbE x1	USB3.0 x2 USB2.0 x8	2 (Tx/Rx)	PCI-E[x1] x4	12V	0°C~60°C	I2C, SMBus, 8b-GPIO/(SDIO)
NANOCOM-SKU-A10-0003	10 (COM.0 Rev 2.1)	6th Gen. Intel® Core™ i3-6100U 2c/2.3GHz	4GB DDR4	LVDS/(eDP), DDI x1	18/24b 1CH (LVDS share with eDP)	SATA x2	GbE x1	USB3.0 x2 USB2.0 x8	2 (Tx/Rx)	PCI-E[x1] x4	12V	0°C~60°C	I2C, SMBus, 8b-GPIO/(SDIO)

NanoCOM-KBU-A20

COM Express Type 10 Mini Size with 7th Intel® Core™ U SoC Processors



Features

- 7th Generation Intel® Core™ U- Series SoC Processor
- Onboard 8GB DDR4 2666 Memory
- Onboard 64 GB eMMC Support
- Intel® I219LM Gigabit Ethernet x 1
- 18/24-bit Single-Channel LVDS LCDs/eDP, DDI x 1
- High Definition Audio Interface
- SATA3 x 2
- USB 3.0 x 2, USB 2.0 x 8
- PCI-Express [x1] x 4
- GPIO x 8, SMbus, I2C, LPC
- COM Express Type 10, Mini Size, 84 mm x 55 mm
- Supports Industrial Grade Temperature

Specifications

System	
Form Factor	COM Express Mini size, Type 10
CPU	Onboard 7th Generation Intel® Core™ U-series SoC Processor
CPU Frequency	Up to i7-7600U 2C / 2.8 GHz
Chipset	Onboard 7th Generation Intel® Core™ U-series SoC
Memory Type	Onboard Non-ECC DDR4-2133
Max. Memory Capacity	Onboard 8GB DDR4
BIOS	AMI BIOS, Legacy free
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Normal: +12V
Power Supply Type	AT/ATX
Power Consumption (Typical)	i7-7600U, Onboard 8GB DDR4, full loading 1.83A@12V during 100% loading burn in test
Dimension (L x W)	3.31" x 2.17" (84 mm x 55 mm)
Operating Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C) -40 °F ~ 185 °F (-40 °C ~ 80 °C) Option for NANOCOM-SKU series
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE/FCC Class A
Display	
Display Controller	Onboard 7th Gen Intel® Core U-Series Processor, GT2-620/610
Video Output	LVDS/eDP, DDI x 1
LVDS Interface	Supports 18-bit and 24-bit Single channel
I/O	
Ethernet	Intel® I219-LM Gigabit Ethernet
Audio	High Definition Audio Interface
USB port	USB 2.0 x 8, USB 3.0 x 2
Serial Port	2-Wire UART (Tx/Rx) x 2
HDD Interface	SATA3 x 2
Onboard Storage	eMMC Optional
Expansion Slot	PCIe [x1] x 4 (up to 4 devices) LPC SMBus I2C
GPIO	8-bit
TPM	fTPM Supported

Packing List

- NanoCOM-KBU-A20

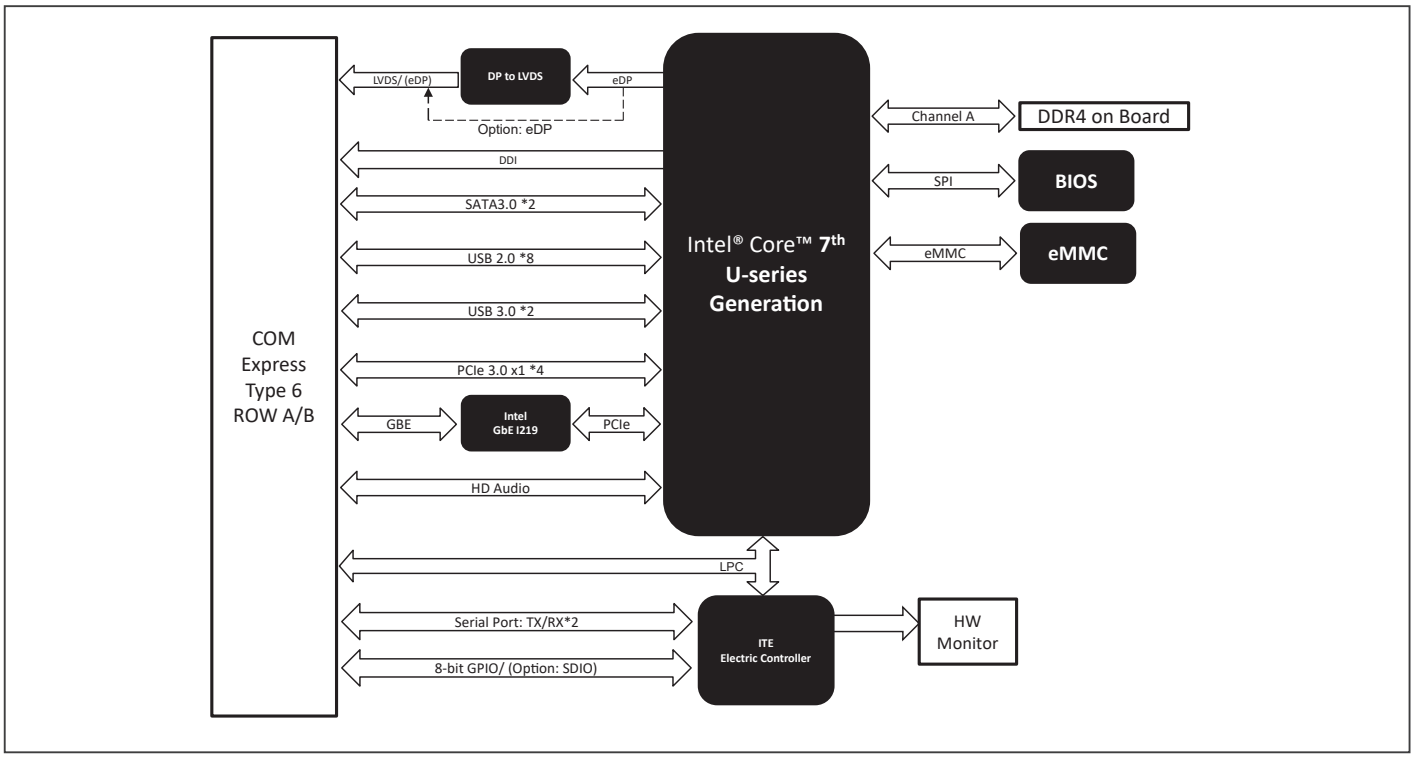
Optional Accessories

- **ECB-920A-A10-0001**
  COM Type 1/6/10 Carrier Board, ATX, GbE, 8 USB, 2 COM, 4 SATA, PCIe, AT/ATX, Legacy Free, Rev. A1.0
- **NanoCOM-SKU-HSP01**
  Heat Spreader, 84 x 55 x 11 mm, Black, NanoCOM-SKU
- **NanoCOM-FAN01**
  CPU Cooler, 84 x 55 x 22.2 mm, Silver use w/ HSP
- **NanoCOM-KBU-FAN01**
  CPU Cooler, 84 x 55 x 18 mm, Black, NanoCOM-KBU

Note: All specifications are subject to change without notice.

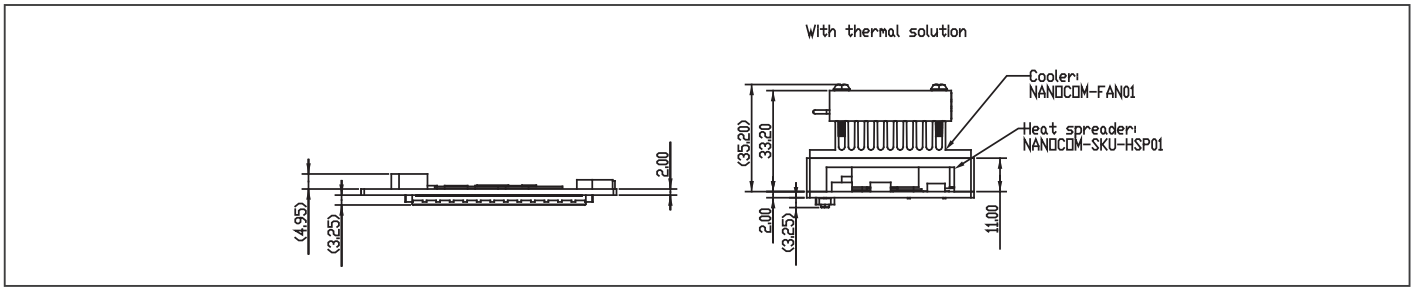
Block Diagram

Unit: mm



Dimension

Unit: mm



Ordering Information

Standard Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Temp	Others
NanoCOM-KBU-A20-0001	10 (COM.0 Rev 3.0)	7th Gen. Intel® Core™ i7-7600U 2.8 GHz	8GB DDR4	LVDS/(eDP), DDI x1	18/24b 1CH (LVDS share with eDP)	SATA3 x 2 eMMC 64GB	GbE x 1	USB 3.0 x 2 USB 2.0 x 8	2-wire (Tx/Rx) x 2	PCIe [x1] x 4	+12V	0°C~60°C	LPC, GPIO 8 bit, I2C, SMBus

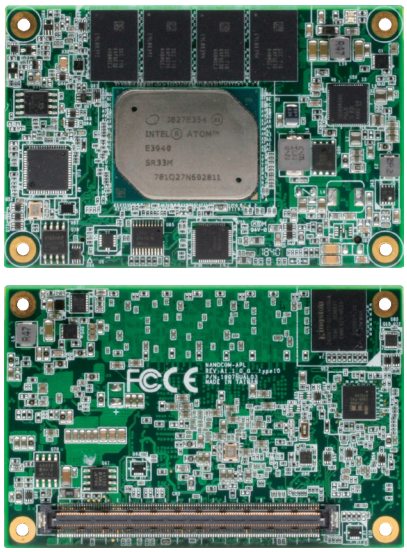
CPU Supports Chart

CPU Kabylake	Base Frequency/Turbo Boost GHz	Core/Thread	Graphic
i7-7600U	2.8/3.9	2/4	GT2 - 520
i5-7300U	2.6/3.5	2/4	GT2 - 520
i3-7100U	2.4	2/4	GT2 - 520
C-3965U	2.2	2/2	GT1 - 510

* 6xxxU SoC supported as option

NanoCOM-APL

COM Express Type 10 Module with Intel® Atom™ Processor SoC



Features

- Intel® Atom™/Celeron®/Pentium® SoC
- Onboard Memory LPDDR4 4GB/8GB
- Intel® I210/I211
- Support eDP/LVDS, DDI D
- SATA x2, eMMC 5.x (optional, up to 64GB)
- USB 2.0 x8 + USB 3.0 x2
- 2-wire UART, Tx/Rx x2
- PCI-Express [x1] x4, 3 device available at anytime
- DC Input Range, 12V
- COM Express Mini Size, Pin-Out Type 10

Specifications

System	
Form Factor	COM Express Mini size, Type 10
CPU	Onboard Intel® Atom™/Celeron®/Pentium® SoC
CPU Frequency	Up to 2.5 GHz
Chipset	Intel® Atom™/Celeron®/Pentium® SoC
Memory Type	Onboard LPDDR4 4GB (Default) / 8GB (Optional)
Max. Memory Capacity	8GB LPDDR4 Onboard
BIOS	AMI BIOS, Legacy free
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Standard : +12V, AT/ATX
Power Supply Type	AT/ATX
Power Consumption (Typical)	Up to E3950 TDP 12W CPU
Dimension (L x W)	3.31" x 2.17" (84mm x 55mm)
Operating Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE/FCC Class A
Display	
Display Controller	Intel® HD Graphics 500 / 505
Video Output	LVDS LCD/eDP, DDI x 1
LVDS Interface	Supports 18-bit and 24-bit Single channel
I/O	
Ethernet	Intel® I210IT
Audio	High Definition Audio Interface
USB port	USB 2.0 x 8, USB 3.0 x 2
Serial Port	TX/RX x 2
HDD Interface	SATA 3 x 2
Onboard Storage	Optional onboard eMMC
Expansion Slot	PCIe [x1] x 4 (up to 3 devices) LPC SMBus I2C
GPIO	GPIO 8-bit
TPM	—

Packing List

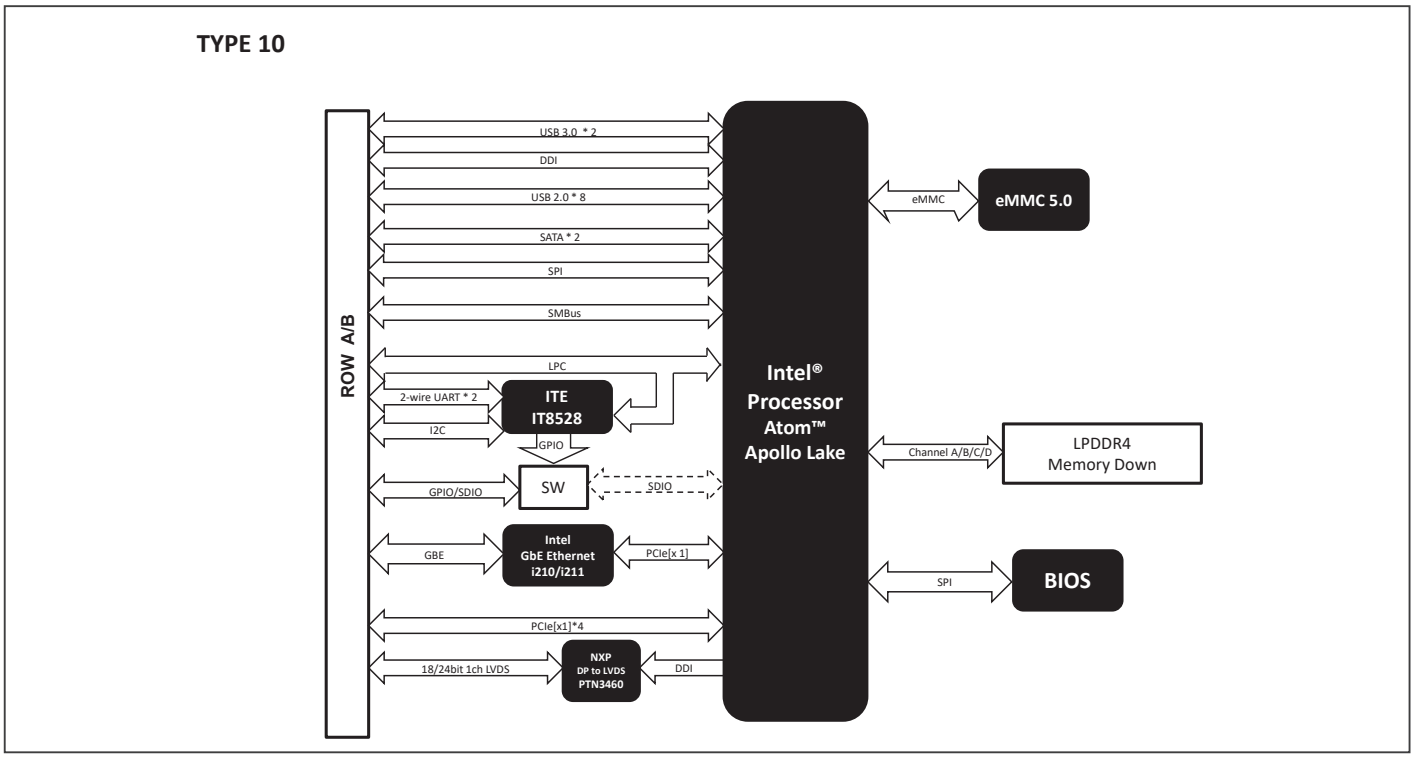
- NanoCOM-APL

Optional Accessories

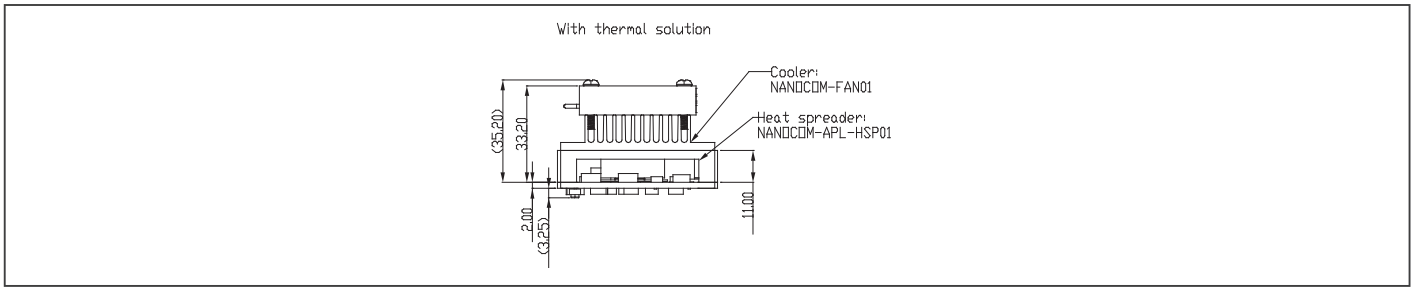
- **NanoCOM-APL-E-HSP01**
  Heat Spreader 84 x 55 x 11 mm, Black, NanoCOM-APL For E39xx CPU only
- **NanoCOM-APL-N-HSP01**
  Heat Spreader 84 x 55 x 11 mm, Black, NanoCOM-APL For Nxxx CPU only
- **NanoCOM-FAN01**
  CPU Cooler, 84 x 55 x22.2 mm, Silver, use w/HSP
- **ECB-920A-A10-0001**
  COM Type 1/6/10, Carrier Board, ATX, GbE, 8USB, 2COM, 4SATA, PCIe, AT/ATX, Legacy Free, Rev. A1.0

Note: All specifications are subject to change without notice.

Block Diagram Unit: mm



Dimension Unit: mm

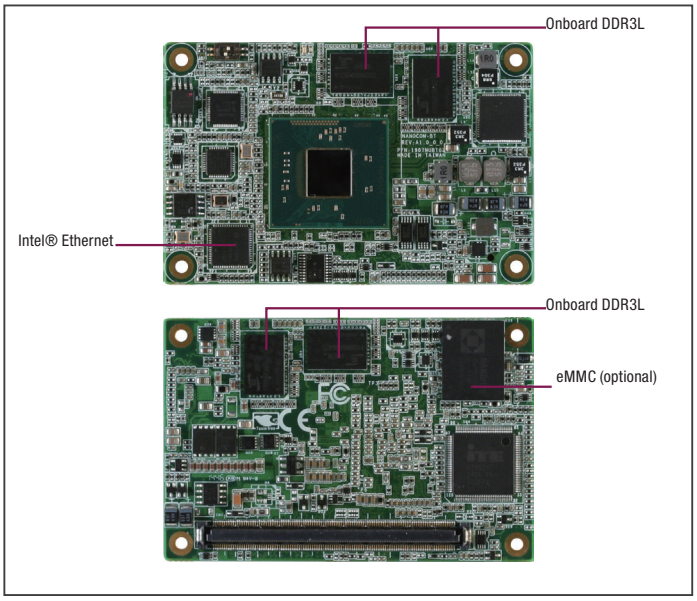


Ordering Information

Standard Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Temp	Others
NANOCOM-APL-A11-0001	Type 10 (COM.0 Rev3.0)	N4200	4GB DDR4	LVDS, DDIx1	18/24 bit 1-channel (Optional : eDP)	SATA x2 32GB eMMC	GbE x 1	USB 3.0 x 2 USB 2.0 x 8	2 (TX/RX)	PCI-E[x1] x4	12V	0°C~60°C	I2C, SMBus, 8b-GPIO/(SDIO)
NANOCOM-APL-A11-0002	Type 10 (COM.0 Rev3.0)	N3350	4GB DDR4	LVDS, DDIx1	18/24 bit 1-channel (Optional : eDP)	SATA x2 32GB eMMC	GbE x 1	USB 3.0 x 2 USB 2.0 x 8	2 (TX/RX)	PCI-E[x1] x4	12V	0°C~60°C	I2C, SMBus, 8b-GPIO/(SDIO)
NANOCOM-APL-A11-0003	Type 10 (COM.0 Rev3.0)	E3950	8GB DDR4	LVDS, DDIx1	18/24 bit 1-channel (Optional : eDP)	SATA x2 64GB eMMC	GbE x 1	USB 3.0 x 2 USB 2.0 x 8	2 (TX/RX)	PCI-E[x1] x4	12V	0°C~60°C	I2C, SMBus, 8b-GPIO/(SDIO)

NanoCOM-BT/BT4

COM Express Type 10 CPU Module with Onboard Intel® Atom™ Processor SoC



Features

- Intel® Atom™ E3800/ Celeron® N2000 Series Processor SoC
- Onboard DDR3L 2 GB Memory (Optional to 4 GB)
- Gigabit Ethernet x 1
- 18/24-bit Single Channel LVDS LCDs, DDI x 1
- High Definition Audio Interface
- SATA x 2, eMMC (Optional)
- USB 2.0 x 6 + USB 2.0/USB 3.0 x 1, GPIO 8-bit, PCI-Express [x1] x 3
- COM Express Pin-out Type 10
- Mini Size, 84mm x 55mm, COM.0 Rev. 2.1

Specifications

System	
Form Factor	COM Express Mini size, Type 10
CPU	Intel® Atom™/ Celeron® Processor SoC (M/I)
CPU Frequency	Up to E3845, 1.91 GHz
Chipset	Intel® Atom™/ Celeron® Processor SoC
Memory Type	Non-ECC DDR3L-1333
Max. Memory Capacity	2 GB DDR3L Onboard (up to 4 GB)
BIOS	AMI BIOS, Legacy free
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Standard : +12V, AT/ATX Optional: +5V, AT/ATX
Power Supply Type	AT/ATX
Power Consumption (Typical)	0.7A@12V, full load, E3845
Dimension (L x W)	3.31" x 2.17" (84 mm x 55 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) by E3800, 2GB SKU
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	90,000
Certification	CE/FCC Class A
Display	
Display Controller	Intel® HD Graphic
Video Output	LVDS LCD/eDP, DDI x 1
LVDS Interface	Supports 18-bit and 24-bit Single channel
I/O	
Ethernet	Intel® I210IT
Audio	High Definition Audio Interface
USB port	USB 2.0 x 7, USB 3.0 x 1
Serial Port	Tx/Rx x 2
HDD Interface	SATA 2 x 2
Onboard Storage	Optional for 8GB/16GB eMMC
Expansion Slot	PCIe [x1] x 3 (up to 3 devices) LPC SMBus I2C
GPIO	GPIO 8-bit
TPM	—

Packing List

- M2.5 Screw x 4
- NanoCOM-BT or NanoCOM-BT4

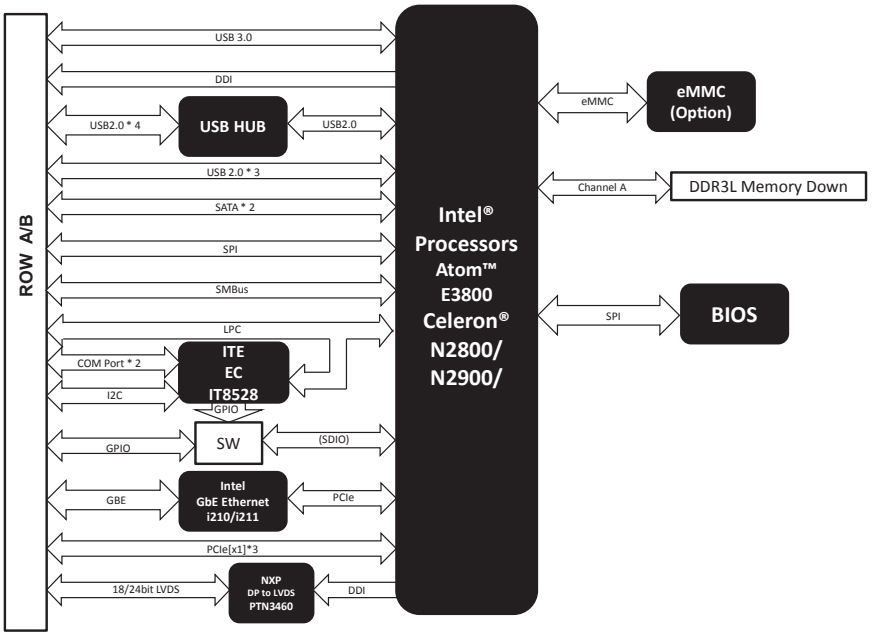
Optional Accessories

- **ECB-920A-A10-0001**
  COM Type 1/6/10 Carrier Board, ATX, GbE, 8 USB, 2 COM, 4 SATA, PCIe, AT/ATX, Legacy Free, Rev. A1.0
- **PER-A134**
  Heat Spreader, for NanoCOM-BT, Onboard CPU
- **NanoCOM-FAN01**
  CPU Cooler, 84 x 55x 22.2 mm, used with HSP
- **PER-A123**
  Passive Heatsink, for NanoCOM size, to be used with Heat Spreader

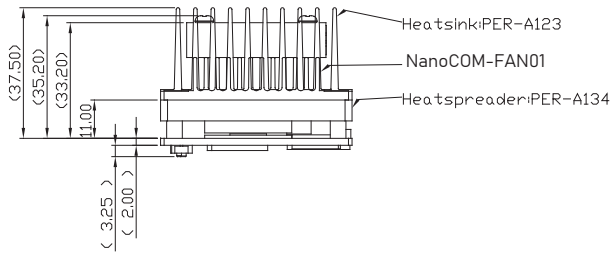
Note: All specifications are subject to change without notice.

Block Diagram Unit: mm

TYPE 10



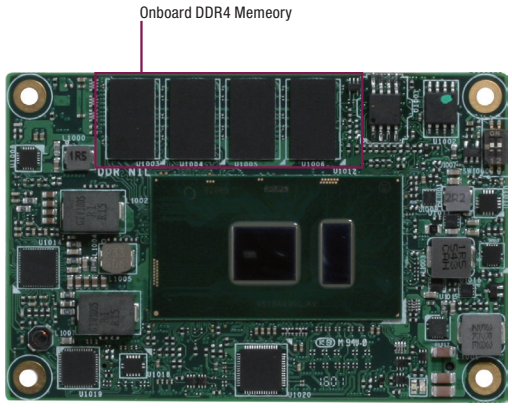
Dimension Unit: mm



Ordering Information

Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Power Temp	Others
NanoCOM-BT-A10-0001	10 (COM.0 Rev. 2.1)	N2930, 4C/1.83 GHz	2GB DDR3L	LVDS/eDP, DDI	18/24bit,1CH	SATA x 2	GbE x 1	USB 3.0 x 1, USB 2.0 x 7	2 (Tx/Rx)	PCIe [x1] x 3	+12V (ATX)	0°C ~ 60°C	LPC, GPIO 8Bit, HDA, I2C, SMBus
NanoCOM-BT-A10-0002	10 (COM.0 Rev. 2.1)	N2807, 2C/1.58 GHz	2GB DDR3L	LVDS/eDP, DDI	18/24bit,1CH	SATA x 2	GbE x 1	USB 3.0 x 1, USB 2.0 x 7	2 (Tx/Rx)	PCIe [x1] x 3	+12V (ATX)	0°C ~ 60°C	LPC, GPIO 8Bit, HDA, I2C, SMBus
NanoCOM-BT-A10-0003	10 (COM.0 Rev. 2.1)	E3845, 4C/1.91 GHz	2GB DDR3L	LVDS/eDP, DDI	18/24bit,1CH	SATA x 2 16GB eMMC	GbE x 1	USB 3.0 x 1, USB 2.0 x 7	2 (Tx/Rx)	PCIe [x1] x 3	+12V (ATX)	0°C ~ 60°C	LPC, GPIO 8Bit, HDA, I2C, SMBus
NanoCOM-BTW2-A10-0003	10 (COM.0 Rev. 2.1)	E3845, 4C/1.91 GHz	2GB DDR3L	LVDS/eDP, DDI	18/24bit,1CH	SATA x 2 16GB eMMC	GbE x 1	USB 3.0 x 1, USB 2.0 x 7	2 (Tx/Rx)	PCIe [x1] x 3	+12V (ATX)	-40°C ~ 85°C	LPC, GPIO 8Bit, HDA, I2C, SMBus
NanoCOM-BT4-A10-0003	10 (COM.0 Rev. 2.1)	E3845, 4C/1.91 GHz	4GB DDR3L	LVDS/eDP, DDI	18/24bit,1CH	SATA x 2 16GB eMMC	GbE x 1	USB 3.0 x 1, USB 2.0 x 7	2 (Tx/Rx)	PCIe [x1] x 3	+12V (ATX)	0°C ~ 60°C	LPC, GPIO 8Bit, HDA, I2C, SMBus
NanoCOM-BT-A10-0006	10 (COM.0 Rev. 2.1)	E3825, 2C/1.33 GHz	2GB DDR3L	LVDS/eDP, DDI	18/24bit,1CH	SATA x 2 8GB eMMC	GbE x 1	USB 3.0 x 1, USB 2.0 x 7	2 (Tx/Rx)	PCIe [x1] x 3	+12V (ATX)	0°C ~ 60°C	LPC, GPIO 8Bit, HDA, I2C, SMBus
NanoCOM-BT4-A10-0006	10 (COM.0 Rev. 2.1)	E3825, 2C/1.33 GHz	4GB DDR3L	LVDS/eDP, DDI	18/24bit,1CH	SATA x 2 8GB eMMC	GbE x 1	USB 3.0 x 1, USB 2.0 x 7	2 (Tx/Rx)	PCIe [x1] x 3	+12V (ATX)	0°C ~ 60°C	LPC, GPIO 8Bit, HDA, I2C, SMBus

COM Express Type 10 with 6th Generation Intel® Core™ ULT Series Processor



Features

- 6th Generation Intel® Core™ ULT Series Processor
- Onboard 4GB DDR4 2133 Memory
- Gigabit Ethernet x 1
- 18/24-bit Single-Channel LVDS LCDs/eDP, DDI x 1
- High Definition Audio Interface
- SATA x 2
- USB 3.0 x 2, USB 2.0 x 8
- PCI-Express [x1] x 4
- GPIO x 8, SMbus, I2C, LPC
- COM Express Type 10
- Mini Size, 84mm x 55mm
- Supports Industrial Grade Temperature

Specifications

System	
Form Factor	COM Express Mini size, Type 10
CPU	6th generation Intel® Core™ ULT Series Processor
CPU Frequency	Up to i7 6600U 2c/4t, 2.6GHz
Chipset	Intel® Core™/Celeron® Processor SoC
Memory Type	Non-EEC DDR4-2133
Max. Memory Capacity	4GB DDR4 Onboard
BIOS	AMI BIOS, Legacy free
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Normal: +12V
Power Supply Type	AT/ATX
Power Consumption (Typical)	i7-6600U 12V@1.5A, i3-6100U 12V@1.42A. Under 100% loading. CPU Set to 15W TDP. CPU base frequency may change accordingly.
Dimension (L x W)	3.31" x 2.17" (84mm x 55mm)
Operating Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C) -40 °F ~ 185 °F (-40 °C ~ 85 °C) Option for NANOCOM-SKU series
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE/FCC Class A
Display	
Display Controller	Onboard 6th Gen. intel® Core™ U-Series Processor, GT2-520/510
Video Output	LVDS LCD/eDP, DDI x 1
LVDS Interface	Supports 18bit and 24bit Single channel
I/O	
Ethernet	Intel® I219 GbE
Audio	High Definition Audio Interface
USB port	USB 2.0 x 8, USB 3.0 x 2
Serial Port	TX/RX x 2
HDD Interface	SATA 2 x 2
Onboard Storage	N/A
Expansion Slot	PCIe x1 supports 4 devices LPC Bus Smbus I2C
GPIO	8-bit
TPM	fTPM Supported

Packing List

- Screws
- NanoCOM-KBU

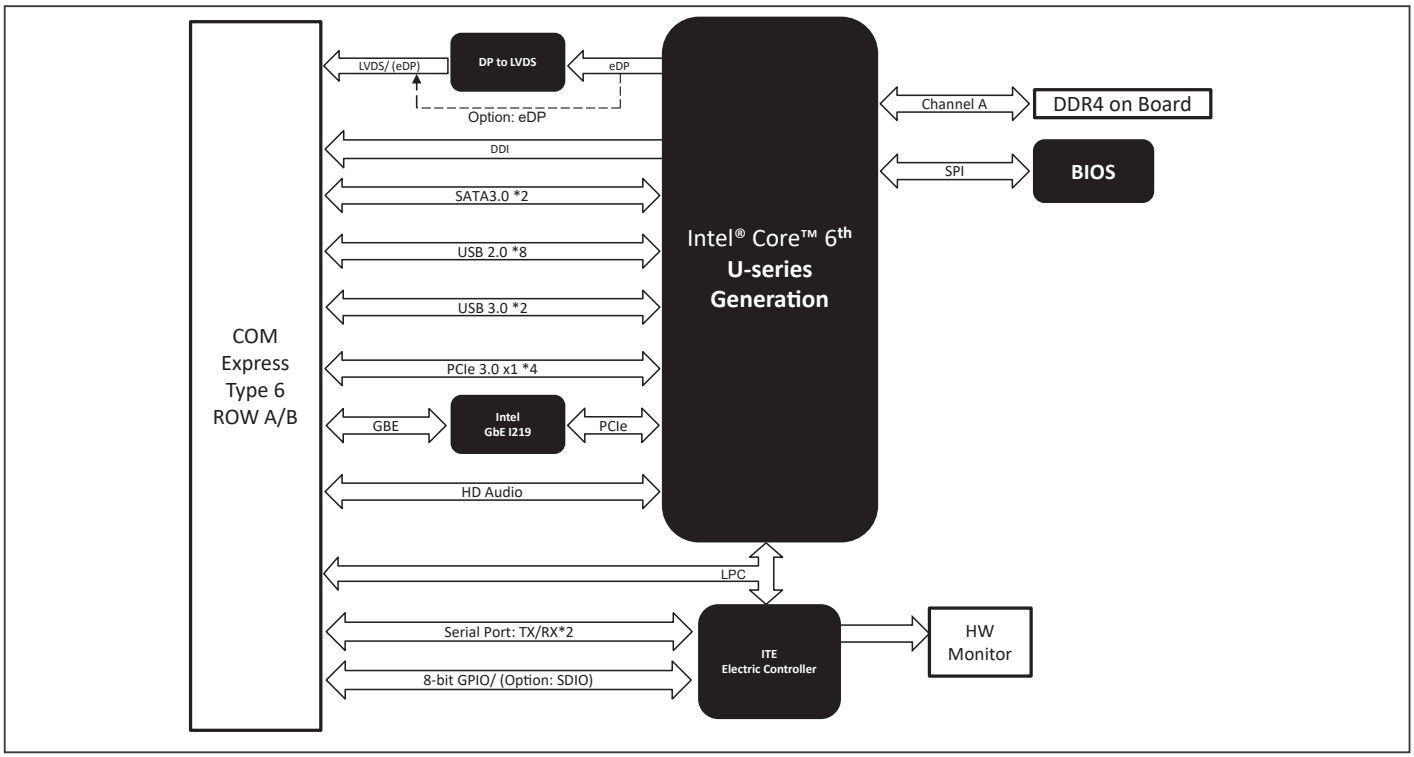
Optional Accessories

- **ECB-920A-A10-0001**
  COM Type 1/6/10 Carrier Board, ATX, GbE, 8 USB, 2 COM, 4 SATA, PCIe, AT/ATX, Legacy Free, Rev. A1.0
- **NanoCOM-SKU-HSP01**
  Heat Spreader, 84 x 55 x 11 mm, Black, NanoCOM-SKU
- **NanoCOM-FAN01**
  CPU Cooler, 84 x 55 x 22.2 mm, Silver use w/ HSP

Note: All specifications are subject to change without notice.

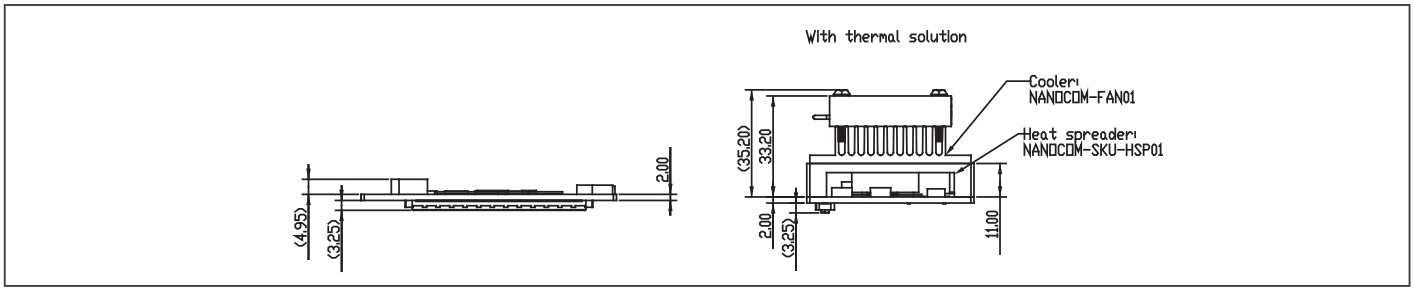
Block Diagram

Unit: mm



Dimension

Unit: mm



Ordering Information

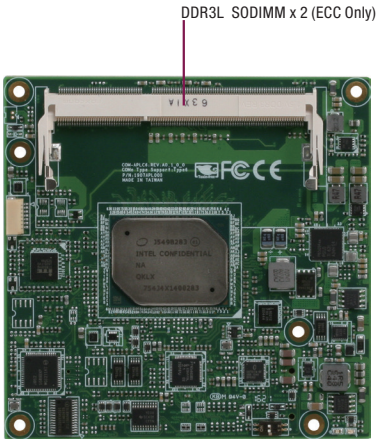
Standard Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Temp	Others
NanoCOM-KBU-A10-0001	10 (COM.0 Rev 3.0)	6th Gen. Intel® Core™ i7-6600U 2c/2.8GHz	4GB DDR4	LVDS/(eDP), DDI x1	18/24b 1CH (LVDS share with eDP)	SATA x2	GbE x1	USB 3.0 x2 USB 2.0 x8	2 (Tx/Rx)	PCI-E[x1] x4	12V	0°C~60°C	I2C, GPIO, SMBus

CPU Supports Chart

CPU Kabylake	Base Frequency/Turbo Boost GHz	Core/Thread	Graphic
i7-7600U	2.8/3.9	2/4	GT2 - 520
i5-7300U	2.6/3.5	2/4	GT2 - 520
i3-7100U	2.4	2/4	GT2 - 520
C-3965U	2.2	2/2	GT1 - 510

COM-APLC6

COM Express Type 6 with Intel® Atom™ E39xx Series Processor SoC



Features

- Intel® Atom@ E39xx Series Processor SoC
- SODIMM DDR3L 1867 x 2 up to 8 GB, ECC only
- Intel® I210 Gigabit Ethernet
- VGA, 18/24-bit 2CH LVDS/eDP, DDI up to 2
- High Definition Audio Interface
- SATA Gen3 x 2
- Micro SD Card Slot x 1
- USB 2.0 x 8, USB 3.0 x 2
- PCI-Express: 3 Devices Max
- 12V DC Input
- COM Express Type 6 Compact Size
- 95mm x 95mm

Specifications

System	
Form Factor	COM Express, Compact, Pin-out Type 6
CPU	Onboard Intel® Atom™ SoC
CPU Frequency	Intel® Atom™ E39xx
Chipset	Intel® Atom™ SoC
Memory Type	DDR3L1867, SODIMM x 2, ECC only
Max. Memory Capacity	8GB
BIOS	AMI BIOS
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Nominal: +12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	E3950 TDP: 12W
Dimension (L x W)	3.74" x 3.74" (95mm x 95mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (hours)	—
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Atom™ SoC Integrated
Video Output	CRT, LVDS/(eDP), DDI
LVDS Interface	—
I/O	
Ethernet	Intel® i210, Gigabit Ethernet
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8, USB 3.0 x 2
Serial Port	Tx/Rx x 2
HDD Interface	SATA x 2
Onboard Storage	—
Expansion Slot	PCI-Express[x1] x 3 (devices) LPC Bus x 1, SMbus x 1, I2C x 1 Micro SD card slot x 1 (Supports SD 3.0)
GPIO	GPIO 8-bit
TPM	—

Packing List

- M2.5 Screw x 4
- COM-APLC6

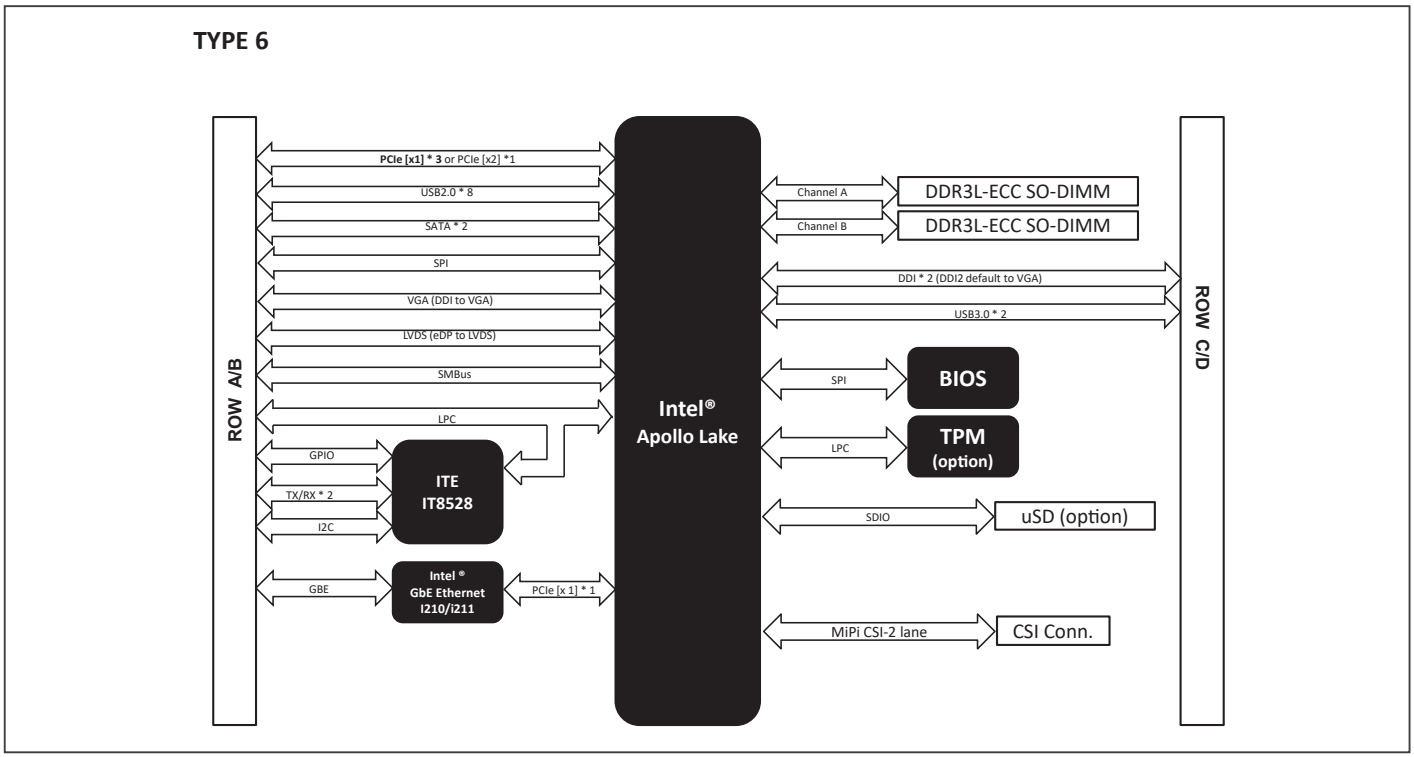
Optional Accessories

- **COM-APLC6-HSP01**
  Heat Spreader, For COM-APLC6
- **COM-FAN02**
  CPU Cooler, 95 x 95 x 26.5mm, Silver, use with HSP
- **ECB-920A-A10-0001**
  COM Type 1/6/10, Carrier Board, ATX, GbE, 8 USB, 2 COM, 4 SATA, PCIe, AT/ATX, Legacy Free, Rev. A1.0

Note: All specifications are subject to change without notice.

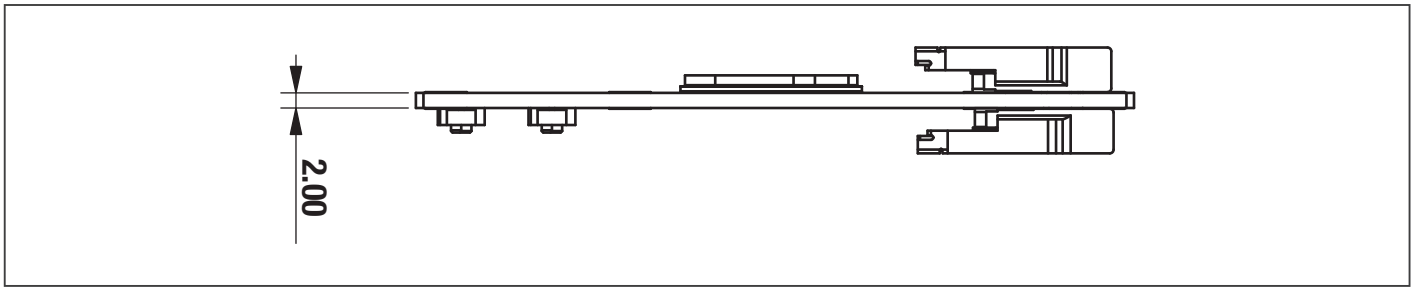
Block Diagram

Unit: mm



Dimension

Unit: mm

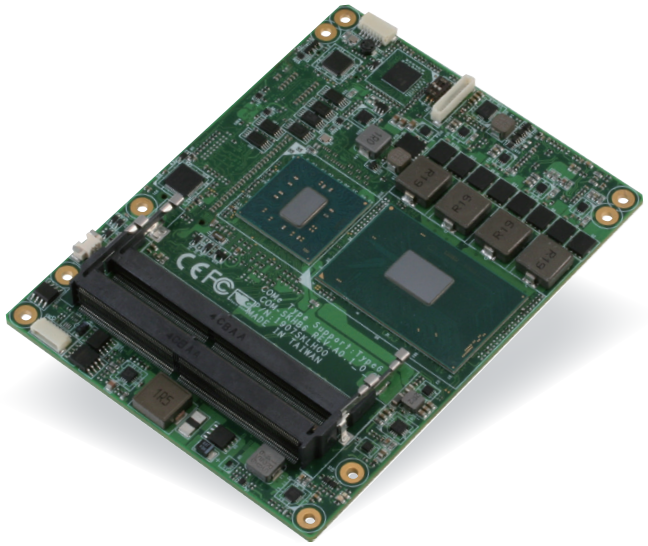


Ordering Information

Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Power Temp	Others
COM-APLC6-A10-0001	6 (COM.0 Rev 2.1)	Intel® E3950	DDR3L-ECC SODIMM Socket upto 8GB max.	CRT, LVDS/eDP DDI x 1	18/24b 2CH (LVDS shared with eDP)	SATA x 2 uSD	GbE x 1	USB 3.0 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCI-E[x1] x 3 (devices) Micro SD card slot x 1	12V	0°C~60°C	—

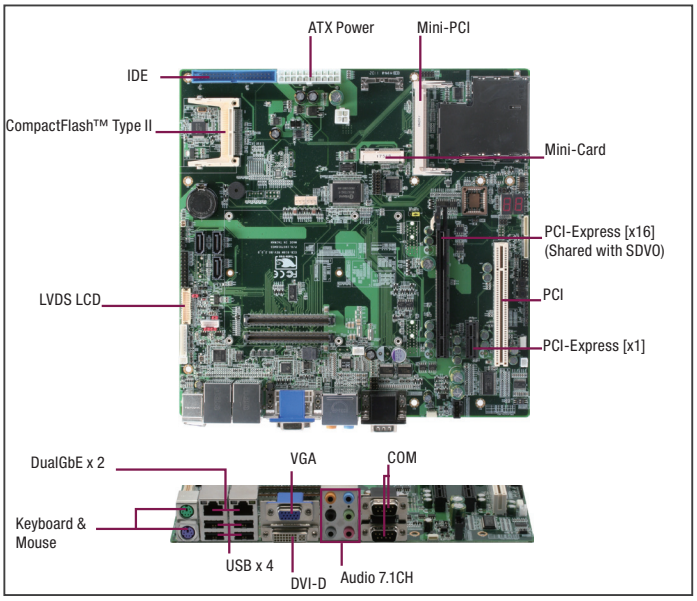
COM Carrier Boards

09



ECB-916M Rev. B11

COM Express Carrier Board for PICMG COM.0 R2.0 Type 2



Features

- Supports COM Express Module Rev. 2.0 Pin-out Type 2
- Supports Gigabit Ethernet, RJ-45 x 2
- VGA/ DVI-D Connector
- 7.1 Channel Audio
- PATA Connector x 1, SATA Port x 3 (4), CompactFlash™ Type 2 Slot x 1
- USB Port x 5, COM Port x 2
- PCI-Express [x16] Slot x 1, PCI-Express [x1] Slot x 1, PCI Slot x 1
- Express Card Slot x 1, Mini-PCI Slot x 1, Mini-Card Slot x 1
- AT/ ATX Power Input
- LPC Connector x 1, microATX Form Factor

Specifications

System	
Form Factor	Micro-ATX
COM Express Connector	x2
I/O Chipset	Winbond W83627DHG
Front Panel Control	10-pin (5x2) header
Ethernet	Intel® 82573L, 10/100/1000Base-TX, RJ-45 x 1 10/100 Base-TX or 10/100/1000Base-TX, RJ-45 x 1 (From CPU module)
Expansion Interface	PCI-Express [x1] slot x 1 (additional 2 for test only) PCI-Express [x16] slot x 1 ==> Add a 3-pin header for SDVO enabled or disabled PCI slot x 1 Mini-PCI slot x 1 Mini-Card slot x 1 Express Card slot x 1
Power Supply Type	AT/ATX
CMOS Battery	RTC battery socket x 1
BIOS	SPI x 1 Firmware Hub x 1 (with DIP Switch for BIOS Selection)
Board Size	9.6" x 9.6"(243.84mm x 243.84mm)
Gross Weight	1.32 lb (0.6 kg)
Operating Temperature	32˚F ~ 140˚F (0˚C ~ 60˚C)
Storage Temperature	-40˚F ~ 176˚F (-40˚C ~ 80˚C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	77,000
Display	
DVI/CRT	DVI 29-pin + DB 15-pin stack-type connector
LVDS	30-pin (15 x 2) Dual-Channel LVDS connector x 1
SDVO	40pin (20 x 2) SDVO connector x 1
DDI	—
I/O	
Storage	40-pin PATA connectorx1 SATA 3.0 Gb/s x 3 CompactFlash™ Type 2 slot x 1
Serial Port	RS-232 Port x 1 RS-232/422/485 Port x 1
USB	Type-A connector x 4
Audio	Audio jack x 6, Supports 7.1 channel audio Audio Codec: Realtek ALC888 Buzzer x 1
PS/2 Port	x 1
Digital I/O	Supports 8-bit (Programmable)
Switch/Button	Power button x 1 Reset button x 1
Debug LED	—
I2C	—
GPIO	—



Packing List

- **9681916M00**
  Cable Kit

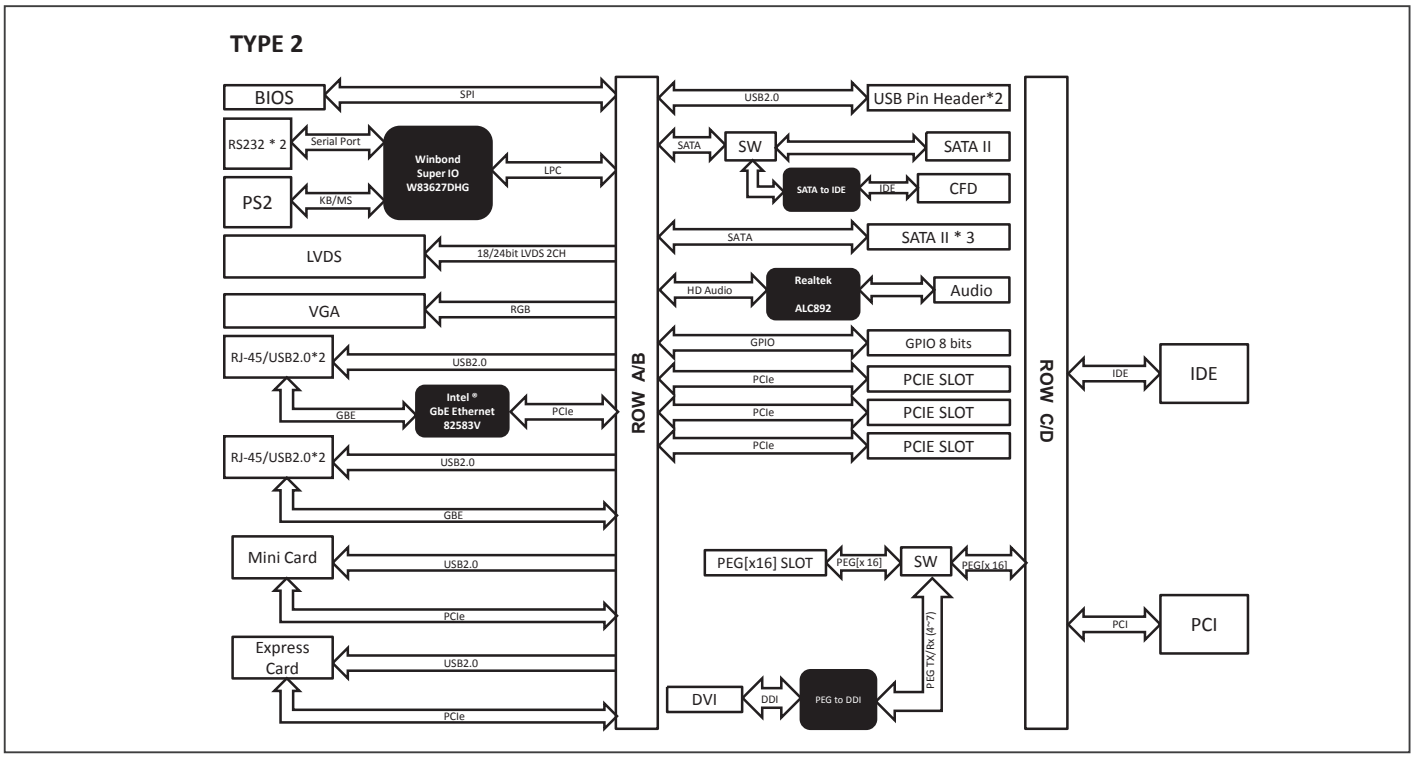
1701400453	IDE Cable x 1
1709070500	SATA Cable x 1
1702150150	SATA Power Cable x 1
1701100207	COM Port Cable x 1
S1DD308042	Copper Stud x 1
S1DC002510	Nut x 1

- **Quick Installation Guide**
- **ECB-916M Rev. B11**

Note: All specifications are subject to change without notice.

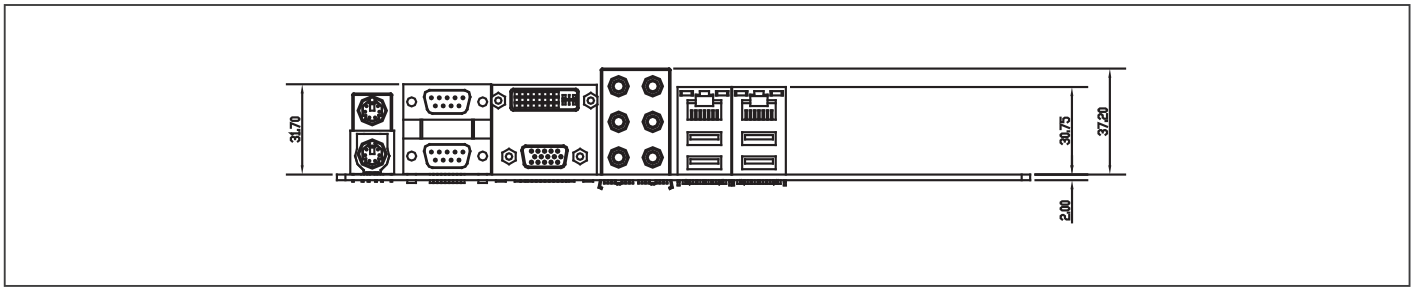
Block Diagram

Unit: mm



Dimension

Unit: mm

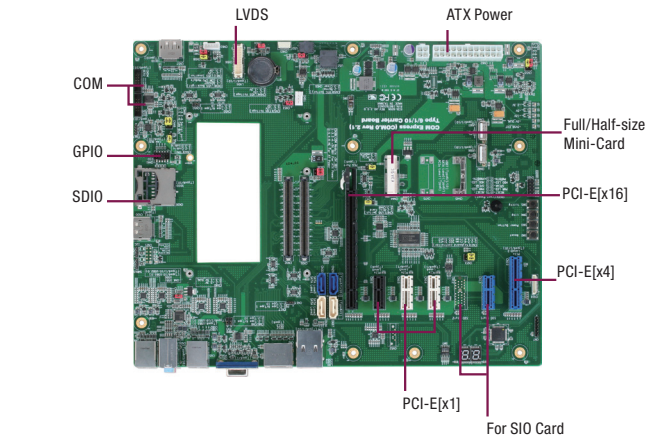


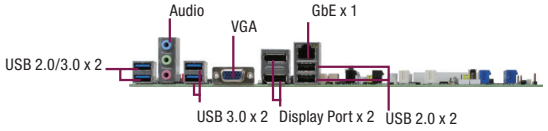
Ordering Information

- **TF-ECB-916M-B11-01**
  COM Express Carrier Board, Micro-ATX, Dual LAN, PCI-Express, W/ Type1 Convert Board, AT/ATX, Rev. B1.1
- **Note: For COM-BYTC2 Series**

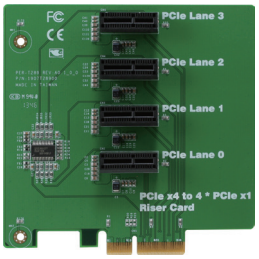
ECB-920A

Universal Type 1/6/10 Carrier Board

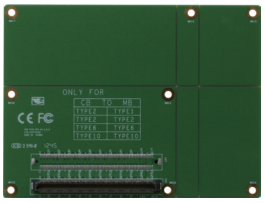


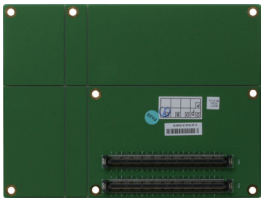


PER-T289



PER-253





Features

- **Supports COM Express Module Rev. 2.1 Pin-out Type 1/6/10**
- **Supports Gigabit Ethernet, RJ-45**
- **Up to 24-bit Dual Channel LVDS Connector, DP, VGA**
- **High Definition Audio**
- **SATA Port x 4**
- **USB 2.0 x 8, USB 3.0 x 4**
- **ATX Power Input**
- **LPC Connector x 1, ATX Form Factor**

Specifications

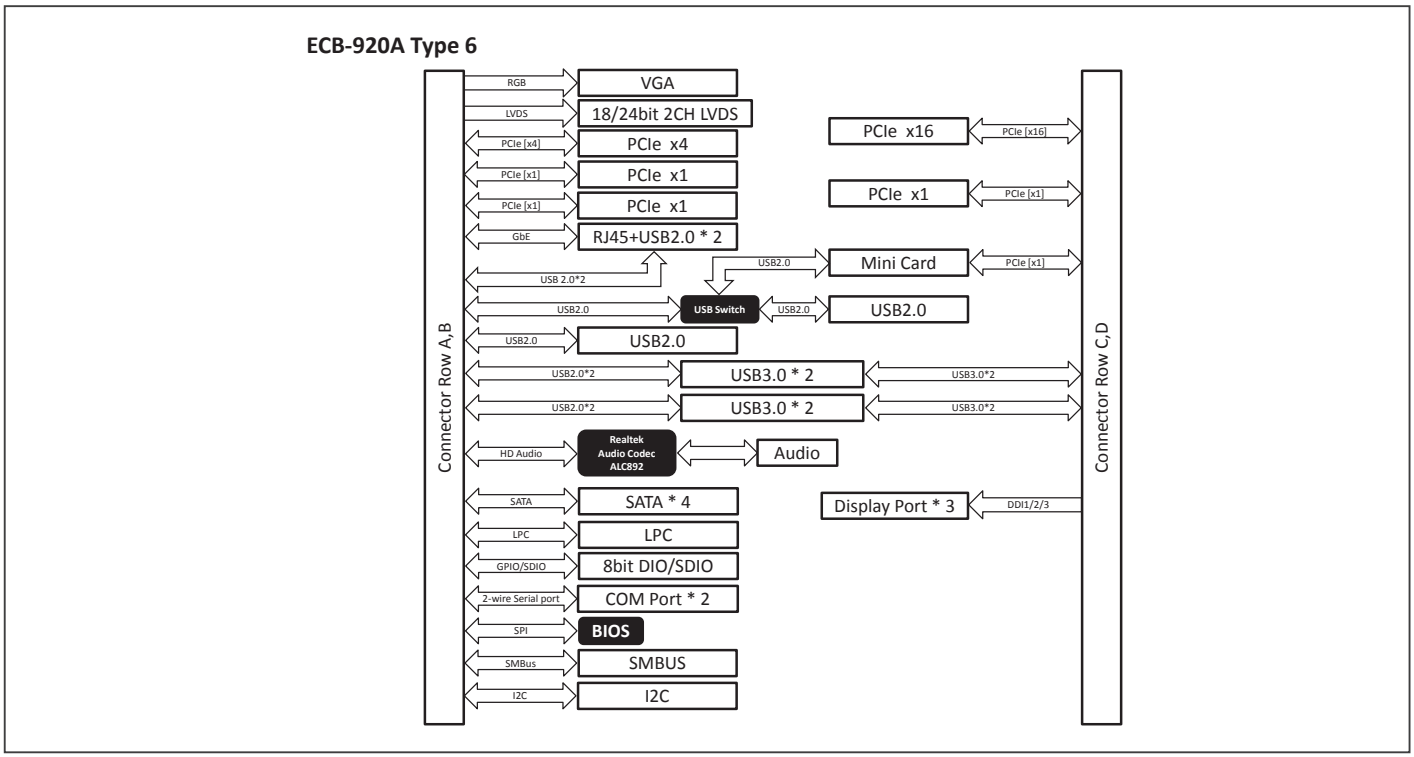
System	
Form Factor	ATX
COM Express Connector	x 2
I/O Chipset	—
Front Panel Control	10-pin (5x2) header
Ethernet	10/1000/1000Base-TX, RJ-45 x 1 (From CPU module)
Expansion Interface	PCI-Express [x1] slot x 4 (3 by PCI-E[x1] x 1 pin-out, 1 by SIO pin-out) PCI-Express [x4] slot x 1 PCI-Express [x16] slot x 1 Mini-Card slot x 1
Power Supply Type	ATX
CMOS Battery	RTC battery socket x 1
BIOS	—
Board Size	12" x 9.6"(304mm x 244mm)
Gross Weight	1.32 lb (0.6 kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	75,000
Display	
DVI/CRT	DB15 connector x 1
LVDS	30-pin (15 x 2) Dual-Channel LVDS connector x 1
SDVO	—
DDI	DP connector x 4 (Dual x 1, Single x 2)
I/O	
Storage	SATA x 4
Serial Port	2-wire RS-232 port x 2 (10-pin (5x2) box header x 2)
USB	Type A connector x 4 (USB 3.0) for Type 6, USB 2.0 port x 4
Audio	Audio Jack, supports Line-in, Line-out, Microphone
PS/2 Port	—
Digital I/O	—
Switch/Button	—
Debug LED	80 PORT
I2C	1
GPIO	GPIO 8bit

*** I/O functions according to the type of module installed, please refer to function table.**

Note: All specifications are subject to change without notice.

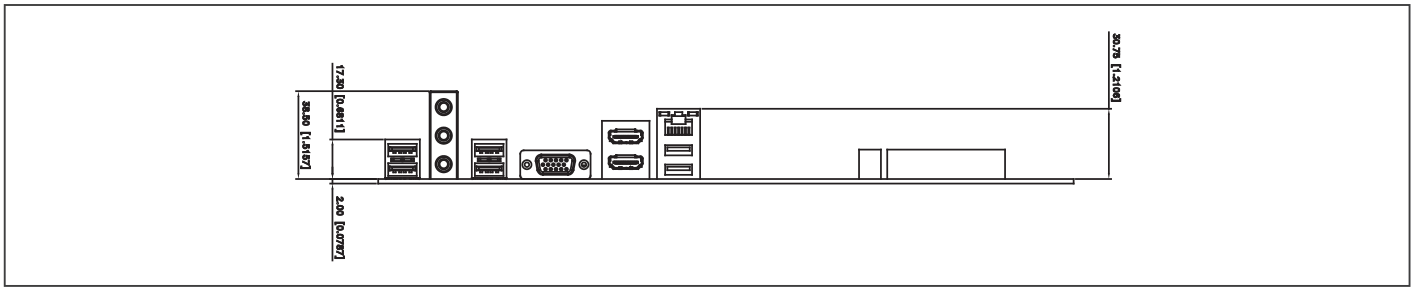
Block Diagram

Unit: mm



Dimension

Unit: mm



Packing List

- **9681920A00**
  Cable Kit
- **1709070500**
  SATA Cable x 1
- **1701100206**
  COM Port Cable x 1
- **COM Express Type Converter Board**
- **PCI-E[x4] to PCI-E[x1] x 4 Card**
- **Product CD**
- **ECB-920A**

Ordering Information

- **ECB-920A-A10-0001**
  COM Express Type 1/6/10 Carrier Board, Gigabit Ethernet, USB, 2 COM, 4 SATA, PCIe, AT/ATX Rev. A1.0 w/ Boot Selection

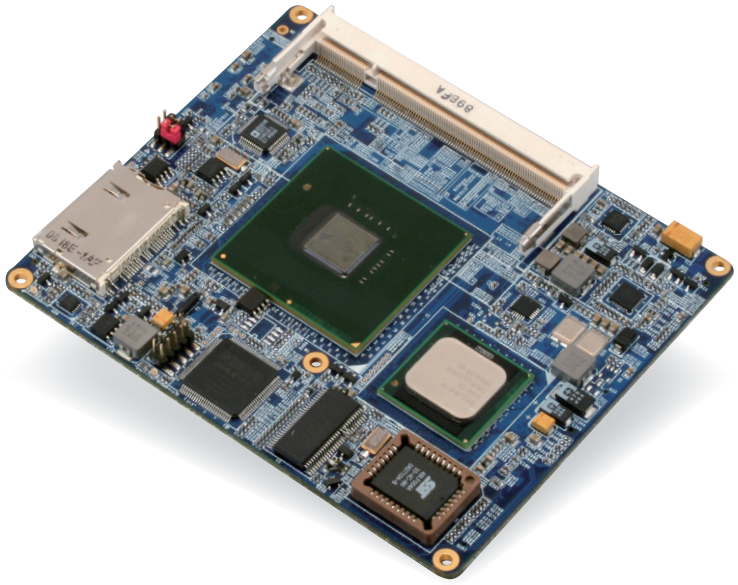
Type 1/6/10 Function Table

COM Type	Type 1	Type 6	Type 10
PCI-E [x16]	—	1	—
PCI-E[x4]	1 (Lane 0~3)	1 (Lane 0~3)	1 (Lane 0~3)
PCI-E[x1]	2 (Lane 4~5)	3 (Lane 4~6)	—
VGA	1	1	—
DDI	—	3 (DDI 1~3)	1 (DDI 0)
LVDS	1	1	1
LAN	1	1	1
mSATA	1 Shared with SATA Lane 0	1 Shared with SATA Lane 0	—
Mini-PCIe	—	1 (Lane 7)	—
SATA	4 (Lane 0~3)	4 (Lane 0~3)	2 (Lane 0~1)
Serial	—	2	2
USB 3.0	—	4 (Port 0~3)	2 (Port 0~1)
USB 2.0	8	8	8
SDIO/GPIO	—	1/8b	1/8b

ETX CPU Modules

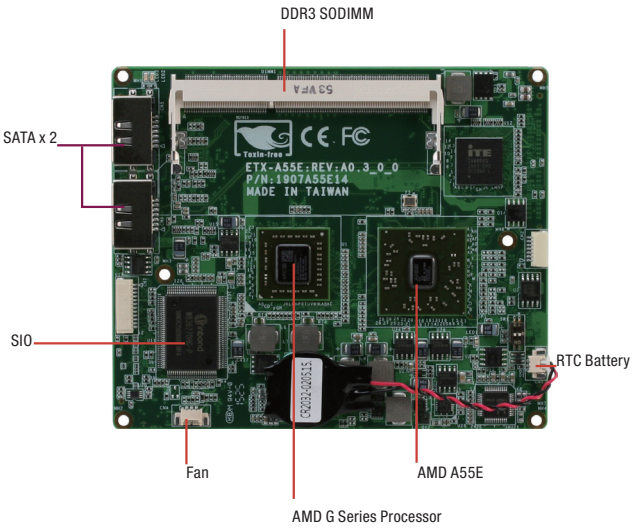


10



ETX-A55E

ETX CPU Module with Onboard AMD® G-series APU



Features

- AMD® G-series APU T16R/T56N
- Onboard DDR3L Socket, up to 8 GB
- 10/100 Ethernet x 1
- 18/24-bit Dual-Channel LVDS
- High Definition Audio Interface
- SATA x 2, PATA x 2 (2 Devices Total)
- USB2.0 x 4
- PCI, ISA
- ETX Form Factor
- 114mm x 95mm

Specifications

System	
Form Factor	ETX
CPU	Onboard AMD® G-series APU T16R/T56N
CPU Frequency	T16R: Single Core 615 MHz/ 4.5W T56N: Dual Core 1.6GHz/18W
Chipset	AMD G-series A55E
Memory Type	DDR3L 1066/1333 MHz, SODIMM x 1
Max. Memory Capacity	up to 8 GB
BIOS	AMI BIOS
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+5V
Power Consumption (Typical)	T16R: 10.7W T56N: 24.2W
Power Supply Type	AT/ ATX
Dimension (L x W)	4.5" x 3.74" (114mm x 95mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	83,500
Certification	CE/FCC
Display	
VGA/LCD Controller	AMD G-series T16R/T56N integrated
Video Output	CRT/ LVDS LCD
Backlight Inverter Supply	—
I/O	
Ethernet	Realtek RTL8105 10/100 Base-TX
Audio	Realtek ALC892
USB Port	USB2.0 x 4
Serial Port	1
Parallel Port	1
HDD Interface	SATA x 2, PATA x 2 (2 devices)
FDD Interface	—
SSD	—
Expansion Slot	32-bit PCI x 4 SMBus x 1 I2C x1 8/16-bit ISA
DIO	—
TPM	—

Packing List

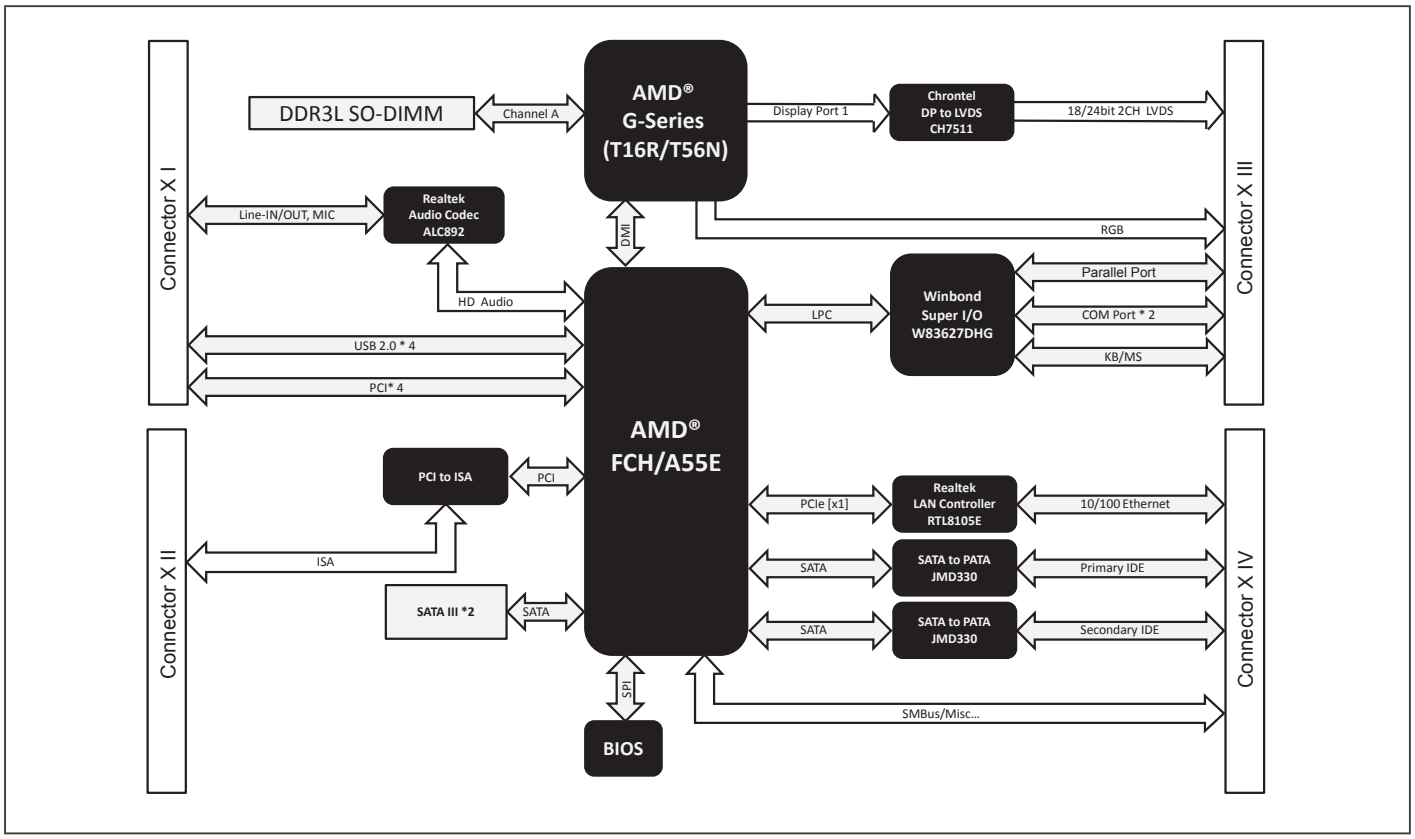
- M2.5 Screw x 4
- Product CD
- ETX-A55E

Optional Accessories

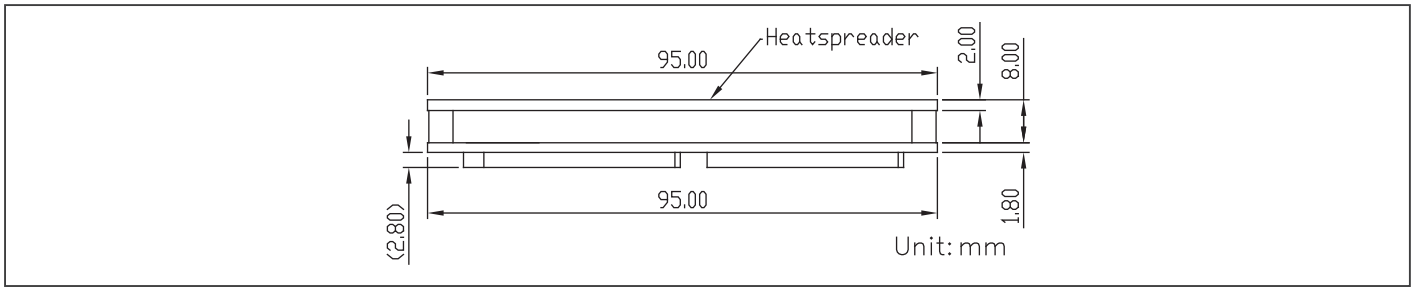
- **TF-ECB-902M-A10**
  ETX Carrier Board, LAN, Audio, 2COM, USB2.0, PCI, ISA, AT/ATX, Rev. A1.0
- **PER-A142**
  Heat Spreader, For ETX-A55E, Onboard CPU
- **EXTX-HSK01**
  Passive Heat-sink, to be used with head spreader
- **EXTX-FAN01**
  CPU Cooler, 35W, to be used with head spreader

Note: All specifications are subject to change without notice.

