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an ASUS assoc. co.

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GSA Contact Holder #GS-35F-0740Y

AAEON® 2017 Embedded Platform Solutions www.aaeon.com

AAEON®
an ASUS assoc. co.

Embedded Platform Solutions

Premier Source For Embedded Computing Products

2017 Product Catalog

www.aaeon.com

Focus • Agility • Competitiveness

A Leader and Partner in Embedded Computing Platforms

Our relentless pursuit for excellence and passion for unsurpassed service.

Established in 1992, AAEON is one of the leading designers and manufacturers of advanced industrial and embedded computing platforms today. Committed to innovative engineering, AAEON provides integrated solutions, hardware and services for premier OEM/ODMs and system integrators worldwide. Reliable and high quality computing platforms include industrial motherboards and systems, industrial displays, rugged tablets, PC/104, PICMG and COM Express modules, embedded SBCs, Box PCs, network appliances, IoT Gateway Systems, Maker Baords, and other related accessories. AAEON also offers customized end-to-end services from initial product conceptualization and product development to volume manufacturing and after-sales service.

With our continuous pursuit of innovation and excellence, AAEON has further strengthened its leadership by leveraging advanced technology and resources from ASUS.

AAEON is poised to offer more diversified embedded products and solutions at higher quality standards to meet world-class design and manufacturing demands in the years to come.

AAEON is an Associate member of the Intel® Internet of Things Solutions Alliance. AAEON is also a GSA Contract Holder (#GS-35F-0470Y), serving the Federal, State & Local government sectors.

Peruse AAEON's services and product portfolio by visiting us at www.aaeon.com.

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 commits to deliver high quality intelligent system products, such as Rugged Panel PCs, Expandable Industrial Computers, Full HD Infotainment Displays, Rugged Tablets, Embedded PCs and related accessories, applicable in all facets of today's Digital Signage, Transportation, Industrial Automation, Healthcare, Hospitality, Harbor/Marine, Military/Government, Public Safety and Energy sectors, to name a few.

AAEON offers customization services for a range of embedded computers and system products, according to customer requirements and specifications. Having earned the highest degree of trust from Tier-1 customers, AAEON provides end-to-end Design Manufacturing Service (DMS) that can assist large customers with volume production, beginning with design to contract manufacturing. Quality assurance of our system products ensures excellent product performance is the key to our success and growing global customer base.

Board Level Products

Being a reputable manufacturer/designer of embedded boards, such as 5.25" Compact Boards, 3.5" SubCompact Boards, EPIC Boards, Pico-ITX Boards, RISC Boards, Qseven Boards, COM Express Modules, ETX Modules, XTX Modules, PC/104 Modules, PC/104 Peripheral Modules, Full Size and Half-Size SBCs and related accessories, AAEON, in close collaboration with ASUS, is able to further extend its range of high-grade Mini-ITX, Micro-ATX and ATX industrial motherboards. These products can be applied widely in Industrial Automation, Military/Government, Smart Building, Energy, Multimedia, POS, Kiosk, Gaming, Transportation and Medical applications. Additionally, AAEON offers wide temperature boards that work in extreme conditions. AAEON's WiTAS (Wide Temperature Assurance Services) products support temperatures from -20°C to 70°C or -40°C to 85°C. As a green company, AAEON has focused on RoHS compliance with the development of lead-free manufacturing. Well-known in the IPC industry for its experience and solid execution in OEM and ODM projects, offering one-stop shopping of embedded boards, AAEON is set to become your ideal Embedded Computing Platform Partner.

00 Milestones

2016
- AAEON awarded the 25th Taiwan Symbol of Excellence Award
- AAEON awarded the 2017 Innovative Application Award for Smart City
- AAEON awarded the 2016 ICT Month Innovative Elite Top 100 Awards
- AAEON awarded the 2016 Excellence in Corporate Social Responsibility
- AAEON awarded the 2016 Golden Peak Award of Outstanding Enterprises of the Year in R.O.C.
- 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 Outstanding Business Achievement Award

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

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

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

2011
- AAEON awarded the Taiwan Excellence Achievement Award
- AAEON awarded the 19th Taiwan Symbol of Excellence Award
- AAEON awarded Siemens Star Supplier 2011 Award
- AAEON awarded the Computex Taipei 2011 Best of Choice Award
- AAEON joins 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 receives 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 receives Intel® Marketing Development Funds Award of Excellence
- AAEON receives Intel® Greatest Co-Selling Growth Award of Excellence
- AAEON attains ISO 13485 medical certification
- AAEON awarded the 15th Taiwan Symbol of Excellence Award
- AAEON awarded the Computex Taipei Best of Choice Award

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

2005
- AAEON awarded the Computex Taipei Best of Choice Award
- AAEON establishes a U.S. West Coast Sales Office in Brea, California
- AAEON moves Europe branch to the Netherlands

2004
- AAEON Technology (Su Zhou) factory attains 3C and ISO-9001 certification
- AAEON sets up Singapore office

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

2002
- AAEON attains TL9000-H certification
- AAEON becomes a member of Intel® ACPP Program

2001
- AAEON Technology Inc. is established in Su Zhou, China
- AAEON becomes a publicly traded company on Taiwan Stock Exchange
- AAEON sets up European office in Limburg, Germany

2000
- AAEON acquires Astech Technology Inc, forming the core of the panel PC Division

1999
- AAEON is listed as an OTC (Over The Counter) stock company
- AAEON Foundation is established to expand into humanity and technology

1998
- AAEON establishes Sales Offices in Europe and China

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

1992
- AAEON establishes the first office in Taipei, Taiwan

Note: All specifications are subject to change without notice.

Operation Strength

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

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 from its off-the-shelf products. From depopulation of unused features for a cost down effort to specific component selection, flexible TKS Solution and DTD Service, AAEON has the experience and expertise to help you create or modify products that 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 customers meet 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 enables 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 needs in 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 employees in R&D and 10% of annual sales revenue invested towards this field, AAEON is prepared to handle the most demanding designs based on the latest technologies. The innovative nature of this experienced staff has allowed AAEON to receive many design patents worldwide.

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 layout 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 quality improvement to meet customer expectations. These stages 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 topmost 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 have gone through rigorous tests in 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 feeds related issues to R&D for improving product performance and compatibility.

SQA

Service Quality Assurance includes technical support and repair service. These are important windows to serve AAEON's customer needs, receive their feedback and work with R&D and Manufacturing to strengthen AAEON's response time in resolving customer concerns and improving 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 web site 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 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, 2004
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

Design Manufacturing Service (DMS) offers exceptional end-to-end services from product conceptualization, product development to 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 consign to AAEON 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 oversees 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

Contract Manufacturing (CM)
- Customer-owned design
- AAEON provides manufacturing and engineering service

Commercial off-the-Shelf (COTS)
- Based on AAEON standard product & technology roadmap
- With optional minor changes

Customized COTS
- Based on AAEON standard product & technology roadmap
- Modify according to customer's request

Joint Development (JDM)
- Strategic Partnership
- Co-architected design based on common IP from technology roadmap

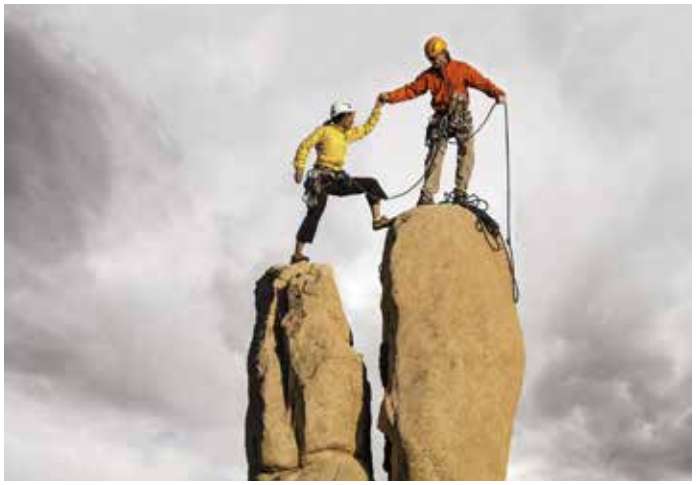
Original Design Manufacturing (ODM)
- Customer driven design
- Based on customer driven product and technology roadmap

Quality Manufacturing → **Collaborative Development**

Note: All specifications are subject to change without notice.

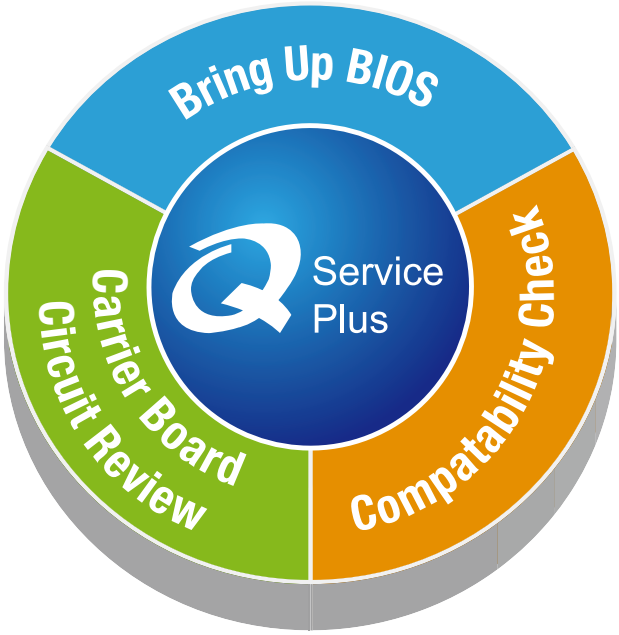
Q Service Plus

Q Service Plus



What is Q Service Plus?

Q Service is a Quick and Quality Service for reducing the time spent on trouble shooting and expediting the development process. With COM technology getting more and more complex and versatile, product failure can originate from numerous ways and may be difficult to identify. AAEON's Q Service Plus helps our customers to improve new product's time-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 bring up of 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.

Service for Wide Temperature Embedded Computing

Applications of embedded computing systems continue to improve the quality and convenience of our lives. As the world population increases, there are greater demands on resources and the need for automation and computing capability in remote regions will arise. To address the requirement for operating in extreme environments, computer platforms must follow design methodologies for wide temperature range operation. 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 production.

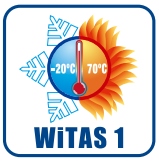
AAEON has designed and manufactured quality embedded products for over two decades. The accumulated experience in all aspects of the embedded electronics market gives AAEON a strong position in the development of wide temperature CPU boards and systems.

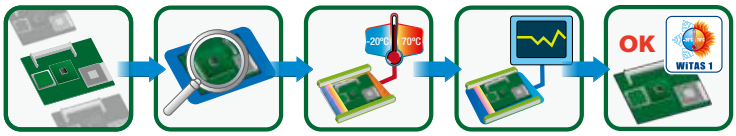
AAEON's WiTAS (Wide Temperature Assurance Service) program produces boards in two temperature range categories:

-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

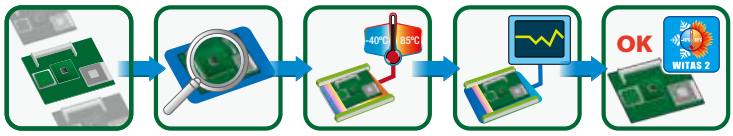
WiTAS 1 Production





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

Application

Applications for WiTAS CPU boards can be found in most industries and markets:

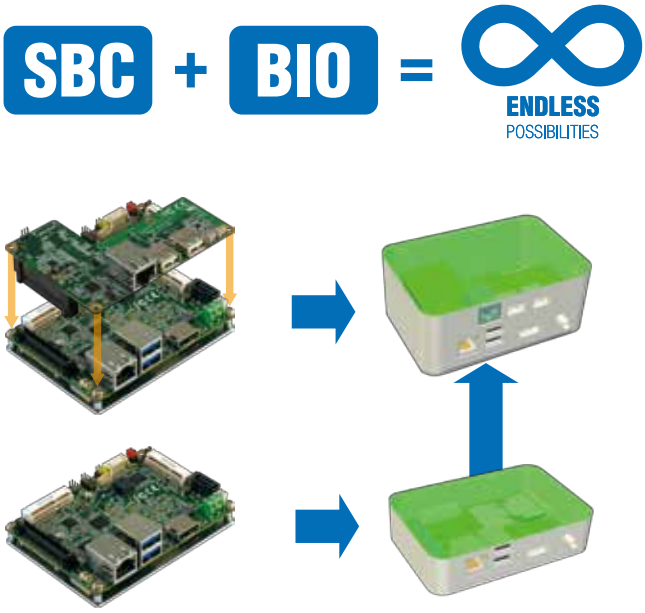
- Transportation: Train, Ship, Airplane and Traffic Surveillance System
- Factory Automation: Power Station, Steel Manufacturer
- Military: Field Electronic Devices, Controller
- Energy: Windmill Controller, Solar Energy Controller
- Environmental: Climate, Water, Air Quality
- Anti-dust, Fanless Application: Medical, Chemical and Pharmaceutical Factory

Note: All specifications are subject to change without notice.

BIO Board Design Service

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, PoE (Power over Ethernet) ports, etc., for the perfect solution.

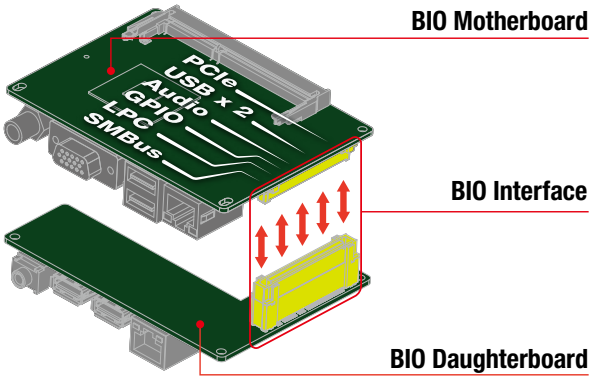


BIO Standardized Pin Definition

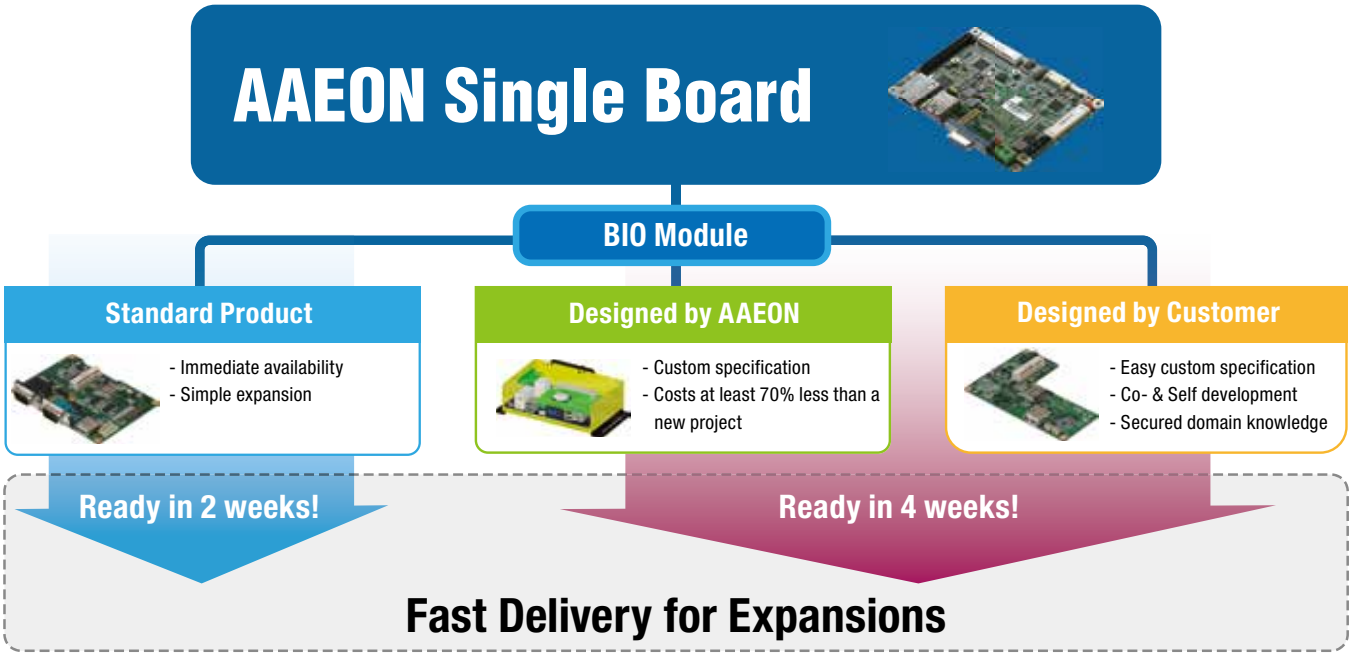
While there are many approaches to which a product can be customized, AAEON recommends the BIO daughterboards, a series of daughterboards equipped with AAEON's Board-to-board Interface for AAEON's Standard Products. Simple in design and made-to-order, the board takes the time and effort out of customization by bypassing the traditional process of re-specifying, building, and testing. Just pick the features you want, build the board, connectit 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 time-to-market and save customers' time and R&D resources.

Windows® Embedded Products

Windows 10 IoT

Windows 10 IoT Enterprise 2016

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

- Windows Embedded Compact 7

Windows Server 2012 R2

- Windows Server 2012 R2 for Embedded Systems

Note: All specifications are subject to change without notice.

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® 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
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

AAEON Embedded OS Solution

Chipset	Windows® Embedded Standard 2009 (Note 1)	Windows® Embedded Standard 7 (Note 2)	Windows® Embedded 8 Standard	Windows® CE 6.0	Windows® Compact 7
Intel® Q170/H110	—	✓	✓	—	—
Intel® QM87/Q87/H81	—	✓	✓	—	—
Intel® QM77/Q77/HM76/B75	✓	✓	✓	—	—
Intel® QM67/Q67/H61	✓	✓	✓	—	—
Intel® QM57/Q57	✓	✓	—	—	—
Intel® Atom™ D2550/N2800/N2600	✓	✓	—	—	✓
Intel® Atom™ D525/N455/D425	✓	✓	—	✓	✓
Intel® Atom™ N450/D410/D510	✓	✓	—	✓	✓
Intel® Atom™ E620/E640/E660/E680	✓	✓	—	—	✓
Intel® Atom™ J1900/N2000/E3800	—	✓	✓	✓	✓
AMD Geode™ LX700/LX800/LX900	—	✓	—	—	—
AMD T56N/T40R/T40E/T16R	✓	✓	✓	✓	✓

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

AAEON Hi-Safe

Hi-Safe is a free and powerful program providing SDKs for UIs running Microsoft® Windows® operating systems. It provides an easy way to develop the end user's own UI software to monitor vital system information such as those for the processor, RAM and VGA. It monitors received data from 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

Note: All specifications are subject to change without notice.

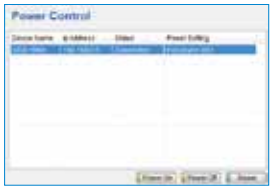
AAEON Hi-Manager

Hi-Manager is a tool based on the Intel® Active Management Technology 9.0 (iAMT 9.0) 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

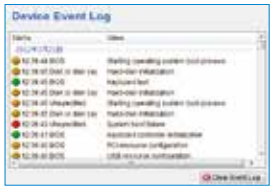
- **Easy-to-use and build custom applications**
- **Supports AAEON products with iAMT**
- **In-depth technical support**

Network Discovery:
AMT device discovery



Power Control:
Powers On/Off the target device

Group Management:
Arrange devices in this function



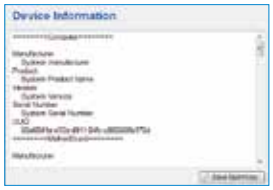
Event Log:
Logs boot records of the selected device

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
Intel® AMT Version	AMT 7.0/8.0/9.0
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 the increasing demands of high performance 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 equips 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 total cost of ownership.

Note: All specifications are subject to change without notice.

Board Product Lines

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: 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 serial ports, LAN ports, USB ports, IEEE-1394a ports, SATA ports, Capture functions, TTL/DVI Conversion module, CAN bus, to name a few.

1 Compact Boards

PCM-QM77	Compact Board with Intel® 3rd Generation Core™ i7/i5/i3/Celeron® Mobile Processor	01-1
PCM-LN02	Compact Board with Onboard Intel® Atom™ N455/D525 Processor	01-3
PCM-5895 Rev. A	Compact Board with AMD Geode™ LX Series Processor	01-5
PCM-5895 Rev. B	Compact Board with AMD Geode™ LX Series Processor	01-7

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EPIC-BDU7	EPIC Board with 5th Generation Intel® Core™ i Series ULT Processor SoC	02-3
EPIC-QM77	EPIC Board with Onboard Intel® Core™ i7-3555LE/ Celeron® 847E Processor	02-5
EPIC-QM57	EPIC Express Board with Intel® Core™ i7/ i5/ Celeron® (32nm) Processor	02-7
EPIC-BT07	EPIC Board with Intel® Atom™/ Celeron® Processor SoC	02-9
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EPIC-5536	EPIC Board with Onboard AMD Geode™ LX800 (500 MHz) Processor	02-13

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GENE-QM77 Rev. A	3.5" SubCompact Board with Intel® 3rd Generation 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
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PFM-540I Rev. A	PC/104 Module with AMD Geode™ LX Processor	04-9
PFM-540I Rev. B	PC/104 Module with AMD Geode™ LX Processor with Intel® LAN Chip	04-11

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PICO-BSW1	Pico-ITX Board with Intel® Pentium®/Celeron® N3000 or X5-E8000 Series Processor SoC	05-3
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Note: All specifications are subject to change without notice.

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PICMG 1.0

FSB-B75G	Full-Size SBC with Intel® 3rd Generation Core™ i7/i5/i3 LGA 1155 Processor	13-1

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Backplanes

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Compact Boards

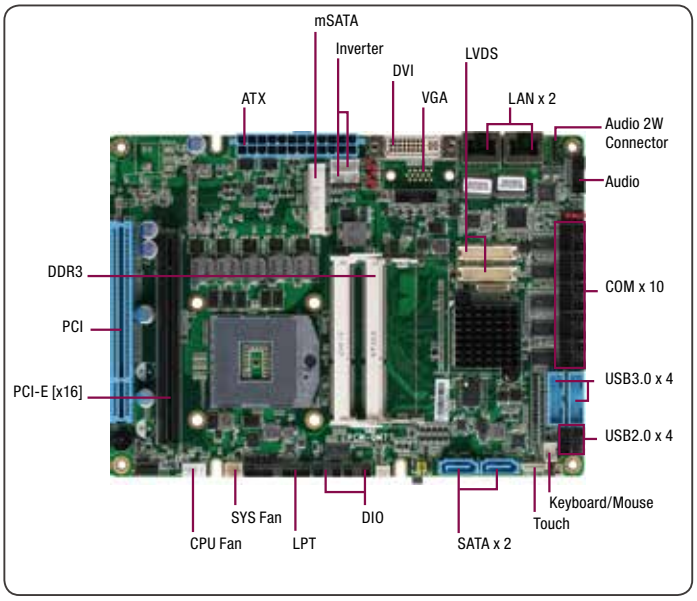
AAEON® an ASUS assoc. co.

Focus • Agility • Competitiveness

01

PCM-QM77

Compact Board with Intel® 3rd Generation 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

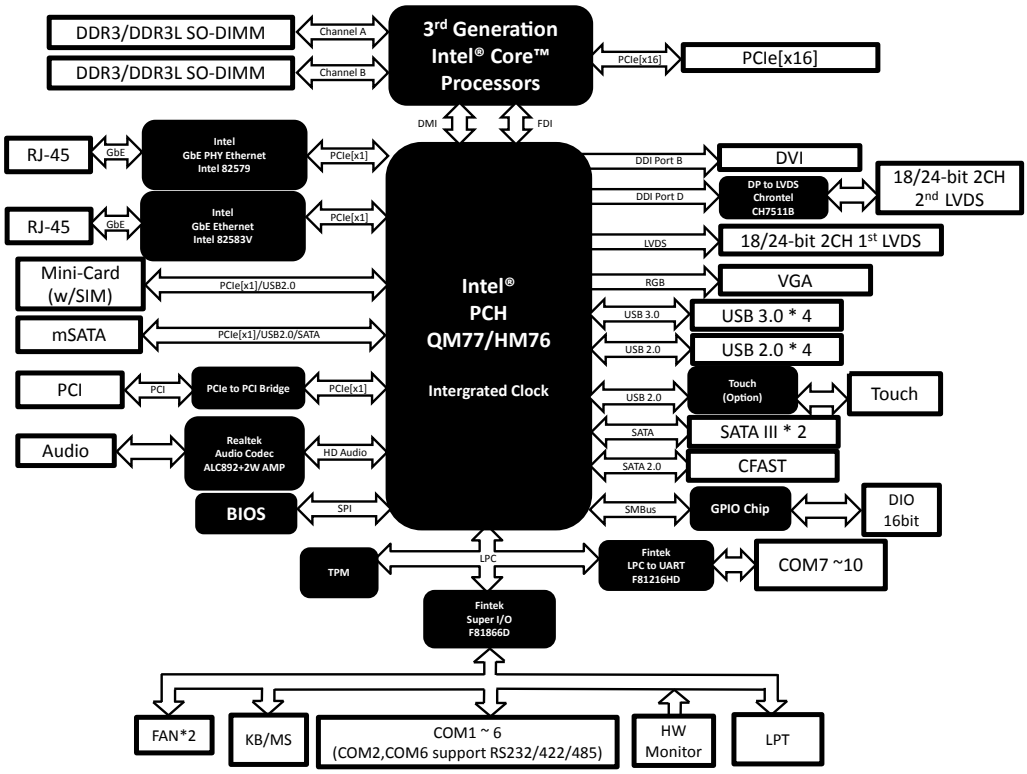
- Jumper Cap
- CPU Cooler FAN + Heatsink
- Product DVD
- PCM-QM77

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

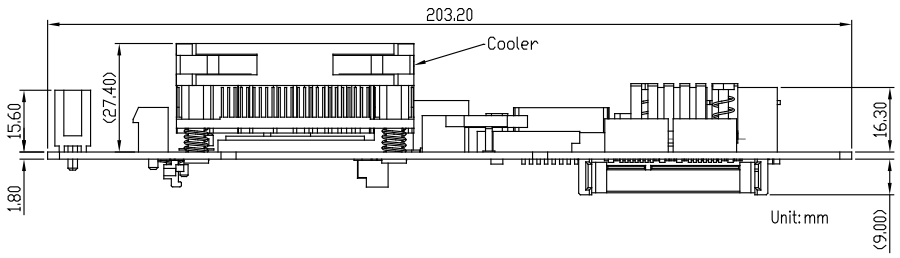
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

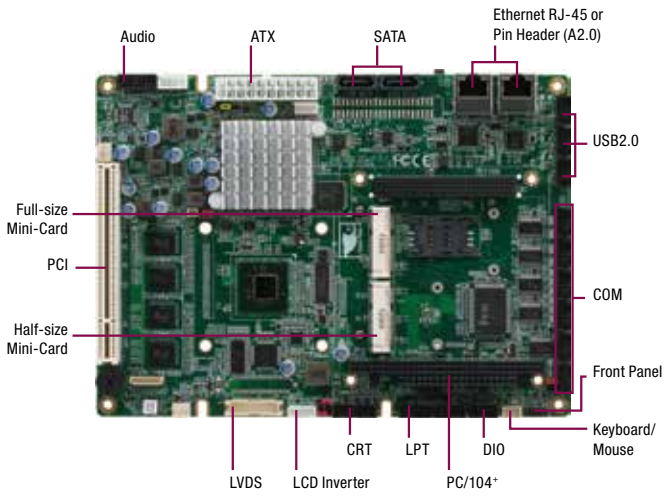


Ordering Information

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

PCM-LN02

Compact Board with Onboard Intel® Atom™ N455/D525 Processor



Features

- **Intel® Atom™ N455/D525 Processor**
- **Intel® ICH8M**
- **Onboard DDR3 667/800MHz, up to 2 GB**
- **10/100/1000Base-TX Ethernet x 2, RJ-45 x 2**
- **Integrated Graphic Supports 18-bit or 24-bit LVDS Panel or TTL (Optional)**
- **Speaker Out with 2W Amplifier (Wafer Box)**
- **SATA 3.0 Gb/s x 2, CompactFlash™ x 1, EIDE x 1 (Optional)**
- **USB2.0 x 6, RS-232 x 5, RS-232/422/485 x 1**
- **PC/104+ (ISA+PCI), Mini-Card x 2 (1st: Full Size + SIM; 2nd: Half-size)**
- **+12V Only Operation with Optional ATX**
- **Optional TPM1.2**

Specifications

System	
Form Factor	5.25" Compact Board
CPU	Onboard Intel® Atom™ N455/D525
CPU Frequency	Up to 1.83GHz
Chipset	PineView™ D/M DDR3 + ICH8M
Memory Type	Onboard 2 GB /4 GB DDR3 667/800
Max. Memory Capacity	4 GB
BIOS	AMI 8MB
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V & ATX co-lay
Power Supply Type	ATX/ DC-12V
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)	—
Certification	CE/FCC
Display	
VGA/LCD Controller	Integrated
Video Output	CRT, TTL (Optional), or LVDS 18/24 bit
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	Intel® 82567V x 1, Intel® 82583V x 1, 10/100/1000Base-TX x 2
Audio	ALC888-GR, 2 CH
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
HDD Interface	UDMA33 x 1, SATA 2 x 2
FDD Interface	—
SSD	CompactFlash™
Expansion Slot	PCMCIA x 1, PC-104-Plus Two mini-card (1st: full size+SIM; 2nd: half size) on the top side; CF x 1 LAN connector Pin header Type
PWM LCD Support	—
DIO	8 bit
TPM	Optional
Touch	—

Packing List

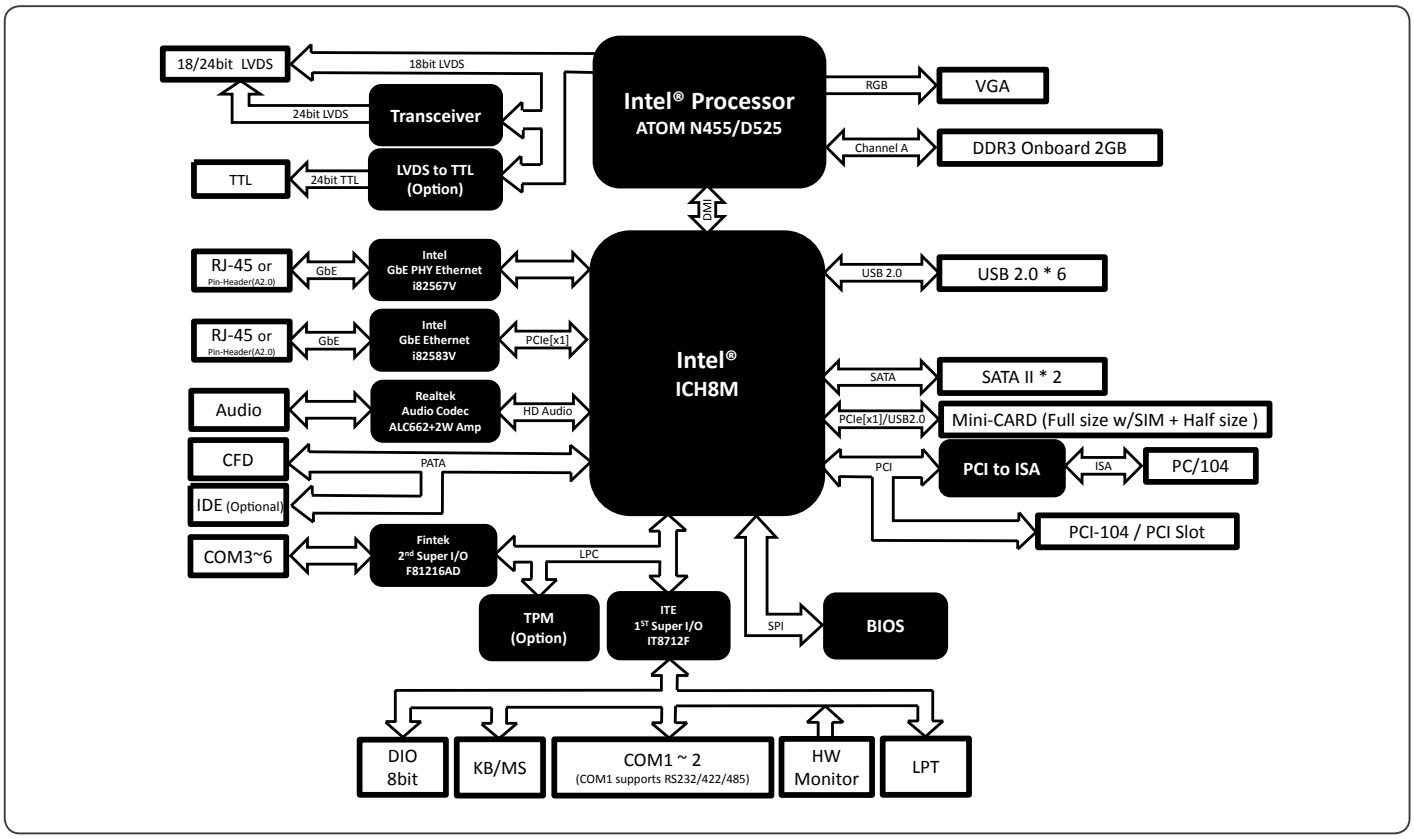
- **9657666600**
  Jumper Cap
- **17592LN8T0**
  Cooler
- **Product CD**
- **PCM-LN02**

Optional Accessories

- **1709100208**
  USB Cable, Length 20cm
- **1700140510**
  Audio Cable, Length 51cm
- **1701100206**
  COM Port Cable, Length 20cm
- **1701260200**
  Parallel Port Cable, Length 20cm
- **1709070500**
  SATA Cable, Length 50cm
- **1700160201**
  VGA Cable, Length 20cm
- **1702151200**
  Onboard SATA Power Cable
- **1700100201**
  LAN Cable 20cm for A20

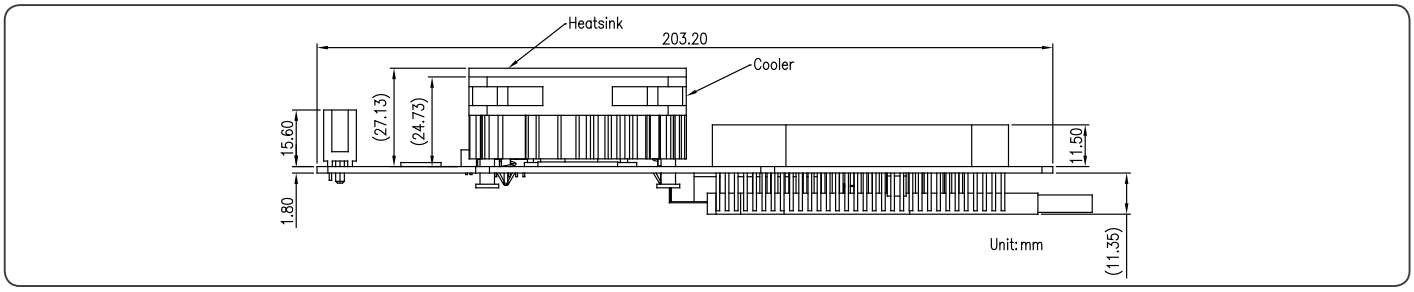
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

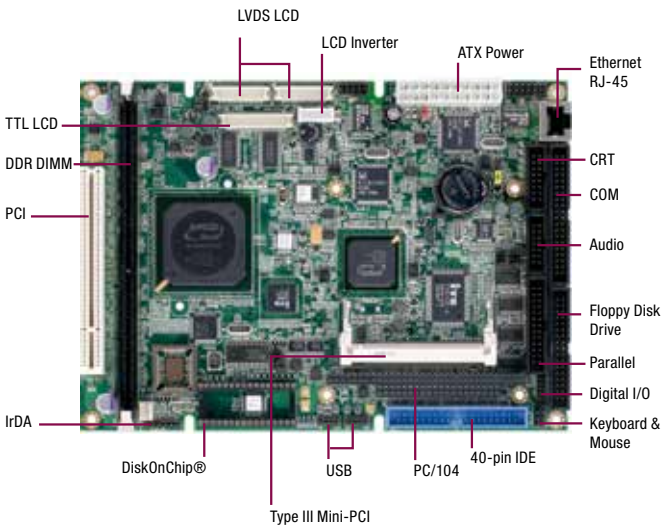


Ordering Information

Part Number	CPU	Memory	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
TF-PCM-LN02-A10-02	Intel® Atom™ D525	Onboard 2 GB DDR3	Fan	CRT + LVDS	18b, 1CH	SATA x 2 CF x 1	GbE x 2	UBS2.0 x 4	3	1	Mini-Card x 1	ATX	0°C ~ 60°C	DIO 8-bit, 2W Amp. LPT, PS/2
TF-PCM-LN02-A10-03	Intel® Atom™ N455	Onboard 2 GB DDR3	Fanless	CRT + LVDS	18b, 1CH	SATA x 2 CF x 1	GbE x 2	UBS2.0 x 4	3	1	Mini-Card x 1	+12V (ATX)	0°C ~ 60°C	DIO 8-bit, 2W Amp. LPT, PS/2
TF-PCM-LN02-A10-04	Intel® Atom™ D525	Onboard 2 GB DDR3	Fan	CRT + LVDS	24b, 1CH	SATA x 2 CF x 1	GbE x 2	UBS2.0 x 6	5	1	Mini-Card x 1 Mini-Card x 1 (half size) PCI Slot x 1, PC/104+ x 1, SIM Card x 1	ATX	0°C ~ 60°C	DIO 8-bit, 2W Amp. LPT, PS/2
TF-PCM-LN02-A10-05	Intel® Atom™ N455	Onboard 2 GB DDR3	Fanless	CRT + LVDS	24b, 1CH	SATA x 2 CF x 1	GbE x 2	UBS2.0 x 6	5	1	Mini-Card x 1 Mini-Card x 1 (half size) PCI Slot x 1, PC/104+ x 1, SIM Card x 1	+12V (ATX)	0°C ~ 60°C	DIO 8-bit, 2W Amp. LPT, PS/2
TF-PCM-LN02-A20-02	Intel® Atom™ D525	Onboard 2 GB DDR3	Fan	CRT + LVDS	24b, 1CH	SATA x 2 CF x 1	GbE x 2 Pin Header x 2	UBS2.0 x 6	5	1	Mini-Card x 1 Mini-Card x 1 (half size) PCI Slot x 1, PC/104+ x 1, SIM Card x 1	ATX	0°C ~ 60°C	DIO 8-bit, 2W Amp. LPT, PS/2
TF-PCM-LN02-A20-03	Intel® Atom™ N455	Onboard 2 GB DDR3	Fanless	CRT + LVDS	24b, 1CH	SATA x 2 CF x 1	GbE x 2 Pin Header x 2	UBS2.0 x 6	5	1	Mini-Card x 1 Mini-Card x 1 (half size) PCI Slot x 1, PC/104+ x 1, SIM Card x 1	+12V (ATX)	0°C ~ 60°C	DIO 8-bit, 2W Amp. LPT, PS/2

PCM-5895 Rev. A

Compact Board with AMD Geode™ LX Series Processor



Features

- AMD Geode™ LX800 Processor
- AMD Geode™ LX + CS5536
- DDR 333/400 MHz DIMM x 1, Up To 1 GB
- 10/100Base-TX Ethernet x 2, RJ-45 x 1, Pin Header x 1
- Up To 24-bit LVDS/TTL LCD, CRT
- Realtek ALC203
- Type 2 CompactFlash™ x 1, EIDE x 1, Floppy Disk Drive x 1
- USB x 4, COM x 4, 8-bit Digital I/O
- PCI x 1, Mini-PCI, PC/104 x 1
- ATX Power

Specifications

System	
Form Factor	5.25" Compact Board
CPU	Onboard AMD Geode™ LX 800
CPU Frequency	Up to 500 MHz
Chipset	AMD Geode™ LX 800 + CS5536
Memory Type	SDRAM DDR333/400, DIMM x 1
Max. Memory Capacity	1 GB
BIOS	Award 1 MB
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	ATX
Power Supply Type	AT/ ATX
Power Consumption (Typical)	AMD Geode™ LX 800 (500 MHz) DDR400 256 MB 2.33A@+5V
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)	80,000
Certification	CE/FCC
Display	
VGA/LCD Controller	AMD Geode™
Video Output	LVDS/TTL, CRT
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	10/100Base-TX x 2, Realtek RTL8139DL (Real I/O, Pin Header x 1)
Audio	Realtek ALC203
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	UDMA100 x 1
FDD Interface	FDD x 1
SSD	CompactFlash™
Expansion Slot	PCI, Mini-PCI, PC/104
PWM LCD Support	—
DIO	8 bit
TPM	—
Touch	—

Packing List

- **9657666000**
  Jumper Cap
- **Product CD**
- **PCM-5895 Rev. A**

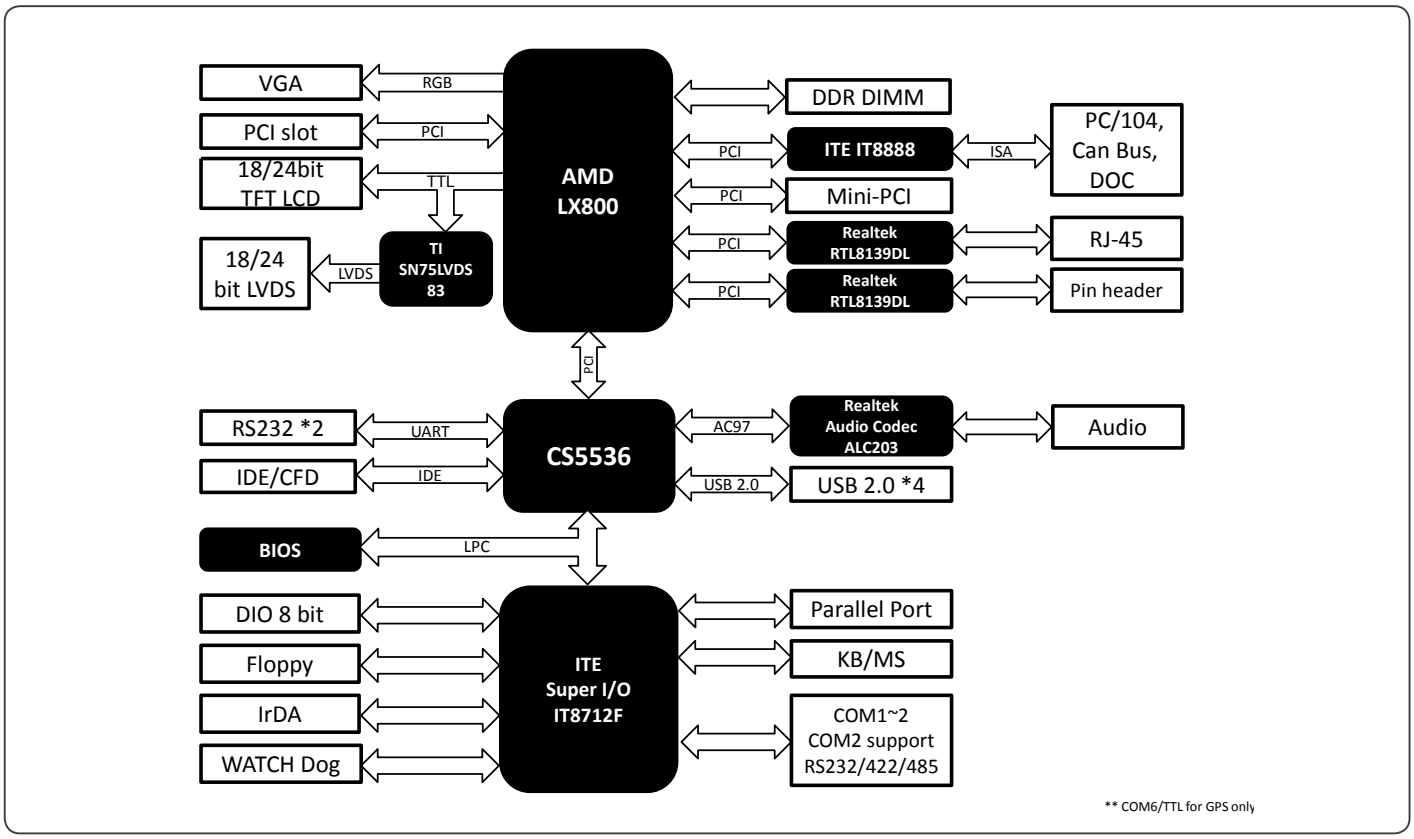
Optional Accessories

- **TF-PER-A030**
  Cable Kit for PCM-5895
- **TF-PCM-3660-B10**
  PC/104 Ethernet Module
- **TF-PER-C10L-A10**
  Mini-PCI 10/100Base-TX Ethernet Module with Realtek 8100C
- **TF-PER-C10L-A10-01**
  Mini-PCI 10/100/1000Base-TX Ethernet Module with Realtek 8110S
- **TF-PER-C10L-A10-03**
  Mini-PCI 10/100/1000Base-TX Ethernet Module with Intel® 82541GI

Note: All specifications are subject to change without notice.