Block Diagram



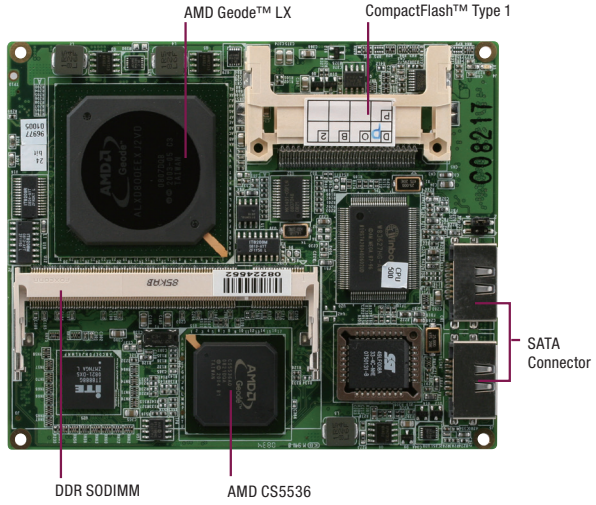
Dimension



Ordering Information

Part Number	Form Factor	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	KB/MS	LPT	Power Temp.	Others
ETX-A55E-A11-0001	ETX	AMD G-series. T16R	DDR3L x 1 (Max 8 G)	LVDS/LCD	18b/24b, 2CH	SATA3.0 x 2, PATA x 2 (2 devices)	FE x 1	USB2.0 x 4	2	1	1	0°C ~ 60°C	—
ETX-A55E-A11-0002	ETX	AMD G-series. T56N	DDR3L x 1 (Max 8 G)	LVDS/LCD	18b/24b, 2CH	SATA3.0 x 2, PATA x 2 (2 devices)	FE x 1	USB2.0 x 4	2	1	1	0°C ~ 60°C	—

ETX CPU Module with AMD Geode™ LX Series Processor



Features

- Onboard AMD Geode™ LX Series Processor
- AMD CS5536
- DDR 333/400 MHz SODIMM x 1, Up to 1 GB
- 10/100Base-TX Ethernet
- CRT, Up to 24-bit LVDS LCD, TTL LCD
- AC97 2.3 Codec 2CH Audio
- PATA x 2, SATA 3.0 Gb/s x 2 (on Module), CompactFlash™ Type 1 Slot x 1 (On Module)
- USB2.0 x 4, COM x 2
- +5V Only Operation

Specifications

System	
Form Factor	ETX
CPU	Onboard AMD Geode™ LX 800
CPU Frequency	LX800: 500 MHz
Chipset	AMD Geode™ LX 800 + CS5536
Memory Type	DDR333/400, DDR SODIMM x 1, DDR333: 1 GB, DDR400: 512 MB
Max. Memory Capacity	1 GB
BIOS	Award PLCC Type, 2MB
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+5V
Power Consumption (Typical)	LX 800, DDR333 1 GB 0.25A@+12V, 2.02A@+5V W/ TF-ECB-901A-A10-01
Power Supply Type	AT/ ATX
Dimension (L x W)	4.5" x 3.74" (114mm x 95mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	110,000
Certification	CE/FCC
Display	
VGA/LCD Controller	AMD Geode™ LX 800 processor integrated
Video Output	CRT, LVDS LCD, TTL LCD
Backlight Inverter Supply	—
I/O	
Ethernet	Realtek RTL8139DL, 10/100Base-TX
Audio	Realtek ALC203
USB Port	USB2.0 x 4
Serial Port	COM 1/2
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	PATA x 2, SATA 1 x 2
FDD Interface	Option
SSD	—
Expansion Slot	PCI Express [x1] x3 I2C x 2 SPI x 2, 1 for boot
DIO	—
TPM	—

Packing List

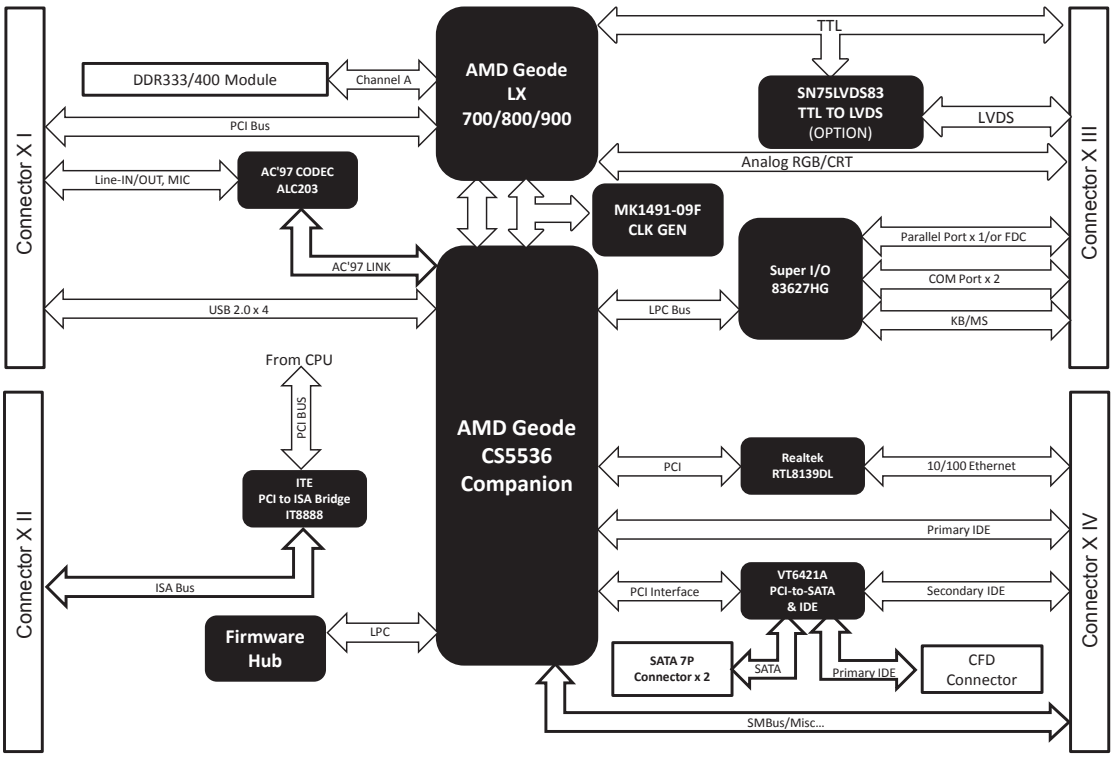
- M2.5 Screw x 4
- Product CD
- ETX-701

Optional Accessories

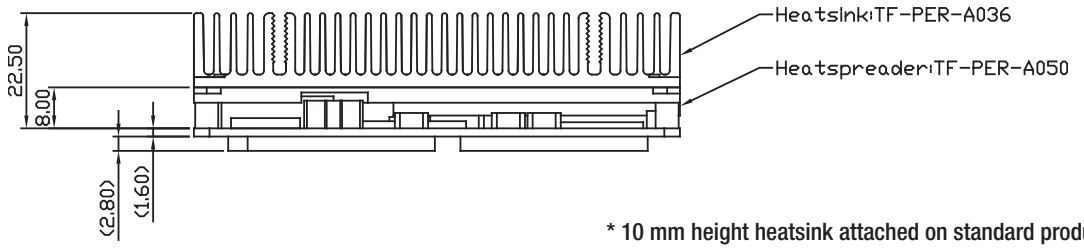
- **TF-ECB-902M-A10**
  ETX Carrier Board, LAN, Audio, 4 COM, USB2.0, PCI, ISA, AT/ATX, Rev. A1.0 (For ETX-LN, ETX-945GSE, ETX-701, ETX-700)

Note: All specifications are subject to change without notice.

Block Diagram



Dimension



* 10 mm height heatsink attached on standard product

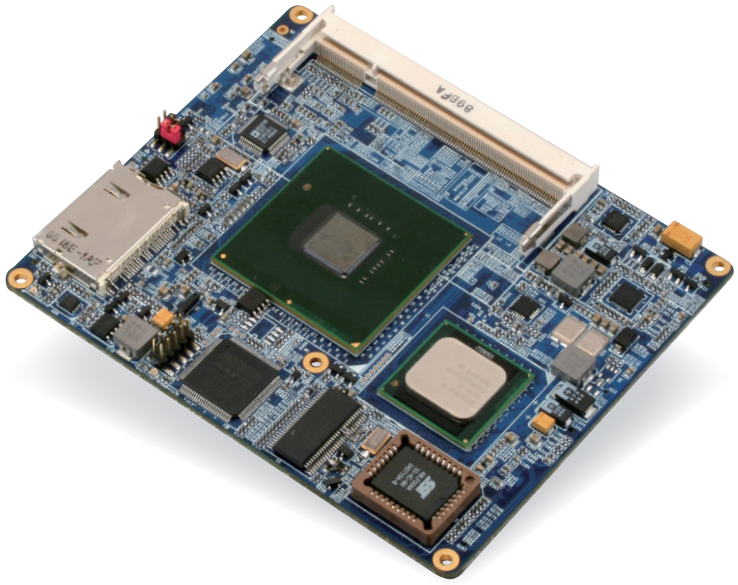
Ordering Information

Part Number	CPU	Memory	Display	LVDS	Storage	LAN	USB2.0	KB/MS	UART	LPT	Expansion Slot	Power	Temp
TF-ETX-701-A10	AMD Geode™ LX800/500 MHz	DDR SODIMM x 1 up to 1 GB	CRT, TTL	24b, TTL	SATA2 x 1 PATA x 2 CF x 1	FE x 1	4	1	2	1	8-bit/16-bit/ISA 32-bit PCI x 4	5V	0°C~60°C
TF-ETX-701-A10-01	AMD Geode™ LX800/500 MHz	DDR SODIMM x 1 up to 1 GB	CRT, LVDS	18b, 1CH	SATA2 x 1 PATA x 2 CF x 1	FE x 1	4	1	2	1	8-bit/16-bit/ISA 32-bit PCI x 4	5V	0°C~60°C
TF-ETX-701-A10-02	AMD Geode™ LX800/500 MHz	DDR SODIMM x 1 up to 1 GB	CRT, LVDS	24b, 1CH	SATA2 x 1 PATA x 2 CF x 1	FE x 1	4	1	2	1	8-bit/16-bit/ISA 32-bit PCI x 4	5V	0°C~60°C

ETX Carrier Board

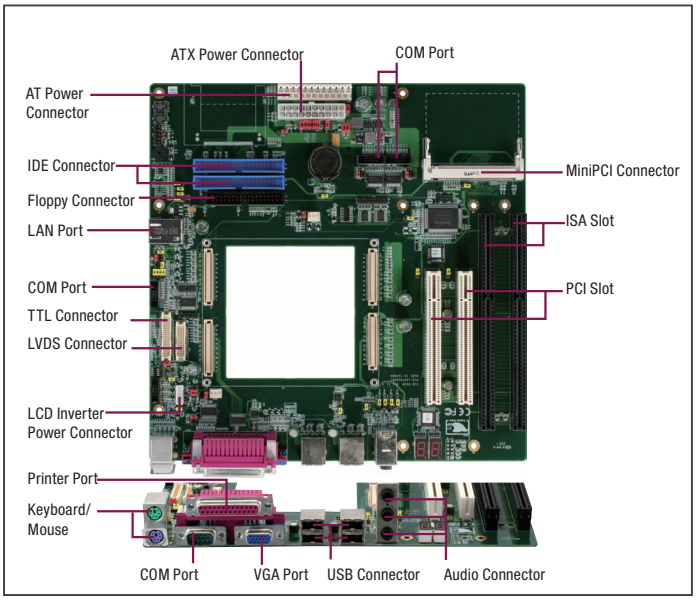


11



ECB-902M

ETX Carrier Board



Features

- Supports ETX Module
- Supports 10/100Base-TX Ethernet, RJ-45 x 1
- VGA, LVDS, TTL-out Connector
- 2 CH Audio
- PATA Connector x 2
- USB Port x 4, COM Port x 4, Mini-PCI Connector x 1
- PCI Slot x 2, ISA Slot x 2
- AT/ ATX Power Input
- MicroATX Form Factor

Specifications

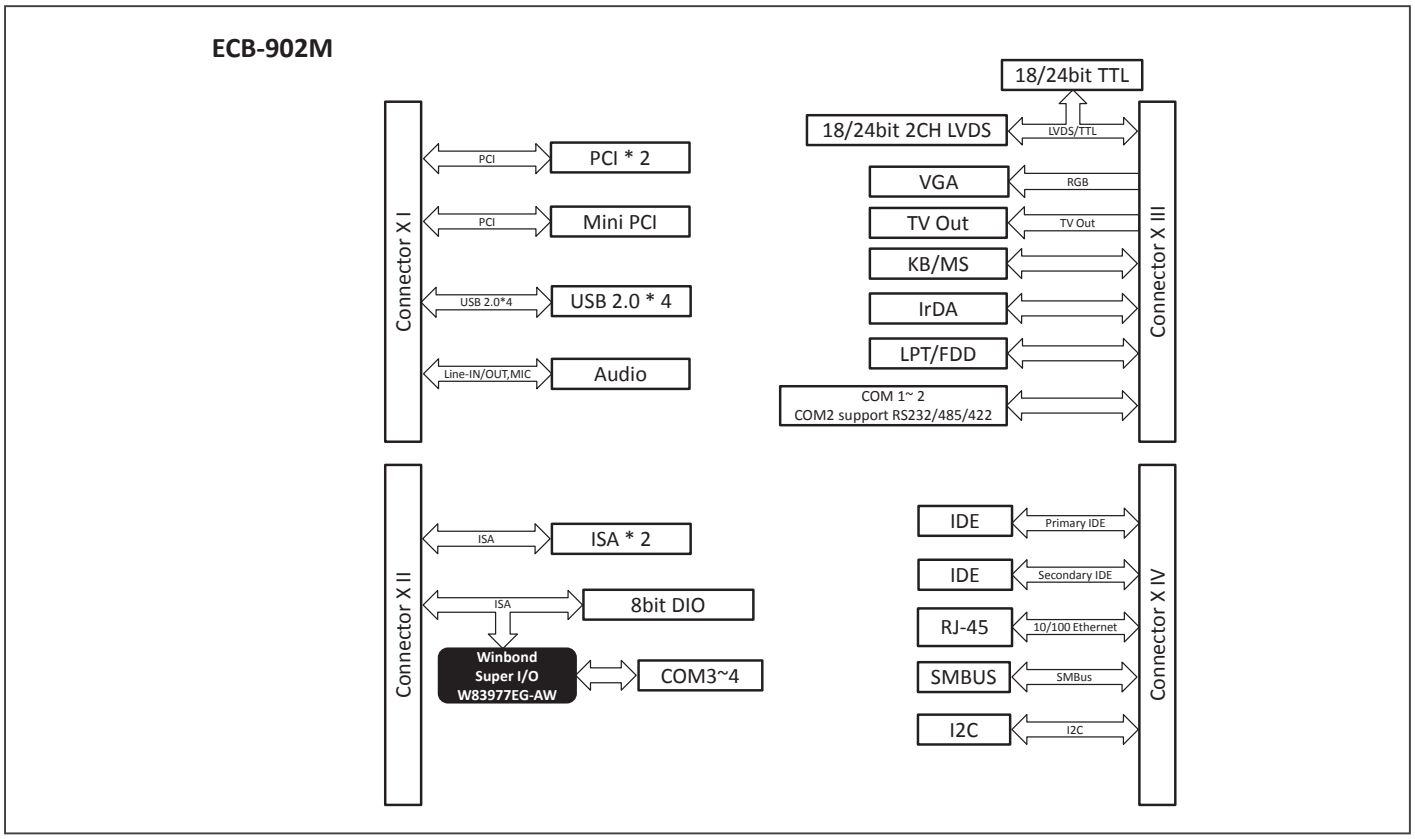
System	
Form Factor	MicroATX
I/O Chipset	Winbond W83977EG-AW
Ethernet	10/100Base-TX, RJ-45 x 1
Expansion Interface	PCI Slot x 2 ISA Slot x 2 Mini PCI slot x 1
Power Supply Type	AT/ ATX
Board Size	9.6" x 9.6" (244mm x 244mm)
Gross Weight	1.32 lb (0.6 kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	132,000
Display	
VGA	DB15 connector x 1
LCD	30-pin (15x2) Dual-Channel LVDS connector x 1 40-pin (20x2) TTL connector x 1
I/O	
Storage	PATA connector x 2
Serial Port	RS-232 port x 3 (9-pin Dsub connector x 1 + 5 x 2-pin box header x 2) RS-232/422/485 port x 1 (5x2-pin box header)
Parallel Port	DB-25 connector x 1, supports SPP/ EPP/ ECP mode
USB	Type A connector x 4
PS/2 Port	Keyboard x 1, Mouse x 1
Digital I/O	Supports 8-bit (Programmable)
Audio	Audio jack, supports 2 channel audio
IrDA	One IrDA Tx/Rx header

Packing List

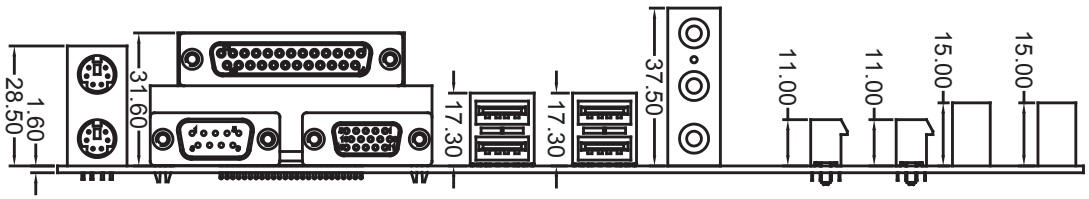
- **9681902M00:**
  Cable Kit
  - 1701400453 IDE Cable x 1
  - 1701340704 FDD Cable x 1
  - 1701100207 FPC x 1
- **Quick Installation Guide**
- **ECB-902M**

Note: All specifications are subject to change without notice.

Block Diagram



Dimension

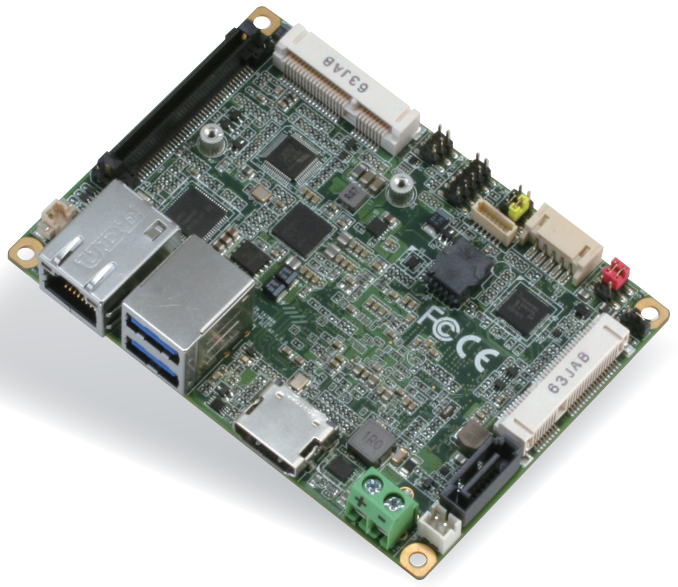


Ordering Information

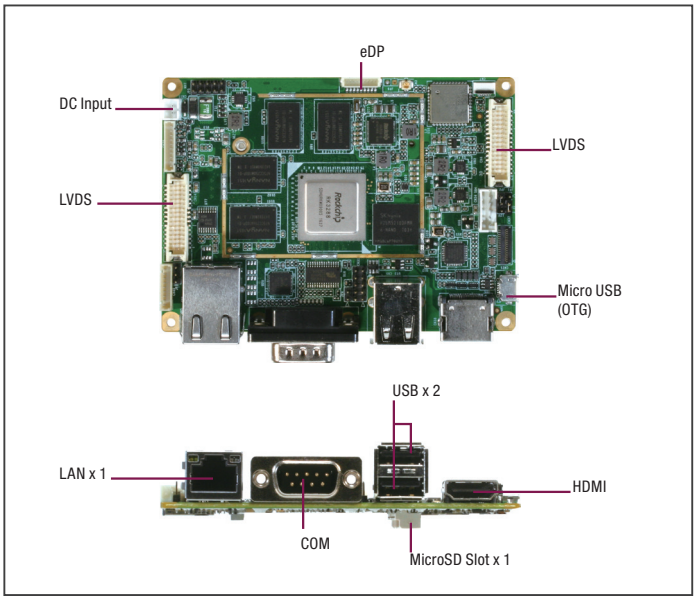
- **TF-ECB-902M-A10**
  ETX Carrier Board, LAN, Audio, 2 COM, 4 USB, 2 PCI, 1 Mini-PCI, 2 ISA, AT/ATX, Rev. A1.0 (For ETX-LN, ETX-945GSE, ETX-701)

RISC Board

12



Pico-ITX Fanless Board with HDMI and Rockchip ARM Cortex™-A17 Quad-core Processor



Features

- Rockchip RK3288 ARM Cortex™-A17 Quad-core 1.6 GHz
- Onboard DDR3L Memory 2 GB
- Onboard eMMC 16 GB
- MicroSD Slot up to 64 GB
- Gigabit Ethernet x 1
- 18/24-bit Dual-Channel LVDS, eDP and HDMI
- RS-232 x 1, RS-232/422/485 x 1
- USB 2.0 x 3, USB OTG x 1, Mini-PCIe x 1 (for 3G/4G Module)
- Optional 7.4V Battery Power Input
- Optional High Accuracy GPS Module, NFC Module

Specifications

System	
Form Factor	Pico-ITX
CPU	Rockchip RK3288 ARM Cortex™-A17 Quad-core 1.6 GHz (up to 1.6 GHz)
GPU	Mali-T764
Graphics	Video Decode: MPEG-1, MPEG-2, MPEG-4, H.263, H.264, AVS, VC-1, VP8, MVC Video Encode: H.264 (BP@level4.0, MP@level4.0, HP@level4.0), MVC and VP8
Memory Capacity	DDR3L 2GB
Storage/SSD	16GB eMMC and Micro SD card
Operating System	Android 6.0
Kernel	Kernal 4.4
Watchdog Timer	Integrated
Power Requirement	+12V DC input, Optional 7.4V battery
Power Consumption (Typical)	0.6A@12V, full load, Quad CPU
Dimension	3.94" x 2.84" (100 mm x 72 mm)
Gross Weight	0.88 lb (0.4 kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE/FCC
Display	
HDMI	HDMI(1.4) up to 4k x 2k @60Hz
eDP	Up to 2560 x 1440 @60Hz
LVDS	support 18/24-bit up to 1920 x 1080 @60Hz
MIPI	Up to 2560 x 1440 @60Hz
I/O	
Ethernet	GbE x 1
USB Port	Micro USB OTG x 1, USB 2.0 Type A x 2 USB2.0 Pin header x 1
Serial Port	RS-232/422/485 x 1 RS-232 Pin header x 1, Debug port pin header x 1
Audio	2.5W (by 4Ω) Speaker/ Microphone/ Earphone
GPIO	8-bit (4-in, 4-out)
Expansion Slot	Full-size mini-PCIe slot x 1 (For 3G/4G card)
SIM Slot	Nano-SIM
SD Socket	Supports Micro SD card
Camera	—

Packing List

- MB Power Cable
- RTC Battery
- RICO-3288

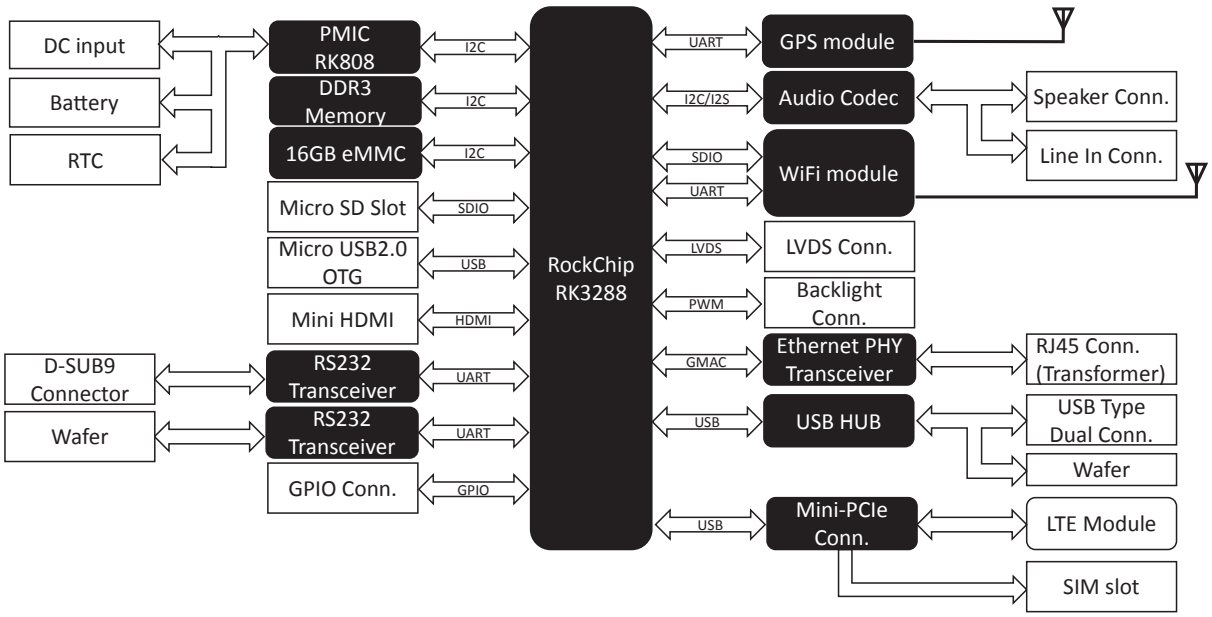
Optional Accessories

Part Number	Description	Qty.
1701090150	COM Cable, Length 15cm	1
1255300607	12V 60W Power Adapter	1
9697T41704-S	NFC Board	1
9697T47700-D	GPS & Battery Charger Board	1

Note: All specifications are subject to change without notice.

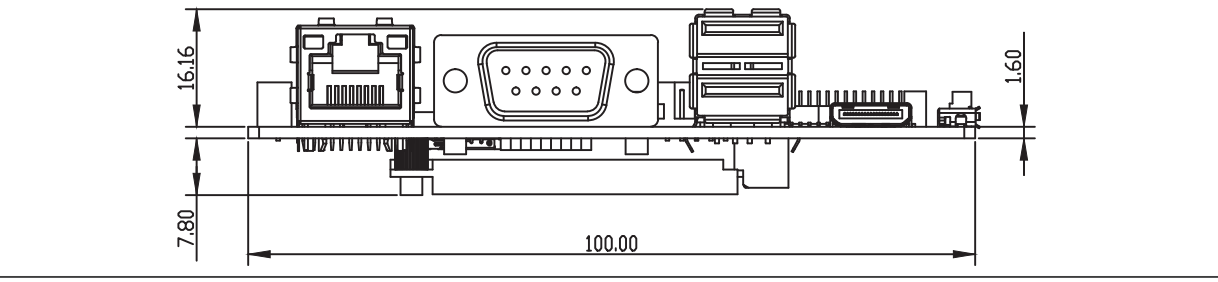
Block Diagram

Unit: mm



Dimension

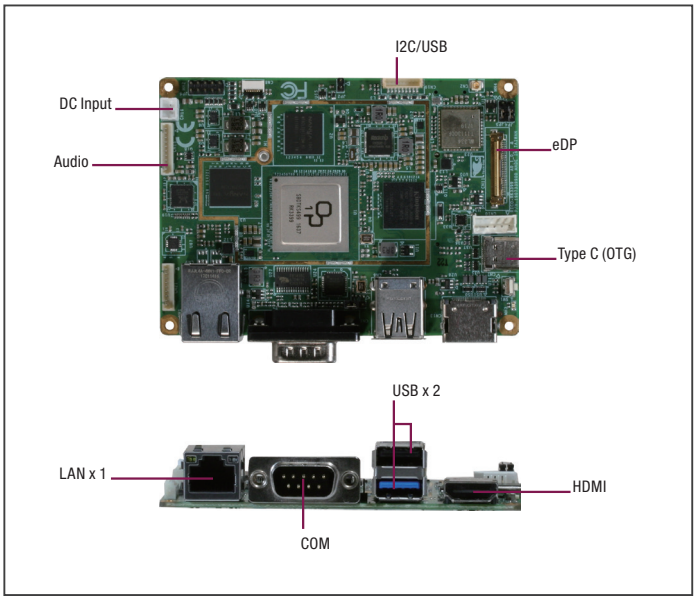
Unit: mm



Ordering Information

Part Number	CPU	RAM	Storage	LAN	RS-232/422/485	USB	HDMI	WiFi & BT	3G/LTE Slot
RICO-3288B-A10-0001	ARM Cortex-A17 1.6GHz	2GB DDR3L	16GB eMMC	GbE x 1	1	2	1	—	—
RICO-3288-A10-0001	ARM Cortex-A17 1.6GHz	2GB DDR3L	16GB eMMC	GbE x 1	1	2	1	802.11ac & BT4.0	Supports 3G/4G card

Pico-ITX Fanless Board with Rockchip ARM Dual-Core Cortex-A72 and Quad-Core Cortex-A53



Features

- Rockchip RK3399 SoC
- Onboard LPDDR3 Memory 2GB
- Onboard eMMC 16GB
- MicroSD Slot
- Gigabit Ethernet x 1
- eDP and HDMI
- RS-232 x 1, RS-232/422/485
- USB 2.0 x 1, USB 3.0 x 1, Type C x 1

Specifications

System	
Form Factor	Pico-ITX
CPU	Rockchip RK3399 Cortex™-A72 Dual-core and Cortex™-A53 Quad-core(up to 1.8 GHz)
GPU	Mali-T864
Graphics	Video Decode: MPEG-1, MPEG-2, MPEG-4, H.263, H.264, H.265, VC-1, VP9, VP8, MVC Video Encode: H.264 UP to HP@level4.1, MVC and VP8
Memory Capacity	LPDDR3 2 GB
Storage/SSD	16GB eMMC and Micro SD card
Operating System	Android 7.1
Kernel	Kernel 4.4
Watchdog Timer	Integrated
Power Requirement	+12V DC input
Power Consumption (Typical)	0.6A@12V, full load, Hexa core
Dimension	3.94" x 2.84" (100 mm x 72 mm)
Gross Weight	0.88 lb (0.4 kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE/FCC
Display	
HDMI	HDMI(2.0) up to 4k x 2k @60Hz
eDP	Up to 4k x 2k @60Hz
LVDS	—
MIPI	—
I/O	
Ethernet	GbE x 1
USB Port	USB 3.0 Type C x 1, USB 2.0 Type A x 1, USB 3.0 Type A x 1 USB 2.0 Pin Header x 1
Serial Port	RS-232/422/485 x 1, RS-232 Pin header x 1, Debug port pin header x 1
Audio	2.5W (by 4Ω) Speaker/ Microphone/ Earphone
GPIO	8-bit (4-in, 4-out)
Expansion Slot	Full-size mini-PCIe slot x 1 (For 3G/4G card)
SIM Slot	Nano-SIM
SD Socket	Supports Micro SD card
Camera	—

Packing List

- MB Power Cable
- RTC Battery
- RICO-3399

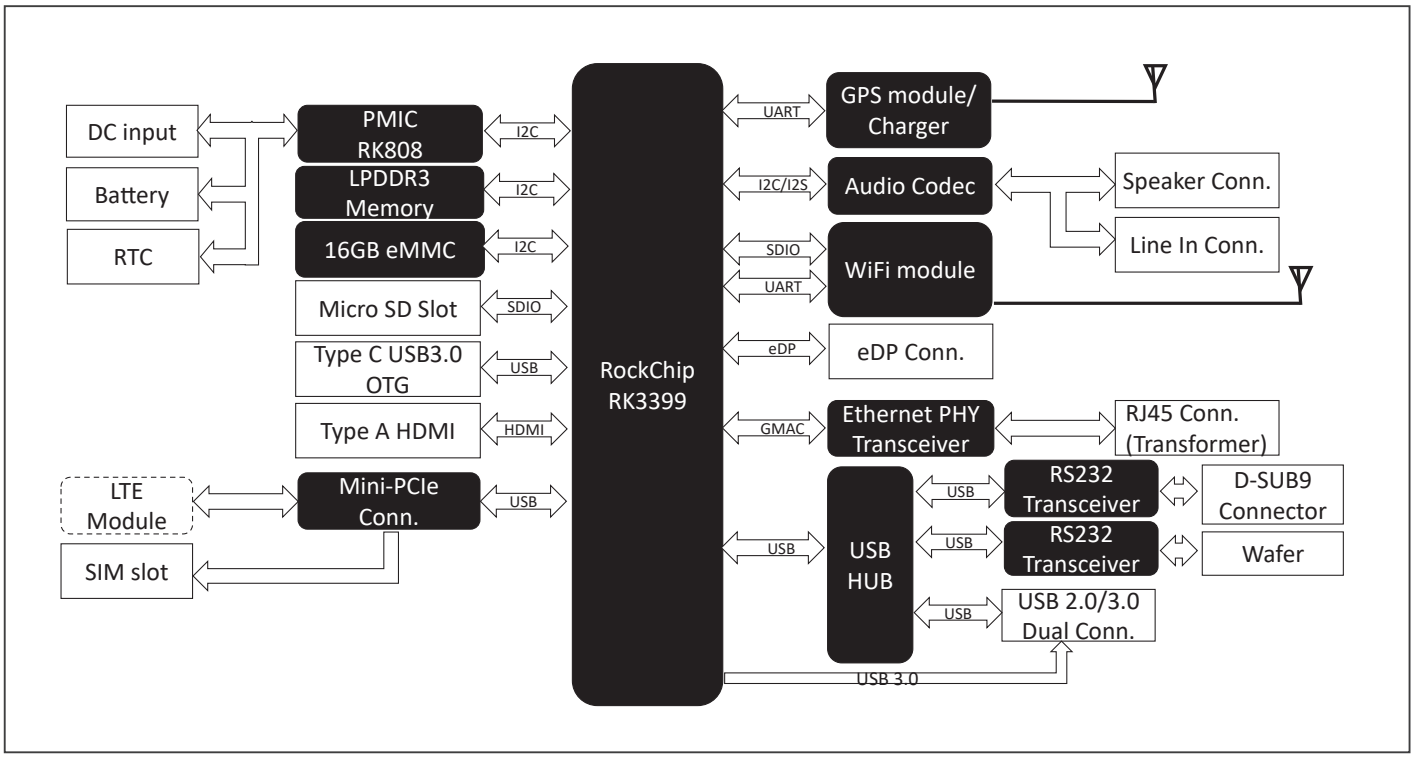
Optional Accessories

Part Number	Description	Qty.
1701090150	COM Cable, Length 15cm	1
1255300607	12V 60W Power Adapter	1
9697T41703-S	NFC Board	1
9697T47700-D	GPS & Battery Charger Board	1

Note: All specifications are subject to change without notice.

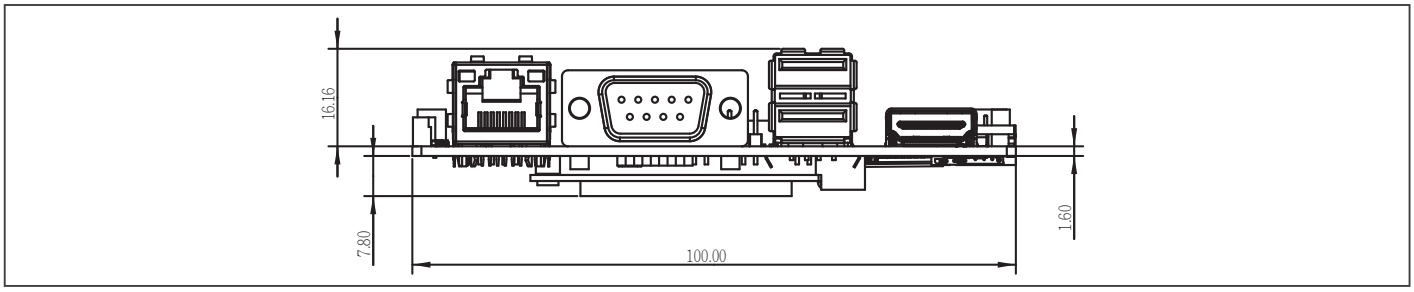
Block Diagram

Unit: mm



Dimension

Unit: mm

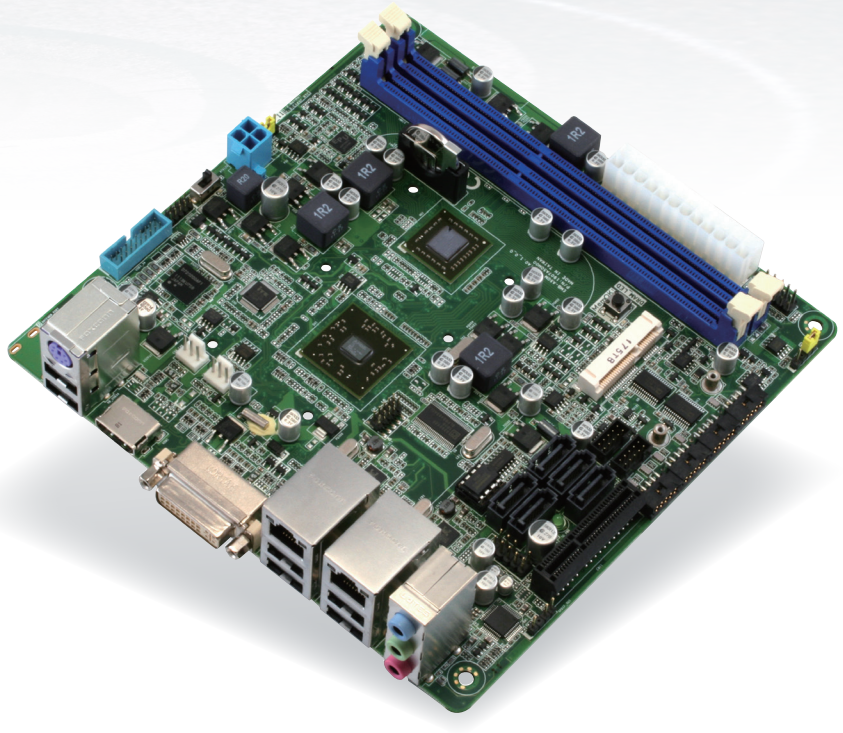


Ordering Information

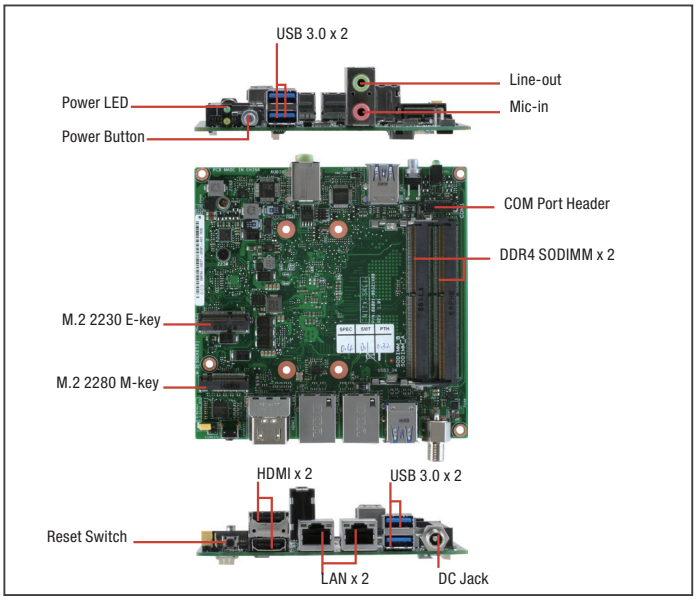
Part Number	CPU	RAM	Storage	Giga LAN	RS-232/422/485	USB	HDMI	WiFi & BT	LTE slot	Optional CAN BUS	Optional RS-232
RICO-3399-A10-0000	ARM Dual Cortex-A72 + Quad Cortex-A53	2GB LPDDR3	16GB eMMC	1	1	2	1	—	—	—	—
RICO-3399-A10-0001	ARM Dual Cortex-A72 + Quad Cortex-A53	2GB LPDDR3	16GB eMMC	1	1	2	1	802.11a & BT4.0	Supports 3G/4G Card	—	—

Industrial Motherboards

13



6th Generation Intel® Core™ 15W Processor Nano-ITX Board with HDMI x 2, LAN Port x 2, COM Port x 1 and USB Port x 4



Features

- **6th Generation Intel® Core™ i7/i5/i3/Celeron® 15W BGA Processor**
- **Dual Gigabit Ethernet**
- **Dual HDMI Port**
- **USB 3.0 Port x 4**
- **COM Port x 1**

Specifications

System	
Processor	6th generation Intel® 14nm ULT Core™, BGA CPU, 15W TDP. i7-6600U 2C/4T GT2 2.6/3.4 GHz 4M/ i5-6300U 2C/4T GT2 2.4/3.0 GHz 3M/ i3-6100U 2C/4T GT2 2.3 GHz 3M/ Celeron® 3955U 2C/2T GT1 (f) 2.0 GHz 2M
Chipset	Intergrated into SoC
Memory	SODIMM x 2, max. 32 GB, DDR4 2133/1867 MHz non-ECC, un-buffered memory
I/O Chipset	NCT5538D
Ethernet	Realtek 8111G Gb LAN x 2, RJ-45 x 2
Audio	Realtek® ALC887
TPM	—
Expansion Slots	M.2 2280 M-Key slot x 1 (PCIe x4 + SATA) M.2 2230 E-Key slot x 1 (PCIe+USB)
BIOS	128Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System Voltage Monitor on Vcore/5V/3.3V/12V Fan Monitor on Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Chassis Fan
Wake On LAN / PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Integrated Graphics
Graphics Multi Display	HDMI + HDMI
VGA	—
DVI	—
HDMI	HDMI 1.4 up to 4096 x 2160@24Hz
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	DC Power x 1 (DC: 12V~19V, wide rage:12V-5%~ 19V+10%)
Operating Temperature	FANLESS : 0°C~40°C, FAN : 0°C~50°C
Storage Temperature	—
Operating Humidity	20%~90% R/H, non-condensing
Certificate	CE & FCC class A
Form Factor	NANO ITX: 4.72" x 4.72" (120mm x 120mm)
Weight	—
MTBF (Hours)	—
Front Panel I/O	
USB	USB 3.0 port x 2
Audio	Audio Jack x 2: Line-out (green), Mic-in(pink)
Power	On/Off Button x 1
Others	Power LED + HD LED x 1
Rear Panel I/O Ports	
USB	USB 3.0 port x 2
Display I/O	HDMI Connector x 2
Audio I/O	—
LAN I/O	RJ-45 connector x 2
Serial Port	—
PS/2 Port	—
Others	Reset Switch x 1, DC power jack x 1
Internal I/O	
Serial port	RS-232 9PIN 1.25mm Header
Storage	M.2 2280 M-Key slot x 1
FAN	Chassis Fan connector x 1 (3-pin, p=2.00mm)
Others	Reset Switch 2-pin header x 1, power button 2-pin header x 1, M.2 2230 E-Key slot x 1
Operating System	
OS Support	WIndows® 7 32-bit, WIndows® 7 64-bit, WIndows® 8.1 64-bit, WIndows® 10 64-bit, Linux Fedora* 22 (64b)

Packing List

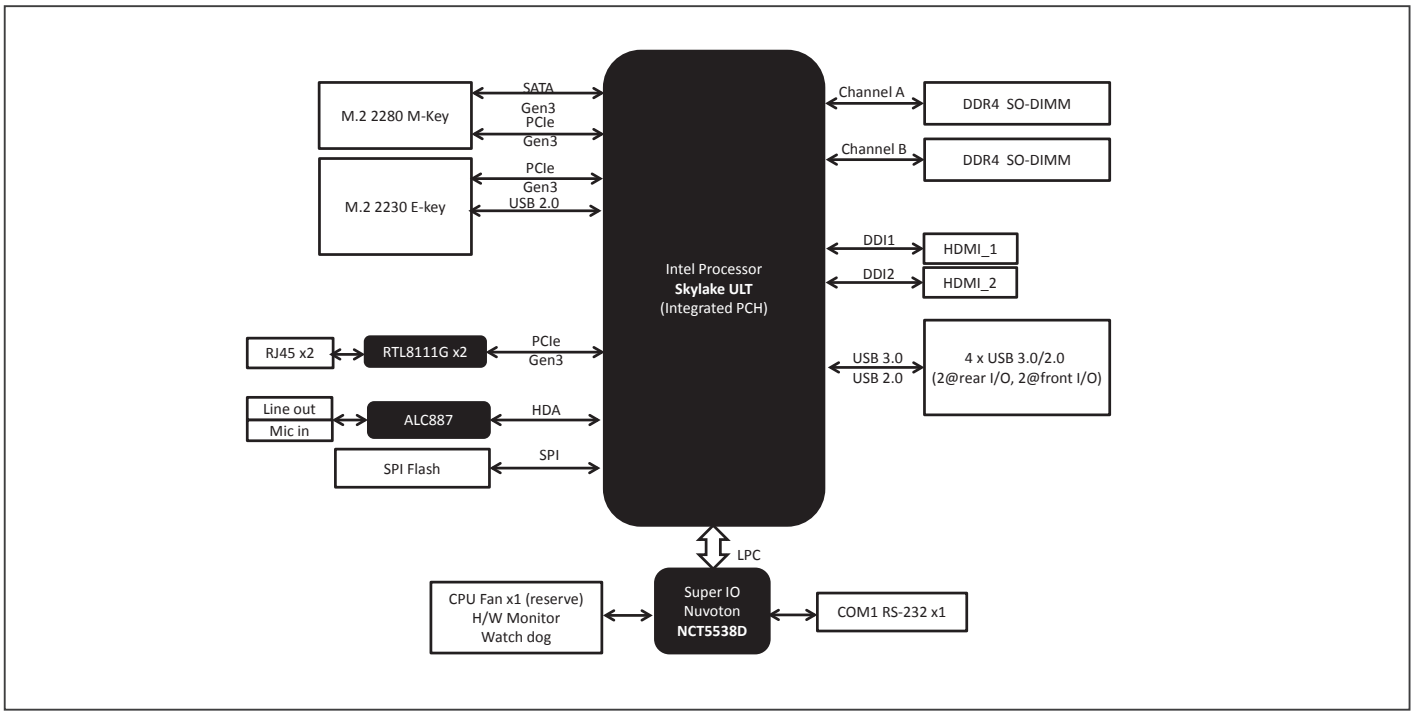
- **Product CD**
- **NITX-SKL1**

Optional Accessories

Part Number	Description
1255300607	60W Power Adapter
968C032G1L	M.2 2280 32GB SSD
968C064G2X	M.2 2280 64GB SSD
968C128G1G	M.2 2280 128GB SSD

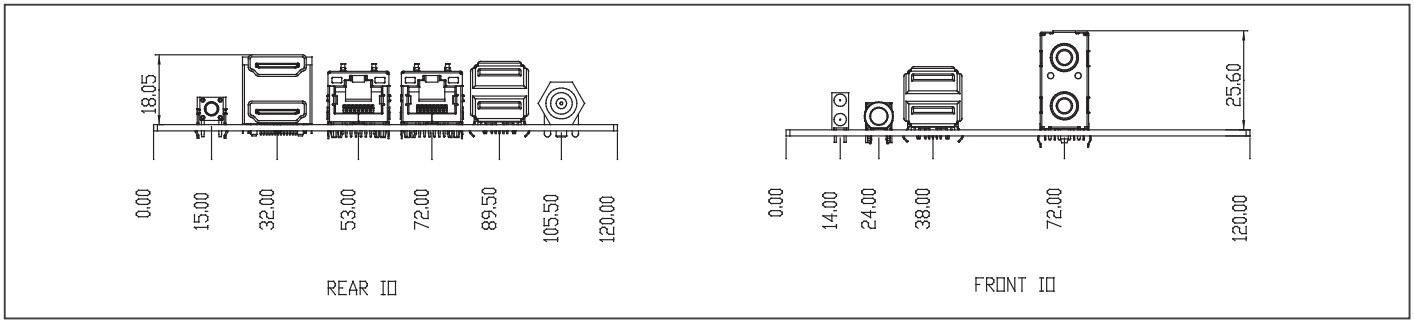
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

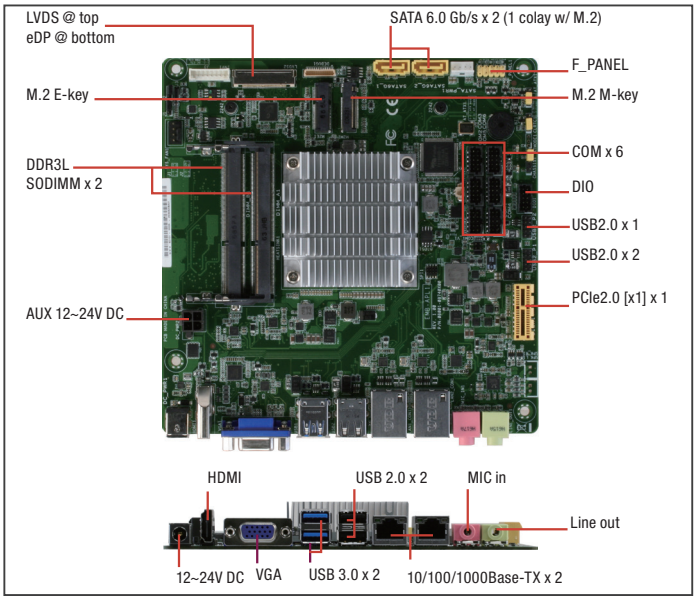


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LAN	USB	USB	RS-232	Expansion Slot	Power	Temp.
NITX-SKL1-3955-A10	Celeron 3955U 2.0G/2M	DDR4 2133/1867 SODIMM	Depends on customer's Mechanical design	HDMI x 2	M.2 2280 M-key Slot	GbE x 2	USB 3.0 Port x 4	USB 3.0 Port x 4	RS-232 x 1	M.2 2230 E-Key Slot	DC12-19V	32°F ~140°F (0°C ~ 60°C)
NITX-SKL1-6100-A10	I3-6100U 2.3G/3M	DDR4 2133/1867 SODIMM		HDMI x 2	M.2 2280 M-key Slot	GbE x 2	USB 3.0 Port x 4	USB 3.0 Port x 4	RS-232 x 1	M.2 2230 E-Key Slot	DC12-19V	32°F ~140°F (0°C ~ 60°C)
NITX-SKL1-6300-A10	I5-6300U 2.4G/3M	DDR4 2133/1867 SODIMM		HDMI x 2	M.2 2280 M-key Slot	GbE x 2	USB 3.0 Port x 4	USB 3.0 Port x 4	RS-232 x 1	M.2 2230 E-Key Slot	DC12-19V	32°F ~140°F (0°C ~ 60°C)
NITX-SKL1-6600-A10	I7-6600U 2.6G/4M	DDR4 2133/1867 SODIMM		HDMI x 2	M.2 2280 M-key Slot	GbE x 2	USB 3.0 Port x 4	USB 3.0 Port x 4	RS-232 x 1	M.2 2230 E-Key Slot	DC12-19V	32°F ~140°F (0°C ~ 60°C)

EMB-APL1

Mini-ITX Embedded Motherboard with Intel® N3350(DC)/N4200(QC)/E3930(DC) Processor



Features

- DDR3L 1333/1600/1867 MHz SODIMM x 2, Up to 8 GB
- Three Independent Display: VGA x 1, HDMI x 1, LVDS/eDP x 1
- Realtek 8111G, Gigabit Ethernet x 2
- COM Port x 6 (RS-232 x 5, RS-232/422/485 x 1)
- M.2 Slot(M-key) x 1, M.2 Slot(E-key) x 1, PCIe2.0 [x1] x 1
- 12~24V DC Wide Range Voltage Power Input
- Low Profile

Specifications

System	
Processor	N4200, (4C @ 2.50GHz CPU [Burst Mode], 750MHz GFX [Turbo], ~6W TDP) N3350, (2C @ 2.40GHz CPU [Burst Mode], 650MHz GFX [Turbo], ~6W TDP) E3930, (2C @ 1.80GHz CPU [Burst Mode], 550MHz GFX [Turbo], ~6.5W TDP)
Chipset	Intergrated into SoC
Memory	DDR3L 1333/1600/1867MHz SODIMM x 2, max. 8GB, non-ECC, un-buffered memory
I/O Chipset	NCT6116D
Ethernet	Realtek PCIe Gb LAN 8111G x 2
Audio	Realtek® ALC3236-CG
TPM	Nuvoton NPCT652ABCYX TPM2.0 (default: No)
Expansion Slots	PCIe2.0 [x1] x 1 M.2 M key (22 x 42mm) x 1, for SATA M.2 E Key (22 x 30mm) x 1, for PCIe
BIOS	128Mbit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Chassis Fan (Fanless)
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	Three Independent Display
VGA	Up to 1920 x 1200 @60Hz
DVI	—
HDMI	Up to 3840 x 2160 @ 30Hz
Display Port	—
LVDS	Up to 1920 x 1200 @60Hz, dual-channel 18/24 bit (via PS8625) (colay with eDP)
eDP	Up to 4096 x 2160 @60Hz
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12V~24V wide-range voltage input back panel DC jack x 1; 4-pin ATX Power connector x 1
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operation Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	263,080

Rear Panel I/O Ports	
USB	USB 3.0 x 2, USB 2.0 x 2
Display I/O	HDMI x 1, VGA x 1
Audio I/O	Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	—
PS/2 Port	—
Others	DC power jack x 1
Internal I/O Connectors	
Storage	SATA 6.0Gb/s x 2(1 colay with M.2 M-key), M.2 M-key (22 x 42mm) x 1
USB	USB 2.0 headers support additional 3 USB ports (2*5-pin, p=2.00mm) x 2
Display I/O	40-pin LVDS/eDP connector x 1(default eDP)
Audio I/O	—
Serial Port	RS-232/422/485 x 1, RS-232 x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit x 1 (In/Out programmable)
FAN	4-pin Chassis Fan x 1
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, AT/ATX mode select jumper (optional) x 1, SATA power connector x 1, M.2 E key (22 x 30mm) for PCIe x 1
OS	
OS Support	WIndows® 10 64bit, Ubuntu16.04.02/Kernel4.8.0

Packing List

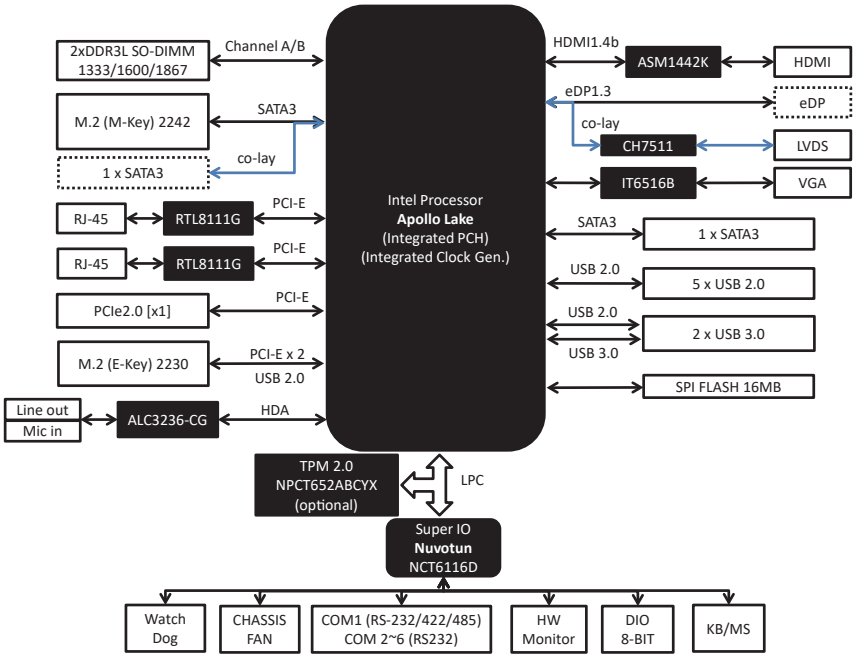
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in1)
- **14001-00230100**
  SATA to Power Cable (4P, 120MM)
- **Heatsink**
- **I/O Shield**
- **Product CD**
- **EMB-APL1**

Optional Accessories

Part Number	Description
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)
1701100206	COM Cable (200MM, p=2.00mm)
1702150300	SATA Power Cable (4P, 300MM p=2.54mm)
1255900846	Adapter 12V/84W

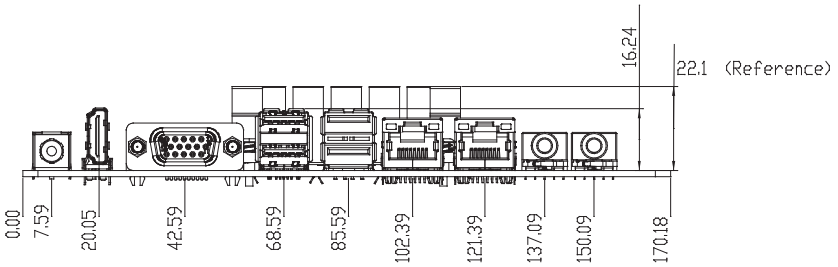
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

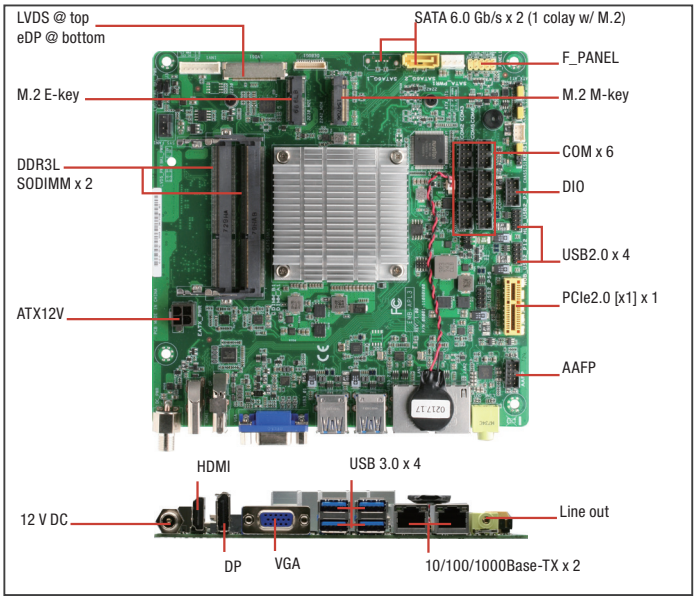


Order Information

Part Number	CPU	RAM	Fan/ Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-APL1-A10-4200-LV	N4200	SODIMM x 2	Fanless	VGA, HDMI, LVDS	SATA3 x 1, M.2(M-key)	Daul Channel 18/24 bit	GbE x 2	USB2.0 x 5, USB 3.0 x 2	5	1	PCIe2.0[x1] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12V-24V DC	—	32°F ~140°F (0°C ~ 60°C)
EMB-APL1-A10-3350-LV	N3350	SODIMM x 2	Fanless	VGA, HDMI, LVDS	SATA3 x 1, M.2(M-key)	Daul Channel 18/24 bit	GbE x 2	USB2.0 x 5, USB 3.0 x 2	5	1	PCIe2.0[x1] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12V-24V DC	—	32°F ~140°F (0°C ~ 60°C)

EMB-APL3

Mini-ITX Embedded Motherboard with Intel® N3350(DC)/N4200(QC)/E3930(DC) Processor



Features

- DDR3L 1333/1600/1867 MHz SODIMM x 2, Up to 8 GB
- Three Independent Display: VGA x 1, HDMI/DP x 1, LVDS/eDP x 1
- Realtek 8111H, Gigabit Ethernet x 2
- COM Port x 6 (RS-232 x 5, RS-232/422/485 x 1)
- M.2 Slot (M-key) x 1, M.2 Slot(E-key) x 1, PCIe2.0 [x1] x 1
- 12V DC Power Input
- Low Profile

Specifications

System	
Processor	N4200, (4C @ 2.50GHz CPU [Burst Mode] 750MHz GFX [Turbo], ~6W TDP) N3350, (2C @ 2.40GHz CPU [Burst Mode], 650MHz GFX [Turbo], ~6W TDP) E3930, (2C @ 1.80GHz CPU [Burst Mode], 550MHz GFX [Turbo], ~6.5W TDP)
Chipset	Intergrated into SoC
Memory	DDR3L 1333/1600/1867MHz SODIMM x 2, max. 8GB, non-ECC, un-buffered memory
I/O Chipset	NCT6116D
Ethernet	Realtek® PCIe Gb LAN 8111H x 2
Audio	Realtek® ALC3236-CG
TPM	Nuvoton NPCT652ABCYX TPM2.0 (default: No)
Expansion Slots	PCIe2.0 [x1] x 1 M.2 M key (22 x 42mm) x 1, for SATA M.2 E Key (22 x 30mm) x 1, for PCIe
BIOS	128Mbit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Chassis Fan (Fanless)
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	Three Independent Display
VGA	Up to 1920 x 1200 @ 60 Hz
DVI	—
HDMI	Up to 3840 x 2160 @30 Hz(HDMI 1.4b)
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz (Colay with VGA)
LVDS	Up to 1920 x 1200 @60Hz, dual-channel 18/24 bit (via PS8625) (colay with eDP)
eDP	Up to 4096 x 2160 @60Hz
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12V DC jack (screw type) 4-pin internal power connector
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	230,820

Rear Panel I/O Ports	
USB	USB 3.0 x 4
Display I/O	VGA/DP x 1, HDMI x 1
Audio I/O	Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC power jack x 1
Internal I/O Connectors	
Storage	SATA 6.0Gb/s x 2(1 colay with M.2 M-key), M.2 M-key (22 x 42mm) x 1
USB	USB 2.0 headers support additional 6 USB ports (2*5-pin, p=2.00mm) x 3
Display I/O	40-pin LVDS/eDP connector x 1(default LVDS)
Audio I/O	AAFP
Serial Port	RS-232/422/485 x 1, RS-232 x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit x 1 (In/Out programmable)
FAN	4-pin Chassis Fan x 1
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, AT/ATX mode select jumper (optional) x 1, SATA power connector x 1,d M.2 E key (22 x 30mm) for PCIe x 1
OS	
OS Support	WIndows® 10 64bit Ubuntu16.04.02/Kernel4.8.0

Packing List

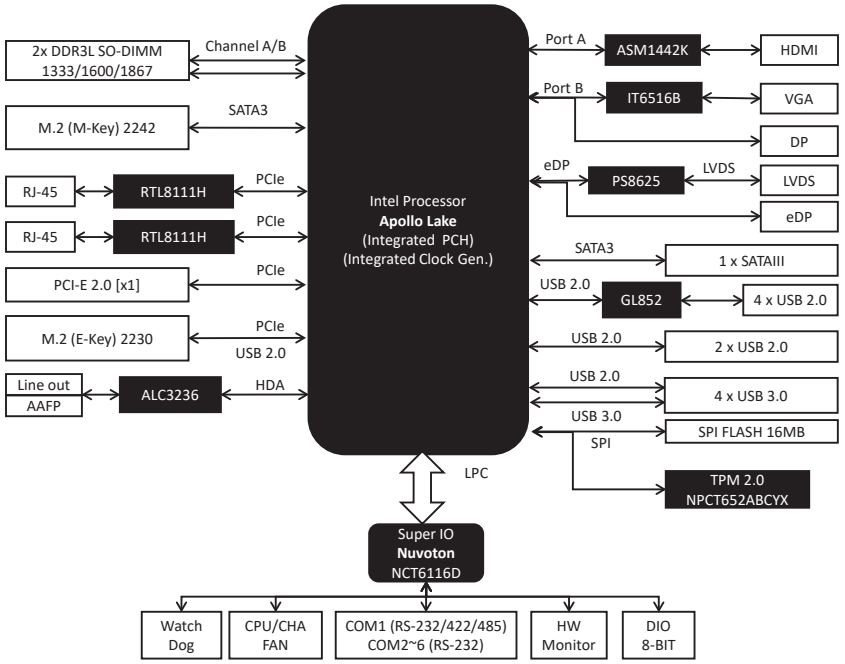
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in1)
- **14001-00230100**
  SATA to Power Cable (4P, 120MM)
- **Heatsink**
- **I/O Shield**
- **Product CD**
- **EMB-APL3**

Optional Accessories

Part Number	Description
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)
1701100206	COM Cable (200MM, p=2.00mm)
1702150300	SATA Power Cable (4P, 300MM p=2.54mm)
1255900846	Adapter 12V/84W

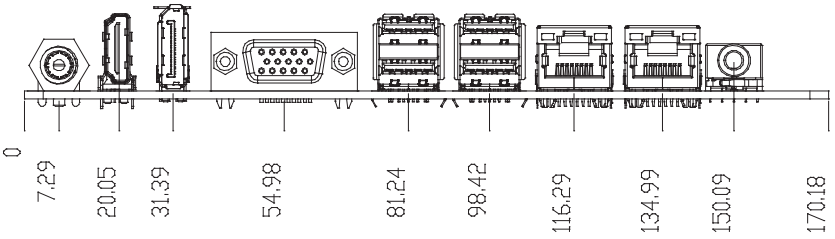
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

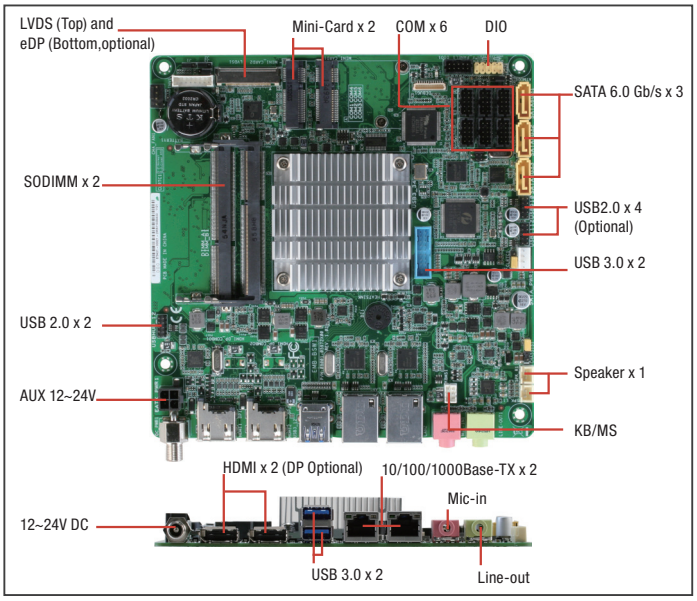
Unit: mm



Order Information

Part Number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-APL3-A10-3350-LV	N3350	SODIMM x 2	Fanless	VGA, HDMI, LVDS	Daul Channel 18/24 bit	SATA3 x 1, M.2(M-key)	GbE x 2	USB2.0 x 5, USB3.0 x 2	5	1	PCIe2.0[x1] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12V DC	—	32°F ~140°F (0°C ~ 60°C)
EMB-APL3-A10-4200-LV	N4200	SODIMM x 2	Fanless	VGA, HDMI, LVDS	Daul Channel 18/24 bit	SATA3 x 1, M.2(M-key)	GbE x 2	USB2.0 x 5, USB3.0 x 2	5	1	PCIe2.0[x1] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12V DC	—	32°F ~140°F (0°C ~ 60°C)

Thin Mini-ITX Embedded Motherboard with Intel® N3710/N3060 Processor, SATA 6.0 Gb/s x 3, USB x 6 (up to 10)



Features

- **Intel® N3710/N3060 Processor**
- **DDR3L 1333/1600 MHz SODIMM x 2, Up to 8 GB**
- **Three Independent Display: HDMI/DP x 2 (Default:HDMI), LVDS/eDP x 1 (Default: LVDS)**
- **SATA 6.0 Gb/s x 3**
- **USB 3.0 x 4, USB 2.0 x 2 (up to 6)**
- **Half-size Mini-Card (PCIe + USB) x 1, Full-size Mini-Card (mSATA Default) (PCIe + USB Optional) x 1**
- **12V~24V DC Wide Range Voltage Power Input**
- **Low Profile**

Specifications

System	
Processor	Intel® Pentium N3710 Processor, (4C @ 2.56GHz CPU (Burst Mode), 400/700 MHz GFX (Turbo), ~6W TDP), Intel® Celeron N3060 Processor, (2C @ 2.48GHz CPU (Burst Mode), 320/600 MHz GFX (Turbo), ~6W TDP)
Chipset	—
Memory	DDR3L 1600 MHz SODIMM x 2 up to 8 GB, Non-ECC, un-buffered memory, Dual-channel memory architecture flat type
I/O Chipset	F81866D
Ethernet	Intel® i211AT x 2
Audio	Realtek® ALC3236
TPM	Infineon SLB96XX TT 1.2/2.0 (default: No)
Expansion Slots	Full-size Mini-Card (mSATA default) (PCIe+USB optional)x 1,Half-size Mini-Card (PCIe+USB) x 1
BIOS	64 M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Chassis Fan (fanless)
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	Three independent displays
VGA	—
DVI	—
HDMI	Up to 2560 x 1600 @60 Hz, 3840 x 2160 @30Hz
Display Port	Up to 2560 x 1600 @60 Hz, 3840 x 2160 @30Hz, 3840 x 2160 @30 Hz
LVDS	Up to 1920 x 1200 @60Hz, dual-channel 18/24-bit (via CH7511)
eDP	Up to 2560 x 1440 @60Hz
Backlight Control	Voltage/ PWM, use HW control
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12-24V DC (wide range: 12V-5% ~ 24V +10%)
Operating Temperature	32°F ~131°F (0°C ~55°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	229,000

Rear Panel I/O Ports	
USB	USB 3.0 x 2
Display I/O	HDMI x 2 (DP optional)
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC port (12V~24V) Screw type x 1
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) x 3, SATA power connector x 1, Full Size Mini-Card (mSATA) x 1
USB	USB 3.0 (2x10PIN, 2.00mm) x 1 port supports additional 2 USB, USB 2.0 (2 x 5-pin, 2.00mm) x 1 port supports additional 2 USB 2.0 (optional up to 3 ports supporting total 6 USB 2.0)
Display I/O	LVDS connector (40PIN, default) x 1, eDP connector (colay with LVDS, optional) x 1, LVDS 3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight connector (inverter) x 1, LCD backlight 12V/5V jumper x 1
Audio I/O	Speaker x 1
Serial Port	Boxer header for COM (RS-232) x 5, Boxer header for COM (RS-232/422/485) x 1
PS/2 Port	PS/2 Keyboard Mouse 6 PIN Connector x 1
Parallel Port	—
DIO	DIO (4-in/4-out) x 1
FAN	Chassis Fan connector x 1
Power	12V AUX Power Connector x 1, AT/ATX mode select jumper (optional) x 1
Others	Front Panel connector x 1, CMOS jumper x 1
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 64-bit, Ubuntu16.04.02/Kernel4.8.0

Packing List

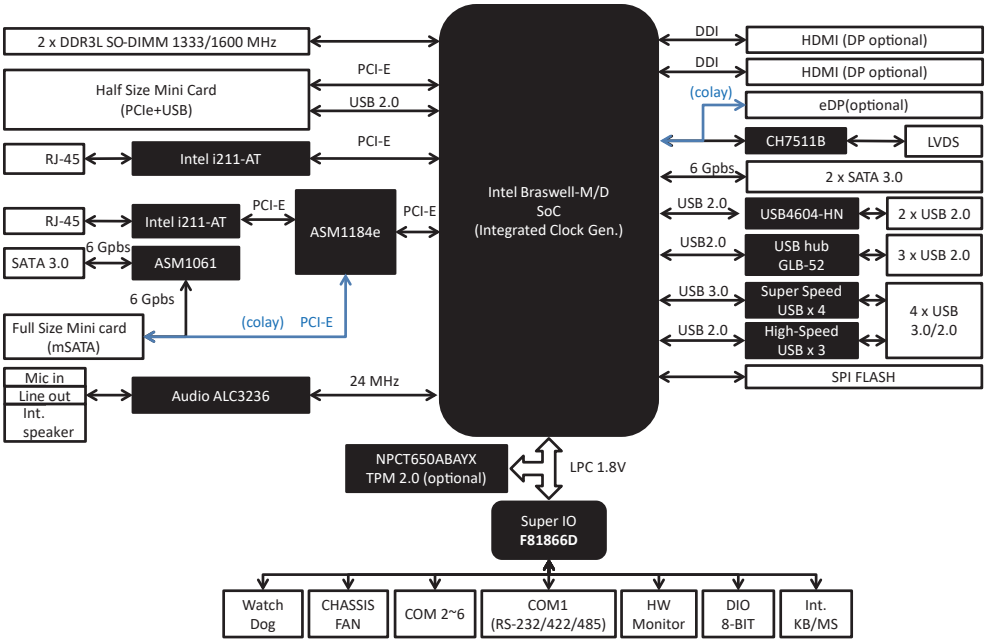
- **SATA Cable**
- **SATA Power Cable**
- **I/O Shield**
- **Heatsink**
- **Product CD**
- **EMB-BSW1**

Optional Accessories

Part Number	Description
1709050201	USB 2.0 Cable (5P, 220MM, p=2.00mm)
1701260305	LPT Cable (25P, 270MM)
1757908403	Lockable Adapter 84W
1701100206	COM Port Cable
1700060152	PS/2 cable (6P, 150mm, p=2.00mm)
1702150300	SATA Power Cable 4P, 2.54mm
125530060A	Lockable Adapter 60W, 12V, 5A, 60W
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1709100201	USB 2.0 Cable (10P, 200mm, p=2.00mm w/ bracket)
1700190450	(TF)USB 3.0 Cable.2 PORTS USB 3.0.to 19P.w/ bracket.450mm.ASUS

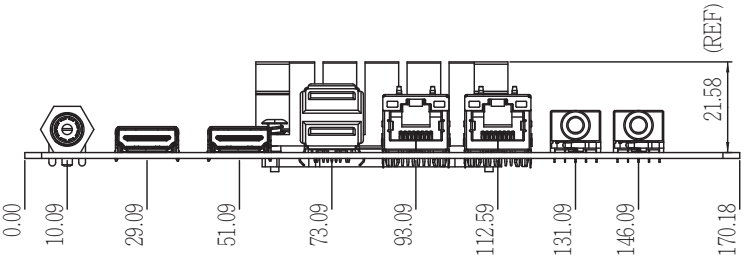
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

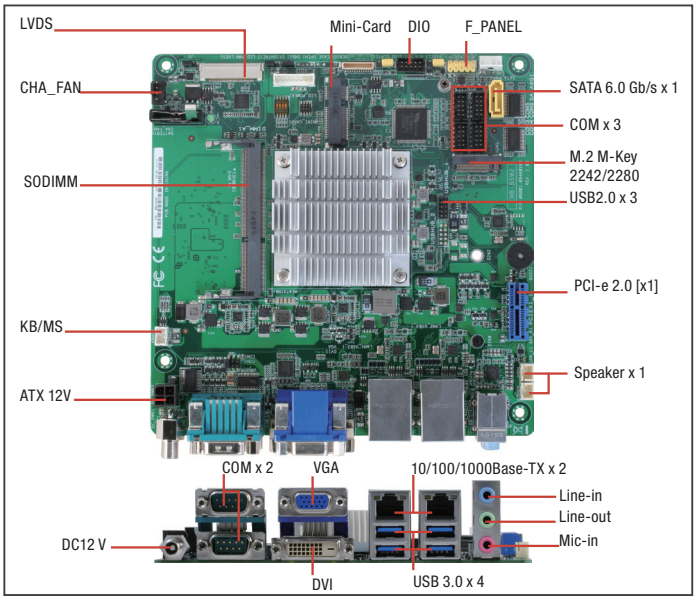
Unit: mm



Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-BSW1-A10-3710-HHL	N3710	SODIMM x 2	Fanless	LVDS, HDMI x 2	SATA3 x 3, Full size Mini-Card x 1 (mSATA)	Dual Channel 18/24-bit	GbE x 2	USB 3.0 x 4, USB 2.0 x 2	5	1	Full-size Mini-Card (mSATA default) x 1, Half-size Mini-Card (PCIe + USB) x 1	12~24VDC	No	32°F ~140°F (0°C ~ 60°C)
EMB-BSW1-A10-3060-HHL	N3060	SODIMM x 2	Fanless	LVDS, HDMI x 2	SATA3 x 3, Full size Mini-Card x 1 (mSATA)	Dual Channel 18/24-bit	GbE x 2	USB 3.0 x 4, USB 2.0 x 2	5	1	Full-size Mini-Card (mSATA default) x 1, Half-size Mini-Card (PCIe + USB) x 1	12~24VDC	No	32°F ~140°F (0°C ~ 60°C)

Mini-ITX Embedded Motherboard with Intel® N3060 (DC) Processor



Features

- DDR3L 1333/1600 MHz SODIMM x 1, Up to 8 GB
- Three Independent Display: VGA x 1, DVI-D x 1, LVDS x 1
- Realtek 8111G, Gigabit Ethernet x 2
- COM Port x 5 (RS-232 x 4, RS-232/422/485 x 1)
- 12V DC Power Input
- M.2 (M-key) x 1, PCIe2.0 [x1] x 1, mPCIe x 1

Specifications

System	
Processor	Intel® Celeron®N3060 Processor, (2C @ 2.48GHz CPU (Burst Mode), 320/600MHz GFX (Turbo), ~6W TDP)
Chipset	Intergrated into SoC
Memory	DDR3L 1333/1600 MHz SODIMM x 1, max. 8GB, non-ECC, un-buffered memory
I/O Chipset	NCT6116D
Ethernet	Realtek PCIe Gb LAN 8111G x 2
Audio	Realtek® ALC3236-CG
TPM	—
Expansion Slots	PCIe2.0 [x1] x 1 M.2 M-key (2242/2280) x 1, for SATA (default:2280) Full-size Mini Card(PCIe +USB) x 1
BIOS	64Mbit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Chassis Fan x 1 (Fanless)
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	Three Independent Display
VGA	Up to 1920 x 1200 @60Hz
DVI	Up to 1920 x 1200 @60Hz
HDMI	—
Display Port	—
LVDS	Up to 1920 x 1200 @60Hz, dual-channel 18/24 bit (via PS8625)
eDP	—
Backlight Control	Voltage/PWM, use HW control
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12V DC input (back panel DC jack) x 1; 4-pin ATX 12V Power connector x 1
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operation Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Mini-ITX: 6.7" x 6.7"(170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	337,940

Rear Panel I/O Ports	
USB	USB 3.0 x 4
Display I/O	DVI-D x 1, VGA x 1
Audio I/O	Mic-in, Line in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	COM x 2 (RS-232 x 1, RS-232/422/485 x 1)
PS/2 Port	—
Others	Lockable DC power jack x 1
Internal I/O Connectors	
Storage	SATA 6.0Gb/s x 1, M.2 M-key (2242/2280) x 1, (default:2280)
USB	USB 2.0 headers (2*5-pin, p=2.00mm) x 2, support additional 3 USB ports
Display I/O	40-pin LVDS connector x 1
Audio I/O	Speaker (2W) x 1
Serial Port	RS-232 box header x 3
PS/2 Port	PS/2 header x 1
Parallel Port	—
DIO	8-bit x 1 (In/Out programmable)
FAN	4-pin Chassis Fan x 1
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, AT/ATX mode select jumper x 1, SATA power connector x 1, 4-pin ATX 12V Power connector x 1
OS	
OS Support	Windows® 7 32 / 64bit, Windows® 8.1 64bit, Windows® 10 64bit,Ubuntu16.04.02/Kernel4.8.0

Packing List

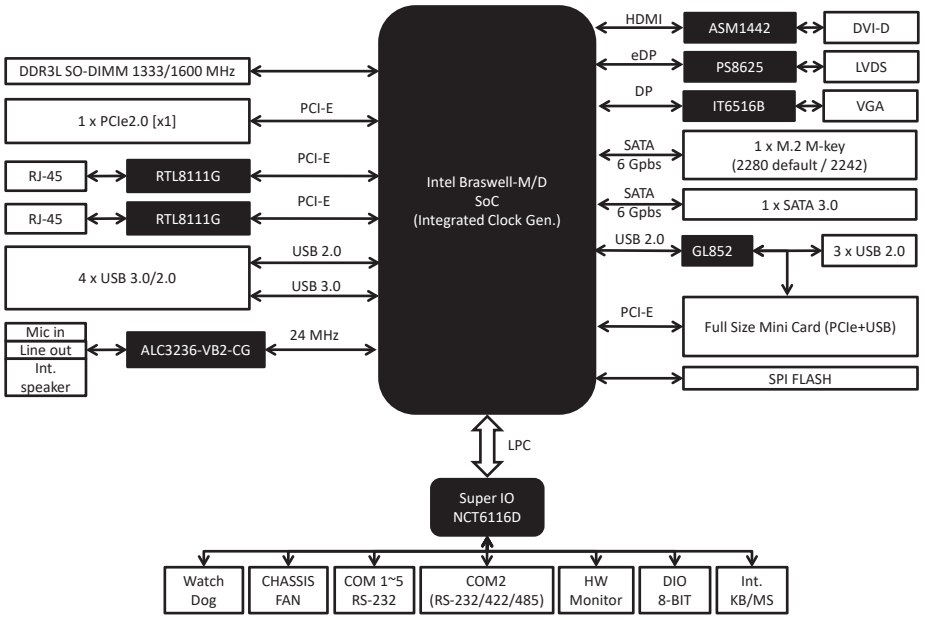
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)
- **14001-00230100**
  SATA to Power Cable (4P, 120MM)
- **I/O Shield**
- **Heatsink**
- **Product CD**
- **EMB-BSW2**

Optional Accessories

Part Number	Description
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)
170910020K	USB 2.0 Cable (9P, 200MM, p=2.54mm, w/o bracket)
1701100206	COM Cable (200MM, p=2.00mm)
1702150300	SATA Power Cable (4P, 300MM p=2.54mm)
1757908403	Lockable Adapter 84W
125530060A	Lockable Adapter 12V, 5A, 60W

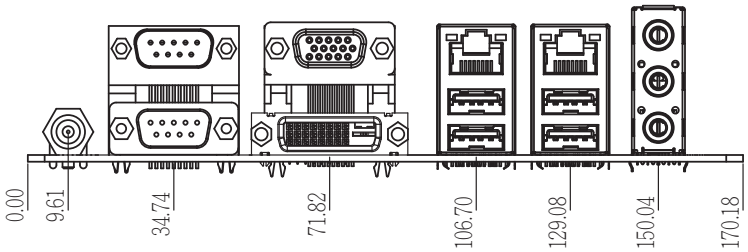
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

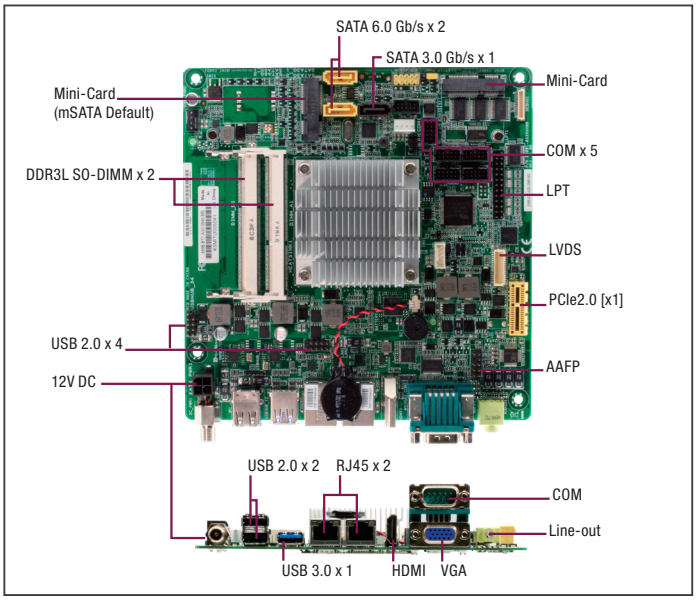
Unit: mm



Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-BSW2-A10-3060	N3060(DC)	SODIMM x 2	Fanless	VGA x 1, DVI-D x 1, LVDS x 1	SATA3 x 1, M.2(M-key) x 1	—	GbE x 2	USB 3.0 x 4, USB2.0 x 3	4	1	PCIe2.0[x1] x 1, Full Size mPCIe x 1	12V DC	—	32°F ~ 140°F (0°C ~ 60°C)

Mini-ITX Embedded Motherboard with Intel® Celeron® J1900/N2807/ Atom™ E3845/E3825 Processor, SATA3 x 2, SATA2 x 2, USB x 8



Features

- **Intel® Celeron® J1900/N2807/ Atom™ E3845/E3825 Processor**
- **Dual Displays: VGA x 1, HDMI x 1, LVDS x 1**
- **Realtek 8111G, Gigabit Ethernet x 2**
- **SATA 6.0 Gb/s x 2, SATA 3.0 Gb/s x 2 (1 Colay with mSATA)**
- **USB 3.0 x 1, USB 2.0 x 7**
- **Full-size Mini-Card with mSATA x 1, Half-size Mini-Card x 1, PCI-E[x1] x 1**
- **12V DC Power Input**

Specifications

System	
Processor	Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP), Intel® Celeron® N2807 Processor (2C @ 1.58 GHz CPU, 313/750 MHz GFX, 4.3W TDP), Intel® Atom™ E3845 Processor (4C @ 1.91 GHz CPU, 542/792 MHz GFX, 10W TDP), Intel® Atom™ E3825 Processor (2C @ 1.33 GHz CPU, 533 MHz GFX, 6W TDP)
Chipset	—
Memory	DDR3L 1333 MHz SODIMM x 2 up to 8 GB (for J1900 / E3845), DDR3L 1333 MHz SODIMM x 1 up to 4 GB (for N2807), DDR3L 1067 MHz SODIMM x 1 up to 4 GB (for E3825), Non-ECC, un-buffered memory, Dual-channel memory architecture flat type
I/O Chipset	Fintech 81866D
Ethernet	Realtek® PCIe Gb LAN 8111G x 2
Audio	Realtek® ALC887
TPM	Infineon SLB9635 TT 1.2 (default : No)
Expansion Slots	Full-size Mini-Card (mSATA default) (PCIe+USB optional) + SIM Card (default: No) x 1, Half-size Mini-Card (PCIe+USB) x 1, PCIe [x1] x 1
BIOS	64 M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Chassis Fan (fanless)
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+LVDS, VGA+HDMI, LVDS+HDMI
VGA	Up to 1920 x 1200 @60 Hz
DVI	—
HDMI	Up to 1920 x 1200 @60 Hz
Display Port	—
LVDS	Up to 1920 x 1080 @60Hz, dual-channel 18/24-bit (via CH7511)
eDP	—
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12VDC
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	111,131

Rear Panel I/O Ports	
USB	USB 3.0/2.0 x 1, USB 2.0 x 2
Display I/O	VGA x 1, HDMI x 1
Audio I/O	Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	COM (RS-232)(optional) x 1
PS/2 Port	—
Others	DC port (12V) Screw type x 1
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) x 2, SATA2 (3.0Gb/s) x 2 (1 colay with mSATA), SATA power connector x 1, Ful Size Mini-Card slot (mSATA) x 1
USB	USB 2.0 (2 x 5-pin, 2.54mm) x 2 ports support additional 4 USB, USB 2.0 (1x 5-pin, 2.0mm) x 1 port supports additional 1 USB
Display I/O	LVDS connector x 1, LVDS 3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight connector (inverter) x 1, LCD backlight 12V /5V jumper x 1
Audio I/O	AAFP x 1
Serial Port	Boxer header for COM (RS-232) x 4, Boxer header for COM (RS-232/422/485) x 1
PS/2 Port	PS/2 Keyboard Mouse 6 PIN Connector x 1
Parallel Port	SPP/EPP Mode
DIO	DIO (4in/4out) x 1
FAN	Chassis Fan connector x 1
Power	12V AUX Power Connector x 1, AT/ATX mode select jumper (default : No) x 1
Others	Half-size Mini-Card (PCIe + USB) x 1, PCIe [x1] x 1, SIM Card Socket(default : No) x 1, LPT PIN header x 1, Front Panel connector x 1, CMOS jumper x 1
OS	
OS Support	Windows® 10 64-bit, Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Linux Fedora

Packing List

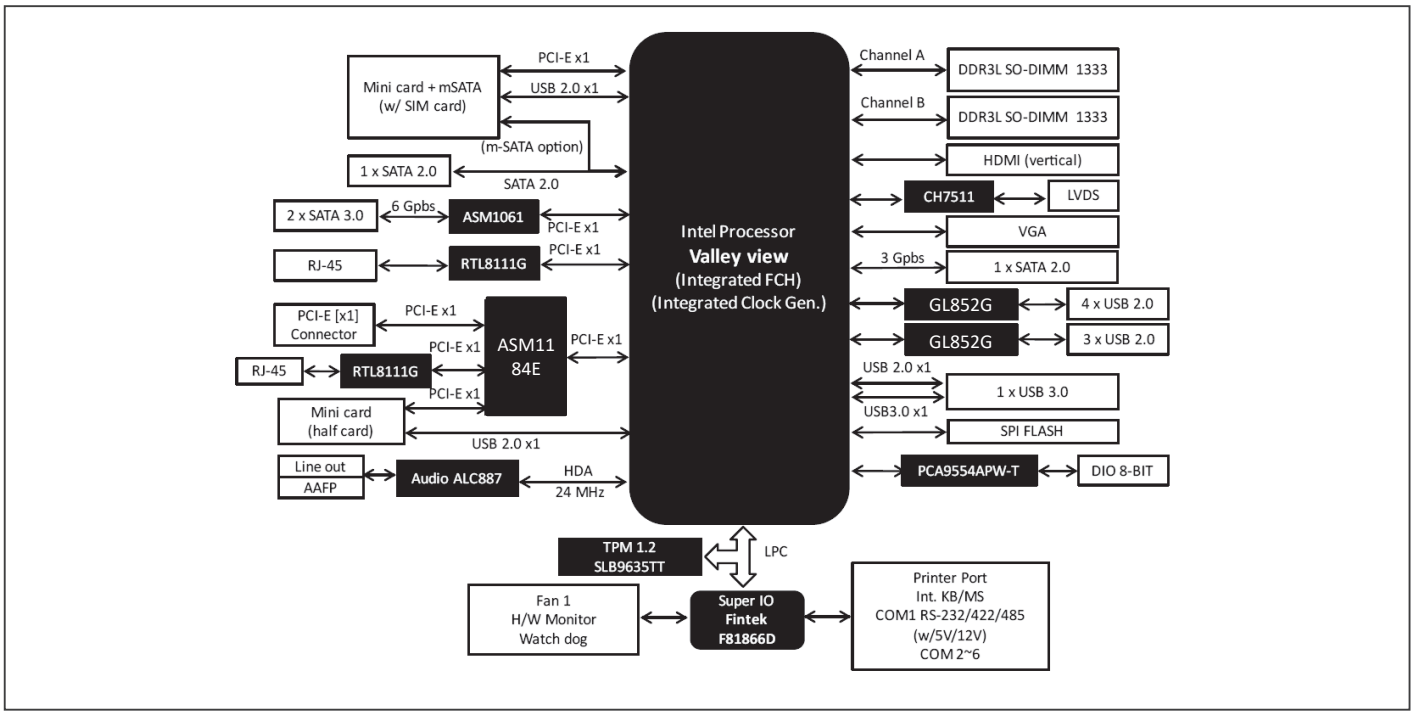
- **SATA Cable**
- **SATA Power Cable**
- **I/O Shield**
- **Heatsink**
- **Product CD**
- **EMB-BT1**

Optional Accessories

Part Number	Description
1709100330	USB 2.0 Cable (9P, 330MM, p=2.54mm, w/ bracket)
1709050201	USB 2.0 Cable (5P, 220MM, p=2.00mm)
1701260305	LPT Cable (25P, 270MM)
1757908403	Lockable Adapter 84W
1701100206	COM Port Cable
1700060152	PS/2 Cable (6P, 150mm, p=2.00mm)
170910020K	USB 2.0 Cable (9P, 200MM, p=2.54mm, w/o bracket)
1702150300	SATA Power Cable 4P, 2.54mm
125530060A	Lockable Adapter 12V, 5A, 60W

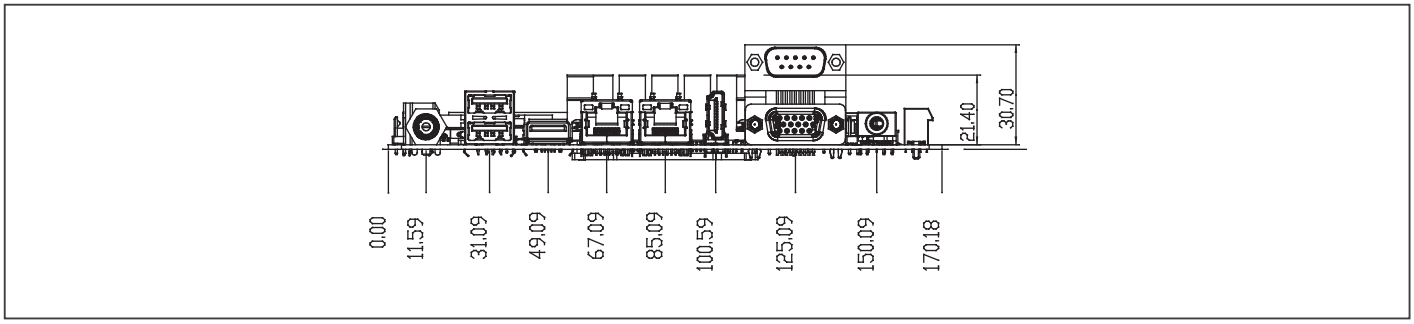
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

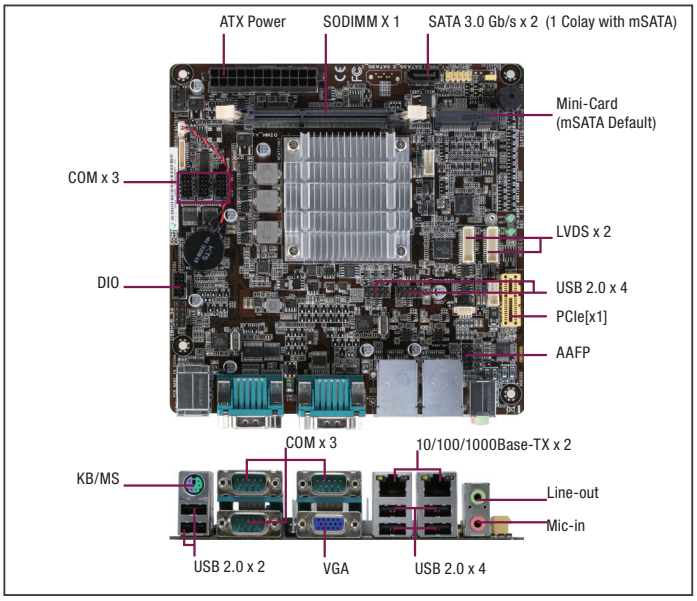
Unit: mm



Ordering Information

Part Number	CPU	RAM	Fan/ Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-BT1-A30-1900-MS	J1900	DDR3L-1333 x 2	Fanless	VGA, LVDS, HDMI	SATA2 x 1, SATA3 x 2, Full size Mini-Card x 1 (mSATA)	Dual Channel 18/24-bit	GbE x 2	USB 3.0 x 1, USB 2.0 x 7	5	1	PCIe [x1] x 1, Half-size Mini-Card x 1 (PCIe [x1] x 1& USB)	12V DC	—	32°F ~ 140°F (0°C ~ 60°C)
EMB-BT1-A30-3825-MS	E3825	DDR3L-1066 x 1	Fanless	VGA, LVDS, HDMI	SATA2 x 1, SATA3 x 2, Full size Mini-Card x 1 (mSATA)	Dual Channel 18/24-bit	GbE x 2	USB 3.0 x 1, USB 2.0 x 7	5	1	PCIe [x1] x 1, half size Mini-Card x 1 (PCIe [x1] x 1 & USB)	12V DC	—	32°F ~ 140°F (0°C ~ 60°C)
EMB-BT1-A30-3845-MS	E3845	DDR3L-1333 x 2	Fanless	VGA, LVDS, HDMI	SATA2 x 1, SATA3 x 2, Full size Mini-Card x 1 (mSATA)	Dual Channel 18/24-bit	GbE x 2	USB 3.0 x 1, USB 2.0 x 7	5	1	PCIe [x1] x 1, half size Mini-Card x 1 (PCIe [x1] x 1 & USB)	12V DC	—	32°F ~ 140°F (0°C ~ 60°C)

Mini-ITX Embedded Motherboard with Intel® Celeron® J1900 Processor, SATA2 x 2, USB 2.0 x 10, Dual LVDS



Features

- Intel® Celeron® J1900 Processor
- Realtek 8111G, Gigabit Ethernet x 2
- Dual Displays: VGA + LVDS, Dual LVDS
- SATA 3.0 Gb/s x 2
- USB 2.0 x 10
- Full-size Mini-Card with mSATA x 1, PCI-E [x1] x 1
- ATX Power

Specifications

System	
Processor	Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP)
Chipset	—
Memory	DDR3L 1333 MHz SODIMM x 1 up to 8 GB, Non-ECC, un-buffered memory
I/O Chipset	Fintech 81866D
Ethernet	Realtek PCIe Gb LAN 8111G x 2
Audio	Realtek® ALC887 (colay ALC892/886)
TPM	Infineon SLB9635 TT 1.2 (default : No)
Expansion Slots	Full-size Mini-Card (mSATA default PCIe+USB optional) x 1, PCIe [x1] x 1
BIOS	64 M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Chassis Fan (fanless)
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+LVDS, Dual LVDS
VGA	Up to 1920 x 1200 @60 Hz
DVI	—
HDMI	—
Display Port	—
LVDS	Dual LVDS, Up to 1920 x 1080 @60Hz, dual-channel 18/24-bit (via CH7511)
eDP	—
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	ATX
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	290,990
Rear Panel I/O Ports	
USB	USB 2.0 x 6
Display I/O	VGA x 1
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	COM (RS-232/422/485) x 1, COM (RS-232) x 2
PS/2 Port	PS/2 Keyboard Mouse combo x 1
Others	—
Internal I/O Connectors	
Storage	SATA2 (3.0Gb/s) x 2 (1 colay with mSATA), Ful Size Mini-Card slot (mSATA) x 1
USB	USB 2.0 (2 x 5-pin, 2.54mm) x 2 ports support additional 4 USB
Display I/O	LVDS connector x 2, LVDS 3V /5V jumper x 2, LCD DC / PWM mode jumper x 2, LCD backlight connector (inverter) x 2, LCD backlight 12V /5V jumper x 2, LCD push button for backlight control (2PIN) x 2
Audio I/O	AAFP x 1, Speaker x 1
Serial Port	Boxer header for COM (RS-232) x 3
PS/2 Port	—
Parallel Port	—
DIO	DIO (4in/4out) x 1
FAN	Chassis Fan connector x 1
Power	24PIN ATX power connector x 1, AT/ATX mode select jumper (default : No) x 1
Others	Front Panel connector x 1, CMOS jumper x 1
OS	
OS Support	Windows® 10 64-bit, Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Linux Fedora

Packing List

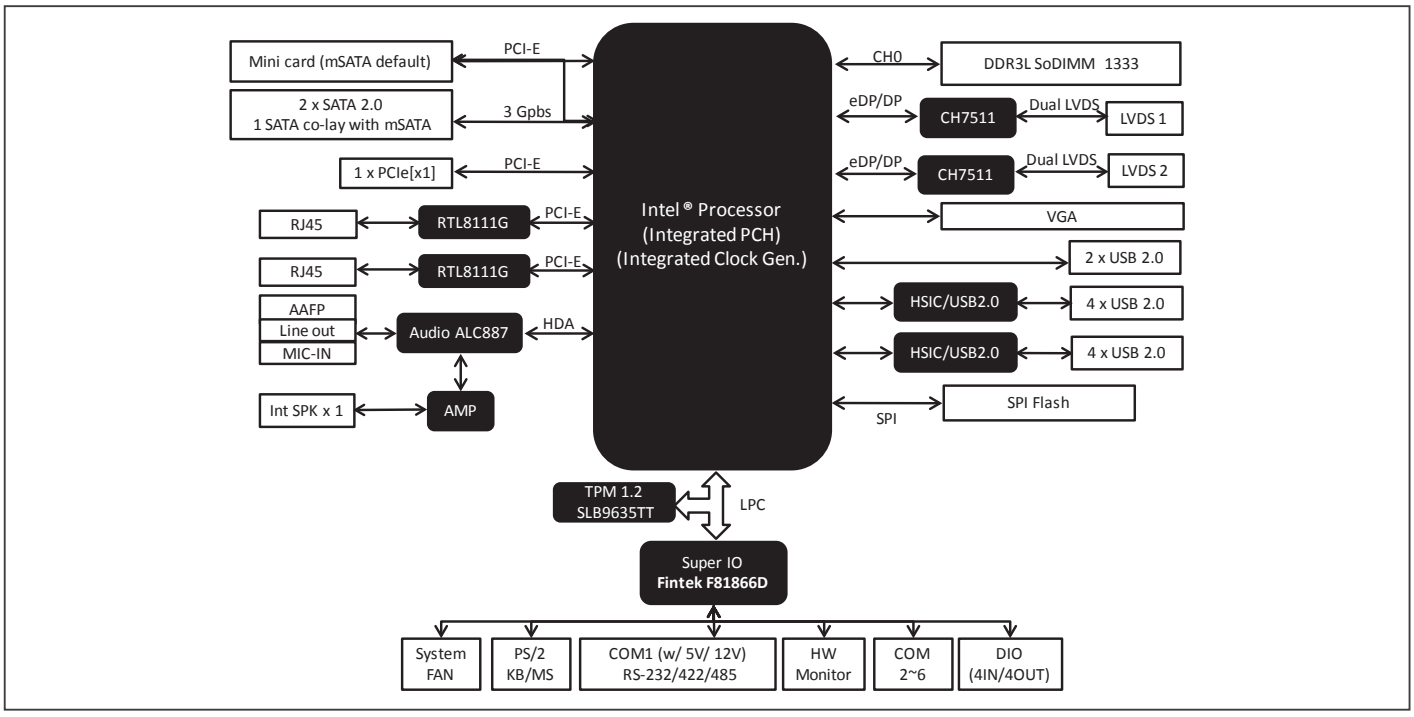
- SATA 3G Cable
- Heatsink
- I/O Shield
- Product CD
- EMB-BT2

Optional Accessories

Part Number	Description
1709100330	USB 2.0 Cable (9P, 330MM, p=2.54mm, w/ bracket)
1701100206	COM Port Cable
170910020K	USB 2.0 Cable (9P, 200MM, p=2.54mm, w/o bracket)

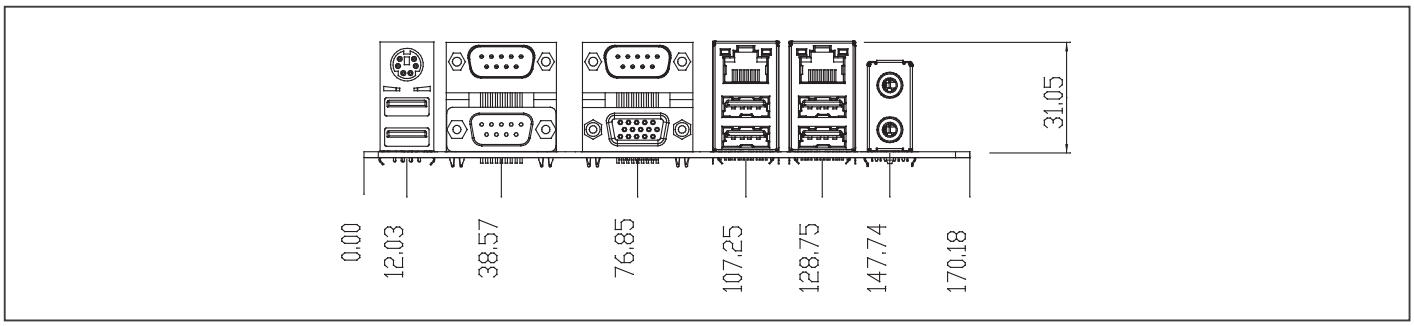
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

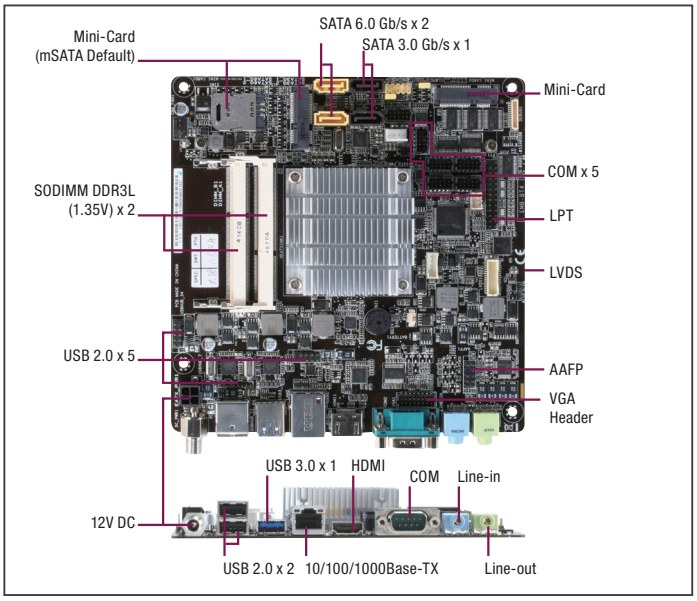
Unit: mm



Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-BT2-A11-1900-MS	J1900	SODIMM x 1	Fanless	VGA, LVDS x 2	SATA2 x 1, Full-Size Mini-Card x 1(mSATA)	Dual Channel 18/24-bit x 2	GbE x 2	USB 2.0 x 10	5	1	Full-size Mini-Card (mSATA default, PCIe x 1 optional) x 1, PCIe[x1] x 1	ATX	—	32°F ~ 140°F (0°C ~ 60°C)

Thin Mini-ITX Embedded Motherboard with Intel® Celeron® J1900/N2807 Processor, SATA 6.0 Gb/s x 2, SATA 3.0 Gb/s x 2, USB x 8



Features

- **Intel® Celeron® J1900/N2807 Processor**
- **DDR3L 1333 MHz SODIMM x 2, Up to 8 GB, (J1900)**
- **DDR3L 1333 MHz SODIMM x 1, Up to 4 GB, (N2807)**
- **Dual Displays: LVDS x 1, VGA x 1, HDMI x 1,**
- **SATA 6.0 Gb/s x 2, SATA 3.0 Gb/s x 2**
- **USB 3.0 x 1, USB 2.0 x 7**
- **Full-size Mini-Card + SIM Card (mSATA Default) x 1, Half-size Mini-Card x 1**
- **12V DC Power Input**
- **Low Profile**

Specifications

System	
Processor	Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP), Intel® Celeron® N2807 Processor (2C @ 1.58 GHz CPU, 313/750 MHz GFX, 4.3W TDP)
Chipset	—
Memory	DDR3L 1333 MHz SODIMM x 2 up to 8 GB (for J1900), DDR3L 1333 MHz SODIMM x 1 up to 4 GB (for N2807), Non-ECC, un-buffered memory, Dual-channel memory architecture flat type
I/O Chipset	Fintech 81866D
Ethernet	Realtek PCIe Gb LAN 8111G x 1
Audio	Realtek® ALC887 (colay ALC892/886)
TPM	Infineon SLB9635 TT 1.2 (default : No)
Expansion Slots	Full-size Mini-Card (mSATA default) (PCIe+USB optional) + SIM Card (default: No) x 1, Half-size Mini-Card (PCIe+USB) x 1
BIOS	64 M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Chassis Fan (fanless)
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+LVDS, VGA+HDMI, LVDS+HDMI
VGA	Up to 1920 x 1200 @60 Hz
DVI	—
HDMI	Up to 1920 x 1200 @60 Hz
Display Port	—
LVDS	Up to 1920 x 1080 @60Hz, dual-channel 18/24-bit (via CH7511)
eDP	—
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12VDC
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	295,750
Rear Panel I/O Ports	
USB	USB 3.0/2.0 x 1, USB 2.0 x 2
Display I/O	HDMI x 1
Audio I/O	Line in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 1
Serial Port	COM (RS-232) x 1
PS/2 Port	—
Others	DC port (12V) Screw type x 1
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) x 2, SATA2 (3.0Gb/s) x 2 (1 colay with mSATA), SATA power connector x 1, Ful Size Mini-Card slot (mSATA) x 1
USB	USB 2.0 (2 x 5-pin, 2.54mm) x 2 ports support additional 4 USB, USB 2.0 (1x 5-pin, 2.0mm) x 1 port supports additional 1 USB
Display I/O	VGA pin header x 1, LVDS connector x 1, LVDS 3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight connector (inverter) x 1, LCD backlight 12V /5V jumper x 1
Audio I/O	AAFP x 1
Serial Port	Boxer header for COM (RS-232) x 4, Boxer header for COM (RS-232/422/485) x 1
PS/2 Port	PS/2 Keyboard Mouse 6 PIN Connector x 1
Parallel Port	SPP/EPP Mode
DIO	DIO (4in/4out) x 1
FAN	Chassis Fan connector x 1
Power	12V AUX Power Connector x 1, AT/ATX mode select jumper (default : No) x 1
Others	Half-size Mini-Card (PCIe + USB) x 1, SIM Card Socket(default : No) x 1, LPT PIN header x 1, Front Panel connector x 1, CMOS jumper x 1
OS	
OS Support	Windows® 10 64-bit, Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Linux Fedora

Packing List

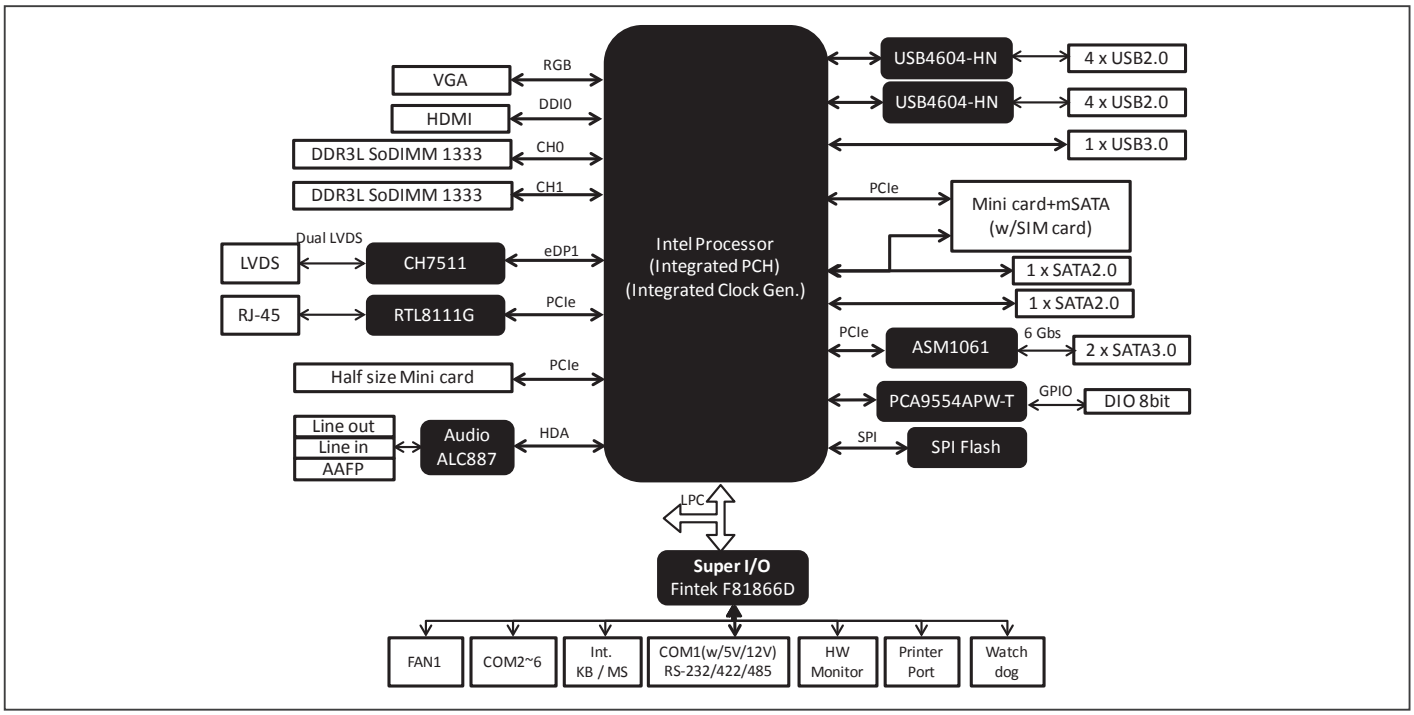
- **SATA Cable**
- **SATA Power Cable**
- **I/O Shield**
- **Heatsink**
- **Product CD**
- **EMB-BT4**

Optional Accessories

Part Number	Description
1709100330	USB 2.0 Cable (9P, 330MM, p=2.54mm, w/ bracket)
1709050201	USB 2.0 Cable (5P, 220MM, p=2.00mm)
1701260305	LPT Cable (25P, 270MM)
1757908403	Lockable Adapter 84W
1701100206	COM Port Cable
1700060152	PS/2 cable (6P, 150mm, p=2.00mm)
170910020K	USB 2.0 Cable (9P, 200MM, p=2.54mm, w/o bracket)
1702150300	SATA Power Cable 4P, 2.54mm
125530060A	Lockable Adapter 60W, 12V, 5A, 60W
1701160201	VGA Cable

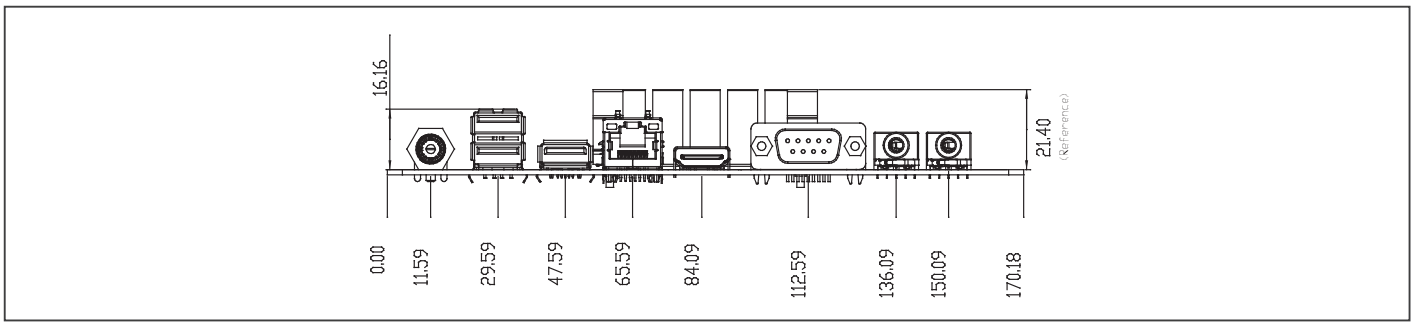
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

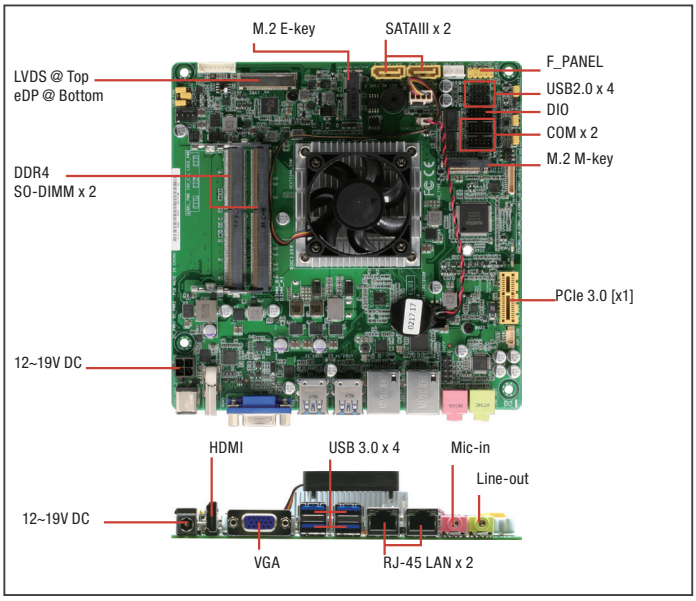


Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-BT4-A11-1900-MS	J1900	SODIMM x 2	Fanless	VGA, HDMI, LVDS	SATA2 x 1, SATA3 x 2, Full-Size Mini-Card (mSATA) x 1	Dual Channel 18/24-bit x 2	GbE x 1	USB 3.0 x 1, USB 2.0 x 7	5	1	Half-size Mini-Card (PCIe + USB) x 1 w/o SIM slot	12V DC	—	32°F ~ 140°F (0°C ~ 60°C)
EMB-BT4-A11-2807-MS	N2807	SODIMM x 1	Fanless	VGA, HDMI, LVDS	SATA2 x 1, SATA3 x 2, Full-Size Mini-Card (mSATA) x 1	Dual Channel 18/24-bit x 2	GbE x 1	USB 3.0 x 1, USB 2.0 x 7	5	1	Half-size Mini-Card (PCIe + USB) x 1 w/o SIM slot	12V DC	—	32°F ~ 140°F (0°C ~ 60°C)

MIX-KLUW1

Mini-ITX, 14nm, FCBGA1356 7thGen Intel® Core™ processor family, 15~25W TDP



Features

- DDR4 SODIMM x 2, Up to 32GB
- Three Independent Display: eDP x 1, LVDS x 1, VGA (Default) or HDMI
- Intel® LAN i211AT x 1, 219LM for iAMT 12.0 x 1
- M.2 Slot (M-key) x 1
- M.2 Slot (E-key) x 1
- PCIe3.0 [x1] x 1
- 12-19V DC wide range voltage power input
- USB3.0x4, USB2.0x4

Specifications

System	
Processor	14nm 7th Gen. Intel® Core™ (formerly Kaby Lake-U), FCBGA1356 Core i7-7600U, 2C/4C, 2.8/3.9(turbo)GHz, 4M, 300MHz/1.15GHz (Turbo) GFX, ~15W TDP (Optional) Core i5-7300U, 2C/4C, 2.6/3.5(turbo)GHz, 3M, 300MHz/1.10GHz (Turbo) GFX, ~15W TDP (Optional) Core i3-7100U, 2C/4C, 2.4GHz, 3M, 300MHz/1.00GHz (Turbo) GFX, ~15W TDP Celeron 3965U, 2C, 2.2GHz, 2M, 300MHz/900MHz (Turbo) GFX, ~15W TDP
Chipset	—
Memory	SODIMM x 2, max. 32GB, DDR4-2133 non-ECC, un-buffered memory
I/O Chipset	NCT6793D
Ethernet	Intel® PCIe Gb LAN 219LM for vPro (i7-7600U/i5-7300U) x 1 Intel® PCIe Gb LAN 211AT x 1
Audio	Realtek® ALC887
TPM	Nuvoton NPCT650ABBYX TPM2.0 onboard (default: No)
Expansion Slots	PCIe 3.0 [x1] x 1 M.2 M key (22 x 80mm) x 1, SATA & PCIe [x4] M.2 E key (22 x 30mm) x 1 for Wireless-wifi module (PCIe+USB)
BIOS	128Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	Supports three display of LVDS+eDP+VGA or LVDS+eDP+HDMI (by SKU selection)
VGA	Up to 1920 x 1200 @60 Hz colay with HDMI (default: VGA)
DVI	—
HDMI	HDMI 1.4 up to 4096 x 2340 @24Hz colay with VGA (default: VGA)
Display Port	—
LVDS	LVDS Up to 1920 x 1200 @60Hz, dual-channel 18/24 bit (via CH7511)
eDP	eDP UP to 4096 x 2304 @ 60Hz
Backlight Control	Voltage/PWM; Max 1A
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12(-5%)~19V(+5%) DC
Operating Temperature	32°F ~ 131°F (0°C ~ 55°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC (Class A)
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours):	275,650
Rear Panel I/O Ports	
USB	USB 3.0 x 4
Display I/O	VGA x 1, HMDI Colay (default: VGA x 1)
Audio I/O	Mic-in x 1, Line out x 1
LAN I/O	LAN (RJ45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC Power Jack x 1
Internal I/O Connectors	
Storage	M.2 M key (22 x 80mm) for PCIe [x4]/SATA storage x 1, SATA 6.0Gb/s x 2, 4-pin SATA power x 1
USB	USB 2.0 pin header x 2 support additional 4 USB ports
Display I/O	40-pin LVDS connector x 1, 40-pin eDP connector x 1, LCD backlight connector (inverter) x 1
Audio I/O	Speaker for 2W@4Ω x 1, AAFP follow ASUS pin out x 1
Serial Port	Boxer header x 2 for COM (COM1: RS-232/422/485 supports 5V/12V/RI)
PS/2 Port	—
Parallel Port	—
DIO	8-bit programmable (4-in/4-out) x 1
FAN	4-pin Chassis Fan connector x 1, 4-pin CPU Fan connector x 1
Power	2 x 2 Pin DC-in 12~19V(-5%~+5%) x 1
Others	Clear CMOS jumper x 1, AT/ATX mode select jumper x 1
OS	
OS Support	Windows 10 64 bit, Ubuntu 16.04.LTS

Packing List

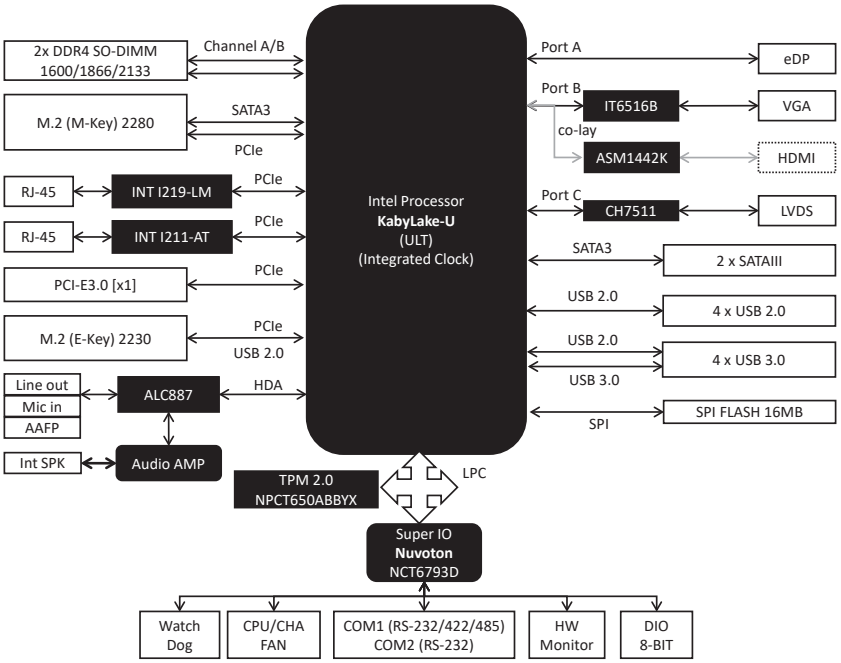
- Heatsink/CPU Fan
- SATA Cable
- SATA Power Cable
- I/O Shield
- Product CD
- MIX-KLUW1

Optional Accessories

Part Number	Description
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)
1701100206	COM Cable (200MM, p=2.00mm)
1702150300	SATA Power Cable (4P, 300MM p=2.54mm)
1702151201	SATA Power Cable (4P, 120MM, p=2.5mm)
1255900846	Adapter 12V/84W

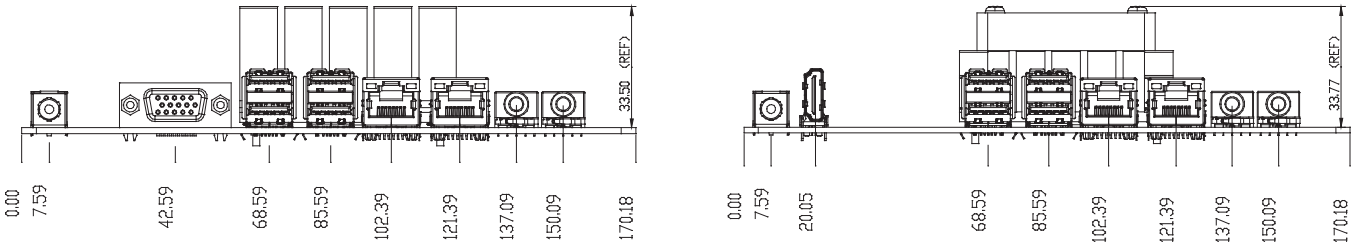
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

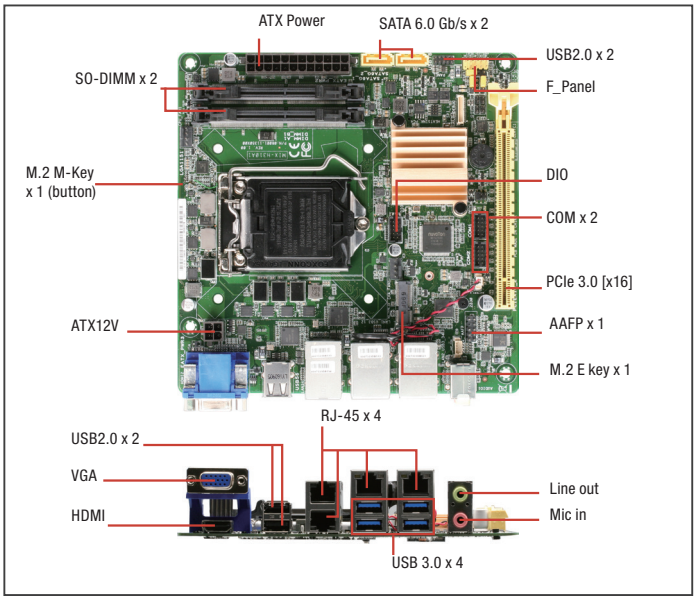


Ordering Information

PART NUMBER	CPU	RAM	FAN/ FANLESS	DISPLAY	STORAGE	LVDS	LAN	USB	RS-232	RS-232/422/485	EXPANSION SLOT	POWER	TPM	TEMP.
MIX-KLUW1-A10-3965V	Celeron® 3965U	SODIMM x 2	Fanless	VGA, LVDS, eDP	SATA3 x 2, M.2 (M-key)	Daul Channel 18/24 bit	GbE x 2	USB2.0 x 4, USB3.0 x 4	1	1	PCIe[x1] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12~19V DC	—	32°F ~ 131°F (0°C ~ 55°C)
MIX-KLUW1-A10-3965H	Celeron® 3965U	SODIMM x 2	Fanless	HDMI, LVDS, eDP	SATA3 x 2, M.2 (M-key)	Daul Channel 18/24 bit	GbE x 2	USB2.0 x 4, USB3.0 x 4	1	1	PCIe[x1] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12~19V DC	—	32°F ~ 131°F (0°C ~ 55°C)
MIX-KLUW1-A10-7100H	i3-7100U	SODIMM x 2	Fanless	HDMI, LVDS, eDP	SATA3 x 2, M.2 (M-key)	Daul Channel 18/24 bit	GbE x 2	USB2.0 x 4, USB3.0 x 4	1	1	PCIe[x1] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12~19V DC	—	32°F ~ 131°F (0°C ~ 55°C)

MIX-H310A1

Mini-ITX with 8th Gen Intel® Core Processor Family, Max. 65W TDPs, Giga-LAN x 4



Features

- 8th Gen. Intel® Core™ LGA1151 Processor
- DDR4 SODIMM x 2, Up to 32 GB
- M.2 Slot(M Key-SATA), M.2 Slot(E key) x 1
- Two Independent Display : HDMI, VGA
- USB 3.0 Port x 4, USB 2.0 Port x 4
- Intel® LAN 211AT x 3, 219V for iAMT 12.0 x 1
- SATA 6.0 Gb/s x 2
- PCI-Express [x16] (Gen3) x 1
- ATX Power

Specifications

System	
Processor	8th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
Chipset	Intel® H310 Express Chipset
Memory	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6793D
Ethernet	Intel® PCIe Gb LAN 219V x 1, Intel® PCIe Gb LAN i211AT x 3
Audio	Realtek® ALC887 with Amp.
TPM	NPCT650ABBYX TPM2.0 (default: No)
Expansion Slots	PCIe3.0 [x16] x 1, M.2 M-key(22x80mm) at bottom side x 1 for SATA, M.2 E-key(22x30mm)
BIOS	128Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 step by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	HDMI+VGA
VGA	Up to 1920 x 1200 @ 60 Hz
DVI	—
HDMI	Up to 4096 x 2160 @30Hz(HDMI 1.4)
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	ATX
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	288,900

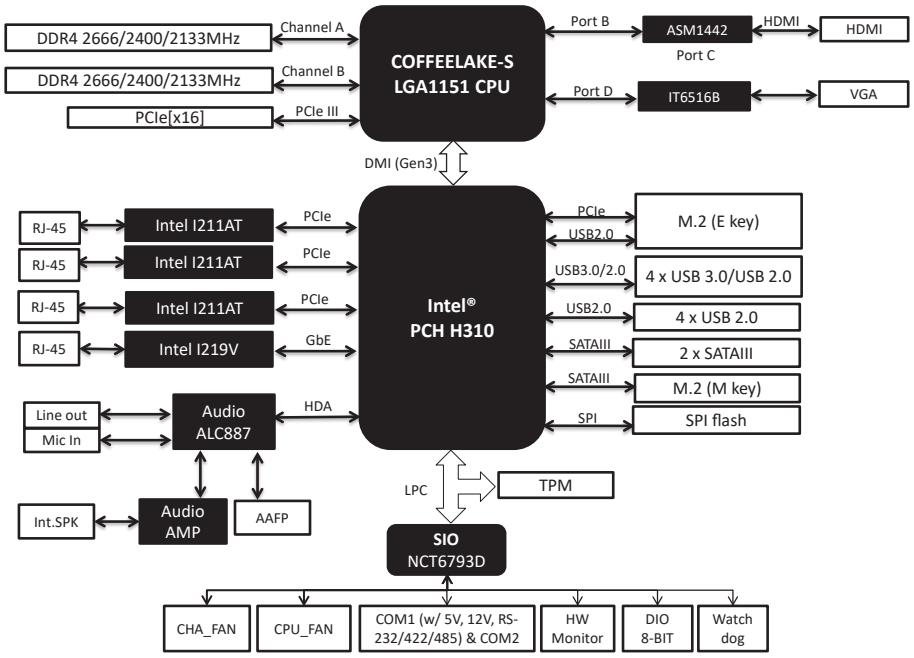
Rear Panel I/O Ports	
USB	USB 3.0 x 4, USB 2.0 x 2
Display I/O	VGA x 1, HDMI x 1
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 4
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) at bottom side x 1 (SATA only)
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 1 ports support additional 2 USB.
Display I/O	—
Audio I/O	AAFP x 1, Speaker x 1
Serial Port	Boxer header for COM (RS-232/422/485) x 1, Boxer header for COM (RS-232) x 1
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	—
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1
OS	
OS Support	Windows® 10 64-bit, ,Linux Ubuntu 18.04 LTS

Packing List

- SATA Cable
- I/O Shield
- Product DVD
- MIX-H310A1

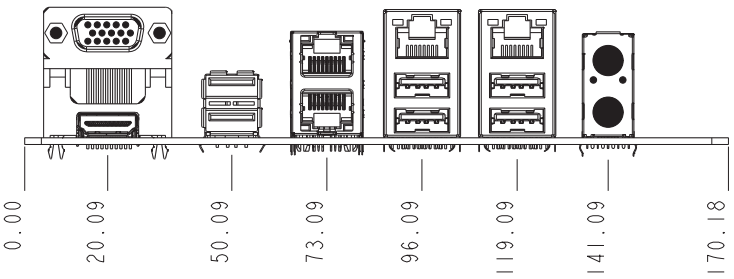
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

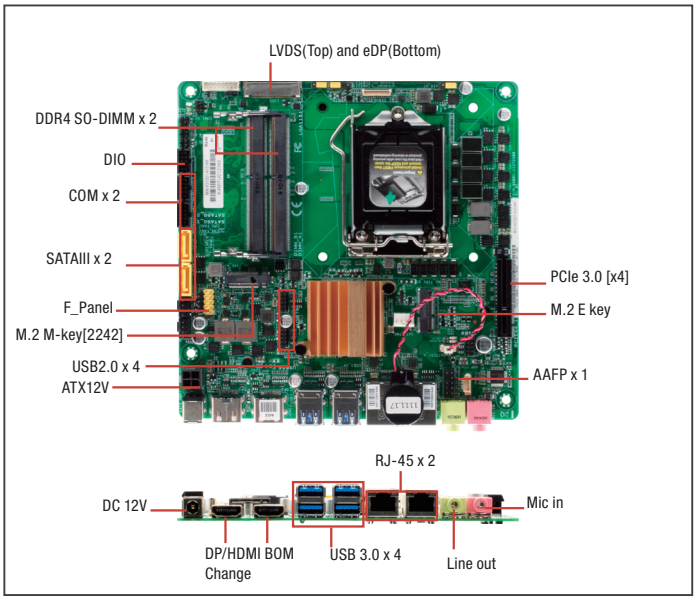
Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-H310A1-A10-2L	Socket	SODIMM x 2	Fan	VGA, HDMI	SATA3 x2, M.2(M-key)	—	GbE x 2	USB2.0 x 4 USB3.0 x 4	1	1	PCIe3.0[x16] x 1, M.2(M-key) x1, M.2(E-Key) x 1	ATX	—	0~60˚C
MIX-H310A1-A10-4L	Socket	SODIMM x 2	Fan	VGA, HDMI	SATA3 x2, M.2(M-key)	—	GbE x 4	USB2.0 x 4 USB3.0 x 4	1	1	PCIe3.0[x16] x 1, M.2(M-key) x1, M.2(E-Key) x 1	ATX	—	0~60˚C

Optional Accessories

Part Number	Description
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
COOLER -65W-01	CPU Cooler
1709100201	USB 2.0 Cable (10P, 200mm, p=2.00mm, w/bracket)
1701100206	COM Cable (200mm, p=2.00mm)
1700100491	USB 2.0 Cable (10P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)

MIX-H310D1

Mini-ITX with Intel® 8th Generation Core™ LGA1151 Socket Processor, Max. 65W TDPs, 12V DC Power input



Features

- 8th Gen. Intel® Core™ LGA1151 Processor
- DDR4 SODIMM x 2, Up to 32 GB
- Two Independent Display: DP, HDMI, eDP, LVDS
- M.2 Slot (M-key, 2242) x 1, M.2 Slot (E-key) x 1
- PCIe [x4] x 1
- Low Profile
- 12V DC Power Input
- USB 3.0 x 4, USB 2.0 x5