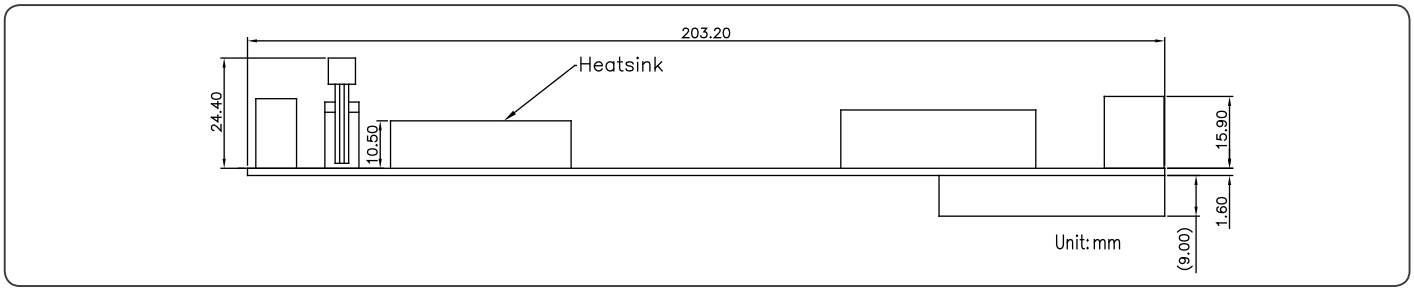
PCM-5895 Rev. A

Block Diagram



Dimension

Unit: mm

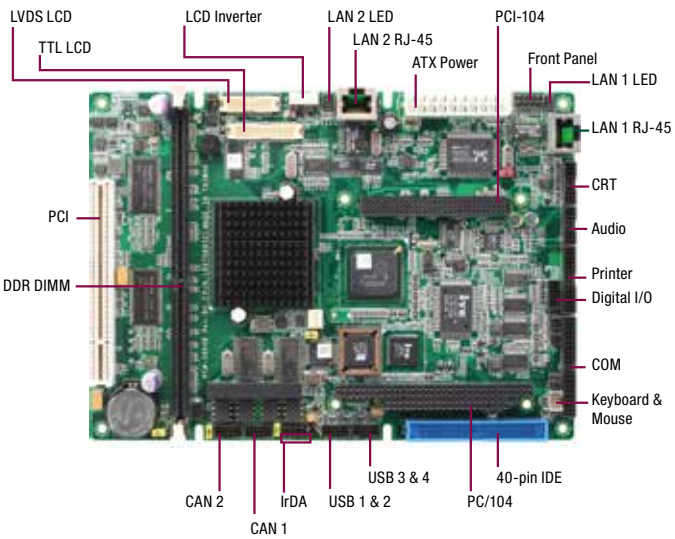


Ordering Information

Part Number	CPU	Memory	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp.	Others
TF-PCM-5895-A10	AMD Geode™ LX800	DDR (Max. 1 GB)	Fanless	CRT + LVDS CRT + TTL	18b, 1CH	IDE x 1 CompactFlash™ x 1	FE x 1	4	3	1	Mini-PCI x 1 PCI x 1 PC/104 x 1	ATX	0°C ~ 60°C	DIO 8-bit Audio LPT PS/2
TF-PCM-5895-A10-01	AMD Geode™ LX800	DDR (Max. 1 GB)	Fanless	CRT + LVDS CRT + TTL	24b, 1CH	IDE x 1 CompactFlash™ x 1	FE x 1	4	3	1	Mini-PCI x 1 PCI x 1 PC/104 x 1	ATX	0°C ~ 60°C	DIO 8-bit Audio LPT PS/2

PCM-5895 Rev. B

Compact Board with AMD Geode™ LX Series Processor



Features

- AMD Geode™ LX800 Processor
- AMD Geode™ LX + CS5536
- DDR 333/400 MHz DIMM x 1, Up to 1 GB or Onboard DDR 333 Memory 256 MB
- 10/100Base-TX Ethernet x 2, RJ-45 x 2
- Up to 24-bit LVDS/TTL LCD, CRT
- Realtek ALC203
- Type 2 CompactFlash™ x 1, EIDE x 1
- USB x 4, COM x 4, 8-bit Digital I/O x 1, Parallel x 1
- PCI x 1, PC/104+ (Optional)
- ATX Power
- CAN Bus x 2 (Optional)

Specifications

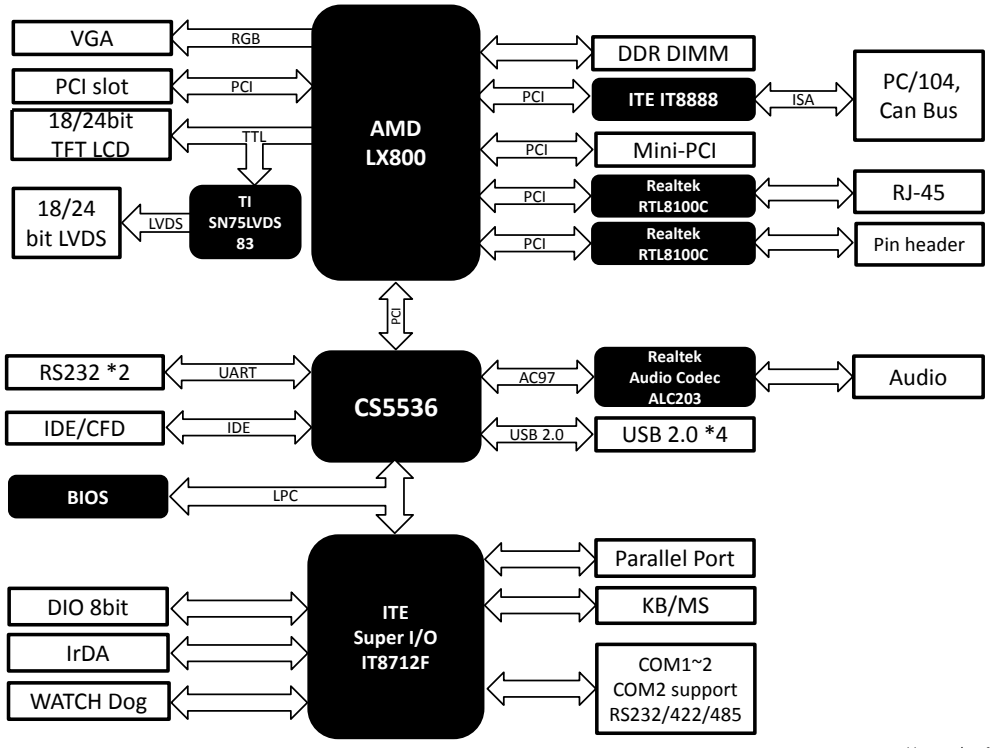
System	
Form Factor	5.25" Compact Board
CPU	Onboard AMD Geode™ LX 800
CPU Frequency	Up to 500 MHz
Chipset	AMD Geode™ LX 800 + CS5536
Memory Type	SDRAM DDR333/400 DIMM x 1 or Onboard memory
Max. Memory Capacity	1 GB DIMM x 1 or onboard memory 256 MB
BIOS	Award 1 MB
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	ATX
Power Supply Type	AT/ ATX
Power Consumption (Typical)	AMD Geode™ LX 800 (500 MHz) DDR400 256 MB 2.33A@+5V
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)	80,000
Certification	CE/FCC
Display	
VGA/LCD Controller	AMD Geode™
Video Output	LVDS/TTL, CRT
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	10/100Base-TX x 2, Realtek RTL8100C
Audio	Realtek ALC203
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	UDMA100 x 1
FDD Interface	—
SSD	CompactFlash™
Expansion Slot	PCI, PC/104+, CAN x 2 (Optional)
PWM LCD Support	—
DIO	8 bit
TPM	—
Touch	—

Packing List

- **9657666000**
  Jumper Cap
- **Product CD**
- **PCM-5895 Rev. B**

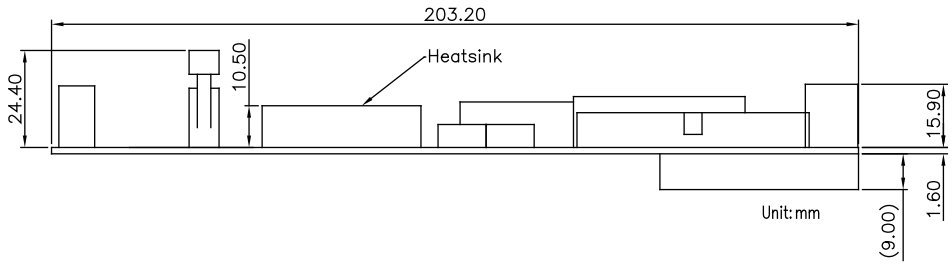
Note: All specifications are subject to change without notice.

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	Temp.	Others
TF-PCM-5895-B10	AMD Geode LX800	DDR x 1 (Max. 1 GB)	Fanless	CRT + LVDS CRT + TTL	18b, 1CH	IDE x 1 CompactFlash™ x 1	FE x 2	4	3	1	PCI x 1	ATX	0°C ~ 60°C	DIO 8-bit Audio LPT PS/2
TF-PCM-5895-B10-03	AMD Geode LX800	DDR onbard 256 MB	Fanless	CRT + LVDS CRT + TTL	24b, 1CH	IDE x 1 CompactFlash™ x 1	FE x 2	4	3	1	PCI x 1 PC/104+ x 1 CAN Bus x 2	ATX	0°C ~ 60°C	DIO 8-bit Audio LPT PS/2

EPIC Boards

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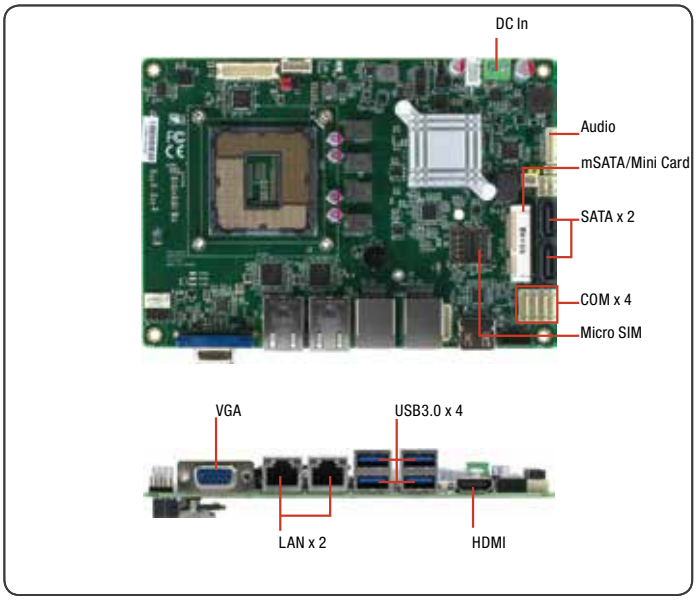
Focus • Agility • Competitiveness

02

EPIC-KBS7

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



Features

- 7th Generation Intel® Core™ i-S series Processor (Socket Type)
- 12V, 9-24V Wide Voltage, Non-ECC DDR4 SODIMM x 1
- Basic VGA/HDMI/LVDS Display
- USB 3.0 x 4, USB 2.0 x 2, Good for Machine Vision
- Mini-card/mSATA Selection x 1
- HDA, SATA x 2, GPIO x 8, COM x 4

Specifications

System	
Form Factor	EPIC
CPU	* 6th generation CPU major selection i3-6100TE (2C) 2.7 GHz (TDP: 35W) G3900TE (2C) 2.3GHz (TDP:35W) G4400TE (2C) 2.4 GHz (TDP:35W) i5-6500TE (4C) 2.3 GHz, up to 3.3 GHz (TDP: 35W) i7-6700TE (4C) 2.4 GHz, up to 3.4 GHz (TDP: 35W) * 7th generation SKU will be released in Q1 2017
CPU Frequency	7th Generation Intel® Core™ i3/i5/i7/Celeron®
Chipset	H110 , C236 (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
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	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 Gen3 x 2, SATA Power (5V)
FDD Interface	—
SSD	mSATA x 1 (optional for mini-Card)
Expansion Slot	Mini-card x 1, Micro SIM x 1 (Optional)
PWM LCD Support	—
DIO	8 bit
TPM	—
Touch	—

Packing List

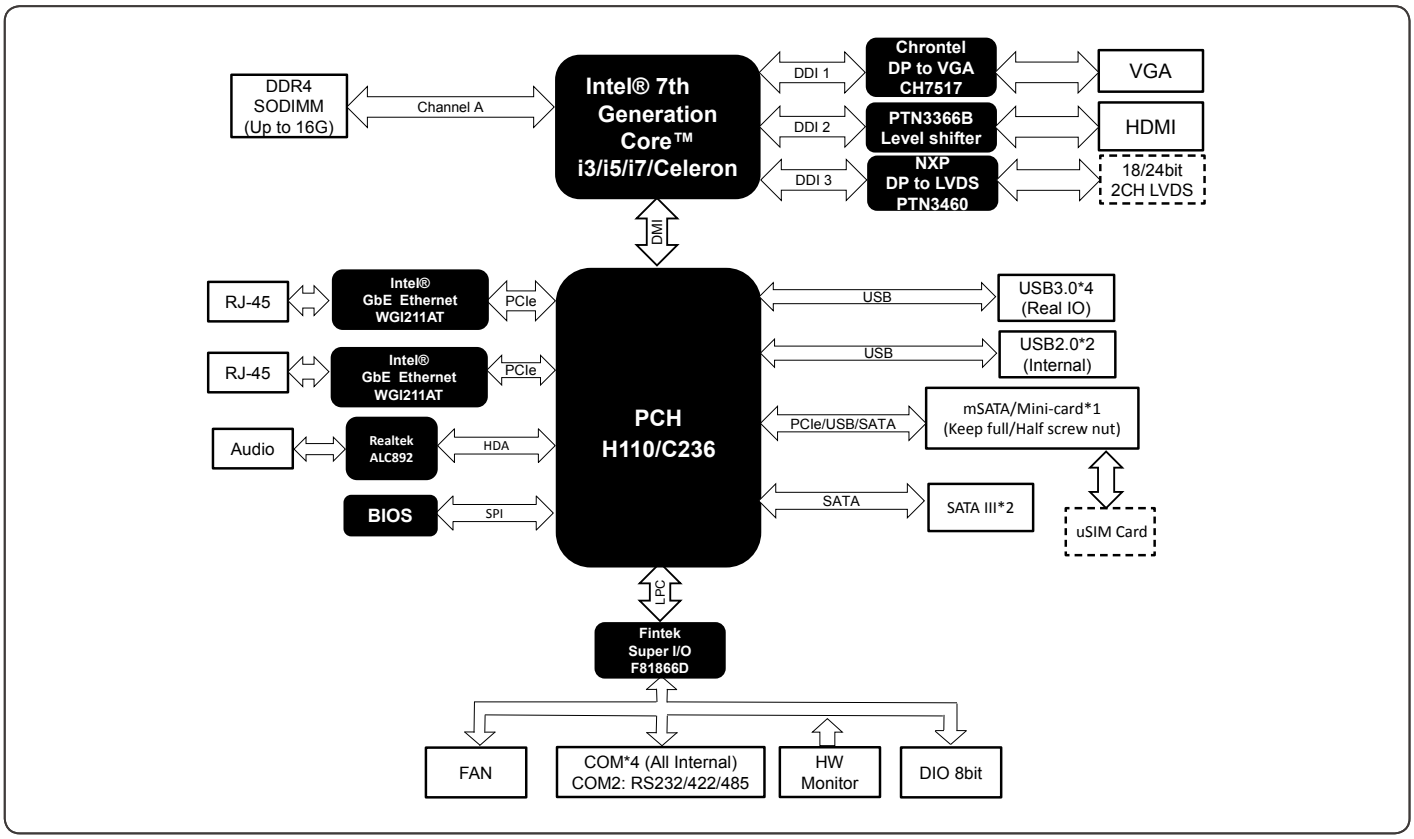
- SATA Cable, Length 50cm (1709070500)
- SATA Power Cable, Length 15cm (1702150155)
- Jumper Cap (9657666600)
- Product DVD
- EPIC-KBS7

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	4
1701090150	COM Cable (9pin), Length 15cm	4
TBD	CPU Cooler	1

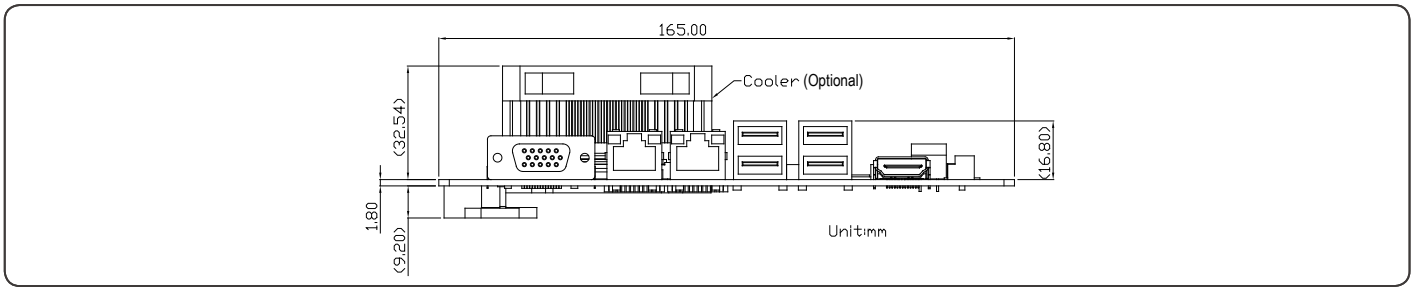
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



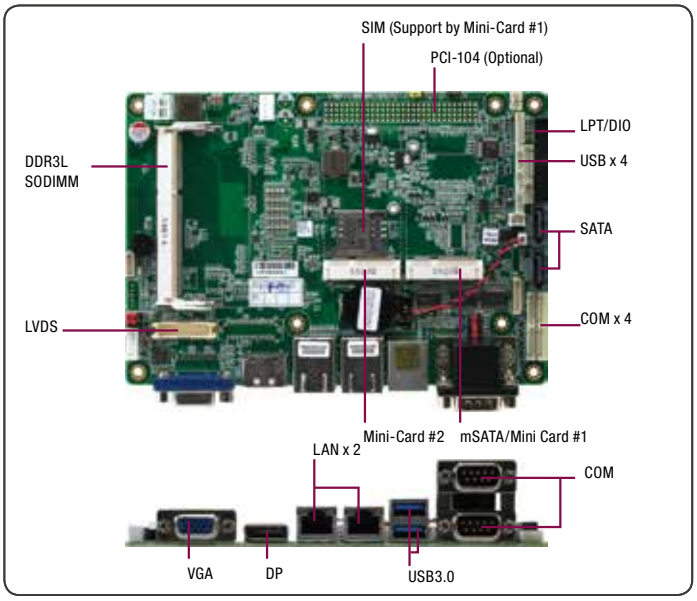
Ordering Information

Part Number	CPU	Memory	Thermal	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
EPIC-KBS7-A10-0001 (Standard)	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/miniCard x 1	12V	0°C ~ 60°C	DIO x 8
EPIC-KBS7-A10-0002 (Advanced)	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

* 7th generation will be BIOS upgraded in Q1 2017

EPIC-BDU7

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

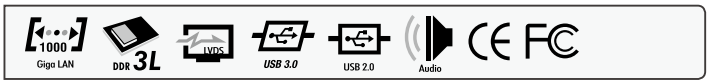


Features

- 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	EPIC
CPU	Intel® 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 8G
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" (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)	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
FDD Interface	—
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
PWM LCD Support	—
DIO	16 bit
TPM	Optional
Touch	Optional



Packing List

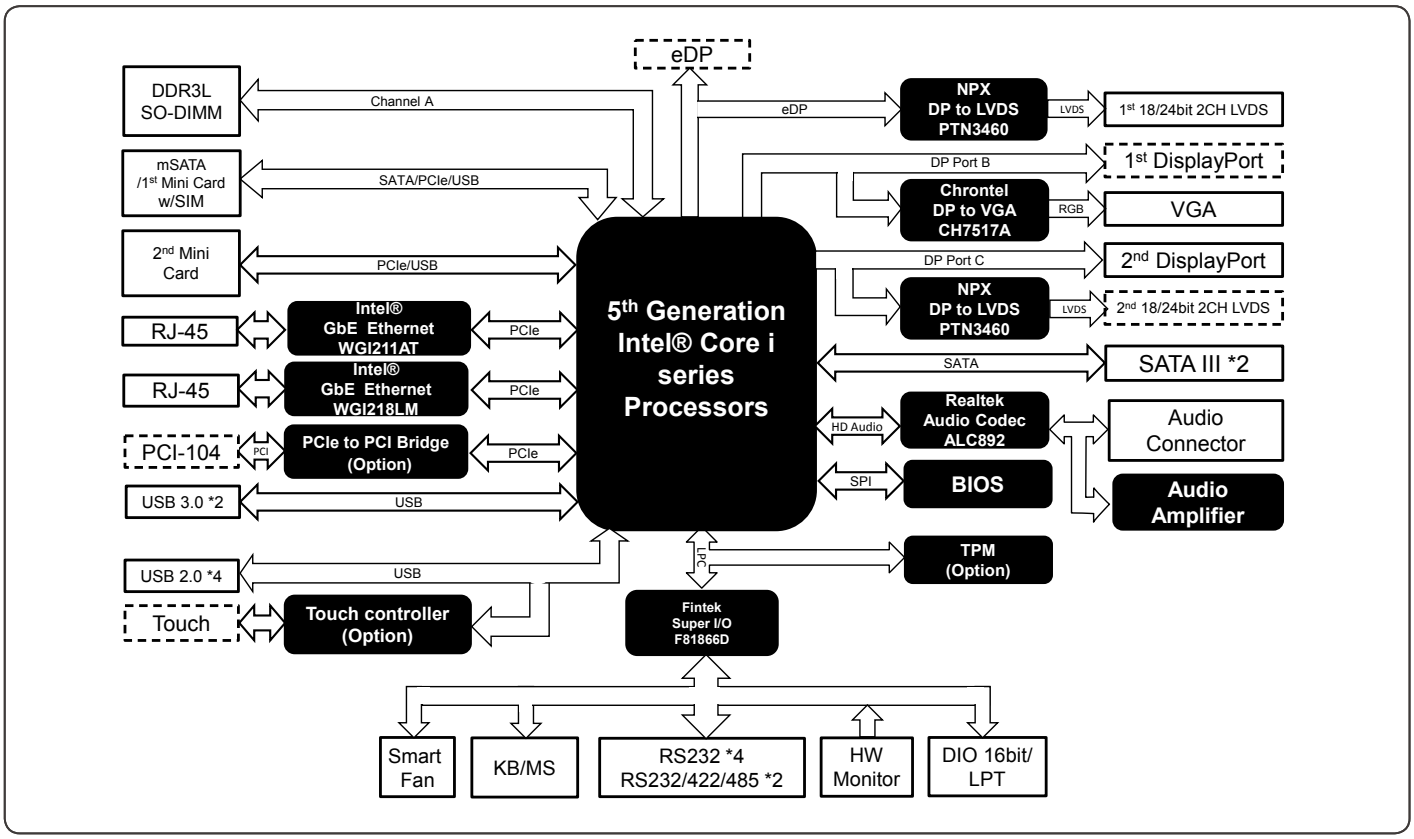
- **1709070500**
  SATA Cable, Length 50 cm
- **1702150155**
  SATA Power Cable, Length 15 cm
- **M10BDU7000**
  Heat Spreader
- **9657666600**
  Jumper Cap
- **Product DVD**
- **EPIC-BDU7**

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

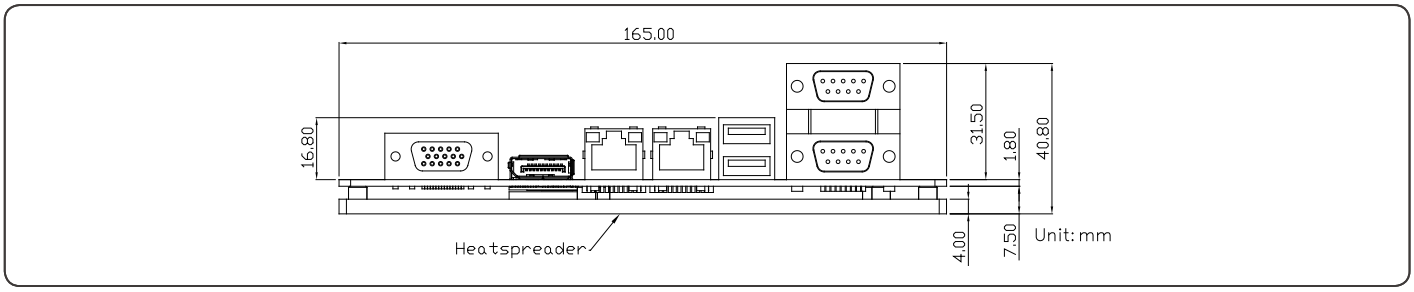
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

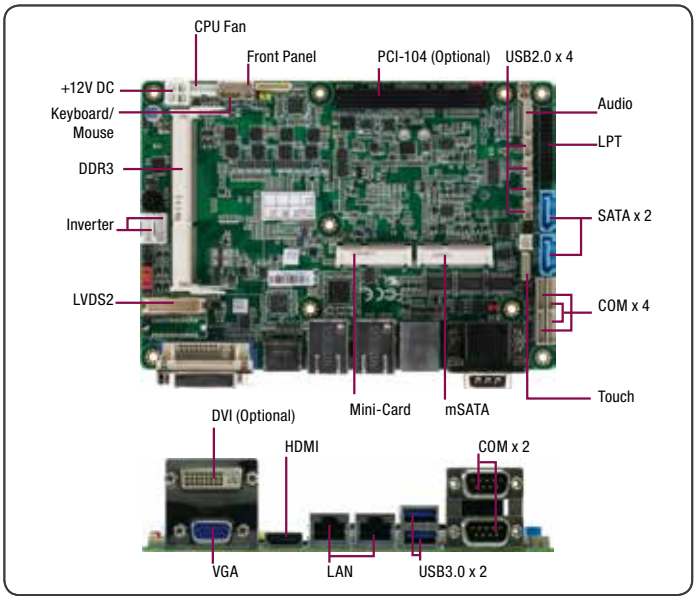


Ordering Information

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-A11-0002	Dual Core i5-5350U (1.8GHz)	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-QM77

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	EPIC
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
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
FDD Interface	—
SSD	mSATA x 1
Expansion Slot	Mini Card x 1 16 bit DIO or LPT PCI-104
PWM LCD Support	—
DIO	16 bit
TPM	Optional
Touch	Optional

Packing List

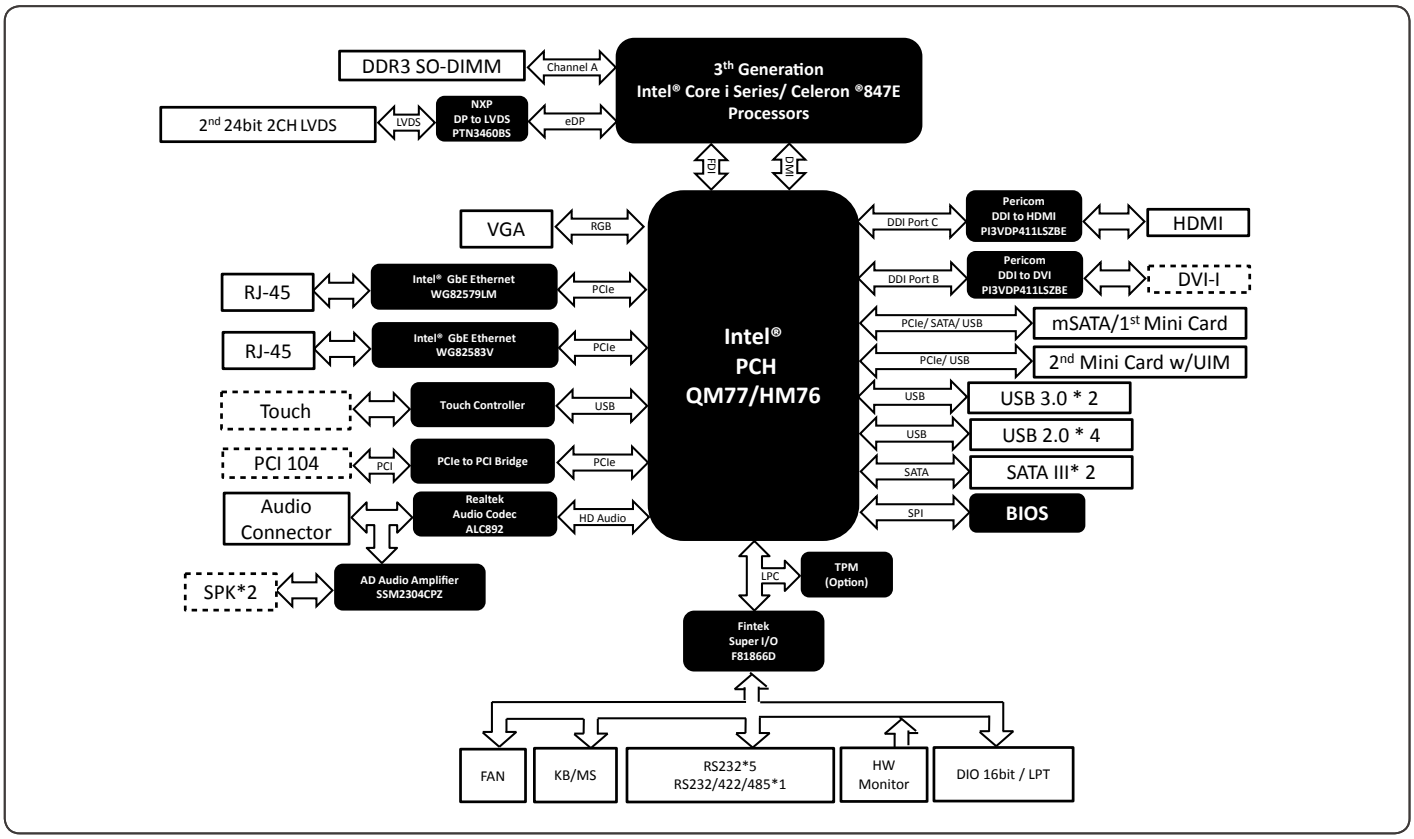
- **1709070500**
  SATA Cable
- **1702150155**
  SATA Power Cable
- **9657666600**
  Jumper Cap
- **M10QM7700**
  Heat Spreader
- **Product DVD**
- **EPIC-QM77**

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

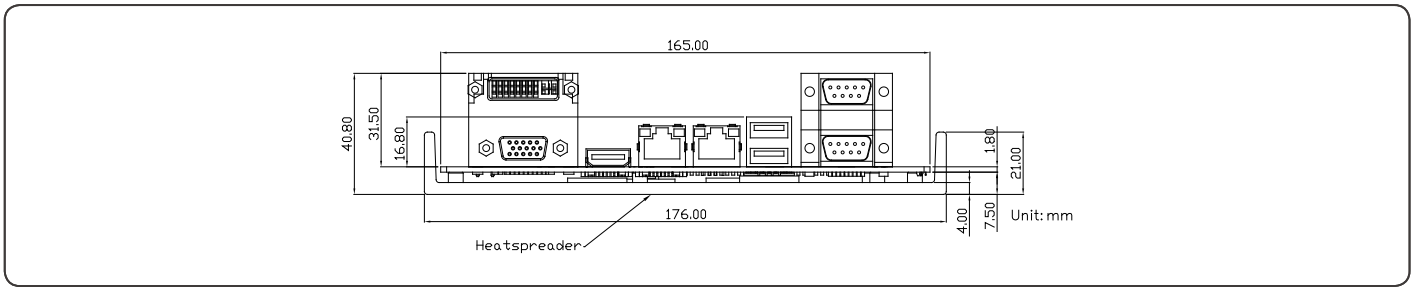
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



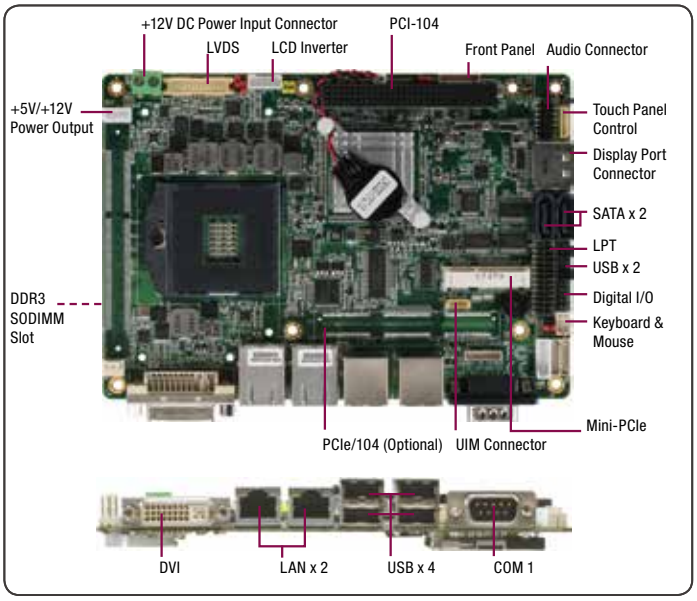
Ordering Information

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

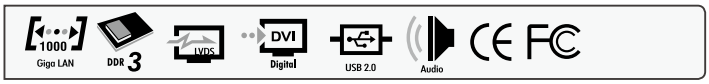


Features

- **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	EPIC
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
FDD Interface	—
SSD	CompactFlash™
Expansion Slot	PCI/104-Express (PCI-Express & PCI-104)
PWM LCD Support	—
DIO	8 bit
TPM	—
Touch	Yes