Specifications

System	
Processor	8th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
Chipset	Intel® H310 Express Chipset
Memory	DDR4 2666 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6793D
Ethernet	Realtek ® PCIe Gb LAN RTL8111H
Audio	Realtek® ALC887 with Amp.
TPM	NPCT650ABBYX TPM2.0 (default: No)
Expansion Slots	PCIe3.0 [x4] x 1 M.2 E-key(22 x 30 mm) x 1 for Wireless-wifi module (PCIe+USB)
BIOS	128Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	HDMI1+HDMI2, HDMI1+DP2, DP1+HDMI2, HDMI1+LVDS, HDMI2+LVDS, HDMI1+eDP, HDMI2+eDP, DP1+DP2, DP1+LVDS, DP2+LVDS, DP1+eDP, DP2+eDP
VGA	—
DVI	—
HDMI	Up to 4096 x 2304@24Hz (HDMI 1.4b)
Display Port	Up to 4096 x 2304@60Hz
LVDS	Up to 1920 x 1200 @ 60 Hz, dual-channel 18/24 bit (via CH 7511)
eDP	UP to 4096 x 2304 @ 60Hz
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12V DC
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)
Weight	1.1 lb (0.5 kg)
MTBF (Hours)	246,210

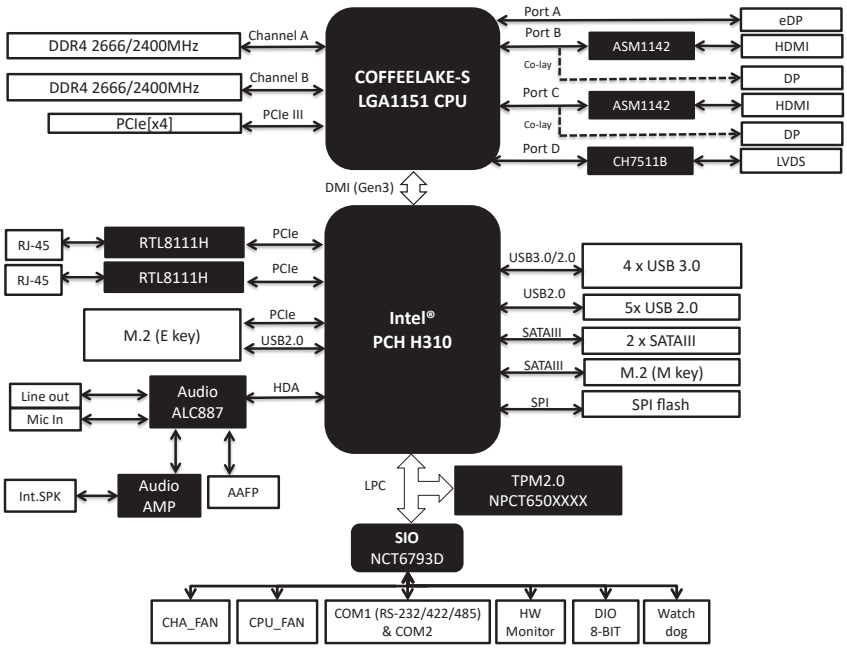
Rear Panel I/O Ports	
USB	USB3.1 Gen.1 x 4
Display I/O	HDMI x 2, DP x 1 + HDMI x 1 (Optional), DP x 2 (Optional)
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC Jack
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2 M.2 M-key (SATA) (22 x 42mm) x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 3 ports support additional 5 USB.
Display I/O	—
Audio I/O	AAFP x 1, Speaker header x 1
Serial Port	Boxer header for COM (RS-232/422/485) x 1 Boxer header for COM (RS-232) x 1
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	—
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1
OS	
OS Support	Windows® 10 64-bit Linux Ubuntu 18.04 64bit

Packing List

- SATA Cable
- SATA Power Cable
- I/O Shield
- Product CD
- MIX-H310D1

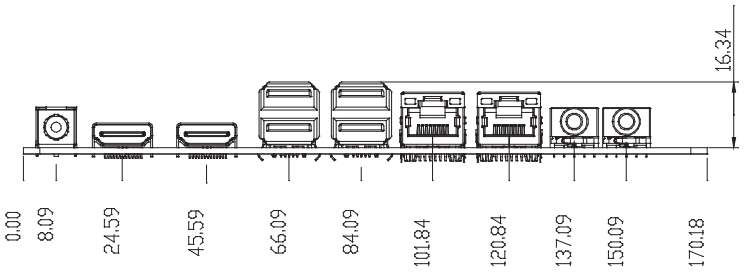
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

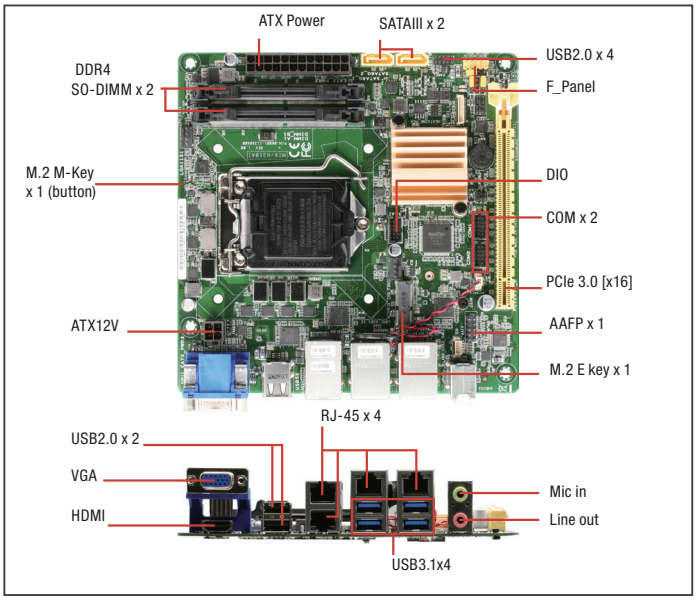
Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-H310D1-A10-HH	Socket	SODIMM x 2	Fan	Daul HDMI, eDP, LVDS	SATA3 x 2, M.2 (M-key; SATA)	Daul Channel 18/24 bit	GbE x 2	USB2.0 x 5 USB3.0 x 4	1	1	PCIe3.0[x4] x 1, M.2 (E-Key) x 1	12V DC	—	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
1759200172	(TF)CPU Cooler Fan, LGA 1156 socket, 4P, 12V, 2-Ball Bearing, Dynatron, K785, (2U cooler)
175921156B	(TF)CPU Cooler Fan, LGA 1156 socket, 12V, 4P, 2Ball (Tray), Dreamer, DSA-00273
COOLER-65W-01	CPU Cooler, LGA 1156, 12V, 65W, 4P, Kingcooler, 0571-1463R
1709100201	USB 2.0 Cable (10P, 200mm, p=2.00mm, w/bracket)
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)
1701100206	COM Cable (200mm, p=2.00mm)
1702150300	SATA Power Cable (4P, 300mm p=2.54mm)
1702151201	SATA Power Cable (4P, 120mm, p=2.5mm)
1255900846	Adapter 12V/84W

MIX-Q370A1

Mini-ITX with 8th Gen Intel® Core Processor Family, Max. 65W TDPs, Giga-LAN x 4



Features

- 8th Gen. Intel® Core™ LGA1151 Processor
- DDR4 DRAM Support, 2666MHz, Max. 32GB
- M.2 Slot (M key- SATA only) x 1, M.2 Slot (E key) x 1
- USB 3.1 Port x 4, USB 2.0 Port x 4
- Intel® LAN 211AT x 3, 219LM for iAMT 12.0 x 1
- SATA 6.0 Gb/s x 2
- PCI-Express [x16] (Gen3) x 1
- ATX Power

Specifications

System	
Processor	8th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
Chipset	Intel® Q370 Express Chipset
Memory	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, dual-channel memory architecture
I/O Chipset	NCT6793D
Ethernet	Intel® PCIe Gb LAN 219LM x 1, Intel® PCIe Gb LAN i211AT x 3
Audio	Realtek® ALC887 with Amp.
TPM	NPCT650ABBYX TPM2.0 (default: No)
Expansion Slots	PCIe3.0 [x16] x 1 M.2 E-key (22 x 30mm; Support CNVi)
BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	HDMI+VGA
VGA	Up to 1920 x 1200 @ 60 Hz
DVI	—
HDMI	Up to 4096 x 2160 @30Hz (HDMI 1.4)
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	ATX
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 kg)
MTBF (Hours)	—

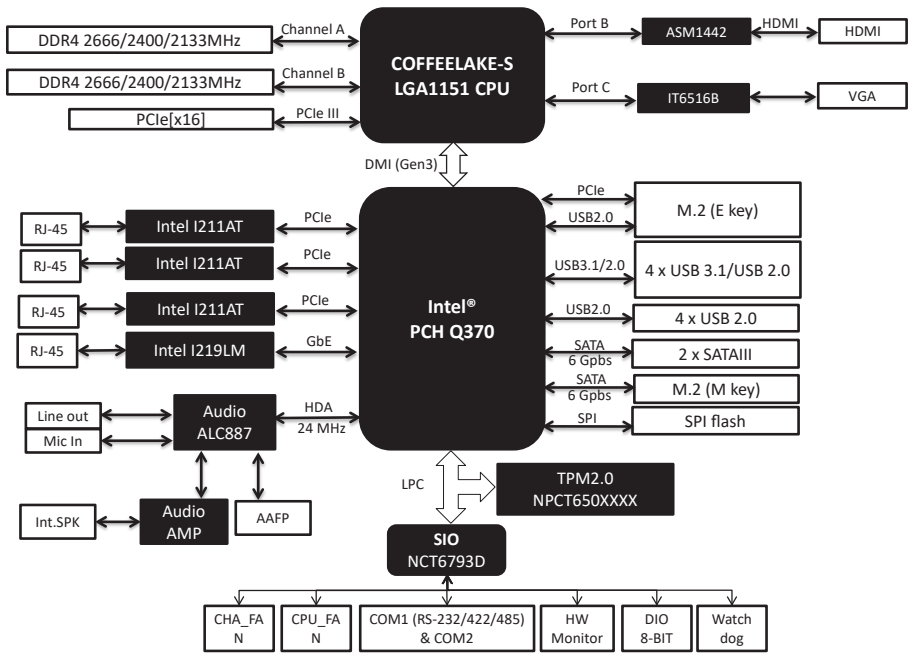
Rear Panel I/O Ports	
USB	USB 3.1 x 4, USB 2.0 x 2
Display I/O	VGA x 1, HDMI x 1
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 4
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) at bottom side x 1(SATA only)
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 1 ports support additional 2 USB
Display I/O	—
Audio I/O	AAFP x 1, Speaker x 1
Serial Port	Boxer header for COM (RS-232/422/485) x 1 Boxer header for COM (RS-232) x 1
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	—
Others	Front Panel connector x 1 Chassis Intrusion x 1 Buzzer onboard x 1 CMOS jumper x 1
OS	
OS Support	Windows® 10 64-bit, Linux Ubuntu 18.04. 64-bit

Packing List

- SATA Cable
- I/O Shield
- Product DVD
- MIX-Q370A1

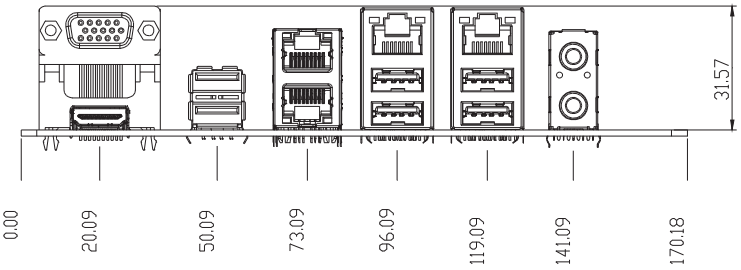
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

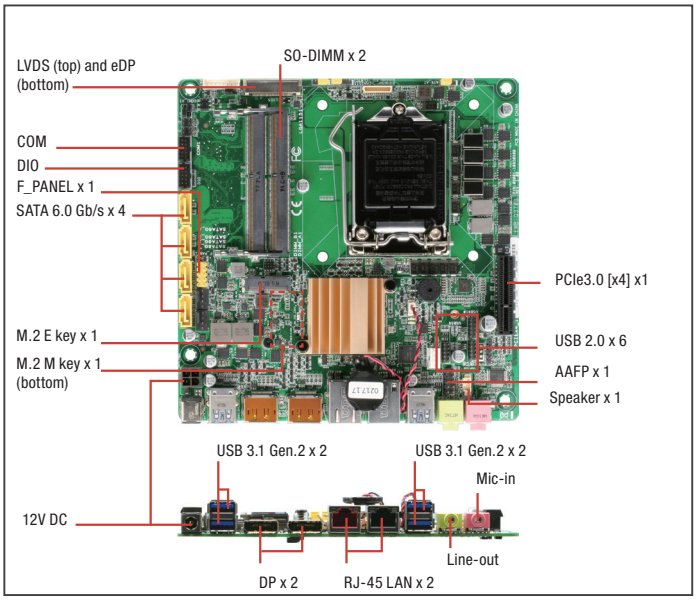
Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-Q370A1-A10-4L	Socket	SODIMM x 2	Fan	VGA, HDMI	SATA3 x2, M.2(M-key)	—	GbE x 4	USB2.0 x 4 USB3.1 x 4	1	1	PCIe3.0[x16] x 1, M.2(E-Key) x 1	ATX	—	0~60°C
MIX-Q370A1-A10-2L	Socket	SODIMM x 2	Fan	VGA, HDMI	SATA3 x2, M.2(M-key)	—	GbE x 2	USB2.0 x 4 USB3.1 x 4	1	1	PCIe3.0[x16] x 1, M.2(E-Key) x 1	ATX	—	0~60°C

Optional Accessories

Part Number	Description
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
COOLER -65W-01	CPU Cooler
1709100201	USB 2.0 Cable (10P, 200mm, p=2.00mm, w/bracket)
1701100206	COM Cable (200mm, p=2.00mm)
1700100491	USB 2.0 Cable (10P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)

MIX-Q370D1

Mini-ITX with 8th Gen Intel® Core Processor Family, DDR4 DRAM, USB x 10, Max. 65W TDPs



Features

- DDR4 SODIMM x 2, Up to 32 GB
- Three Independent Display: DP x 2, eDP x 1, LVDS x 1
- Intel® LAN 210AT x 1, 219LM for iAMT 12.0 x 1
- M.2 Slot (M-key) x 1
- M.2 Slot (E-key) x 1
- USB 3.1 x 4, USB 2.0 x 6
- PCIe [x4] x 1
- Low Profile
- 12V DC Power Input
- Support Intel® NVMe M.2 SSD

Specifications

System	
Processor	8th Generation Intel® Core™ i7/ i5 /i3, Pentium® LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
Chipset	Intel® Q370 Express Chipset
Memory	SODIMM x 2, Max. 32GB, DDR4 2666/2400 MHz, Non-ECC, Un-buffered Memory, Dual channel
I/O Chipset	NCT6793D
Ethernet	Intel® PHY i219LM Giga LAN (support Intel® AMT 12.0) x 1 Intel® i210AT Giga LAN x 1
Audio	Realtek® ALC887
TPM	Nuvoton TPM version 2.0
Expansion Slots	PCIe 3.0 [x4] x 1 M.2 M key (22 x 80 mm) x 1 at Bottom side, SATA & PCIe [x4] M.2 E key (22 x 30 mm) x 1 for Wireless-wifi module (PCIe+USB)
BIOS	256M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	Three Independent Display
VGA	—
DVI	—
HDMI	—
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio, DP++ supported
LVDS	LVDS Up to 1920 x 1200 @ 60 Hz, dual-channel 18/24 bit (via Chrontel 7511)
eDP	eDP UP to 4096 x 2304 @ 60Hz
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12V DC
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC (Class A)
Form Factor	Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	256,310

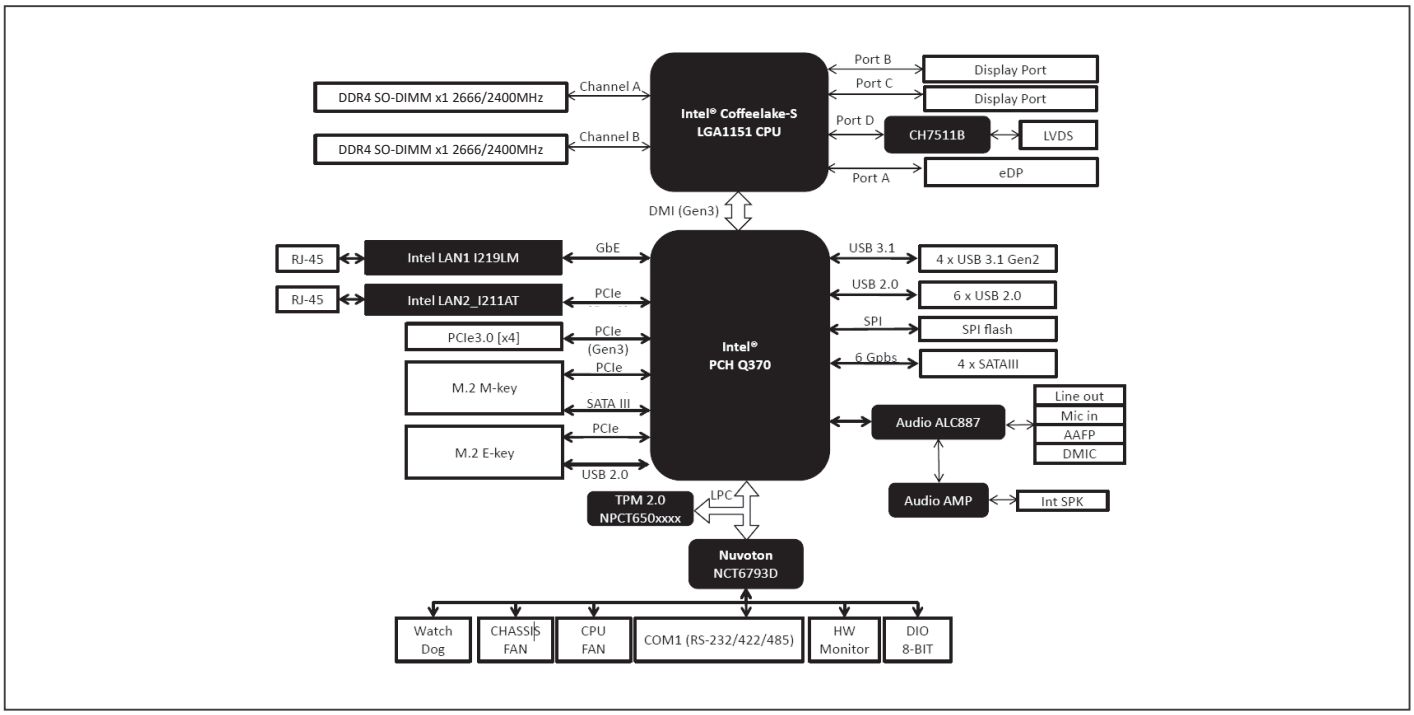
Rear Panel I/O Ports	
USB	USB 3.1 Gen. 2 x 4
Display I/O	DP x 2
Audio I/O	Mic-in x 1, Line out x 1
LAN I/O	LAN (RJ45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC Jack
Internal I/O Connectors	
Storage	SATA 6.0Gb/s x4 M.2 M key (22 x 80 mm) x1 (Support Intel® NVMe M.2 SSD)
USB	3 x USB 2.0 pin header support additional 6 USB ports
Display I/O	40-pin LVDS connector x 1 40-pin eDP connector x 1 LCD backlight connector (inverter) x 1
Audio I/O	Speaker for 2W/4Ω x 1 AAFP follow ASUS pin out x 1
Serial Port	Boxer header x 1 for COM (COM1: RS-232/422/485 supports 5V/12V/RI)
PS/2 Port	—
Parallel Port	—
DIO	8-bit x 1 (In/Out programmable)
FAN	4-pin Chassis Fan connector x 1 4-pin CPU Fan connector x 1
Power	12V DC Power jack x 1
Others	Front panel header x 1 Clear CMOS jumper x 1 AT/ATX select jumper x 1 Chassis Intrusion x 1 4-pin SATA power x 1
OS	
OS Support	Windows® 10 64 bit, Ubuntu 16.04 LTS

Packing List

- SATA Cable
- SATA Power Cable
- I/O Shield
- Product CD
- MIX-Q370D1

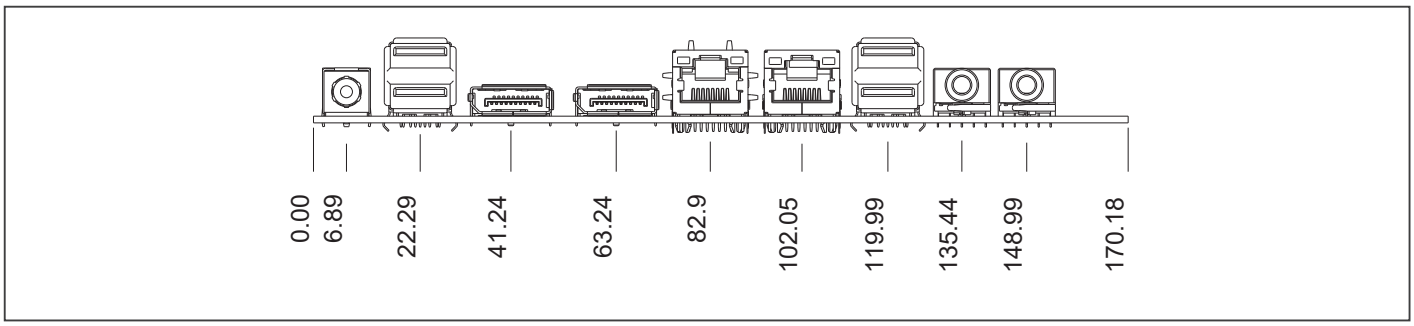
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

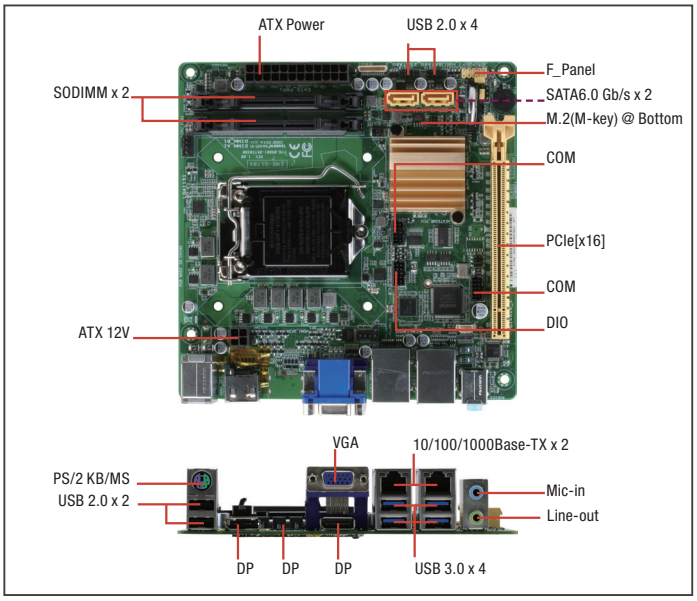
Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-Q370D1-A11	Socket	SODIMM x 2	Fan	DP x 2, LVDS, eDP	SATA3 x 4, M.2(M-key)	Daul Channel 18/24 bit	GbE x 2	USB2.0 x 6, USB3.1 x 4	—	1	PCIe3.0[x4] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12V DC	—	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
1759200172	(TF)CPU Cooler Fan, LGA 1156 socket, 4P, 12V, 2-Ball Bearing, Dynatron, K785, (2U cooler)
175921156B	(TF)CPU Cooler Fan, LGA 1156 socket, 12V, 4P, 2Ball (Tray), Dreamer, DSA-00273
COOLER-65W-01	CPU Cooler, LGA 1156, 12V, 65W, 4P, Kingcooler, 0571-1463R
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)
1701100206	COM Cable (200MM, p=2.00mm)
1702150300	SATA Power Cable (4P, 300MM p=2.54mm)
1255900846	Adapter 12V/84W

EMB-Q170A

6th/7th Generation Intel® Core™ i Series, LGA1151 Socket Processor, Max. 65W TDPs, M.2 x 1, SATA 6.0 Gb/s x 2, USB x 10



Features

- **LGA1151 Socket For 6th/7th Generation Intel® Core™ i Series Processor**
- **DDR4 SODIMM x 2, Up to 32 GB**
- **Three Independent Display: DP x 3, VGA x 1**
- **4K for Display Port**
- **Intel® LAN 211AT x 1, LAN 219LM for vPro x 1 (LAN1 Supports iAMT11.0)**
- **SATA 6.0 Gb/s x 2, M.2 slot (M-key) x 1**
- **PCI-Express [x16] (Gen3) x 1**
- **ATX Power**

Specifications

System	
Processor	6th/7th Generation Intel® Core™ i7/i5/i3, LGA1151 Socket Processor, Max. 65W TDPs
Chipset	Intel® Q170
Memory	DDR4 2133/1867 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6791D
Ethernet	Intel® PCIe Gb LAN 219LM x 1, Intel® PCIe Gb LAN i211AT x 1
Audio	Realtek® ALC887
TPM	Infineon SLB96XX TT 1.2/2.0 (default: No)
Expansion Slots	PCIe3.0 [x16] x 1, M.2 M-key(22 x 80 mm) at bottom side x 1
BIOS	128M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	DP+DP, DP+VGA, DP+DP+VGA, DP+DP+DP
VGA	Up to 1920 x 1200 @60 Hz
DVI	—
HDMI	—
Display Port	Up to 4096 x 2160 @24 Hz / 3840 x 2160 @60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	ATX
Operating Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	221,850

Rear Panel I/O Ports	
USB	USB 3.0 x 4, USB 2.0 x 2
Display I/O	VGA x 1, DP x 3
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	PS/2 for KB/MS x 1
Others	—
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80 mm) at bottom side x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 2 ports support additional 4 USB.
Display I/O	—
Audio I/O	Speaker x 1
Serial Port	Boxer header for COM (RS-232/422/485) x 1, Boxer header for COM (RS-232) x 1
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	ATX Power Connector x 2, AT/ATX mode select jumper (optional) x 1
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 64-bit, Ubuntu16.04.02/Kernel4.8.0

Packing List

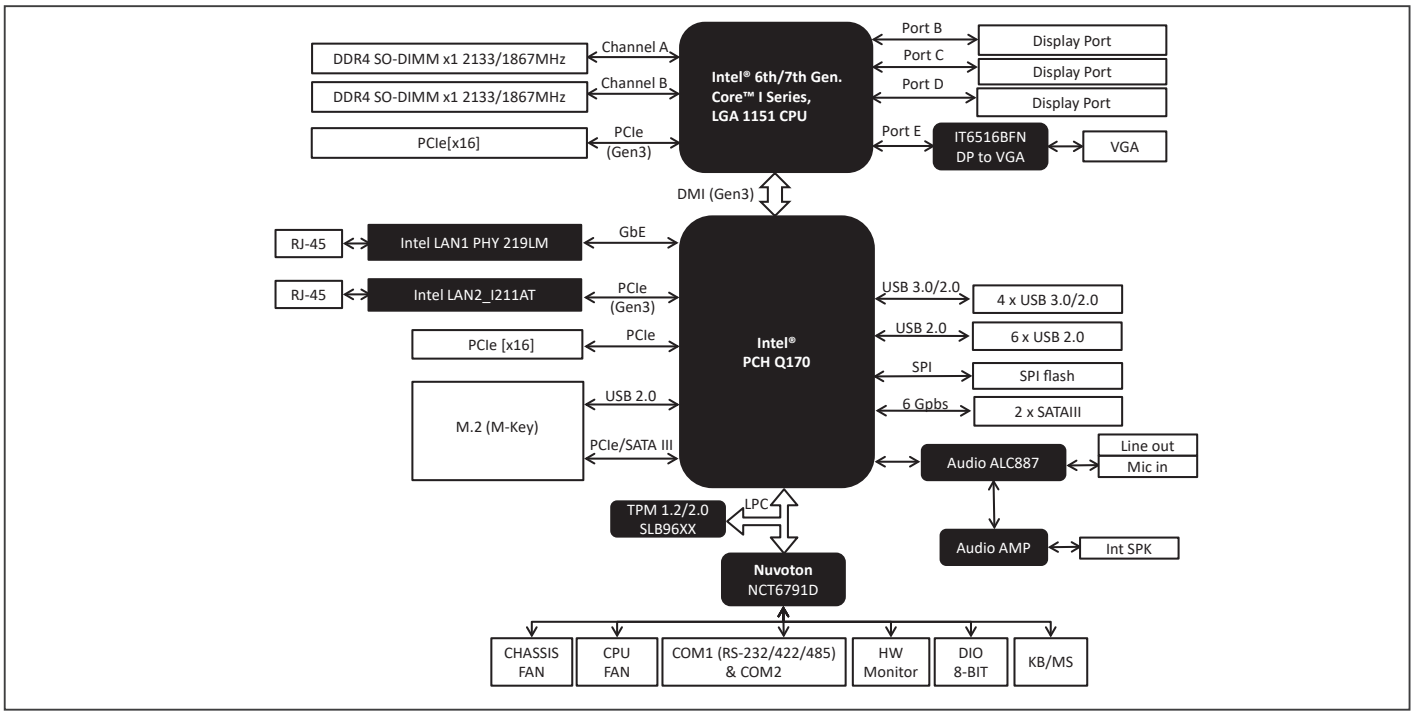
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in1)
- **I/O Shield**
- **Product DVD**
- **EMB-Q170A**

Optional Accessories

Part Number	Description
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
COOLER -65W-01	CPU Cooler
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/ bracket)
1701100206	COM Cable (200MM, p=2.00mm)
1700100491	USB 2.0 Cable (10P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)

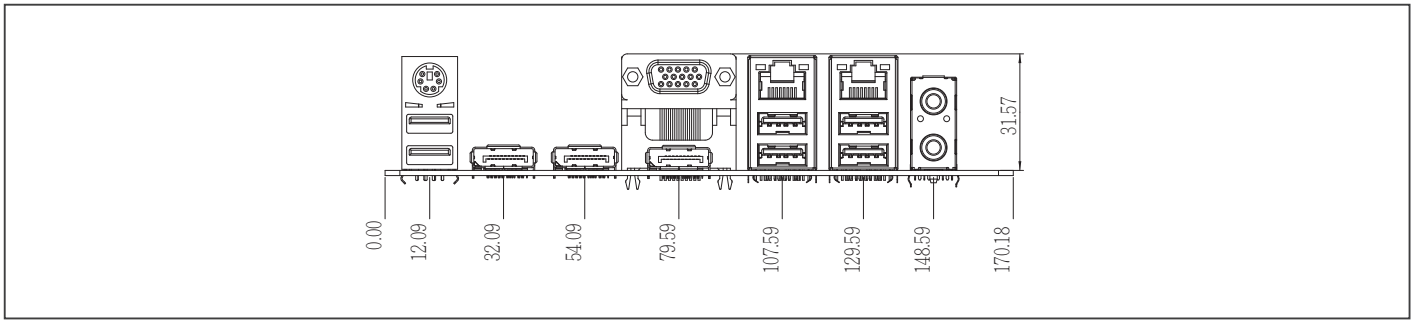
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

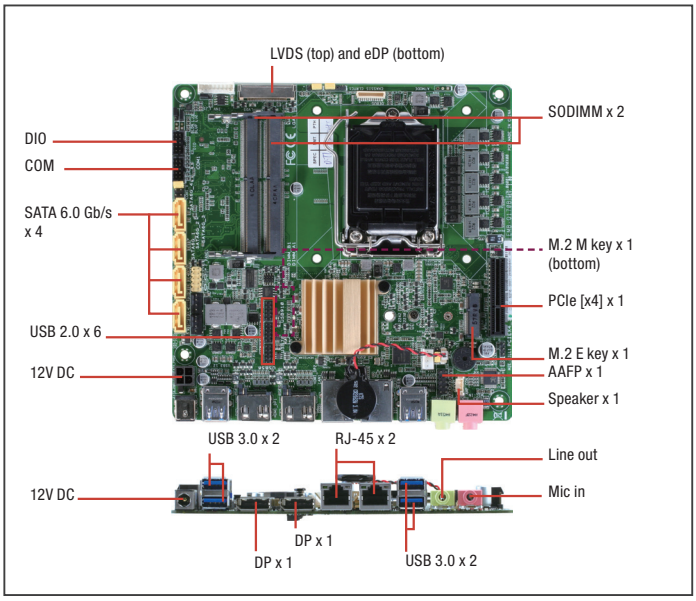


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-Q170A-A10-K	Socket	SODIMM x 2	Fan	VGA, DP	SATA3 x 2, M.2(M-key)	—	GbE x 2	USB 3.0 x 4, USB2.0 x 6	1	1	PCIe3.0[x16] x 1, M.2(M-key) x 1	ATX	—	32°F ~140°F (0°C ~ 60°C)

EMB-Q170B

6th/7th Generation Intel® Core™ i Series, LGA1151 Socket Processor, Max. 65W TDPs, M.2 x 2, SATA 6.0 Gb/s x 2, USB x 10



Features

- 6th/7th Generation Intel® Core™ i Series, LGA1151 Socket Processor
- DDR4 SODIMM x 2, Up to 32GB
- Three Independent Display: DP x 2, eDP x 1, LVDS x 1
- M.2 Slot (E-key) x 1 @Top Side, (M-key) x 1 @Bottom Side
- PCI-Express [x4] x 1
- Low Profile
- 4K for DP/eDP
- LAN1 Supports iAMT11.0

Specifications

System	
Processor	6th/7th Generation Intel® Core™ i7/i5/i3, LGA1151 Socket Processor, Max. 65W TDPs
Chipset	Intel® Q170
Memory	DDR4 2133/1867 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6791D
Ethernet	Intel® PCIe Gb LAN 219LM for vPro x 1, Intel® PCIe Gb LAN 211AT x 1
Audio	Realtek® ALC887
TPM	Infineon SLB96XX TT 1.2/2.0 (default: No)
Expansion Slots	PCIe 3.0 [x4] x 1 M.2 M key (22 x 80 mm) at Bottom side x 1 M.2 E key (22 x 30 mm) at Top side x 1
BIOS	128M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on VCore™ 5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	2DP + LVDS, DP + eDP + LVDS, 2DP + eDP
VGA	—
DVI	—
HDMI	—
Display Port	Up to 4096 x 2160 @24 Hz / 3840 x 2160 @60 Hz, with Digital Audio
LVDS	Up to 1920 x 1200 @60 Hz, dual-channel 18/24-bit
eDP	UP to 4096 x 2340 @60Hz
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12VDC
Operating Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	292,450

Rear Panel I/O Ports	
USB	USB 3.0 x 4
Display I/O	DP x 2
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC Jack x 1
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) x 4, SATA power connector x 1, M.2 M key (22 x 80mm) at Bottom side x 1, M.2 E key (22 x 30mm) at Top side x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 3 ports support additional 6 USB.
Display I/O	40-pin LVDS connector x 1, 40-pin eDP connector x 1, LVDS 3.3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight connector (inverter) x 1, LCD backlight 12V /5V jumper x 1
Audio I/O	AAFP x 1, Speaker x 1 (pin out refer to manual)
Serial Port	Boxer header for COM (RS-232/422/485) x 1
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	12V AUX Power Connector x 1, AT/ATX mode select jumper (optional) x 1
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard (pin header) x 1, CMOS jumper x 1
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 64-bit, Ubuntu16.04.02/Kernel4.8.0

Packing List

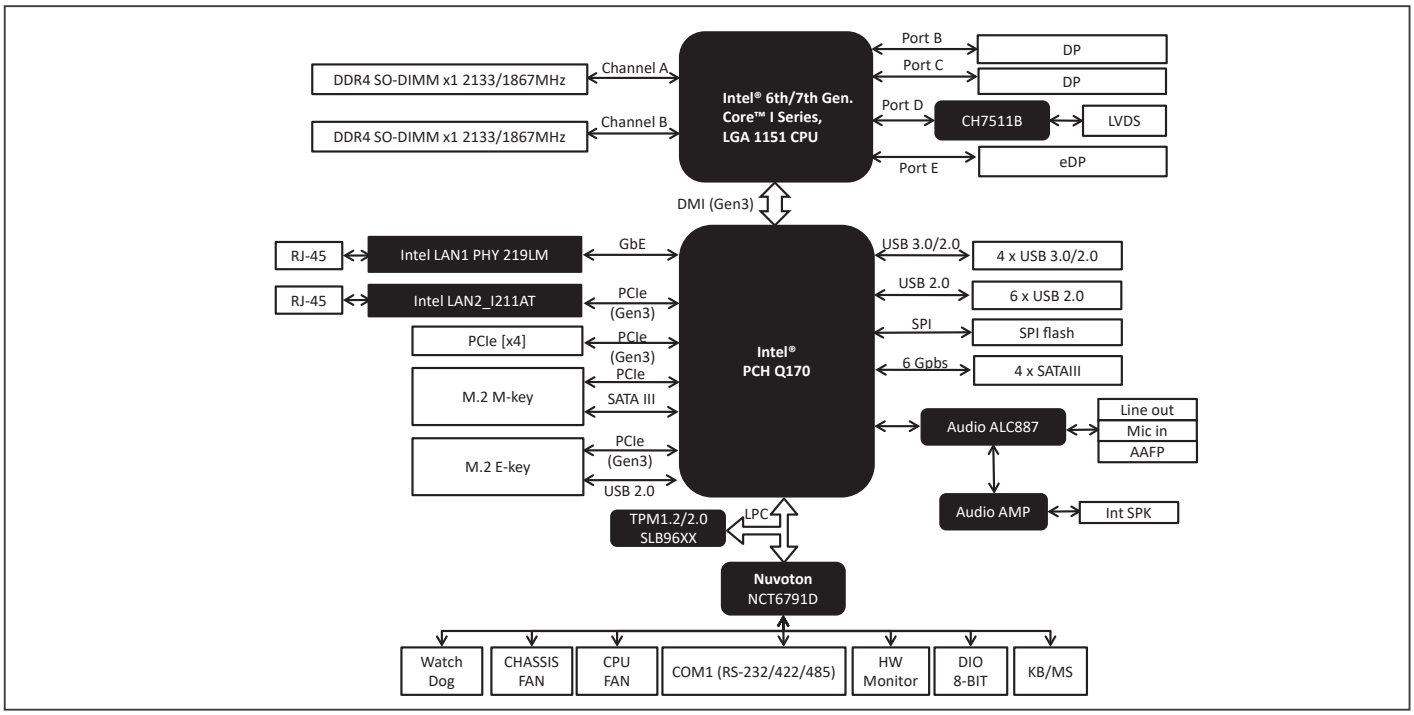
- SATA Cable
- SATA Power Cable
- I/O Shield
- Product DVD
- EMB-Q170B

Optional Accessories

Part Number	Description
1759200172	(TF)CPU Cooler Fan, LGA 1156 socket, 4P, 12V, 2-Ball Bearing, Dynatron, K785 (2U cooler)
175921156B	(TF)CPU Cooler Fan, LGA 1156 socket, 12V, 4P, 2Ball (Tray), Dreamer, DSA-00273
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)
1701100206	COM Cable (200MM, p=2.00mm)
1702150300	SATA Power Cable (4P, 300MM p=2.54mm)
COOLER-65W-01	CPU Cooler, LGA 1156, 12V, 65W, 4P, Kingcooler, 0571-1463R
1702151201	SATA Power Cable (4P, 120MM, p=2.5mm)
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1255900846	Adapter 12V/84W
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)

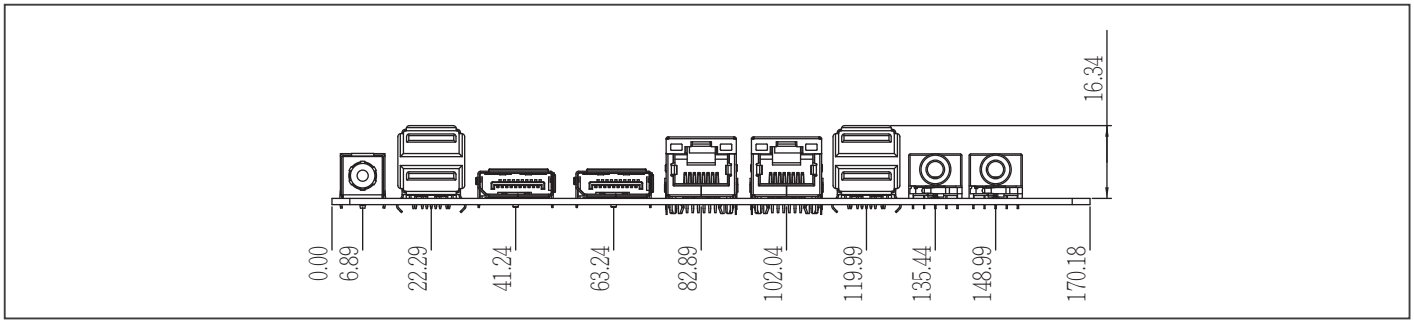
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

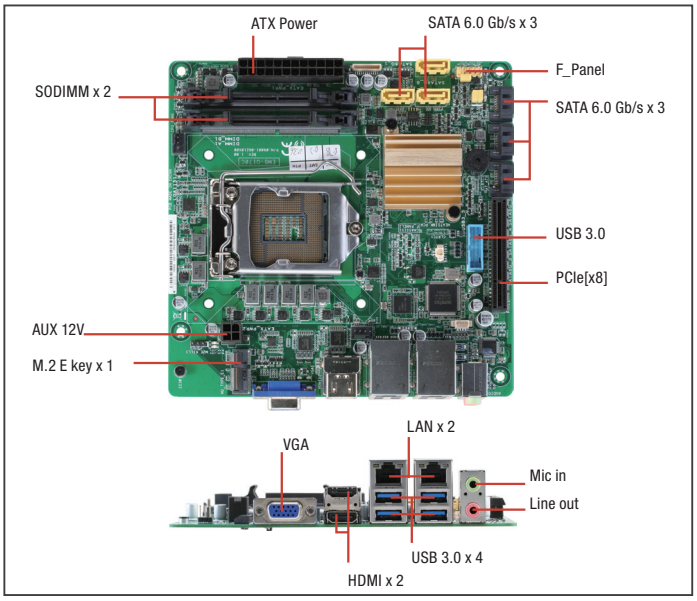
Unit: mm



Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-Q170B-A10-K	Socket	SODIMM x 2	Fan	LVDS, eDP, DP	SATA3 x 4, M.2 (M-key)	Daul Channel 18/24 bit	GbE x 2	USB 3.0 x 4, USB2.0 x 6	—	1	PCIe [x4] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12VDC	—	32°F ~ 140°F (0°C ~ 60°C)

6th/7th Generation Intel® Core™ i Series, LGA1151 Socket Processor, Max. 65W TDPs, M.2 x 1, SATA 6.0 Gb/s x 6



Features

- 6th/7th Generation Intel® Core™ i Series, LGA 1151 Socket Processor, Max. 65W TDPs
- DDR4 SODIMM x 2, Up to 32 GB
- Three Independent Display : VGA x 1, HDMI x 2
- SATA 6.0Gb/s x 6, M.2 E-key 2230 for PCIe
- PCIe [x8] x 1
- ATX Power
- LAN1 Supports iAMT11.0

Specifications

System	
Processor	6th/7th Generation Intel® Core™ i7/ i5 /i3, LGA 1151 socket Processor, Max. 65W TDPs
Chipset	Intel® Q170
Memory	DDR4 2133/1867 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6791D
Ethernet	Intel® PCIe Gb LAN 219LM for vPro x 1, Intel® PCIe Gb LAN i211AT x 1
Audio	Realtek® ALC887 with Amp.
TPM	Infineon SLB9665 TT 2.0 (optional)
Expansion Slots	PCIe3.0 [x8] x 1 M.2 E-key (22 x 30 mm) for PCIe x 1
BIOS	128Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/Chassis Fan
Wake On LAN / PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA + HDMI + HDMI
VGA	Up to 1920 x 1200 @ 60 Hz
DVI	—
HDMI	Up to 4096 x 2160 @24 Hz ; 3840 x 2160 @60 Hz, with Digital Audio
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	ATX
Operating Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0%~90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	282,880

Back Panel I/O Ports	
USB	USB 3.0 x 4
Display I/O	VGA x 1, HDMI x 2
Audio I/O	Mic-in x 1, Line out x 1
LAN I/O	LAN (RJ45) port x 2
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) x 6, SATA power connector x 1
USB	USB 3.0 (2x10-PIN, 2.00mm) x 1 port supports additional 2 USB
Display I/O	—
Audio I/O	Speaker x 1
Serial Port	—
PS/2 Port	—
Parallel Port	—
DIO	—
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	12V AUX Power Connector x 1, AT/ATX mode select jumper (optional) x 1
Others	M.2 E-key(22 x 30 mm) for PCIe x 1 Front Panel connector x 1 Chassis Intrusion x 1 Buzzer onboard x 1 CMOS jumper x 1
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 64-bit, Windows® 10 64-bit, Ubuntu16.04.02/Kernel4.8.0

Packing List

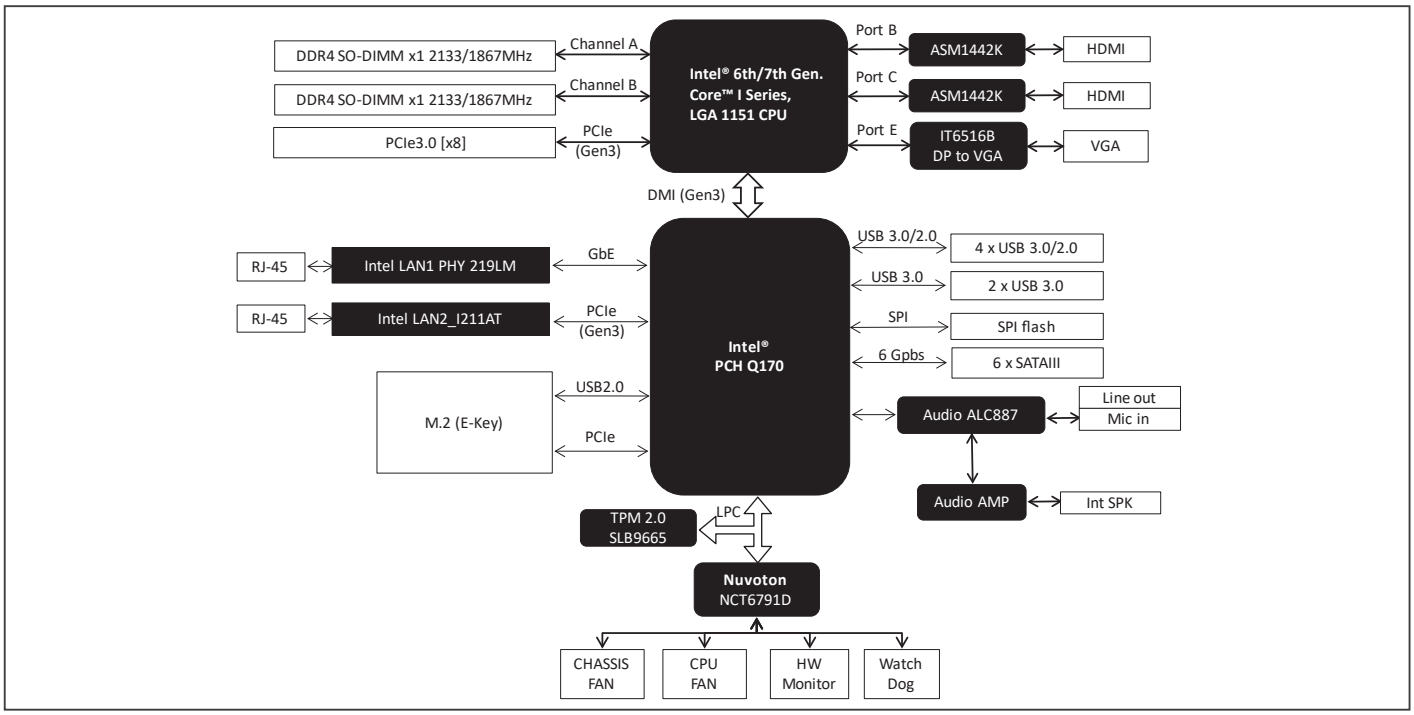
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in1)
- **I/O Shield**
- **Product DVD**
- **EMB-Q170C**

Optional Accessories

Part Number	Description
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
COOLER-65W-01	CPU Cooler, 1U, 12V, 65W, 4P
1400100630100	SATA 6G Cable (7p, 180; 90, 500mm 2 in 1)
1700190450	(TF) USB 3.0 Cable 2 Ports USB3.0 to 19P w/ bracket 450mm

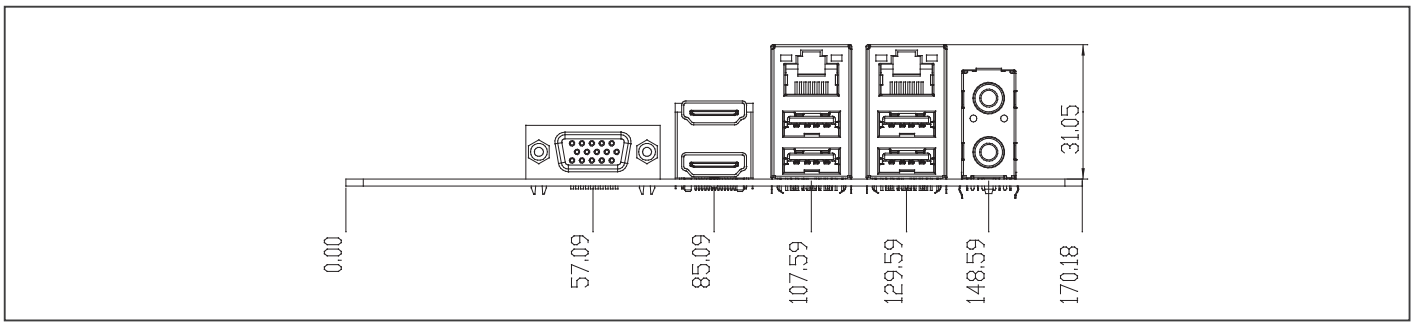
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

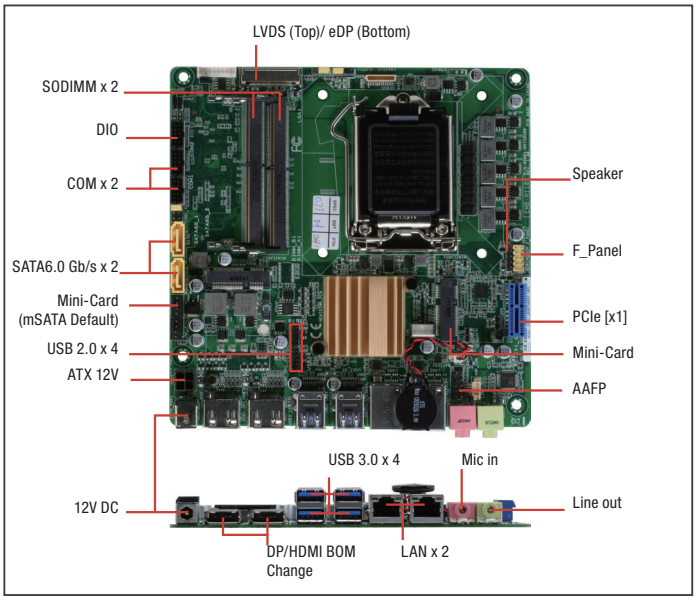


Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-Q170C-A10-K	Socket	SODIMM x 2	Fan	VGA x 1, HDMI x 2	SATA3 x 6	No	GbE x 2	USB 3.0 x 6	0	0	PCIe3.0 [x8] x 1 M.2, E-key (22x30mm) x 1	ATX	—	32°F ~ 140°F (0°C ~ 60°C)

EMB-H110B

6th/7th Generation Intel® Core™ i Series, LGA1151 Socket Processor, Max. 65W TDPs, SATA 6.0 Gb/s x 2, USB x 8



Features

- LGA1151 Socket For 6th/7th Generation Intel® Core™ i Series Processor
- DDR4 SODIMM x 2, Up to 32GB
- Two Independent Display: DP/HDMI (BOM Change), LVDS, eDP
- SATA 6.0 Gb/s x 2, Half-size Mini-Card x 1, Full/Half-size Mini-Card x 1
- PCI-Express [x1] x 1
- 12V DC
- Low Profile
- 4K for HDMI/eDP

Specifications

System	
Processor	6th/7th Generation Intel® Core™ i7/i5/i3, LGA1151 Socket Processor, Max. 65W TDPs
Chipset	Intel® H110
Memory	DDR4 2133/1867 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6791D
Ethernet	Realtek® PCIe Gb LAN 8111G x 2
Audio	Realtek® ALC887
TPM	Infineon SLB96XX TT 1.2/2.0 (default: No)
Expansion Slots	PCIe2.0 [x1] x 1, Full-size Mini-Card (mSATA default) (PCIe+USB optional)x 1, Half-size Mini-Card (PCIe+USB) x 1
BIOS	64 M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	—
Graphics Multi Display	HDMI1+HDMI2, HDMI1+DP2, DP1+HDMI2, HDMI1+LVDS, HDMI2+LVDS, HDMI1+eDP, HDMI2+eDP, DP1+DP2, DP1+LVDS, DP2+LVDS, DP1+eDP, DP2+eDP
VGA	—
DVI	—
HDMI	Up to 4096 x 2160 @24 Hz / 2560 x 1600 @60 Hz, with Digital Audio (HDMI/ DP Combo)
Display Port	Up to 1920 x 1200 @60 Hz, with Digital Audio (HDMI/DP Combo)
LVDS	Up to 1920 x 1200 @60 Hz, dual-channel 18/24-bit colay
eDP	UP to 4096 x 2340 @60Hz
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12VDC
Operating Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	315,210

Rear Panel I/O Ports	
USB	USB 3.0 x 4
Display I/O	DP/HDMI (BOM Change) x 2
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC Jack x 1
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) x 2, Full Size Mini-Card (mSATA) x 1, SATA power connector x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 2 ports support additional 4 USB.
Display I/O	40-pin LVDS connector x 1, 40-pin eDP connector x 1, LVDS 3.3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight connector (inverter) x 1, LCD backlight 12V /5V jumper x 1
Audio I/O	AAFP x 1, Speaker x 1
Serial Port	Boxer header for COM (RS-232/422/485) x 1, Boxer header for COM (RS-232) x 1
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	12V AUX Power Connector x 1, AT/ATX mode select jumper (optional) x 1
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard (pin header) x 1, CMOS jumper x 1
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 64-bit, Ubuntu16.04.02/Kernel4.8.0

Packing List

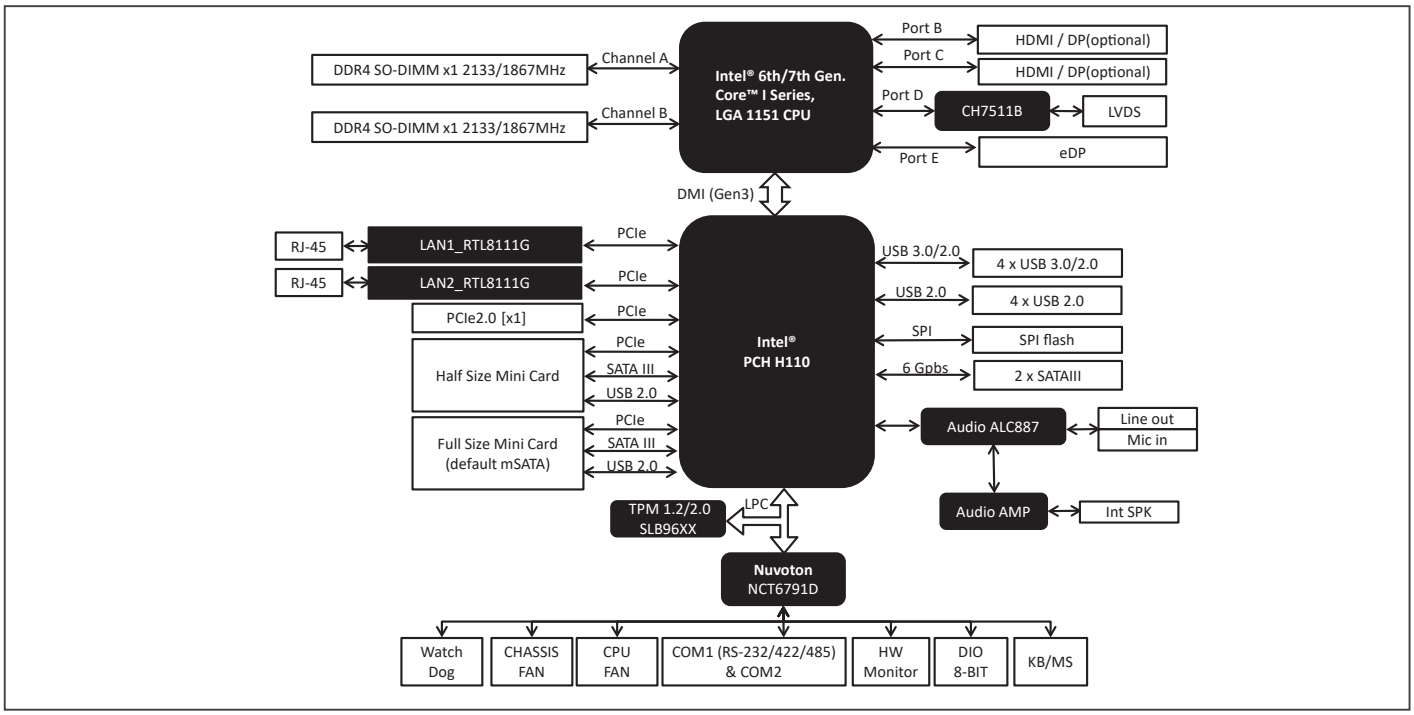
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in1)
- **14001-00230100**
  SATA to Power Cable (4P, 120MM)
- **I/O Shield**
- **Product DVD**
- **EMB-H110B**

Optional Accessories

Part Number	Description
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
COOLER-65W-01	CPU Cooler, 1U, 12V, 65W, 4P
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/ bracket)
1701100206	COM Cable (200MM, p=2.00mm)
1702150300	SATA Power Cable, 4P, 2.54mm
1255900846	Adapter 12V/84W
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)

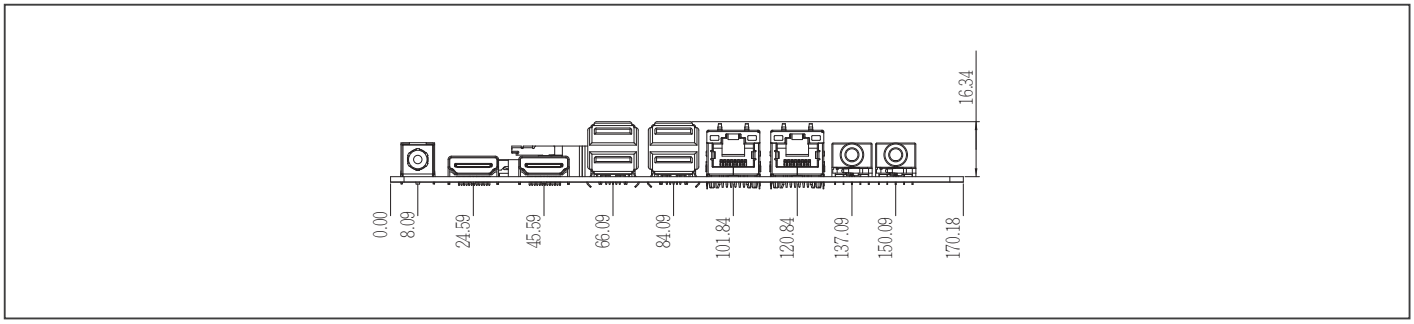
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

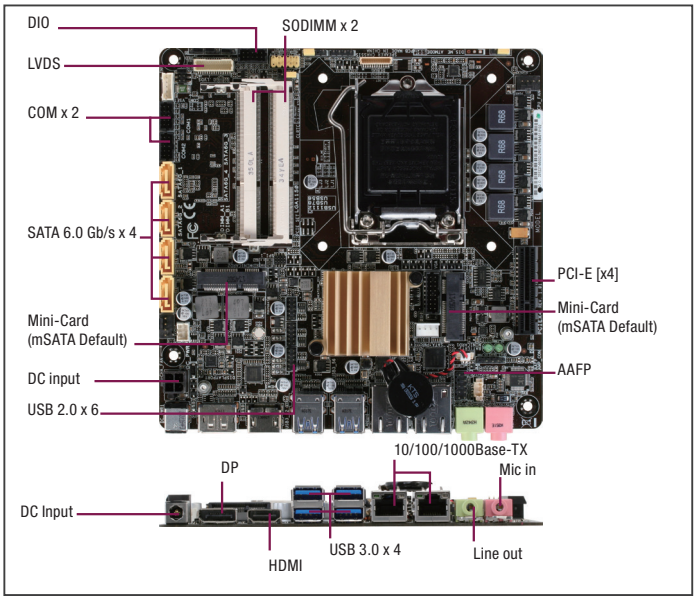


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-H110B-A10-HH-K	Socket	SODIMM x 2	Fan	LVDS, eDP, HDMI x 2	SATA3 x 2, Full size mini card x 1 (mSATA)	Daul Channel 18/24 bit	GbE x 2	USB 3.0 x 4, USB2.0 x 4	1	1	PCIe2.0 [x1] x 1, Half-size Mini Card (PCIe +USB default) x 1	12VDC	—	32°F ~ 140°F (0°C ~ 60°C)

EMB-Q87A

Thin Mini-ITX Embedded Motherboard with 4th Generation Intel® Core™ i Series Processor, 12~24V DC Wide Range Power Input



Features

- **LGA1150 Socket For 4th Generation Intel® Core™ i Series 22nm Processor**
- **LAN1 Supports iAMT9.0**
- **DDR3 1333/1600 MHz SODIMM x 2, Up to 16 GB**
- **Three Independent Display: LVDS, VGA, HDMI, DP**
- **SATA 6.0 Gb/s x 4**
- **USB 3.0 x 4, USB 2.0 x 6**
- **PCI-E2.0[x4] x 1, Full-size Mini-Card with Default mSATA x 1, Half-size Mini-Card x 1**
- **12V~24V DC Wide Range Voltage Power Input**
- **Low Profile**

Specifications

System	
Processor	4th Generation Intel® Core™ i Series 22nm LGA1150 socket Processor, Max. 65W, TDPs
Chipset	Intel® Q87
Memory	DDR3 1333/1600 MHz SODIMM x 2, Up to 16GB, Non-ECC, Dual-channel memory architecture(flat type)
I/O Chipset	NCT6791D
Ethernet	Intel® PHY I217LM Gb LAN x 1, Intel® I210AT Gb LAN x 1
Audio	Realtek® ALC887
TPM	Infineon SLB96XX TT 1.2/2.0 (default: 1.2)
Expansion Slots	PCIe [x4] x 1, Full-size Mini-Card x 1 (mSATA default) (PCIe+USB optional, selected by Jumper), Half-size Mini-Card x 1 (PCIe+USB default, selected by Jumper).
BIOS	128M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on VCore™ 5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+HDMI, VGA+DP, VGA+LVDS, HDMI+DP, HDMI+LVDS, DP+LVDS, VGA+HDMI+DP, VGA+HDMI+LVDS, HDMI+DP+LVDS, VGA+DP+LVDS
VGA	Up to 1920 x 1200 @60 Hz
DVI	—
HDMI	Up to 4096 x 2160 @24 Hz ; 3840 x 2160 @60 Hz, with Digital Audio
Display Port	Up to 4096 x 2160 @24 Hz ; 3840 x 2160 @60 Hz, with Digital Audio
LVDS	Up to 1920 x 1200 @60 Hz, dual-channel 18/24-bit
eDP	—
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12-24V DC (wide rage:12V-5%~ 24V+10%)
Operating Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	104,363

Rear Panel I/O Ports	
USB	USB 3.0 x 4
Display I/O	HDMI x 1, DP x 1
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC Jack x 1
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) x 4, SATA power connector x 1, Full Size Mini-Card (mSATA) x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 3 ports support additional 6 USB
Display I/O	VGA x 1, LVDS connector x 1, LVDS 3.3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight connector (inverter) x 1, LCD backlight 12V /5V jumper x 1
Audio I/O	AAFP x 1, Speaker x 1, DMIC (optional) x 1
Serial Port	Boxer header for COM (RS-232) x 2
PS/2 Port	PS/2 Keyboard Mouse 6 PIN Connector x 1
Parallel Port	—
DIO	Digital I/O header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	12V AUX Power Connector x 1, AT/ATX mode select jumper (optional) x 1
Others	Front Panel connector x 1, Chassis Intrusion x 1, CMOS jumper x 1
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 64-bit, Linux Fedora

Packing List

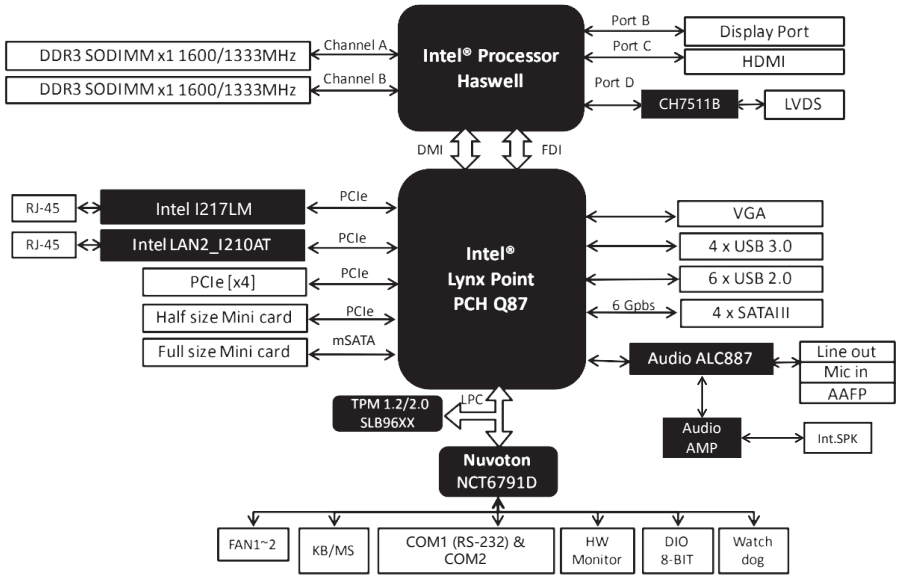
- **SATA Cable**
- **SATA Power Cable**
- **I/O Shield**
- **Product CD**
- **EMB-Q87A**

Optional Accessories

Part Number	Description
1255901201	Power Adapter 19V/120W
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1701160201	VGA Cable (200MM, p=2.00mm)
Cooler-65W-01	CPU Cooler, 1U, 12V, 65W, 4P
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/ bracket)
1701100206	COM Cable (200MM, p=2.00mm)
1700060152	PS/2 Cable (6P, 150mm, P=2.0mm)
1702150300	SATA Power Cable, 4P, 2.54mm
ADAPTER_18W	DELTA, AOP-180MB FB
1255900846	Adapter 12V/84W
17592AM901	CPU Cooler, LGA 1155/1156, 1U, 4P, 12V

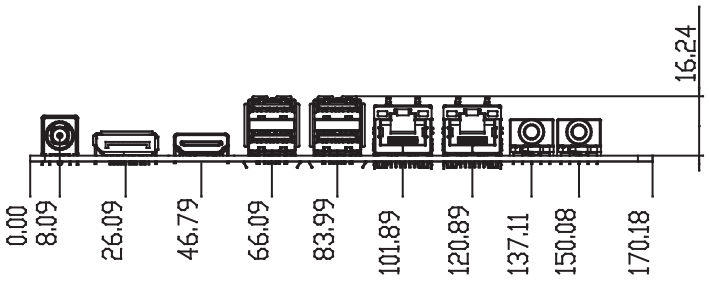
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

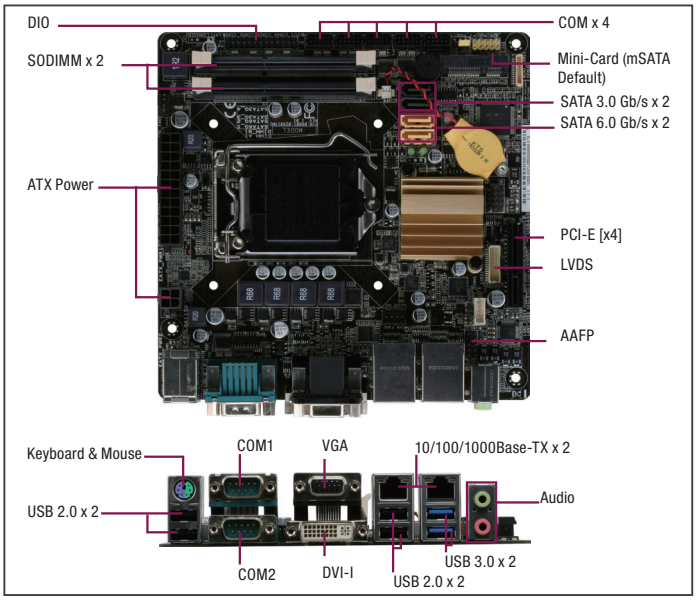


Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-Q87A-B10	Socket	SODIMM x 2	Fan	VGA, HDMI, DP, LVDS	SATA3 x 4, Full size Mini-Card (mSATA)	Dual Channel 18/24-bit	GbE x 2	USB 3.0 x 4, USB 2.0 x 6	2	—	PCIe [x4] x 1, Full size Mini- Card x 1, Half size Mini-Card x 1	12V~24V DC	TPM1.2 Onboard	32°F ~ 140°F (0°C ~ 60°C)

EMB-H81A

Mini-ITX with LGA1150 Socket for 4th Generation Intel® Core™ i Series Processor, SATA 6.0 Gb/s x 2, SATA 3.0Gb/s x 2, USB x 9



Features

- **LGA1150 Socket for 4th Generation Intel® Core™ i Series Processor**
- **Dual Independent Display: VGA, DVI-I, LVDS**
- **Gigabit Ethernet x 2**
- **SATA 6.0 Gb/s x 2**
- **USB 3.0 x 2, USB 2.0 x 7**
- **PCI-E2.0 [x4] x 1, Full-size Mini-Card (PCI-E + USB) with mSATA (Optional) x 1**