Packing List

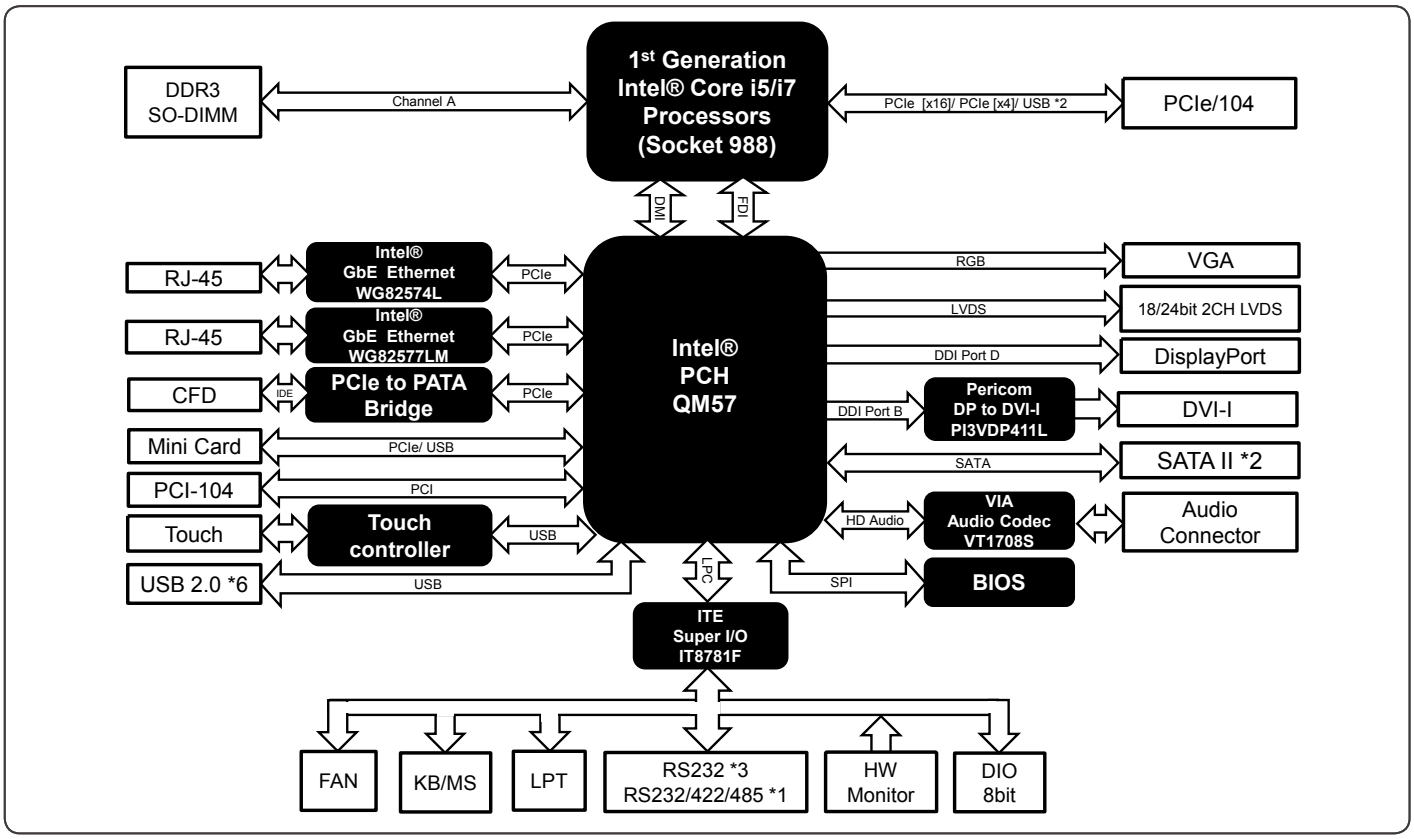
- **1654929900**
  DVI to CRT Adapter
- **1700060157**
  Keyboard/ Mouse Cable
- **17592QM575**
  CPU Cooler
- **Product DVD**
- **EPIC-QM57**

Optional Accessories

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

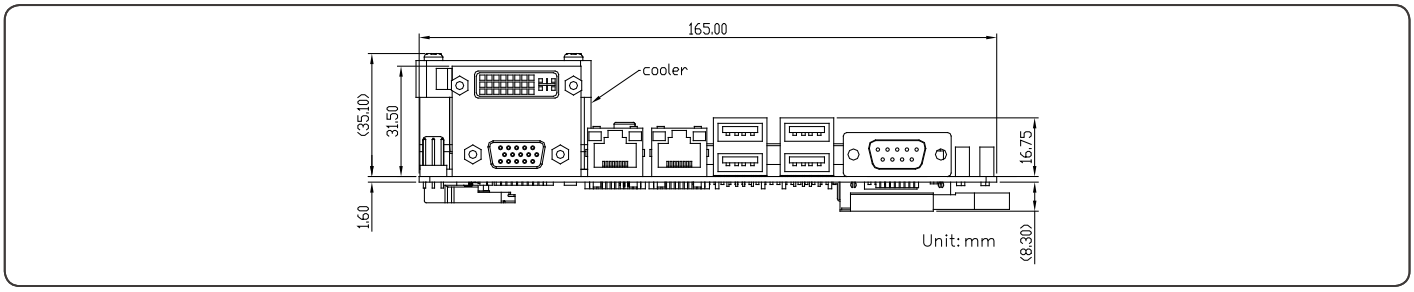
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

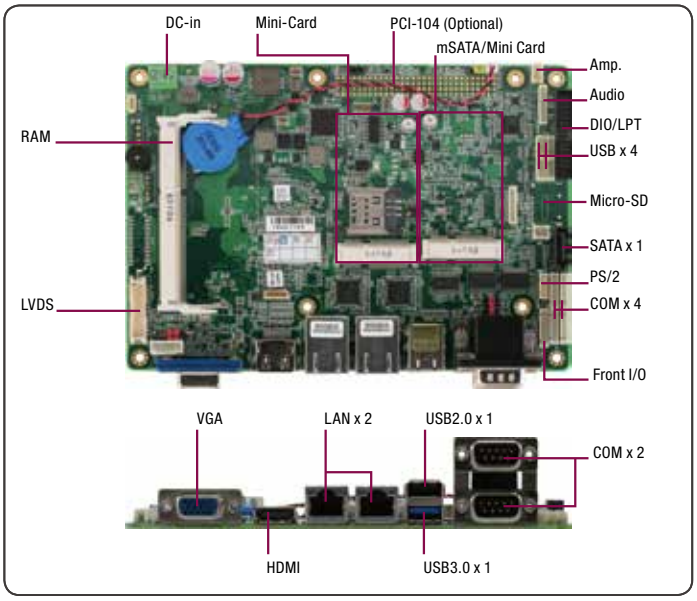


Ordering Information

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-BT07

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

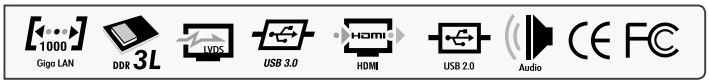


Features

- **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	EPIC
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" (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	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
FDD Interface	—
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
PWM LCD Support	—
DIO	16 bit
TPM	Optional
Touch	Optional



Packing List

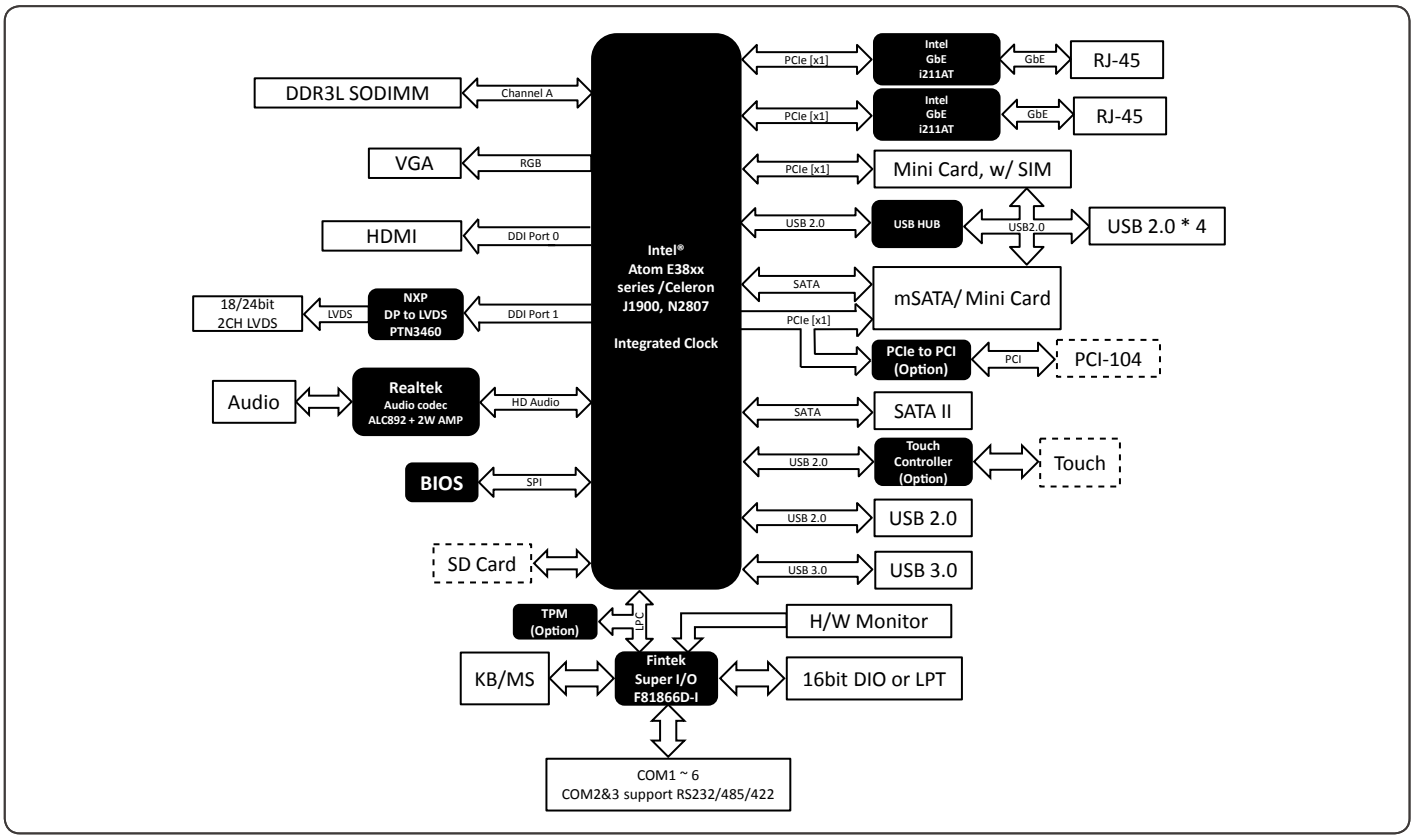
- **1709070500**
  SATA Cable
- **1702150155**
  SATA Power Cable
- **M10BT07010**
  Heat-Spreader
- **Product DVD**
- **EPIC-BT07**

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
M16BT07000	Metal, Al, Heat Sink, 165*95*14mm, Silver, EPIC-BT07	1

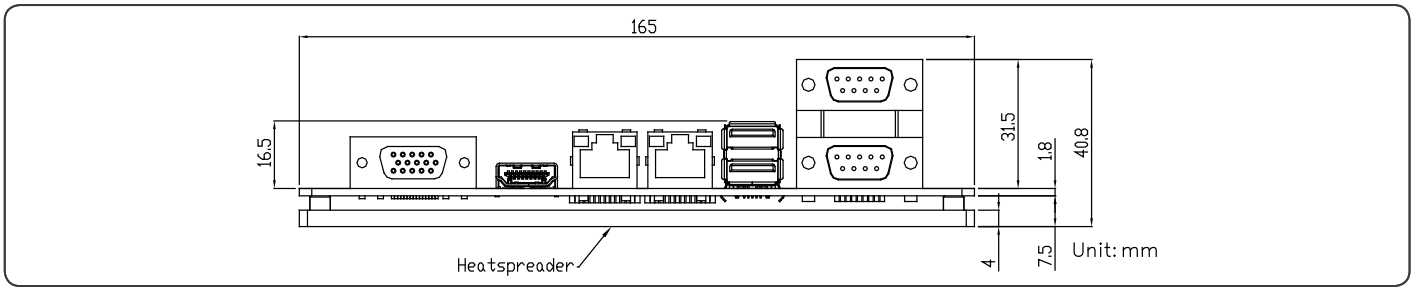
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

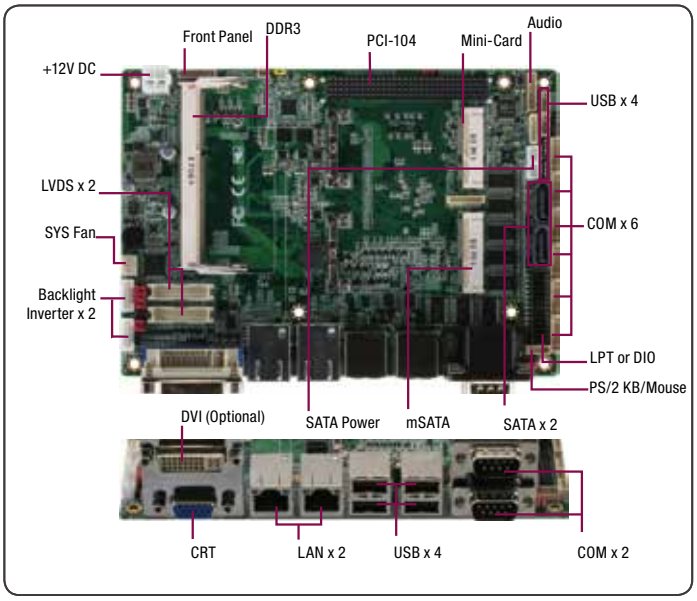


Ordering Information

Part Number	CPU	Memory	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power 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-CV07

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	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
FDD Interface	None
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
PWM LCD Support	—
DIO	16 bit
TPM	—
Touch	Yes

Packing List

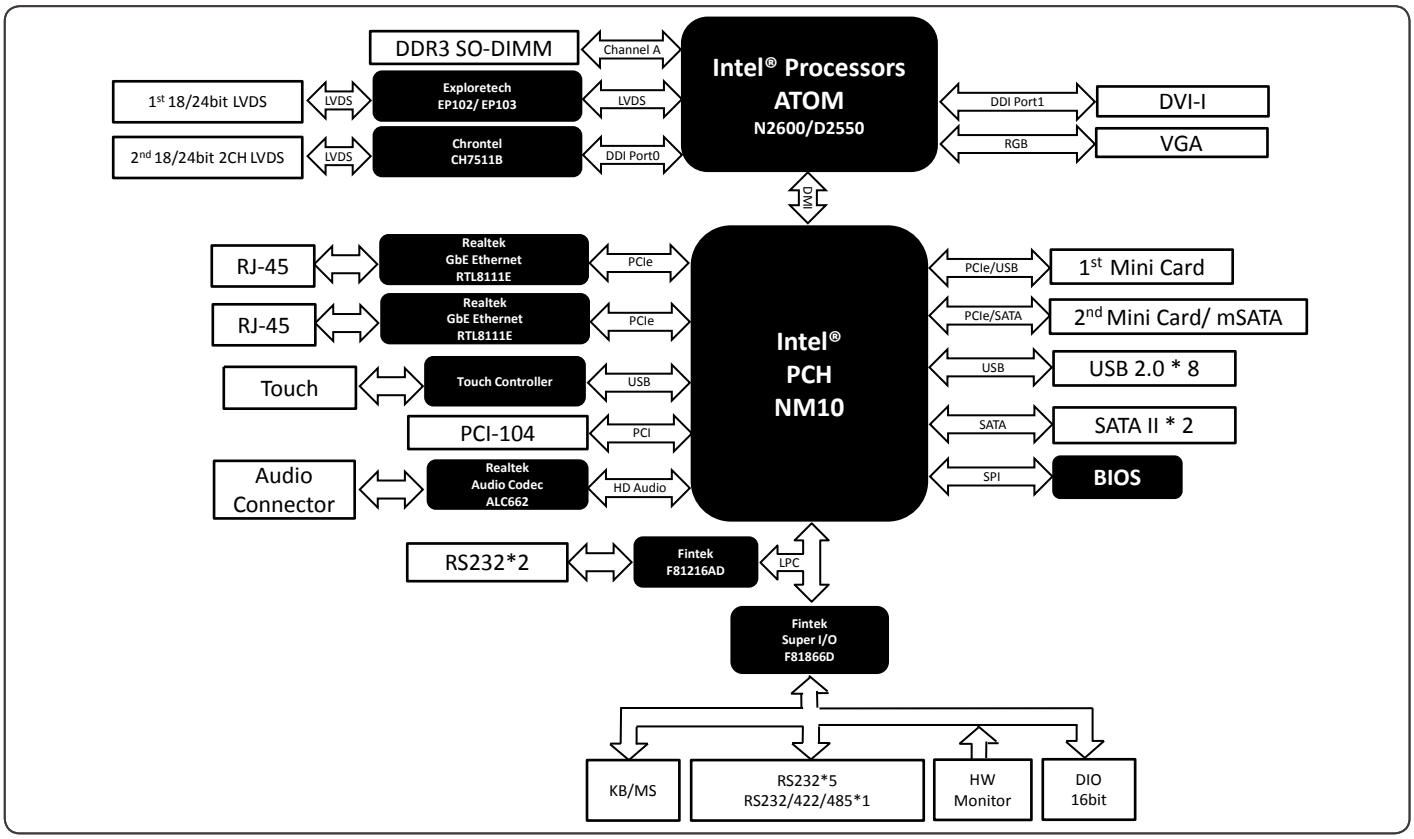
- **1709070500**
  SATA Cable
- **1702150155**
  SATA Power Cable
- **9657666600**
  Jumper Cap
- **M10CV0700**
  Heat Spreader
- **Product DVD**
- **EPIC-CV07**

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

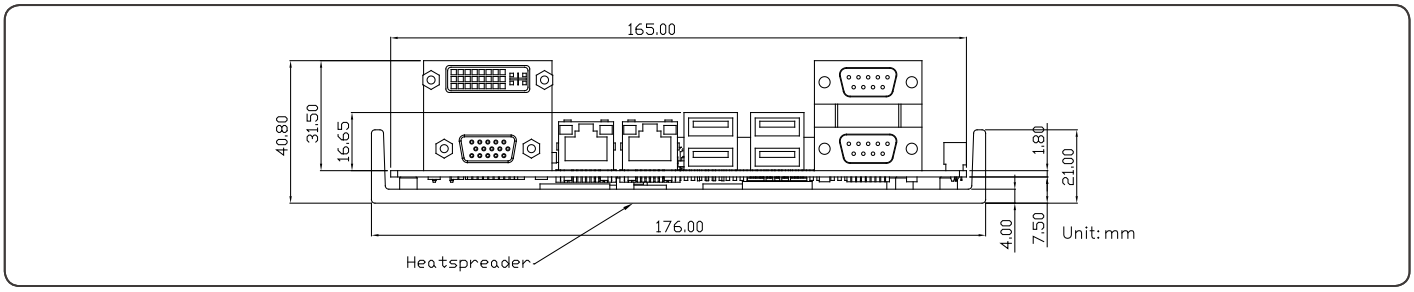
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

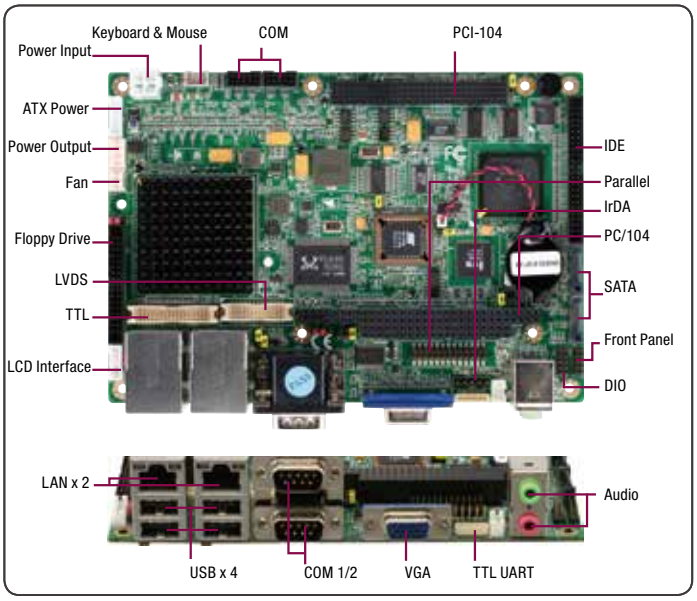
Part Number	CPU	Memory	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
EPIC-CV07-A10-10	Atom™ D2550	DDR3 (Max. 4 GB)	Fanless	CRT+ LVDS1, CRT+ LVDS2	LVDS1 18b 1CH, LVDS2 24b 2CH	SATA x 1, mSATA/Mini-Card x 1	GbE x 2	UBS2.0 x 7	7	1	Mini-Card x 1, PCI-104 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-5536

EPIC Board with Onboard AMD Geode™ LX800 (500 MHz) Processor



Features

- **Onboard AMD Geode™ LX800 Processor**
- **AMD LX800 + CS5536**
- **DDR 333 MHz SODIMM, Up to 1 GB and DDR 400 MHz, Up to 512 MB**
- **10/100Base-TX Ethernet x 2**
- **Up to 24-bit TTL/LVDS LCD Panel**
- **High Definition Audio (HDA)**
- **EIDE x 1, SATA 1.5 Gb/s x 2 with RAID 0,1, CompactFlash™ x 1, Floppy Disk Drive x 1**
- **Parallel x 1, COM x 5, USB2.0 x 4, 8-bit Digital I/O x 1**
- **PC/104+ Expansion**
- **+12V, AT/ATX**

Specifications

System	
Form Factor	EPIC
CPU	AMD Geode™ LX 800
CPU Frequency	Up to 500 MHz
Chipset	AMD CS5536
Memory Type	SDRAM DDR333 (DDR400 optional), SODIMM x 1
Max. Memory Capacity	1 GB
BIOS	Award 1 MB
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V
Power Supply Type	AT/ATX
Power Consumption (Typical)	AMD Geode™ LX 800 500 MHz, DDR333 1 GB 1.35A@12V
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	AMD Geode™ +TI SN75LVDS83
Video Output	CRT, LVDS & TTL
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	10/100Base-TX x 2, Realtek 8100C (Optional Gigabit LAN)
Audio	High Definition Audio (HDA)
USB Port	USB2.0 x 4 (Does not support wake-up function)
Serial Port	RS-232 x 3, TTL only/ GPS x1, RS-232/422/485 x 1
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	UDMA100 x 1, SATA 1 x 2
FDD Interface	FDD x 1
SSD	CompactFlash™
Expansion Slot	PC/104-plus
PWM LCD Support	—
DIO	8-bit
TPM	—
Touch	—

Packing List

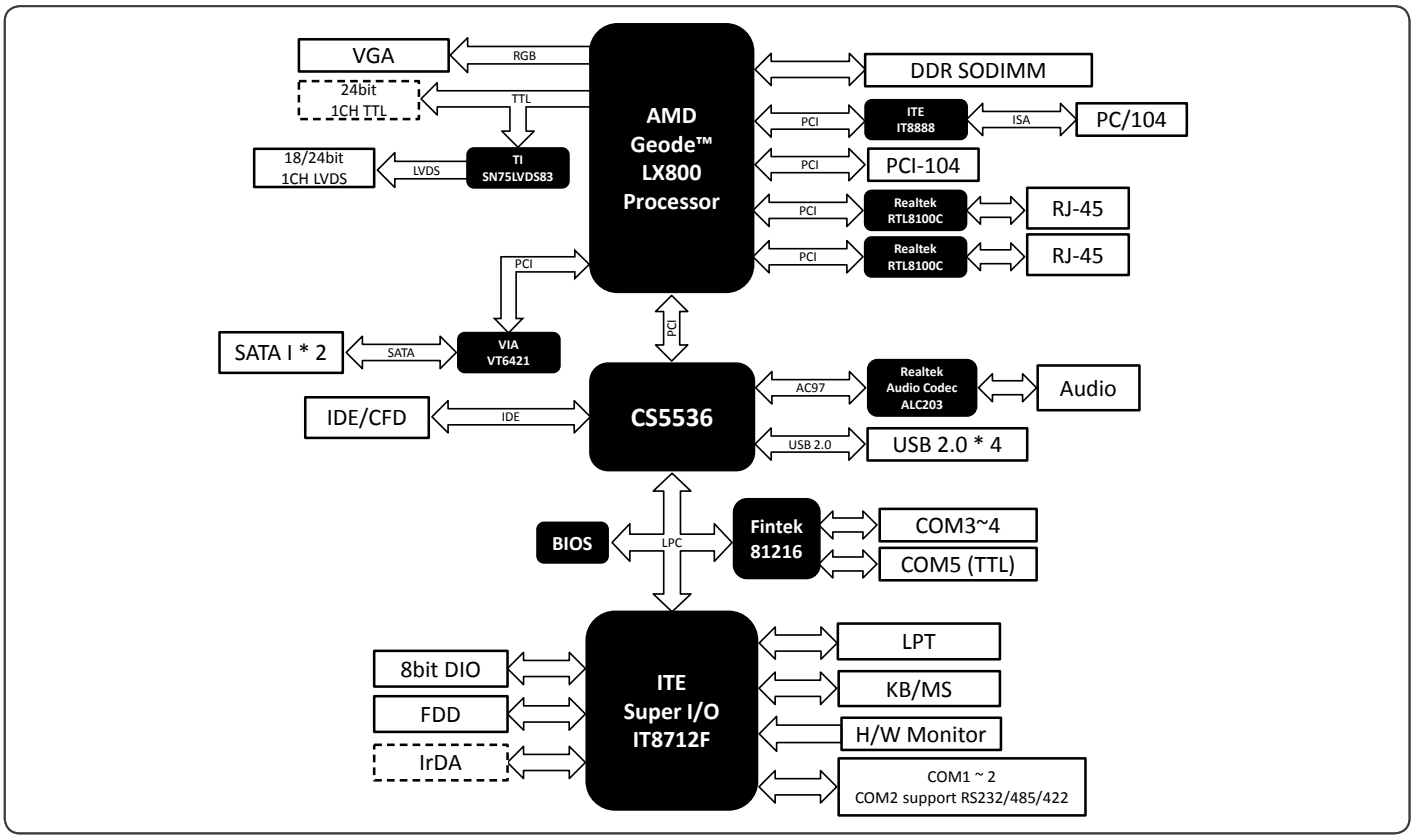
- **9681945600**
  Cable Kit for EPIC-5536
  1701440500 IDE Cable, Length 30+20cm
  1700060152 Keyboard/Mouse Cable, Length 15cm
- **9657666600**
  Jumper Cap
- **Product CD**
- **EPIC-5536 with Heatsink**

Optional Accessories

- **1701260200**
  LPT Cable, Length 20cm
- **1700060152**
  Keyboard/Mouse Cable, Length 15cm
- **1709070500**
  SATA Cable, Length 50cm
- **1701100206**
  COM Port Cable, Length 20cm
- **1701340703**
  FDD Cable, Length 70 cm
- **1702040109**
  Power Output Cable, Length 10cm
- **1703030102**
  Audio Cable (Line-in), Length 10cm
- **1701440500**
  IDE Cable, Length 30+20cm

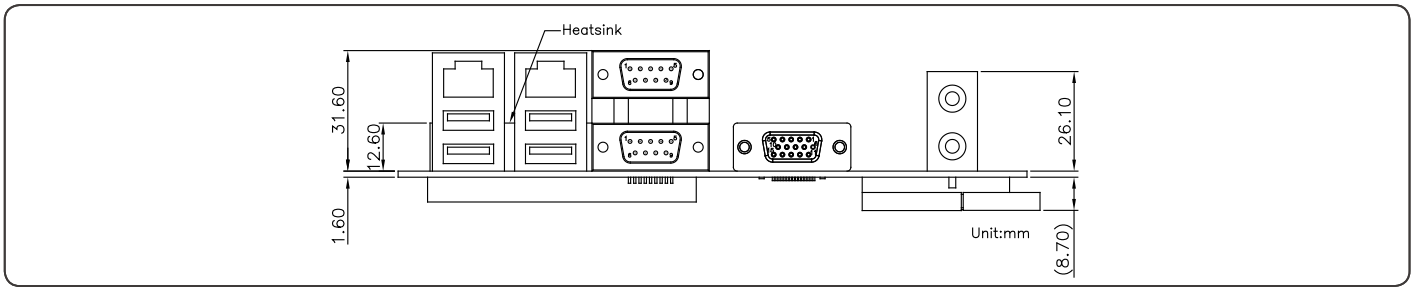
Note: All specifications are subject to change without notice.

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
TF-EPIC-5536-A10	AMD Geode LX800	DDR (Max. 1 GB)	Fanless	CRT+ LVDS	24b 1CH	SATA x 2, EIDE x 1, CF x 1	FE x 2	UBS2.0 x 4	3	1 + 1 (TTL UART)	PC/104+ x 1	+12V (ATX)	0°C ~ 60°C	LPT, DIO 8-bit, Audio, PS/2
TF-EPIC-5536-A10-01	AMD Geode LX800	DDR (Max. 1 GB)	Fanless	CRT+ LVDS	18b 1CH	SATA x 2, EIDE x 1, CF x 1	FE x 2	UBS2.0 x 4	3	1 + 1 (TTL UART)	PC/104+ x 1	+12V (ATX)	0°C ~ 60°C	LPT, DIO 8-bit, Audio, PS/2

SubCompact Boards

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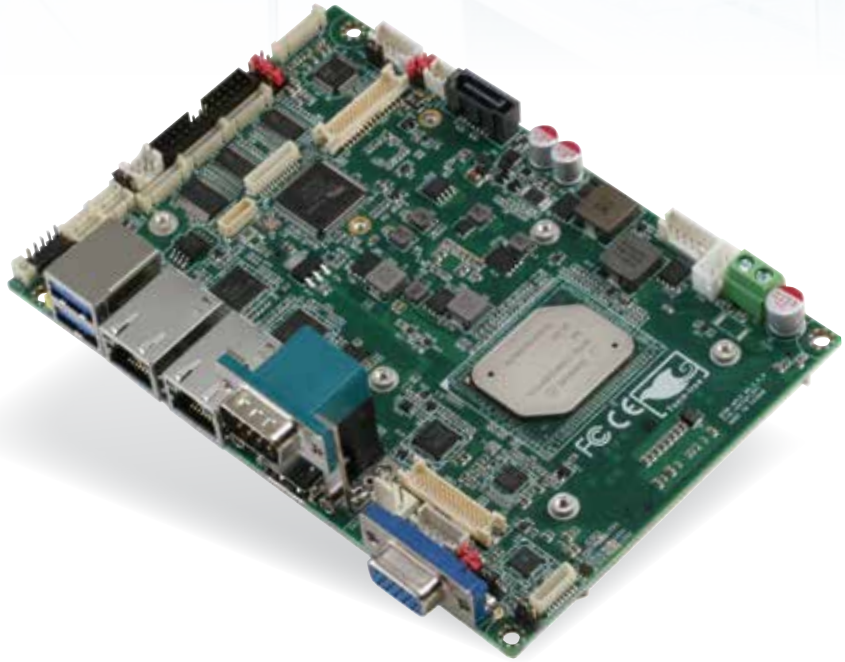
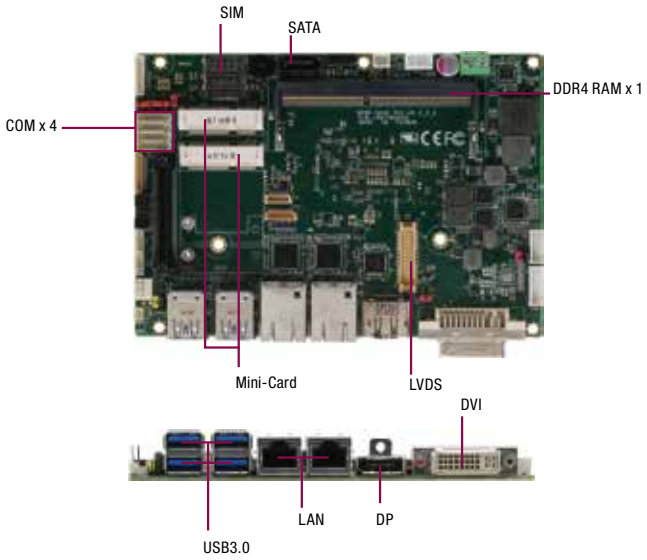
03



GENE-SKU6

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, CRT/DP, 18/24-bit Dual-Channel LVDS
- 2 CH Audio
- SATA III x 1 & mSATA (share with half-size Mini-Card and selective by BIOS)
- Support 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 (Optional), 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	Intel® 6th Generation Core™ i7-6600U/i5-6300U SoC Processor
CPU Frequency	Up to 3.0GHz
Chipset	Intel® 6th Generation Core™ i7-6600U/i5-6300U SoC Processor
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 16G, 1.75A@ +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)	123,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® 6th Generation Core™ SoC Processor
Video Output	DVI-I, CRT/DP, LVDS (CRT is shared wih DP, and default is DP)
Backlight inverter supply	Yes
I/O	
Ethernet	Intel® i210/i211, 10/100/1000Base-TX, RJ-45 x 2 (Support EtherCAT)
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 (share with half-size Mini-Card and selective by BIOS)
Expansion Slot	1. BIO x 1 2. Mini-Card x 2 and default is 2.1. mSATA x 1 (half-size) 2.2. Mini-Card x 1(Full-size)
DIO	8 Bit
SIM	x 1
TPM	x 1 (option)
Touch	x 1

Packing List

- Product DVD
- GENE-SKU6 with Heatspreader

Optional Accessories

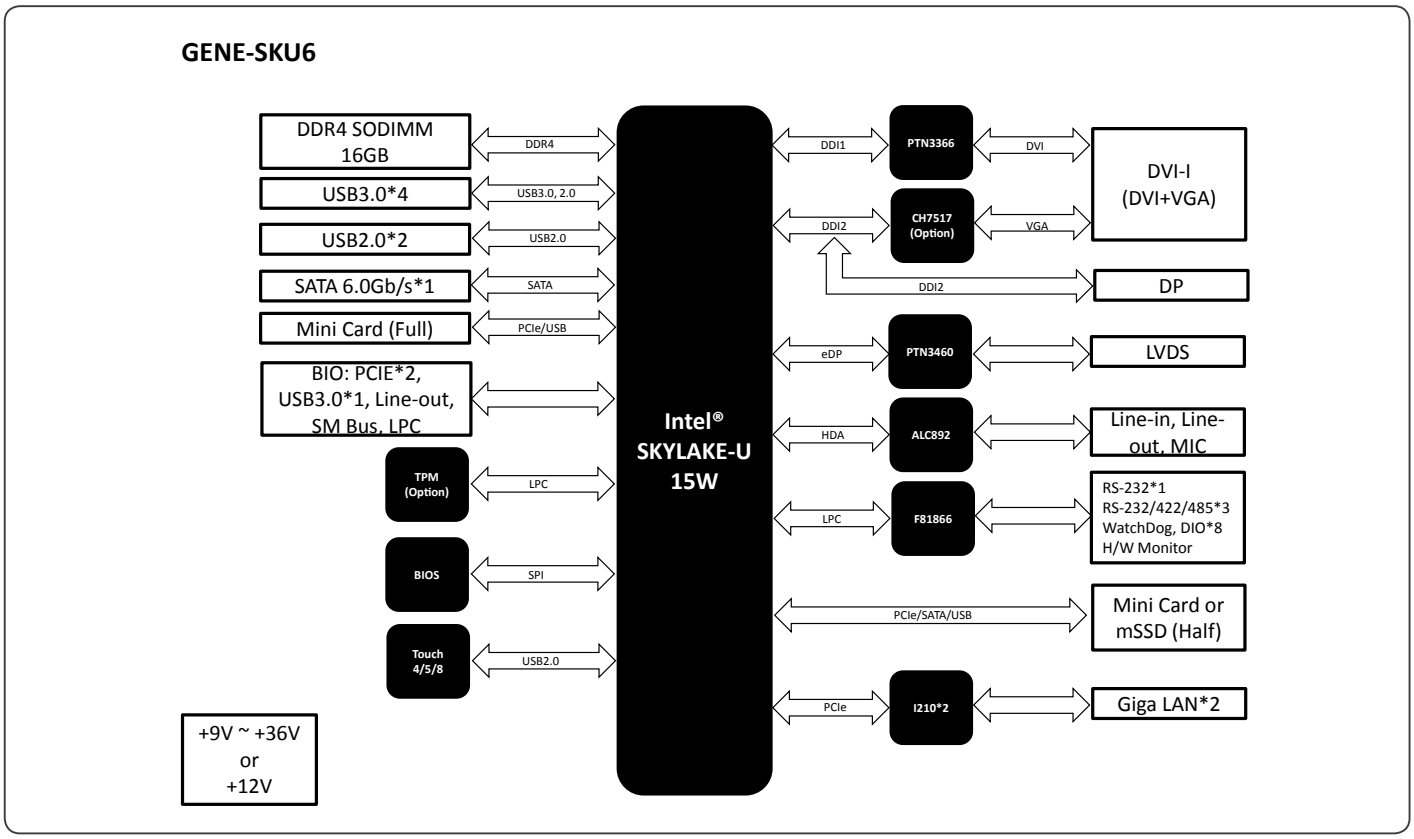
Part Number	Description	QTY
1700050207	(TF)USB CABLE.1*5P Pitch=1.25mm Housinh.20cm.for PFM-945C	2
1701090150	(TF)Flat Cable.D-Sub 9(M).9P Housing.9P 1.25mm pitch Housing.15cm	4
1709100254	(TF)PHONE JACK Cable.3P AUDIO JACK.1*10P 1.25mm HOUSING(F).25cm	1
1702150155	(TF)Power Cable.15P SATA(F).2P 2.0mm 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

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

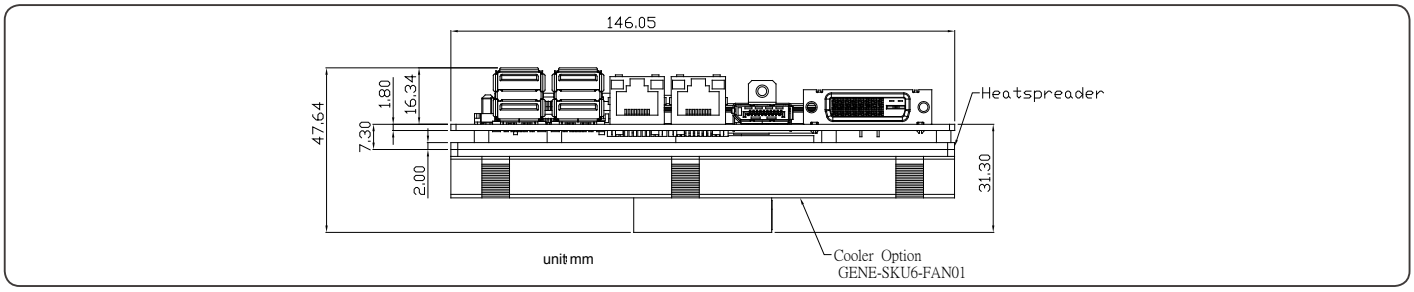
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

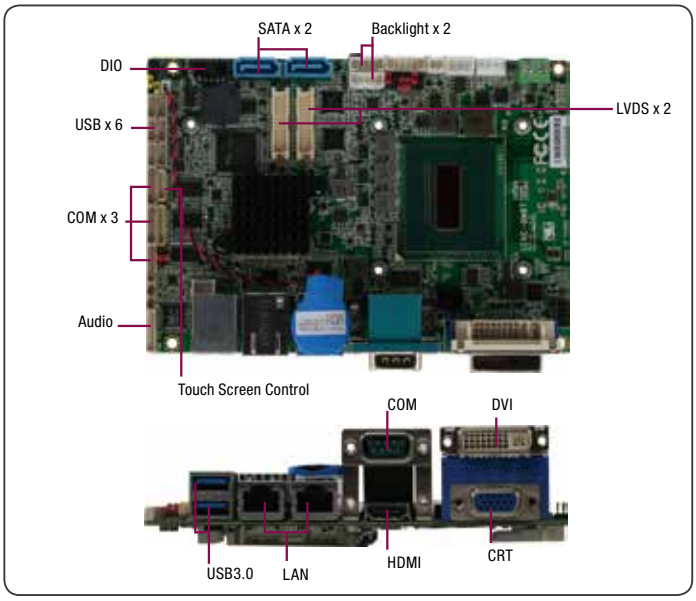


Ordering Information

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	Fan	DVI + LVDS + DP	18/24-bit, 2CH	SATA x 1 mSATA x 1	GbE x 2	USB3.0 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
GENE-SKU6-A10-0002	Intel® i7-6600U	Fan	DVI + LVDS + DP	18/24-bit, 2CH	SATA x 1 mSATA x 1	GbE x 2	USB3.0 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