Specifications

System	
Processor	4th Generation Intel® Core™ i Series 22nm LGA1150 socket Processor, Max. 65W, TDPs
Chipset	Intel® H81
Memory	DDR3 1333/1600 MHz SODIMM x 2, Up to 16GB, Non-ECC, Dual-channel memory architecture(flat type)
I/O Chipset	NCT6791D, NCT5104D
Ethernet	Realtek® PCIe Gb LAN 8111F x 2
Audio	Realtek® ALC887
TPM	Infineon SLB9635 TT 1.2
Expansion Slots	PCIe [x4] x 1, Full-size Mini-Card (PCIe+USB default) (mSATA Default) x 1,
BIOS	64 M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA + LVDS, VGA + DVI-I, LVDS + DVI-I
VGA	Up to 1920 x 1200 @60 Hz
DVI	Up to 1920 x 1200 @60 Hz
HDMI	—
Display Port	—
LVDS	Up to 1920 x 1200 @60 Hz, dual-channel 18/24-bit Supports LVDS
eDP	—
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 4pin ATX 12V Power connector x 1
Operating Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	288,500
Rear Panel I/O Ports	
USB	USB 3.0 x 2, USB 2.0 x 4
Display I/O	VGA x 1, DVI-I x 1
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	COM (RS-232/422/485) x 1, COM (RS-232) x 2
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) x 2, SATA2 (3.0Gb/s) x 2 (1 colay with mainboard), Full/Half Size Mini-Card slot x 1
USB	USB 2.0 connectors support additional 2 USB ports (2.54mm) x 1, USB 2.0 connectors support additional 1 USB ports (2.00mm) x 1
Display I/O	LVDS connector x 1, LCD Inverter connector x 1
Audio I/O	AAFP x 1
Serial Port	Box header for COM (RS-232) x 4
PS/2 Port	—
Parallel Port	SPP/EPP/ECP Mode
DIO	Digital I/O header x 1
FAN	CPU Fan connector x 1, Chassis Fan connector x 1
Power	12V AUX Power Connector x 1, 24-pin EATX Power connector x 1
Others	Front Panel connector x 1
OS	
OS Support	WIndows® 10 64-bit, Windows® 7 32/64-bit, Windows® 8 32/64-bit, Linux Fedora

Packing List

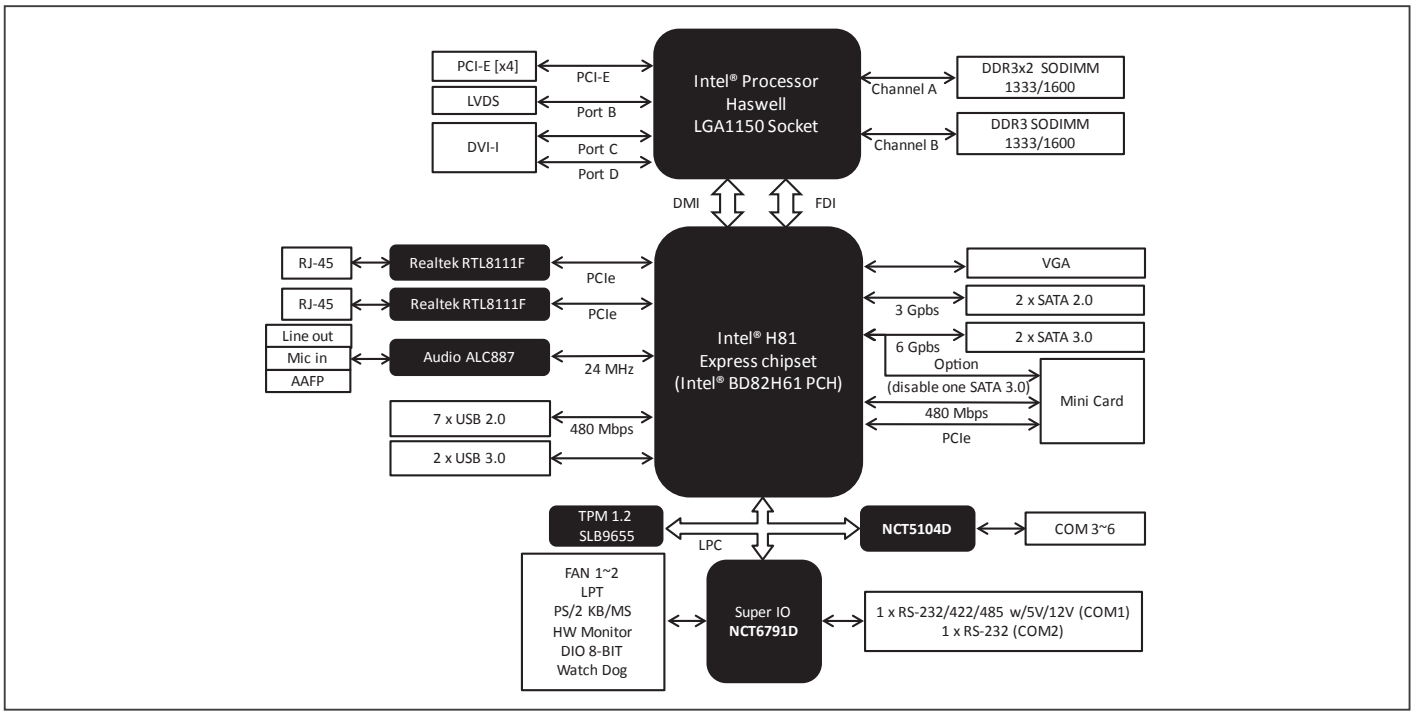
- **SATA Cable**
- **I/O Shield**
- **Product CD**
- **EMB-H81A**

Optional Accessories

Part Number	Description
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1709100330	USB 2.0 Cable (9P, 330MM, p=2.54mm, w/ bracket)
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/ bracket)
1701100206	COM cable (200MM, p=2.00mm)
1701260305	LPT Cable (25P, 270MM)
1701100206	COM Cable (200MM, p=2.00mm)
1700060192	PS/2 Cable (6P, 190mm, P=2.0mm)
170910020K	USB 2.0 Cable (9P, 200MM, p=2.54mm, w/o bracket)
1702150300	SATA Power Cable, 4P, 2.54mm
1709050201	USB 2.0 Cable (5P, 220MM, p=2.00mm)

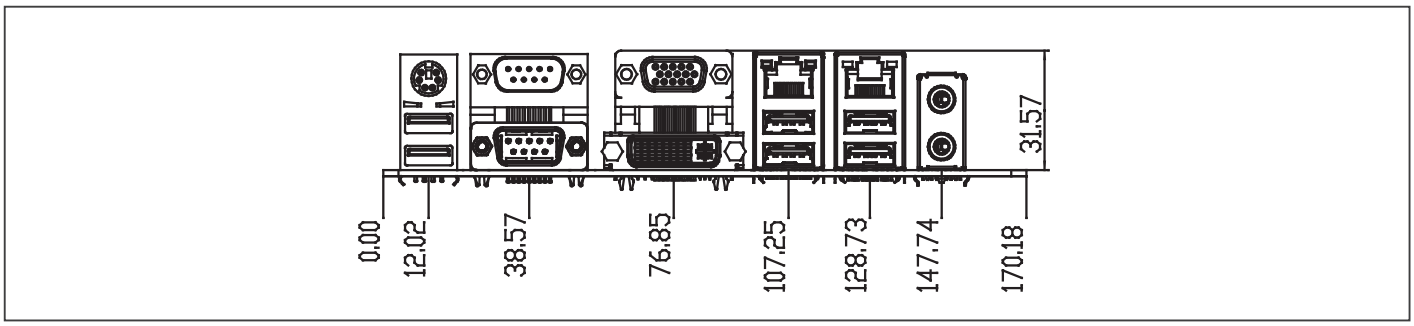
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

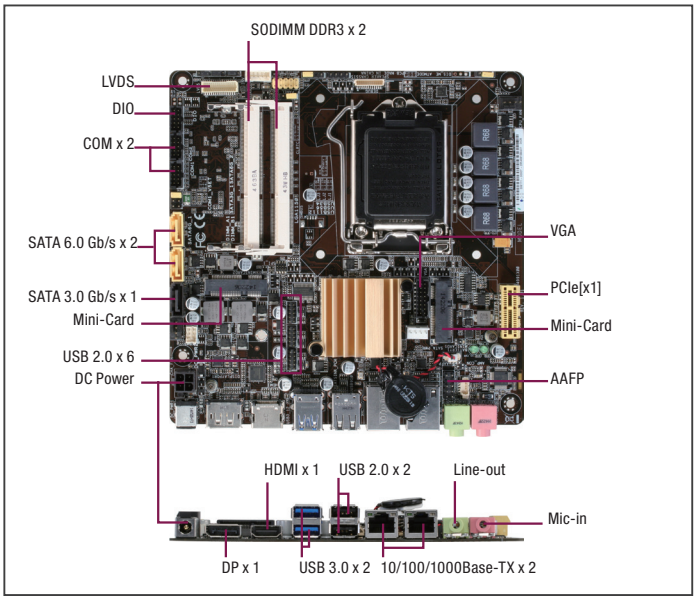


Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-H81A-A10	Socket	SODIMM	Fan	VGA, LVDS, DVI-I	SATA3 x 2, SATA2 x 2	Dual Channel 18/24-bit	GbE x 2	USB 3.0 x 2, USB 2.0 x 7	5	1	PCI-E[x4] x 1, Full size Mini-Card x 1	ATX	TPM1.2 Onboard	32°F ~ 140°F (0°C ~ 60°C)
EMB-H81A-A10-MS	Socket	SODIMM	Fan	VGA, LVDS, DVI-I	SATA3 x 2, SATA2 x 1	Dual Channel 18/24-bit	GbE x 2	USB 3.0 x 2, USB 2.0 x 7	5	1	PCI-E[x4] x 1, Full size Mini-Card x 1	ATX	TPM1.2 Onboard	32°F ~ 140°F (0°C ~ 60°C)

EMB-H81B

Thin Mini-ITX Embedded Motherboard with 4th Generation Intel® Core™ i Series Processor, 12V~24V Wide Range Power Input



Features

- 4th Generation Intel® Core™ i Series 22nm Processor
- Intel® H81
- DDR3 1333/1600 MHz SODIMM x 2, Up to 16 GB
- Dual Independent Display: LVDS, VGA, HDMI, DP
- SATA 6.0 Gb/s x 2, SATA 3.0 Gb/s x 1
- USB 3.0 x 2, USB 2.0 x 6
- PCI-E2.0 [x1] x 1, Full-size Mini-Card (mSATA) x 1, Half-size Mini-Card x 1
- 12V~24V DC Wide Range Voltage Power Input
- Low Profile

Specifications

System	
Processor	4th Generation Intel® Core™ i Series 22nm LGA1150 socket Processor, Max. 65W, TDPs
Chipset	Intel® H81
Memory	DDR3 1333/1600 MHz SODIMM x 2, Up to 16GB, Non-ECC, Dual-channel memory architecture(flat type)
I/O Chipset	NCT6791D
Ethernet	Realtek® PCIe Gb LAN 8111G x 2
Audio	Realtek® ALC887
TPM	Infineon SLB9635 TT 1.2
Expansion Slots	PCIe [x1] x 1, Full-size Mini-Card (mSATA default) (PCIe+USB optional)x 1, Half-size Mini-Card (PCIe+USB) x 1
BIOS	64 M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+HDMI, VGA+DP, VGA+LVDS, HDMI+DP, HDMI+LVDS, DP+LVDS
VGA	Up to 1920 x 1200 @60 Hz
DVI	—
HDMI	Up to 4096 x 2160 @24 Hz / 3840 x 2160 @60 Hz, with Digital Audio
Display Port	Up to 4096 x 2160 @24 Hz / 3840 x 2160 @60 Hz, with Digital Audio
LVDS	Up to 1920 x 1200 @60 Hz, dual-channel 18/24-bit
eDP	—
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12-24V DC (wide rage:12V-5%~ 24V+10%)
Operating Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	288,850
Rear Panel I/O Ports	
USB	USB 3.0 x 2, USB 2.0 x 2
Display I/O	HDMI x 1, DP x 1
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC Jack x 1
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) x 2, SATA2 (3.0Gb/s) x 1, SATA power connector x 1, Full Size Mini-Card (mSATA) x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 3 ports support additional 6 USB (2 colay with Mini-Card)
Display I/O	VGA x 1, LVDS connector x 1, LVDS 3.3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight connector (inverter) x 1, LCD backlight 12V /5V jumper x 1
Audio I/O	AAFP x 1, Speaker x 1
Serial Port	Boxer header for COM (RS-232) x 1, Boxer header for COM (RS-232/422/485) x 1
PS/2 Port	PS/2 Keyboard Mouse 6 PIN Connector x 1
Parallel Port	—
DIO	Digital I/O header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	12V AUX Power Connector x 1, AT/ATX mode select jumper (optional) x 1
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard (pin header) x 1, CMOS jumper x 1
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 64-bit, Linux Fedora

Packing List

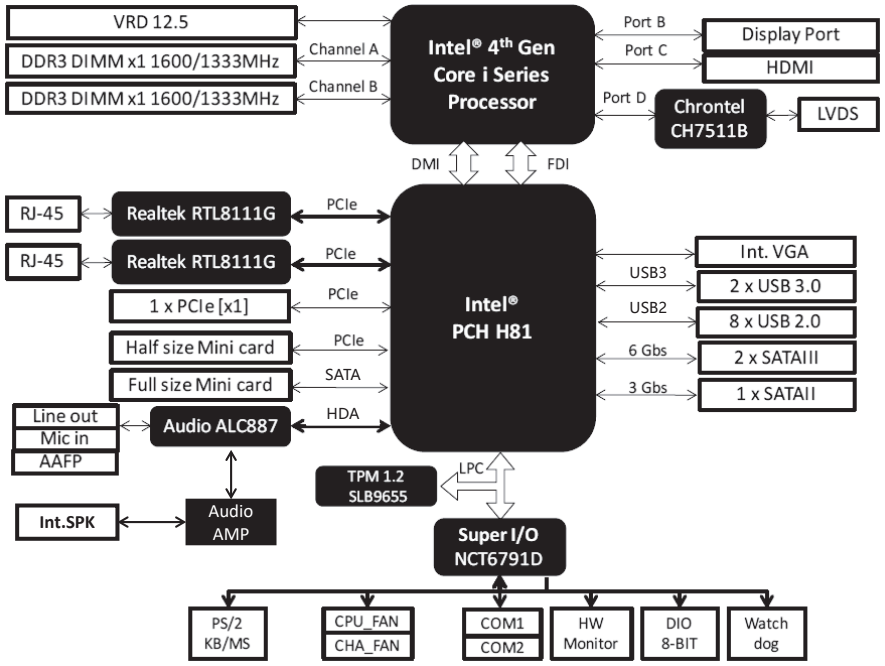
- SATA Cable
- SATA Power Cable
- I/O Shield
- Product DVD
- EMB-H81B

Optional Accessories

Part Number	Description
1709100201	USB 2.0 Cable (10P, 200mm, p=2.00mm) (with I/O BKT)
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1701100206	COM Cable (200mm, p=2.00mm)(w/o I/O BKT)
1700060152	PS/2 Cable with KB/MS (150mm, p=2.00mm)(w/o I/O BKT)
COOLER-65W-01	CPU Cooler, 1U, 12V, 65W, 4P
17592AM901	CPU Cooler LGA1155/1156, 1U, 4P, 12V
1702150300	SATA Power Cable 4P, 2.54mm
1255901201	Power Adapter, 19V/120W
1255900846	Power Adapter, 12V/84W
1700100491	USB2.0 Cable (10P, 490mm, P=2.00mm)

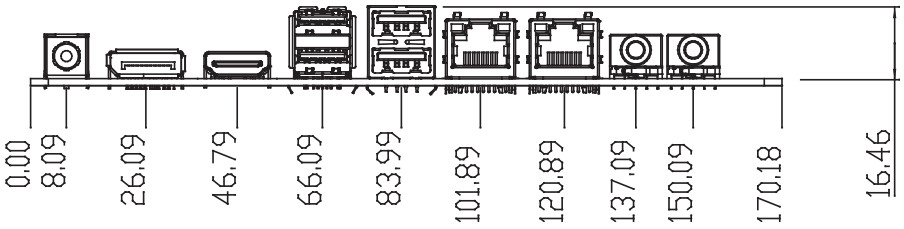
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

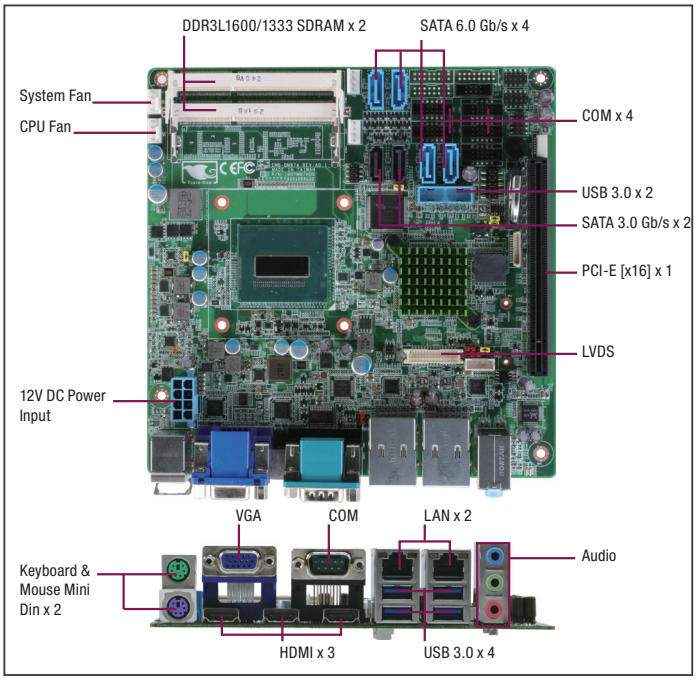


Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-H81B-B10	Socket	SODIMM x 2	Fan	VGA, HDMI, DP, LVDS	SATA3 x 2, SATA2 x 1, Full-Size Mini-Card x 1 (mSATA)	Dual Channel 18/24-bit	GbE x 2	USB 3.0 x 2, USB 2.0 x 6	1	1	PCI-E [x1] x 1, Half size Mini-Card (PCIe+USB) x 1	12V ~ 24VDC	TPM1.2 Onboard	32°F ~ 140°F (0°C ~ 60°C)

EMB-QM87A

Embedded Motherboard with Onboard 4th Generation Intel® BGA 1364 Processor & iAMT Support



Features

- **Onboard 4th Generation Intel® BGA 1364 Processor**
- **204-pin DDR3L 1600/1333 MHz SDRAM x 2, Up to 16 GB**
- **HDMI x 3, VGA, 24-bit Dual-Channel LVDS**
- **Audio Jack x 3 with BTX Type (Mic-in, Line-in, Line-out)**
- **LAN 1: Intel® I217-LM Gigabit Ethernet**
  LAN 2: Realtek® RTL 8111E Gigabit Ethernet
- **iAMT Support**
- **SATA 6.0 Gb/s x 4, SATA 3.0 Gb/s x 2, Supports RAID 0,1,5,10**
- **PCI-E[x16] x 1, Mini-PCIe x 1, COM x 5**

USB 3.0 | 1000 Giga LAN | DDR 3L | PCIe PCI Express | CE FC

LAN I/O	RJ-45 x 2
Serial Port	RS-232/422/485 x 1
PS/2 Port	Mini-Din PS/2 K/B and Mouse x 1
Others	—
Internal I/O Connectors	
Storage	SATA 6.0 Gb/s x 4, SATA 3.0 Gb/s x 2, Supports RAID 0,1,5,10
USB	USB 3.0 x 2, USB 2.0 x 4
Display I/O	LVDSx 1
Audio I/O	—
Serial Port	RS-232 x 4
PS/2 Port	—
Parallel Port	—
DIO	8-bit programmable (4-in/4-out)
FAN	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 1
Power	8-pin connector x 1
Others	—
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Linux Fedora

Specifications

System	
Processor	Onboard 4th generation Intel® BGA 1364 Processor
Chipset	Intel® QM87
Memory	Dual-channel with 204-pin SDRAM x 2, DDR3L 1600/1333, up to 16GB
I/O Chipset	Fintek F81866D-I
Ethernet	Intel® I217-LM / Realtek® RTL 8111E, Gb LAN x 2
Audio	Realtek® ALC892/886/662
TPM	Infineon SLB9635TT 1.2(Optional)
Expansion Slots	PCIe [x16] x 1, Mini-PCIe x 1
BIOS	AMI BIOS - 128MB ROM
H/W Monitor	Supports system temperature, voltage, and cooling fan status monitoring
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/Chassis Fan
Wake On LAN/ PXE	Yes
Power State	S3,S4,S5
Graphics	
Graphics Chipset	Intel® Core™ i7/i5/i3 + QM87
Graphics Multi Display	HDMIx3, HDMIx2+VGA, HDMIx2+LVDS, HDMI+VGA+LVDS
VGA	1
DVI	—
HDMI	1
Display Port	—
LVDS	1
eDP	—
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium Battery
Power Requirement	12V DC
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE/FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.32 lb (0.6 kg)
MTBF (Hours)	106,000
Rear Panel I/O Ports	
USB	USB 3.0 x 4
Display I/O	HDMI x 3, VGA x 1
Audio I/O	Line-in, Mic-in, Line-out

Packing List

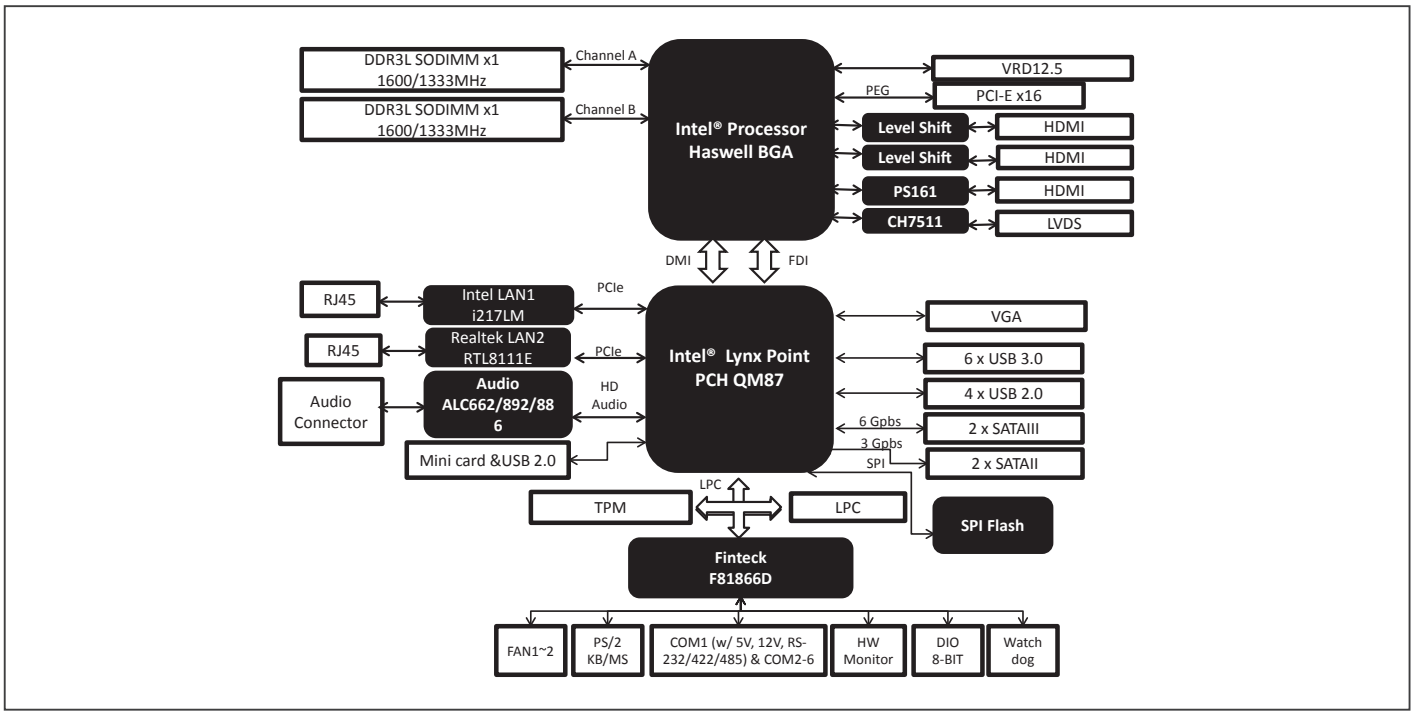
- **M20QM87000**
  (TF)Metal, Sus, I/O Shield, Rev.0.0, EMB-QM87, Northern Queen, 60038-1
- **1709070800**
  (TF)SATA CABLE, 7P Pitch 1.27mm, 80cm, w/Lock
- **1702151201**
  (TF)Power Cable, 4P 2.5mm Housing, 15P SATA (F), 12cm, for FWS-2150
- **9657666600**
  (TF)Accessory, for All Series Jumper
- **17592QM871**
  (TF)CPU Cooler, FAN+Heat Sink, 4P, 60*60*26.5mm, for GENE-QM87, COOLJAG, JACDD04A-3-2300
- **Product DVD**
- **EMB-QM87A**

Optional Accessories

- **1709070800**
  (TF)SATA CABLE, 7P Pitch 1.27mm, 80cm, w/Lock
- **1702151201**
  (TF)Power Cable, 4P 2.5mm Housing, 15P SATA (F), 12cm, for FWS-2150
- **9657666600**
  (TF)Accessory, for All Series Jumper
- **1709100201**
  (TF)USB Cable, 20cm 2.0mm, w/ bracket
- **1701100206**
  (TF)Flat Cable, 9P DB 9P Male, 10P 2.00mm Pitch Housing, 20cm
- **1700190450**
  (TF)USB 3.0 Cable, 2 PORTS USB 3.0, to 19P, w/ bracket, 450mm, ASUS

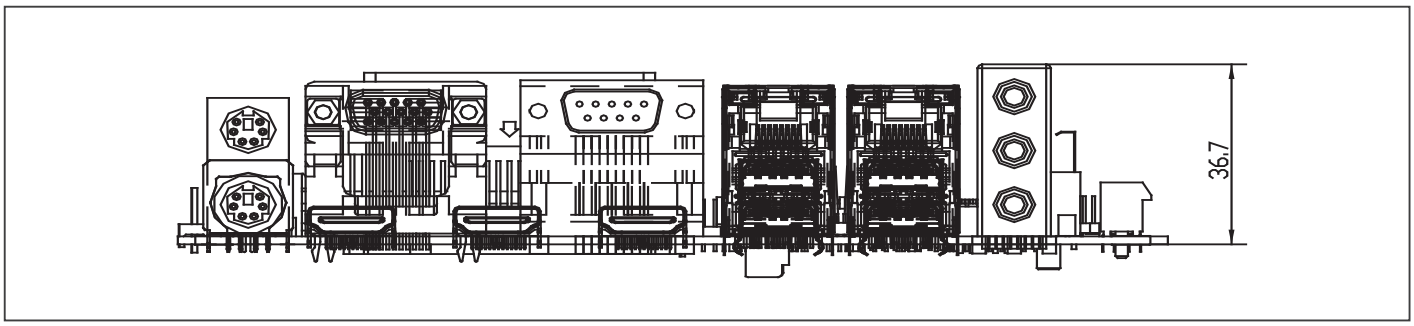
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

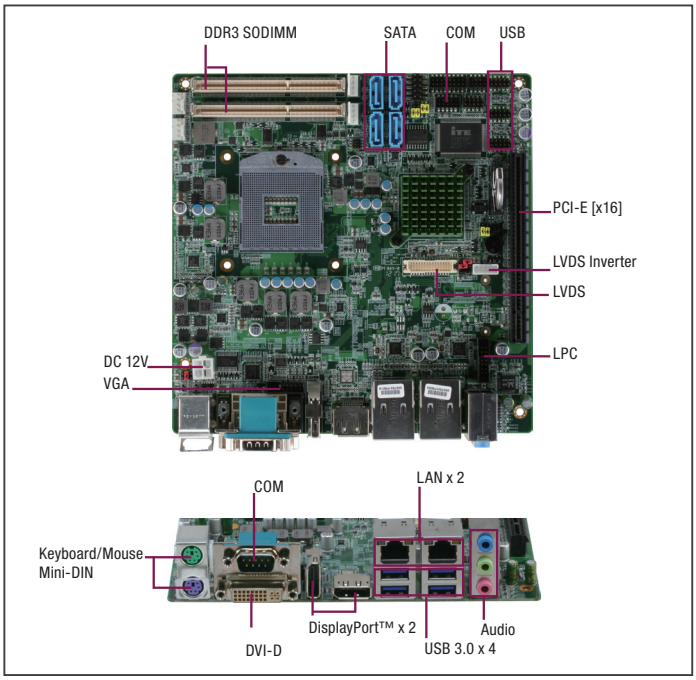


Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-QM87A-A10	i7-4700EQ	DDR3L 16GB	Fan	VGA/LVDS/HDMI	SATA2 x 2, SATA3 x 4	GbE x 2	USB 3.0 x 6, USB 2.0 x 4	4	1	PCIe [x16] x 1, mPCIe x 1	+12V DC	—	32°F ~ 140°F (0°C ~ 60°C)
EMB-QM87A-A10-01	i5-4400E	DDR3L 16GB	Fan	VGA/LVDS/HDMI	SATA2 x 2, SATA3 x 4	GbE x 2	USB 3.0 x 6, USB 2.0 x 4	4	1	PCIe [x16] x 1, mPCIe x 1	+12V DC	—	32°F ~ 140°F (0°C ~ 60°C)
EMB-QM87A-A10-02	i3-4100E	DDR3L 16GB	Fan	VGA/DVI-D/HDMI	SATA2 x 2, SATA3 x 4	GbE x 2	USB 3.0 x 6, USB 2.0 x 4	4	1	PCIe [x16] x 1, mPCIe x 1	+12V DC	—	32°F ~ 140°F (0°C ~ 60°C)

EMB-QM77

Embedded Motherboard with 3rd Generation Intel® Core™ i7/i5/Celeron® Quad Core/Dual Core™ Processor



Features

- **Socket rPGA988, 3rd Generation Intel® Core™ i7/i5/Celeron® Processor**
- **Intel® Core™ i7/i5 + QM77**
- **204-pin Dual-channel DDR3 1066/1333/1600 MHz SODIMM x 2, Up to 16 GB**
- **Gigabit Ethernet x 2**
- **Dual Display Version: CRT, Dual 24-bit LVDS, DVI-D, HDMI, DisplayPort™**
- **Three Display Version: CRT, Dual 24-bit LVDS, DVI-D, DisplayPort™ x 2 (Optional)**
- **SATA 6.0 Gb/s x 2, SATA 3.0 Gb/s x 2, Supports RAID 0,1,5,10**
- **USB 2.0 x 6, USB 3.0 x 4, COM x 2**
- **PCI-Express [x16] x 1, Mini-Card x 1, CFast™ x 1, TPM x 1**

Specifications

System	
Processor	Socket 3rd Generation Intel® rPGA988 Processor
Chipset	Intel® QM77
Memory	Dual-channel with 204-pin SDRAM x 2, DDR3 1600/1333/1066, up to 16GB
I/O Chipset	ITE IT8728F+Fintek F81216DG
Ethernet	Intel® PHY WG82579LM / Realtek® RTL 8111E, Gb LAN x 2
Audio	Realtek® ALC892/886/662
TPM	Infineon SLB9635TT 1.2
Expansion Slots	PCIe [x16] x 1, Mini-PCIe x 1, CFast x 1
BIOS	AMI BIOS - 128MB ROM
H/W Monitor	Supports system temperature, voltage, and cooling fan status monitoring
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/Chassis Fan
Wake On LAN/ PXE	Yes
Power State	S3,S4,S5
Graphics	
Graphics Chipset	Intel® Core™ i7/i5/i3 + QM77
Graphics Multi Display	DP x 2+VGA, DP x 2+LVDS, HDMI+DP,HDMI+VGA, HDMI+LVDS
VGA	1
DVI	1
HDMI	1 (by SKU)
Display Port	2 (by SKU)
LVDS	1
eDP	—
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium Battery
Power Requirement	12V DC
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE/FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.32 lb (0.6 kg)
MTBF (Hours)	60,000

Rear Panel I/O Ports	
USB	USB 3.0 x 4
Display I/O	DP x 2 or DP x 1+HDMI x 1, DVI-D x 1
Audio I/O	Line-in, Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	RS-232/422/485 x 1
PS/2 Port	Mini-Din PS/2 K/B and Mouse x 1
Others	—
Internal I/O Connectors	
Storage	SATA 6.0 Gb/s x 2, SATA 3.0 Gb/s x 2, Supports RAID 0,1,5,10
USB	USB 2.0 x 6
Display I/O	VGAx 1, LVDSx 1
Audio I/O	—
Serial Port	RS-232 x 1
PS/2 Port	—
Parallel Port	—
DIO	8-bit programmable (4-in/4-out)
FAN	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 1
Power	4-pin connector x 1
Others	—
OS	
OS Support	Windows® XP, Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Linux Fedora

Packing List

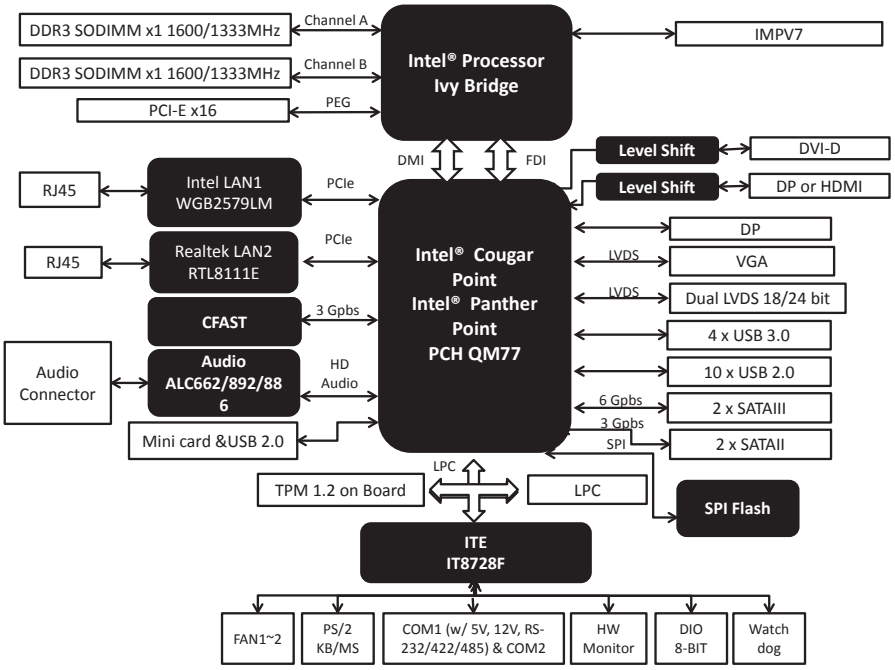
- **1701160201**
  VGA Cable
- **1709100201**
  USB Cable w/ bracket
- **1701100206**
  COM Cable
- **1709070800**
  SATA Cable
- **1702151201**
  SATA Power Cable (4-pin)
- **Metal I/O Bracket**
- **EMB-QM77**

Optional Accessories

- **17592QM672**
  CPU Cooler 4P, 60mm x 60mm x 26.5mm

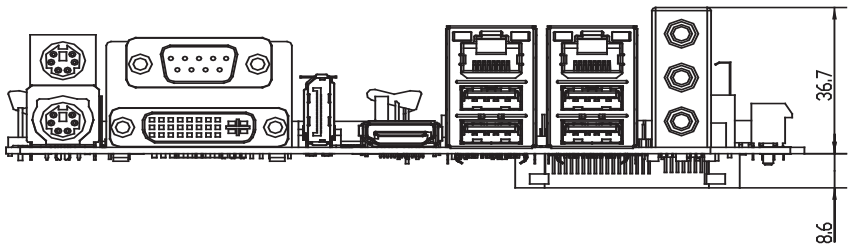
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

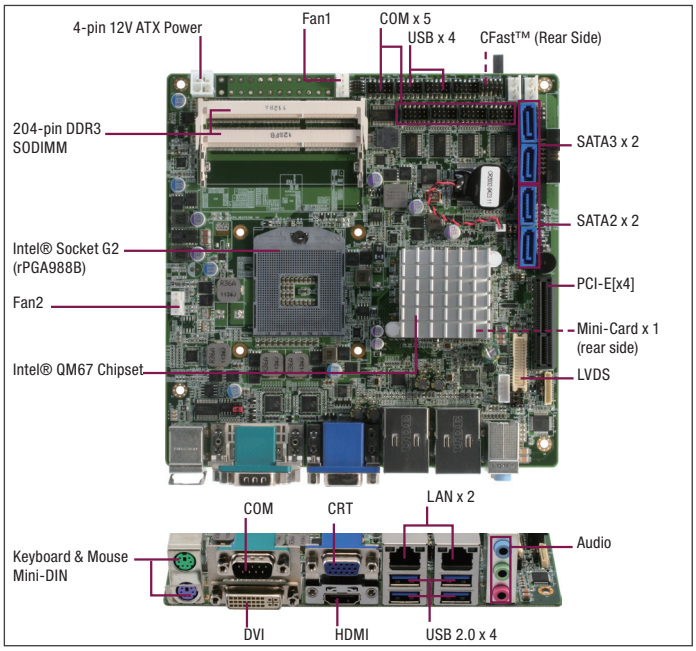
Unit: mm



Ordering Information

Part Number	CPU	RAM	Fan/ Fanless	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
TF-EMB-QM77-A10-OSP	Socket	DDR3 16GB	Fan	VGA/DVI-D/LVDS/DP	SATA2 x 2, SATA3 x 2, CFAST x 1	GbE x 2	USB 3.0 x 4, USB 2.0 x 6	1	1	PCIe [x16] x 1, mPCIe x 1	+12V DC	1.2	32°F ~ 140°F (0°C ~ 60°C)
TF-EMB-QM77-A10-01-OSP	Socket	DDR3 16GB	Fan	VGA/DVI-D/LVDS/DP/ HDMI	SATA2 x 2, SATA3 x 2, CFAST x 1	GbE x 2	USB 3.0 x 4, USB 2.0 x 6	1	1	PCIe [x16] x 1, mPCIe x 1	+12V DC	1.2	32°F ~ 140°F (0°C ~ 60°C)

Embedded Motherboard with Socket G2 (rPGA988B) 2nd Generation Intel® Core™ i7/i5/Celeron® QC/ DC Processor



Features

- **Socket G2 (rPGA988B) for 2nd Generation Intel® Core™ i7/i5/ Celeron® QC/ DC Processor**
- **Intel® QM67**
- **204-pin Dual-Channel DDR3 1066/1333/1600 MHz SODIMM x 2, Up to 16 GB**
- **Gigabit Ethernet x 2**
- **Intel® Integrated Graphics Engine Supports Dual View by VGA, DVI, HDMI, 24b, 2CH LVDS**
- **HD Audio**
- **SATA 3.0 Gb/s x 2, Supports RAID 0,1,5,10**
- **USB 2.0 x 8, COM x 6**
- **PCI-Express [x4] x 1, Mini-PCIe x 1, CFast™ x 1, TPM x 1 (Optional)**

Specifications

System	
Processor	Socket 2nd Generation Intel® rPGA988 Processor
Chipset	Intel® QM67
Memory	Dual-channel with 204-pin SDRAM x 2, DDR3 1600/1333/1066, up to 16GB
I/O Chipset	ITE IT8728F+Fintek F81216DG
Ethernet	Intel® PHY WG82579LM / Realtek® RTL 8111E, Gb LAN x 2
Audio	Realtek® ALC892/886/662
TPM	Infineon SLB9635TT 1.2 (Optional)
Expansion Slots	PCIe [x4] x 1, Mini-PCIe x 1, CFast x 1
BIOS	AMI BIOS - 64MB ROM
H/W Monitor	Supports system temperature, voltage, and cooling fan status monitoring
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/Chassis Fan
Wake On LAN/ PXE	Yes
Power State	S3,S4,S5
Graphics	
Graphics Chipset	Intel® Core™ i7/i5/Celeron® + QM67
Graphics Multi Display	VGA+HDMI, VGA + LVDS, VGA+DVI, HDMI+DVI, HDMI+LVDS, DVI+LVDS
VGA	1
DVI	1
HDMI	1
Display Port	—
LVDS	1
eDP	—
Backlight Control	Voltage
Environment & Power & ME	
Battery	Lithium Battery
Power Requirement	12V DC
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE/FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)
Weight	1.32 lb (0.6 kg)
MTBF	70,000
Rear Panel I/O Ports	
USB	USB 2.0 x 4
Display I/O	HDMI x 1, DVI-D x 1, VGA x 1
Audio I/O	Line-in, Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	RS-232/422/485 x 1
PS/2 Port	Mini-Din PS/2 K/B and Mouse x 1
Others	—
Internal I/O Connectors	
Storage	SATA 3.0 Gb/s x 2, Supports RAID 0,1,5,10
USB	USB 2.0 x 4
Display I/O	LVDS x 1
Audio I/O	—
Serial Port	RS-232 x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit programmable (4-in/4-out)
FAN	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 1
Power	4-pin connector x 1
Others	—
OS	
OS Support	Windows® XP, Windows® 7 32/64-bit, Linux Fedora

Packing List

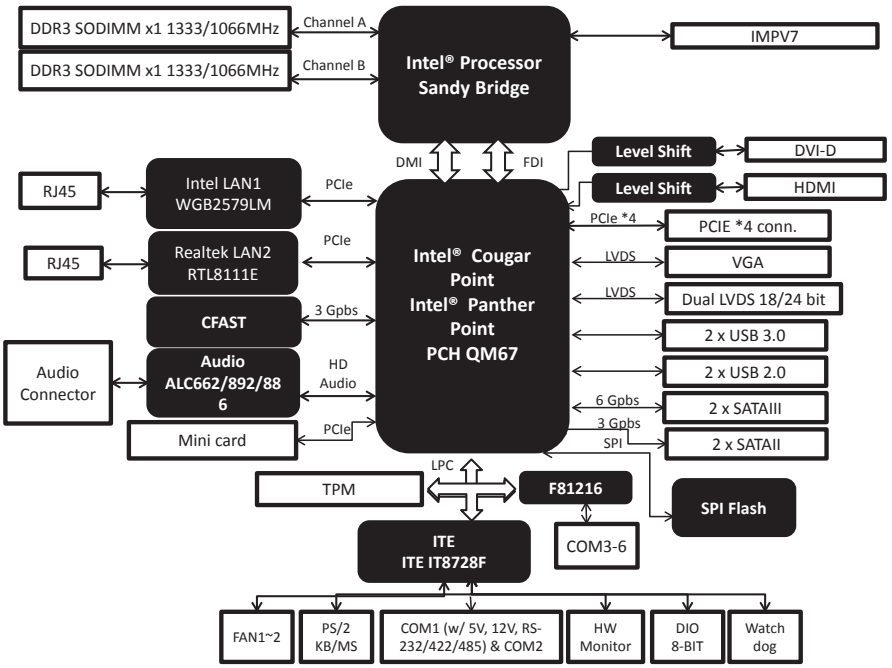
- **1709070800**
  SATA Cable
- **1702151201**
  SATA Power Cable
- **M20QM6700**
  Metal I/O Bracket
- **1701100206**
  COM Cable
- **Product DVD**
- **EMB-QM67**

Optional Accessories

- **17592QM671**
  CPU Cooler, Fan + Heatsink, 3P, 60 x 60 x 27 mm for EMB-QM67
- **1709100208**
  USB Cable
- **17592QM672**
  CPU Cooler, Fan + Heatsink, 4P, 60mm x 60mm x 27mm

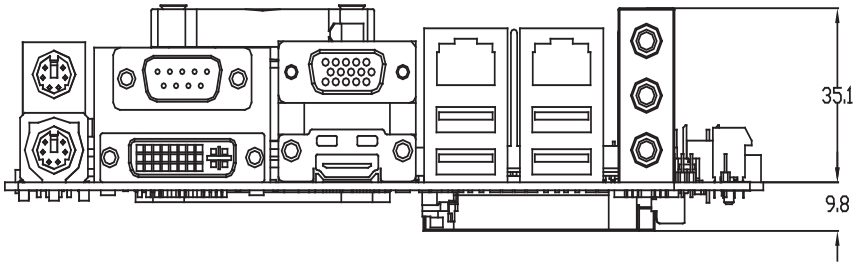
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

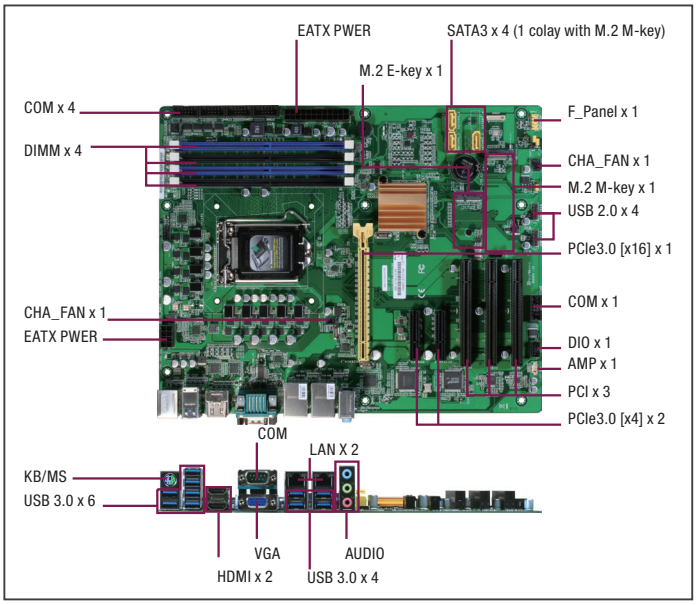


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
TF-EMB-QM67-A12	Socket	DDR3 16GB	Fan	VGA/DVI-D/ LVDS/HDMI	SATA2 x 2, SATA3 x 2, CFAST x 1	GbE x 2	USB 2.0 x 8	5	1	PCIe [x4] x 1, mPCIe x 1	+12V DC	—	32°F ~ 140°F (0°C ~ 60°C)
TF-EMB-QM67-A12-01	Socket	DDR3 16GB	Fan	VGA/DVI-D/ LVDS/HDMI	SATA2 x 2, SATA3 x 2, CFAST x 1	GbE x 2	USB 2.0 x 8	5	1	PCIe [x4] x 1, mPCIe x 1	ATX	—	32°F ~ 140°F (0°C ~ 60°C)

IMBA-Q170A

ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 DRAM, USB x 14, Supports iAMT 11.0



Features

- 7th/6th Generation Intel® Core™ LGA1151 Processor
- DDR4 DRAM Support, 2400 MHz, Max. 64GB
- Three Independent Display: HDMI x 2, VGA x 1
- Dual Intel® Gigabit Ethernet, LAN1 Supports iAMT 11.0
- PCIe [x16] x 1, PCIe [x4] x 2, PCI x 3
- M.2 Slot (M key) x 1, M.2 Slot (E key) x 1
- USB 3.0 Port x 10, USB 2.0 Port x 3

Specifications

System	
Processor	Intel® 7th/ 6th Generation(Kaby Lake-S/ Skylake-S) Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor
Chipset	Intel® Q170
Memory	288-pin DIMM x 4, max. 64GB, DDR4 2400/2133/1867, dual-channel
I/O Chipset	NCT6791D, F81216HD
Ethernet	LAN1: Intel® PHY I219LM Gb LAN (supports iAMT 11.0), LAN2: Intel® I211AT Gb LAN
Audio	Realtek® ALC887 (Colay with ALC886)
TPM	Nuvoton NPCT6xx TPM2.0 (Optional)
Expansion Slots	SKU1: PCIe [x16] x 1, PCIe [x4] (open edge) x 2, PCI x 3, M.2 E key (22 x 30mm) x 1, M.2 M key (22 x 80mm, for SATA) x 1 SKU2: PCIe [x16] x 1, PCIe [x4] (open edge) x 1, PCI x 3, M.2 E key x 1, M.2 M key (for SATA & PCIex4) x 1
BIOS	128M bit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan x1, Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+HDMI, HDMI+HDMI, VGA+HDMI+HDMI
VGA	Up to 1920 x 1200 @60Hz
DVI	—
HDMI	HDMI 1.4 up to 4096 x 2304 @24Hz
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	ATX, 12" x 9.6" (305 mm x 244 mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	219,970

Rear Panel I/O Ports	
USB	USB 3.0 x 10
Display I/O	HDMI x 2, VGA x 1
Audio I/O	Line-in, Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	DB-9 COM x 1 (supports RS-232/422/485, 5V/12V/RI)
PS/2 Port	Stack Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	Supports RAID 0/1/5/10 SKU1: SATA 6.0Gb/s x 3, M.2 M key (SATA) x 1 SKU2: SATA 6.0Gb/s x 4, M.2 M key (PCIex4) x 1
USB	USB 2.0 x 3
Display I/O	—
Audio I/O	Speaker header x 1 (Line-out)
Serial Port	RS-232 header x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit DIO x 1 (In/Out programmable)
FAN	4-pin CPU Fan x 1, 4-pin Chassis Fan x 2
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (2[x4]P p=1.27mm) x 1, Chassis Intrusion x 1, AT/ATX mode select jumper x 1
OS	
OS Support	Windows® 7 32/64-bit (not supported when a Kaby Lake processor is used), Windows® 8.1 64-bit (not supported when a Kaby Lake processor is used), Windows® 10 64-bit, ,Linux Fedora 64bit

Packing List

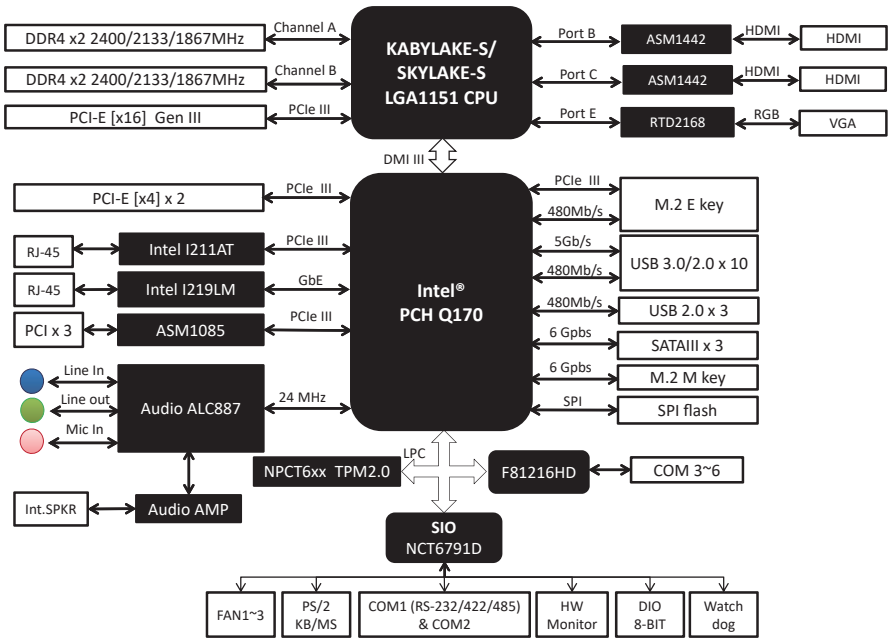
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in1)
- **14001-00400100**
  COM Port Cable (9P, 260mm, p=2.54mm w/bracket)
- **I/O Shield**
- **Product CD**
- **IMBA-Q170A**

Optional Accessories

- **1709100330**
  USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
- **170910020K**
  USB 2.0 cable (9P, 330MM, p=2.54mm, w/o bracket)
- **175921156B**
  CPU Cooler (2-Ball, Push-pin Type)
- **1759200172**
  CPU Cooler (2-Ball, Screw with Retention Plate)

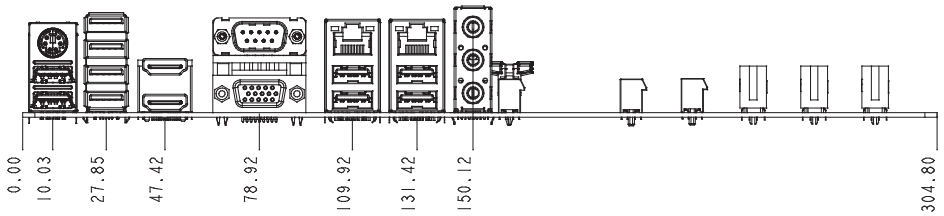
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

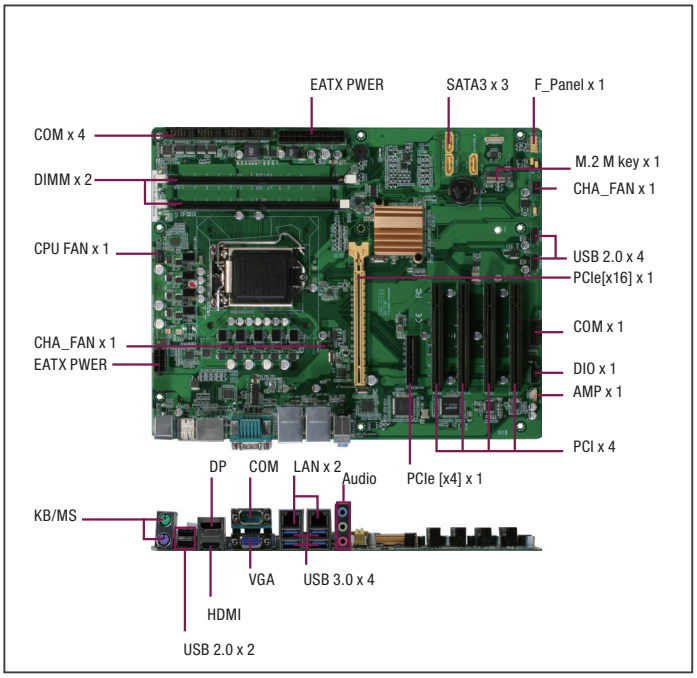


Ordering Information

PN	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBA-Q170A-A10-2P4	LGA1151 socket	DDR4 2400	Fan	VGA x 1, HDMI x 2	M.2 M key 2280 x 1 (SATA module only), SATA3 x 3	—	GbE x 2	USB3.0 x 10, USB2.0 x 3	5	1	PCIe[x16] x 1, PCIe [x4] x 2, PCI x 3, M.2 E key 2230 x 1	ATX	—	32°F ~ 140°F (0°C ~ 60°C)
IMBA-Q170A-A10-1P4	LGA1151 socket	DDR4 2400	Fan	VGA x 1, HDMI x 2	M.2 M key 2280 x 1 (PCIe [x4] module only), SATA3 x 4	—	GbE x 2	USB3.0 x 10, USB2.0 x 3	5	1	PCIe[x16] x 1, PCIe [x4] x 1, PCI x 3, M.2 E key 2230 x 1	ATX	—	32°F ~ 140°F (0°C ~ 60°C)

IMBA-H110A

ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 Max. 32GB, M.2 x 1, USB x 10



Features

- 7th/6th Generation Intel® Core™ LGA1151 Processor
- DDR4 DRAM Support, 2400 MHz, Max. 32GB
- Two Independent Display: HDMI x 1, DP x 1, VGA x 1
- Dual Intel® Gigabit Ethernet
- M.2 Slot (M key) x 1
- USB 3.0 Port x 4, USB 2.0 Port x 6

Specifications

System	
Processor	7th/6th Generation Intel® Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor
Chipset	Intel® H110
Memory	288-pin DIMM x 2, max. 32GB, DDR4 2400/2133/1867, dual-channel
I/O Chipset	NCT6791D, F81216HD
Ethernet	LAN1: Intel® PHY I219V Gb LAN, LAN2: Intel® I211AT Gb LAN
Audio	Realtek® ALC887 (Colay with ALC886)
TPM	Nuvoton NPCT650ABBYX TPM2.0 (default : No)
Expansion Slots	PCIe [x16] x 1, PCIe [x4] (open edge) x 1, PCI x 4, M.2 M key (22 x 80mm) x 1
BIOS	128M bit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan x 1, Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+HDMI, VGA+DP, HDMI+DP
VGA	Up to 1920 x 1200 @60Hz
DVI	—
HDMI	HDMI 1.4 up to 4096 x 2304 @24 Hz
Display Port	DP 1.2, up to 4096 x 2304 @60 Hz
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	ATX, 12" x 9.6" (305 mm x 244 mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	244,580

Rear Panel I/O Ports	
USB	USB 3.0 x 4, USB 2.0 x 2
Display I/O	HDMI x 1, DP x 1, VGA x 1
Audio I/O	Line-in, Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	DB-9 COM x 1 (supports RS-232/422/485)
PS/2 Port	Stack Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA 6.0Gb/s x 3, M.2 M key (22 x 80mm) x 1
USB	USB 2.0 x 4
Display I/O	—
Audio I/O	Speaker header x 1 (Line-out)
Serial Port	RS-232 header x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit x 1 (In/Out programmable)
FAN	4-pin CPU Fan x 1, 4-pin Chassis Fan x 2
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (2[x4]P p=1.27mm) x 1, Chassis Intrusion x 1, AT/ATX mode select jumper x 1
OS	
OS Support	Windows® 7 32/64-bit (not supported when a Kaby Lake processor is used), Windows® 8.1 64-bit (not supported when a Kaby Lake processor is used), Windows® 10 64-bit, ,Linux Fedora 64bit

Packing List

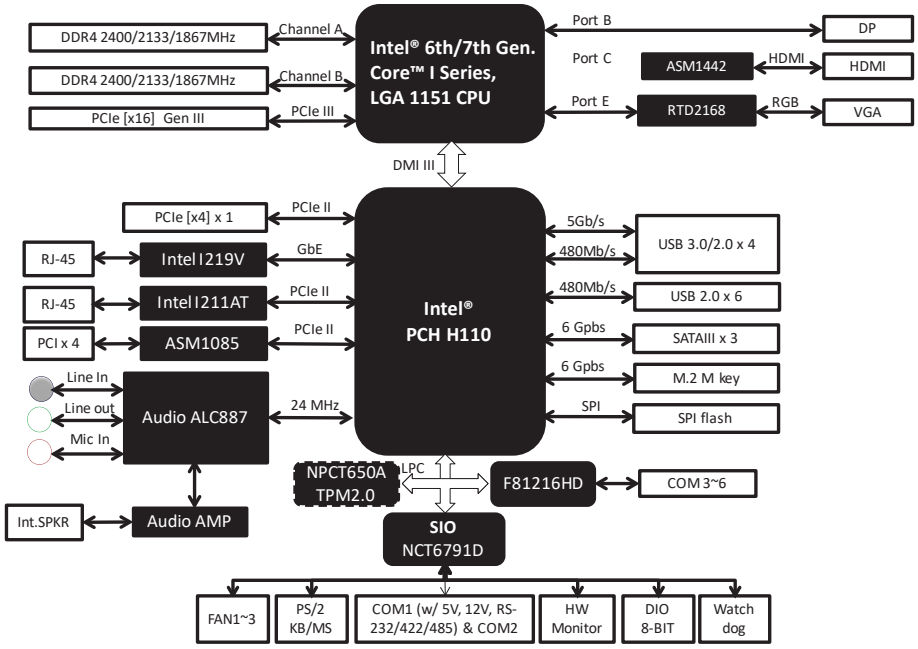
- **14001-0063010**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in1)
- **14001-00400100**
  COM Port Cable (9P, 260mm, p=2.54mm w/bracket)
- **I/O Shield**
- **Product CD**
- **IMBA-H110A**

Optional Accessories

- **1709100330**
  USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
- **170910020K**
  USB 2.0 cable (9P, 330MM, p=2.54mm, w/o bracket)
- **175921156B**
  CPU Cooler (2-Ball, Push-pin Type)
- **1759200172**
  CPU Cooler (2-Ball, Screw with Retention Plate)

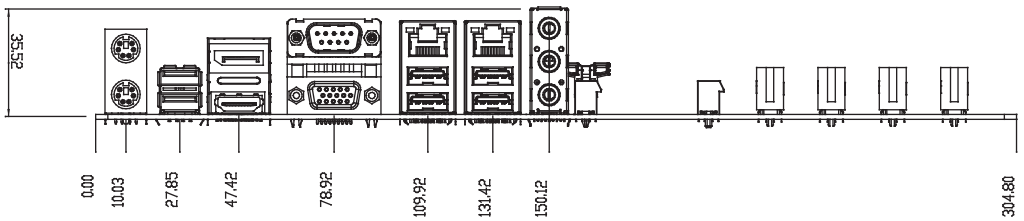
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

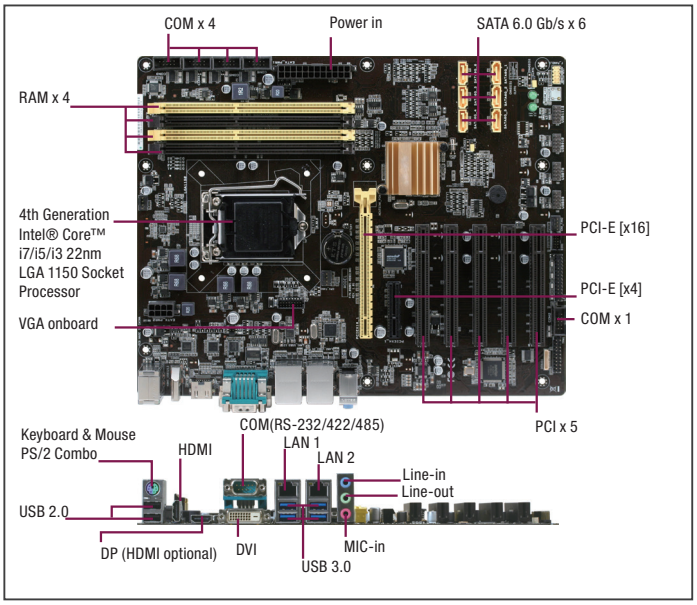


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBA-H110A-A10	LGA1151 socket	DDR4	Fan	HDMI x 1, DP x 1, VGA x 1	M.2 M key 2280 x 1 SATA3 x 3	—	GbE x 2	USB3.0 x 4, USB2.0 x 6	5	1	PCIe[x16] x 1, PCIe [x4] x 1, PCI x 4	ATX	TPM2.0	32°F ~ 140°F (0°C ~ 60°C)

IMBA-Q87A

ATX Industrial Motherboard with 4th Generation Intel® LGA1150 Processor, SATA3 x 6, PCI x 5, Multiple Display Ports, Supports iAMT 9.0



Features

- 4th Generation Intel® Core™ i7/i5/i3 22nm LGA 1150 Socket Processor
- Three/Dual Independent Display: VGA, DVI-D, HDMI, DP (HDMI Optional)
- Dual Gigabit Ethernet, LAN1 Supports iAMT 9.0
- SATA 6.0 Gb/s x 6, USB 3.0 x 4, USB 2.0 x 10
- Rich Expansion Slot: PCI-E 3.0/2.0 [x16] x 1, PCI-E [x4] x 1, PCI x 5
- TPM Optional (Via Pin Header)

Specifications

System	
Processor	4th Generation Intel® Core™ i7/i5/i3/Pentium®/ Celeron® 22nm LGA 1150 socket Processor
Chipset	Intel® Q87 Express Chipset
Memory	240-pin DIMM x 4, max. 32GB, DDR3 1600/1333 MHz, non-ECC, un-buffered memory, dual-channel memory architecture
I/O Chipset	NCT6791D, F81216HD
Ethernet	LAN1: Intel® PHY I217LM Gb LAN (supports iAMT 9.0) x 1 LAN2: Intel® I210AT Gb LAN x 1, RJ-45 x 2
Audio	Realtek® ALC887 (Colay with ALC886)
TPM	20-1 PIN header for TPM1.2/FW3.19
Expansion Slots	PCIe 3.0/2.0 [x16] Slot x 1, PCIe 2.0 [x4] Slot x 1, PCI x 5
BIOS	64Mbit Flash ROM x 2, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	SKU1 (VGA/ DVI/ HDMI/ DP): VGA+DVI, VGA+HDMI, VGA+DP, DVI+HDMI, DVI+DP, HDMI+DP, VGA+DVI+HDMI, VGA+DVI+DP, HDMI+DP+VGA; SKU2 (VGA/ DVI/ 2xHDMI): VGA+DVI, VGA+HDMI1, VGA+HDMI2, DVI+HDMI1, DVI+HDMI2, HDMI1+HDMI2, VGA+HDMI1+HDMI2, VGA+HDMI1+DVI, VGA+HDMI2+DVI
VGA	Up to 1920 x 1200 @60Hz
DVI	Up to 1920 x 1200 @60Hz
HDMI	HDMI 1.4, up to 4096 x 2304 @24Hz
Display Port	DP 1.2, up to 3840 x 2160 @60Hz
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	ATX Form Factor, 12" x 9.6" (305 mm x 244 mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	86,000

USB 3.0 | Gigo LAN | DDR 3 | PCI Express | CE FC

Rear Panel I/O Ports	
USB	USB 3.0 port x 4, USB 2.0 port x 2
Display I/O	DVI-D x 1, HDMI x 1 (Dual HDMI optional), DP x 1 (will disable if choose 2 HDMI)
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ-45) port x 2
Serial Port	RS-232/422/485 DB-9 connector x 1 (COM1, supports 5/12V on RI pin)
PS/2 Port	PS/2 Combo Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) port x 6, supports RAID 0/1/5/10
USB	USB 2.0 connector x 4 supports additional 8 USB ports
Display I/O	VGA x 1
Audio I/O	—
Serial Port	RS-232 header x 5
PS/2 Port	—
Parallel Port	LPT connector x 1
DIO	8-bit Digital I/O interface x 1 (In/Out programmable)
FAN	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (2[x4]P p=1.27mm) x 1
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 32/64-bit, Linux Fedora

Packing List

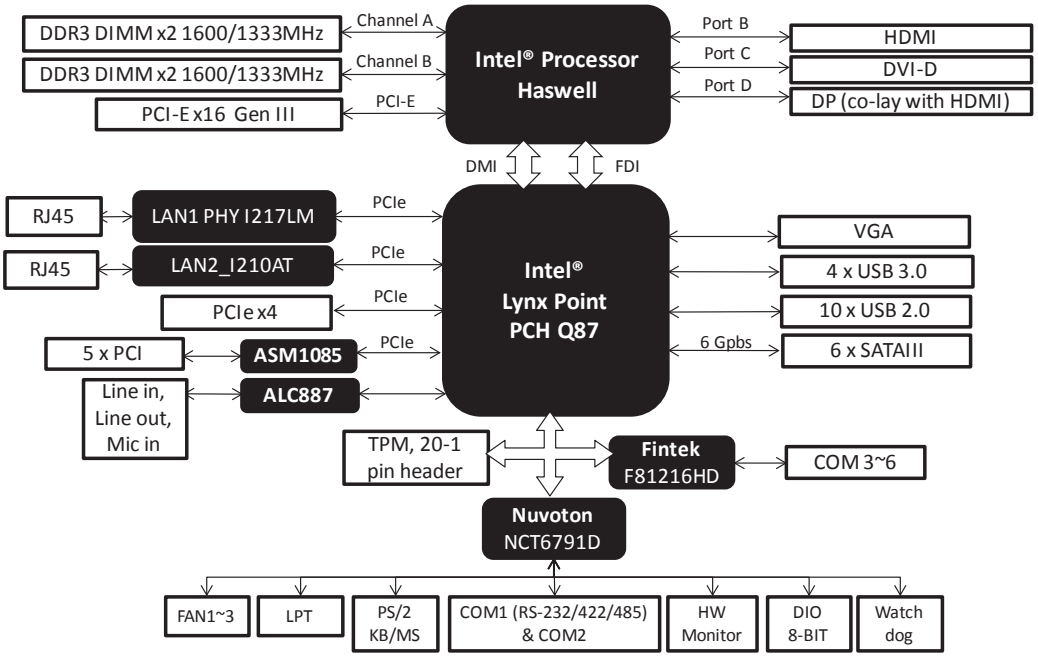
- **14001-00400100**
  COM Cable (9P, 260mm, P=2.54mm w/ bracket)
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500MM) 2 in 1
- **I/O Shield**
- **Product DVD**
- **IMBA-Q87A**

Optional Accessories

- **1709100330**
  USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
- **170910020K**
  USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)
- **1701260305**
  LPT Cable (25P, 270MM)
- **1759200172**
  CPU Cooler (2-Ball, Screw with Retention Plate)
- **175921156B**
  CPU Cooler (2-Ball, Push-pin Type)
- **1701160201**
  VGA Cable (200MM, p=2.00mm)
- **1700060192**
  PS/2 Combo Cable, 6P, 190mm

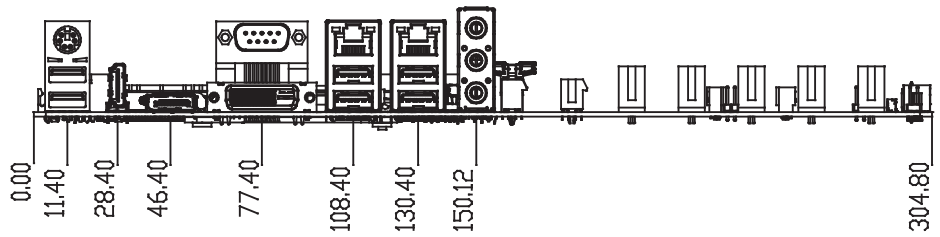
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