GENE-QM87

3.5” SubCompact Board with Onboard Intel® 4th Generation Core™ i5-4402E Mobile Processor



Features

- Onboard Intel® 4th Generation Core™ i5-4402E Processor
- Intel® QM87
- DDR3L 1333/1600 MHz SODIMM x 1, Up to 8 GB
- Gigabit Ethernet, RJ-45 x 2
- CRT, DVI, 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
- USB3.0 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® QM87
- Onboard 4/5/8-wire Resistive Touch Screen Controller
- mSATA x 1 (Optional, Would Replace Mini-PCIe with Jumper Setting)
- IEEE 1588 Compatible

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	Onboard Intel® 4th Generation Core™ i5-4402E Processor
CPU Frequency	Up to 2.7GHz
Chipset	Intel® PCH QM87
Memory Type	DDR3L 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™ i5-4402E 1.6 GHz, DDR3L 1600 8GB 2.73A@+12V
Dimension (L x W)	5.75" x 4" (146mm x 101.7mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 61°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 81°C)
Operating Humidity	0% ~ 91% relative humidity, non-condensing
MTBF (Hours)	105,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Haswell BGA integrated
Video Output	CRT+LVDS, CRT+HDMI, LVDS+DVI, LVDS+HDMI, DVI+HDMI, LVDS+LVDS (Real I/O as GENE-QM77 Rev.B)
Backlight inverter supply	Up to 24-bit dual-channel LVDS x 2
I/O	
Ethernet	Intel® I211AT, I217LM ,Intel®I210 10/100/1000Base-TX x2
Audio	High Definition Audio Interface
USB Port	USB2.0 x 6, USB3.0 x 2
Serial Port	RS-232 x 3 , RS-232/422/485 x 1
Parallel Port	—
HDD Interface	SATA 3.0 (6Gbps) x 2
FDD Interface	—
SSD	CFast™ mSATA (share with Mini-Card by jumper)
Expansion Slot	Mini-Card x 1
DIO	8 bit
SIM	x 1
TPM	x 1
Touch	x 1

Packing List

- **170204010R**
  Power Cable
- **Product DVD**
- **GENE-QM87 with Active Cooler**

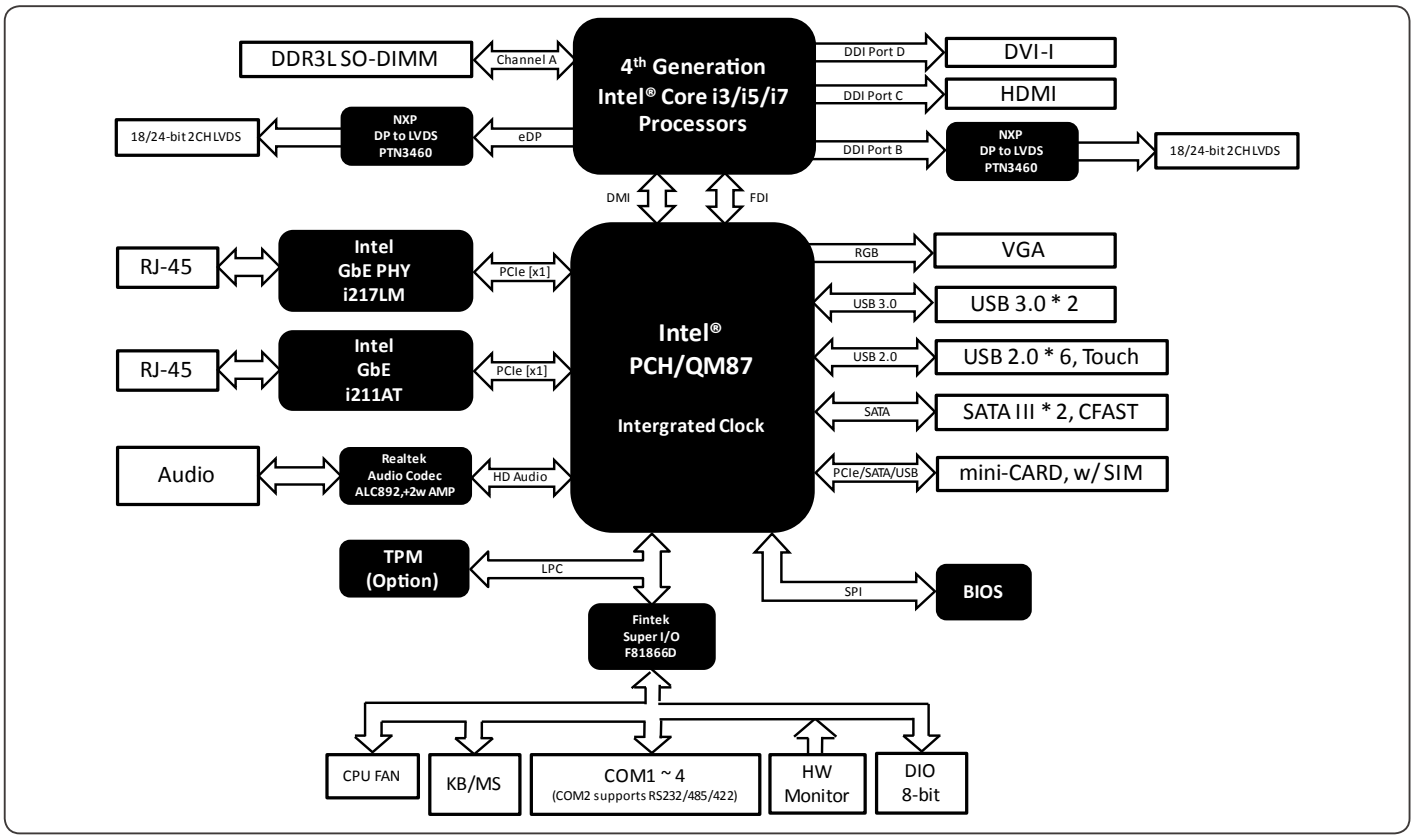
Optional Accessories

- **1700050207**
  USB Cable, Length 20cm
- **1701090150**
  COM Port Cable, Length 15cm
- **1709100254**
  Audio Cable, Length 25cm
- **1702150155**
  Power Cable for 2.5” SATA Hard Disk, Length 15cm
- **1709070500**
  SATA Cable, Length 50cm
- **1700060157**
  Keyboard/Mouse Cable
- **17592QM774**
  CPU Cooler 47W FAN + Heatsink, 60 x 60 x 25 mm (1U)

Note: All specifications are subject to change without notice.

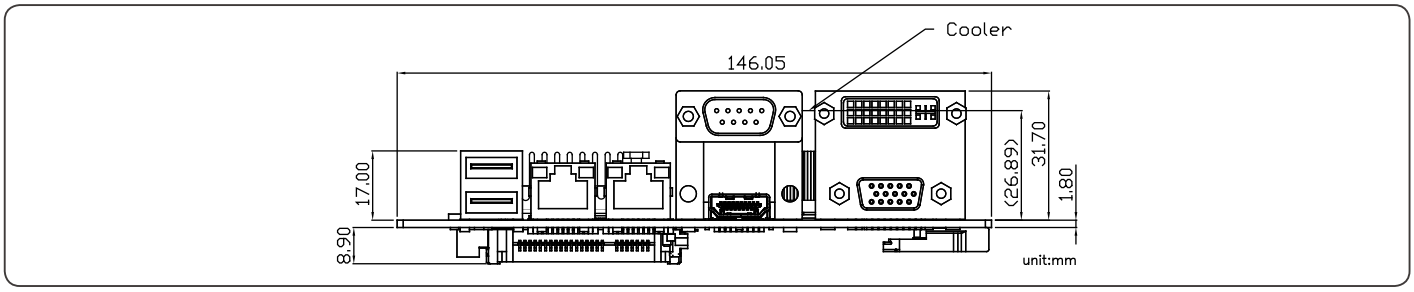
GENE-QM87

Block Diagram



Dimension

Unit: mm

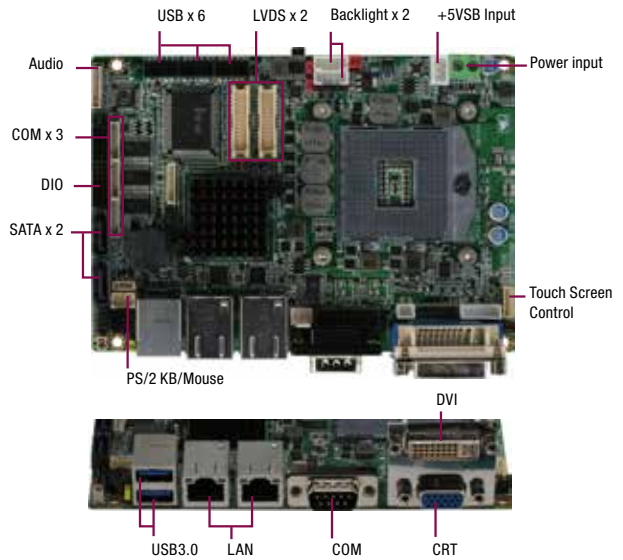


Ordering Information

Part Number	CPU	Chipset	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-QM87-A10	Intel®i5-4402E	Intel® QM87	Fan	CRT + LVDS CRT+ DVI CRT + HDMI 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	USB3.0 x 2 UBS2.0 x 6	3	1	Mini-Card x 1	+12V, AT/ATX	0°C ~ 60°C	TPM, SIM, Touch Controller, DIO x 8
GENE-QM87-A10-01	Intel®i5-4402E	Intel® QM87	Fan	CRT + LVDS LVDS + HDMI LVDS + HDMI	1st 18/24b, 2CH	SATA x 2	GbE x 2	USB3.0 x 2 UBS2.0 x 6	3	1	Mini-Card x 1	+12V, AT/ATX	0°C ~ 60°C	SIM, DIO x 8

GENE-QM77 Rev. A

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



Features

- Intel® 3rd Generation 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
- USB3.0 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 , USB3.0 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	SATAIII x 2
FDD Interface	—
SSD	CFast™ mSATA (share 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
- Product DVD
- GENE-QM77 Rev. A

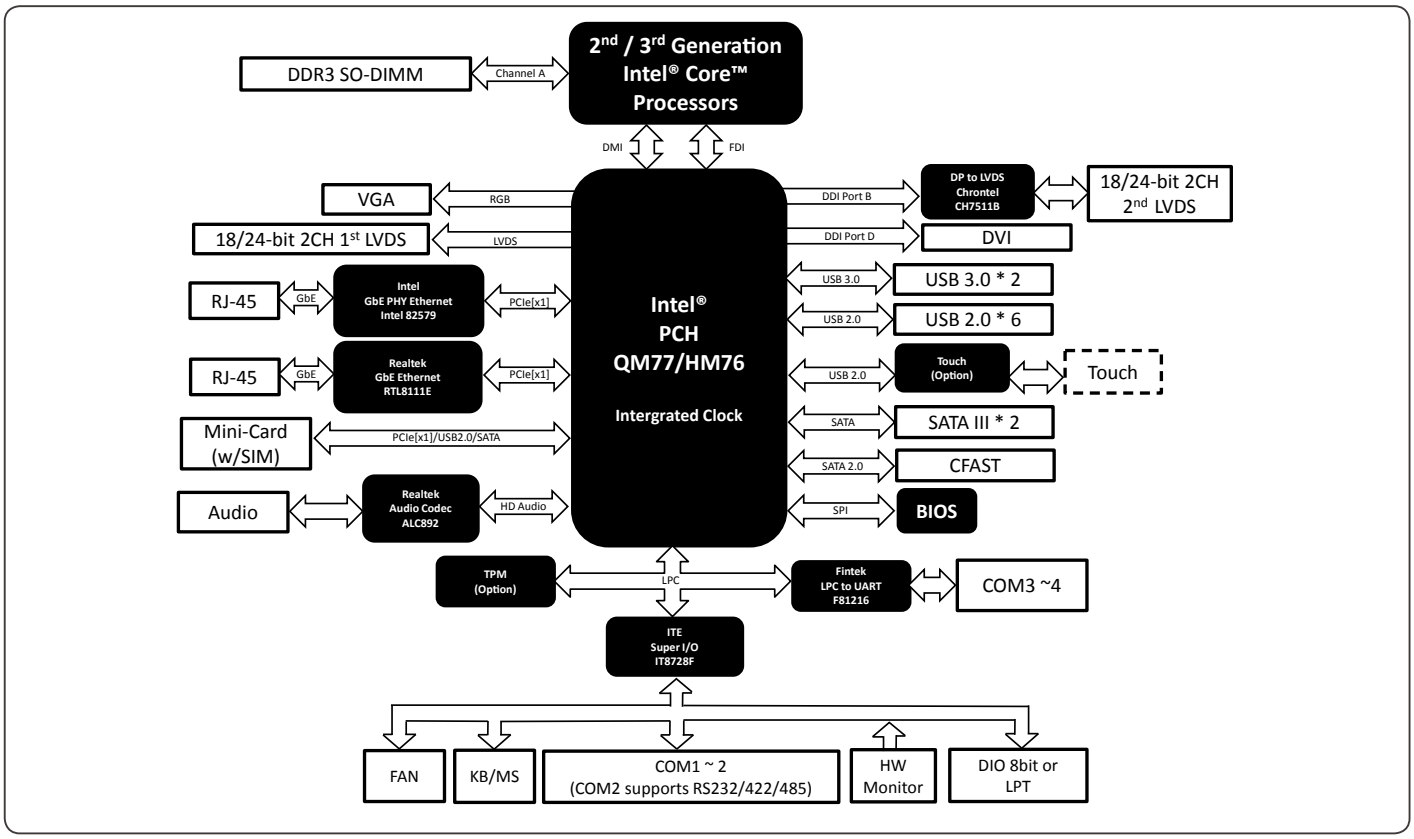
Optional Accessories

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

Note: All specifications are subject to change without notice.

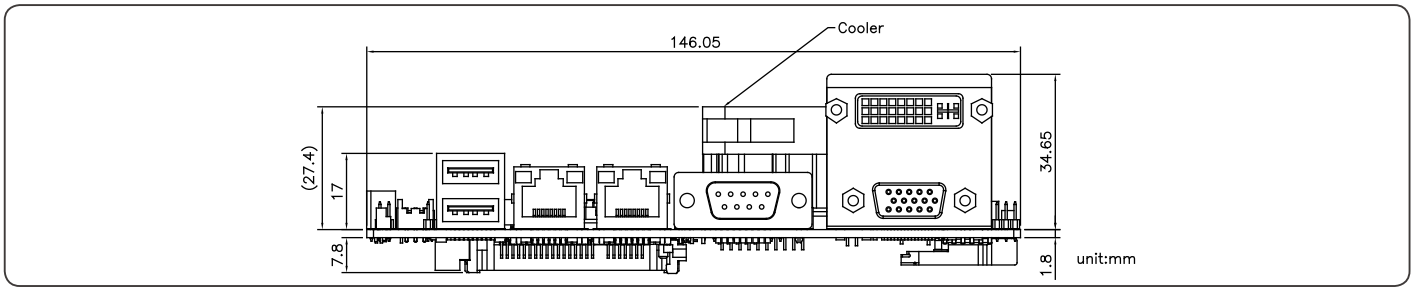
GENE-QM77 Rev. A

Block Diagram



Dimension

Unit: mm

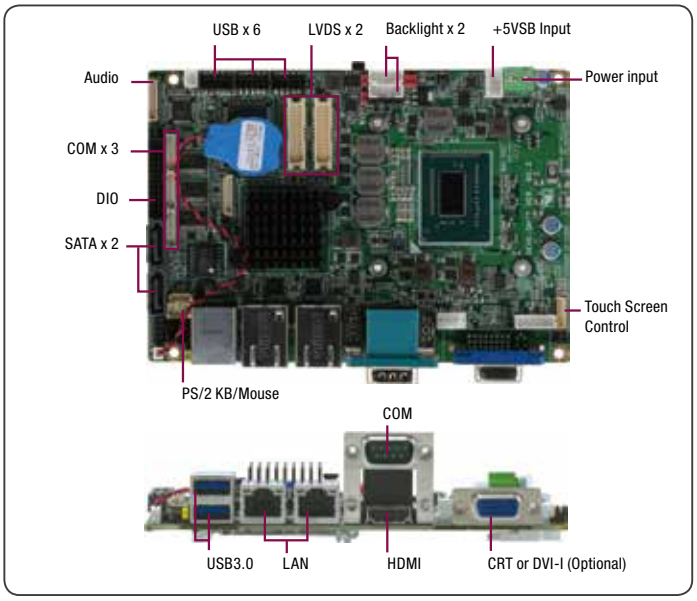


Ordering Information

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	USB3.0 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	USB3.0 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

GENE-QM77 Rev. B

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
- USB3.0 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 , USB3.0 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	SATAIII x 2
FDD Interface	—
SSD	CFast™, mSATA (share 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

- Product DVD
- GENE-QM77 Rev. B with Active Cooler

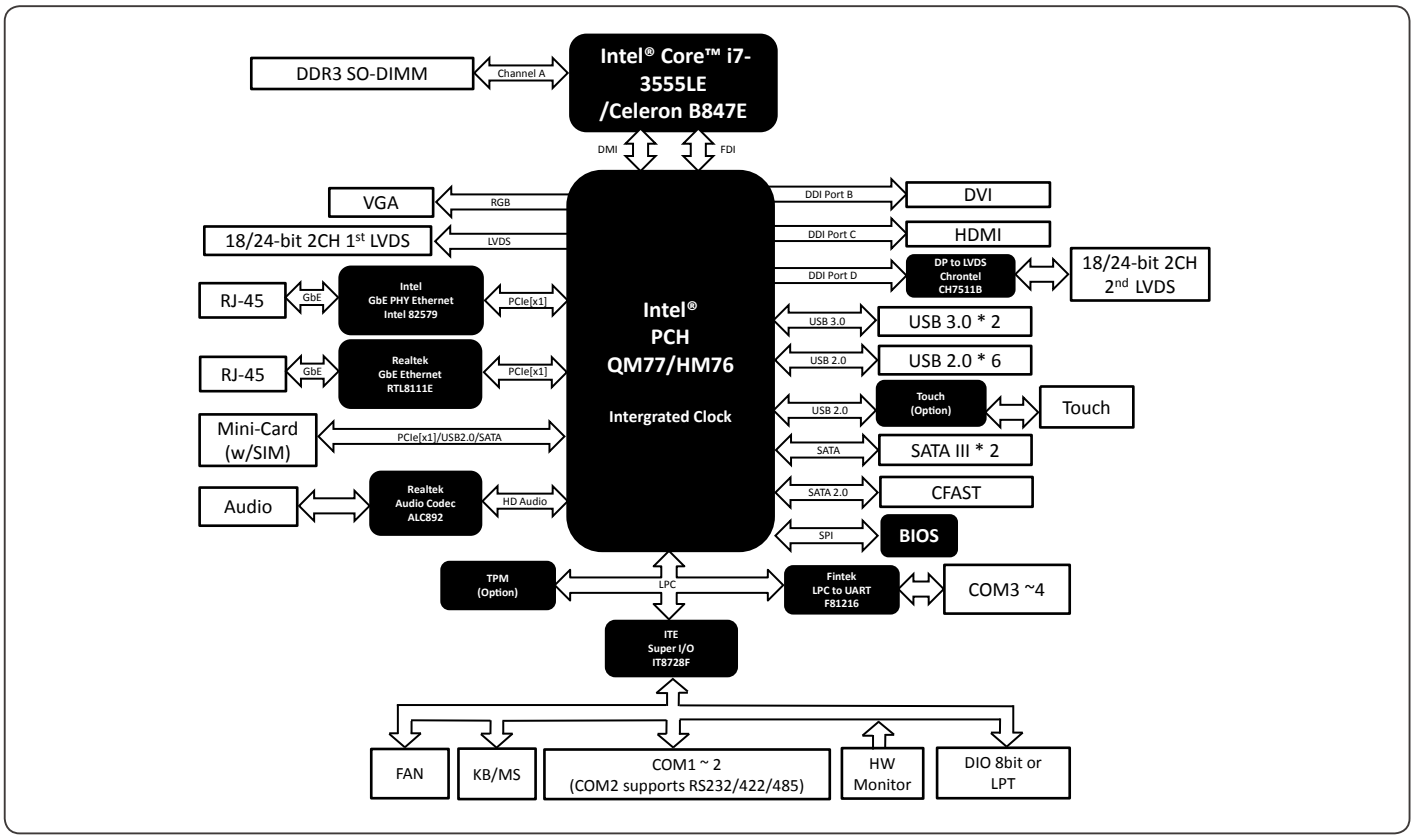
Optional Accessories

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

Note: All specifications are subject to change without notice.

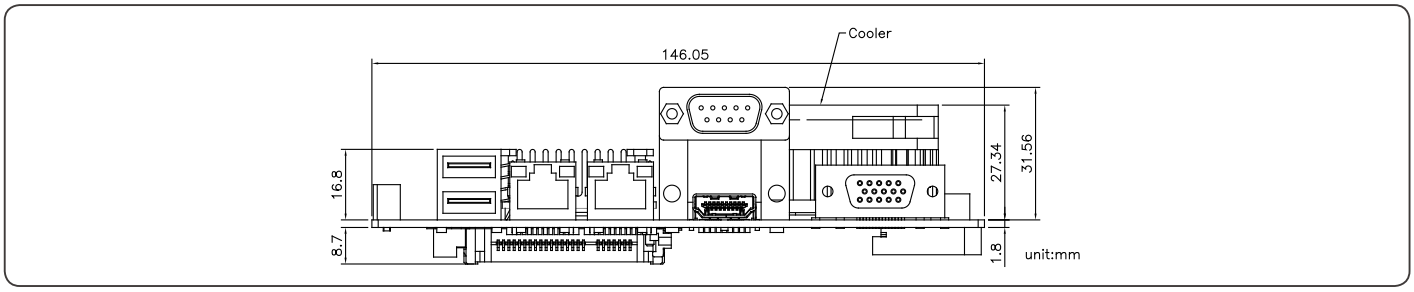
GENE-QM77 Rev. B

Block Diagram



Dimension

Unit: mm

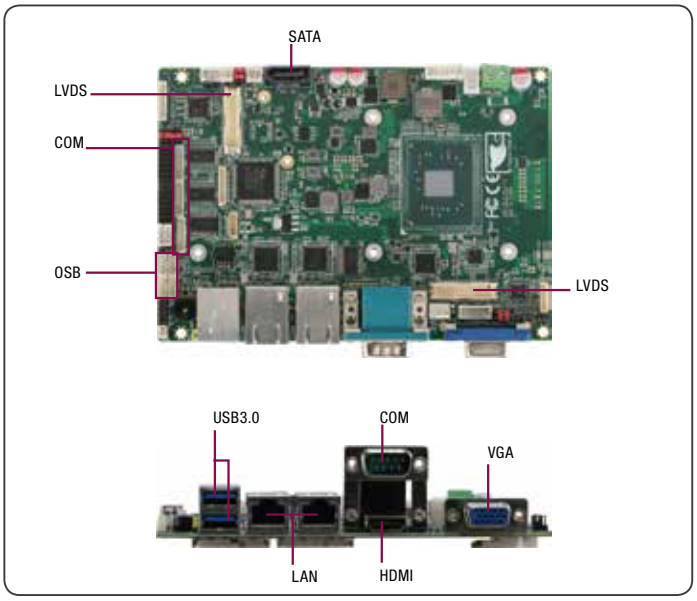


Ordering Information

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	USB3.0 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	USB3.0 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	USB3.0 x 2 UBS2.0 x 6	2	1	Mini-Card x 1	+12V, AT/ ATX	0°C ~ 60°C	Touch Controller, DIO x 8

GENE-APL5

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

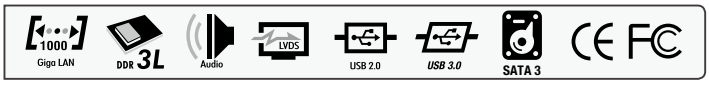


Features

- **Intel® Pentium® N4200/ Celeron® N3350 Processor SoC**
- **DDR3L 1867 MHz SODIMM x 1, up to 8 G**
- **VGA/LVDS/LVDS2 (HDMI Co-layout with LVDS2 Optional)**
- **2 CH Audio, SATA III x 1**
- **Support 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 1867MHz, 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)	—
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)	intel® N4200, DDR3L 1600 MHz 8G, 0.8A@+12V
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, share with DIO)
HDD Interface	SATA 3.0 x 1 +5V SATA power connector x 1
FDD Interface	—
SSD	mSATA
Expansion Slot	Mini Card x 2 and default is 2.1. mSATA x 1 (full-size) 2.2. miniCard x 1 (half-size)
DIO	8 Bit
SIM	x 1 (uSIM) (Optional)
TPM	x 1 (Optional)
Touch	x 1 (Optional)



Packing List

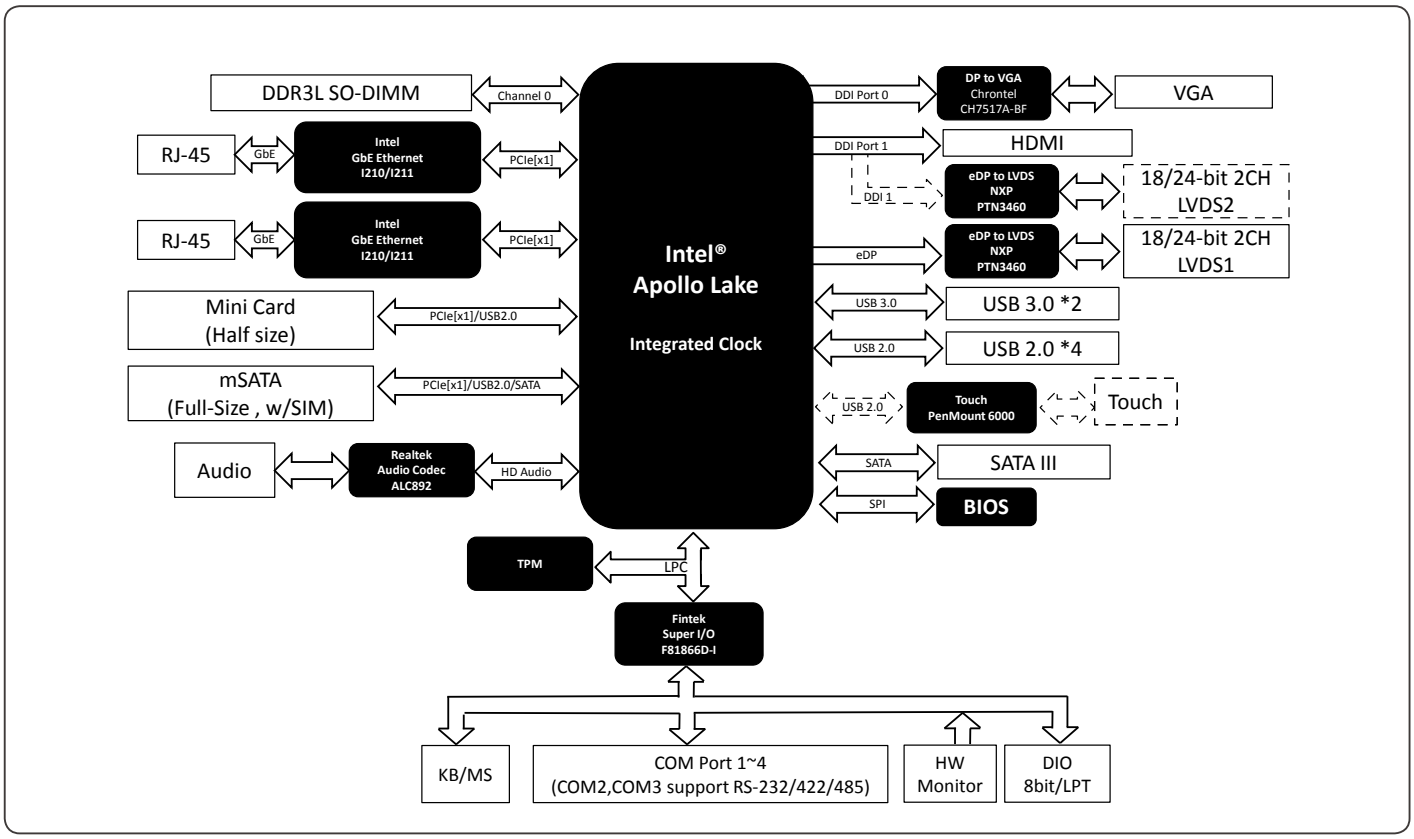
- **Product DVD**
- **GENE-APL5 with Heatsink**

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

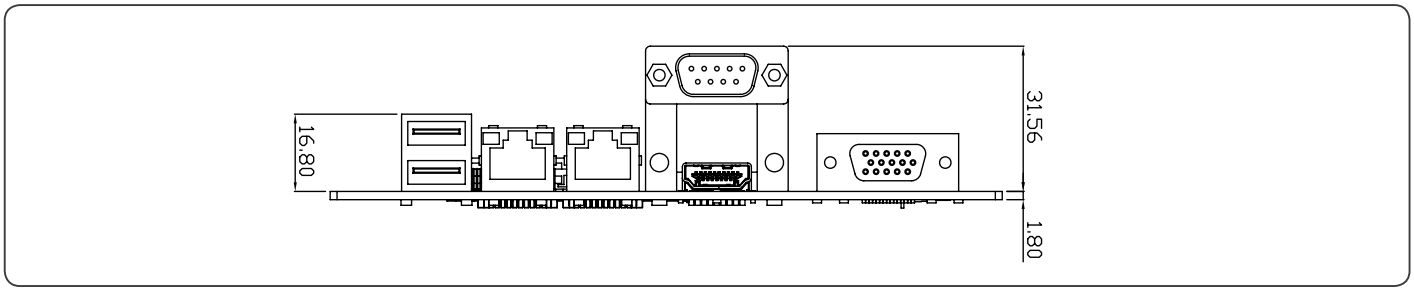
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

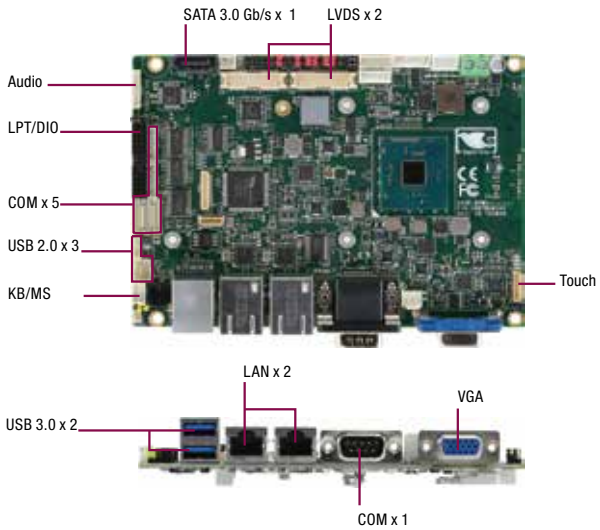


Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-APL5-A10-0001	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	12V	0°C ~ 60°C	DIO x 8

GENE-BSW5

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)**
- **USB3.0 x 2, USB2.0 x 3, RS-232 x 4, RS-232/422/485 x 2, 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® Pentium® N3700 @ 2.40 GHz, DDR 3L 1600MHz, 8G, 1.55A@+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	USB3.0 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, share 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

- **Product DVD**
- **GENE-BSW5 with Passive Heatsink**

Optional Accessories

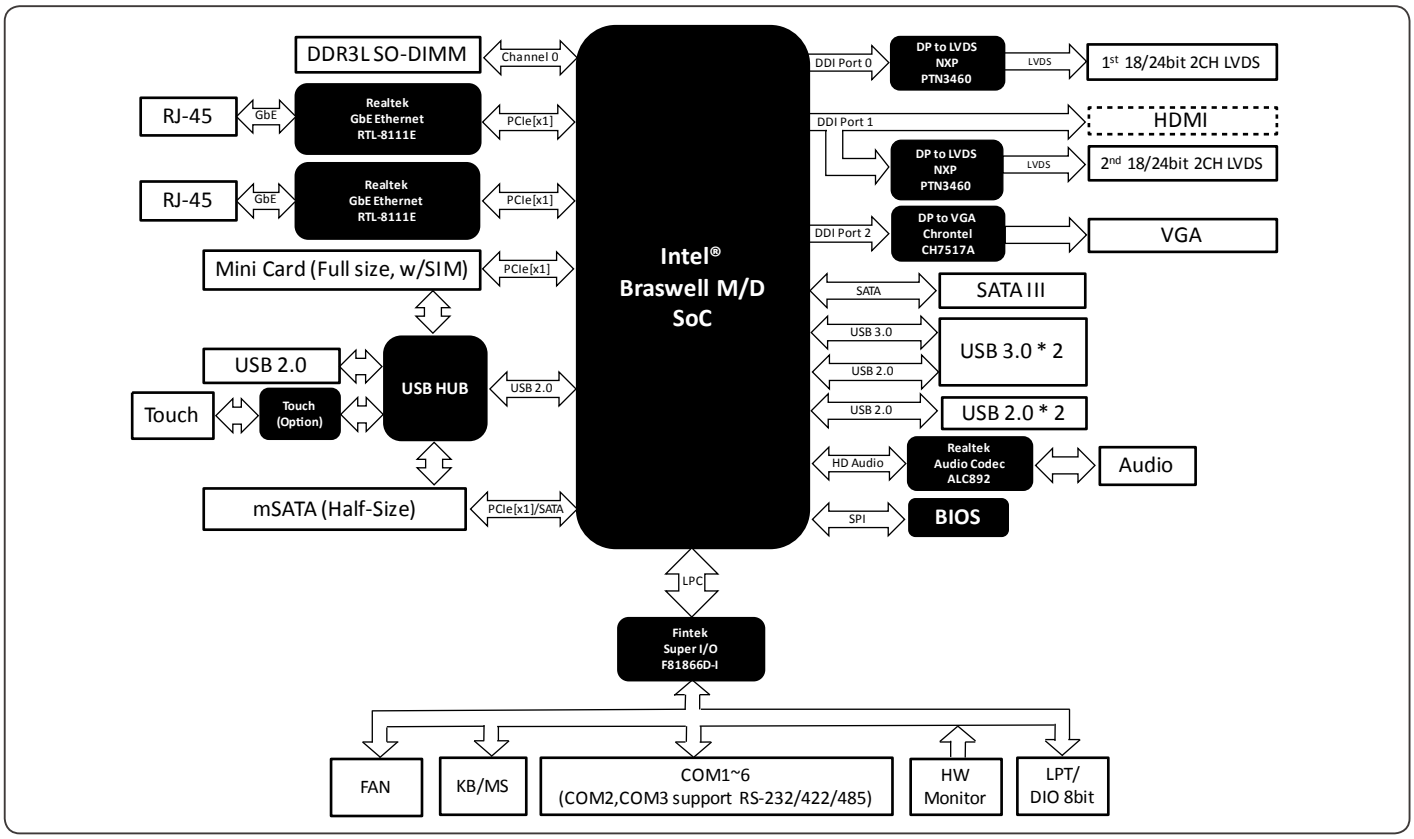
Part Number	Description	QTY
1702150155	(TF)Power Cable.15P SATA(F).2P 2.0mm Housing(PH).15cm	1
170220020B	(TF)Power Cable.20P ATX(M).4P 5.08mm Housing(F).+3P 2.5mm Housing (XH).20cm	1
1709070500	(TF)SATA CABLE.7P Pitch 1.27mm.50cm	1
170204010R	(TF)Power Cable.Double 4P 5.08mm Housing(M).10cm	1
1709100254	(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-W10R-600-00000-EN	Windows® 10 IoT Enterprise, for Retail or Thin Clients, 64bit MultiLang. (EngFreChiTChiSJanKor)

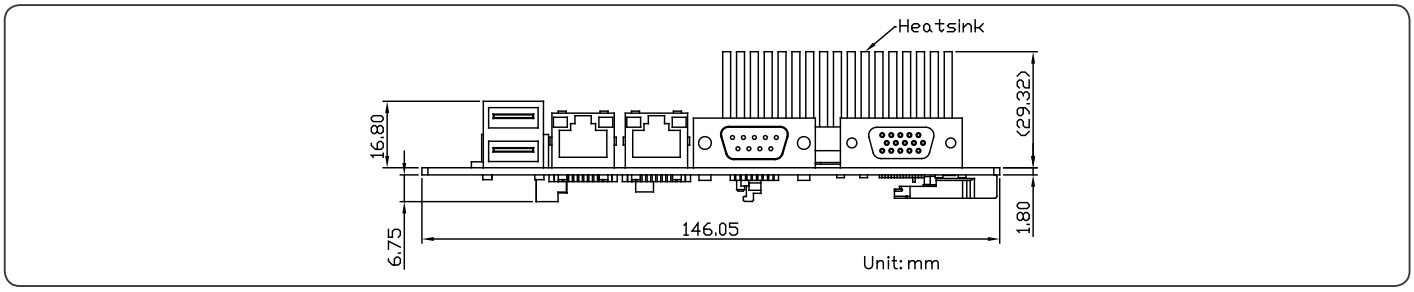
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

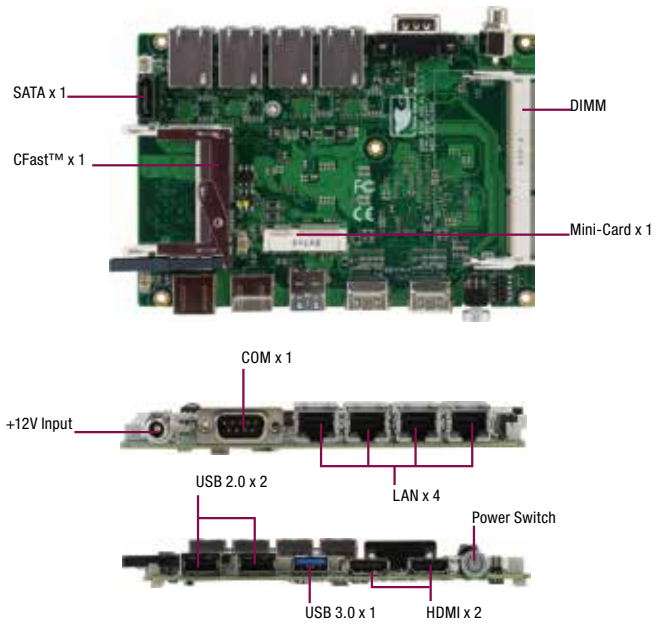


Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-BSW5-A11-0001	N3160	Fanless	VGA/LVDS	24bit, 2CH	SATA x 1, mSATA x 1 (half size)	GbE x 2	USB3.0 x 2 USB 2.0 x 3	4	—	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

GENE-BT04

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



Features

- Intel® Celeron® J1900/ N2807 Processor
- 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

Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	Intel® Celeron® J1900/ N2807 Processor SoC
CPU Frequency	Up to 2.0GHz
Chipset	Intel® Bay Trail N2807/J1900 Processor SoC
Memory Type	DDR3L 1333, SODIMM x 1
Max. Memory Capacity	Up to 8G
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Level
Power Requirement	+12V
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
- **Product DVD**
- **GENE-BT04 with Heatspreader**

Optional Accessories

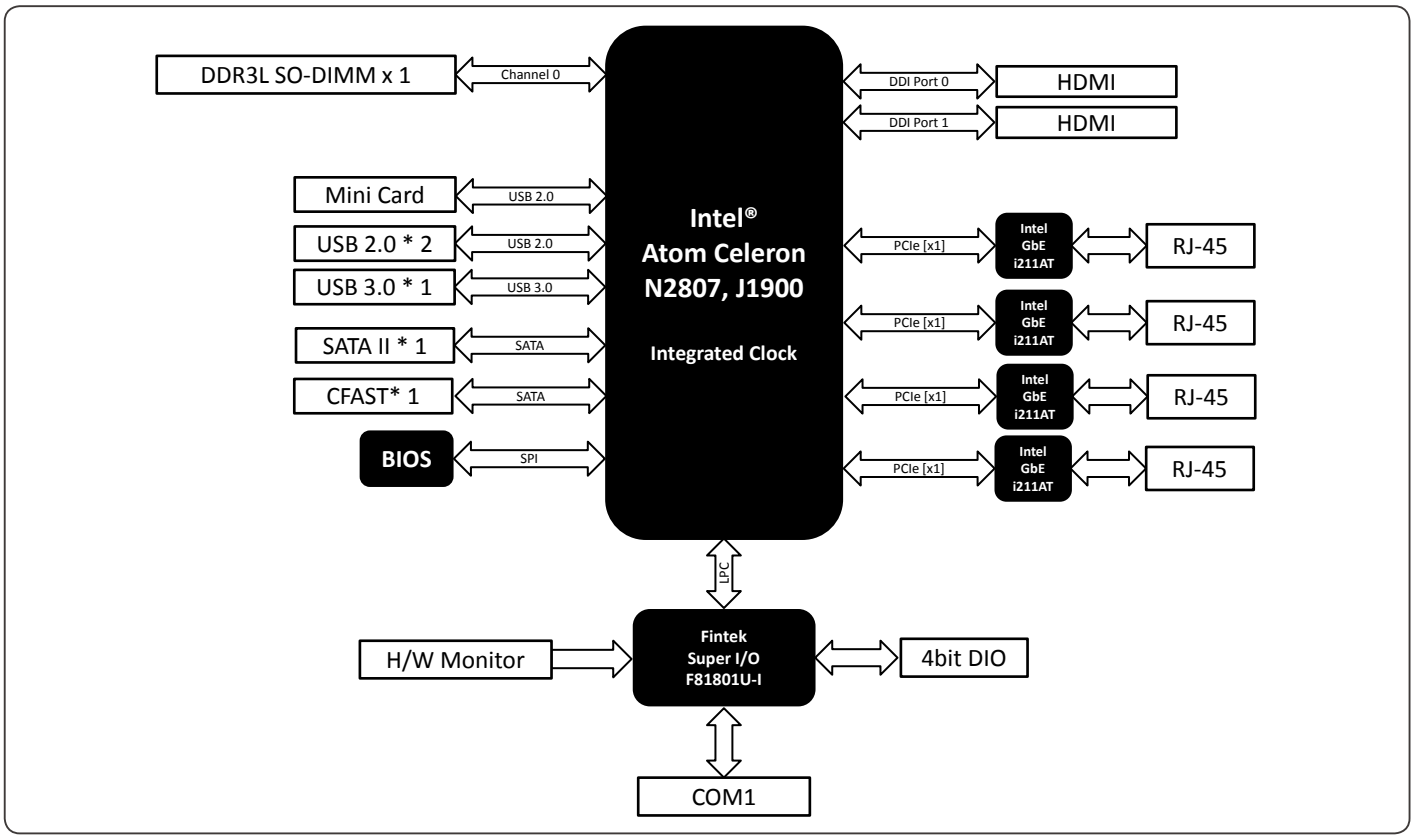
Part Number	Description	QTY
1709070500	(TF)SATA CABLE, 7P Pitch 1.27mm, 50cm	1
1702150155	(TF)Power Cable, 15P SATA(F), 2P 2.0mm Housing(PH), 15cm	1

OS Support

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

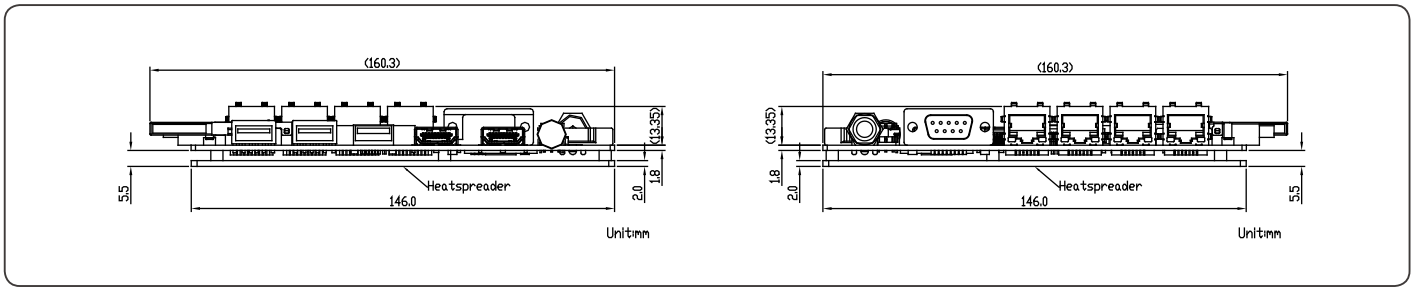
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

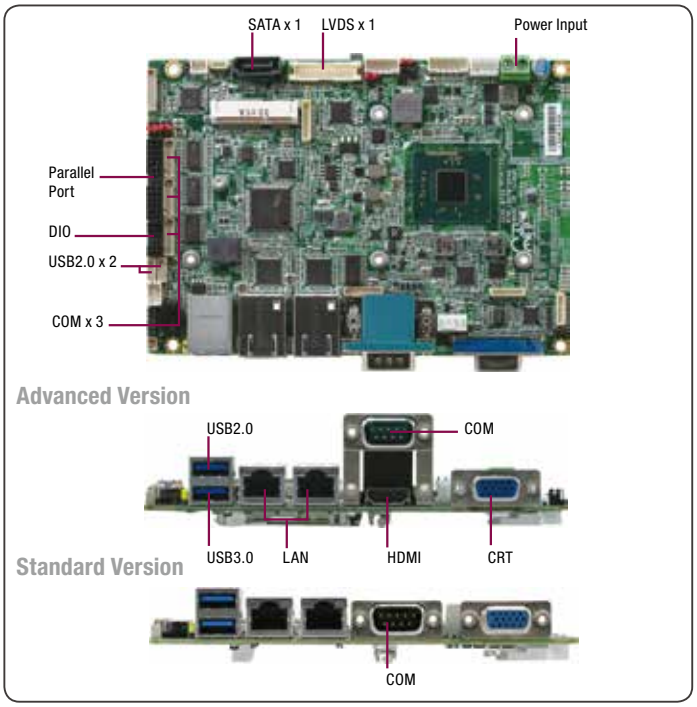


Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-BT04-A10-0001	Intel® Celeron® N2807	Fanless	HDMI x 2	—	SATA x 1	GbE x 4	USB3.0 x 1 USB 2.0 x 2	1	—	Mini-Card x 1 (Full)	12V	0°C ~ 60°C	DIO x 4
GENE-BT04-A10-0002	Intel® Celeron® J1900	Fanless	HDMI x 2	—	SATA x 1	GbE x 4	USB3.0 x 1 USB 2.0 x 2	1	—	Mini-Card x 1 (Full)	12V	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
- USB3.0 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 8G
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Level
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" (146mm x 101.6mm)
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

- Product DVD
- GENE-BT05 with Passive Heatsink

Optional Accessories

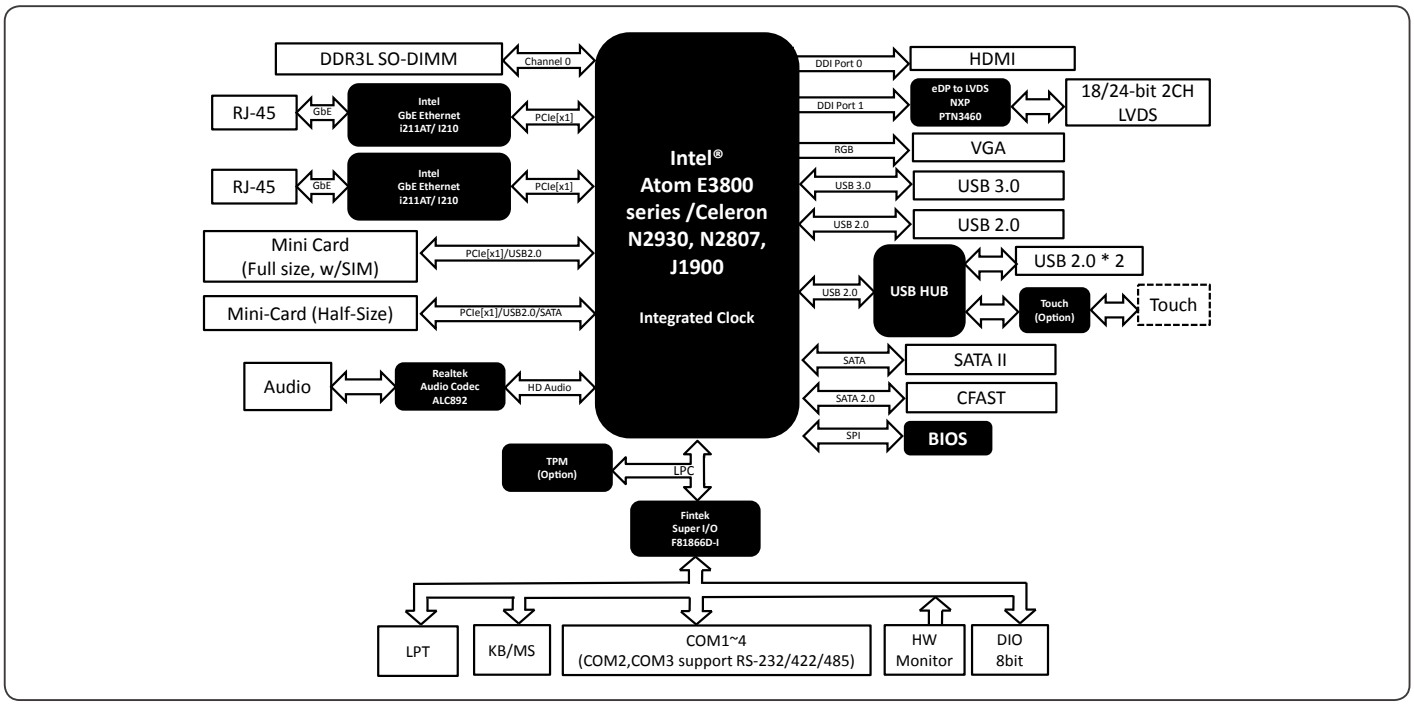
Part Number	Description	QTY
1700050207	(TF)USB CABLE, 1*5P Pitch=1.25mm Housinh, 20cm, for PFM-945C	2
1701090150	(TF)Flat Cable, D-Sub 9(M), 9P Housing, 9P 1.25mm pitch Housing, 15cm	3
1709100254	(TF)PHONE JACK Cable, 3P AUDIO JACK, 1*10P 1.25mm HOUSING(F), 25cm	1
1709070500	(TF)SATA CABLE, 7P Pitch 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.

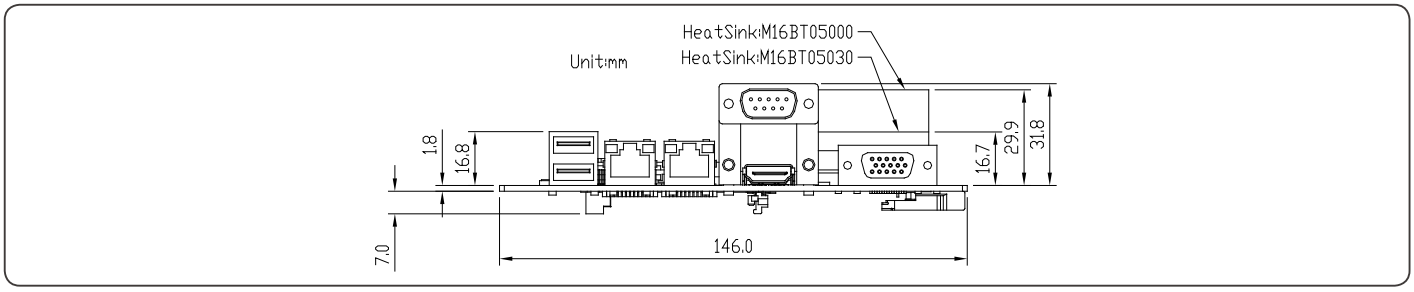
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

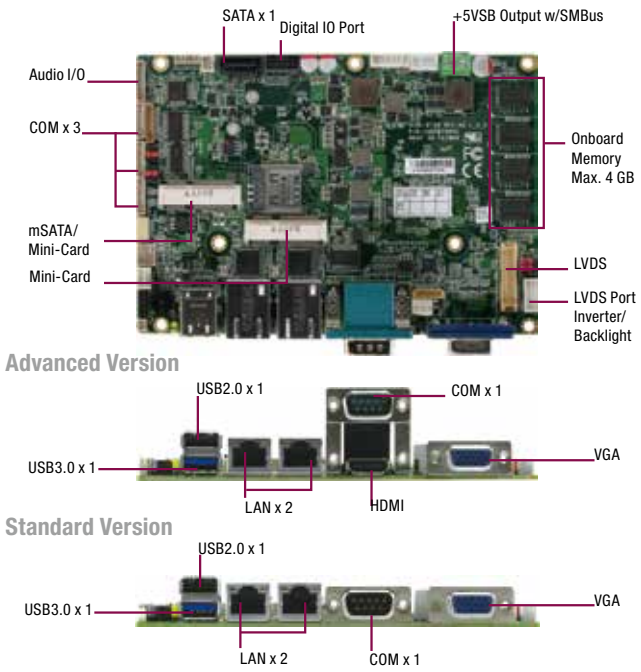


Ordering Information

Part Number	CPU	Fan/Fan-less	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp	Others
GENE-BT05-A10-0001	Intel® Celeron® N2930	Fanless	CRT + LVDS, LVDS + HDMI, HDMI + CRT	24-bit, 2CH	SATA x 1 CFast™ x 1	GbE x 2	USB3.0 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	24-bit, 2CH	SATA x 1 mSATA x 1 (Half-size)	GbE x 2	USB3.0 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	24-bit, 2CH	SATA x 1 CFast™ x 1	GbE x 2	USB3.0 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	24-bit, 2CH	SATA x 1 mSATA x 1 (Half-size)	GbE x 2	USB3.0 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	24-bit, 2CH	SATA x 1 CFast™ x 1	GbE x 2	USB3.0 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	24-bit, 2CH	SATA x 1 mSATA x 1 (Half-size)	GbE x 2	USB3.0 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	24-bit, 2CH	SATA x 1 CFast™ x 1	GbE x 2	USB3.0 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	24-bit, 2CH	SATA x 1 mSATA x 1 (Half-size)	GbE x 2	USB3.0 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	24-bit, 2CH	SATA x 1 CFast™ x 1	GbE x 2	USB3.0 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	24-bit, 2CH	SATA x 1 mSATA x 1 (Half-size)	GbE x 2	USB3.0 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	24-bit, 2CH	SATA x 1 mSATA x 1 (Half Size)	Gbe x 2	USB3.0 x 1 UBS2.0 x 3	2	2	Mini-Card x 1 (Full-Size)	+12V, AT/ ATX	WITAS 2 (-40°C ~ 85°C)	DIO x 8
GENE-BT05W2-A10-0008	Intel® Atom™ E3825	Fanless	CRT + LVDS	24-bit, 2CH	SATA x 1 mSATA x 1 (Half Size)	Gbe x 2	USB3.0 x 1 UBS2.0 x 3	2	2	Mini-Card x 1 (Full-Size)	+12V, AT/ ATX	WITAS 2 (-40°C ~ 85°C)	DIO x 8

GENE-BT06

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)
- Support 8-bit Digital I/O, USB2.0 x 3 , USB3.0 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	On Board DDR3L 1066/1333
Max. Memory Capacity	Up to 4GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Level
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" (146mm x 101.6mm)
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™ series 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

- Product DVD
- GENE-BT06 with Heatspreader

Optional Accessories

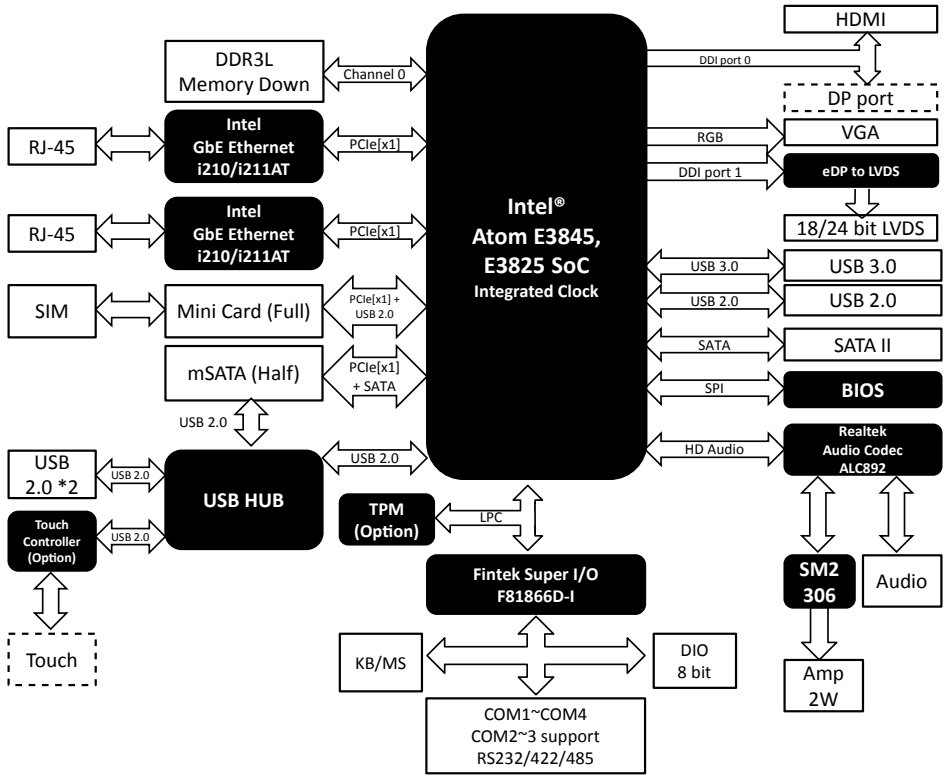
Part Number	Description	QTY
1700050207	(TF)USB CABLE, 1*5P Pitch=1.25mm Housinh, 20cm, for PFM-945C	2
1701090150	(TF)Flat Cable, D-Sub 9(M), 9P Housing, 9P 1.25mm pitch Housing, 15cm	3
1709100254	(TF)PHONE JACK Cable, 3P AUDIO JACK, 1*10P 1.25mm HOUSING(F), 25cm	1
1702150155	(TF)Power Cable, 15P SATA(F), 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)

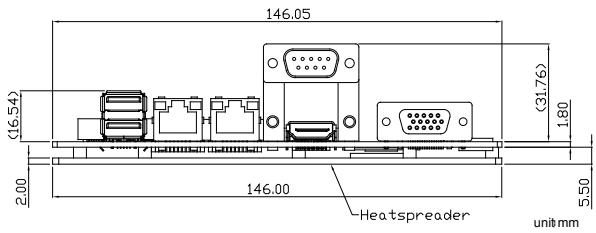
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

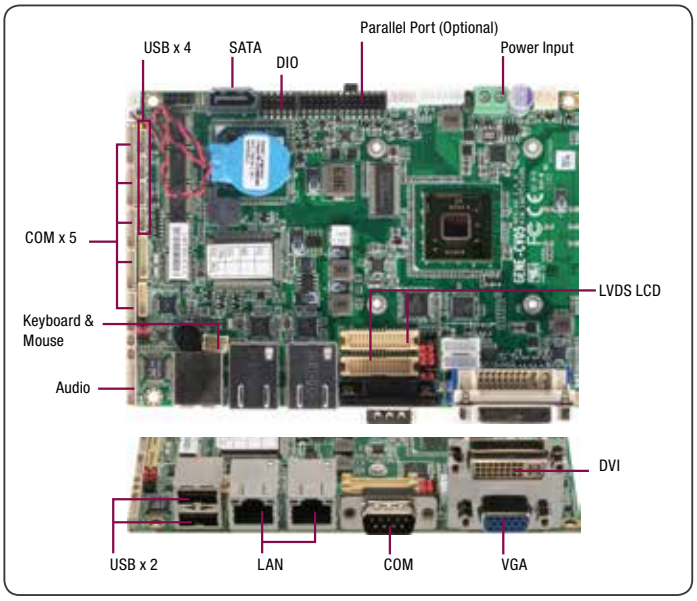


Ordering Information

Part Number	CPU	Fan/ Fanless	DRAM	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	Mini-Card x 1 (Full)	9~24V	0°C ~ 60°C	DIO x 8
GENE-BT06-A11-0002	Intel® Atom™ E3845	Fanless	Onboard 4GB	CRT + LVDS LVDS + HDMI HDMI + CRT	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	Mini-Card 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	Mini-Card x 1 (Full)	9~24V	0°C ~ 60°C	DIO x 8
GENE-BT06W2-A11-0002	Intel® Atom™ E3845	Fanless	Onboard 4GB	CRT + LVDS LVDS + HDMI HDMI + CRT	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	Mini-Card x 1 (Full)	9~24V	0°C ~ 60°C	Touch Controller, TPM, SIM, DIO x 8

GENE-CV05

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" (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)	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	SATAII 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

- Product DVD
- GENE-CV05 with Passive Heatsink

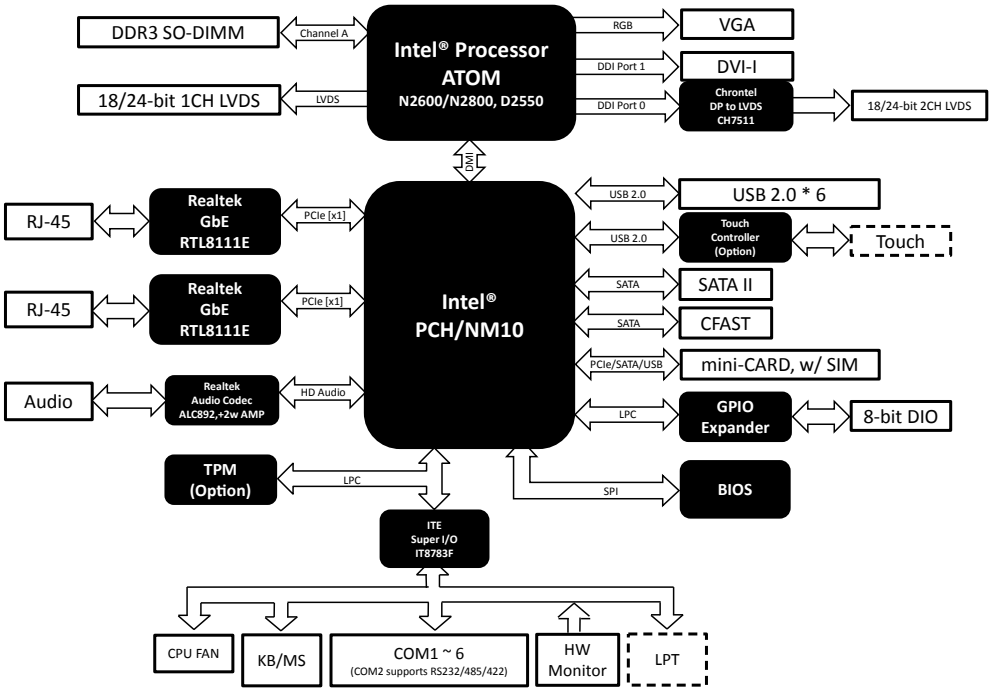
Optional Accessories

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

Note: All specifications are subject to change without notice.

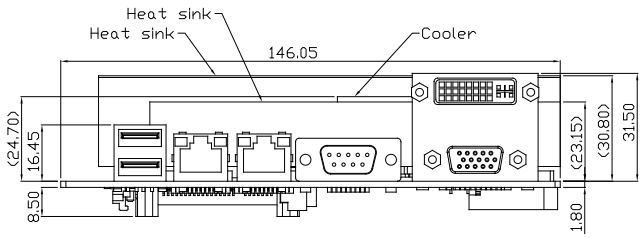
GENE-CV05

Block Diagram



Dimension

Unit: mm



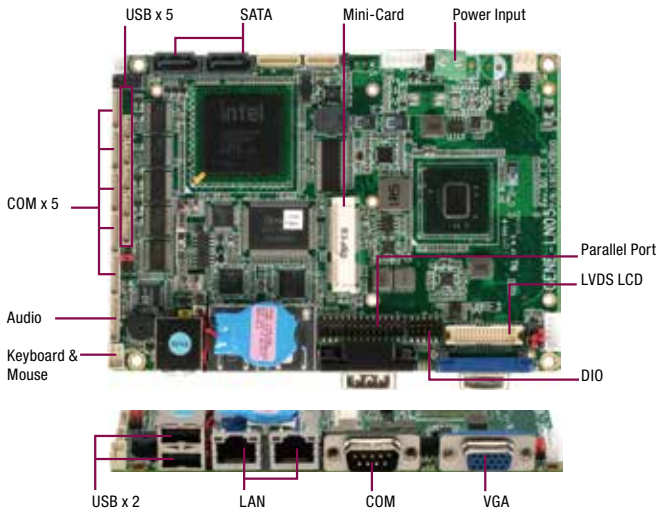
Ordering Information

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 x1	+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 x1	+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 x1	+12V, AT/ ATX	0°C ~ 60°C	Touch Controller, 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.

GENE-LN05 Rev. B

3.5” SubCompact Board with Intel® Atom™ N455/ D525 Processor



Features

- Intel® Atom™ N455/D525 Processor
- Intel® ICH8M
- DDR3 800 MHz SODIMM, Up to 4 GB For Intel® Atom™ D525
  DDR3 800 MHz SODIMM, Up to 2 GB For Intel® Atom™ N455
- Gigabit Ethernet x 2, RJ-45 x 2
- CRT, 18/24-bit Single Channel LVDS LCD
- 2CH HD Audio
- SATA 3.0 Gb/s x 2 (Optional RAID 0 & 1), CompactFlash™ x 1
- USB2.0 x 7, COM x 6, Parallel x 1, 8-bit Digital I/O
- Onboard 4/5/8-wire Resistive Touch Screen Controller
- Mini-Card x 1
- +12V or +5V (Optional)
- Onboard Trusted Platform Module (Optional)

Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	Intel® Atom™ D525/N455
CPU Frequency	1.8 GHz
Chipset	Intel® ICH8M
Memory Type	SODIMM DDR3 800
Max. Memory Capacity	4 GB for D525 , 2GB for N455
BIOS	AMI 4MB
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V or +5V
Power Supply Type	AT/ATX
Power Consumption (Typical)	Intel® Atom™ D525, DDR3 800 1 GB , 1.29A @ +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)	70,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Atom™ D525/N455
Video Output	CRT, LVDS
Backlight inverter supply	Up to 24-bit single channel LVDS
I/O	
Ethernet	10/100/1000Base-TX x 2, Intel® 82567V, Intel® 82583V
Audio	High definition audio interface
USB Port	USB2.0 x 7
Serial Port	RS-232 x 5, RS-232/422/485 x 1
Parallel Port	SPP/ECP/EPP x 1
HDD Interface	SATA 2 x 2
FDD Interface	—
SSD	CompactFlash™
Expansion Slot	Mini-Card x 1
DIO	8 bit
SIM	x 1
TPM	x 1
Touch	x 1

Packing List

- Product CD
- GENE-LN05 Rev.B with Active Cooler (D525 Version) or with Passive Heatsink (N455 Version)

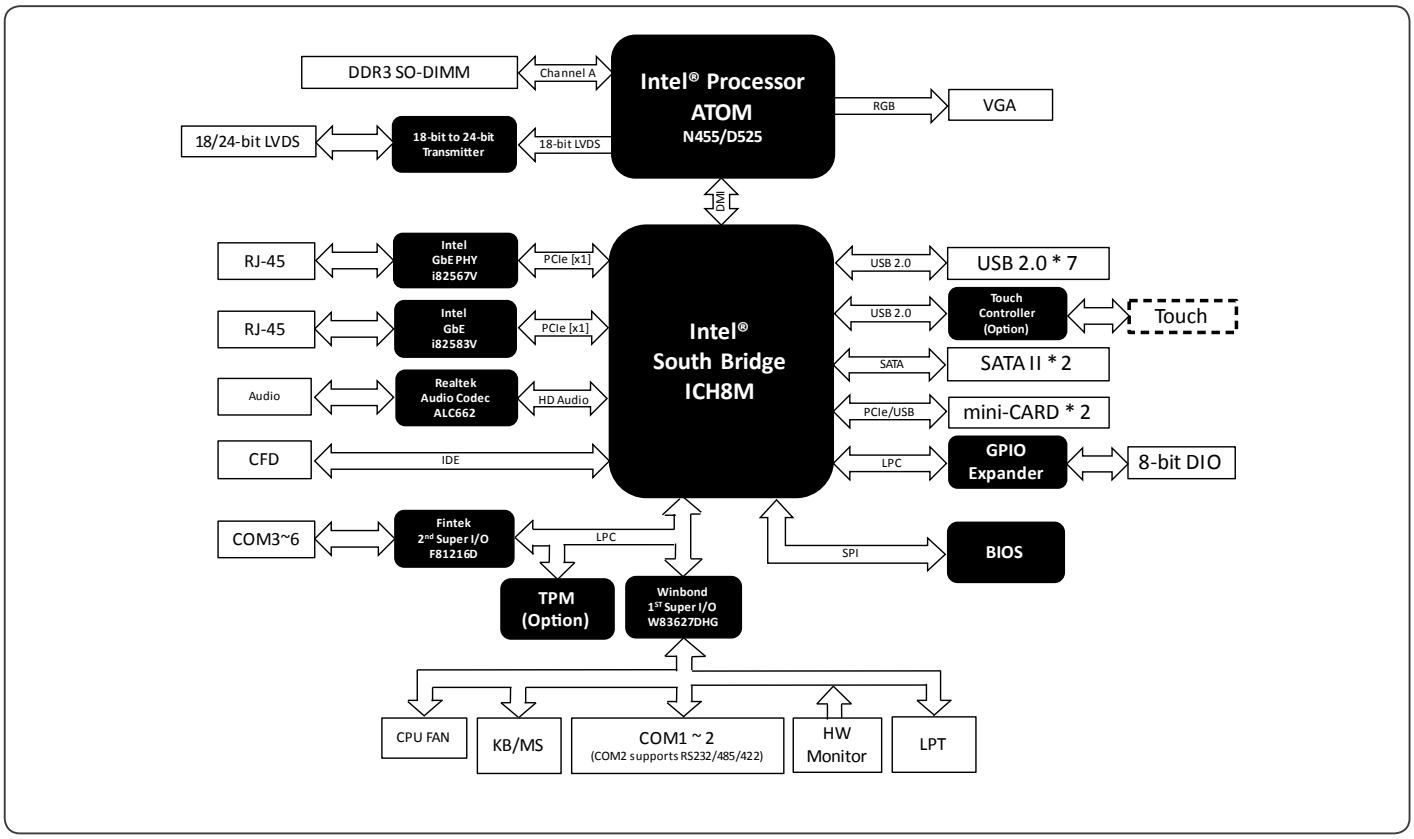
Optional Accessories

- **1700050207**
  USB Cable, Length 20cm
- **1701090150**
  COM Port Cable, Length 15cm
- **1709100254**
  Audio Cable, Length 25cm
- **1709070500**
  SATA Cable, Length 50cm
- **1701260200**
  Parallel Port Cable, Length 20cm
- **1702002010**
  Big Single Row 4-pin Power Input Cable for +12V Input, Length 10cm
- **1702150155**
  Power Cable for 2.5” SATA Hard Disk, Length 15cm
- **170220020B**
  Conversion Cable ATX Power Supply, Length 20cm
- **170204010P**
  Big Single Row 4-pin Power Input Cable for +5V Input, Length 10cm
- **1700060157**
  KB/Mouse Cable

Note: All specifications are subject to change without notice.

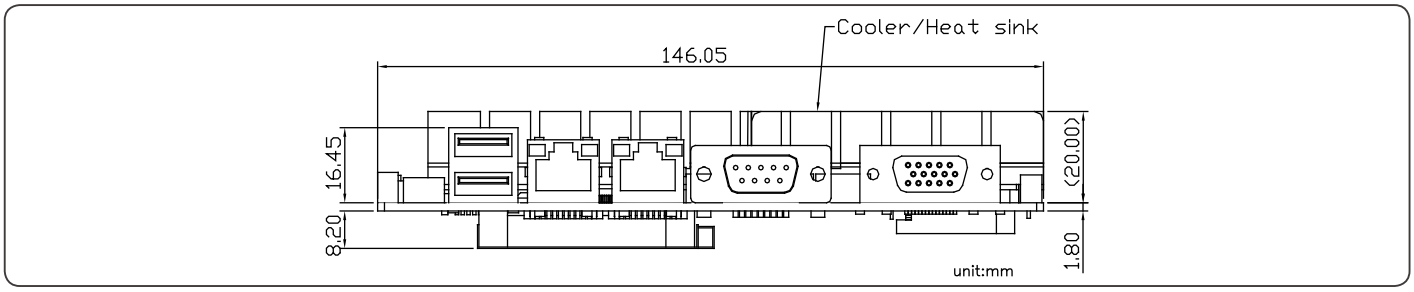
GENE-LN05 Rev. B

Block Diagram



Dimension

Unit: mm

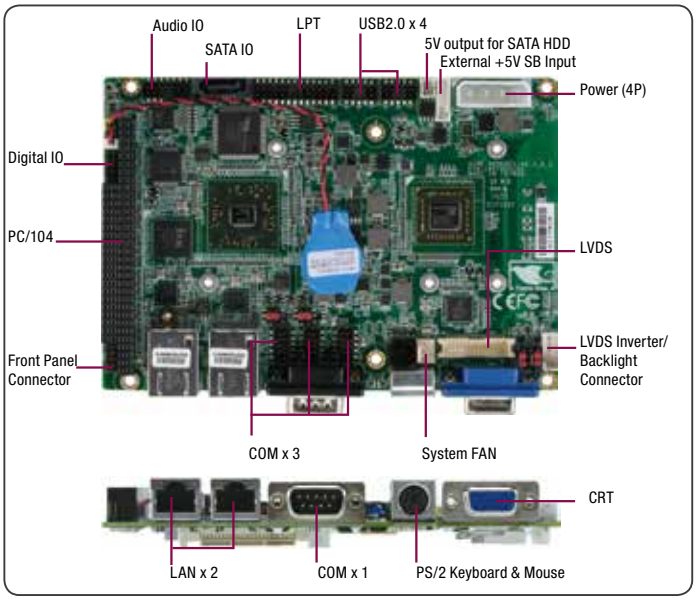


Ordering Information

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-LN05-B10	Intel® Atom™ D525	ICH8M	Fan	CRT + LVDS	18/24b, 2CH	SATA x 2 CompactFlash™ x 1	GbE x 2	UBS2.0 x 7	5	2	Mini-Card x 1	+12V, AT/ATX	0°C ~ 60°C	Touch Controller, SIM, DIO x 8
TF-GENE-LN05-B10-01	Intel® Atom™ N455	ICH8M	Fanless	CRT + LVDS	18/24b, 2CH	SATA x 2 CompactFlash™ x 1	GbE x 2	UBS2.0 x 7	5	1	Mini-Card x 1	+12V, AT/ATX	0°C ~ 60°C	Touch Controller, SIM, DIO x 8
TF-GENE-LN05-B10-02	Intel® Atom™ N455	ICH8M	Fanless	CRT + LVDS	18/24b, 2CH	SATA x 2 CompactFlash™ x 1	GbE x 2	UBS2.0 x 7	5	1	Mini-Card x 1	+5V, AT/ATX	0°C ~ 60°C	Touch Controller, SIM, DIO x 8
TF-GENE-LN05-B10-03	Intel® Atom™ D525	ICH8M	Fan	CRT + LVDS	18/24b, 2CH	SATA x 2 CompactFlash™ x 1	GbE x 2	UBS2.0 x 7	5	1	Mini-Card x 1	+5V, AT/ATX	0°C ~ 60°C	Touch Controller, SIM, DIO x 8
TF-GENE-LN05W1-B10-01	Intel® Atom™ N455	ICH8M	Fanless	CRT + LVDS	18/24b, 2CH	SATA x 2 CompactFlash™ x 1	GbE x 2	UBS2.0 x 7	5	1	Mini-Card x 1	+12V, AT/ATX	WiTAS 1 (-20°C ~ 70°C)	DIO x 8
TF-GENE-LN05W2-B10-01	Intel® Atom™ N455	ICH8M	Fanless	CRT + LVDS	18/24b, 2CH	SATA x 2 CompactFlash™ x 1	GbE x 2	UBS2.0 x 7	5	1	Mini-Card x 1	+12V, AT/ATX	WiTAS 2 (-40°C ~ 85°C)	DIO x 8

GENE-A55E

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
- Support 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" (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)	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	SATAII 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

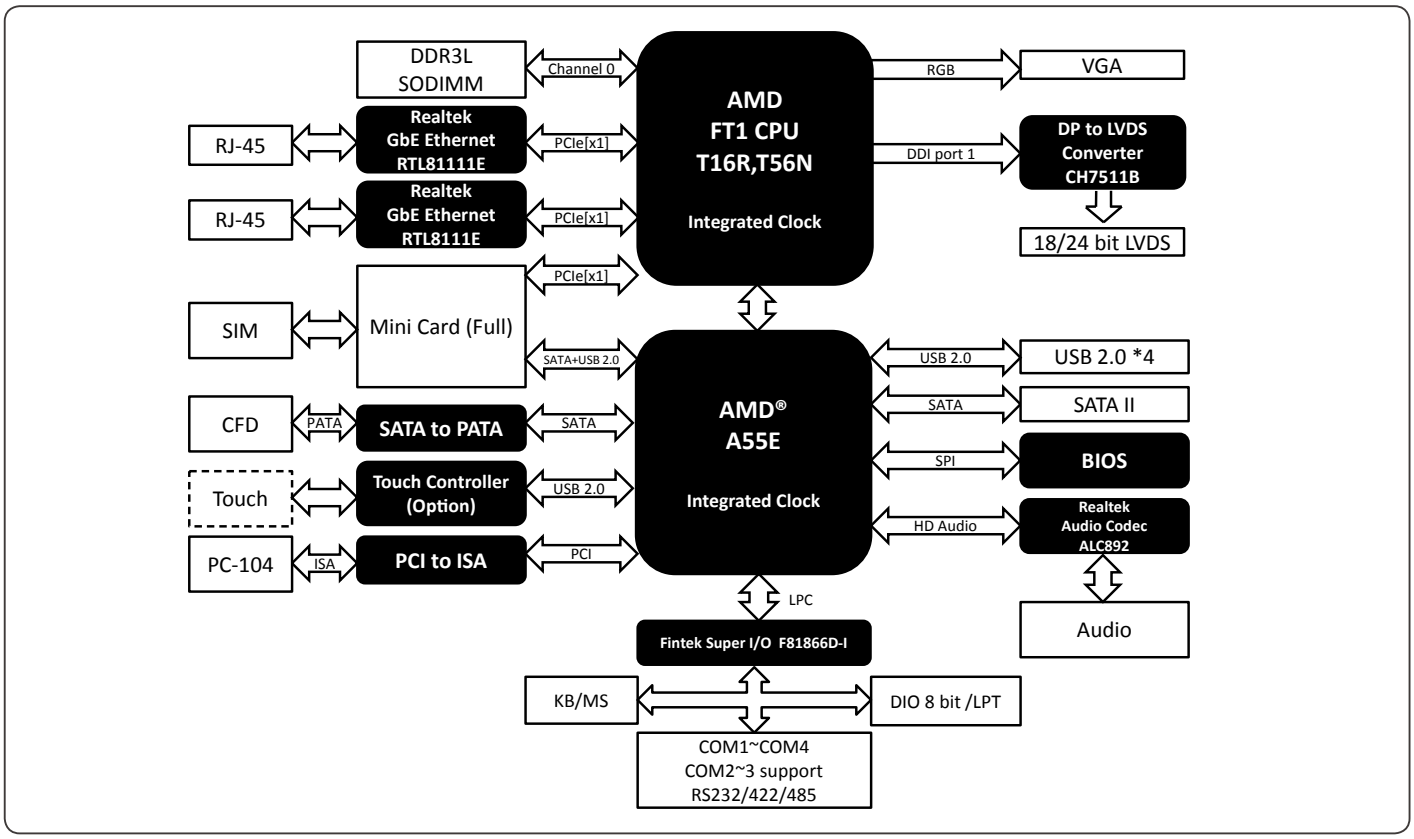
Optional Accessories

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.