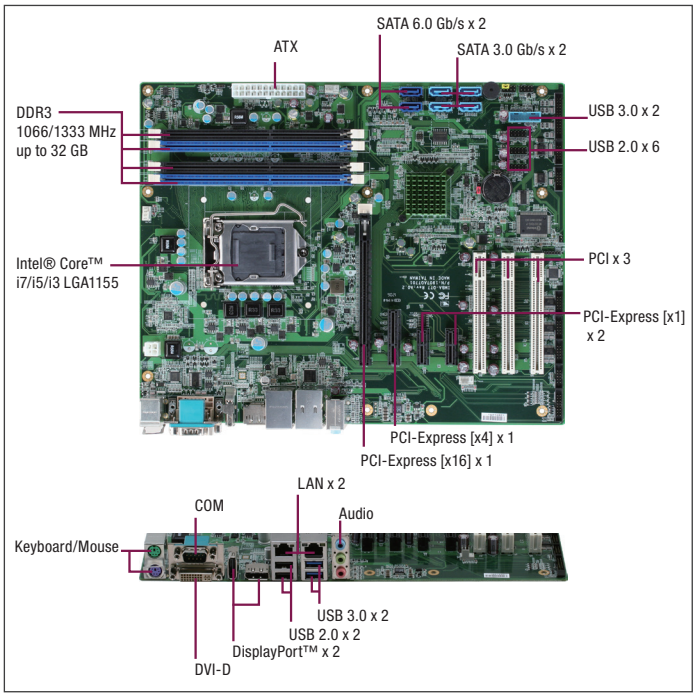


Ordering Information

PN	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBA-Q87A-A10-DH	LGA1150 socket	DDR3 1600/1333	Fan	VGA, DVI, HDMI, DP	SATA3 x 6	—	IntelGbE x 2	USB 3.0 x 4 USB 2.0 x 10	5	1	PCI-Express [x16] x 1 PCI-Express [x4] x 1 PCI x 5	ATX	20-1 Pin Header	32°F ~ 140°F (0°C ~ 60°C)
IMBA-Q87A-A10-HH	LGA1150 socket	DDR3 1600/1333	Fan	VGA, DVI, HDMI x 2	SATA3 x 6	—	IntelGbE x 2	USB 3.0 x 4 USB 2.0 x 10	5	1	PCI-Express [x16] x 1 PCI-Express [x4] x 1 PCI x 5	ATX	20-1 Pin Header	32°F ~ 140°F (0°C ~ 60°C)

IMBA-Q77

ATX Industrial Motherboard with 3rd Generation Intel® Core™ i7/i5/i3 Processor



Features

- 3rd Generation Intel® Core™ i7/i5/i3 LGA 1155 Processor
- Intel® Q77
- Dual-Channel DDR3 1600 (Only for 3rd Generation CPU)/1333/1066 MHz DIMM x 4, Up to 32 GB
- 10/100/1000Base-TX x 2 (LAN1 Supports Intel® iAMT 8.0)
- Three Independent Displays with VGA (Onboard Only), DisplayPort™, DVI-D
- SATA 3.0 Gb/s x 4, SATA 6.0 Gb/s x 2, Supports RAID 0,1,5,10
- USB 2.0 x 8, USB 3.0 x 4, COM x 6, LPT x 1, IrDA Tx/Rx Header x 1
- PCI-Express [x16] x 1, PCI-Express [x4] x 1, PCI-Express [x1] x 2, PCI x 3
- TPM 1.2 (Optional)

Specifications

System	
Processor	Socket LGA1155 3rd Generation Intel® Processor
Chipset	Intel® Q77
Memory	Dual-channel with 240-pin DRAM x 4, DDR3 1600/1333/1066, up to 32GB
I/O Chipset	Winbond W83627DHG
Ethernet	Intel® 82579 / 82583V, Gb LAN x 2
Audio	Realtek® ALC662
TPM	Infineon SLB9635TT 1.2(Optional)
Expansion Slots	PCIe [x16] x 1, PCIe [x4] x 1, PCIe [x1] x 2, PCI x 3
BIOS	AMI BIOS - 128MB ROM
H/W Monitor	System temperature, Voltage, and Cooling fan status monitoring
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/Chassis Fan
Wake On LAN / PXE	Yes
Power State	S3,S4,S5
Graphics	
Graphics Chipset	Intel® Core™ i7/i5/i3 + Q77
Graphics Multi Display	DP x 2+VGA, DP x 2+DVI, HDMI+DP,HDMI+VGA, HDMI+LVDS, VGA+DVI,VGA+LVDS
VGA	1
DVI	1
HDMI	1 (by SKU)
Display Port	2 (by SKU)
LVDS	1
eDP	—
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium Battery
Power Requirement	12V DC
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE/FCC
Form Factor	ATX form Factor, 12" x 9.6" (305mm x 244mm)
Weight	1.76 lb(0.8 kg)
MTBF (Hours)	56,000

Rear Panel I/O Ports	
USB	USB 3.0 x 2 with Type A connectors, USB 2.0 x 2 with Type A connectors
Display I/O	DP x 2 or DP x 1+HDMI x 1, DVI-D x 1
Audio I/O	Line-in, Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	RS-232/422/485 x 1
PS/2 Port	Mini-Din PS/2 K/B and Mouse x 1
Others	—
Internal I/O Connectors	
Storage	SATA 6.0 Gb/s x 2, SATA 3.0 Gb/s x 4, Supports RAID 0,1,5,10
USB	USB 3.0 x 2, USB 2.0 x 6
Display I/O	VGA x 1, LVDS x 1
Audio I/O	—
Serial Port	RS-232 x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit programmable (4-in/4-out)
FAN	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 1
Power	24-pin ATX connector x 1, 4-pin connector x 1
Others	—
OS	
OS Support	Windows® XP, Windows® 7 32/64-bit, Linux Fedora

Packing List

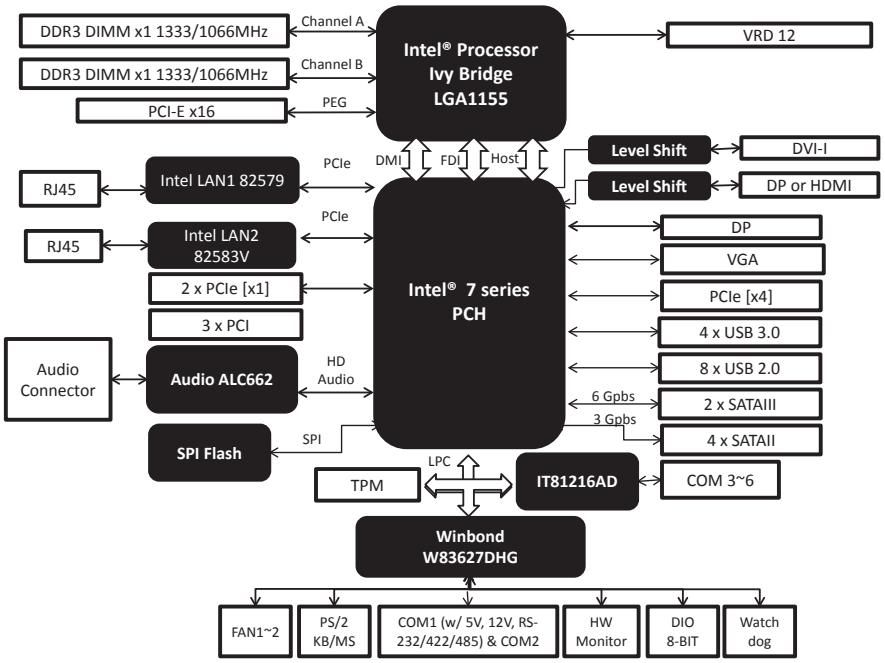
- **1700100353**
  USB 2.0 Cable
- **1709070800**
  SATA Cable
- **1701100305**
  COM Port Cable
- **Product DVD**
- **IMBA-Q77**

Optional Accessories

- **1759200172**
  CPU Cooler for LGA 1155 CPU, TDP 95W
- **1700160254**
  VGA Cable with Bracket
- **1700160253**
  VGA cable (Without Bracket)

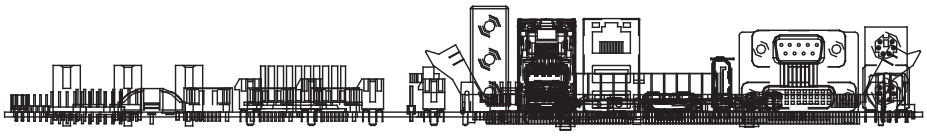
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

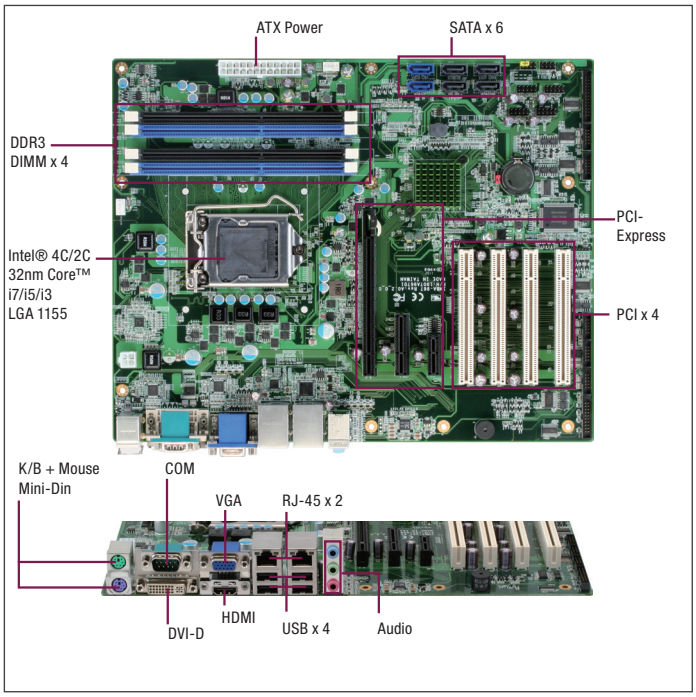


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
TF-IMBA-Q77-A10-G2-00-OSP	Socket	DDR3 32GB	Fan	VGA (onboard only)/DVI-D/DP	SATA2 x 4, SATA3 x 2	GbE x 2	USB 2.0 x 12	5	1	PCIe [x16] x 1, PCIe [x4] x 1, PCIe [x1] x 2, PCI x 3	ATX	—	32°F ~ 140°F (0°C ~ 60°C)
TF-IMBA-Q77-A10-G2-01-OSP	Socket	DDR3 32GB	Fan	VGA (onboard only)/DVI-D/DP/ HDMI	SATA2 x 4, SATA3 x 2	GbE x 2	USB 2.0 x 12	5	1	PCIe [x16] x 1, PCIe [x4] x 1, PCIe [x1] x 2, PCI x 3	ATX	—	32°F ~ 140°F (0°C ~ 60°C)

IMBA-967

ATX Industrial Motherboard with Intel® Core™ i7/i5/i3 Processor



Features

- Intel® Core™ i7/i5/i3 LGA 1155 (4C/ 2C 32nm) Processor with Graphic & Memory Controller
- Intel® Q67
- Dual-Channel DDR3 1066/1333 MHz, Up to 32 GB
- Intel® 10/100/1000Base-TX Ethernet x 2 (LAN1 Supports Intel® iAMT 7.0)
- Intel® Integrated GPU Supports Dual Display By VGA, DVI, HDMI
- HDAC with Realtek ALC662
- SATA 6.0 Gb/s and 3.0 Gb/s x 6, Supports RAID 0/1/5/10
- USB 2.0 x 12, COM x 6, LPT x 1, IrDA x 1
- PCI-E [x16] x 1, PCI-E [x4] x 1, PCI-Express [x1] x 1, PCI x 4

Specifications

System	
Processor	Socket LGA1155 2nd generation Intel® Processor
Chipset	Intel® Q67
Memory	Dual-channel with 240-pin DRAM x 4, DDR3 1333/1066, up to 32GB
I/O Chipset	Winbond W83627DHG
Ethernet	Intel® 82579LM / 82574L, Gb LAN x 2
Audio	Realtek® ALC662
TPM	Infineon SLB9635TT 1.2(Optional)
Expansion Slots	PCIe [x16] x 1, PCIe [x4] x 1, PCIe [x1] x 1, PCI x 4
BIOS	AMI BIOS - 64MB ROM
H/W Monitor	Supports System temperature, Voltage, and Cooling fan status monitoring
WatchDog Timer	1~255 steps by software program
Smart Fan Control	—
Wake On LAN / PXE	Yes
Power State	S3,S4,S5
Graphics	
Graphics Chipset	Intel® Core™ i7/i5/i3 + Q67
Graphics Multi Display	VGA+HDMI, VGA+DVI, HDMI+DVI
VGA	1
DVI	1
HDMI	1
Display Port	—
LVDS	—
eDP	—
Backlight Control	Voltage
Environment & Power & ME	
Battery	Lithium Battery
Power Requirement	12V DC
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE/FCC
Form Factor	ATX form Factor, 12" x 9.6" (305mm x 244mm)
Weight	1.76 lb (0.8 kg)
MTBF (Hours)	52,000

Rear Panel I/O Ports	
USB	USB 2.0 x 4 with Type A connectors
Display I/O	HDMI x 1, DVI-D x 1, VGA x 1
Audio I/O	Line-in, Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	RS-232 x 1
PS/2 Port	Mini-Din PS/2 K/B and Mouse x 1
Others	—
Internal I/O Connectors	
Storage	SATA 6.0 Gb/s x 2, SATA 3.0 Gb/s x 4, Supports RAID 0,1,5,10
USB	USB 2.0 x 8
Display I/O	—
Audio I/O	—
Serial Port	RS-232 x 3, RS-232/422/485 x 1
PS/2 Port	—
Parallel Port	LPT x 1
DIO	8-bit programmable (4-in/4-out)
FAN	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 1
Power	24-pin ATX connector x 1, 4-pin connector x 1
Others	IrDA x 1
OS	
OS Support	Windows® XP, Windows® 7 32/64-bit, Linux Fedora

Packing List

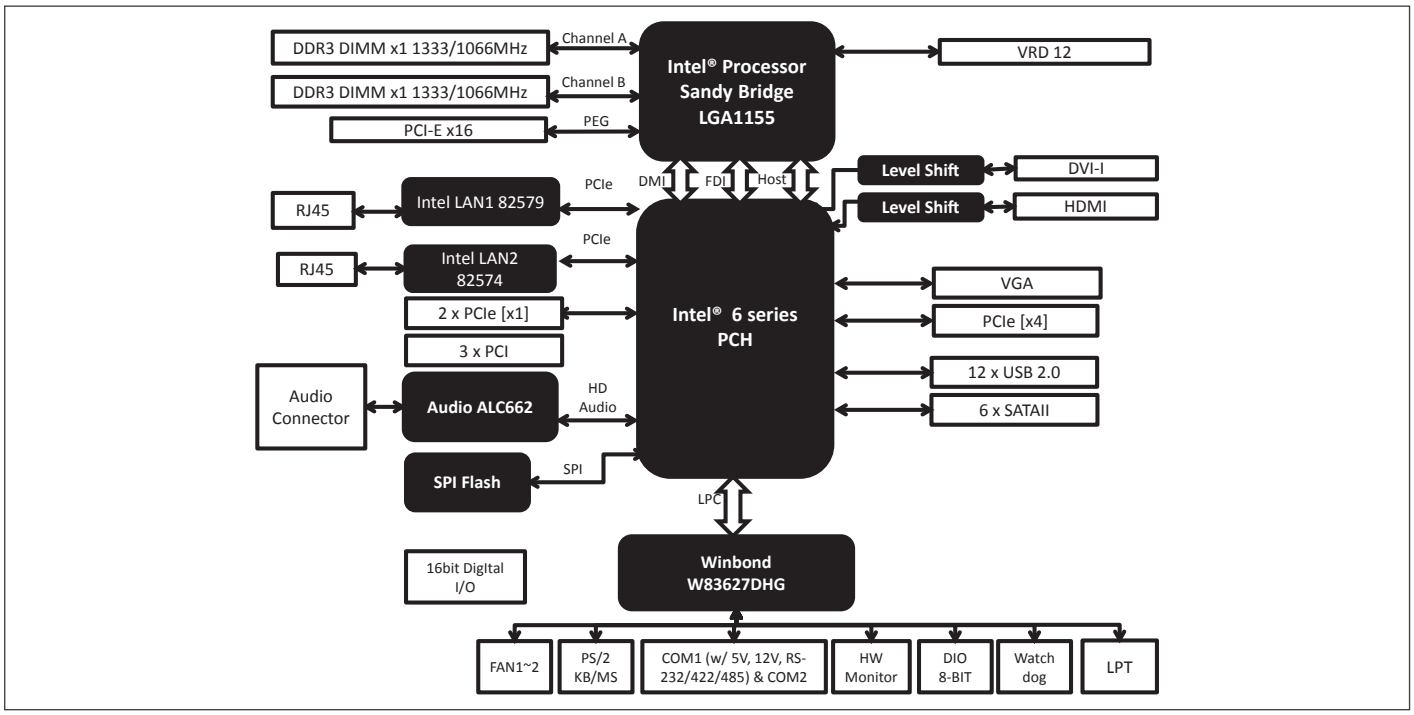
- **1700100353**
  USB Cable
- **1701100305**
  COM Port Cable
- **1709070800**
  SATA Cable
- **M20QM57000**
  I/O Shield
- **Product DVD**
- **IMBA-967**

Optional Accessories

- **1759200172**
  CPU Cooler for LGA 1155 CPU, TDP 95W

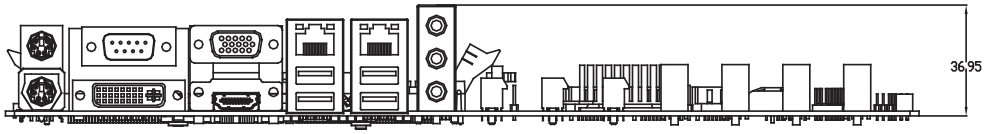
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

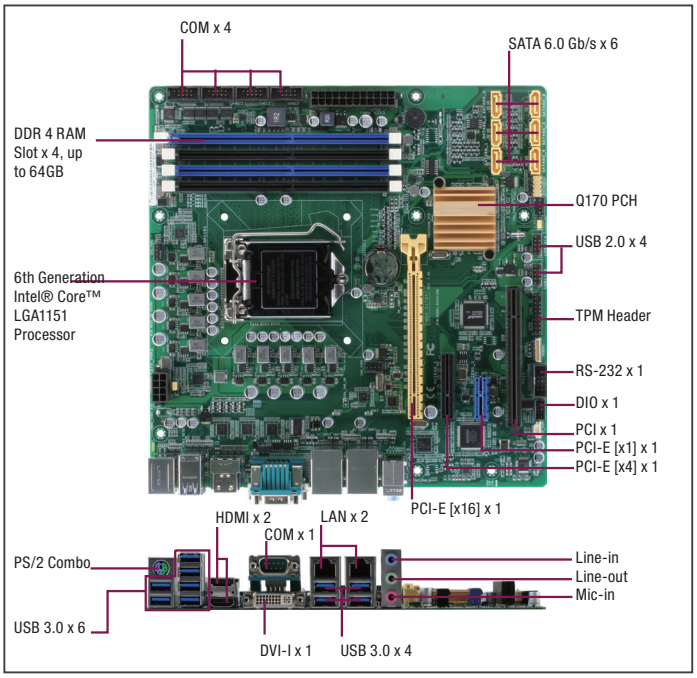


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
TF-IMBA-967-A11-G2-OSP	Socket	DDR3 32GB	Fan	VGA/DVI-D/HDMI	SATA2 x 4, SATA3 x 2	GbE x 2	USB 2.0 x 12	5	1	PCIe [x16] x 1, PCIe [x4] x 1, PCIe [x1] x 1, PCI x 4	ATX	—	32°F ~ 140°F (0°C ~ 60°C)
TF-IMBA-967-A11-VG-OSP	Socket	DDR3 32GB	Fan	VGA/DVI-D/HDMI	SATA2 x 4, SATA3 x 2	GbE x 1	USB 2.0 x 12	5	1	PCIe [x16] x 1, PCIe [x4] x 1, PCIe [x1] x 1, PCI x 4	ATX	—	32°F ~ 140°F (0°C ~ 60°C)

IMBM-Q170A

Micro-ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 DRAM, USB x 14, Supports iAMT 11.0



Features

- 6th/7th Generation Intel® Core™ LGA1151 Processor
- DDR4 DRAM Support, 2133 MHz, Max. 64GB
- Three Independent Display: HDMI x 2, DVI-I Port x 1
- Dual Intel® Gigabit Ethernet, LAN1 Supports iAMT 11.0
- USB 3.0 Port x 10, USB 2.0 Port x 4
- TPM Optional (Via Pin Header)

PCI Express · 1000 Giga LAN · DDR 4 · USB 3.0 · USB 2.0 · HDMI · CE FC

Rear Panel I/O Ports	
USB	USB 3.0 port x 10
Display I/O	DVI-I x 1, HDMI x 2
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ-45) port x 2
Serial Port	RS-232/422/485 DB-9 connector x 1 (COM1, supports 5/12V on RI pin)
PS/2 Port	PS/2 Combo Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) port x 6, supports RAID 0/1/5/10
USB	USB 2.0 connector x 2 supports additional USB port x 4
Display I/O	—
Audio I/O	Speaker header x 1 (Line-out)
Serial Port	RS-232 header x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface x 1 (In/Out programmable)
FAN	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, TPM header x 1, BIOS flash header (2[x4]P p=1.27mm) x 1, Chassis Intrusion x 1
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 64-bit, Windows® 10 64-bit, ,Linux Fedora 64bit

Specifications

System	
Processor	7th/6th Generation Intel® Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor
Chipset	Intel® Q170 Express Chipset
Memory	288-pin DIMM x 4, max. 64GB, DDR4 2133/1867 MHz, non-ECC, un-buffered memory, dual-channel memory architecture
I/O Chipset	NCT6791D, F81216HD
Ethernet	LAN 1: Intel® PHY i219LM Gb LAN (supports iAMT 11.0) x 1 LAN 2: Intel® i211AT Gb LAN x 1, RJ-45 x 2
Audio	Realtek® ALC887 (Colay with ALC886)
TPM	20-1 PIN header for TPM1.2/FW3.19
Expansion Slots	PCIe 3.0/2.0[x16] Slot x 1, PCIe 3.0/2.0[x4] Slot (open edge) x 1, PCIe 3.0/2.0[x1] Slot (open edge) x 1, PCI x 1
BIOS	128M bit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	DVI-I+HDMI, HDMI+HDMI
VGA	Up to 1920 x 1200 @60Hz
DVI	Up to 1920 x 1200 @60Hz
HDMI	HDMI 1.4 up to 4096 x 2304 @30Hz
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Micro-ATX Form Factor, 9.6" x 9.6" (244mm x 244mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	193,470

Packing List

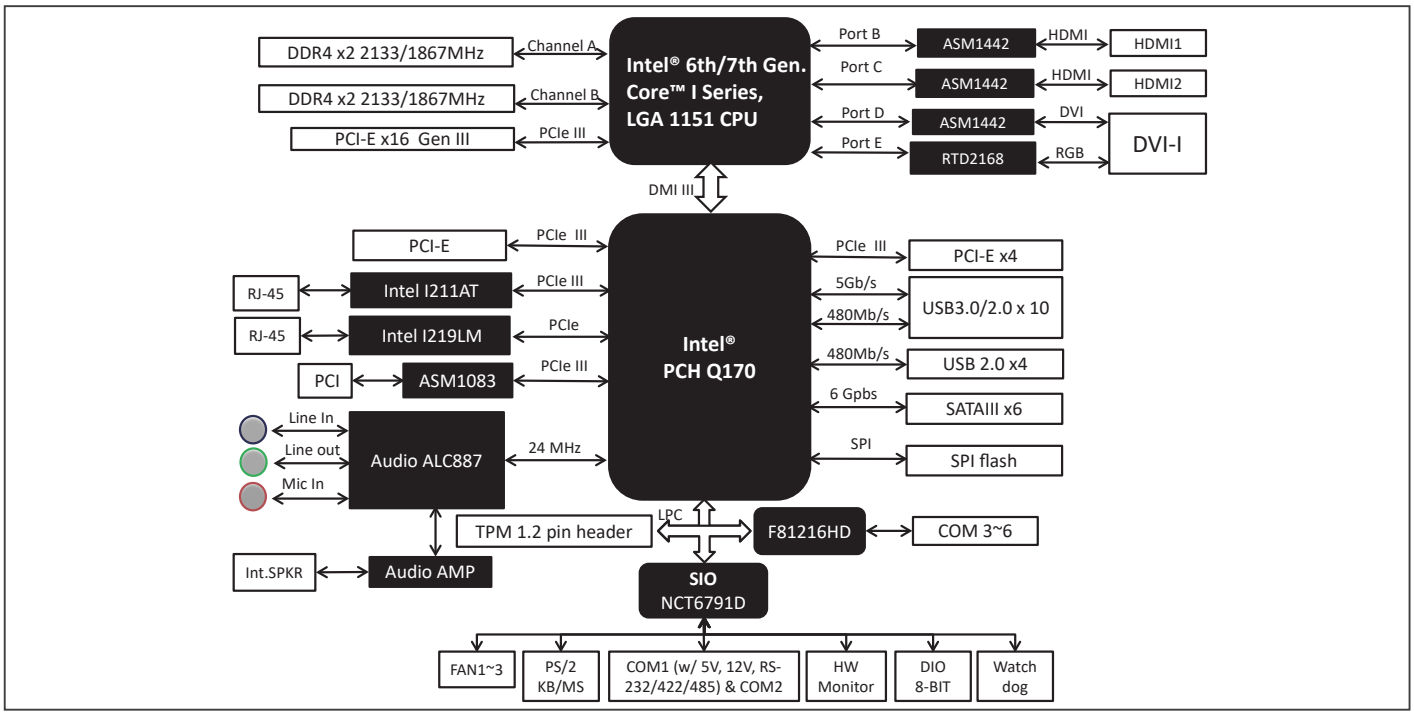
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)
- **14001-00400100**
  COM Port Cable (9P, 260mm, p=2.54mm w/bracket)
- **I/O Shield**
- **Product CD**
- **IMBM-Q170A**

Optional Accessories

Part Number	Description
1709100330	USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
170910020K	USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
TBD	TPM Module

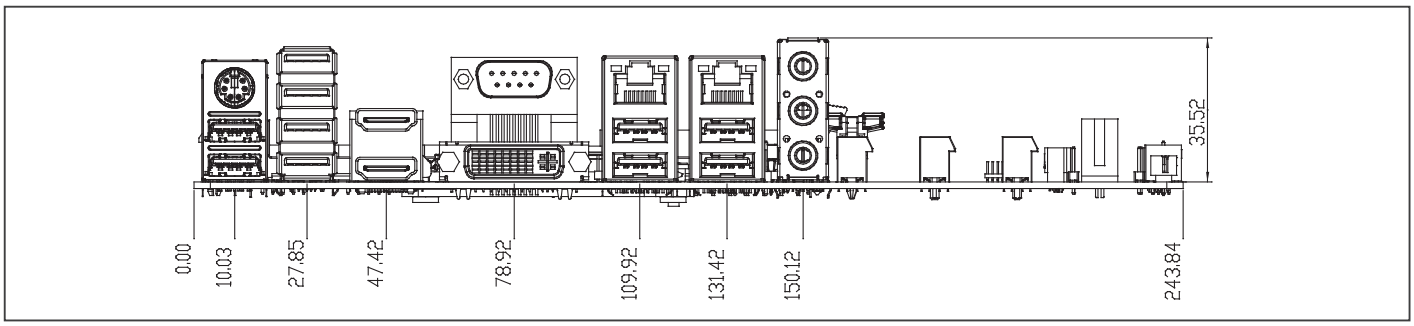
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

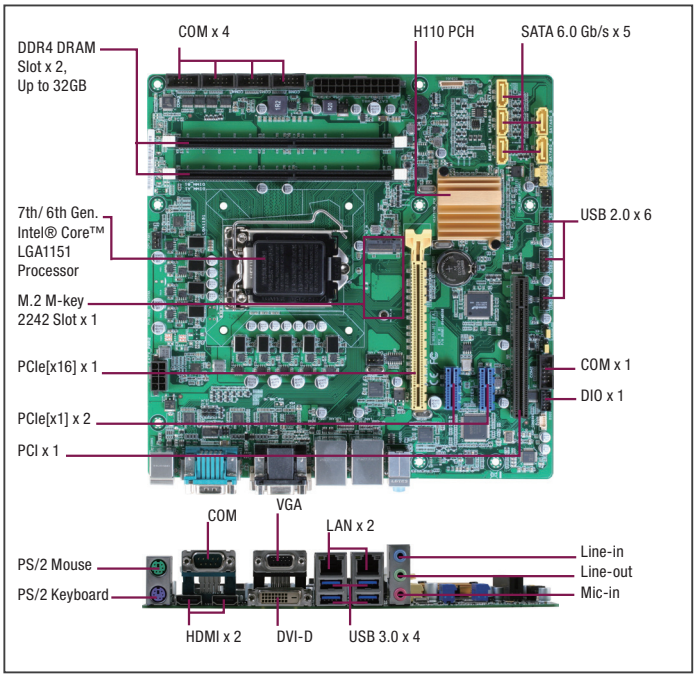


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBM-Q170A-A10-K	LGA1151 socket	DDR4 2133	Fan	DVI-I x 1, HDMI x 2	SATA3 x 6	—	Intel®GbE x 2	USB 3.0 x 10, USB 2.0 x 4	5	1	PCIe[x16] x 1, PCIe [x4] x 1, PCIe[x1] x 1, PCI x 1	ATX	20-1 Pin Header	32°F ~ 140°F (0°C ~ 60°C)

IMBM-H110A

Micro-ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 DRAM, M.2 x 1, USB x 10



Features

- 7th/6th Generation Intel® Core™ LGA1151 Processor
- DDR4 DRAM Support, 2400MHz, Max. 32GB
- Two Independent Display: HDMI x 2, VGA x 1, DVI-D x 1
- Dual Intel® Gigabit Ethernet
- M.2 Slot (M key) x 1
- USB 3.0 Port x 4, USB 2.0 Port x 6

Specifications

System	
Processor	7th/6th Generation Intel® Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor
Chipset	Intel® H110
Memory	288-pin DIMM x 2, max. 32GB, DDR4 2400/2133/1867, dual-channel
I/O Chipset	NCT6791D, F81216HD
Ethernet	Intel® I211AT Gb LAN x 2
Audio	Realtek® ALC887 (Colay with ALC886)
TPM	Nuvoton NPCT650ABBYX TPM2.0 (default : No)
Expansion Slots	PCIe [x16] x 1, PCIe [x1] (open edge) x 2, PCI x 1, M.2 M key (22 x 42mm) x 1
BIOS	128M bit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V/ 3VSB/VBAT, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan x 1, Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	DVI-D+HDMI, HDMI+HDMI, VGA+HDMI, DVI-D+VGA
VGA	Up to 1920 x 1200 @60Hz
DVI	Up to 1920 x 1200 @60Hz
HDMI	HDMI 1.4 up to 4096 x 2304 @24Hz
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operation Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Micro-ATX, 9.6" x 9.6" (244mm x 244mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	245,250

Rear Panel I/O Ports	
USB	USB 3.0 x 4
Display I/O	HDMI x 2, VGA x 1, DVI-D x 1
Audio I/O	Line-in, Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	DB-9 COM x 1 (supports RS-232/422/485)
PS/2 Port	Stack Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA 6.0Gb/s x 5, M.2 M key (22 x 42mm) x 1
USB	USB 2.0 x 6
Display I/O	—
Audio I/O	AMP speaker header x 1 (Line-out)
Serial Port	RS-232 header x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit x 1 (In/Out programmable)
FAN	4-pin CPU Fan x 1, 4-pin Chassis Fan x 2
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (2[x4]P p=1.27mm) x 1, Chassis Intrusion x 1, AT/ATX mode select jumper x 1
OS	
OS Support	Windows® 7 32/64-bit (not supported when a Kaby Lake processor is used), Windows® 8.1 64-bit (not supported when a Kaby Lake processor is used), Windows® 10 64-bit, ,Linux Fedora 64bit

Packing List

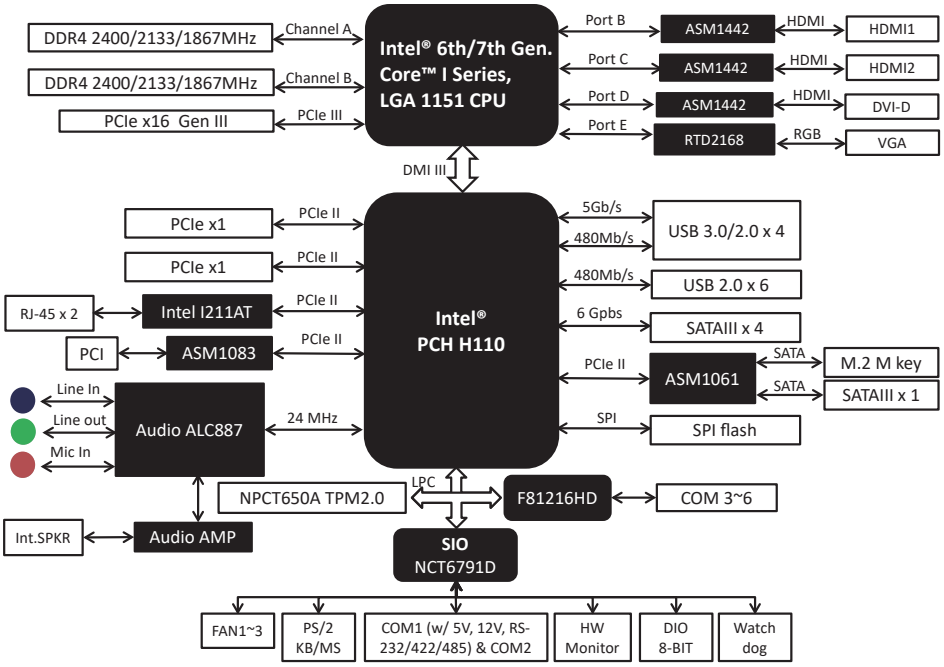
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in1)
- **14001-00400100**
  COM Port Cable (9P, 260mm, p=2.54mm w/bracket)
- **I/O Shield**
- **Product CD**
- **IMBM-H110A**

Optional Accessories

- **1709100330**
  USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
- **170910020K**
  USB 2.0 cable (9P, 330MM, p=2.54mm, w/o bracket)
- **175921156B**
  CPU Cooler (2-Ball, Push-pin Type)
- **1759200172**
  CPU Cooler (2-Ball, Screw with Retention Plate)

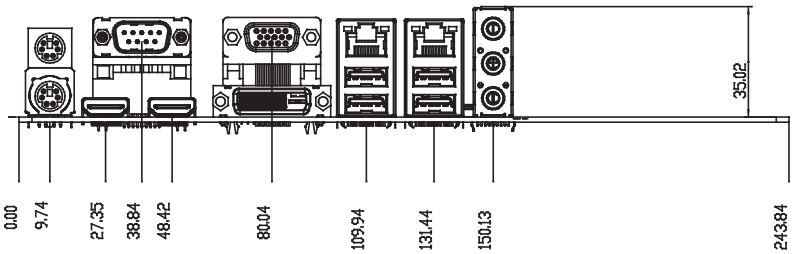
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

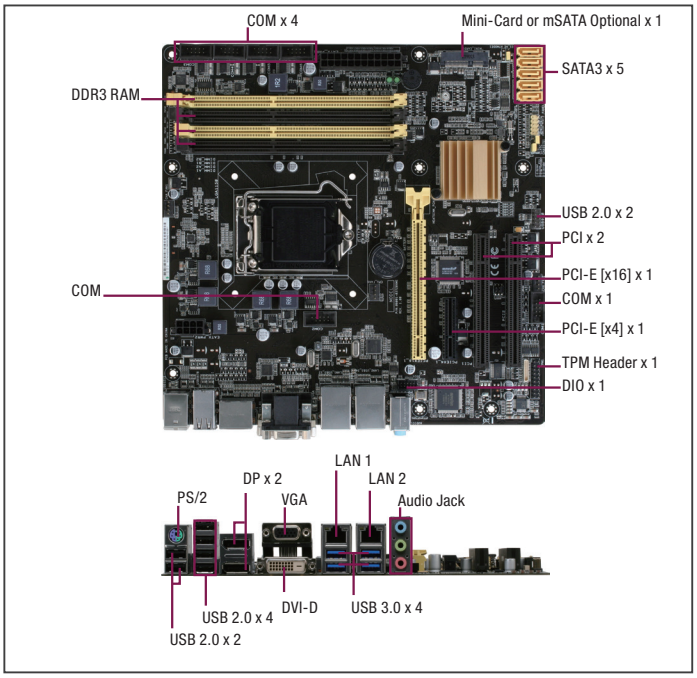


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBM-H110A-A10	LGA1151 socket	DDR4 2400	Fan	HDMI x 2, VGA x 1, DVI-D x 1	M.2 M key 2242 x 1 SATA3 x 5	—	GbE x 2	USB3.0 x 4, USB2.0 x 6	5	1	PCIe[x16] x 1, PCIe[x1] x 2, PCI x 1	ATX	—	32°F~140°F (0°C~60°C)

IMBM-Q87A

Micro-ATX Industrial Motherboard with 4th Generation Intel® LGA1150 Processor, SATA3 x 5, Multiple Display Ports, Supports iAMT 9.0



Features

- 4th Generation Intel® Core™ i7/i5/i3 22nm LGA 1150 Socket Processor
- Three/Dual Independent Display: VGA, DVI-D, DP x 2
- Dual Gigabit Ethernet, LAN1 Supports iAMT 9.0
- SATA 6.0 Gb/s x 5, USB 3.0 x 4, USB 2.0 x 8
- Rich Expansion Slot: PCI-E [x16] x 1, PCI-E [x4] x 1, PCI x 2, Mini-Card (or Optional mSATA) x 1
- TPM Optional (Via Pin Header)

PCI Express · Giga LAN · DDR 3 · USB 3.0 · USB 2.0 · HDMI · CE FC

Rear Panel I/O Ports	
USB	USB 3.0 port x 4, USB 2.0 port x 6
Display I/O	DVI-D x 1, DP x 2, VGA x 1
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	PS/2 Combo Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) port x 5, supports RAID 0/1/5/10; Half size Mini-Card (PCIe + USB,or mSATA optional) x 1
USB	USB 2.0 connector x 1 supports additional 2 USB ports
Display I/O	—
Audio I/O	—
Serial Port	RS-232 header x 5, RS-232/422/485 DB-9 connector x 1 (COM1, supports 5/12V on RI pin)
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface x 1 (In/Out programmable)
FAN	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, TPM header x 1, BIOS flash header (2[x4]P p=1.27mm) x 1, Chassis Intrusion x 1
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 32/64-bit, Linux Fedora

Specifications

System	
Processor	4th Generation Intel® Core™ i7/i5/i3/Pentium®/ Celeron® 22nm LGA 1150 socket Processor
Chipset	Intel® Q87 Express Chipset
Memory	240-pin DIMM x 4, max. 32GB, DDR3 1600/1333 MHz, non-ECC, un-buffered memory, dual-channel memory architecture
I/O Chipset	NCT6791D, F81216HD
Ethernet	Intel® PHY I217LM Gb LAN (supports iAMT 9.0) x 1, Intel® I210AT Gb LAN x 1, RJ-45 x 2
Audio	Realtek® ALC887 (Colay with ALC886)
TPM	20-1 PIN header for TPM1.2/FW3.19
Expansion Slots	PCIe 3.0/2.0[x16] Slot x 1, PCIe 2.0 [x4] Slot x 1, PCI x 2, Half size Mini-Card x 1 (PCIe + USB) or mSATA optional
BIOS	64Mbit Flash ROM x 2, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	DVI-D+DP, DP+DP, VGA+DVI-D, VGA+DP, DVI-D+DP+DP, VGA+DP+DP
VGA	Up to 1920 x 1200 @60Hz
DVI	Up to 1920 x 1200 @60Hz
HDMI	—
Display Port	DP 1.2, up to 3840 x 2160 @60Hz
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Micro-ATX Form Factor, 9.6" x 9.6" (244mm x 244mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	100,000

Packing List

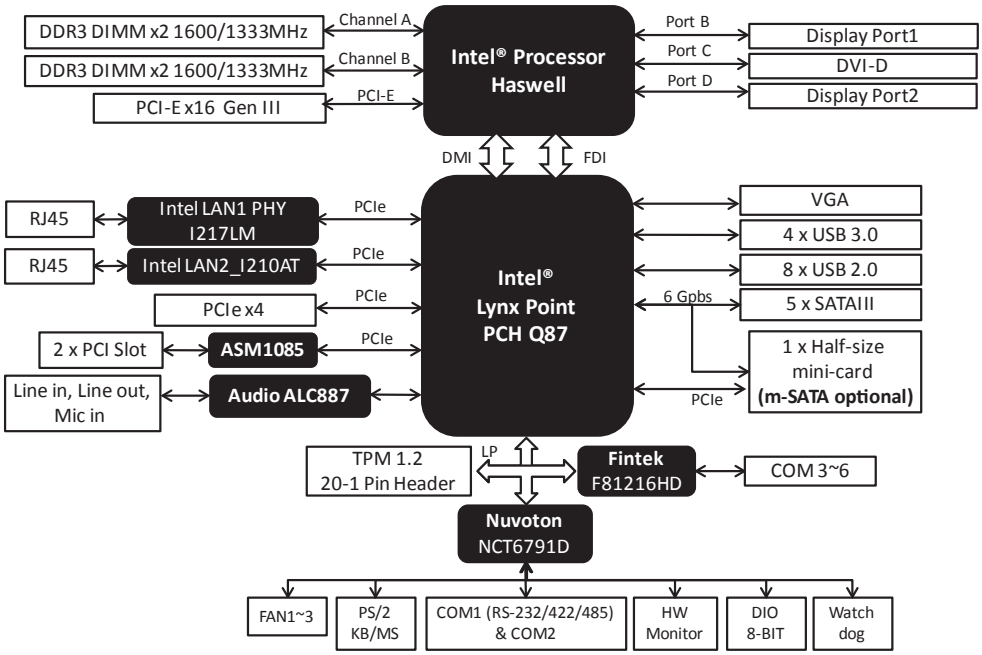
- **14001-00400100**
  COM Cable (9P, 260MM, p=2.54mm) w/bracket
- **I/O Shield**
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm) 2 in 1
- **Product DVD**
- **IMBM-Q87A**

Optional Accessories

- **1709100330**
  USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
- **170910020K**
  USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)
- **1701260305**
  LPT Cable (25P, 270mm)
- **175921156B**
  CPU Cooler (2-Ball, Push-pin Type)
- **1759200172**
  CPU Cooler (2-Ball, Screw with Retention Plate)
- **1701160201**
  VGA Cable (200mm, p=2.00mm)
- **1700060192**
  PS/2 Combo Cable, 6P, 190mm

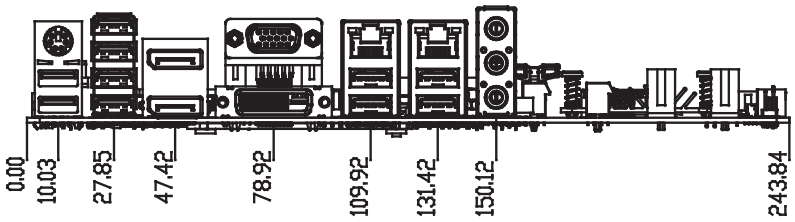
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

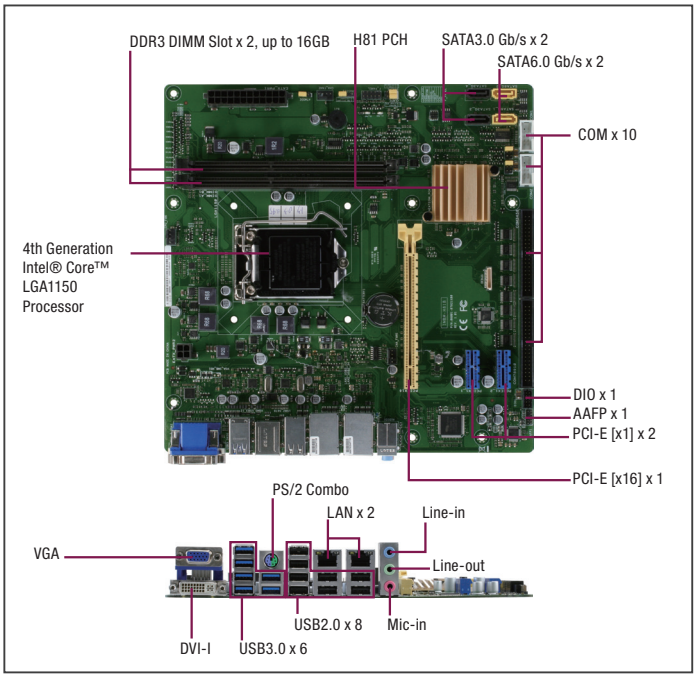


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBM-Q87A-A10	LGA1150 socket	DDR3 1600/1333	Fan	VGA, DVI, DP x 2	SATA3 x 5	—	Intel® GbE x 2	USB 3.0 x 4, USB 2.0 x 8	5	1	PCIe[x16] x 1, PCIe [x4] x 1, PCI x 2, Half-size Minicard x 1	ATX	20-1 Pin Header	32°F ~ 140°F (0°C ~ 60°C)
IMBM-Q87A-A10-MS	LGA1150 socket	DDR3 1600/1333	Fan	VGA, DVI, DP x 2	SATA3 x 5, m-SATA x 1 (Half-size Mini-PCI-E Slot)	—	Intel® GbE x 2	USB 3.0 x 4, USB 2.0 x 8	5	1	PCIe[x16] x 1, PCIe [x4] x 1, PCI x 2	ATX	20-1 Pin Header	32°F ~ 140°F (0°C ~ 60°C)

IMBM-H81B

Micro-ATX with 4th Generation Intel® Core™ Processor, DDR3 DRAM, USB x 14



Features

- 4th Generation Intel® Core™ LGA1150 Processor
- DDR3 DRAM Support, 1600MHz, Max. 16GB
- Two Independent Display: VGA x 1, DVI-I Port x 1
- Realtek 8111G, Gigabit Ethernet x 2
- USB 3.0 Port x 6, USB 2.0 Port x 8
- COM Port x 10 (RS-232 x 9, RS-232/422/485 x 1)

PCI Express | Giga LAN | DDR 2 | USB 2.0 | CE FC

Rear Panel I/O Ports	
USB	USB 3.0 x 6, USB 2.0 x 8
Display I/O	DVI-I x 1, VGA x 1
Audio I/O	Line-in, Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	—
PS/2 Port	Combo Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA 6.0Gb/s x 2, SATA 3.0Gb/s x 2
USB	—
Display I/O	—
Audio I/O	AAFP x 1
Serial Port	RS-232/422/485 x 1, RS-232 x 9
PS/2 Port	—
Parallel Port	—
DIO	8-bit x 1 (In/Out programmable)
FAN	4-pin CPU Fan x 1, 4-pin Chassis Fan x 2
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (2[x4]P p=1.27mm) x 1
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Linux Fedora

Specifications

System	
Processor	4th Generation Intel® Core™ i7/i5/i3/Pentium®/Celeron® 22nm LGA 1150 socket Processor
Chipset	Intel® H81
Memory	240-pin DIMM x 2, max. 16GB, DDR3 1600/1333, Dual channel
I/O Chipset	F81866D, F81216HD
Ethernet	Realtek PCIe Gb LAN 8111G x 2
Audio	Realtek® ALC887
TPM	—
Expansion Slots	PCIe [x16] x 1, PCIe [x1] x 2
BIOS	64Mbit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+DVI-I
VGA	Up to 1920 x 1200 @60Hz
DVI	Up to 1920 x 1200 @60Hz
HDMI	—
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 4-pin ATX 12V Power connector x 1
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operation Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Micro-ATX, 9.6" x 9.6" (244mm x 244mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	220,420

Packing List

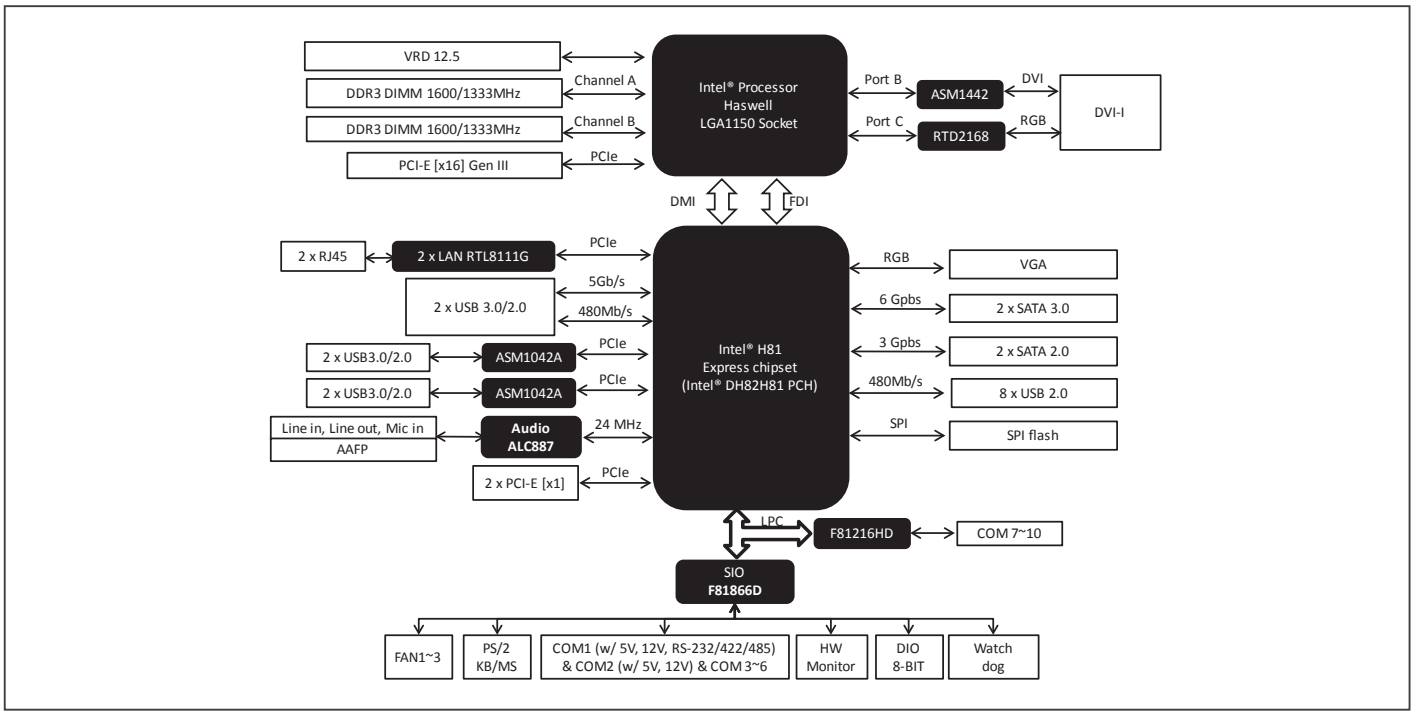
- **I/O Shield**
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)
- **Product CD**
- **IMBM-H81B**

Optional Accessories

- **1709100330**
  USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
- **170910020K**
  USB 2.0 cable (9P, 330MM, p=2.54mm, w/o bracket)
- **175921156B**
  CPU Cooler (2-Ball, Push-pin Type)
- **1759200172**
  CPU Cooler (2-Ball, Screw with Retention Plate)

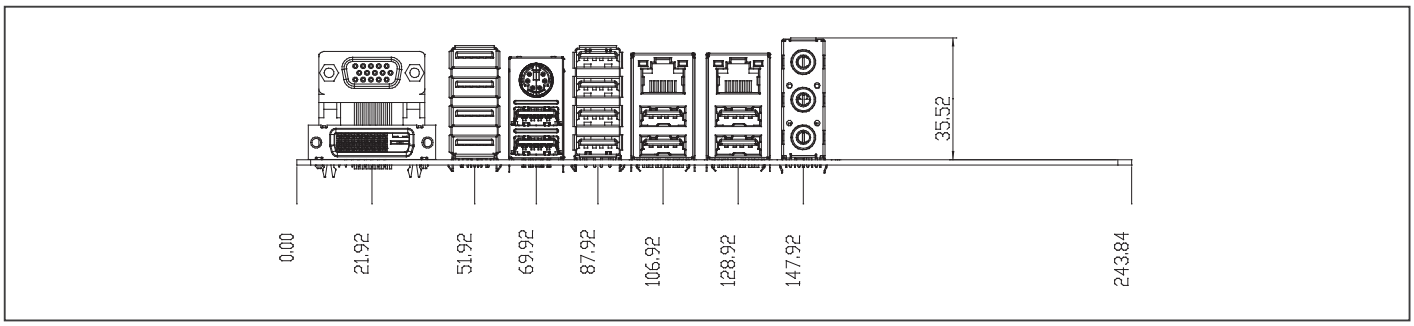
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

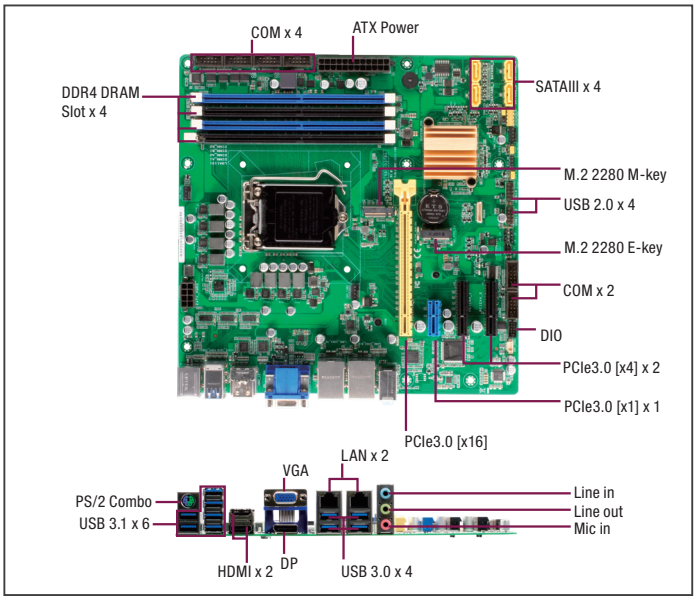


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBM-H81B-A10	LGA1150 Socket	DDR3 1600	Fan	VGA x 1, DVI-I x 1	SATA3 x 2, SATA2 x 2	—	GbE x 2	USB3.0 x 6, USB2.0 x 8	9	1	PCIe[x16] x 1, PCIe[x1] x 2	ATX	—	32°F ~ 140°F (0°C ~ 60°C)

MAX-Q370A

Micro-ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Multiple Display Ports, Supports iAMT 12.0



Features

- 8th/9th Generation Intel® Core™ LGA1151 Processor
- Supports Power 95W max.
- DDR4 2666/2400/2133 MHz, max. 64GB
- Three Independent Displays: HDMI x 2, VGA x 1, DP x 1
- Dual Intel® Gigabit Ethernet, i211AT x 1, i219LM x 1, i219LM Supports iAMT 12.0
- USB 3.1 Gen2 ports x 6, USB 3.1 Gen1 ports x 4
- M.2 E-key (PCIe/USB) x 1, M.2 M-key (PCIex4/SATA3) x 1
- TPM Onboard

Specifications

System	
Processor	8th/9th Generation Intel® (Coffee Lake-S) Core™ i9/ i7/ i5 /i3, Pentium™ 14nm LGA 1151 socket Processor, Max. 95W
Chipset	Intel® Q370 Express Chipset
Memory	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 64GB) Non-ECC, un-buffered memory Dual-channel memory architecture
I/O Chipset	NCT6793D+ F81216HD
Ethernet	Intel® PHY i219LM Gb LAN (supports Intel® AMT 12.0) x 1 Intel® i211AT Gb LAN x 1, RJ45 x 2
Audio	Realtek® ALC887 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750AAAYX TPM2.0 onboard
Expansion Slots	PCIe 3.0[x16] Slot x 1 PCIe 3.0[x4] Slot (open edge) x 2 PCIe 3.0[x1] Slot (open edge) x 1 M.2 2230 E-key (PCIe+USB) x 1 M.2 2280 M-key (PCIex4/SATA3) x 1
BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	HDMI+VGA+DP, HDMI+HDMI+VGA, HDMI+HDMI+DP
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Micro-ATX Form Factor, 9.6"x9.6" (244 mm x 244 mm)

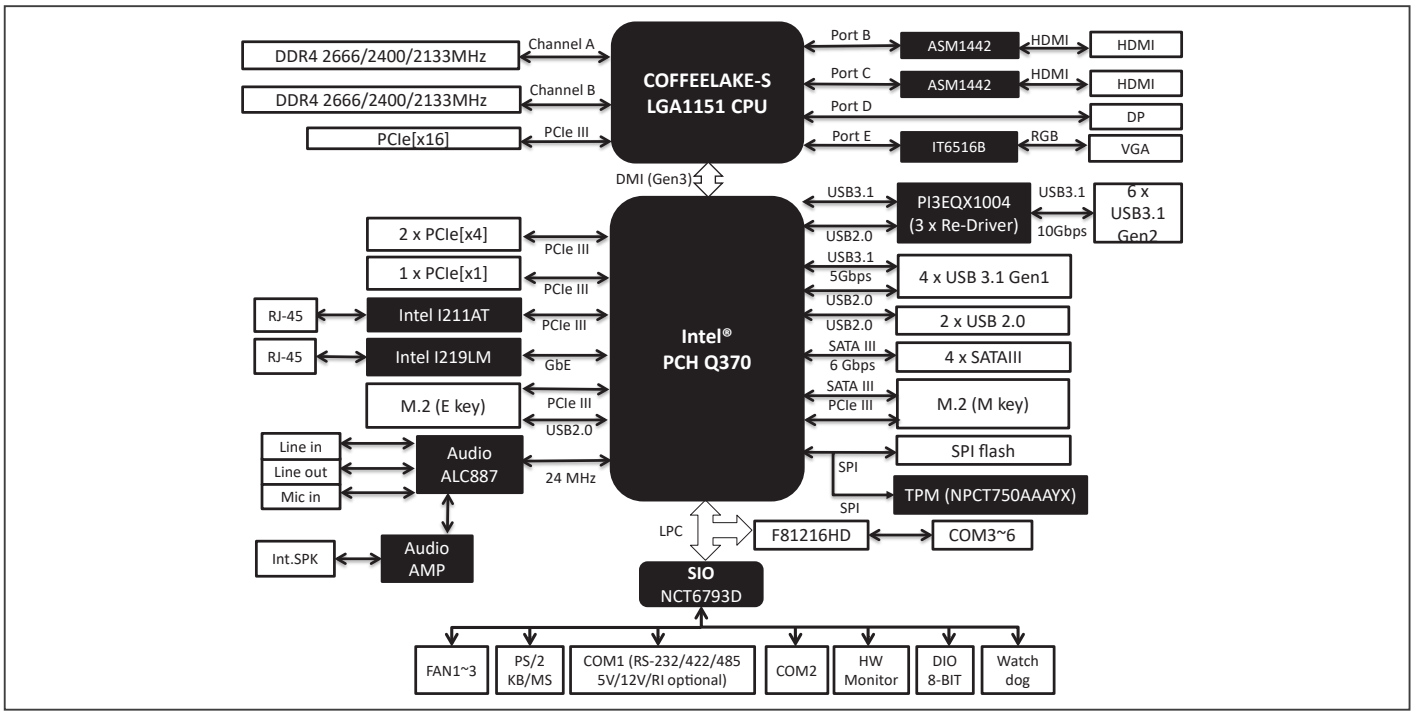
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	264,820
Rear Panel I/O Ports	
USB	USB 3.1 Gen2 ports (10 Gbps) x 6, USB 3.1 Gen1 ports (5 Gbps) x 4
Display I/O	DP x 1, VGA x 1, HDMI x 2
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2
Serial Port	—
PS/2 Port	PS/2 combo Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280 M-key (PCIex4/SATA3) x 1
USB	USB 2.0 headers support additional 3 USB ports (2x5PIN, p=2.54mm) x 2
Display I/O	—
Audio I/O	Speaker for 2W@4Ω x 1
Serial Port	RS-232 Boxer headers x 5 RS-232/422/485 Boxer header (COM1, Pin9 supports 5V/12V/RI optional) x 1
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (In/Out programmable) x 1
FAN	CPU Fan connector (4-pin) x 1 Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Chassis intrusion x 1 AT/ATX mode select jumper x 1 Front panel header x 1 Clear CMOS jumper x 1
OS	
OS Support	Windows® 10 64bit, Linux Ubuntu 64bit (18.04.1/Kernal4.8.0)

Packing List

- 14001-00630100 SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)
- I/O Shield
- Product CD
- MAX-Q370A

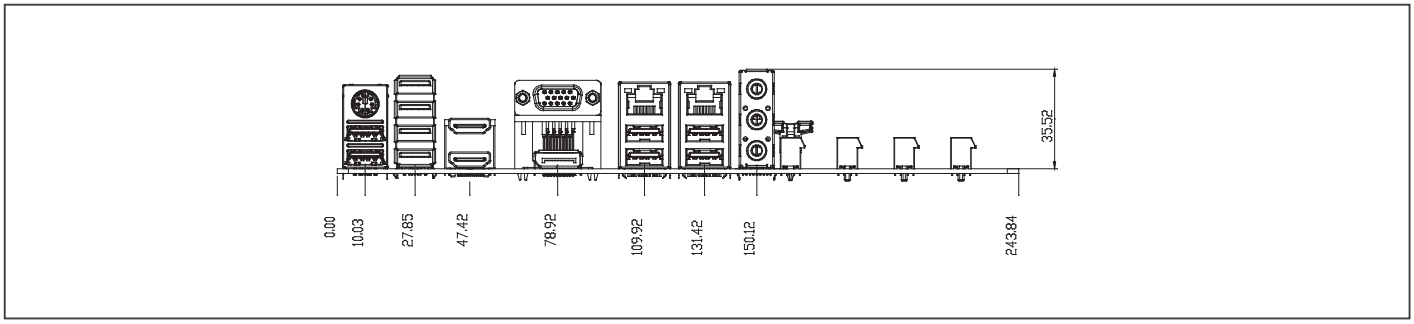
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

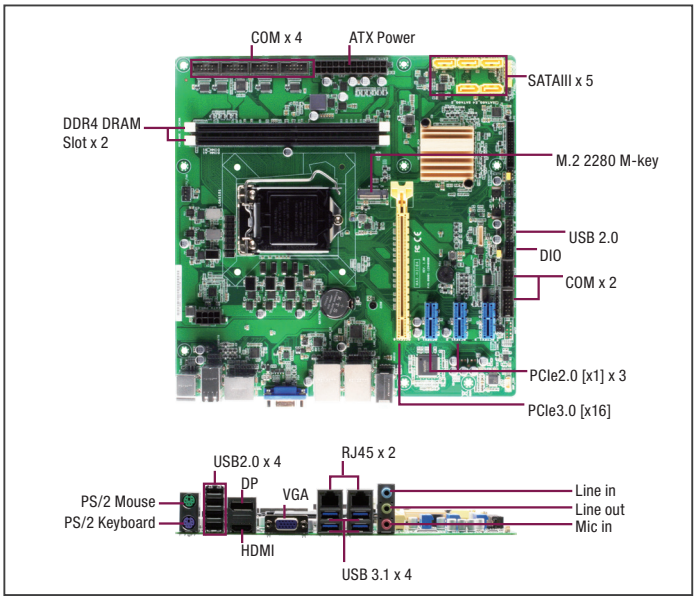
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MAX-Q370A-A10	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 2, VGA x 1, DP x 1	—	SATA3 x 4, M.2 2280 M-key x 1	Intel®GbE x 2	USB 3.1 Gen2 x 6, USB 3.1 Gen1 x 4	5	1	PCIe[x16] x 1, PCIe[x4] x 2, PCIe[x1] x 1, M.2 2230 E-key x 1, M.2 2280 M-key x 1	ATX	Onboard	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
14001-00400100	COM Port Cable (9P, 260mm, p=2.54mm w/bracket)
1709100330	USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
170910020K	USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)

MAX-H310A

Micro-ATX Industrial Motherboard with 8th Generation Intel® Core™ Processor, DDR4 DRAM



Features

- 8th Generation Intel® Core™ LGA1151 Processor
- DDR4 2666/2400/2133 MHz, max. 32GB
- Two Independent Displays: HDMI x 1, VGA x 1, DP x 1
- Dual Intel® Gigabit Ethernet, i211AT x 1, i219V x 1
- USB 3.1 Gen1 ports x 4, USB 2.0 ports x 4
- M.2 M-key (PCIe or SATA) x 1, up to 5 SATA III
- TPM Onboard (Optional)

Specifications

System	
Processor	8th Generation Intel®(Coffee Lake-S) Core™ i7/ i5 /i3, Pentium 14nm LGA 1151 socket Processor
Chipset	Intel® H310 Express Chipset
Memory	DIMM x 2, DDR4 (2666/2400/2133 MHz, max. 32GB) non-ECC, un-buffered memory Dual-channel memory architecture
I/O Chipset	NCT6793D+ F81216HD
Ethernet	Intel® PHY i219V Gb LAN x 1 Intel® i211AT Gb LAN x 1 RJ45 x 2
Audio	Realtek® ALC887 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT650ABBYX TPM2.0 onboard (default: No)
Expansion Slots	PCIe 3.0[x16] Slot x 1 PCIe 2.0[x1] Slot (open edge) x 3 M.2 2280 M-key (BOM option: PCIe or SATA; default: SATA) x 1
BIOS	128Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan x 1 Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	VGA+DP; VGA+HDMI; DP+HDMI
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Micro-ATX Form Factor, 9.6"x9.6" (244 mm x 244 mm)

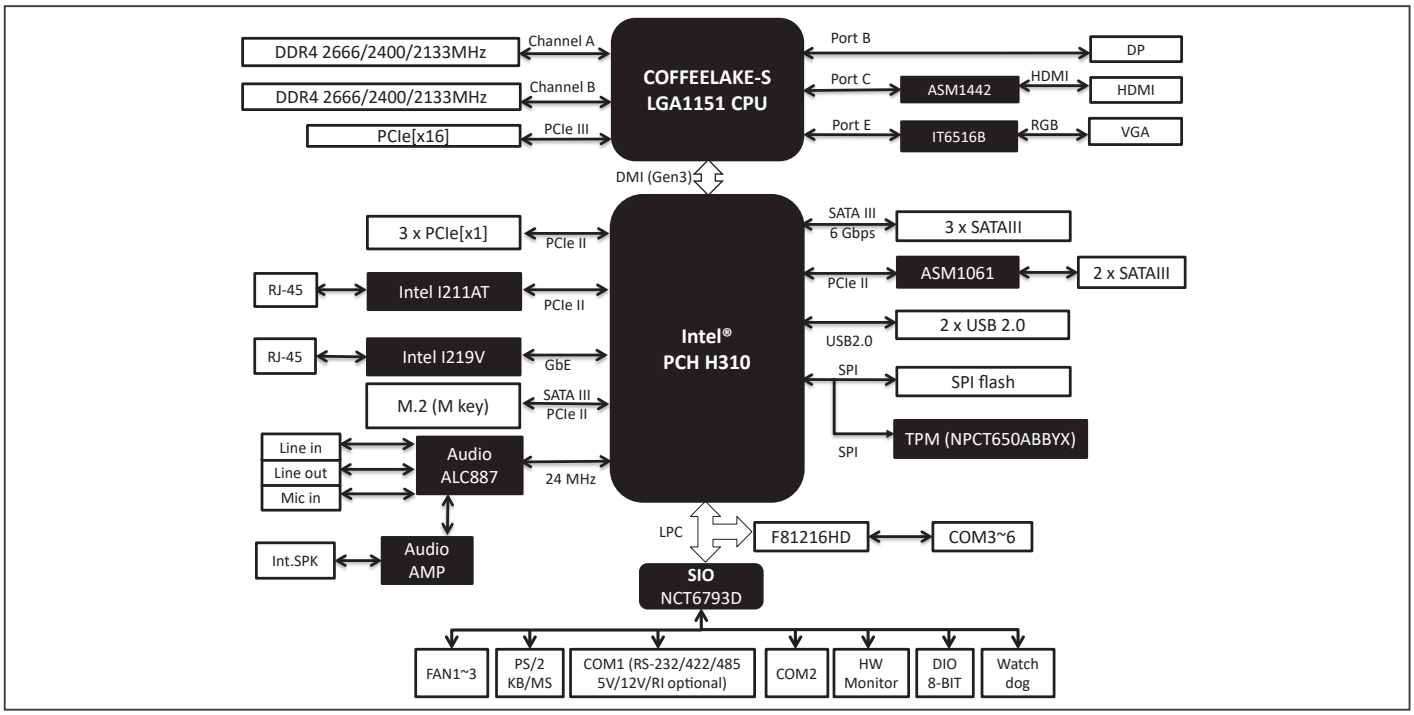
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	261,090
Rear Panel I/O Ports	
USB	USB 3.1 Gen1 ports (5 Gbps) x 4, USB 2.0 ports x 4
Display I/O	DP x 1, VGA x 1, HDMI x 1
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2
Serial Port	—
PS/2 Port	PS/2 stack Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA III (6.0Gb/s) ports (BOM option: additional 2 SATA) x 3 M.2 2280 M-key (BOM option: PCIex1 or SATA; default: SATA) x 1
USB	USB 2.0 header support additional 2 USB ports (2x5PIN, p=2.54mm) x 1
Display I/O	—
Audio I/O	speaker header (Line-out) x 1
Serial Port	RS-232 Boxer headers x 5 RS-232/422/485 Boxer header (COM1, Pin9 supports 5V/12V/RI optional) x 1
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (In/Out programmable) x 1
FAN	CPU Fan connector (4-pin) x 1 Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Chassis intrusion x 1 AT/ATX mode select jumper x 1 Front panel header x 1 Clear CMOS jumper x 1 LPC boxer header x 1
OS	
OS Support	Windows® 10 64bit, Linux Ubuntu 64bit (18.04.1/Kernal4.8.0)

Packing List

- 14001-00630100 SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)
- I/O Shield
- Product CD
- MAX-H310A

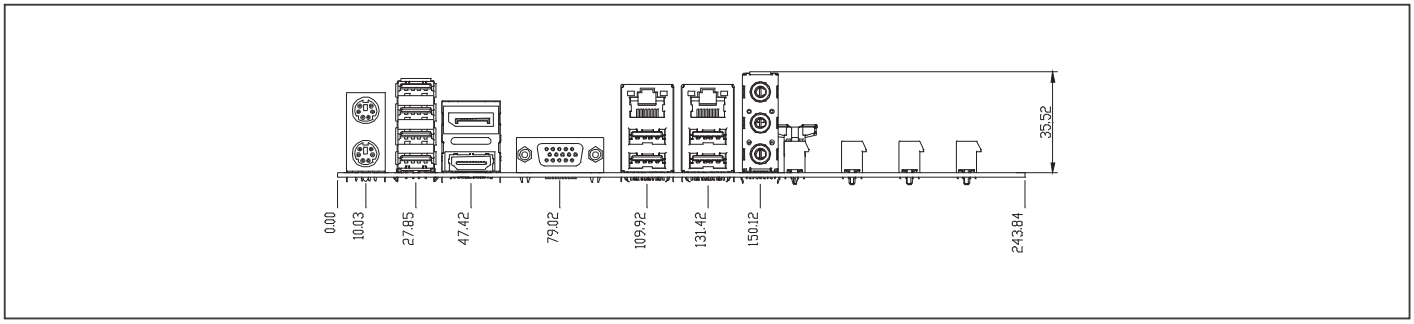
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

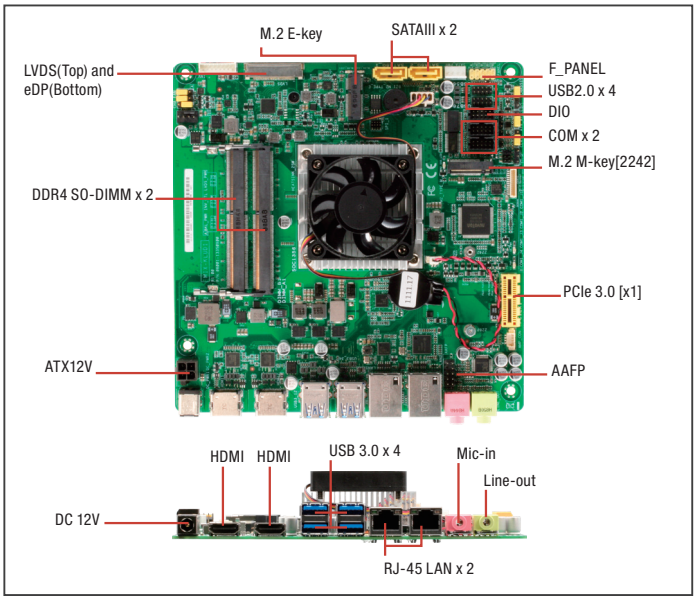
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MAX-H310A-A10	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 1, VGA x 1, DP x 1	—	SATA3 x 3, M.2 2280 M-key (SATA) x 1	Intel®GbE x 2	USB 3.1 Gen1 x 4, USB 2.0 x 4	5	1	PCIe[x16] x 1, PCIe[x1] x 3, M.2 2280 M-key (SATA) x 1	ATX	—	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
14001-00400100	COM Port Cable (9P, 260mm, p=2.54mm w/bracket)
1709100330	USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
170910020K	USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)

MIX-KLUD1

Mini-ITX, 14nm, FCBGA1356 7thGen Intel® Core™ processor family, 15~25W TDP



Features

- DDR4 SODIMM x 2, Up to 32GB
- Three Independent Display: VGA x 1 or HDMI x 1, eDP x 1 or LVDS x 1
- Intel® LAN i211AT x 1, 219LM for iAMT 12.0 x 1
- M.2 Slot (M-key) x 1
- M.2 Slot (E-key) x 1
- PCIe3.0 [x1] x 1
- 12V DC

Specifications

System	
Processor	14nm 7th Generation Intel® Core™ i7-7600U, 2C/4T, 2.8/3.9(turbo)GHz, 4M, 300MHz/1.15GHz (Turbo) GFX, ~25W TDP Core™ i5-7300U, 2C/4T, 2.6/3.5(turbo)GHz, 3M, 300MHz/1.10GHz (Turbo) GFX, ~25W TDP Core™ i5-7200U, 2C/4T, 2.5/3.1(turbo)GHz, 3M, 300MHz/1.00GHz
Chipset	—
Memory	SODIMM x 2, max. 32GB, DDR4-2133 non-ECC, un-buffered memory
I/O Chipset	NCT6793D
Ethernet	Intel® PCIe Gb LAN 219LM for vPro (i7-7600U/i5-7300U) x 1 Intel® PCIe Gb LAN 211AT x 1
Audio	Realtek® ALC887 with Amp.
TPM	NPCT650ABBYX TPM2.0 onboard (default: No)
Expansion Slots	PCIe 3.0 [x1] x 1 M.2 M key (22 x 80 mm) x 1, SATA & PCIe [x4] M.2 E key (22 x 30 mm) x 1 for Wireless-wifi module (PCIe+USB)
BIOS	128Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 step by software program
Smart Fan Control	CPU Fan/Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	HDMI x 2, eDP x 1 or LVDS x 1
VGA	—
DVI	—
HDMI	HDMI 1.4 up to 4096 x 2340 @24Hz
Display Port	—
LVDS	Up to 1920 x 1200 @ 60 Hz, Dual Channel 18/24 bit
eDP	UP to 4096 x 2304 @ 60Hz
Backlight Control	Voltage/PWM; Max 1A
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12V DC
Operating Temperature	32°F ~ 131°F (0°C ~ 55°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90%RH, non-condensing
Certificate	CE & FCC (Class A)
Form Factor	Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours):	—

Rear Panel I/O Ports	
USB	USB 3.0 x 4
Display I/O	HMDI x 2
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC Power Jack x 1
Internal I/O Connectors	
Storage	M.2 M key (22 x 80mm) for PCIe [x4]/SATA storage x 1, SATA 6.0Gb/s x 2, 4-pin SATA power x 1
USB	USB 2.0 pin header x 2 support additional 4 USB ports
Display I/O	40-pin LVDS connector x 1, 40-pin eDP connector x 1, LCD backlight connector(inverter) x 1
Audio I/O	Speaker for 2W@4Ω x 1, AAFP follow ASUS pin out x 1
Serial Port	Boxer header x 2 for COM (COM1: RS-232/422/485 supports 5V/12V/RI)
PS/2 Port	—
Parallel Port	—
DIO	8-bit programmable (4-in/4-out) x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	—
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1
OS	
OS Support	Windows® 10 64-bit

Packing List

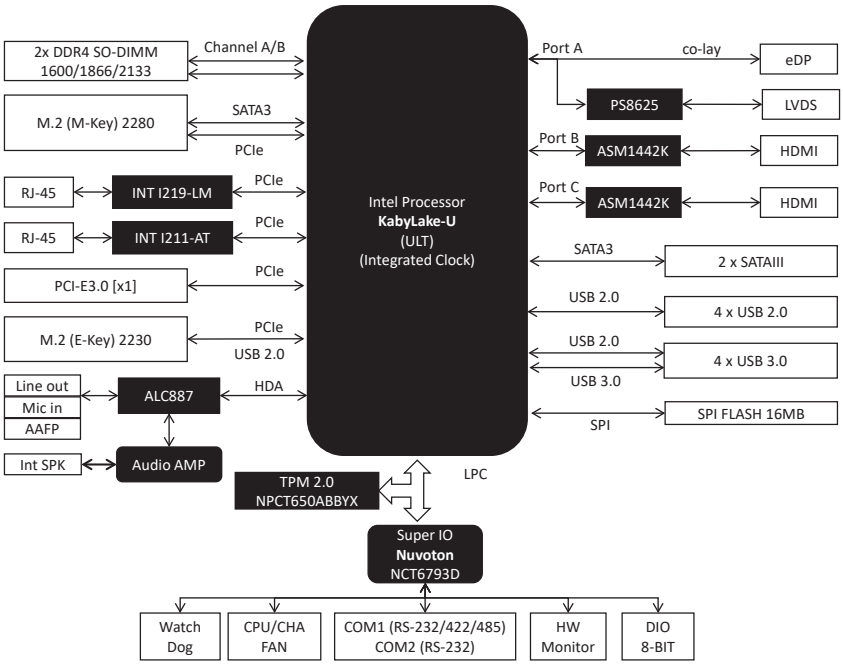
- Heatsink/CPU Fan
- SATA Cable
- SATA Power Cable
- I/O Shield
- Product CD
- MIX-KLUD1

Optional Accessories

Part Number	Description
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)
1701100206	COM Cable (200MM, p=2.00mm)
1702150300	SATA Power Cable (4P, 300MM p=2.54mm)
1702151201	SATA Power Cable (4P, 120MM, p=2.5mm)
1255900846	Adapter 12V/84W

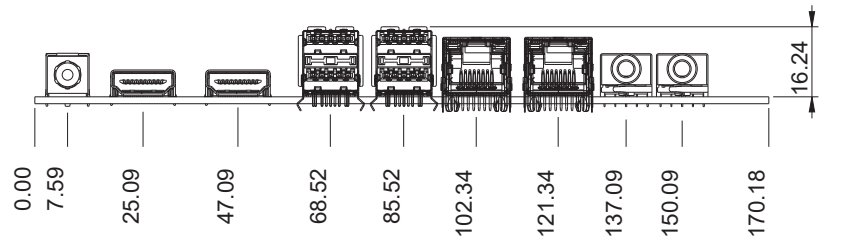
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

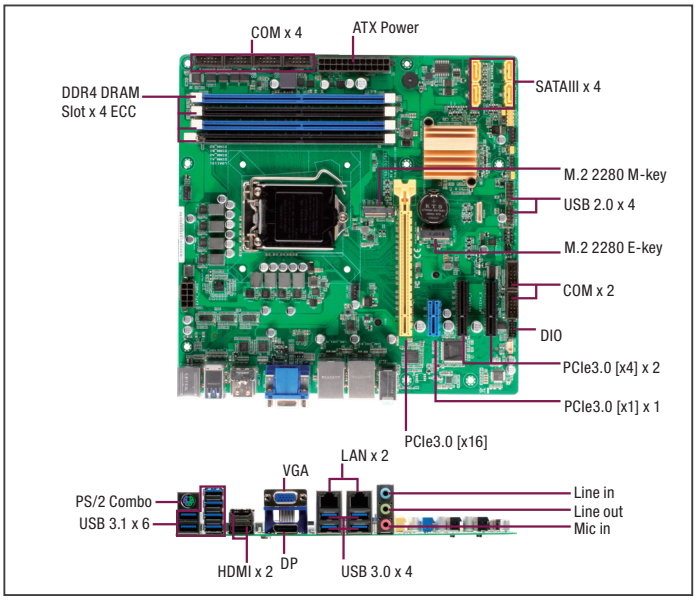


Ordering Information

PART NUMBER	CPU	RAM	FAN/ FANLESS	DISPLAY	STORAGE	LVDS	LAN	USB	RS-232	RS-232/422/485	EXPANSION SLOT	POWER	TPM	TEMP.
MIX-KLUD1-A10-7100-LV	i3-7100U	SODIMM x 2	Fanless	HDMI x 2, LVDS	SATA3 x 2, M.2 (M-key)	Dual Channel 18/24 bit	GbE x 2	USB3.0 x 4, USB2.0 x 4	1	1	PCIe[x1] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12V DC	—	32°F ~ 131°F (0°C ~ 55°C)

MAX-C246A

Micro-ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Multiple Display Ports, Supports iAMT 12.0



Features

- **8th/9th Generation Intel® Core™ LGA1151 Processor**
- **Supports Power 95W max.**
- **DDR4 2666/2400/2133 MHz, max. 64GB**
- **Three Independent Displays: HDMI x 2, VGA x 1, DP x 1**
- **Dual Intel® Gigabit Ethernet, i211AT x 1, i219LM x 1, i219LM Supports iAMT 12.0**
- **USB 3.1 Gen2 ports x 6, USB 3.1 Gen1 ports x 4**
- **M.2 E-key (PCIe/USB) x 1, M.2 M-key (PCIex4/SATA3) x 1**
- **TPM Onboard**

Specifications

System	
Processor	8th/9th Generation Intel® (Coffee Lake-S) Core™ i9/ i7/ i5 /i3, Pentium™ 14nm, Celeron™, Xeon™ E-2200/2100, LGA 1151 socket Processor Min. 65W (E-2104G, 4C4T), Max. 95W (E-2186G, 6C12T)
Chipset	Intel® C246 Express Chipset
Memory	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 64GB) ECC, un-buffered memory Dual-channel memory architecture
I/O Chipset	NCT6793D+ F81216HD
Ethernet	Intel® PHY i219LM Gb LAN (supports Intel® AMT 12.0) x 1 Intel® i211AT Gb LAN x 1 RJ45 x 2
Audio	Realtek® ALC887 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750AAAYX TPM2.0 onboard
Expansion Slots	PCIe 3.0[x16] Slot x 1 PCIe 3.0[x4] Slot x 2(open edge) PCIe 3.0[x1] Slot x 1(open edge) M.2 2230 E-key x 1(PCIe+USB) M.2 2280 M-key x 1(PCIex4/SATA3)
BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	HDMI+VGA+DP, HDMI+HDMI+VGA, HDMI+HDMI+DP
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A

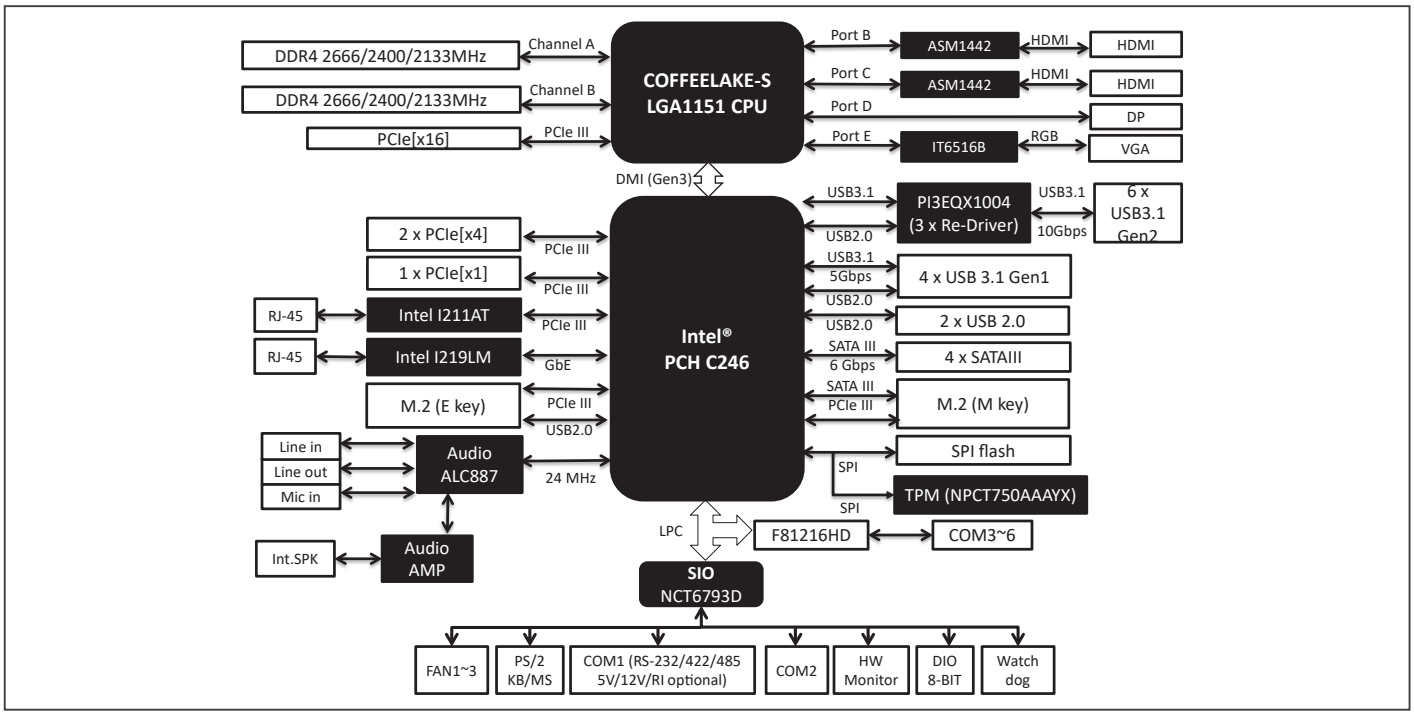
Form Factor	Micro-ATX Form Factor, 9.6"x9.6" (244mmx244mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	264,820
Rear Panel I/O Ports	
USB	USB 3.1 Gen2 ports (10 Gbps) x 6, USB 3.1 Gen1 ports (5 Gbps) x 4
Display I/O	DP x 1, VGA x 1, HDMI x 2
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2
Serial Port	—
PS/2 Port	PS/2 combo port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280 M-key (PCIex4/SATA3) x 1
USB	USB 2.0 headers support additional 3 USB ports (2x5PIN, p=2.54mm) x 2
Display I/O	—
Audio I/O	Speaker for 2W@4Ω x 1
Serial Port	RS-232 Boxer headers x 5 RS-232/422/485 Boxer header (COM1, Pin9 supports 5V/12V/RI optional) x 1
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (In/Out programmable) x 1
FAN	CPU Fan connector (4-pin) x 1 Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Chassis Intrusion x 1 AT/ATX mode select jumper x 1 Front panel header x 1 Clear CMOS jumper x 1
OS	
OS Support	Windows® 10 64-bit, Linux Ubuntu 64-bit (18.04.1/Kernal4.8.0)

Packing List

- **14001-00630100 SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)**
- **I/O Shield**
- **Product CD**
- **MAX-C246A**

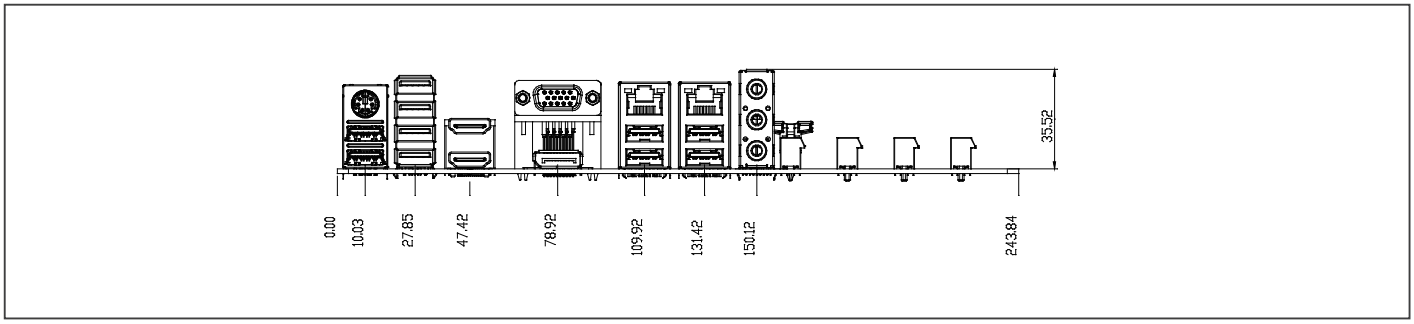
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MAX-C246A-A10	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 2, VGA x 1, DP x 1	—	SATA3 x 4, M.2 2280 M-key x 1	Intel®GbE x 2	USB 3.1 Gen2 x 6, USB 3.1 Gen1 x 4	5	1	PCIe[x16] x 1, PCIe[x4] x 2, PCIe[x1] x 1, M.2 2230 E-key x 1, M.2 2280 M-key x 1	ATX	Onboard	32°F ~140°F (0°C ~ 60°C)

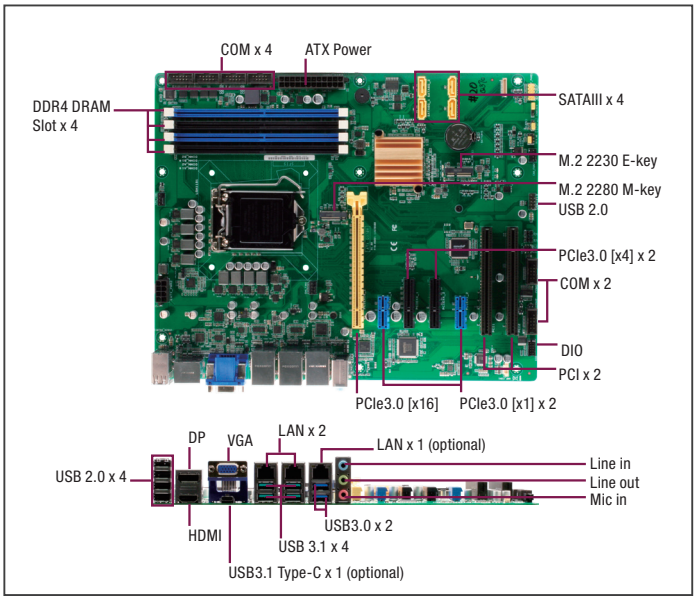
Optional Accessories

Part Number	Description
14001-00400100	COM Port Cable (9P, 260mm, p=2.54mm w/bracket)
1709100330	USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
170910020K	USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)

ATX-Q370A

Preliminary

ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Supports iAMT 12.0, and Intel® CNVi WLAN Card, Option: LAN x 3, Type-C Alternate (Display + Data USB31 Gen2) Function



Features

- **8th/9th Generation Intel® Core™ LGA1151 Processor**
- **Supports Power 95W max.**
- **DDR4 2666/2400/2133 MHz, max. 64GB**
- **Three Independent Displays: HDMI x 1, VGA x 1, DP x 1, USB Type-C x 1 (optional)**
- **Dual Intel® Gigabit Ethernet, i211AT x 1 (option: i211AT x 2), i219LM x 1**
- **USB 3.1 Gen2 ports x 4, USB 3.1 Gen1 ports x 2, USB 2.0 ports x 4**
- **M.2 E-key (PCIex1/USB2.0/CNVi) x 1, M.2 M-key (PCIex4/SATA3) x 1**
- **TPM Onboard (optional)**

Specifications

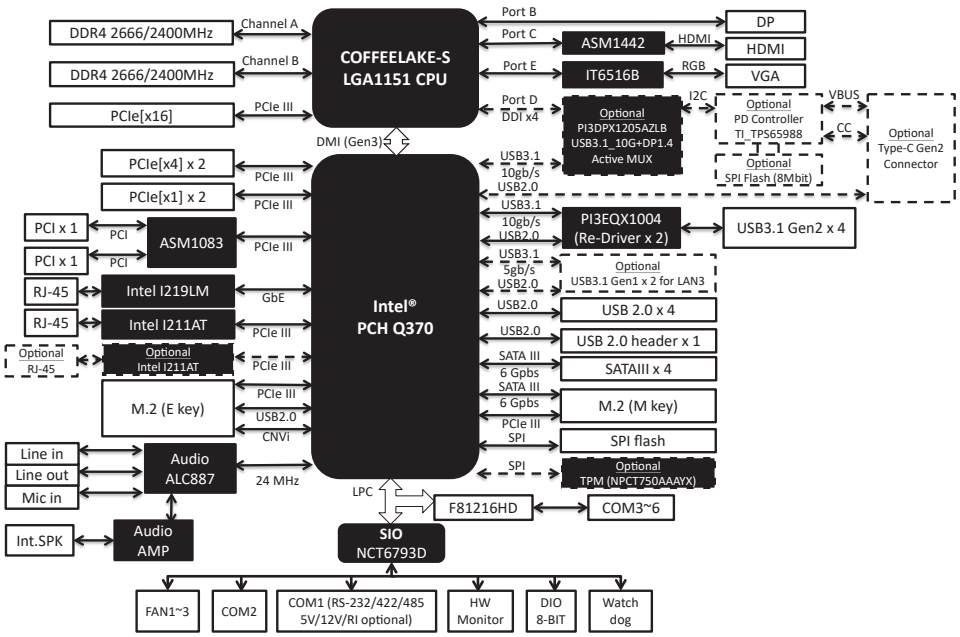
System	
Processor	Intel® 8th/9th Generation (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5 /i3, Pentium 14nm LGA 1151 socket Processor, Max. 95W
Chipset	Intel® Q370 Express Chipset
Memory	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 64GB) Non-ECC, un-buffered memory Dual channel memory architecture
I/O Chipset	NCT6793D + F81216HD
Ethernet	Intel® PHY i219LM Giga LAN x 1 (supports Intel® AMT 12.0) Intel® i211AT Giga LAN x 1 (BOM option: i211AT x 2) RJ45 x 2 (BOM option: RJ45 x 3)
Audio	Realtek® ALC887 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750ABBYX TPM2.0 onboard (optional)
Expansion Slots	PCIe 3.0[x16] Slot x 1, PCIe 3.0[x4] Slot (open edge) x 2, PCIe 3.0[x1] Slot (open edge) x 2, PCI x 2, M.2 2230 E-key (PCIex1/USB2.0/CNVi) x 1, M.2 2280 M-key (PCIex4/SATA3) x 1
BIOS	256Mbit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® Graphics Media Accelerator
Graphics Multi Display	HDMI+VGA+DP (BOM option: USB3.1 Gen2-10Gbps Type-C connector (Alternate Mode: USB+DP) x 1)
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	ATX Form Factor, 12"x9.6" (305mm x 244mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	281,410
Rear Panel I/O Ports	
USB	USB 3.1 Gen2 ports (10 Gbps) x 4, USB 3.1 Gen1 ports (5 Gbps) x 2, USB 2.0 ports x 4
Display I/O	HDMI x 1, VGA x 1, DP x 1, USB Type-C x 1 (optional)
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2 (BOM option: RJ45 x 3)
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280 M-key (PCIex4/SATA3) x 1
USB	USB 2.0 headers x 1 support additional 2 USB ports (2x5PIN, p=2.54mm)
Display I/O	—
Audio I/O	1 x speaker header (Line-out)
Serial Port	5 x RS-232 headers 1 x RS-232/422/485 (COM1, supports 5V/12V/RI optional)
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (In/Out programmable) x 1
FAN	CPU Fan connector(s) (4-pin) x 1 Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Chassis Intrusion x 1 AT/ATX mode select jumper x 1 Front panel header x 1 Clear CMOS jumper x 1
OS	
OS Support	Windows® 10 64bit, Linux Ubuntu 64bit (18.04.1/Kernal4.8.0)

Packing List

- **14001-00630100 SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)**
- **I/O Shield**
- **Product CD**
- **ATX-Q370A**

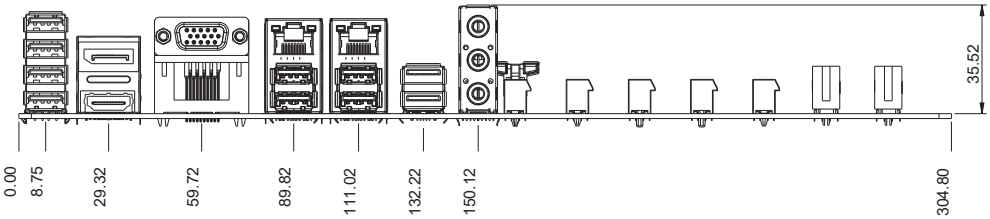
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



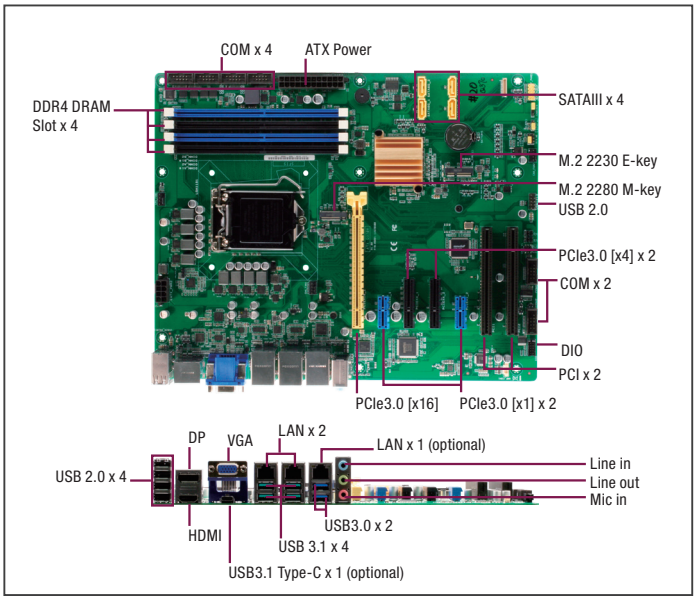
Ordering Information

Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
ATX-Q370A-A10-2L	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 1 VGA x 1 DP x 1	—	SATA3 x 4 M.2 2280 M-key x 1	Intel®GbE x 2	USB 3.1 Gen2 x 4 USB 3.1 Gen1 x 2 USB 2.0 x 4	5	1	PCIe[x16] x 1, PCIe[x4] (open edge) x 2, PCIe[x1] (open edge) x 2, PCI x 2, M.2 2230 E-key x 1, M.2 2280 M-key x 1	ATX	—	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
14001-00400100	COM Port Cable (9P, 260mm, p=2.54mm w/bracket)
1709100330	USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
170910020K	USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)

ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Supports iAMT 12.0, and Intel® CNVi WLAN Card, Option: LAN x 3, Type-C Alternate (Display + Data USB31 Gen2) Function



Features

- 8th/9th Generation Intel® Core™ LGA1151 Processor
- Supports Power 95W max.
- DDR4 2666/2400/2133 MHz, max. 64GB
- Three Independent Displays: HDMI x 1, VGA x 1, DP x 1, USB Type-C x 1 (optional)
- Dual Intel® Gigabit Ethernet, i211AT x 1 (option: i211AT x 2), i219LM x 1
- USB 3.1 Gen2 ports x 4, USB 3.1 Gen1 ports x 2, USB 2.0 ports x 4
- M.2 E-key (PCIex1/USB2.0/CNVi) x 1, M.2 M-key (PCIex4/SATA3) x 1
- TPM Onboard (optional)

Specifications

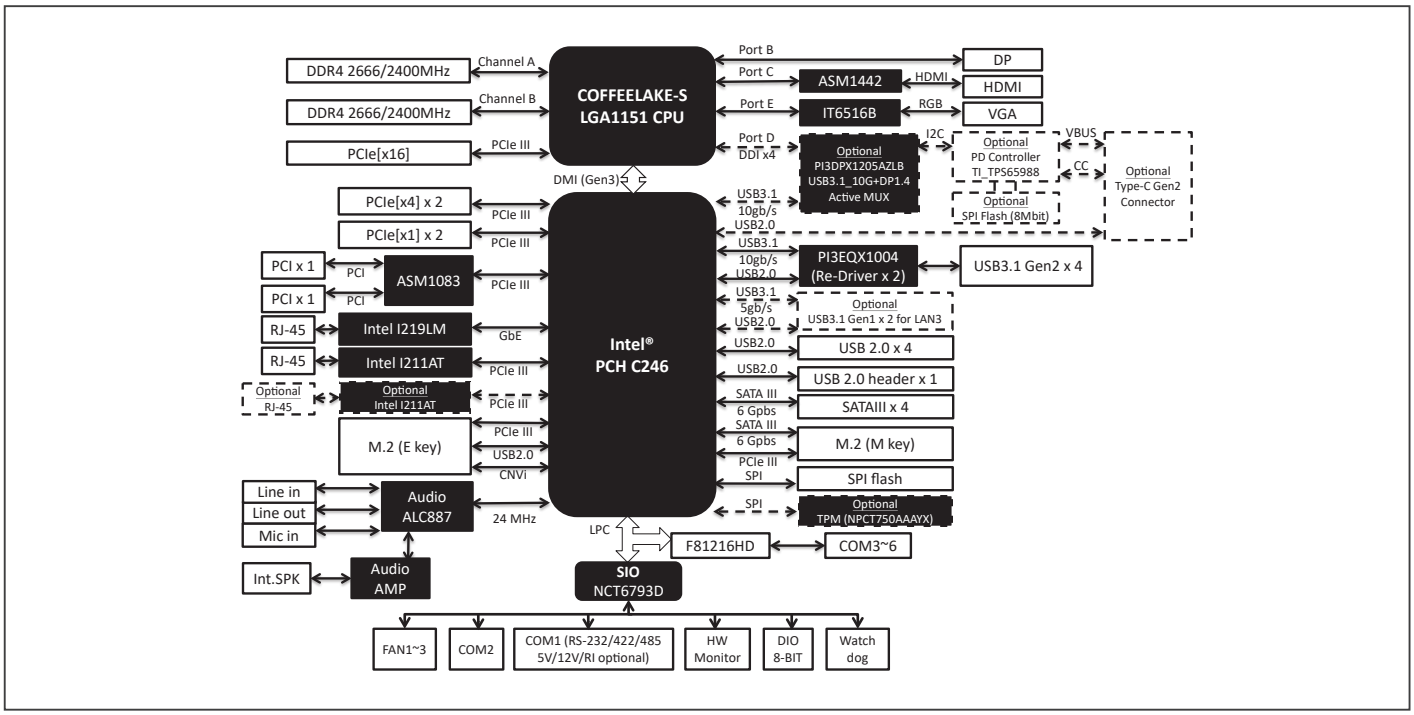
System	
Processor	Intel® 8th/9th Generation (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5 /i3, Pentium 14nm, Celeron™, Xeon E-2200/2100, LGA 1151 socket Processor, Max. 95W (E-2278GE, 8C16T)
Chipset	Intel® C246 Express Chipset
Memory	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 64GB) ECC, un-buffered memory Dual channel memory architecture
I/O Chipset	NCT6793D + F81216HD
Ethernet	Intel® PHY i219LM Giga LAN x 1 (supports Intel® AMT 12.0) Intel® i211AT Giga LAN x 1 (BOM option: i211AT x 2) RJ45 x 2 (BOM option: RJ45 x 3)
Audio	Realtek® ALC887 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750ABBYX TPM2.0 onboard (optional)
Expansion Slots	PCIe 3.0[x16] Slot x 1, PCIe 3.0[x4] Slot (open edge) x 2, PCIe 3.0[x1] Slot (open edge) x 2, PCI x 2, M.2 2230 E-key (PCIex1/USB2.0/CNVi) x 1, M.2 2280 M-key (PCIex4/SATA3) x 1
BIOS	256Mbit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® Graphics Media Accelerator
Graphics Multi Display	HDMI+VGA+DP (BOM option: USB3.1 Gen2-10Gbps Type-C connector (Alternate Mode: USB+DP) x 1)
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	ATX Form Factor, 12"x9.6" (305mm x 244mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	281,410
Rear Panel I/O Ports	
USB	USB 3.1 Gen2 ports (10 Gbps) x 4, USB 3.1 Gen1 ports (5 Gbps) x 2, USB 2.0 ports x 4
Display I/O	HDMI x 1, VGA x 1, DP x 1, USB Type-C x 1 (optional)
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2 (BOM option: RJ45 x 3)
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280 M-key (PCIex4/SATA3) x 1
USB	USB 2.0 headers x 1 support additional 2 USB ports (2x5PIN, p=2.54mm)
Display I/O	—
Audio I/O	1 x speaker header (Line-out)
Serial Port	5 x RS-232 headers 1 x RS-232/422/485 (COM1, supports 5V/12V/RI optional)
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (In/Out programmable) x 1
FAN	CPU Fan connector(s) (4-pin) x 1 Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Chassis Intrusion x 1 AT/ATX mode select jumper x 1 Front panel header x 1 Clear CMOS jumper x 1
OS	
OS Support	Windows® 10 64bit, Linux Ubuntu 64bit (18.04.1/Kernal4.8.0)

Packing List

- 14001-00630100 SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)
- I/O Shield
- Product CD
- ATX-C246A

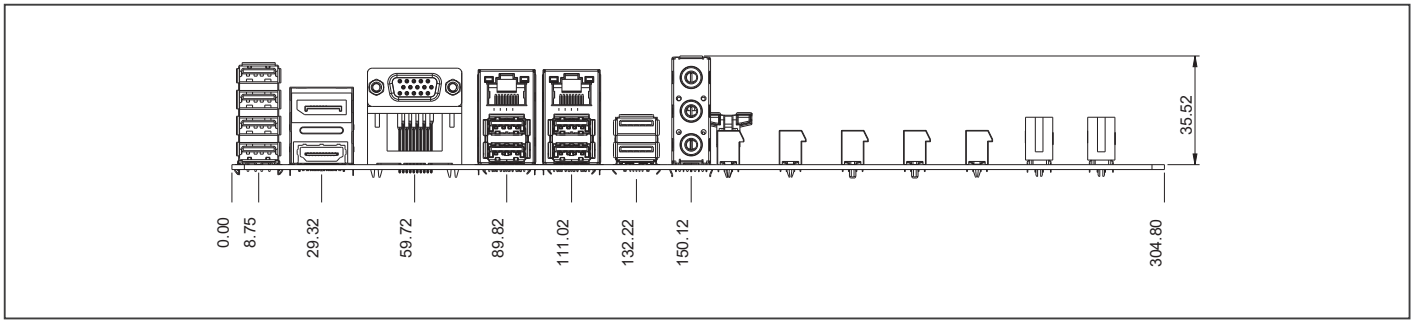
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

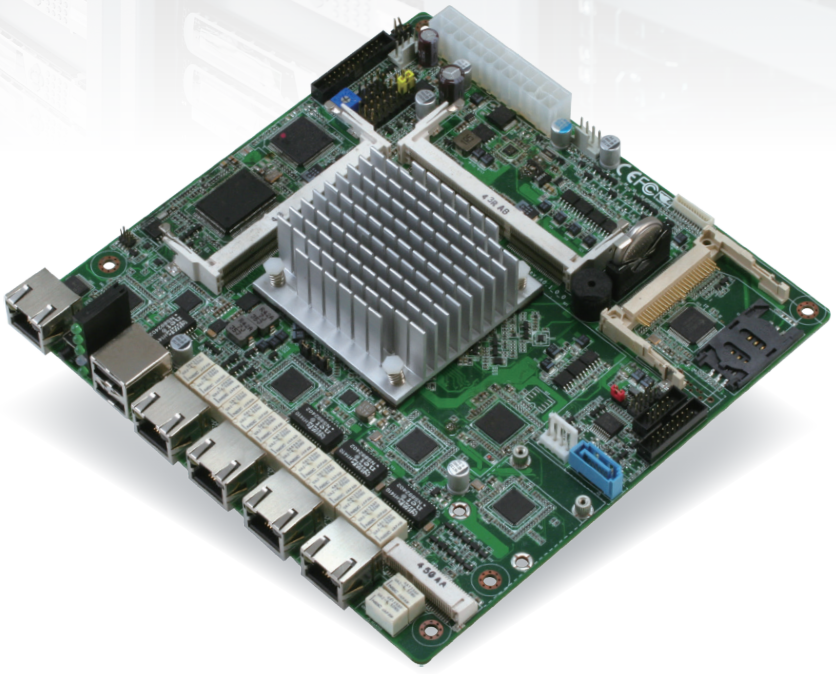
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
ATX-C246A-A10-2L	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 1 VGA x 1 DP x 1	—	SATA3 x 4 M.2 2280 M-key x 1	Intel®GbE x 2	USB 3.1 Gen2 x 4 USB 3.1 Gen1 x 2 USB 2.0 x 4	5	1	PCIe[x16] x 1, PCIe[x4] (open edge) x 2, PCIe[x1] (open edge) x 2, PCI x 2, M.2 2230 E-key x 1, M.2 2280 M-key x 1	ATX	—	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
14001-00400100	COM Port Cable (9P, 260mm, p=2.54mm w/bracket)
1709100330	USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
170910020K	USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)

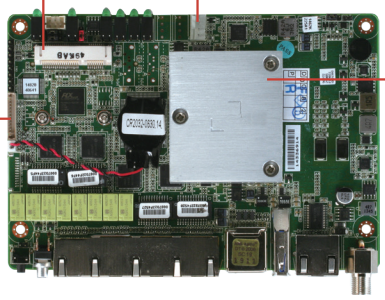
Networking Motherboards

14

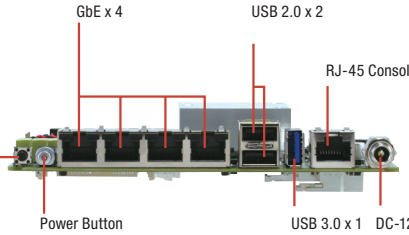


4 LAN Ports Networking Motherboard with Intel® Atom™ E3815 Processor SoC

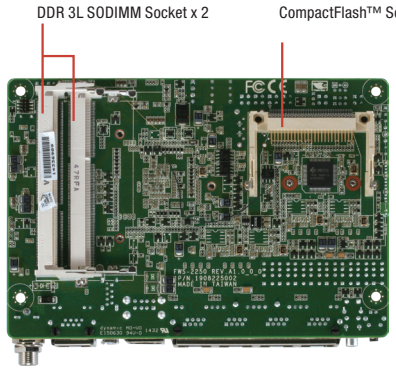
Front View



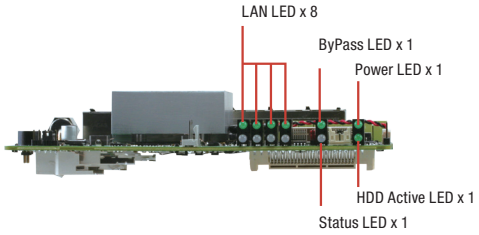
IO View



Rear View



Side View



Features

- **Intel® Atom™ E3815 Processor SoC**
- **204-pin Signle-channel DDR3L 1066/1333MHz SODIMM x 1, Up to 8 GB**
- **10/100/1000Base-TX Ethernet Port x 4**
- **SATA 3.0 Gb/s x 1**
- **CompactFlash™ Socket x 1**
- **Mini-Card Slot x 1**
- **RJ-45 Console x 1, USB 3.0 x 1, USB 2.0 x 2**

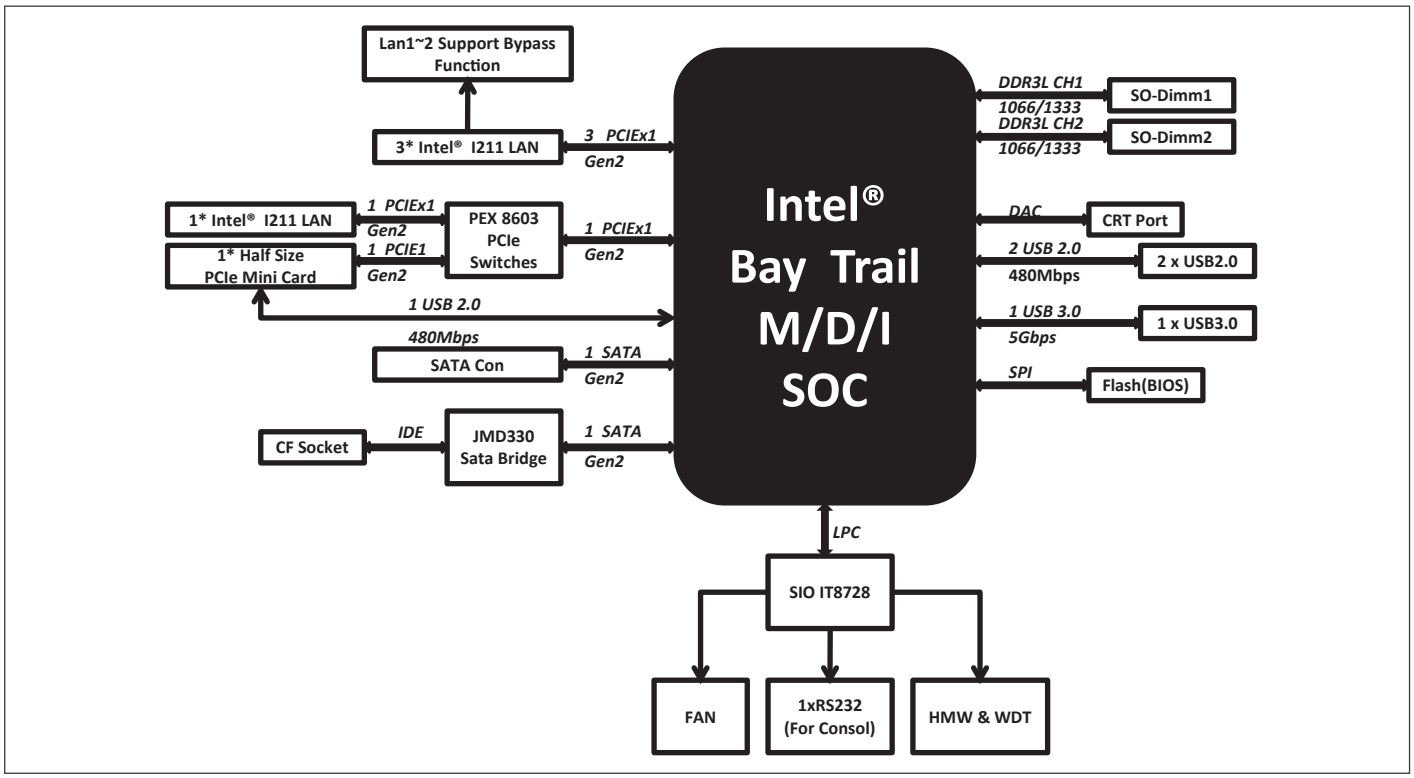
DDR 3L · 1000 Giga LAN · USB 2.0 · USB 3.0 · CE FC

Specifications

System	
Form Factor	Networking Motherboard
Processor	Intel® Atom™ E3815 processor SoC
System Memory	204-pin DDR3L 1066/1333 MHz SODIMM x 2, up to 8 GB
Chipset	—
Ethernet	Intel® Ethernet Controller I211-AT, Gigabit Ethernet x 4
Bypass Function	1 Pair (Optional)
BIOS	AMI BIOS
Serial ATA	SATA 3.0 Gb/s Connector x 1 (CompactFlash™ Socket x 1)
Expansion Interface	Mini-Card Socket x 1(Optional)
Power Requirement	40W, 12V DC-in power connector
Power Consumption	Intel® Celeron® J1900 2.0 GHz, DDR3L 1333 2GB 0.39A@ 100VAC, 1.21A@12V
Board Size	5.67" x 3.94" (114 mm x 100 mm)
Watchdog Timer	1~255 steps by software programming
MTBF (Hours)	90,630
OS Support	Windows® 7 or above, Linux
Display	
Chipset	Intel® Atom™ E3815
Graphic Engine	Intel® HD
Resolution	2560 x 1600
Outer Interface	Reserved VGA Internal box header
I/O	
LAN Port	RJ-45 Port x 4
Serial Port	RJ-45 Console x 1
USB	USB 2.0 x 2, USB 3.0 x 1
LED	Power LED x 1, HDD Active x 1, LAN LED x 8 (Optional Status LED x 1, Bypass LED x 1)
Others	Power Button x 1, Software Programmable Reset Button x 1
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing

Note: All specifications are subject to change without notice.

Block Diagram



Packing List

- FWB-2250

Optional Accessories

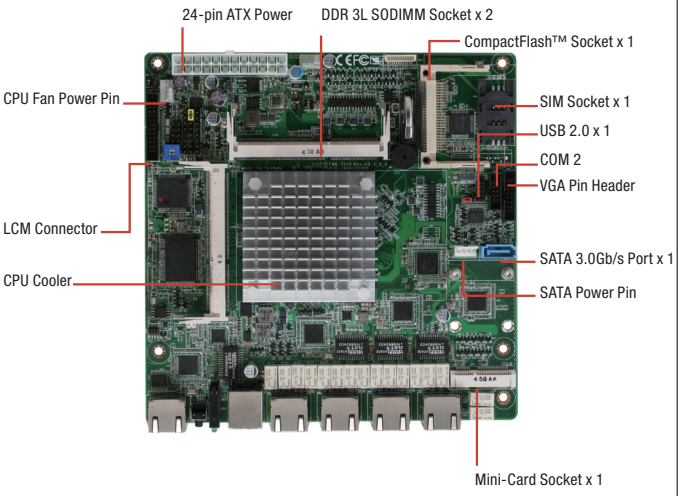
- **1700091805**
  Console Cable
- **1702031802**
  Power Cord, 3P-250V/10A, 180D, 1.8M, USA, YP22/YP12
- **1702031803**
  Power Cord, 3P-250V/10A, 180D, 1.8M, VDE, YP22/YP12
- **1255300401**
  Power Adapter, 12V, 40W

Ordering Information

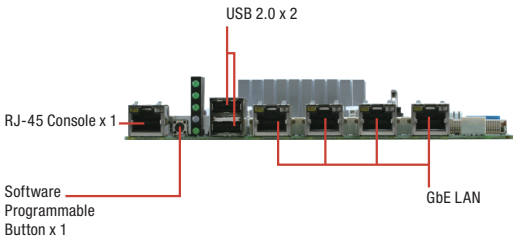
Part Number	CPU	RAM	Bypass	Mini-Card Slot	Storage	LAN	USB	Console	Fan	TPM	Display	Mounting	Power
FWB-2250E4-A10-A10-01	Intel® Celeron® E3815	DDR3L, SODIMM Single Channel	—	—	SATA 3.0 Gb/s x 1 CompactFlash™ Socket x 1	4	USB 2.0 x 2 USB 3.0 x 1	RJ-45 x 1	Fanless	—	Pin Header	—	DC

4 LAN Ports Networking Motherboard with Intel® Celeron® J1900 Porcessor SoC

Front View



IO View



Features

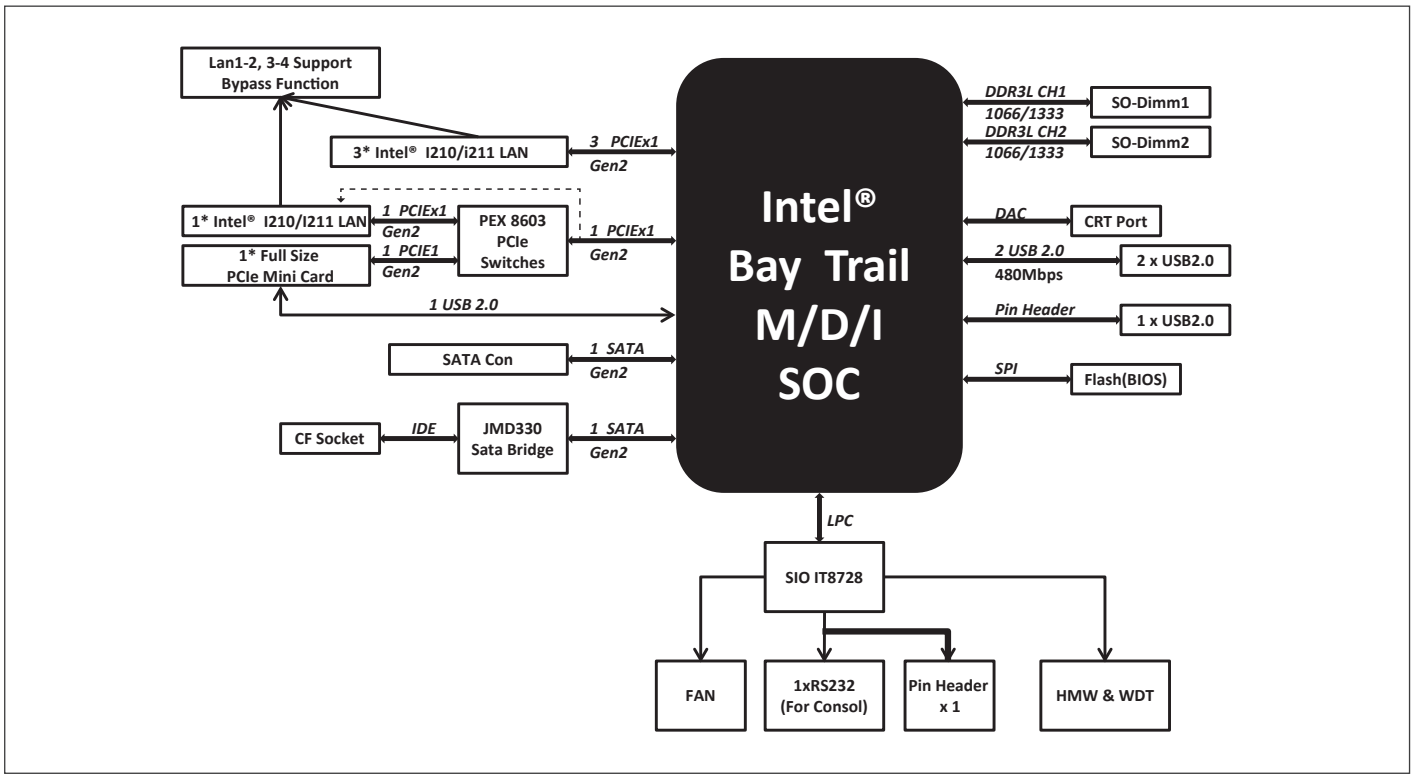
- **Intel® Celeron® J1900 Processor SoC**
- **204-pin Dual-channel DDR3L 1066/1333MHz SODIMM x 2, Up to 8 GB**
- **10/100/1000Base-TX Ethernet Port x 4**
- **SATA 3.0 Gb/s x 1**
- **CompactFlash Card Socket x 1**
- **Mini-Card Slot x 1 (Optional)**
- **RJ-45 Console x 1, USB 2.0 x 2**

Specifications

System	
Form Factor	Mini-ITX / Networking Motherboard
Processor	Intel® Celeron® J1900 2.0 GHz
System Memory	204-pin DDR3L 1333MHz SODIMM x 2, up to 8GB
Chipset	—
Ethernet	Intel® I210-AT (Co-lay with Intel® I211-AT), Gigabit Ethernet x 4
Bypass Function	Supports up to 2 Pair (optional)
BIOS	AMI BIOS
Serial ATA	CompactFlash Socket x 1, SATA2 connector x 1 (Optional SATA2 connector x 2)
Expansion Interface	Mini-Card socket w/ SIM card socket x 1 (optional)
Power Requirement	ATX 100W PSU
Power Consumption	Intel® Celeron® J1900 2.4 GH, DDR3L 1600 4GB, 0.26A@ 100VAC
Board Size	6.7" x 6.7" (170 mm x 170 mm)
Watchdog Timer	1~255 steps by software programming
MTBF (Hours)	110,571
OS Support	Windows® 7 or above, Linux
Display	
Chipset	Intel® Celeron® J1900, Intel® Atom™ E3845 (optional)
Graphic Engine	Intel HD Graphic
Resolution	2560 x 1600
Output Interface	Reserved Pin Header for Graphic Integrated Proccessor
I/O	
LAN Port	RJ-45 Port x 4
Serial Port	RJ-45 Console x 1
USB	USB 2.0 x 2
LED	Power LED x 1, Status LED x 1, HDD Active x 1, Bypass LED x 2
Others	Software Programmable Reset Button x 1
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing

Note: All specifications are subject to change without notice.

Block Diagram



Packing List

- FWB-7250

Optional Accessories

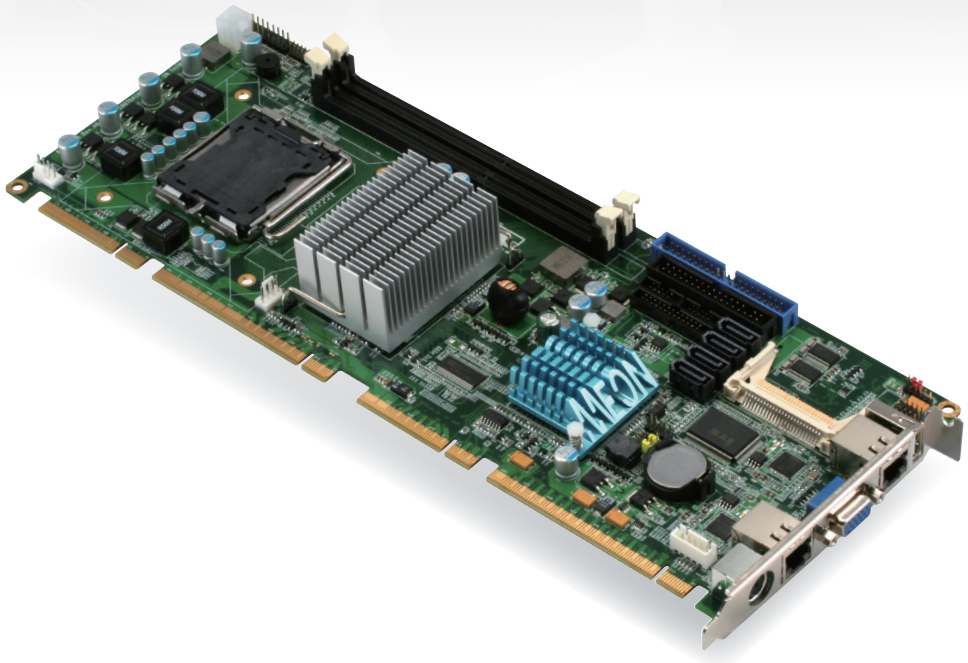
- **1700091805**
  Console Cable
- **1702031802**
  Power Cord, 3P-250V/10A, 180D, 1.8M, USA, YP22/YP12
- **1702031803**
  Power Cord, 3P-250V/10A, 180D, 1.8M, VDE, YP22/YP12

Ordering Information

Part Number	CPU	RAM	Bypass	Mini-Card Slot	Storage	LAN	USB	Console	Fan	TPM	Display	Mounting	Power
FWB-7250E4-A10-00	Intel® Celeron® J1900	DDR3L, SODIMM Dual Channel	—	Full size	SATA 3.0 Gb/s x 1 CompactFlash™ socket x 1	4	USB 2.0 x 2	RJ-45 x 1	Fanless	—	—	—	ATX

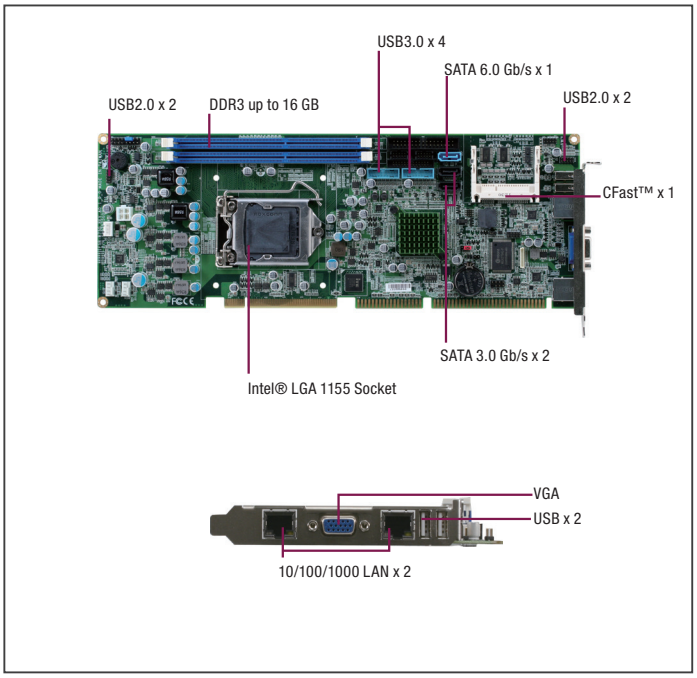
Full-size SBC-PICMG1.0 SBC

15



FSB-B75G

Full-Size SBC with 3rd Generation Intel® Core™ i7/i5/i3 LGA 1155 Processor



Features

- Intel® 3rd Generation Core™ i7/i5/i3 LGA 1155 Processor
- Intel® B75 Chipset
- Dual-Channel DDR3 Memory DIMM Socket x 2, Up to 16 GB
- Intel® B75 Integrated Intel® HD Graphics
- 10/100/1000Base-TX Ethernet x 2
- SATA 6.0 Gb/s x 1, SATA 3.0 Gb/s x 2, CFast™ x 1
- COM x 2, USB3.0 x 4, USB 2.0 x 6
- PICMG 1.0
- ATX 2.1 Power Requirement

Specifications

System	
Form Factor	Full size CPU Card
Bus Interface	PICMG 1.0
CPU	LGA 1155 for Intel® 3rd Generation Core™ i3/i5/i7 Processor
Memory Type	Up to 16 GB (DDR 3 1333/1600 DIMM x 2)
Chipset	Intel® B75
BIOS	AMI
Wake on LAN	No
Watchdog Timer	255 Levels
Watchdog Timer	Yes
Power Requirement	ATX 2.1
Power Consumption (Typical)	Intel® Core™ i7-3770 3.4 GHz, DDR3 8 GB 3.38A@+12V, 3.11A@+5V, 0.41A@+3.3V, 0.2A@5VSB, 58.45W (Full load)
Dimension (L x W)	13.3" x 5" (339 mm x 126 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	60,000
Certification	CE/FCC, Class A
Display	
VGA/LCD Controller	Intel® B75
Video Output	Up to 2048 x 1536 @75 Hz for CRT
Backlight inverter supply	—
I/O	
Ethernet	10/100/1000Base-TX x 2
Audio	HDAC Daughter Board (optional) Mic-in/ Line-in/ Line-out/ CD-in
USB Port	USB3.0 x 4, USB2.0 x 6
Serial Port	RS-232 x 1 RS-232/422/485 x 1
Parallel Port	1
HDD Interface	SATA 3 x 1, SATA 2 x 2
FDD Interface	Optional
SSD	CFast™ x 1
Expansion Slot	PCI x 4/ ISA
DIO	8-bit programmable (4-in/4-out)
TPM	—

Packing List

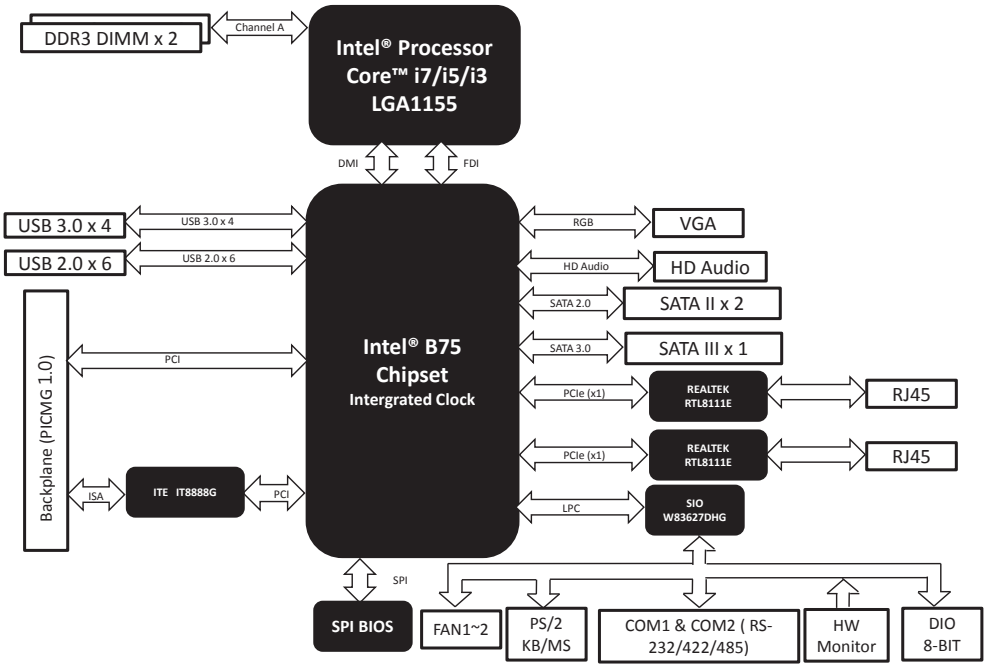
- **1701260307**
  Flat Cable, 9P/DB9P Male & 25P DB25P Female, 10P 2mm & 26P 2mm/IDC No Fold
- **1701100305**
  Flat Cable, 9P/DB9P Male, 10P/2.0mm Pitch/IDC No Fold, 30cm with Bracket
- **1709100201**
  USB Cable, 20cm, 2.0mm Pitch, with Bracket
- **1709070460**
  SATA Cable, 1.27mm Pitch, 46cm with Lock
- **1703030501**
  Wire, 3P 2.5mm Housing, 50cm
- **Product DVD**
- **FSB-B75G**

Optional Accessories

- **TF-PER-U01H**
  HD Codec Audio Daughter Board
- **1175920000D**
  LGA1155/1150 CPU Cooler, Aluminum (2U Height, 95Watt)
- **1759218000**
  LGA1155/1150 CPU Cooler, Copper (1U Height, 95Watt)
- **1709080207**
  KB/MS Cable
- **1700200401**
  2 Ports USB3.0 Cable with Bracket, 40cm

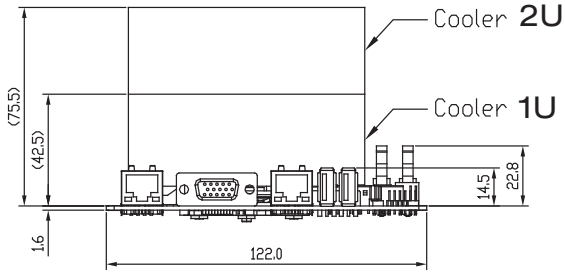
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Passive Backplane Options

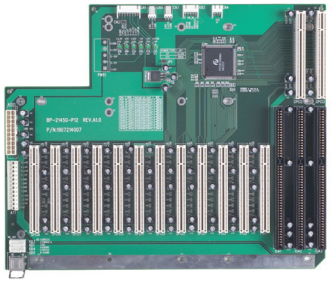
P/N	Description	Master Interface	Slots	Power Connector, ATX Extend Function
TF-BP-214SG-P12	Rackmount, PICMG 1.0, 14-Slot Backplane, 12 PCI, 2 ISA, Single Segment, AT/ATX	PICMG 1.0	12/2/2 (PCI/ ISA/ PICMG)	AT, ATX, 3-pin ATX extend
TF-BP-214SG-P7	Rackmount, PICMG 1.0, 14-Slot Backplane, 7 PCI, 6 ISA, Single Segment, AT/ATX	PICMG 1.0	7/6/2 (PCI/ ISA/ PICMG)	AT, ATX, 3-pin ATX extend
TF-BP-214SG-P4	Rackmount, PICMG 1.0, 14-Slot Backplane, 4 PCI, 9 ISA, Single Segment, AT/ATX	PICMG 1.0	4/9/2 (PCI/ ISA/ PICMG)	AT, ATX, 3-pin ATX extend
TF-BP-208SG-P7	Wallmount, PICMG 1.0, 8-Slot Backplane, 7 PCI, Single Segment, AT/ATX	PICMG 1.0	7/0/1 (PCI/ ISA/ PICMG)	AT, ATX, 3-pin ATX extend
TF-BP-208SG-P4	Wallmount, PICMG 1.0, 8-Slot Backplane, 4 PCI, 3 ISA, Single Segment, AT/ATX	PICMG 1.0	4/3/2 (PCI/ ISA/ PICMG)	AT, ATX, 3-pin ATX extend
TF-BP-206SG-P4	Wallmount, PICMG 1.0, 6-Slot Backplane, 4 PCI, 2 ISA, Single Segment, AT/ATX	PICMG 1.0	4/2/2 (PCI/ ISA/ PICMG)	AT, ATX, 3-pin ATX extend
TF-BP-206SG-P2	Wallmount, PICMG 1.0, 6-Slot Backplane, 2 PCI, 3 ISA, Single Segment, AT/ATX	PICMG 1.0	2/3/2 (PCI/ ISA/ PICMG)	AT, ATX, 3-pin ATX extend

Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp.
FSB-B75G-A10-G2	Socket	DIMM	Fan	VGA	SATA 6.0 Gb/s x 1, SATA 3.0 Gb/s x 2 (Backplane x 2)	—	GbE x 2	USB 3.0 x 4 USB 2.0 x 6	1	1	PICMG 1.0	ATX	0°C ~ 60°C

BP-214SG-P12

Rackmount, PICMG 1.0, 14-Slot Backplane, 12 PCI, 2 ISA, Single Segment



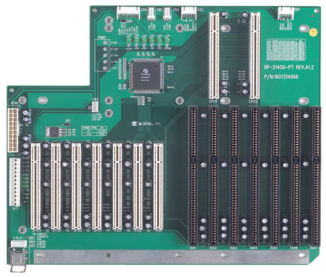
Master	PICMG 1.0
PICMG	2
PCI	12
ISA	2
System	Single
Fan Connector	2
ATX Control Connector	1
ATX Power Connector	1
AT Power Connector	1
Dimension	12.4" x 10.2" (315mm x 260mm)

Ordering Information

- **TF-BP-214SG-P12-A11**
  Rackmount, PICMG,14-slot Backplane, 12 PCI, 1 ISA, Single Segment, AT/ATX, Rev.A1.1
- **TF-BP-214SG-P12-A11-01**
  Rackmount, PICMG,14-slot Backplane,12 PCI, 1 ISA, Single Segment, AT/ATX, Rev.A1.1, Bulk Pack

BP-214SG-P7

Rackmount, PICMG 1.0, 14-Slot Backplane, 7 PCI, 6 ISA, Single Segment



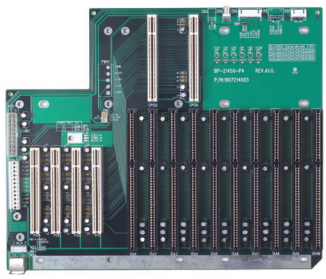
Master	PICMG 1.0
PICMG	2
PCI	7
ISA	6
System	Single
Fan Connector	2
ATX Control Connector	1
ATX Power Connector	1
AT Power Connector	1
Dimension	12.4" x 10.2" (315mm x 260mm)

Ordering Information

- **TF-BP-214SG-P7-A11**
  Rackmount, PICMG,14-Slot Backplane, 7 PCI, 5 ISA, Single Segment, AT/ATX, Rev.A1.2
- **TF-BP-214SG-P7-A11-01**
  Rackmount, PICMG,14-Slot Backplane,7 PCI, 5 ISA, Single Segment, AT/ATX, Rev.A1.2, Bulk Pack

BP-214SG-P4

Rackmount, PICMG 1.0, 14-Slot Backplane, 4 PCI, 9 ISA, Single Segment



Master	PICMG 1.0
PICMG	2
PCI	4
ISA	9
System	Single
Fan Connector	2
ATX Control Connector	1
ATX Power Connector	1
AT Power Connector	1
Dimension	12.4" x 10.2" (315mm x 260mm)

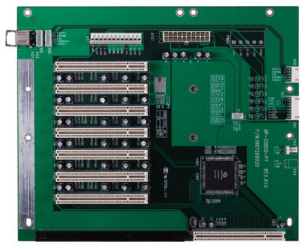
Ordering Information

- **TF-BP-214SG-P4-A11**
  Rackmount, PICMG,14-slot BP, 4 PCI, 8 ISA, Single Segment, AT/ATX, Rev.A1.1
- **TF-BP-214SG-P4-A11-01**
  Rackmount, PICMG, 14-slot Backplane, 4 PCI, 8 ISA, Single Segment, AT/ATX, Rev A1.1, Bulk Pack

Note: All specifications are subject to change without notice.