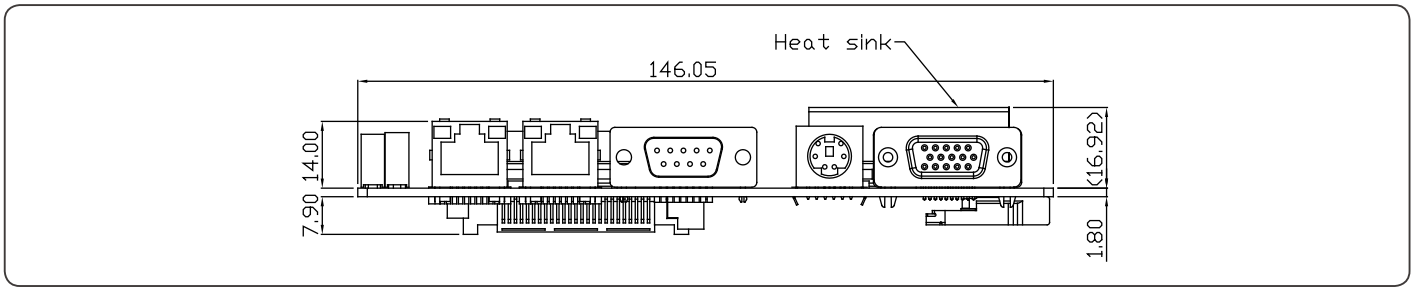
GENE-A55E

Block Diagram



Dimension

Unit: mm

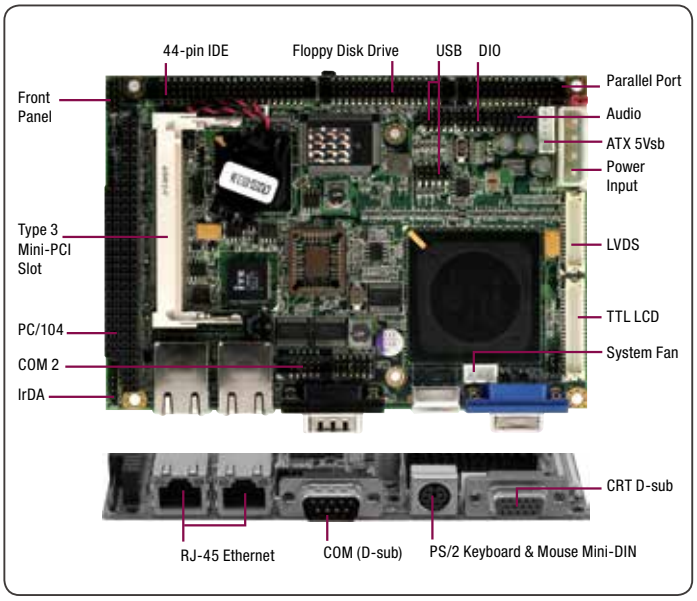


Ordering Information

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

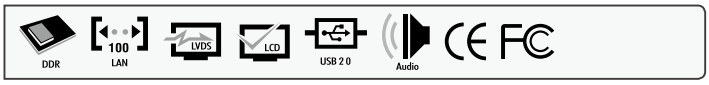
GENE-5315 Rev. A

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" (146mm x 101.6mm)
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**

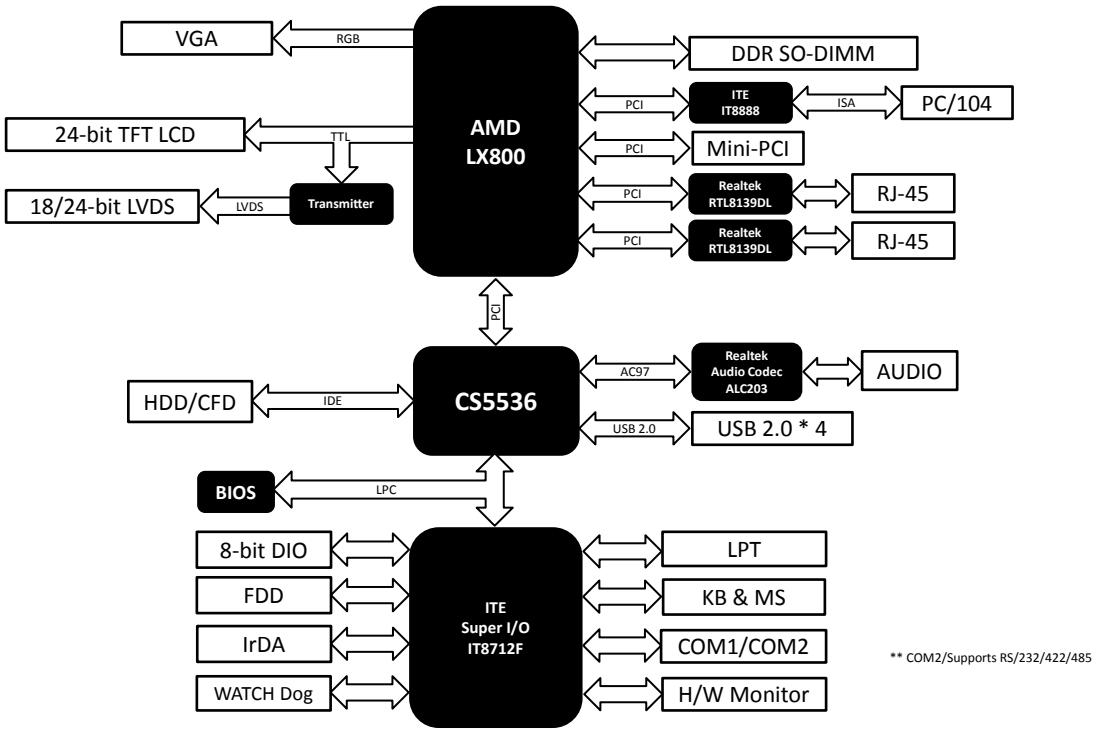
Optional Accessories

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

Note: All specifications are subject to change without notice.

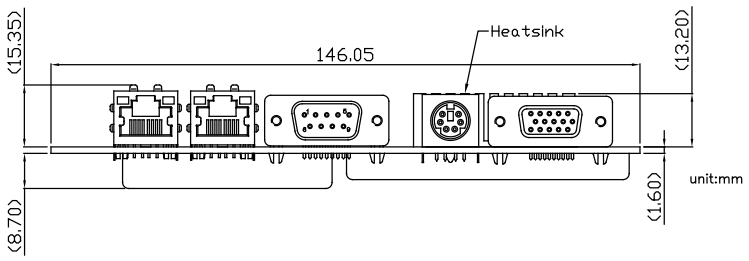
GENE-5315 Rev. A

Block Diagram



Dimension

Unit: mm

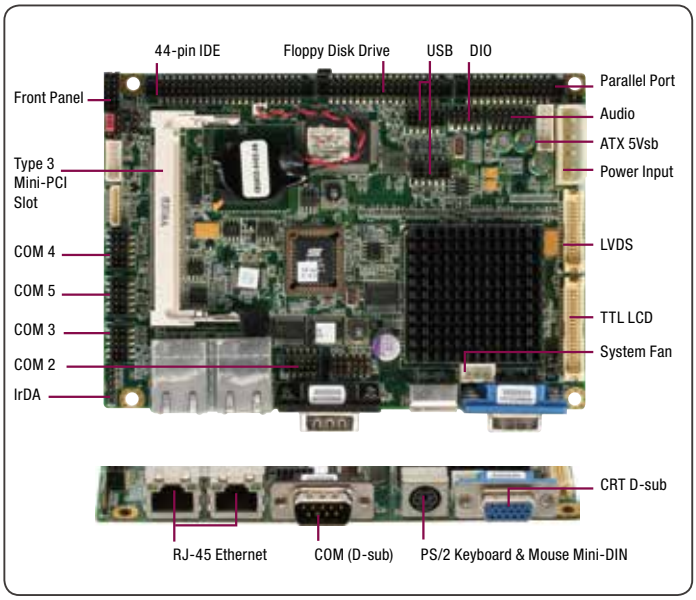


Ordering Information

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

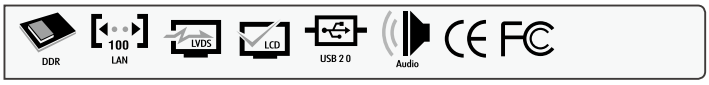
GENE-5315 Rev. B

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" (146mm x 101.6mm)
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**

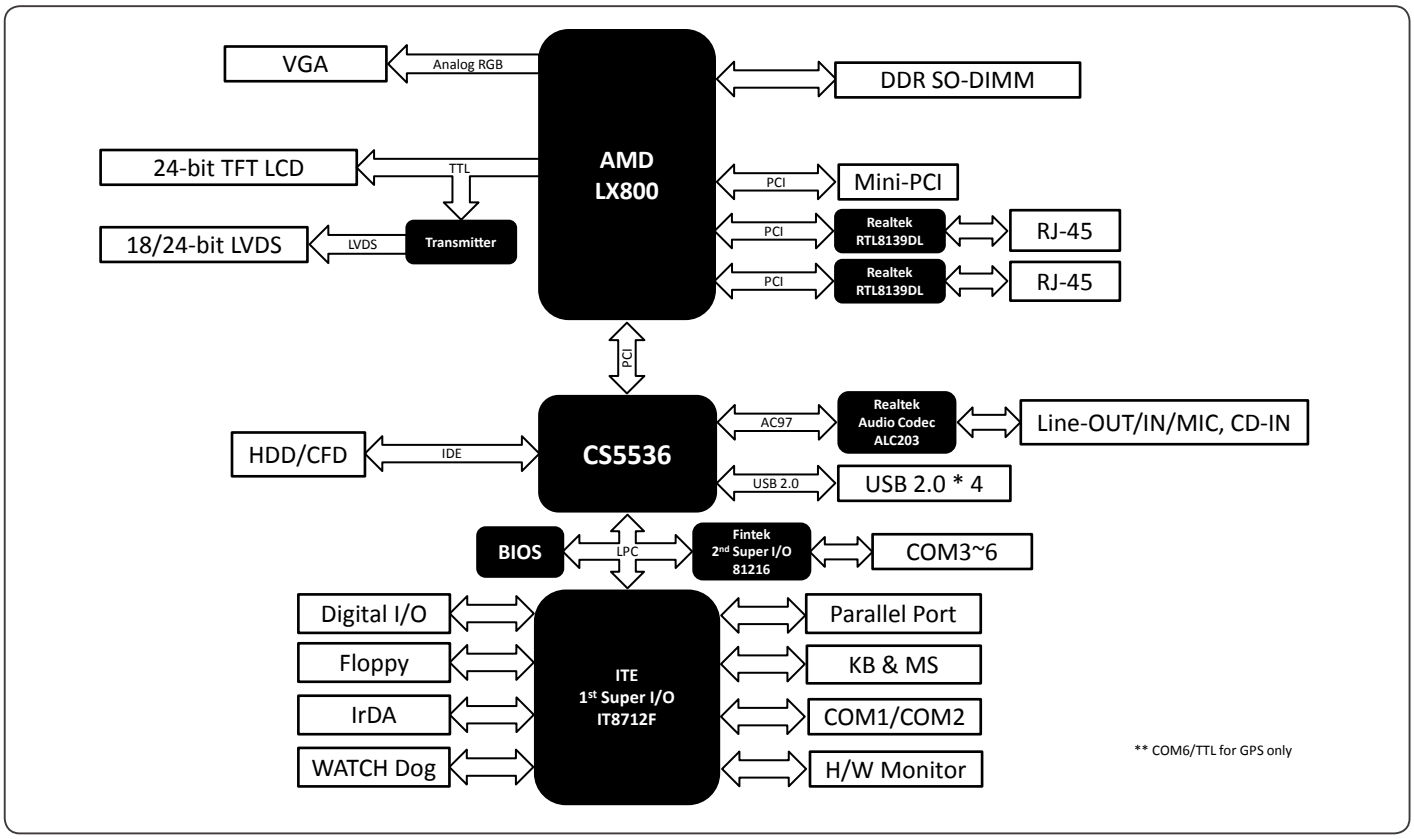
Optional Accessories

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

Note: All specifications are subject to change without notice.

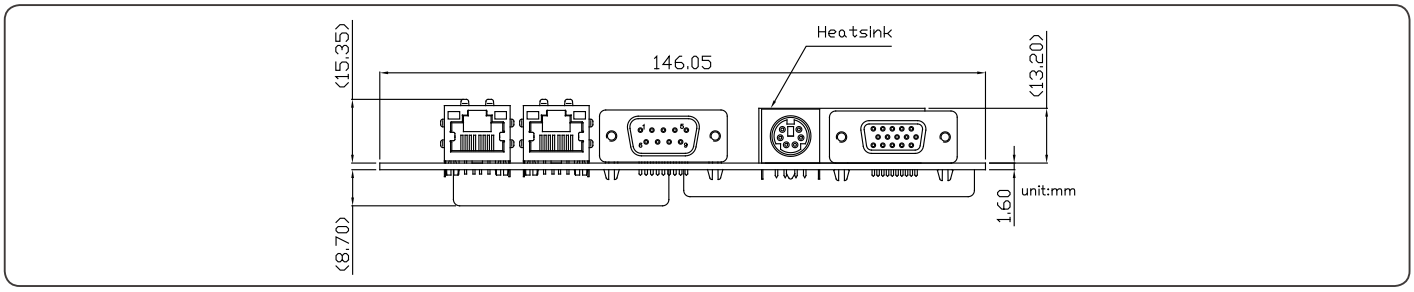
GENE-5315 Rev. B

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

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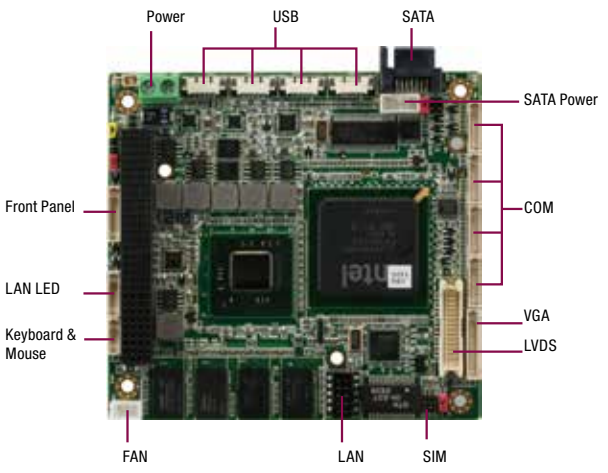
04

PFM-LNP

PC/104 Module with Intel® Atom™ N450 Processor



Features

- Intel® Atom™ N450 1.66 GHz Processor
- Intel® ICH8M
- Onboard DDR2 667 MHz Memory, Up to 1 GB
- Gigabit Ethernet x 1
- CRT, 18-bit Single Channel LVDS LCD
- SATA 3.0 Gb/s x 1, CompactFlash™ x 1
- USB2.0 x 4, COM x 4
- PCI-104, Mini-Card Expansion Interfaces
- +12V Only Operation

Specifications

System	
Form Factor	PC/104
CPU	Onboard Intel® Atom™ N450
CPU Frequency	1.66 GHz
Chipset	Intel® Atom™ N450 + ICH8M
Memory Type	Onboard DDR2 Memory up to 1 GB
Max. Memory Capacity	1 GB
BIOS	AMI - 4MB ROM
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V
Power Supply Type	AT/ATX
Power Consumption (Typical)	—
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)	129,000
Certification	CE/FCC
Display	
VGA/LCD Controller	N450
Video Output	CRT, LVDS (18 bit)
Backlight Inverter Supply	—
I/O	
Ethernet	Intel® 82576V, 10/100/1000Base-TX
Audio	—
USB Port	USB2.0 x 4
Serial Port	RS-232 x 3, RS-232/422/485 x 1
Parallel Port	—
HDD Interface	SATA x 1
FDD Interface	—
SSD	CompactFlash™
Expansion Slot	PCI-104, Mini-Card
PWM LCD Support	—
DIO	8 bit
TPM	—
Touch	—

Packing List

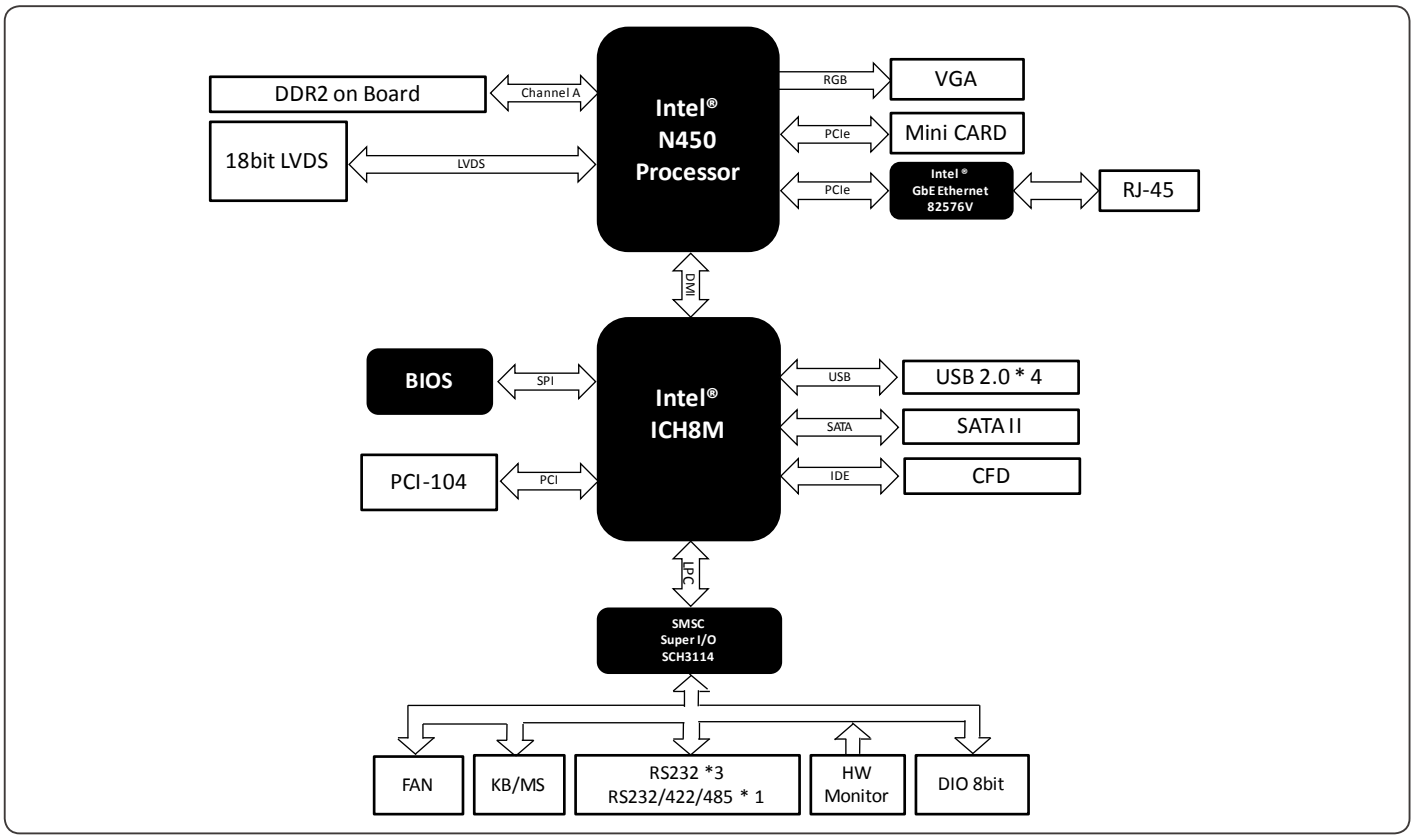
- **9657666600**
  Jumper Cap
- **17592LNP00**
  Heatsink
- **Product CD**
- **PFM-LNP with Cooler**

Optional Accessories

- **1701010150**
  Front Panel Cable
- **1700050207**
  USB Cable, Length 20cm
- **1702150121**
  SATA Power Cable, Length 12cm
- **1709070200**
  SATA Cable, Length 20cm
- **1701090150**
  COM Cable, Length 15cm
- **1700100201**
  LAN Cable, Length 20cm
- **1709150151**
  VGA Cable, Length 15cm
- **1702002010**
  Big 4P Power Input Cable, Length 10cm
- **1700060155**
  Keyboard & PS/2 Mouse Cable 15m

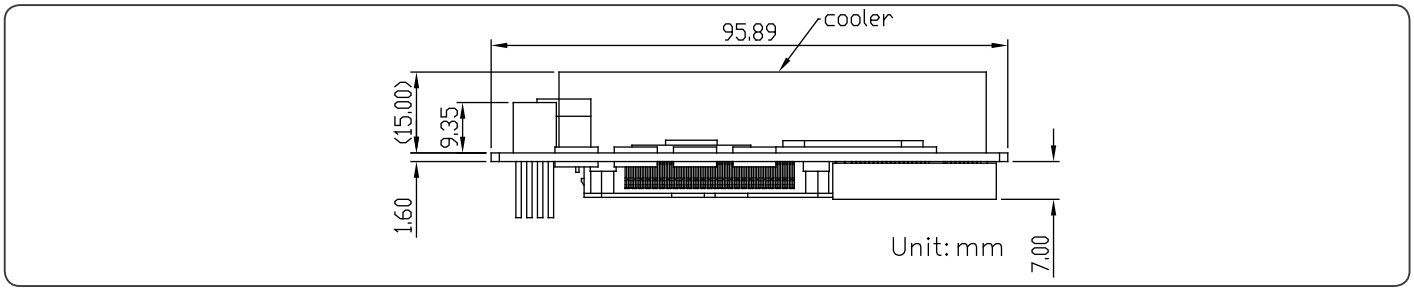
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

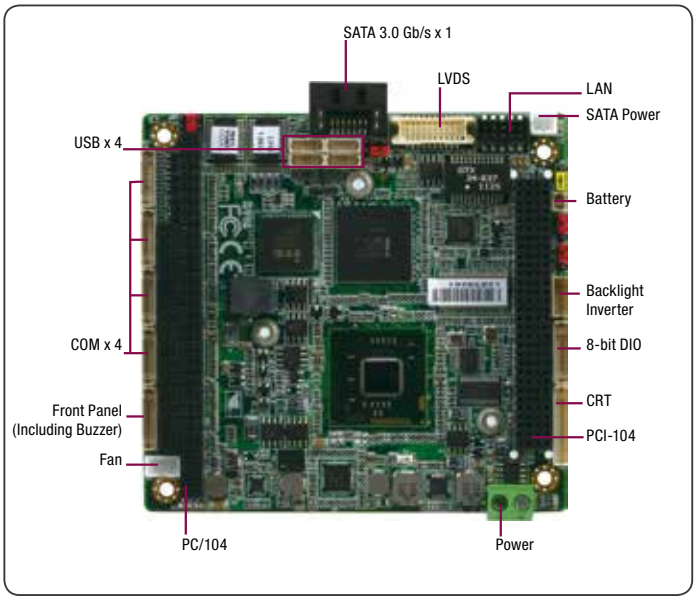


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Storage	Display	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp.
PFM-LNP-A20	Intel® Atom™ N450	1 GB	Fan	SATA x 1, CompactFlash™ x 1	CRT + LVDS	18b, 1CH	GbE x 1	4	3	1	PCI-104, Mini-Card	+12V/ AT/ATX	0°C ~ 60°C
PFM-LNP-A20-01	Intel® Atom™ N450	512 MB	Fan	SATA x 1, CompactFlash™ x 1	CRT + LVDS	18b, 1CH	GbE x 1	4	3	1	PCI-104, Mini-Card	+12V/ AT/ATX	0°C ~ 60°C

PFM-CVS Rev. A

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

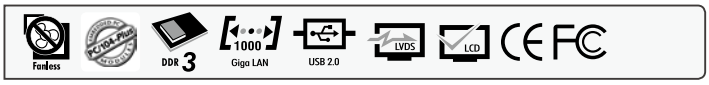


Features

- 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 Level
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) (Nice to Have)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	TBD
Certification	CE/FCC Class A
Display	
VGA/LCD Controller	CedarView integration
Video Output	CRT, LVDS
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	Realtek RTL 8111E, 10/100/1000Base-TX x 1
Audio	—
USB Port	USB 2.0 x 4
Serial Port	RS232 x 3, RS232/422/485 x 1
Parallel Port	—
HDD Interface	SATA2 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

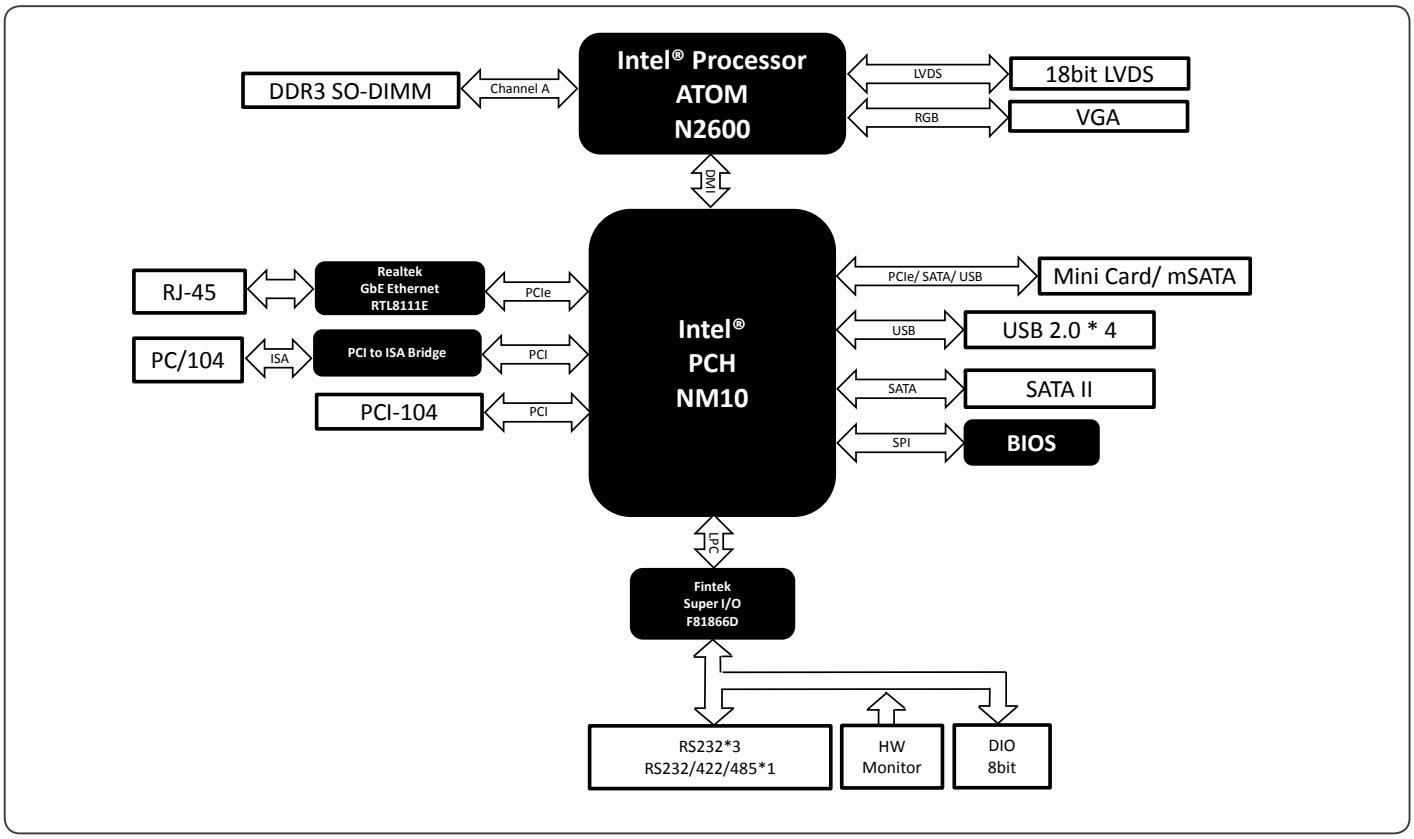
  Cable Kit

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.

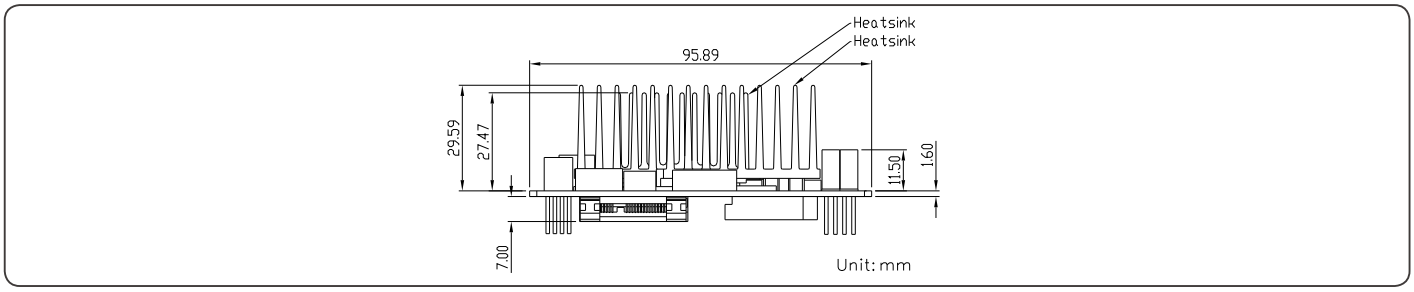
PFM-CVS Rev. A

Block Diagram



Dimension

Unit: mm

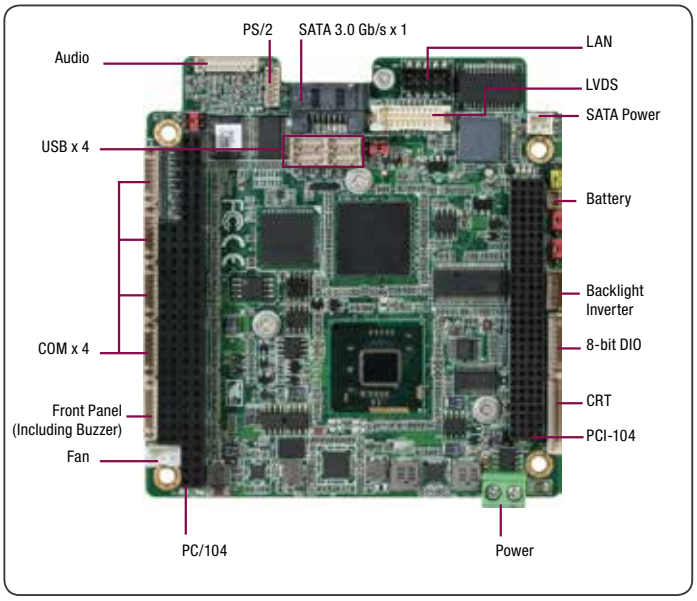


Ordering Information

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)

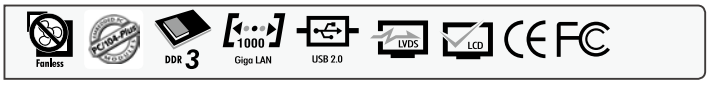
PFM-CVS Rev. B

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 Level
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) (Nice to Have)
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	CedarView integration
Video Output	CRT, LVDS
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	Intel® 82583V, 10/100/1000Base-TX x 1
Audio	—
USB Port	USB 2.0 x 4
Serial Port	RS232 x 3, RS232/422/485 x 1
Parallel Port	—
HDD Interface	SATA2 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

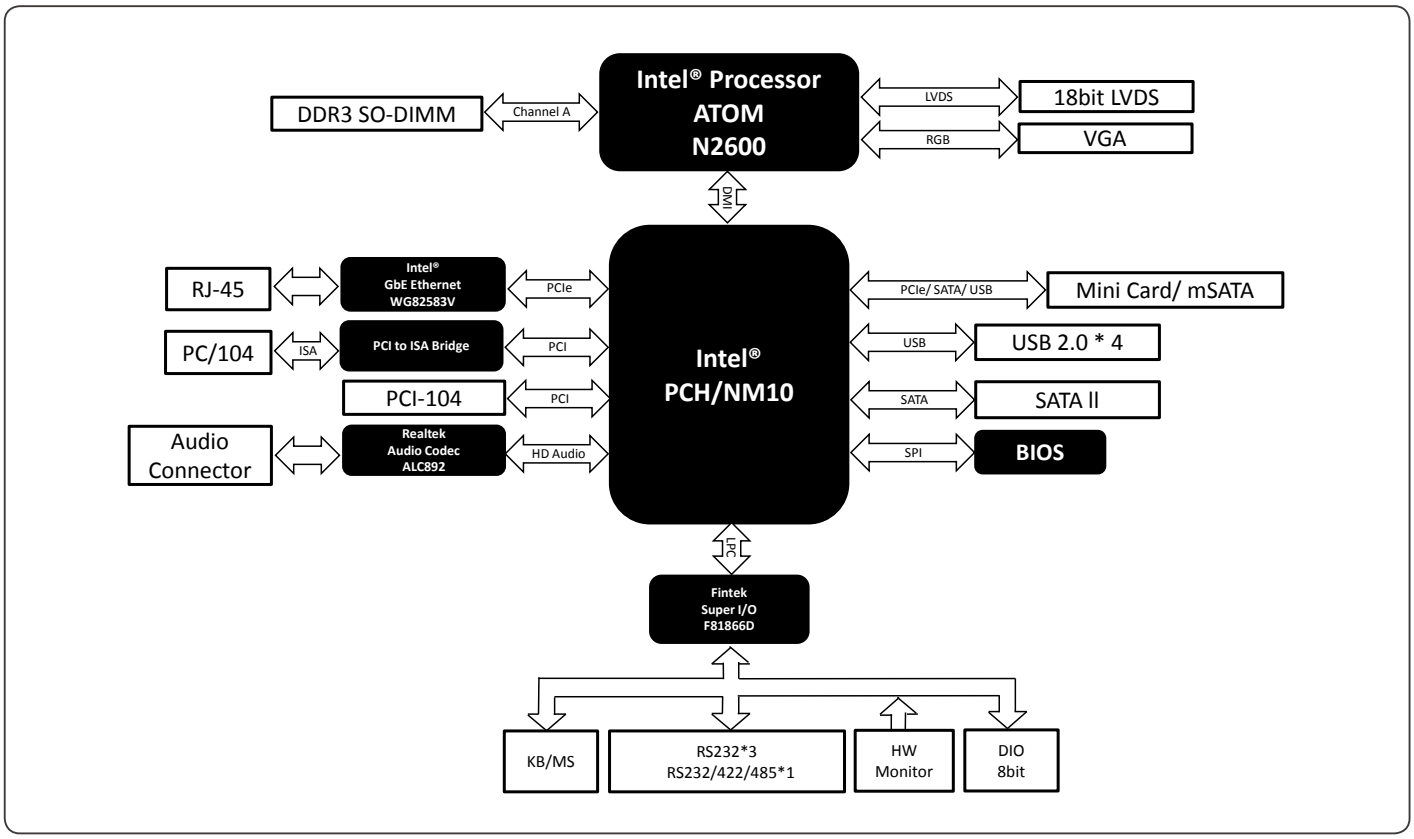
Cable Kit

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.