BP-208SG-P7

Wallmount, PICMG 1.0, 8-Slot Backplane, 7 PCI, Single Segment



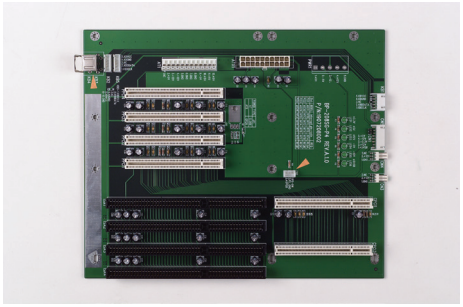
Master	PICMG 1.0
PICMG	1
PCI	7
System	Single
Fan Connector	2
ATX Control Connector	1
ATX Power Connector	1
AT Power Connector	1
Dimension	10.4" x 8.6" (264mm x 219mm)

Ordering Information

- **TF-BP-208SG-P7-A11**
  Wallmount, PICMG, 8-Slot Backplane, 7 PCI, Single Segment, AT/ATX, Rev.A1.1
- **TF-BP-208SG-P7-A11-01**
  Wallmount, PICMG, 8-Slot Backplane, 7 PCI, Single Segment, AT/ATX, Rev.A1.1, Bulk Pack

BP-208SG-P4

Wallmount, PICMG 1.0, 8-Slot Backplane, 4 PCI, 3 ISA, Single Segment



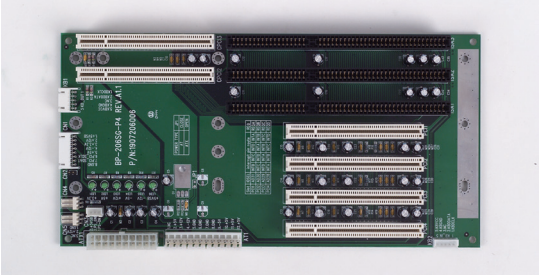
Master	PICMG 1.0
PICMG	2
PCI	4
ISA	3
System	Single
Fan Connector	2
ATX Control Connector	1
ATX Power Connector	1
AT Power Connector	1
Dimension	10.4" x 8.6" (264mm x 219mm)

Ordering Information

- **TF-BP-208SG-P4-A11**
  Wallmount, PICMG, 8-slot Backplane, 4 PCI, 2 ISA, Single Segment, AT/ATX, Rev.A1.1
- **TF-BP-208SG-P4-A11-01**
  Wallmount, PICMG, 8-slotBackplane, 4 PCI, 2 ISA, Single Segment, AT/ATX, Rev.A1.1, Bulk Pack

BP-206SG-P4

Wallmount, PICMG 1.0, 6-Slot Backplane, 4 PCI, 2 ISA, Single Segment



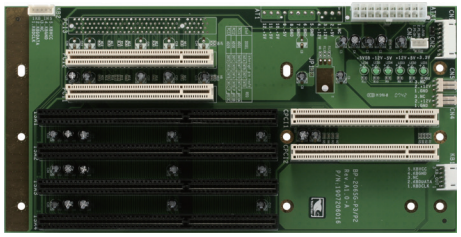
Master	PICMG 1.0
PICMG	2
PCI	4
ISA	2
System	Single
Fan Connector	2
ATX Control Connector	1
ATX Power Connector	1
AT Power Connector	1
Dimension	10.4" x 5.3" (264mm x 134mm)

Ordering Information

- **TF-BP-206SG-P4-A11**
  Wallmount, PICMG, 6-slot Backplane, 4 PCI, 2 ISA, Single Segment, ATX, Rev.A1.1
- **TF-BP-206SG-P4-A11-01**
  Wallmount, PICMG, 6-slot Backplane, 4 PCI, 2 ISA, Single Segment, ATX, Rev.A1.1, Bulk Pack

BP-206SG-P2

Wallmount, PICMG 1.0, 6-Slot Backplane, 2 PCI, 3 ISA, Single Segment



Master	PICMG 1.0
PICMG	2
PCI	2
ISA	3
System	Single
Fan Connector	2
AT Power Connector	1
ATX Control Connector	1
ATX Power Connector	1
Dimension	10.4" x 5.3" (264mm x 134mm)

Ordering Information

- **TF-BP-206SG-P2-A10**
  Wallmount, PICMG, 6-Slot Backplane, 2 PCI, 3 ISA, Single Segment, ATX, Rev.A1.0

Note: All specifications are subject to change without notice.

16

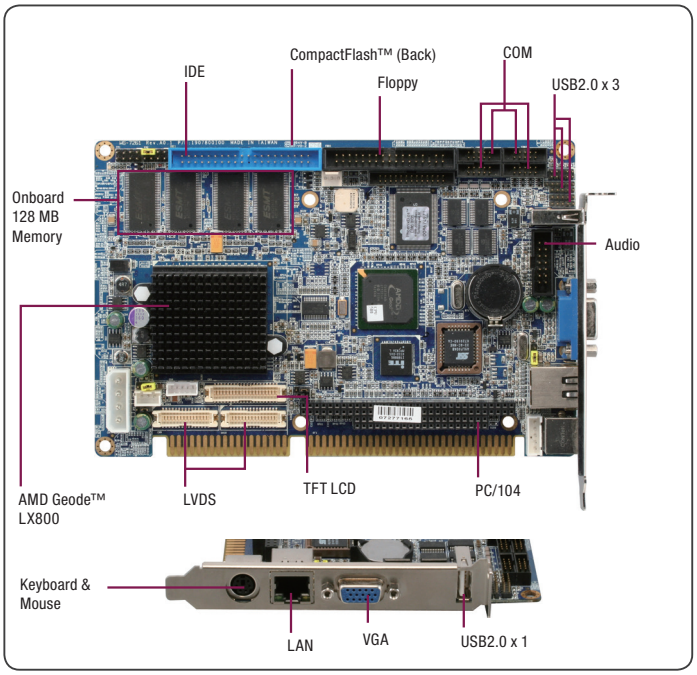
Half-size SBC-ISA



AAEON® an ASUS® assoc. co.

Focus • Agility • Competitiveness

ISA Half-Size SBC with AMD Geode™ LX800 Processor



Features

- AMD Geode™ LX800 Processor
- AMD Geode™ LX800 + CS5536
- Onboard DDR 400 MHz, Up to 128 MB
- 10/100Base-TX Ethernet x 1 or Gigabit Ethernet x 1 (Optional)
- Integrated 2D Graphics Accelerator, VGA Support, CRT, TFT/ LVDS Support
- AC97 Codec Audio
- Ultra ATA33 x 1, CompactFlash™ Type 2 x 1
- USB2.0 x 4, COM x 4, Parallel x 1, IrDA x 1, Digital I/O
- PC/104 Expansion
- +5V, +12V Operation, AT Power

Specifications

System	
Form Factor	Half-size CPU Card
Bus Interface	ISA
CPU	Onboard AMD Geode™ LX800
Memory Type	Onboard 128 MB (DDR 400)
Chipset	AMD Geode™ LX800 + CS 5536
BIOS	Award
Wake on LAN	No
Watchdog Timer	255 Levels
Power Requirement	ATX 2.1
Power Consumption (Typical)	AMD LX800, DDR400 128MB 0.19A@+12V, 1.51A@+5V, 9.83W
Power Supply Type	+5V, +12V operation
Dimension (L x W)	7.3" x 4.8" (185mm x 122mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	85,000
Certification	CE/FCC, Class A
Display	
VGA/LCD Controller	AMD Geode™ LX800
Video Output	1600 x 1200@32bpp at 100 MHz for CRT 1600 x 1200@24bpp for LCD
Backlight inverter supply	5V/12V
I/O	
Ethernet	10/100 or 10/100/1000Base-TX (optional)
Audio	Yes
USB Port	USB2.0 x 4
Serial Port	RS-232 x 3 RS-232/422/485 x 1
Parallel Port	1
HDD Interface	IDE x 1
FDD Interface	1
SSD	CompactFlash™
Expansion Slot	ISA, PC/104
DIO	8-bit Programmable (4-in/4-out)
TPM	—

Packing List

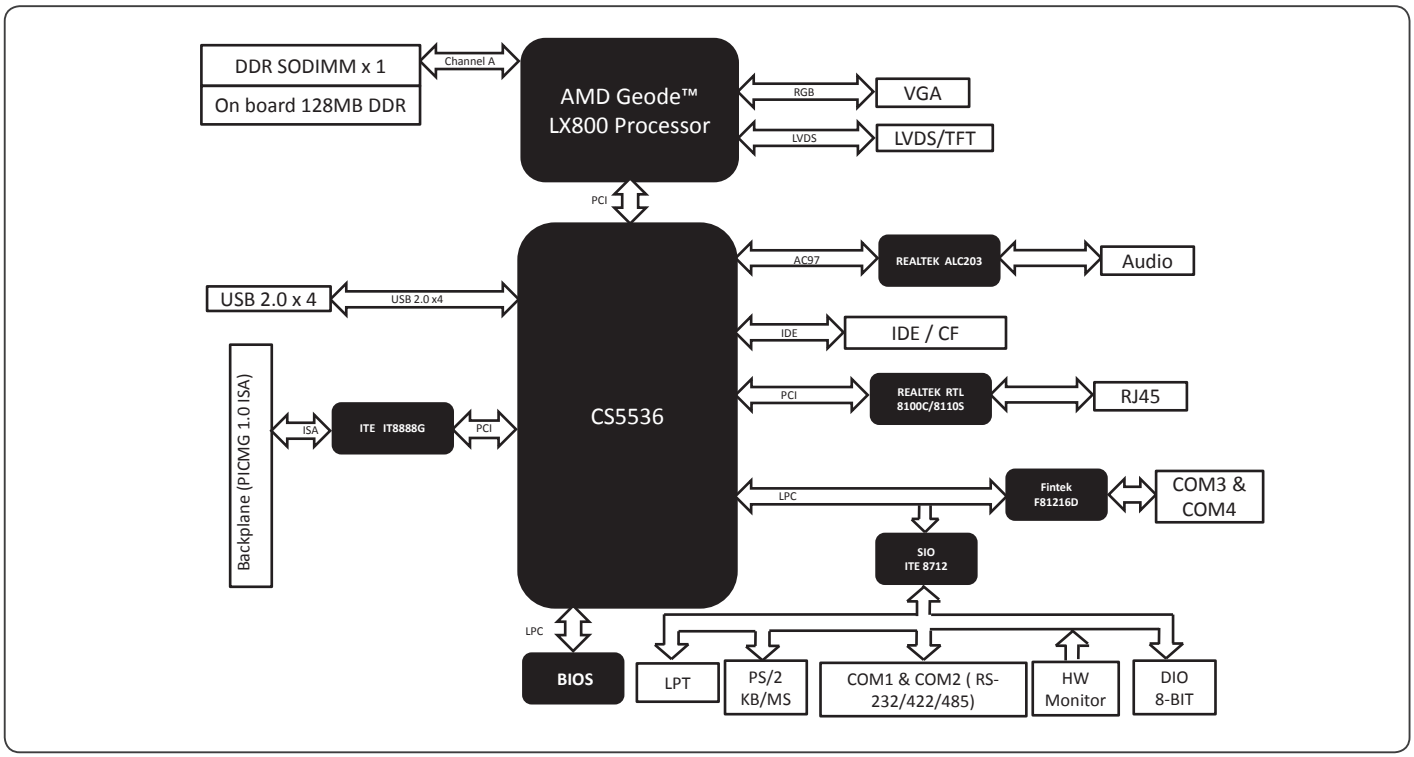
- **1701340704**
  Flat Cable, 34P, 70cm, GRAY for FDD
- **1701400453**
  Cable, 40P 2.54mm IDC with Nose with Fold, 40P 2.54mm IDC with Nose with Fold, 45cm, Blue ATA100
- **1700060192**
  Cable, 6P-6P-6P, 19cm, IVORY PS2/KB & Mouse
- **1709140302**
  Cable, Phone Jack x 3, to 14P, 2.54mm Housing, DB9P(M) 10P 2.0mm IDC, 4P 2.54mm Housing, 30 cm with Bracket
- **1701200301**
  Flat Cable, 9P DB9P Male, 10P 2.0mm Pitch x 2, 30cm, IDC No Fold, with Bracket
- **170910020A**
  USB Cable, 22cm 2.0mm,W/Bracket
- **1703030501**
  Wire,3P 2.5mm Housing, 3P 2,5mm Housing, 50cm
- **1701260307**
  Flat Cable, 9P/DB9P Male & 25P DB25P Female, 10P 2mm & 26P 2mm/IDC No Fold, 30cm with Bracket
- **Product CD**
- **HSB-800I**

Optional Accessories

- **TF-PER-U00A**
  AC97 Audio Daughter Board

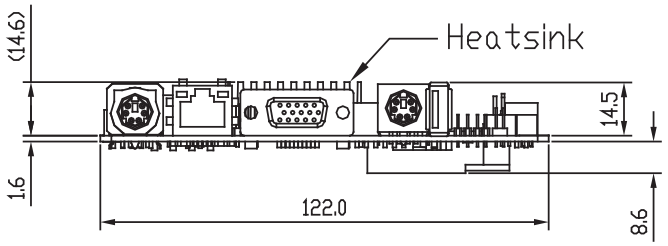
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Passive Backplane Options

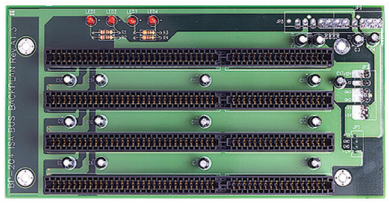
P/N	Description	Master Interface	Slots (PCI/ ISA/ PICMG)	Power ATX Extend Function
TF-BP-204SI	Wallmount, ISA 4-slot Backplane, 4 ISA, Single Segment, AT	ISA	(0/4/0)	AT
TF-BP-206SI	Wallmount, ISA 6-slot Backplane, 6 ISA, Single Segment, AT/ATX	ISA	(0/6/0)	AT/ATX
TF-BP-214SI	Wallmount, ISA 14-slot Backplane, 14 ISA, Single Segment, AT	ISA	(0/14/0)	AT

Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp.
TF-HSB-800I-A10-VG	AMD Geode™ LX800	Onboard 128 MB DDR 400	Fanless	VGA + LVDS/TTL	IDE x 1, Floppy x 1, CF x 1	24b, 1CH	GBE x 1	USB2.0 x 4	3	1	ISA, PC/104	+5V, +12V, AT	0°C ~ 60°C

BP-204SI

Wallmount, ISA, 4-Slot Backplane, 4 ISA, Single Segment



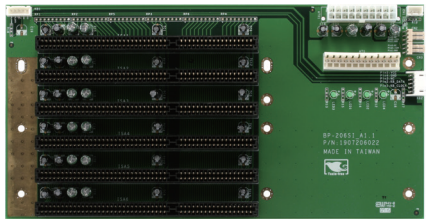
Master	ISA
ISA	4
System	Single
AT Power Connector	1
Dimension	7.3" x 3.7" (186mm x 95mm)

Ordering Information

- **TF-BP-204SI-A13**
  Wallmount, ISA, 4-Slot Backplane,4 ISA, Single Segment, AT , Rev.A1.3

BP-206SI

Wallmount, ISA, 6-Slot Backplane, Single Segment



Master	ISA
ISA	6
System	Single
Fan Connector	2
AT Power Connector	1
ATX Control Connector	1
ATX Power Connector	1
Dimension	9.2" x 5.3" (234mm x 134mm)

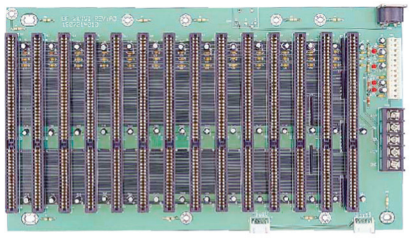
Ordering Information

- **TF-BP-206SI-A11**
  Wallmount, ISA, 6-slot Backplane, AT/ATX , Rev.A1.1

Note: All specifications are subject to change without notice.

BP-214SI-V61

Rackmount, ISA, 14-Slot Backplane, 14 ISA, Single Segment



Master	ISA
ISA	14
System	Single
AT Power Connector	1
Dimension	12.2" x 6.9" (311mm x 175mm)

Ordering Information

- **TF-BP-214SI-V61**
  Rackmount, ISA,14-Slot Backplane,14 ISA, Single Segment, AT, Ver 6.1

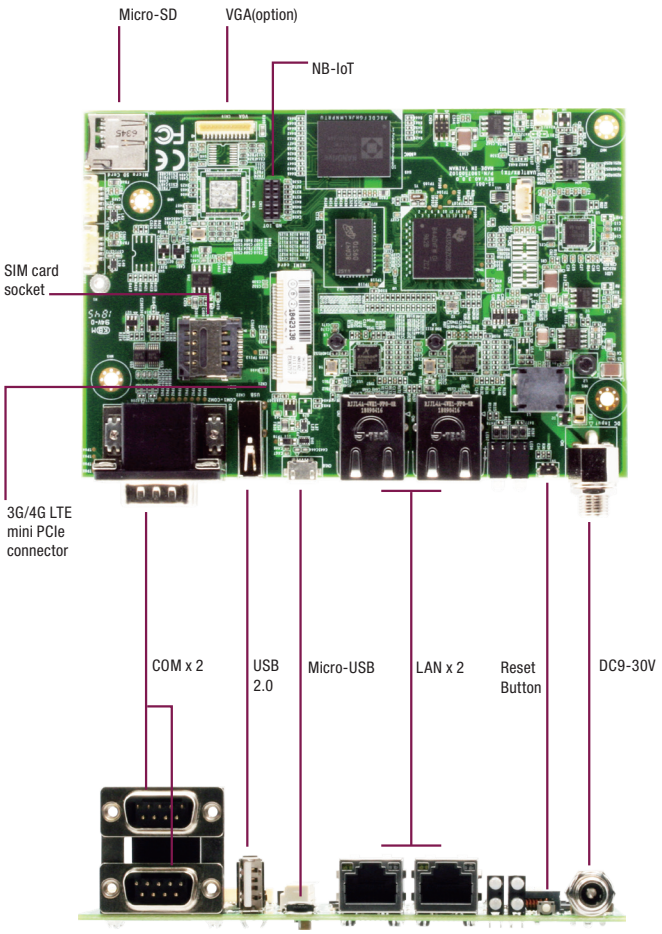
IoT Gateway/Node Boards

17



SRT-3352

Standard Gateway Board With Onboard ARM Cortex-A8 800 MHz RISC Processor



Features

- ARM Cortex-A8 800 MHz RISC Processor
- Onboard DDR3L 1 GB
- eMMC 8G
- Built-in Micro SD Card Slot x 1
- 3G/4G LTE mini PCIe connector x 1
- NB-IoT connector x 1
- SIM card socket x 1
- Gigabit Ethernet RJ-45 x 2 LAN port
- USB2.0 x 2
- COM x 2
- 4 LED lights controlled through GPIO
- Real time clock x 1
- DC9-30V
- VGA x 1 (optional)

Specifications

System	
Processor	ARM Cortex-A8 800 MHz RISC Processor
System Memory	Onboard DDR3L 1GB
RTC	Serial real time clock x 1
Expansion Interface	3G/4G LTE mini PCIe connector; NB-IoT connector; SIM card socket
Battery	3V CR2032 Lithium battery for RTC
Power Requirement	DC9-30V
Power Consumption (Typical)	TBD
Dimension	3.66" x 5.35"(93mm x 136mm)
Gross Weight	0.24 lb (0.11 kg)
Operation Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operation Humidity	10% ~ 95% relative humidity, non-condensing
MTBF (Hours)	TBD
I/O	
Storage	eMMC 8G; Micro SD slot
Serial Port	RS-485 x 2
LAN	Gigabit Ethernet, RJ-45 x 2
Universal Serial Bus	USB 2.0 x 2
GPIO	4 LED control

Packing List

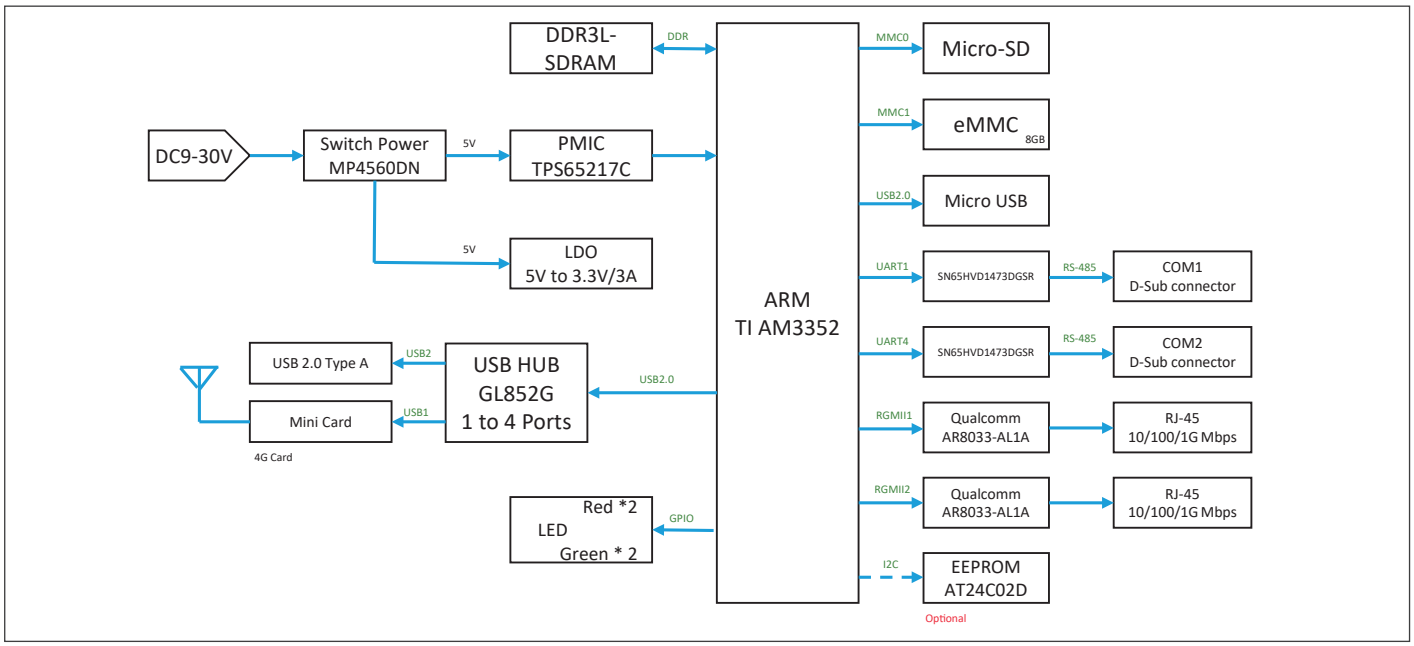
- SRT-3352-A001

Optional Accessories

- **1255300366**
  Power Adapter. AC/DC. 100-240VAC. 12VDC/3A.36W.
- **1702031802**
  POWER CORD.3P-125V 10A 180D. 1.8M. USA.
- **9741EC25E0**
  PCIe mini card.4G LTE module kit with cable & Antenna, EC25-E

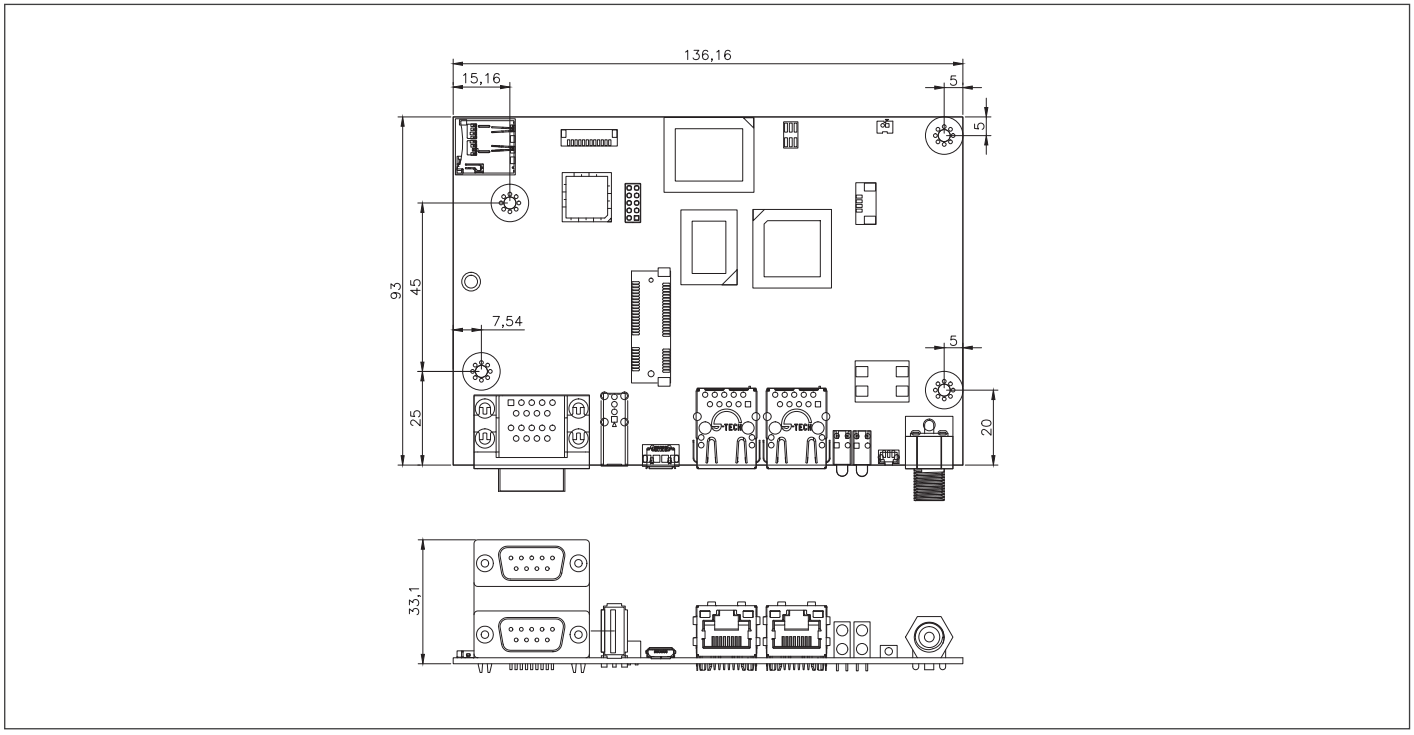
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

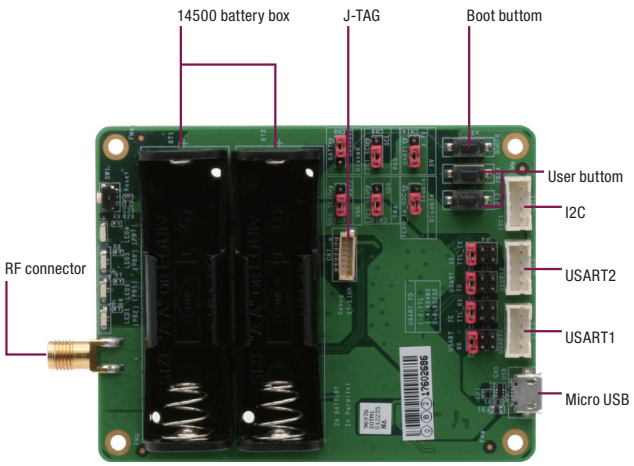


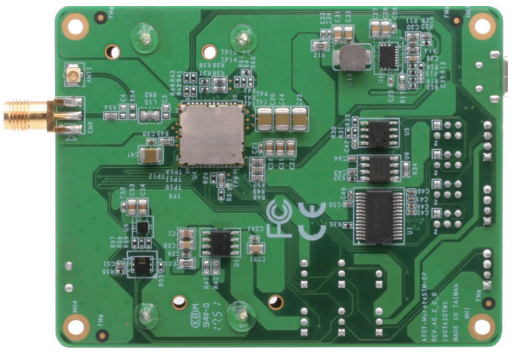
Ordering Information

PART NUMBER	CPU	Memory	Thermal	COM	Storage	LAN	USB	Expansion slot	POWER	OPERATION TEMP.	Others
SRT-3352-A001	ARM Cortex-A8 800MHz	Onboard DDR3L 1G	Fanless	COM x 2	eMMC 8GB, MicroSD x1	GbE x 2	USB 2.0 x 1 Micro USB x 1	Mini PCIe slot x 1, SIM card socket x 1	DC9-30V	0°C ~ 60°C @ 0.5 m/s airflow	VGA x 1 (optional), 3G/4G LTE module (optional)

AIOT-ILND01

LoRa Long Range Radio Node Board





Features

- **LORA stack & STM32 application architecture**
- **Support 868/916 MHz**
- **Build in Temp/humidity sensor, 3-axis accelerometer**
- **3 x GROVE Connectors for UART & I2C**
- **Supports with +5V or 2 x 14500 Lithium-ion battery**

CE

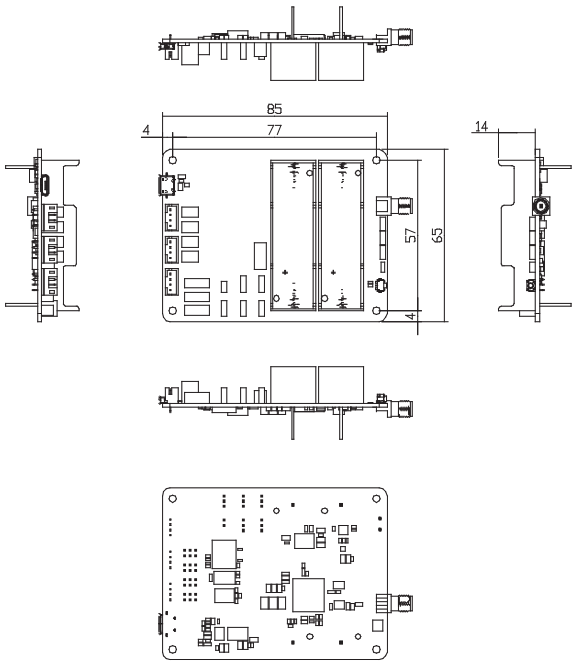
Specifications

System	
Dimension	3.35" x 2.56" (85 mm x 65 mm)
MCU	ST STM32L Semtech SX1276
I/O Placements	GROVE connectors x 3 - x UART1 (RS-232/RS-485) x 1 - x UART2 (TX/RX) x 1 - x I2C x 1 Temperature & humidity sensor x 1 3-axis Accelerometer (2G/4G/8G/16G) x 1 Micro USB2.0 type B for power supply x 1 JTAG-debug port x 1 Battery connector x 2 for 14500 Lithium-ion battery x 2
Others	LED (GPIO control) x 4 3 buttons - boot select x 1 - User defined x 2 - Reset button x 1 SMA antenna connector x 1 IPEX antenna connector (Optional) x 1
Power Input	+5V (via Micro USB) 14500 Lithium-ion battery for external power x 2
Operating Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE

Note: All specifications are subject to change without notice.

Dimension

Unit: mm



Order Information

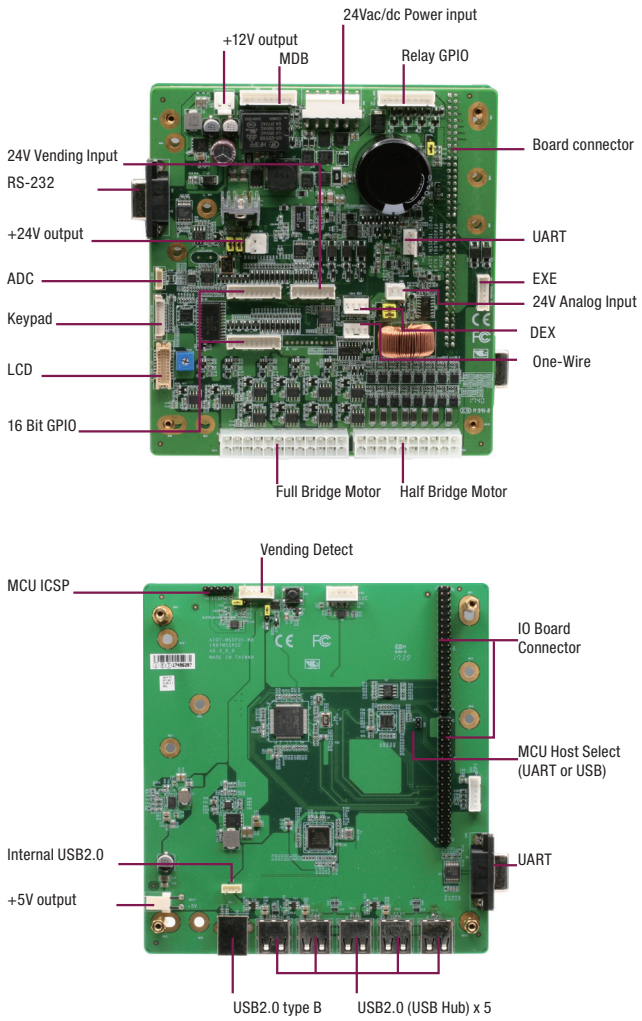
PART NUMBER	MCU	I/O	WiFi/ BT	LoRa	MOUNTING	POWER	OPERATION TEMP.	Others
AIOT-ILND01-A10-MURABZ-EU	ST STM32L Semtech SX1276	3 x GROVE connectors - 1 x UART1 (RS-232/422/485) - 1 x UART2(T X /R X) - 1 x I2C 1 x Temperature & humidity sensor 1 x 3-axes Accelerometer (2G/4G/8G/16G) 1 x micro USB2.0 type B with power 1 x JTAG-debug port 2 x battery connector for 2 x A A	—	Frequency band 868MHz	—	+5V (USB) 2 x A A battery for external powe	32°F ~ 140°F (0°C ~ 60°C)	4 x LED (GPIO control) 3 buttons - 1 x boot select - 2 x User defined 1 x Reset button 1 x SMA antenna hole 1 x IPEX antenna hole

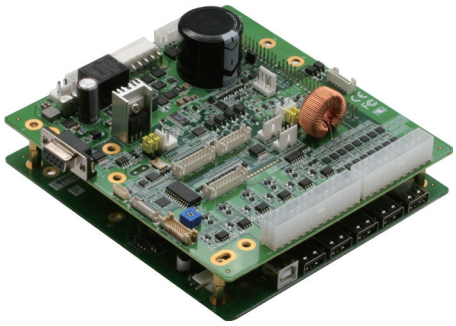
Packing List

- **AIOT-ILND01 x 1**
- **Antenna x 1**

AIOT-MSSP01

Mini SSP Vending Control Board







Features

- Intel® Intelligent Vending Based
- MDB, EXE and USB Support For Vending Devices
- Flexible Motor Control
  - 24V or 12V
  - Supports GPIO, DC, PWM Type
  - Supports up to 160 DC Motors
- Support LCD and Keypad Feature

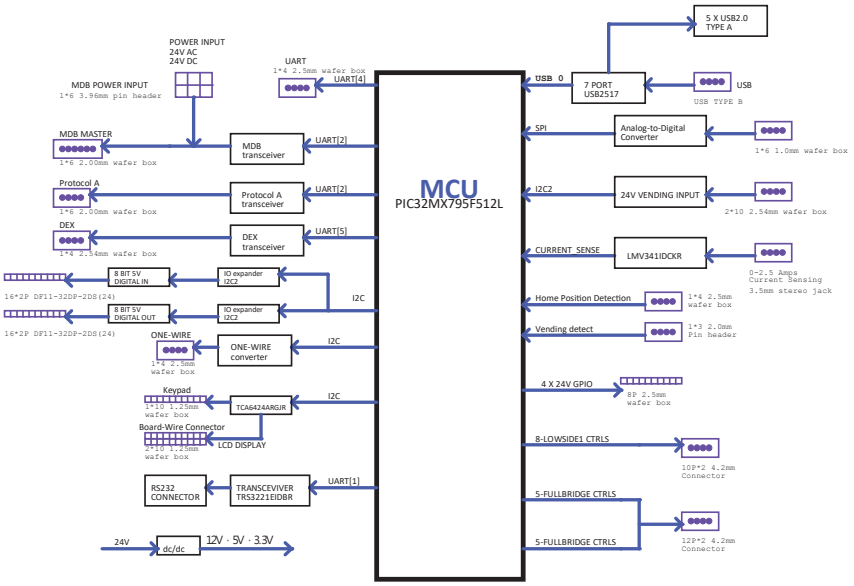
CE FC

Specifications

External Connector	
USB	USB 2.0 type A connector x 5 (via USB HUB) USB 2.0 type B connector x 1 (USB HUB Host)
Internal Connector	
MDB	MDB x 1
1-Wire	1-WIRE x 1
DEX	DEX x 1
Protocol A	Protocol A (EXE) x 1
Keypad	8 Bit Keypad x 1 (subject to support 4 x 4 keypad)
LCD	LCD x 1
ADC	4-channel ADC x 1
Relay GPIO	4-channel Relay GPIO for 12V & 5V by switch x 1
GPIO	16 Bit GPIO x 2
24V GPI	8 Bit 24V GPI x 1
24V Analog Voltage Sense	24V Analog voltage sense x 1
Power Input	24V AC/DC Power Input x 1
Motor Switch	Select motor 24Vdc or 12Vdc switch (Motor supports GPIO, DC, PWM type) x 1
Full Bridge Motor	Full bridge motor control x 5
Low Side Motor	Low side motor control x 16
Expansion Header	2* 20 PIN header x 2
Others	
Dimension	5.91" x 5.51" (150 mm x 140 mm)
Power Source	24V AC @ 50Hz, 24V DC
Operating Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE, FCC

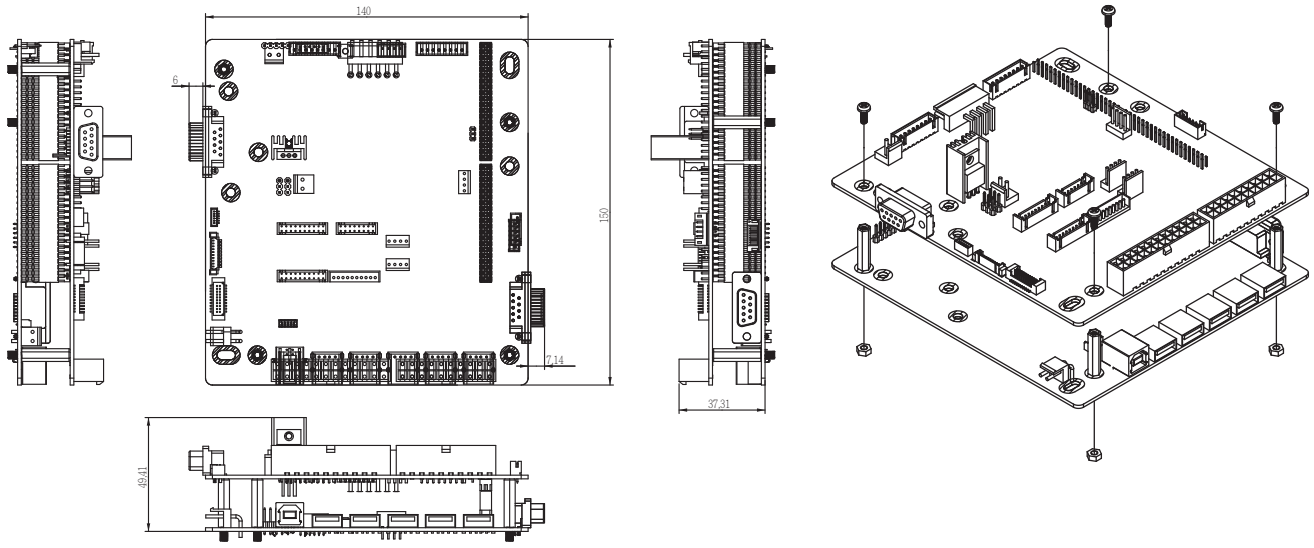
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Packing List

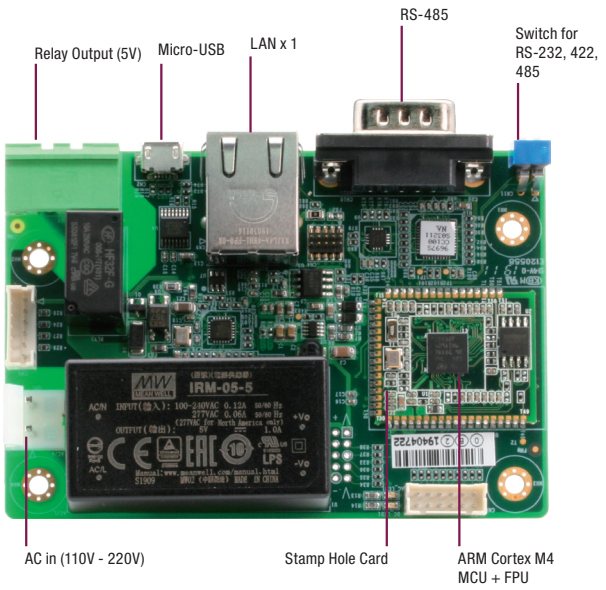
- AIOT-VSSP01-A10-0001

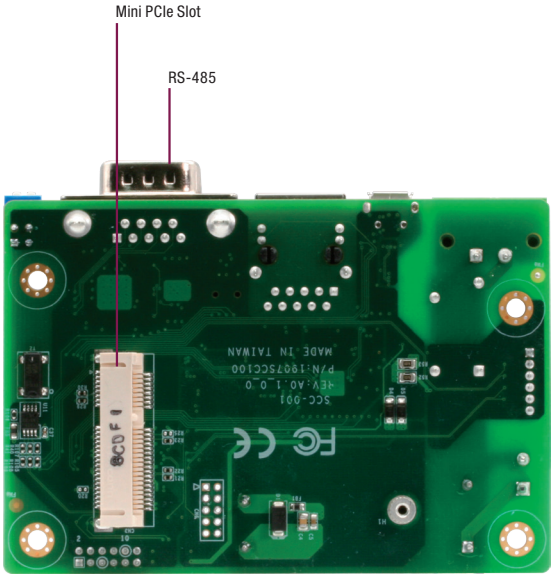
Optional Accessories

Part Number	Description	QTY
9681VSSP01	AIOT-VSSP01 Cable kit	1
1709041001	USB2.0 type A to USB type B male cable	1
1255200600	24Vdc adapter	1
1702031802	USA power cord	1
1702062000	24V DC cable	1
1703150200	MDB & EXE cable to 24 VDC cable	1

SCA-M429

Carrier Board With Onboard ARM Cortex M4 MCU + FPU





Features

- ARM-Cortex M4 MCU + FPU
- RS-485 x 1 (default)
- Switch for changing to RS-232, 422, 485
- GPIO x 4
- 10/100 Mb/s Ethernet, RJ-45 x 1 LAN port
- Micro USB x 1
- Relay output (5V) x 1
- Mini PCIe slot x 1

Specifications

System	
Micro controller	ARM-Cortex M4 MCU+FPU
Expansion interface	mini PCIe connector
Operating voltage	110 V~220V
Dimension	3.35" x 2.56" (85 mm x 65 mm)
Operation temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
I/O port	—
Serial port	RS-485 (default); with switch for RS-422, RS-232
LAN	10/100 Base-TX, RJ-45 x 1
GPIO	GPIO x 4
USB	Micro USB
DC output	Relay output (5V)

Packing List

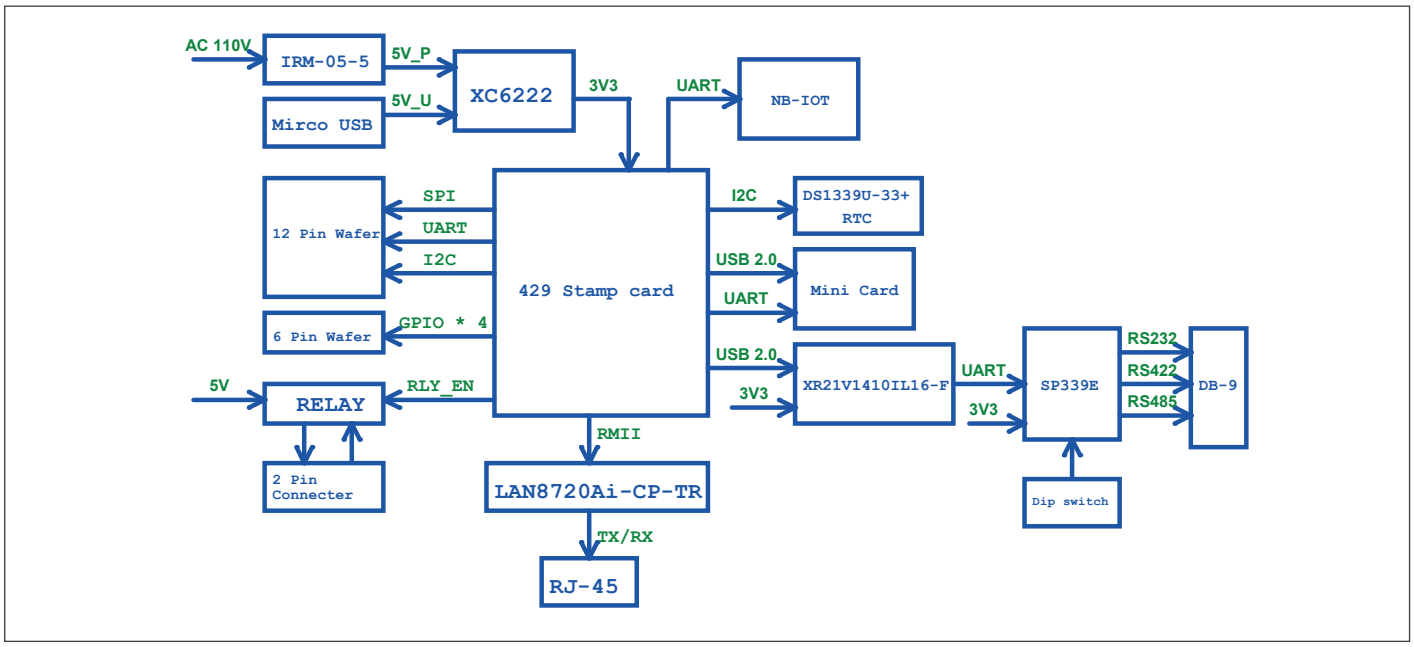
- SCA-M01

Optional Accessories

- **9741EC25E0**
  PCIe mini card.4G LTE module kit with cable & Antenna, EC25-E
- **9741EC25A0**
  PCIe mini card.4G LTE module kit with cable & Antenna, EC25-A

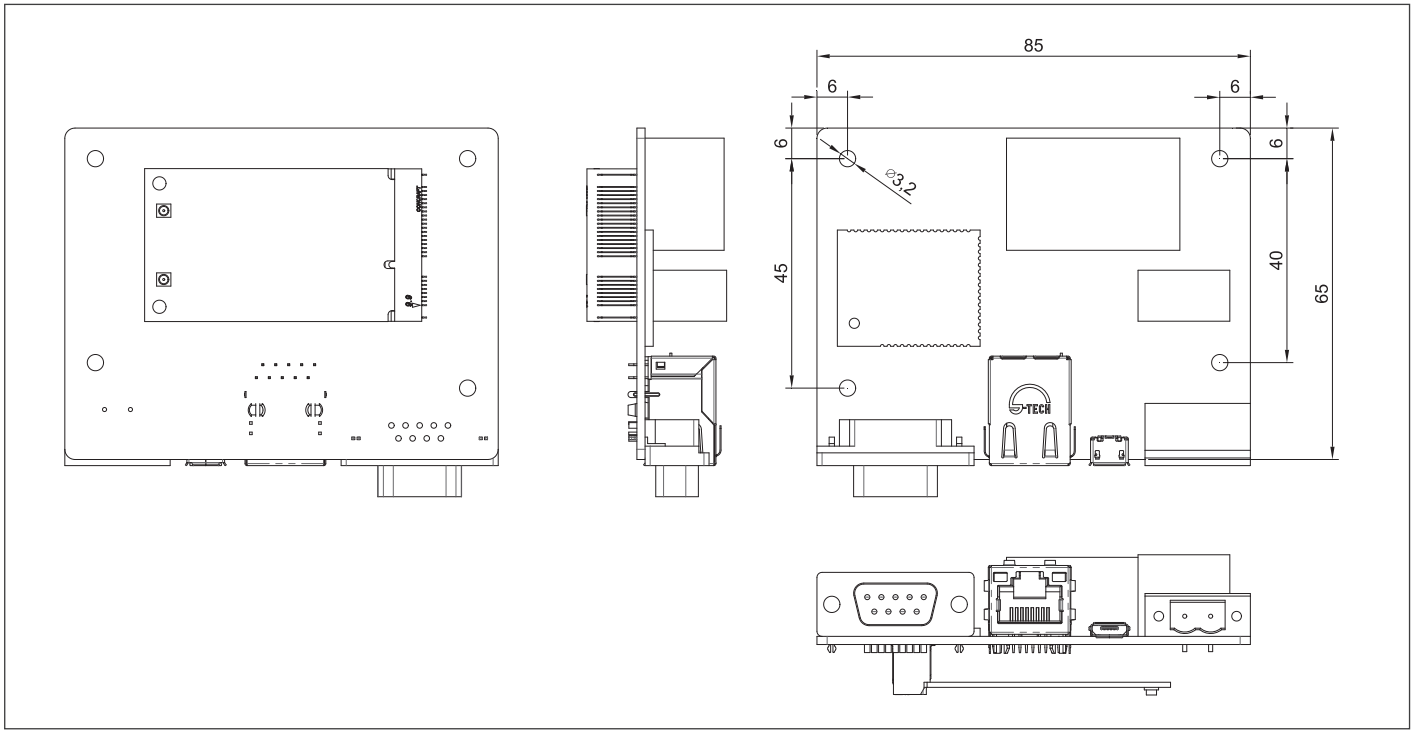
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

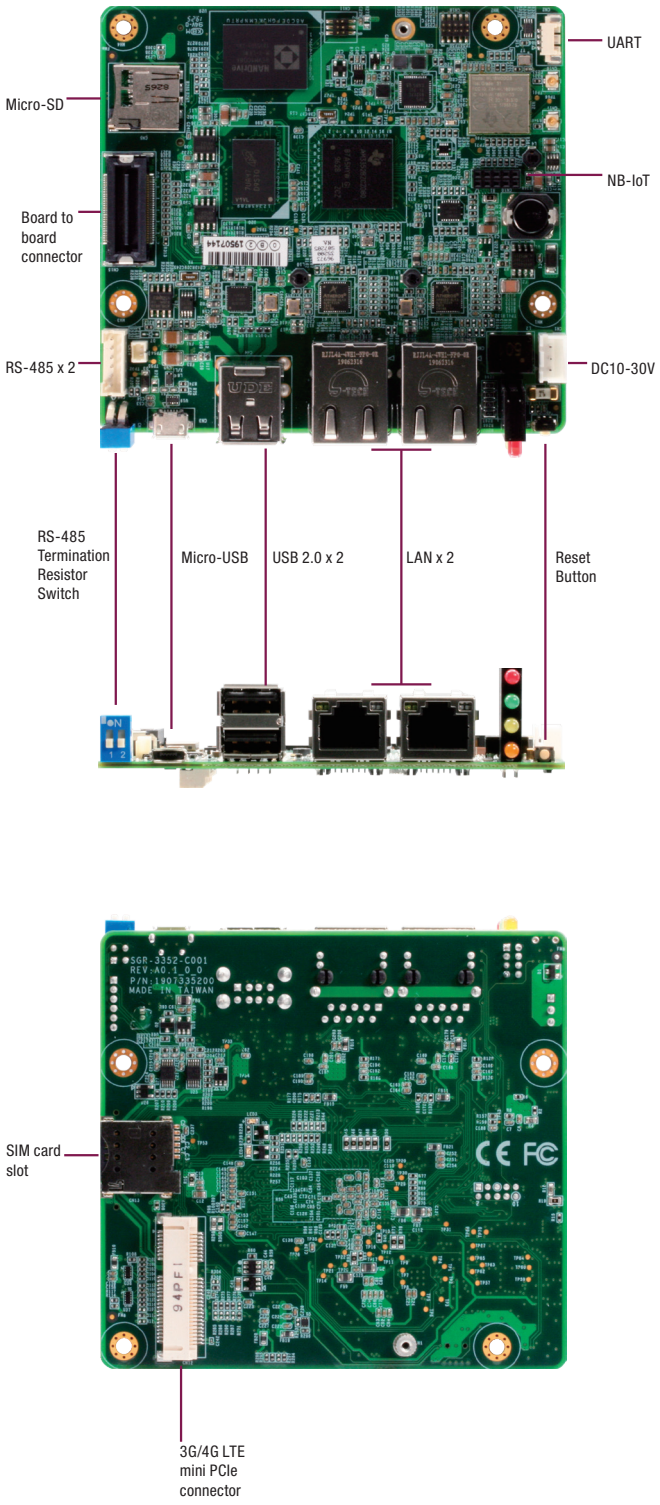
Unit: mm



Ordering Information

Part Number	CPU	Thermal	COM	LAN	USB	Expansion Slot	Power	Operation Temp.	Others
SCA-M01	ARM-Cortex M4 MCU+FPU	Fanless	RS-232/422/485 x1	10/100 Mb/s x 1	Micro USB x 1	Mini PCIe slot x 1	110V ~220V AC in	0°C ~ 60°C @ 0.5 m/s airflow	3G/4G LTE module (optional)

Compact Gateway Board With Onboard ARM Cortex-A8 800 MHz RISC Processor



Features

- ARM Cortex-A8 800 MHz RISC Processor
- Onboard DDR3L 1 GB
- eMMC 8G
- Built-in Micro SD Card Slot x 1
- 3G/4G LTE mini PCIe connector x 1
- NB-IoT connector x 1
- SIM card socket x 1
- Gigabit Ethernet RJ-45 x 2 LAN port
- USB2.0 x 2
- RS-485 x 2
- Micro USB x 1
- 4 LED lights controlled through GPIO
- Real time clock x 1
- DC10-30V
- Board to Board connector
- RS-485 termination resistor switch

Specifications

System	
Processor	ARM Cortex-A8 800 MHz RISC Processor
System Memory	Onboard DDR3L 1GB
RTC	Serial real time clock x 1
Expansion Interface	3G/4G LTE mini PCIe connector; NB-IoT connector; SIM card socket x 1
Battery	3V CR2032 Lithium battery for RTC
Power Requirement	DC9-30V
Power Consumption (Typical)	TBD
Dimension	3.94" x 3.78" (100 x 96mm)
Gross Weight	TBD
Operation Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operation Humidity	10% ~ 95% relative humidity, non-condensing
MTBF (Hours)	TBD
I/O	
Storage	eMMC 8G; Micro SD slot
Serial Port	RS-485 x 2
LAN	Gigabit Ethernet, RJ-45 x 2
Universal Serial Bus	USB 2.0 x 2
GPIO	4 LED control

Packing List

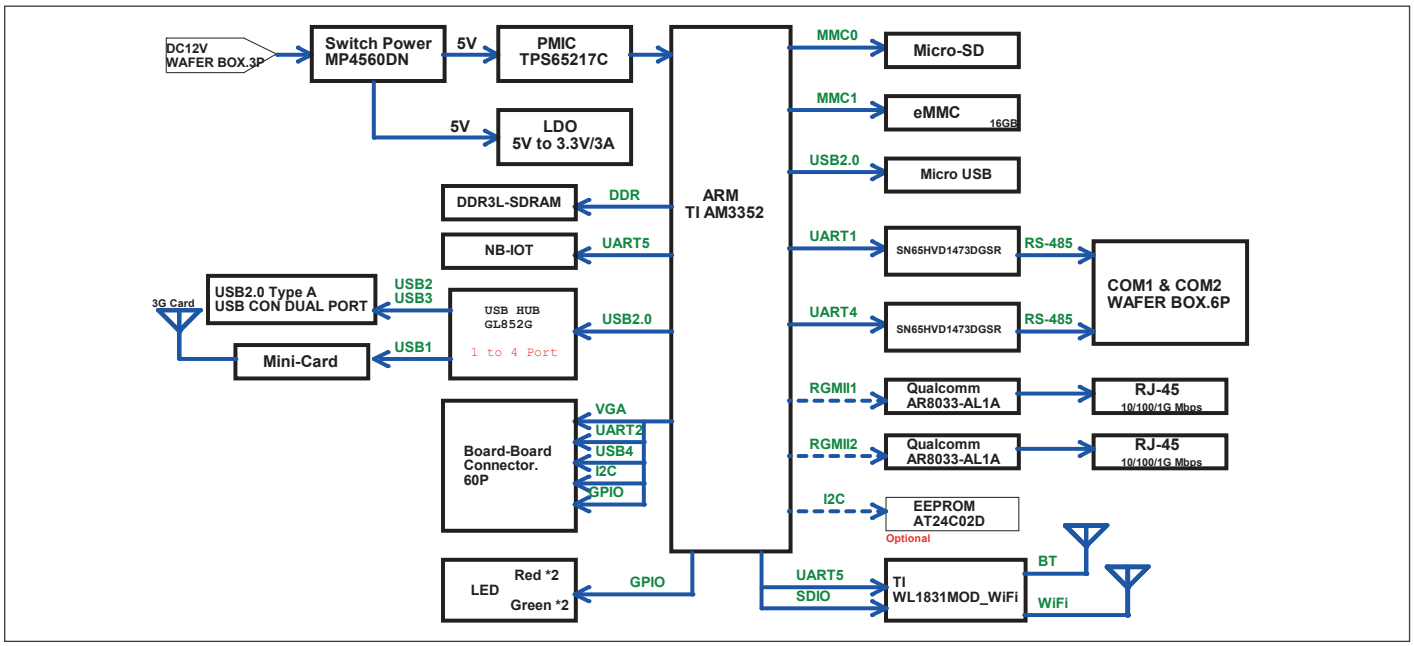
- **SRT-3352C-A10-A001**

Optional Accessories

- **9741EC25E0**
  PCIe mini card.4G LTE module kit with cable & Antenna, EC25-E
- **9741EG25G0**
  PCIe mimi card. 4G LTE. module kit. Global Band W/SIM holder. W/Cable & antenna. Quectel. EG25-G

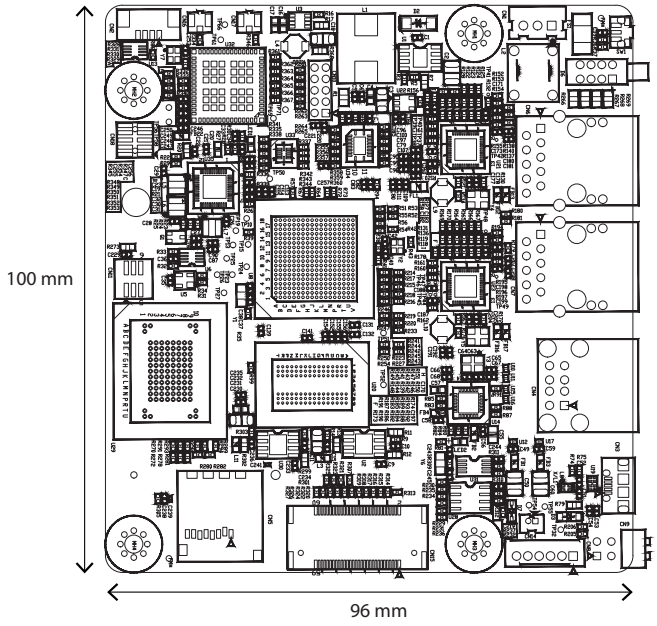
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

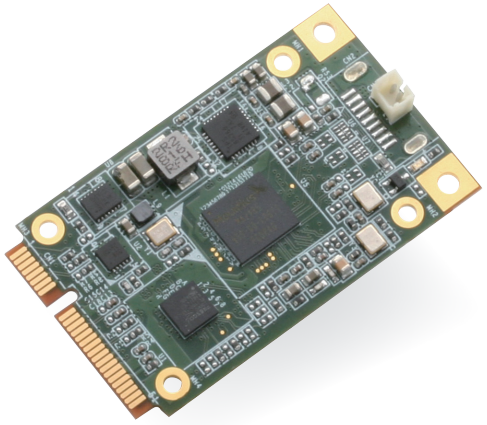


Ordering Information

PART NUMBER	CPU	Memory	Thermal	COM	Storage	LAN	USB	Expansion slot	POWER	OPERATION TEMP.	Others
SRT-3352C-A10-A001	ARM Cortex-A8 800MHz	Onboard DDR3L 1G	Fanless	RS-485 x 2	eMMC 8GB, MicroSD x1	GbE x 2	USB 2.0 x 2 Micro USB x 1	Mini PCIe slot x 1, SIM card socket x 1	DC10-30V	0°C ~ 60°C @ 0.5 m/s airflow	3G/4G LTE module (optional)

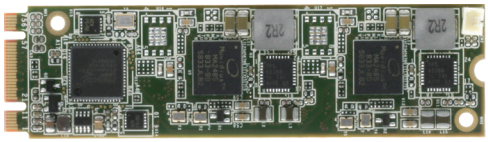
AI Edge Computing Solutions

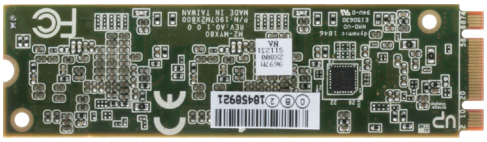
18

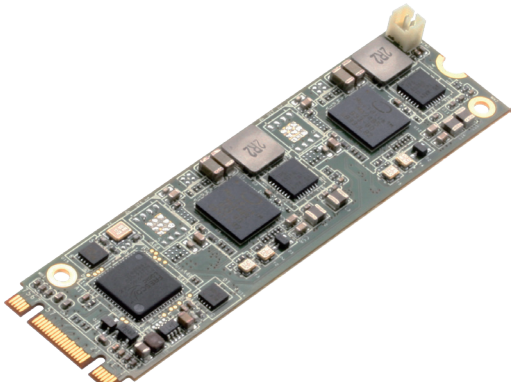


AI Core XM 2280

AI Edge Computing Module with Intel® Movidius™ Myriad™ X VPU







Features

- Intel® Movidius™ Myriad™ X VPU
- 2x MYDX on M.2 2280 B+M key
- Intel® Vision Accelerator Design SW SDK
- Supported Framework: TensorFlow, Caffe, MXNET
- Ubuntu 16.04, Windows® 10

CE FC

Specifications

System	
IC	Intel® Movidius™ Myriad™ X VPU x 2, MA2485
Support frame work	Tensorflow, Caffe, MXNET
Others	
Form Factor	M.2 2280 B+M KEY
Dimension	3.15" x 0.87" (80 mm x 22 mm)
Certification	CE/FCC Class A
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C)
Operating Humidity	10% ~ 80% relative humidity, non-condensing

Packing List

- AI Core XM module card x 1
- M3 screw x 1

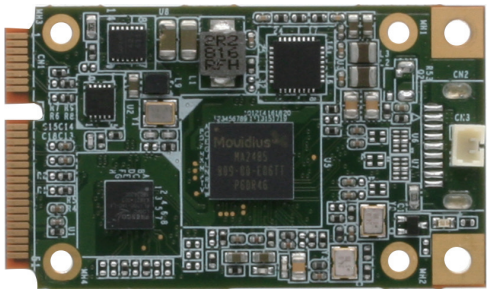
Ordering Information

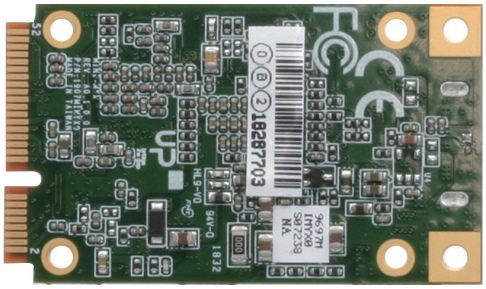
Part Number	Description
PER-TAIX2-A10-2280	AI CORE Movidius™ Myriad™ X 2485.M.2 2280 B+M key.Rev.A1.0

Note: All specifications are subject to change without notice.

AI Core X

AI Edge Computing Module with Intel® Movidius™ Myriad™ X VPU







Features

- Intel® Movidius™ Myriad™ X VPU
- 1x MYDX on mPCIe
- Intel® Vision Accelerator Design SW SDK
- Supported Framework: TensorFlow, Caffe, MXNET
- Ubuntu 16.04, Windows® 10

CE FC

Specifications

System	
IC	Intel® Movidius™ Myriad™ X VPU, MA2485
Support frame work	Tensorflow, Caffe, MXNET
Others	
Form Factor	Mini PCIe
Dimension	2.01" x 1.18" (51 mm x 30 mm)
Certification	CE/FCC Class A
Operating Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)
Operating Humidity	10% ~ 80% relative humidity, non-condensing

Packing List

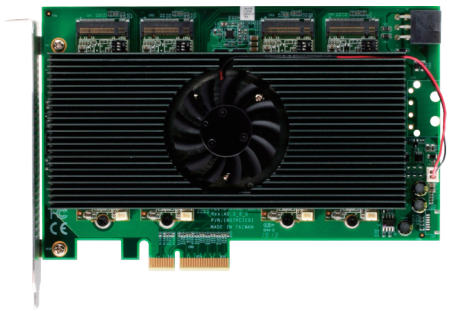
- AI Core X module card x 1
- M2 screw x 1

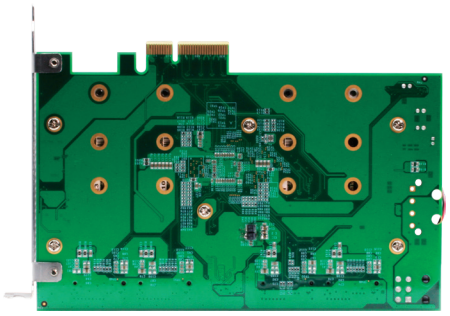
Ordering Information

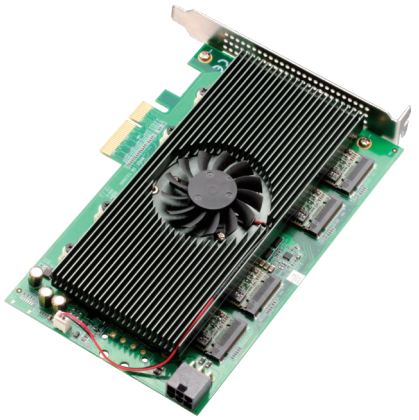
Part Number	Description
PER-TAICX-A10-001	AI CORE Movidius™ Myriad™ X 2485. PCIe interface.Rev.A1.0

Note: All specifications are subject to change without notice.

AI Edge Computing Module with Intel® Movidius™ Myriad™ X VPU







Features

- PCIe x 4 Standard Full Length Low Profile Slot Card
- Supports 4 x M.2 2280 M-Key
- Intel® Movidius™ Myriad™ X VPU
- Intel® Vision Accelerator Design SW SDK
- Supported Framework: TensorFlow, Caffe, MXNET
- Ubuntu 16.04, Windows® 10

CE FC

Specifications

System	
IC	Asmedia PCIe switch
Support frame work	Tensorflow, Caffe, MXNET
Others	
Form Factor	PCIe x 4 card, full length, low profile
Dimension	4.37" x 6.57" (111 mm x 167 mm)
Certification	CE/FCC Class A
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C)
Operating Humidity	10% ~ 80% relative humidity, non-condensing

Packing List

- AI Core XP4/XP8

Ordering Information

Part Number	Description
PER-TAIX4-A10-PCIE	AI Core PCIe x 4 with 2 x AI Core XM 2280, fan heatsink
PER-TAIX8-A10-PCIE	AI Core PCIe x 4 with 4 x AI Core XM 2280, fan heatsink

Note: All specifications are subject to change without notice.

Memo

Memo

Note: All specifications are subject to change without notice.

Memo

AAEON®
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AAEON Technology Inc.

5F, No. 135, Lane 235, Pao Chiao Rd., Hsin-Tien Dist, New Taipei City, 231, Taiwan, R.O.C.
Tel: +886-2-8919-1234 Fax: +886-2-8919-1056 E-mail: sales@aaeon.com.tw URL: http://www.aaeon.com

LITERATURE ORDERING

Contact local office for literature requests.



Americas

USA

California Office

324 W. Blueridge Ave, Orange, CA 92865, USA
Toll Free: +1-877-TO-AAEON (1-877-862-2366)
TEL: +1-714-996-1800
FAX: +1-714-996-1811
E-mail: sales@aaeon.com
Tech Support: tech@aaeon.com

New Jersey Office

11 Crown Plaza, Hazlet, NJ 07730-2441, USA
TEL: +1-732-203-9300
FAX: +1-732-203-9311
E-mail: sales@aaeon.com
Tech Support: tech@aaeon.com

Europe

Netherlands

AAEON EUROPE

Ekkersrijt 4090, 5692 DA Son, Science Park, Eindhoven, the Netherlands
TEL: +31(0)499-745200
FAX: +31(0)499-462010
E-mail: sales@aaeon.eu

Germany

AAEON Technology GmbH

Monzastrasse 4e, 63225 Langen, Germany
TEL: +49(0)61033 74 79 00
FAX: +49(0)61033 74 79 49
E-mail: sales@aaeon.eu

France

AAEON France Office

Gare de Lyon, 37/39 Avenue Ledru-Rollin,
CS 11237, 75012 Paris Cedex 12, France
TEL: +33 (0) 1 60 81 99 27
E-mail: sales@aaeon.eu

Italy

AAEON Italy Office

Viale Masini 12/14, 40126 Bologna, Italy
TEL: + 39 051 0923582
E-mail: sales@aaeon.eu

Asia

China

AAEON Technology (Su Zhou) Inc.

Room 12, 2F, Building B, No.5 Xing Han Street, Suzhou Industrial Park, Jiang Su Province, China
TEL: +86-512-6762-5700
FAX: +86-512-6761-7337
E-mail: sales@aaeon.com.cn

Chengdu Branch Office

Room 2204, 22F, Building6, No.666 JinCheng Avenue, GaoXin District, Chengdu City, China
TEL: +86-28-85120523
E-mail: sales@aaeon.com.cn

Shanghai Branch Office

20F, Unit D, GEM Building, No.487 Tianlin Road, Xuhui District, Shanghai, China
TEL: +86-21-3367-5511
FAX: +86-21-3367-4238
E-mail: sales@aaeon.com.cn

Guangzhou Branch Office

Room 1505,B2,No.122-124 kexue Road, High-Tech Development Zone, Guangzhou
TEL: +86-13534236621
E-mail: sales@aaeon.com.cn

Beijing Branch Office

Room 606-608 Block D, Jiahua Building, No.9, Shanghai 3rd Street, Haidian District, Beijing, China
TEL: +86-10-8278-0904
FAX: +86-10-8278-0214
E-mail: sales@aaeon.com.cn

Shenzhen Branch Office

Room 602,6th Floor,Building J, Zhongli Entrepreneurial Community, Liuxian 2 Road, Xinan Street, Baoan District, Shenzhen, China
TEL: +86-755-8304-7277
FAX: +86-755-8304-7272
E-mail: sales@aaeon.com.cn

Wuhan Branch Office

B1501, 111 Guangu Time Spuare Guanshan st. Wuhan Hubei Province, China
TEL: +86-27-87606090
E-mail: sales@aaeon.com.cn

Singapore

AAEON Technology Singapore PTE LTD.

57 Genting Lane, #07-00, Singapore 349564
TEL: +65-6749-8749
FAX: +65-6746-1595
E-mail: sales@aaeon.com.sg

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