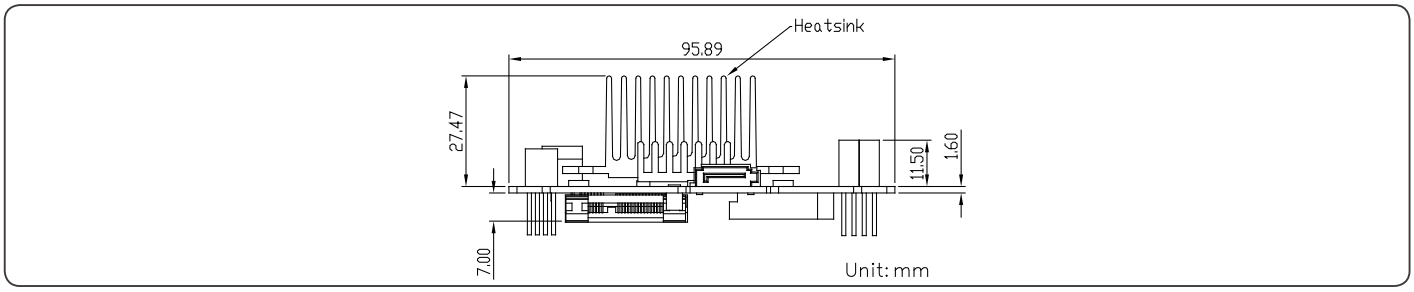
PFM-CVS Rev. B

Block Diagram



Dimension

Unit: mm

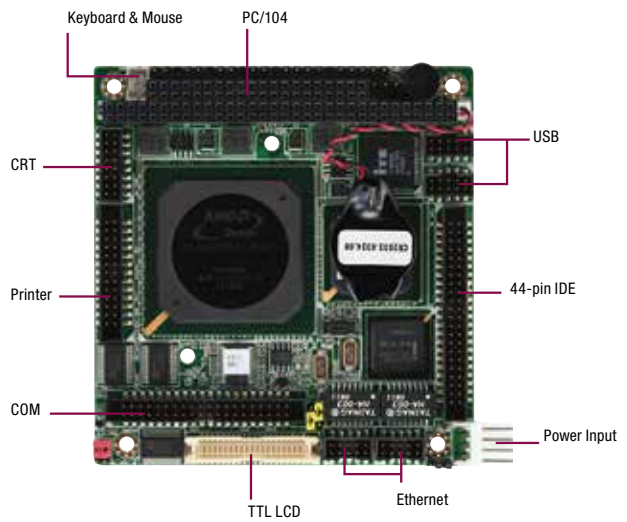


Ordering Information

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)

PFM-541I

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	ALC892
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	—

Packing List

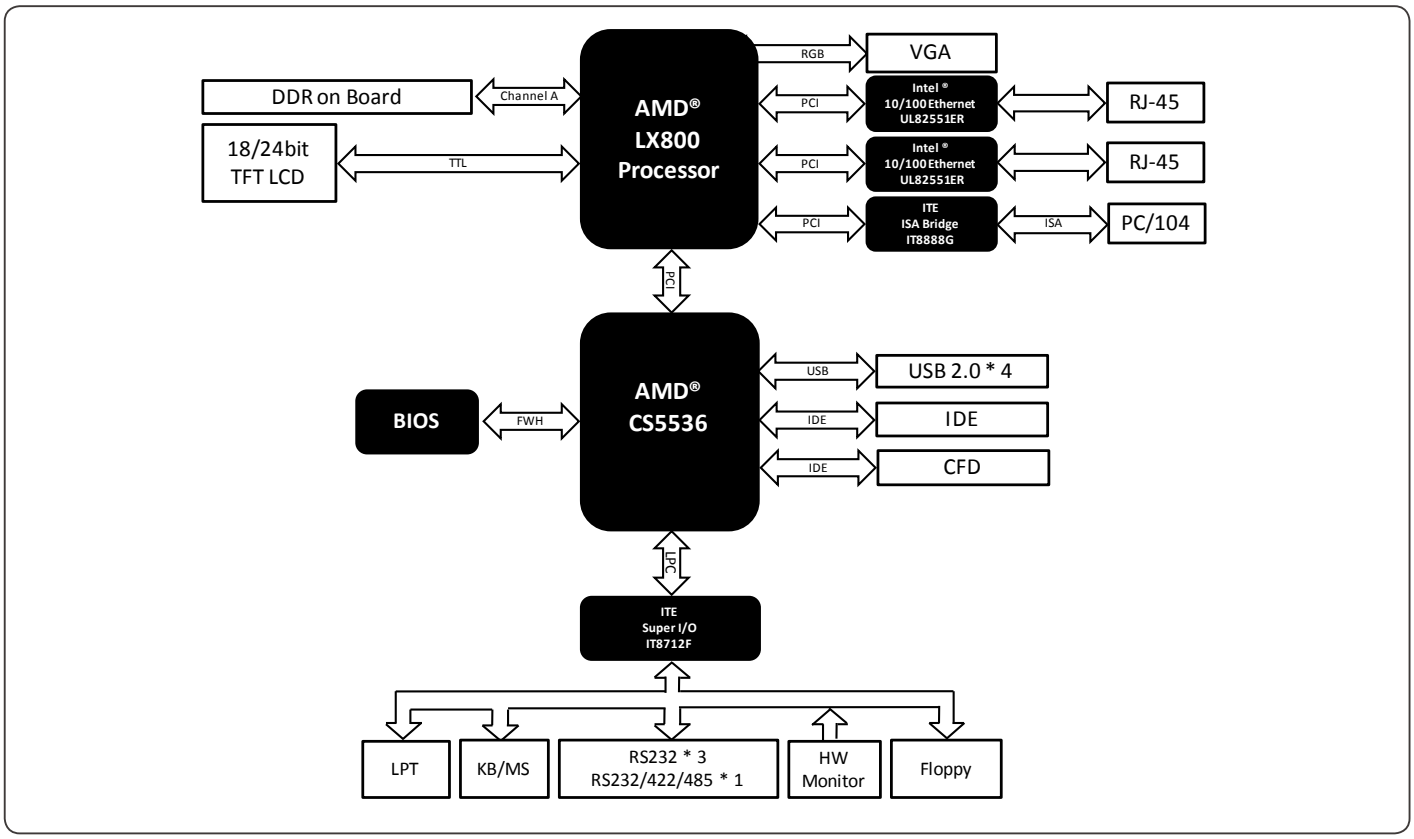
- Cable Kit
- Product CD
- PFM-541I with Heatsink

Optional Accessories

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

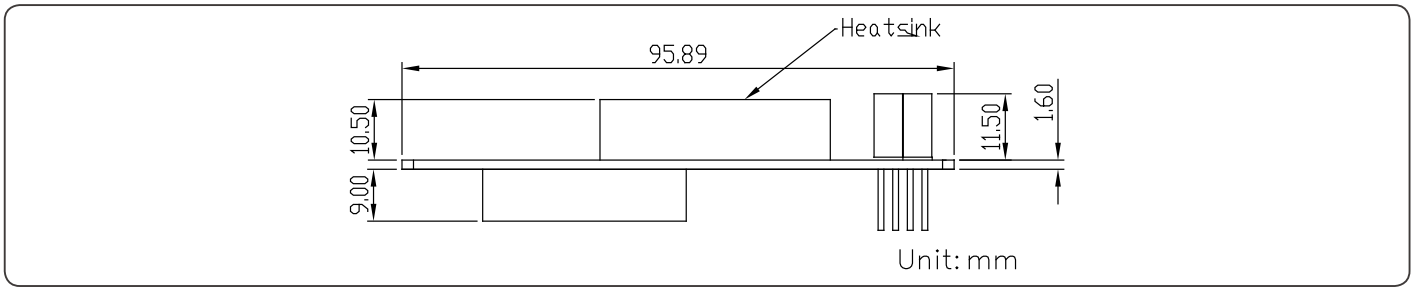
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

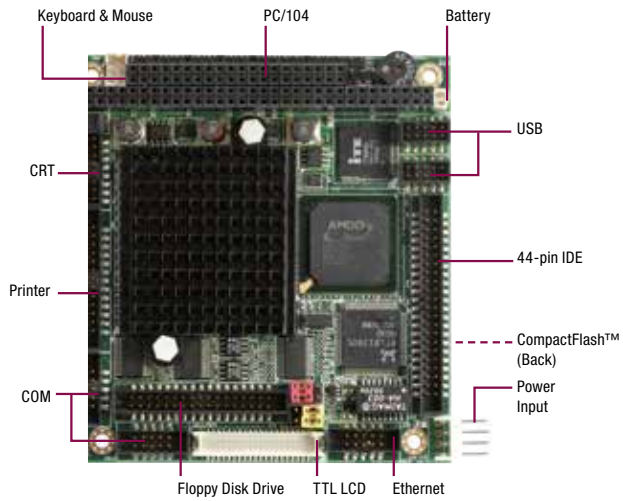


Ordering Information

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

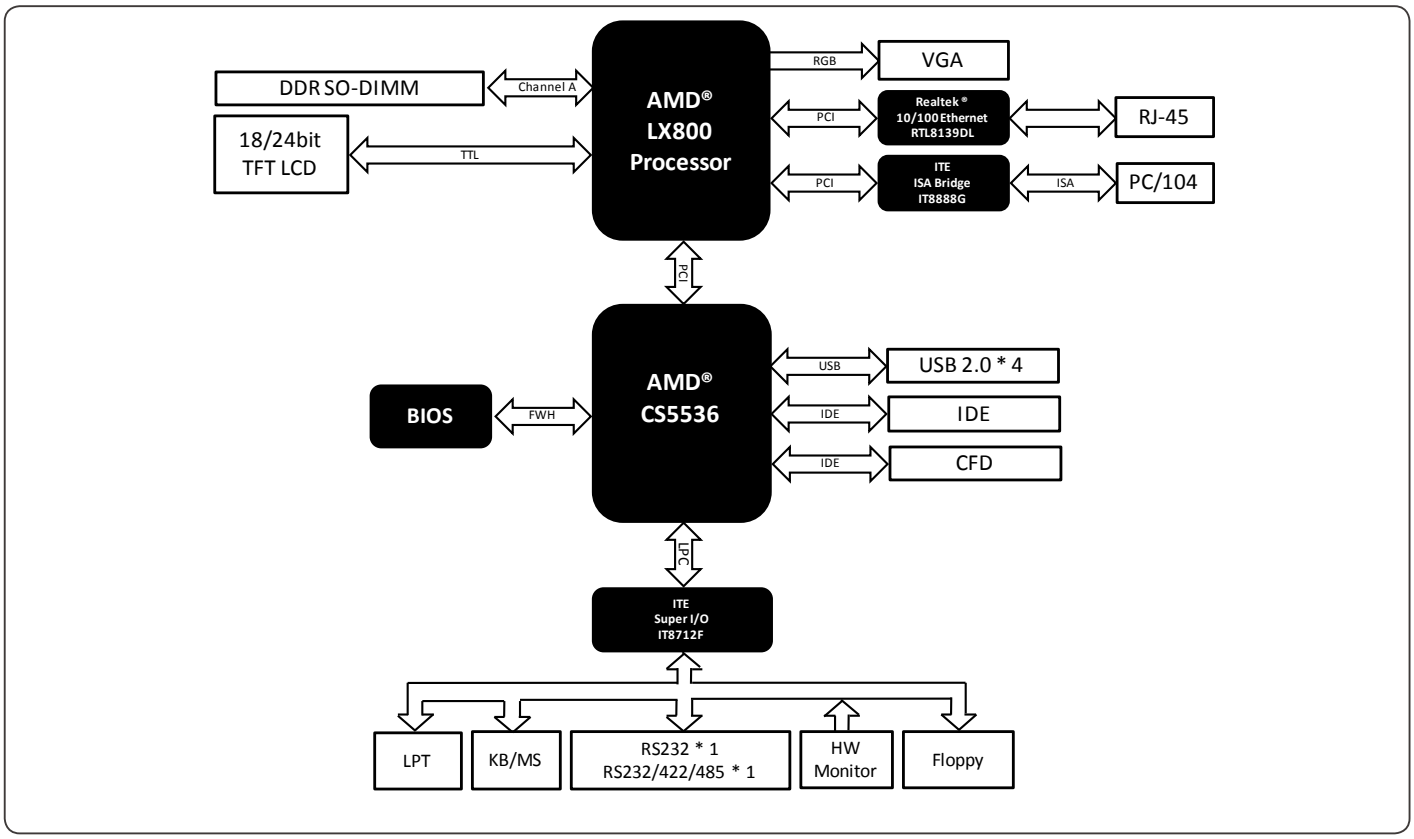
- **Product CD**
- **PFM-540I Rev. A**

Optional Accessories

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

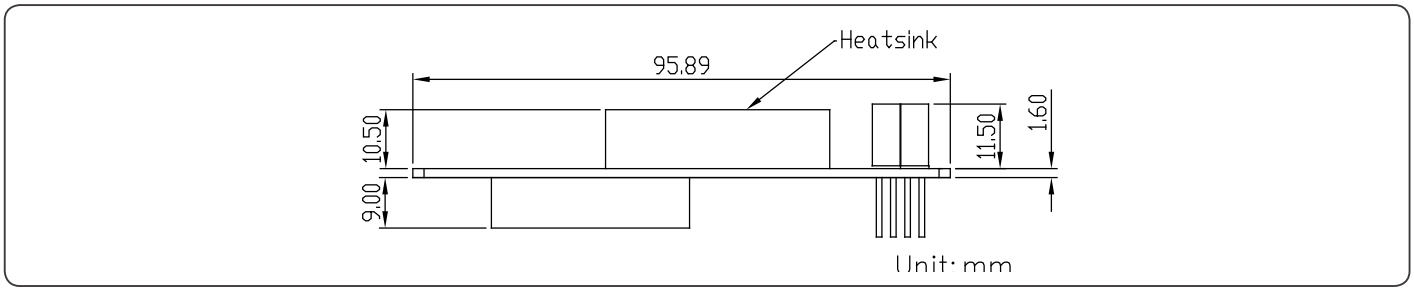
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

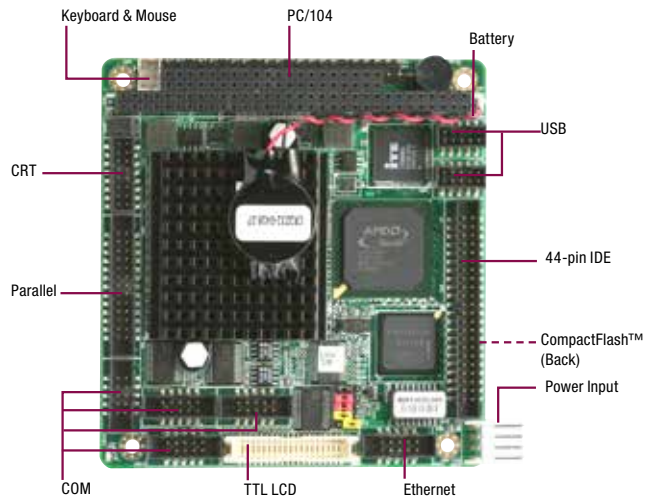


Ordering Information

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**

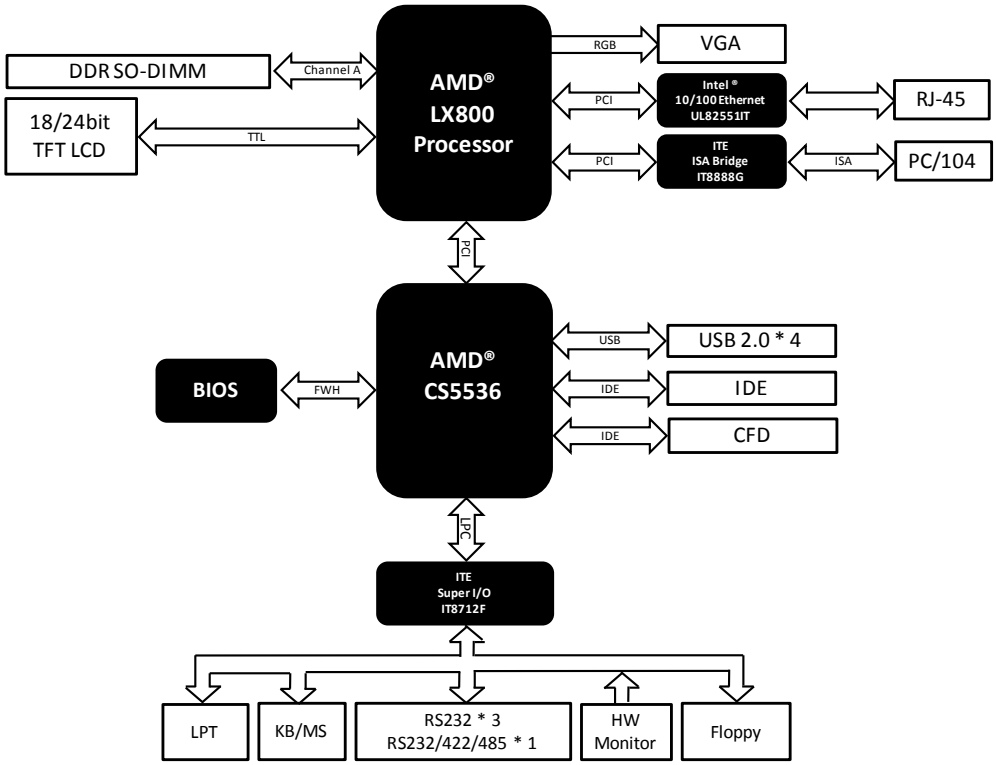
Optional Accessories

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

Note: All specifications are subject to change without notice.

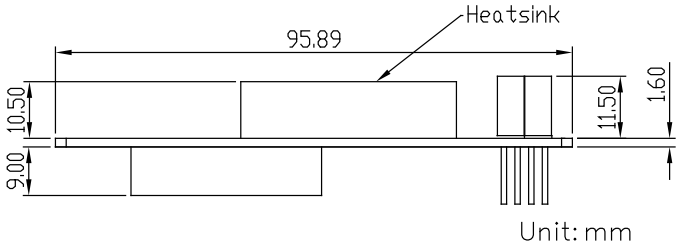
PFM-540I Rev. B

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

Pico-ITX Boards

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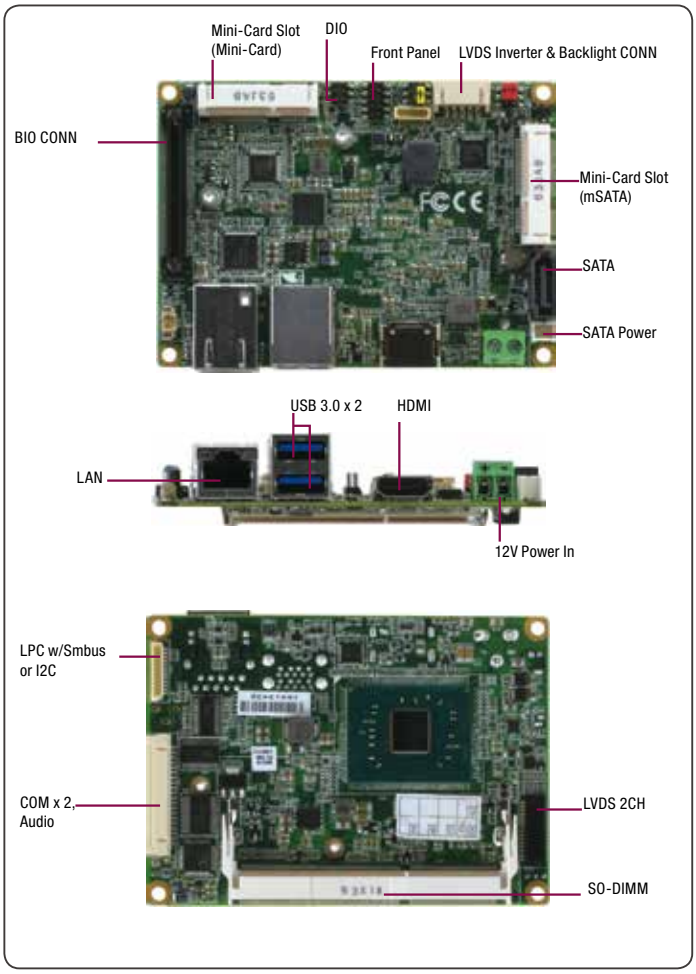
Focus • Agility • Competitiveness

05

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



Features

- **Onboard Intel® Atom™ E3900/Pentium® N4200/Celeron® N3350 Processor SoC**
- **DDR3L 1867MHz SODIMM x 1, Up to 8 GB**
- **18/24-bit Dual Channel LVDS LCD**
- **Support Triple Display (Optional)**
- **HDMI Support 3840 x 2160 (4K x 2K)**
- **SATA 3.0 x 1, mSATA (Full Size) x 1 or MiniCard x 1 (Optional)**
- **Gigabit Ethernet x 1, RJ-45 x 1**
- **USB3.0 x 2, USB2.0 x 1**
- **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)**

Display	
Chipset	Intel® Atom™ E3900 SoC Processor, Intel® N4200, N3350
Resolution	1. LVDS (18/24bit 2CH) 1920 x1200 2. HDMI up to 3840 x 2160 3. DDI (BIO)
LCD Interface	18/24bit 2CH LVDS
I/O	
Storage/SSD	SATA 6.0Gb/s x 1, mSATA/MiniCard(Full size) x 1
Ethernet	Intel® Gigabit Ethernet i211AT, 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 x 1, I2C or SMBus x 1
SIM	—
TPM	—
Touch	—

Specifications

System	
Form Factor	PICO-ITX
CPU	Intel® Atom™ E3900 SoC Processor, Intel® N4200, N3350
CPU Frequency	up to 2.0GHz
Chipset	Intel® Atom™ E3900 SoC Processor, Intel® N4200, N3350
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 Level
Power Requirement	+12V AT/ATX (default)
Power Supply Type	AT/ATX (default), lockable connector optional
Power Consumption (Typical)	TBD
System Cooling	Heat-spreader; heatsink optional
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	—
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

Packing List

- **M10BT01010**
  Heat Spreader
- **1703200153**
  COM x 2, Line-out Cable
- **Product DVD**
- **PICO-APL1**

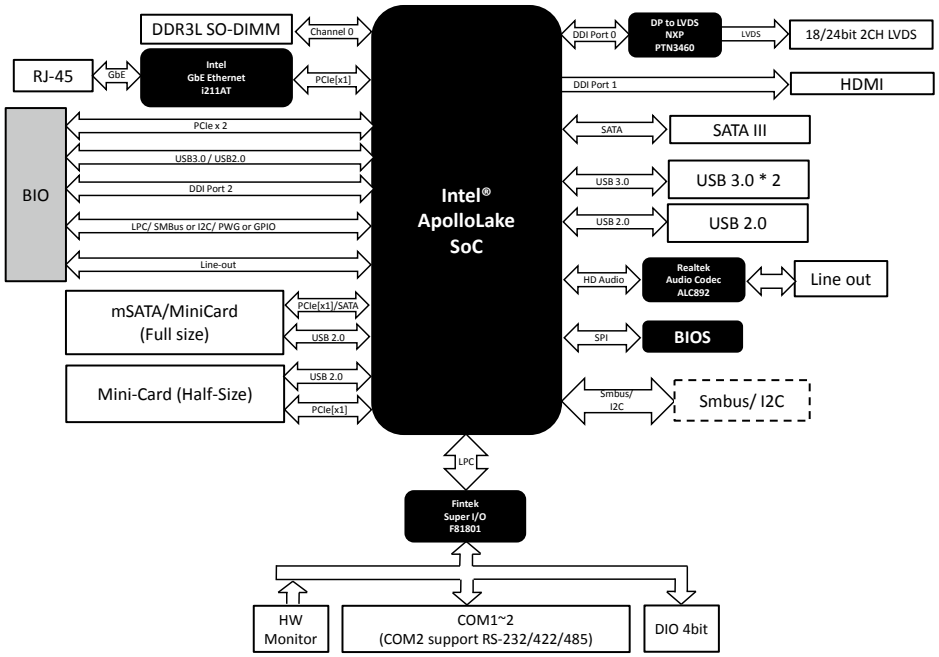
Optional Accessories

Part Number	Description	Qty.
1709070500	(TF) SATA CABLE, 7P Pitch 1.27mm, 50cm	1
1702150155	(TF) SATA Power Cable	1
PICO-BT01-HSP01	Heat-spreader	—
BIO-ST01-L1U2-A10-01	LAN x 1, USB x 1	1
BIO-ST01-M1U1-A10-01	MiniCard x 1	1
BIO-ST01-C4M1-A10-01*	COM x 1, MiniCard x 1	1

* Customized BIOS is required

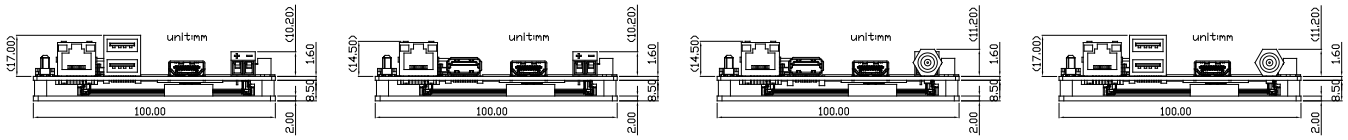
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

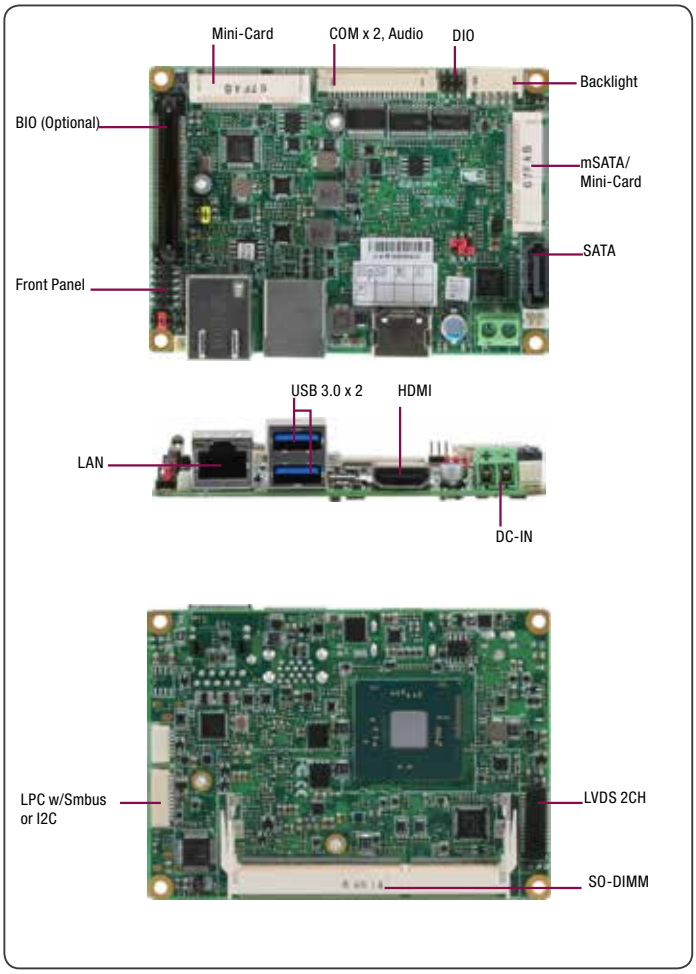
Unit: mm



Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
PICO-APL1-A10-0001 (TBD)	N4200	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	0°C ~ 60°C	BIOx1, DIO x 4, Line-out
PICO-APL1-A10-0002 (TBD)	N3350	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	0°C ~ 60°C	DIO x 4, Line-out

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)**

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	1. LVDS (18/24bit 2CH) 1920 x 1200 2. HDMI up to 3840 x 2160 (4K) 3. 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	—

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 Level
Power Requirement	Realtek RTL 8111E, 10/100/1000Base-TX x 1
Power Supply Type	AT/ATX (default). lockable connector optional
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" (100mm x 72mm)
Gross Weight	200g (0.44 lb)
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

Packing List

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

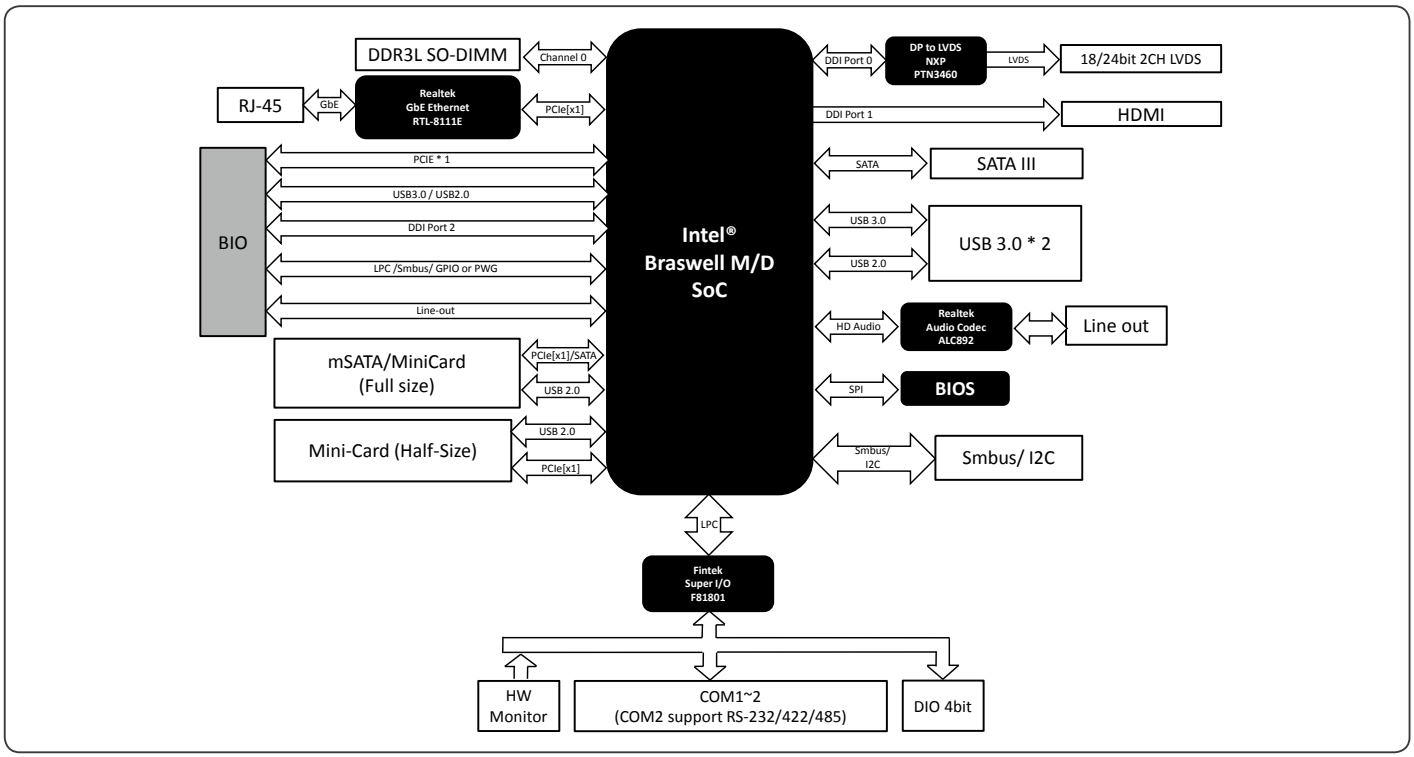
Optional Accessories

Part Number	Description	Qty.
1709070500	(TF)SATA CABLE.7P Pitch 1.27mm.50cm	1
1702150155	(TF)SATA Power Cable	1
17592BSW10	Cooler for PICO-BSW1	1
M16BSW1000	Heat-sink	1
PICO-BT01-HSP01	Heat-spreader (standard package be included)	—
BIO-ST01-L1U2-A10-01	BIO Board, LAN x 1, USB x 1, 2W Audio Amp.	1
BIO-ST01-M1U1-A10-01	BIO Board, MiniCard x 1, SIM x 1, 2W Audio Amp.	1
BIO-ST01-C4M1-A10-01*	BIO Board, COM x 4, MiniCard x 1, SIM x 1	1

* Customized BIOS is required.

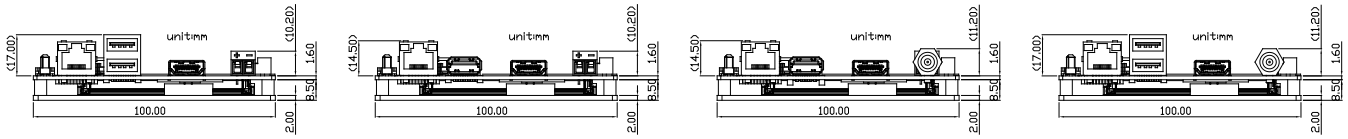
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

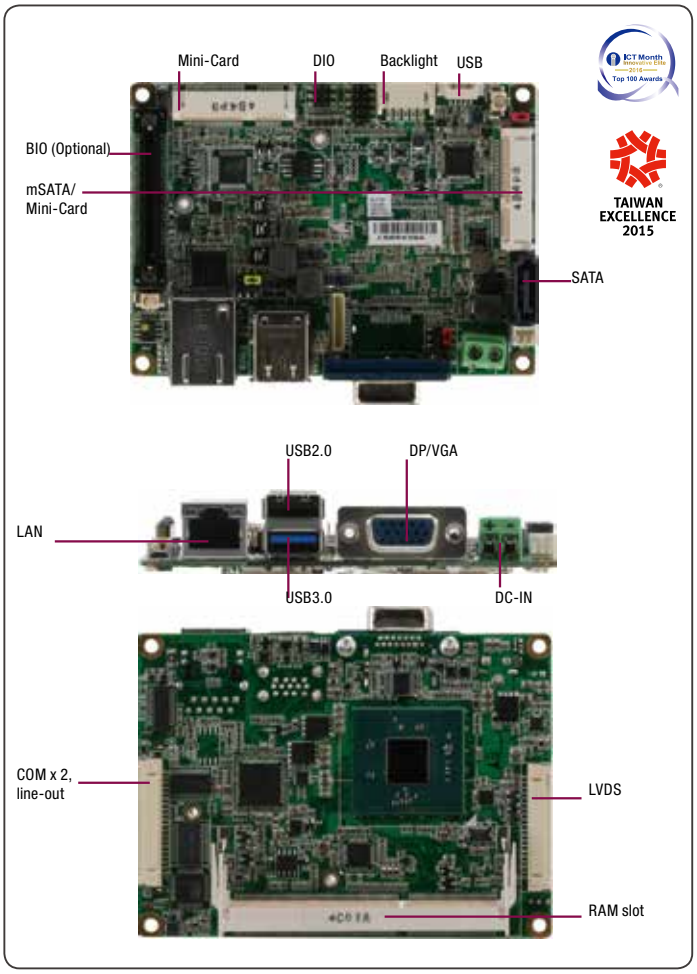


Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
PICO-BSW1-A10-0001	N3160	Heat-Spreader	LVDS/HDMI	24bit,2CH	SATA x 1, mSATA x 1 (Full-size)	GbE x 1	USB3.0 x 2	1	1	miniCard x 1 (Half-size)	12V	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	USB3.0 x 2	1	1	miniCard x 1 (Half-size)	12V	0°C ~ 60°C	DIO x 4, Line-out

PICO-BT01

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



Features

- **Onboard Intel® Atom™ E3800 or Celeron® J1900/N2807 Product Family Processor SoC**
- **DDR3L 1066/1333 MHz SODIMM x 1, Up to 8 GB**
- **18/24-bit LVDS LCD, CRT Co-lay Display Port**
- **SATA 3.0 Gb/s x 1, mSATA/Mini-Card x 1**
- **USB3.0 x 1, USB2.0 x 2**
- **Gigabit Ethernet x 1, RJ-45 x 1**
- **RS-232 x 1, RS-232/422/485 x 1**
- **Mini-Card x 1**
- **4-Bit Digital I/O**
- **BIO Connector for Daughter Board**

I/O	
Storage/SSD	SATA 3.0Gb/s x 1, mSATA/Mini-Card (Full-size) x 1
Ethernet	Intel® Gigabit Ethernet i211AT 10/100/1000Base-TX x 1
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 or 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	1-255 steps by software program
Power Requirement	+12VDC
Power Supply Type	AT/ATX (default), lockable connector optional
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" (100mm x 72mm)
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
- **Product CD**
- **PICO-BT01**

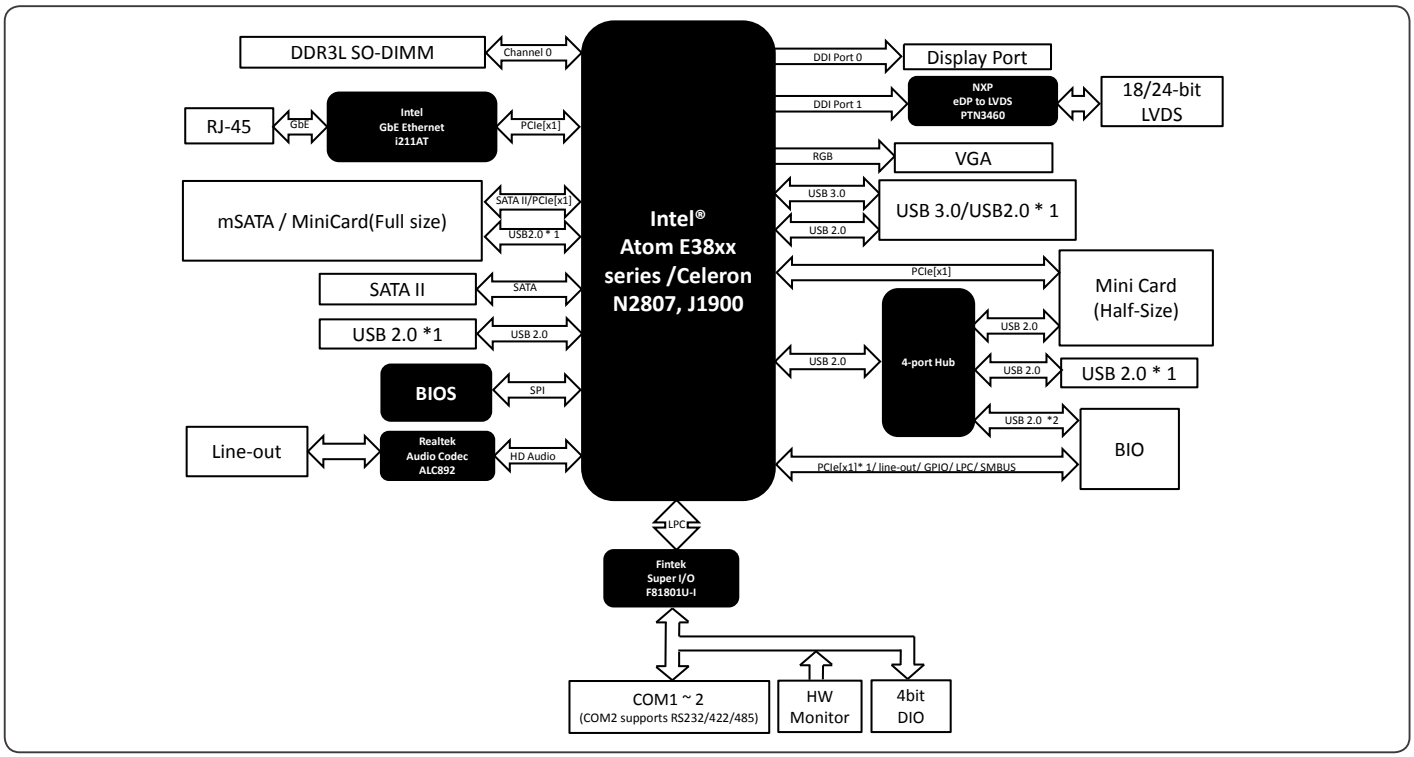
Optional Accessories

Part Number	Description	Qty.
1709070500	SATA Cable	1
1702150155	SATA Power Cable	1
17592NABT0	CPU Cooler for 6-10W. To be used with heat Spreader.	1
PICO-BT01W1-HSK01	Heatsink for E3845 WiTAS1. To be used with heat Spreader.	1
M16BT01000	Heatsink for N2807. To be used with heat Spreader.	1
1700050207	USB Cable 20cm	—
BIO-ST01-L1U2-A10-01	BIO Board, LAN, 2W Audio AMP, 2 USB, SMBus	1
BIO-ST01-M1U1-A10-01	BIO Board, MiniCard, 2W Audio AMP, USB, SMBus	1
BIO-ST02-C4M1-A10-01*	BIO Board, 4 COM, USB, MiniCard, SIM	1

* Customized BIOS is required.

Note: All specifications are subject to change without notice.

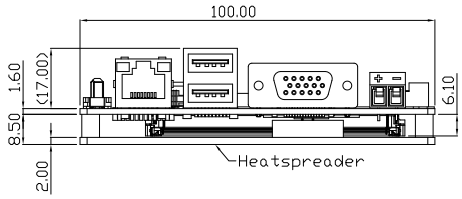
Block Diagram

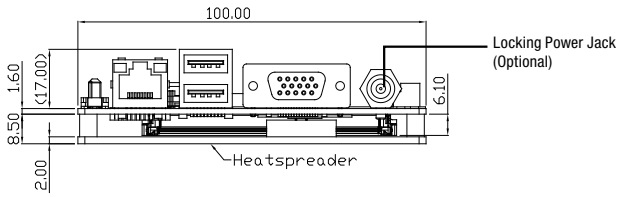


Dimension

Unit: mm

Standard model with Heat-Spreader



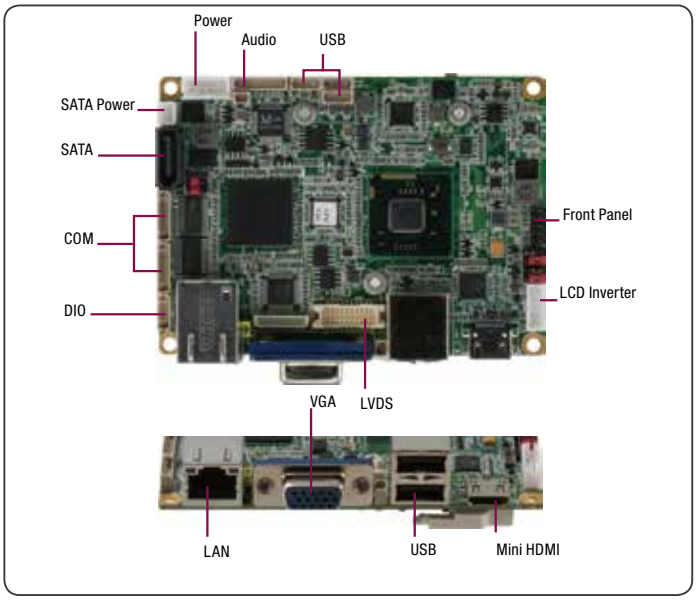


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp.	Others
PICO-BT01-A10-0002	Celeron® N2807 (Dual Core)	DDR3L, Max. 4GB	Heat-spreader	DP+LVDS	24bit 1CH	SATA 2 x 1, mSATA/Mini-Card x 1	GbE x 1	USB3.0 x 1, UBS2.0 x 2	1	1	Mini-Card x 1, DIO 4-bit	+12V (ATX)	32°F ~ 131°F (0°C ~ 60°C)	Line-out
PICO-BT01-A10-0003	Atom™ E3845 (Quad Core)	DDR3L, Max. 8 GB	Heat-spreader	CRT+LVDS	24bit 1CH	SATA 2 x 1, mSATA/Mini-Card x 1	GbE x 1	USB3.0 x 1, UBS2.0 x 2	1	1	Mini-Card x 1, DIO 4-bit	+12V (ATX)	32°F ~ 131°F (0°C ~ 60°C)	Line-out, BIO x 1
PICO-BT01-A10-0004	Atom™ E3825 (Dual Core)	DDR3L, Max. 4GB	Heat-spreader	DP+LVDS	24bit 1CH	SATA 2 x 1, mSATA/Mini-Card x 1	GbE x 1	USB3.0 x 1, UBS2.0 x 2	1	1	Mini-Card x 1, DIO 4-bit	+12V (ATX)	32°F ~ 131°F (0°C ~ 60°C)	Line-out
PICO-BT01-A10-0005	Celeron® J1900 (Quad Core)	DDR3L, Max. 8 GB	Heat-spreader	CRT+LVDS	24bit 1CH	SATA 2 x 1, mSATA/Mini-Card x 1	GbE x 1	USB3.0 x 1, UBS2.0 x 2	1	1	Mini-Card x 1, DIO 4-bit	+12V (ATX)	32°F ~ 131°F (0°C ~ 60°C)	Line-out
PICO-BT01W1-A10-0003	Atom™ E3845 (Quad Core)	DDR3L, Max. 8 GB	Heat-spreader	CRT+LVDS	24bit 1CH	SATA 2 x 1, mSATA/Mini-Card x 1	GbE x 1	USB3.0 x 1, UBS2.0 x 2	1	1	Mini-Card x 1, DIO 4-bit	+12V (ATX)	WiTAS 1 (-20°C ~ 70°C)	Line-out, BIO x 1

PICO-CV01

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
- USB2.0 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" (100mm x 72mm)
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 integration
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	USB2.0 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

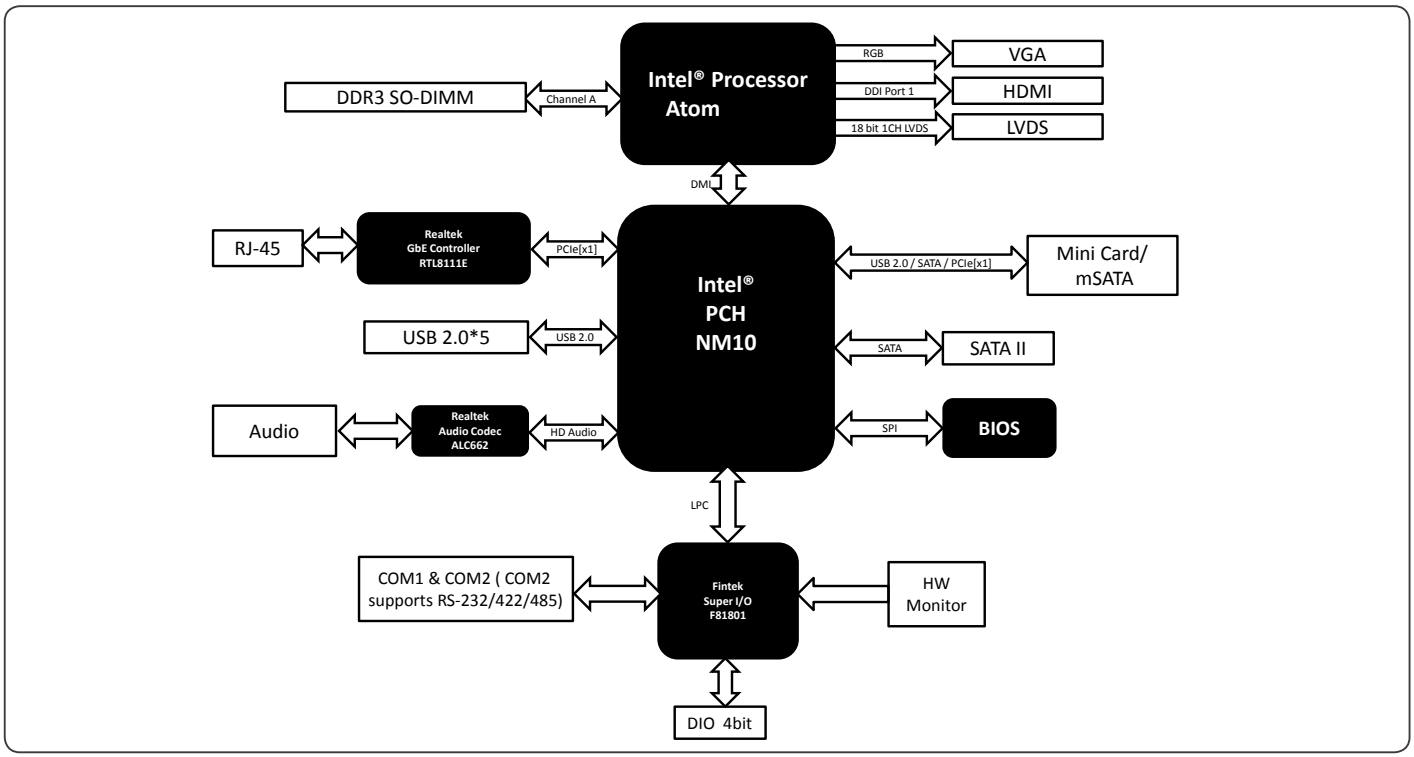
- **170204010S**
  MB Power Cable
- **1709070500**
  SATA data Cable
- **1702150155**
  SATA Power Cable
- **M16CV01040**
  Low profile standard heat-sink for PICO-CV01-A10-11
- **M16CV01020**
  WiTAS I heat-sink for PICO-CV01W1-A10-10
- **Product DVD**
- **PICO-CV01**
  Remark: The packing include one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

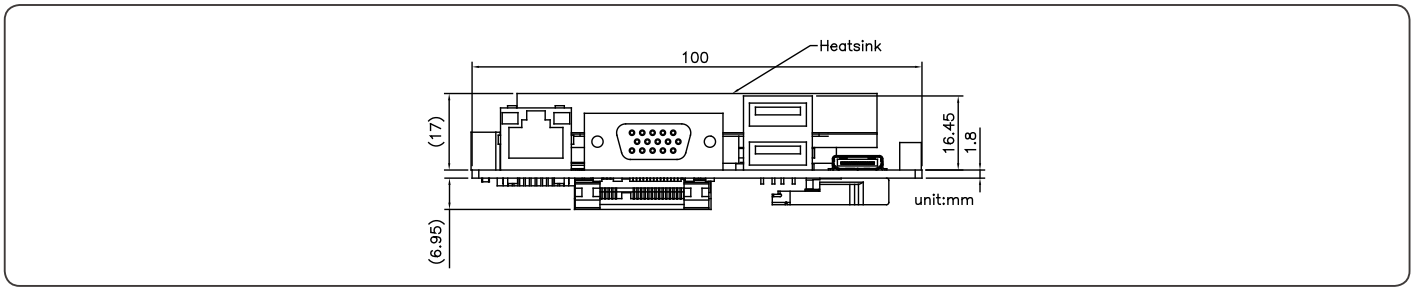
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



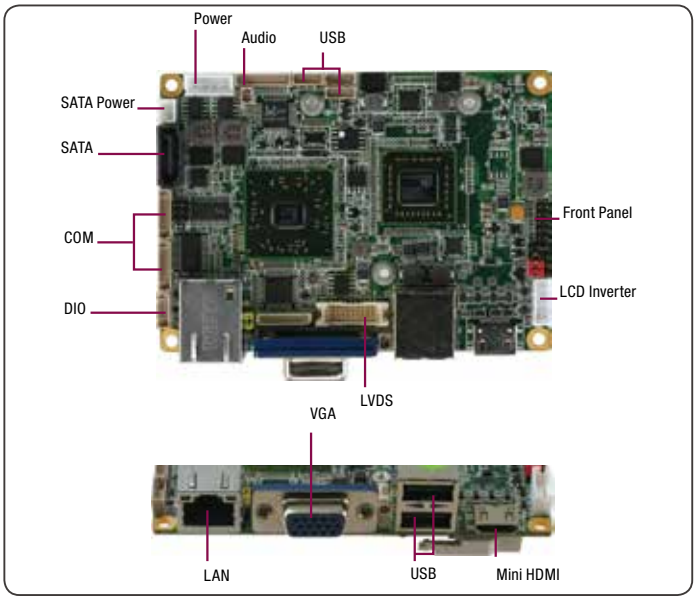
Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	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)	-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-HD01

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" (100mm x 72mm)
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	USB2.0 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**

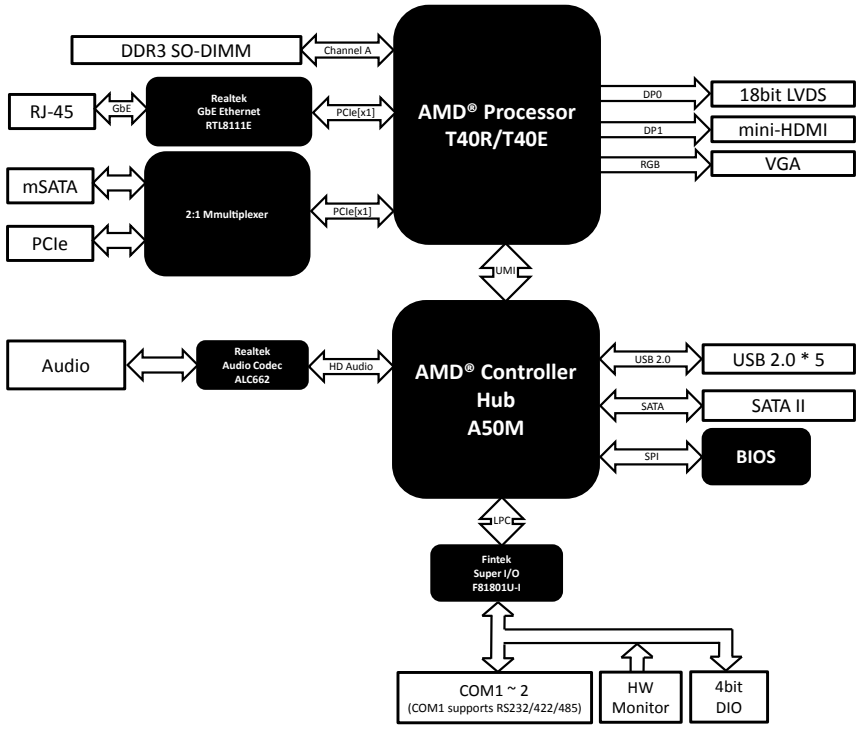
Optional Accessories

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.

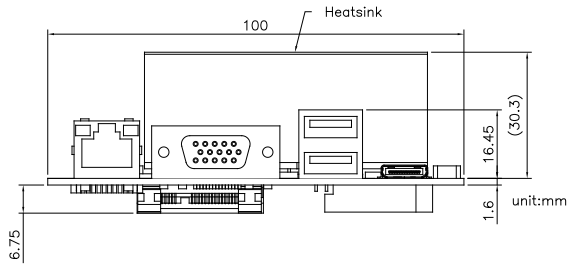
Block Diagram

Unit: mm



Dimension

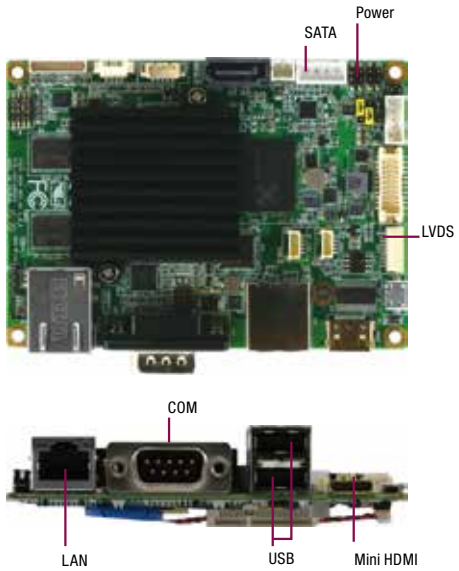
Unit: mm



Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	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 Fanless Board with Freescale® ARM Cortex-A9 I.MX6 SoC



Features

- Freescale® i.MX6 Quad Automotive/DualLite Commercial Processor
- Onboard DDR3 Memory 1 GB
- Gigabit Ethernet x 1
- 18/24-bit Single-Channel LVDS, Micro HDMI
- High Definition Audio Interface
- SATA x 1, MicroSD Slot, eMMC up to 16 GB
- USB2.0 up to 4, USB OTG x 1, Mini-PCIe x 1, CANBus
- +12V Power Input

Specifications

System	
Form Factor	Pico-ITX
CPU	Freescale i.MX6 Quad 1.0 GHz Automotive Freescale I.MX6 Dual Lite 1.0 GHz Ex. Consumer
CPU Frequency	1.0 GHz Dual/Quad Core
Chipset	i.MX6
Memory Type	1GB DDR3
Max. Memory Capacity	2GB
BIOS	—
Wake On LAN	—
Watchdog Timer	Integrated
Power Requirement	12V
Power Supply Type	AT
Power Consumption (Typical)	0.6A@12V, full load, Quad CPU
System Cooling	Fanless, Heat-sink
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.88lb (0.4 kg)
Operating Temperature	0°C ~ 60°C, -40°C ~ 85°C (optional)
Storage Temperature	-40°C ~ 85°C
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE/FCC
Display	
Chipset	Freescale i.MX6
Resolution	mHDMI, LVDS
LCD Interface	1ch 18b LVDS x 1
I/O	
Storage/SSD	SATA w/SATA PWR connector eMMC up to 16GB
Ethernet	GbE x 1
USB Port	Up to 4, one OTG port
Serial Port	4-wire UART x 2
Audio	Line-in, Speaker out, mic
DIO	8-bit
Expansion Slot	Mini-Card (Quad only), CAN Bus (optional)
SIM	Optional
TPM	—
Touch	—

Packing List

- **170204010S**
  MB Power Cable
- **1701090152**
  COM Cable
- **1700050202 (Quad Only)**
  USB Cable
- **Product DVD**
- **PICO-IMX6**

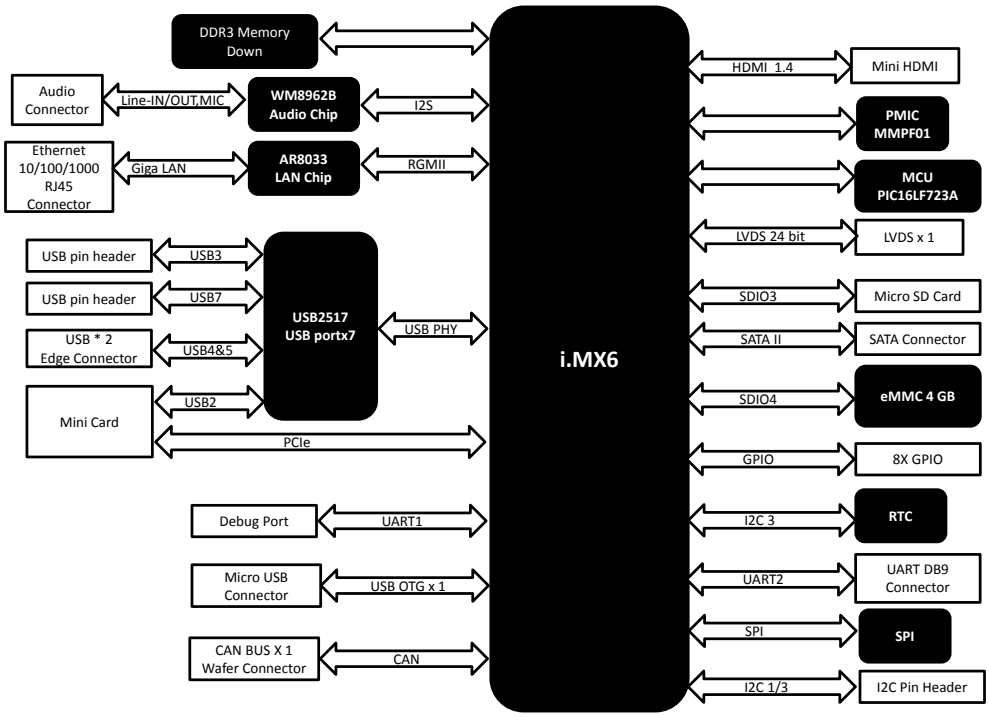
Optional Accessories

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.

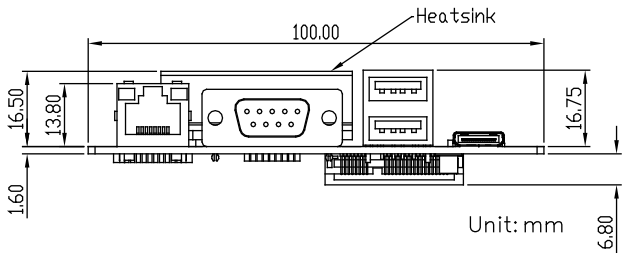
Block Diagram

Unit: mm



Dimension

Unit: mm

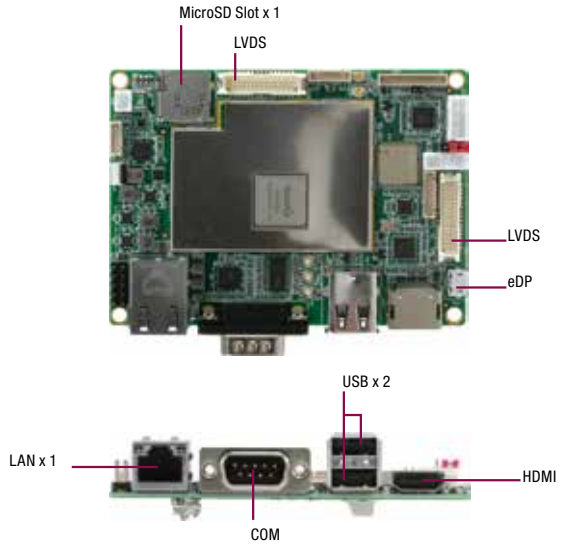


Ordering Information

Part Number	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Power Temp	Others
PICO-iMX6-A10	Freescale i.MX6 Quad 1.0 GHz Automotive grade	Onboard DDR3L 1 GB	miniHDMI	18b, 1CH	SATA 3.0 Gb/s x 1, uSD, 4 GB eMMC	GbE x 1	USB2.0 x 3 + OTG	4-wire x 2	Mini-Card	12V	32°F ~ 131°F (0°C ~ 60°C)	SATA PWR
PICO-iMX6-A10-01	Freescale i.MX6 DualLite 1.0 GHz Consumer grade	Onboard DDR3L 1 GB	miniHDMI	18b, 1CH	uSD	GbE x 1	USB2.0 x 1 + OTG	4-wire x 2	—	12V	32°F ~ 131°F (0°C ~ 60°C)	—

RICO-3288

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



Features

- Rackchip RK3288 ARM Cortex™-A17 Quad-core 1.6GHz
- Onboard DDR3 Memory 2 GB
- Gigabit Ethernet x 1
- 18/24-bit Dual-Channel LVDS, eDP and HDMI
- RS-232 x 1, RS-232/422/485 x 1
- MicroSD Slot, eMMC up to 32 GB
- USB2.0 up to 3, USB OTG x 1, Mini-PCIe x 1
- Support 7.4V Battery Power Input

Specifications

System	
Form Factor	Pico-ITX
CPU	Rackchip RK3288 ARM Cortex™-A17 Quad-core 1.6GHz (up to 1.8GHz)
CPU Frequency	1.6GHz Quad-core
Chipset	Rackchip RK3288
Memory Type	LPDDR3 2GB
Max. Memory Capacity	16GB eMMC and Micro SD card
BIOS	—
Wake On LAN	—
Watchdog Timer	Integrated
Power Requirement	+12V only, support 7.4V battery
Power Supply Type	AT
Power Consumption (Typical)	0.6A@12V, full load, Quad CPU
System Cooling	Fanless, Heat-sink
Dimension	3.94" x 2.84" (100mm x 72mm)
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)	80000
Certification	CE/FCC
Display	
Chipset	—
Resolution	HDMI(2.0) up to 4k x 2k @60Hz DP up to 2560 x 1400 @60Hz LVDS (18/24-bit) up to 1400 x 900 @60Hz
LCD Interface	18/24-bit Dual LVDS
I/O	
Storage/SSD	16GB eMMC and Micro SD card
Ethernet	GbE x 1
USB Port	Micro USB OTG x 1 Rear IO, USB 2.0 x 2 Rear IO and x 1 Pin header
Serial Port	RS-232/422/485 x 1, RS-232 Pin header x 1
Audio	Line-out x 1, 2.5W(by 4Ω) Speaker wafer x 1
DIO	8-bit (4-in, 4-out)
Expansion Slot	Mini-Card (Full-size) x 1
SIM	Mano-SIM
USB	—
TPM	—
Touch	I2C interfac

Packing List

- RICO-3288
- Product DVD
- MB Power Cable

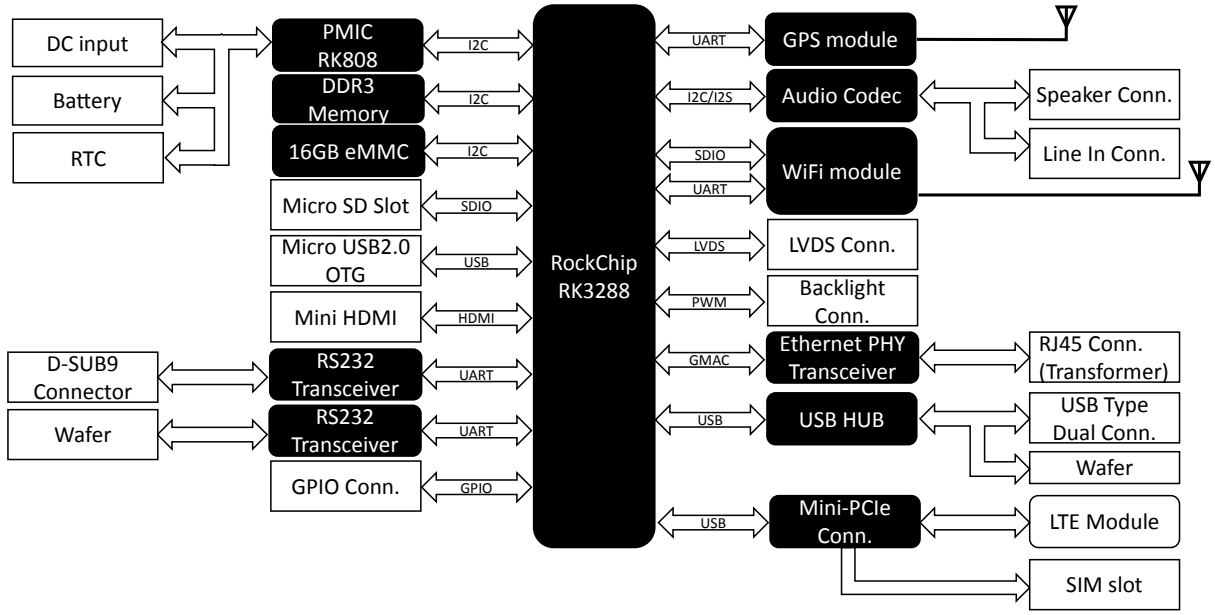
Optional Accessories

Part Number	Description	Qty.
1700050207	USB Cable, Length 20cm	1
1701090150	COM Cable, Length 15cm	1
1709100254	AUDIO Cable, Length 25cm	1

Note: All specifications are subject to change without notice.

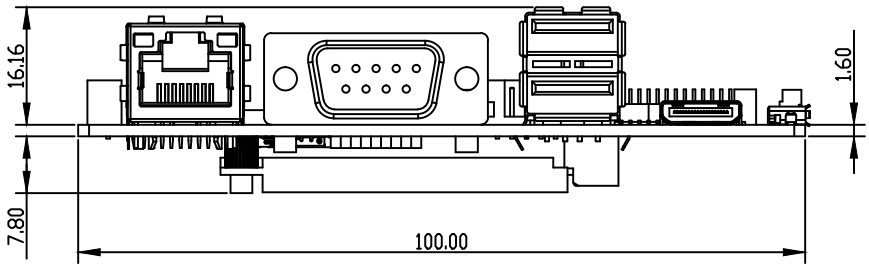
Block Diagram

Unit: mm



Dimension

Unit: mm

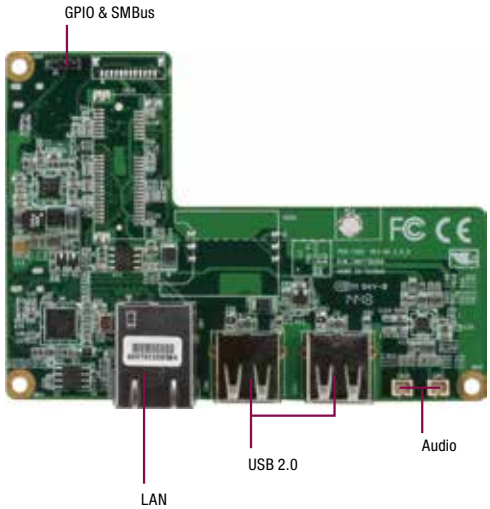


Ordering Information

- TBD

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
- Audio Output Dual Channel with 2W Amp.
- SMbus x 1, GPIO x 1
- LPC (Optional)
- Support PICO-BT01 BIO Daughter Board Option

1000 Giga LAN USB 2.0 CE FC

Specifications

System	
Form Factor	2.5“ Board
BIO	80 Pin Hi-speed Board to board connector
Power Requirement	Power from MB by BIO
Board Size	3.94" x 2.84" (100mm x 72mm)
Gross Weight	200g
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
I/O	
PCIe	Realtek 8111E, 10/100/1000Base-TX, RJ-45 x 1
USB	USB 2.0 x2 on rear I/O
Audio	Dual Channel Audio output with 2W Amp.
Expansion Interface	SMbus x 1, GPIO x 1

Packing List

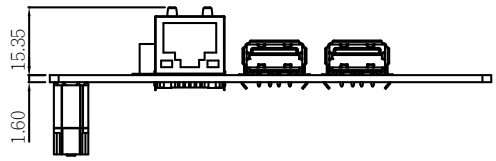
- Accessory Kit
- BIO-ST01-L1U2

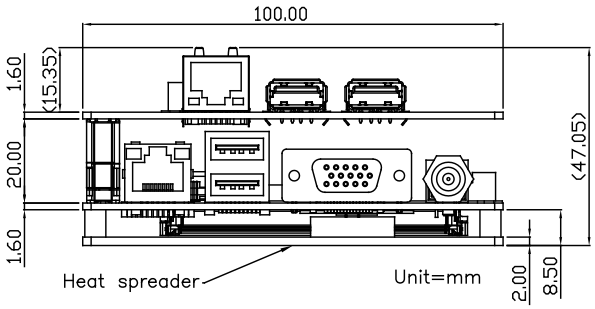
Ordering Information

P/N	USB	USB	GPIO	Expansion Slot	Power Temp.
BIO-ST01-L1U2-A10-01	GbE x 1	USB2.0 x 2	1	Audio output Dual CH with 2W Amp. , SMbus x 1	0°C ~ 60°C

Dimension

Unit: mm

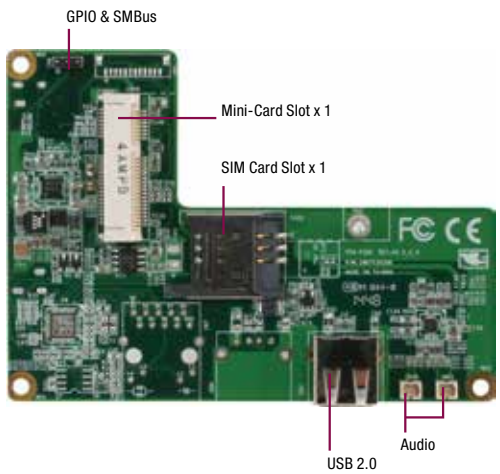




Note: All specifications are subject to change without notice.

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**
- **Audio Output Dual Channel with 2W Amp.**
- **SMbus x 1, GPIO x 1**
- **LPC (Optional)**
- **Support PICO-BT01 BIO Daughter Board**

Specifications

System	
Form Factor	2.5“ Board
BIO	80 Pin Hi-speed Board to board connector
Power Requirement	Power from MB by BIO
Board Size	3.94" x 2.84" (100mm x 72mm)
Gross Weight	200g
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
I/O	
PCIe	Mini-Card x 1
SIM	SIM Slot x 1
USB	USB 2.0 x 1 on rear I/O
Audio	Dual Channel Audio output with 2W Amp.
Expansion Interface	SMbus x 1, GPIO x 1

Packing List

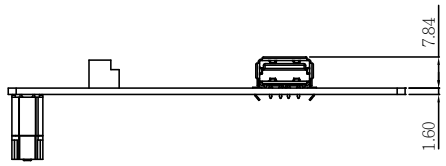
- **Accessory Kit**
- **BIO-ST01-M1U1**

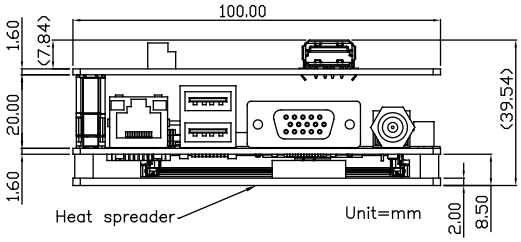
Ordering Information

P/N	USB	GPIO	Expansion Slot	Power Temp.
BIO-ST01-M1U1-A10-01	USB 2.0 x 1	1	Mini-Card x 1, SIM x 1, Audio output/2 CH with 2W Amp. x 1, SMbus	0°C ~ 60°C

Dimension

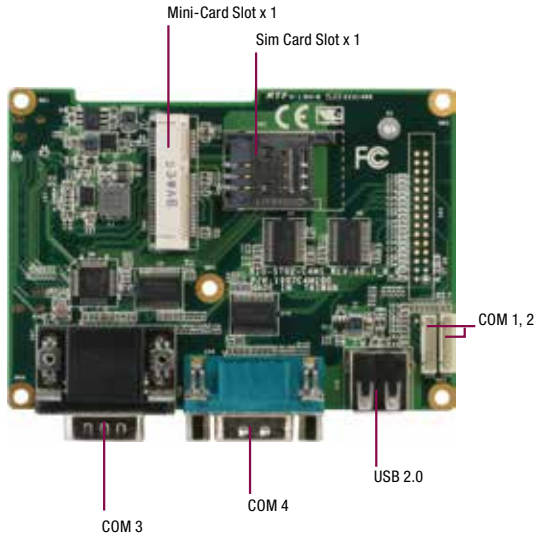
Unit: mm





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**
- **SIM slot x 1**
- **USB 2.0 x 1**
- **Support PICO-BT01 BIO Daughter Board Option**

Specifications

System	
Form Factor	2.5“ Board
BIO	80 Pin hi-speed Board to board connector
Power Requirement	Power from MB by BIO
Board Size	3.94" x 2.84" (100mm x 72mm)
Gross Weight	200g
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
I/O	
Serial Port	COM1, COM2 RS-232 by Pin Header COM3, COM4 RS-232 on Rear I/O
USB	USB 2.0 x 1 on rear I/O
PCIe	Mini-Card x 1 (full size), SIM x 1

Packing List

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

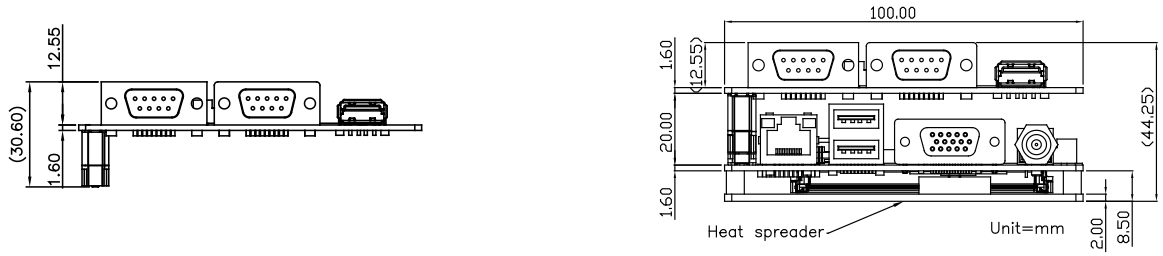
Ordering Information

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

* Customized BIOS is required.

Dimension

Unit: mm



Note: All specifications are subject to change without notice.

06

COM Express CPU Modules

AAEON® an ASUS assoc. co.

Focus • Agility • Competitiveness

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
- USB2.0 x 8, (Include USB 2.0/3.0 x 2)
- PCI-Express: 3 devices max
- 12V DC Input
- COM Express Type 6 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
I/O	
Ethernet	Intel® 210, Gigabit Ethernet
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 6, USB 2.0/3.0 x 2
Serial Port	Tx/Rx x 2
Parallel Port	—
HDD Interface	SATA x 2
FDD Interface	—
SSD	—
Expansion Slot	PCI-Express[x1] x 3 (devices) LPC Bus x 1 SMbus x 1
DIO	GPIO 8-bit

Packing List

- M2.5 Screw x 4
- Product CD
- COM-APLC6

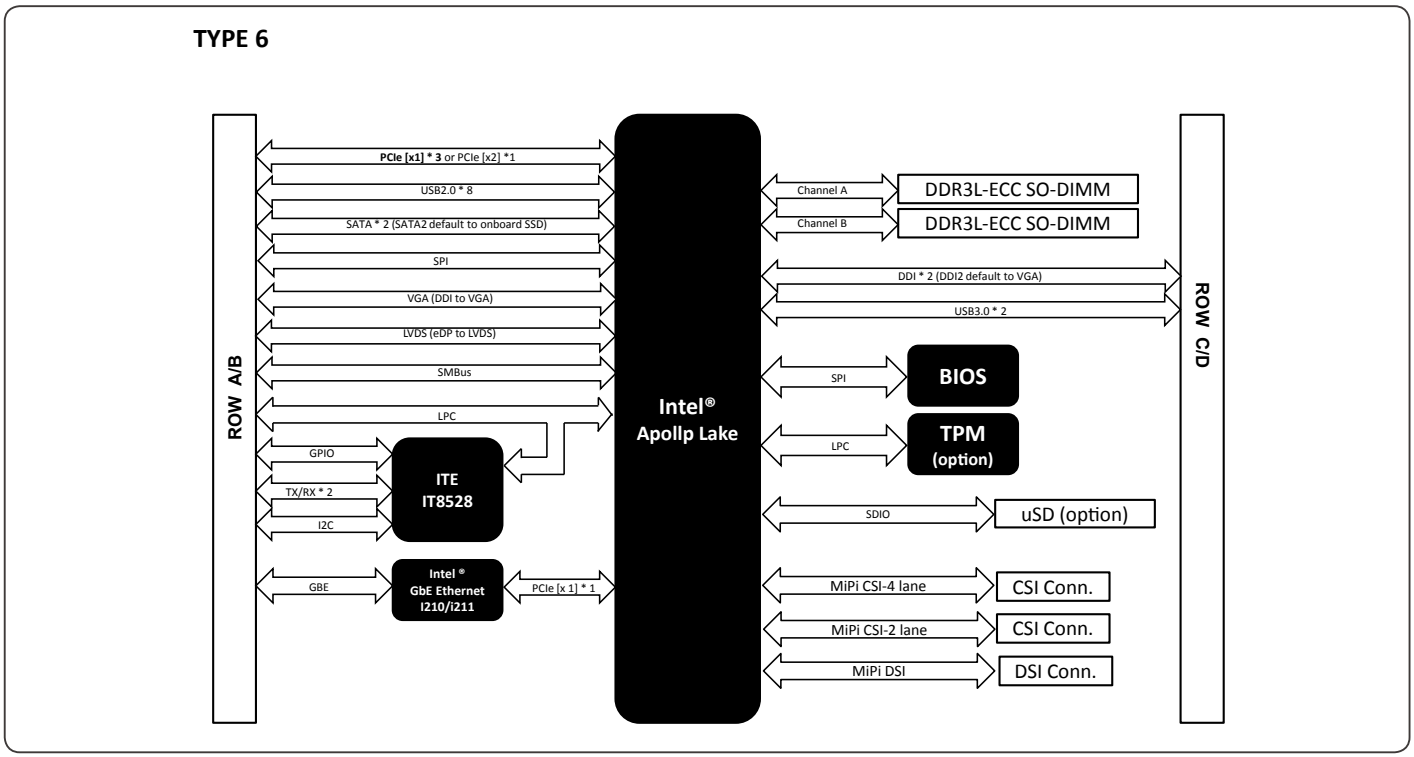
Optional Accessories

- **COM-APLC6-HSP01**
  Heat Spreader, For COM-APLC6
- **COM-FAN02**
  CPU Cooler, 95 x 95 x 26.5mm, Sliver, use with HSP
- **ECB-920A-A10-0001**
  COMe 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.

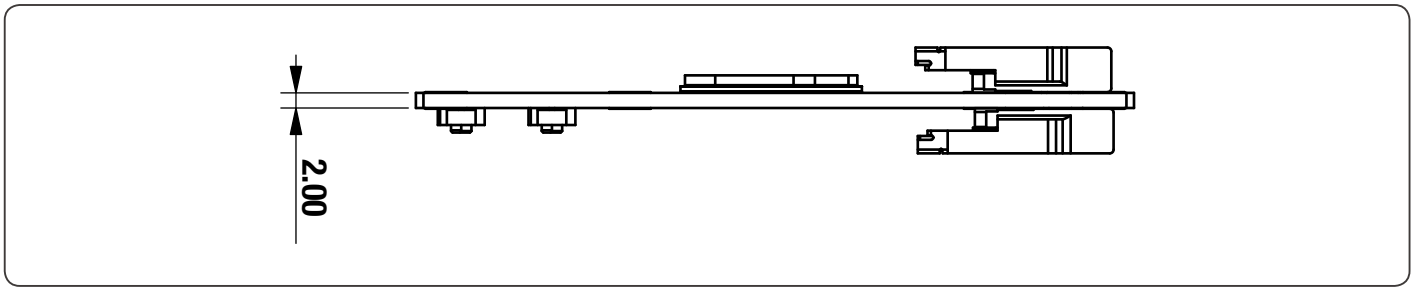
Block Diagram

Unit: mm



Dimension

Unit: mm

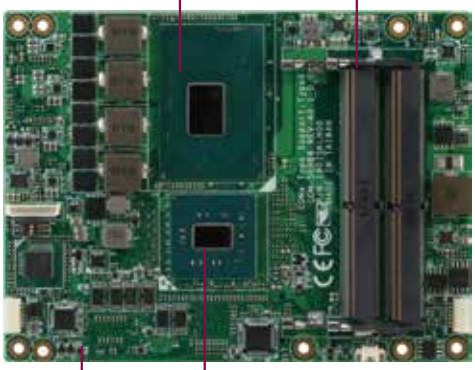


Ordering Information

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, MiPi-DSI	18/24b 2CH (LVDS share with eDP)	SATA x 2 uSD	GbE x 1	USB3.0 x 2 USB2.0 x 8	2 (Tx/Rx)	PCI-E[x1] x 3 (devices) MiPi-CSI x 2	12V	0°C~60°C	—

COM-SKHB6

COM Express Type 6 Basic Size with 6th 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 Support 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**
- **USB2.0 x 8, USB3.0 x 4, GPIO 8-bitPCI-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
CPU Frequency	Up to i7-6820EQ 2.8 GHz
Chipset	PCH QM170 or CM236 (by sku)
Memory Type	DDR4, SODIMM x 2, ECC Support with CM236 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" (125mm 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	Onboard 6th Gen Intel® Core™ H-series Processor, GT2
Video Output	VGA, LVDS/eDP, DDI x2
I/O	
Ethernet	Intel I219, Gigabit Ethernet
Audio	HD Audio
USB Port	USB2.0 x8, USB3.0 x4
Serial Port	2-Wire UART (Tx/Rx) x2
HDD Interface	SATA x4
Onboard SSD	—
Expansion Slot	PCIe[x16] x 1, PCIe[x1] x8, I2C, LPC, SMBus
DIO	GPIO 8-bit
TPM	Optional

Packing List

- **M2.5 Screw x 5**
- **Product CD**
- **COM-SKHB6**

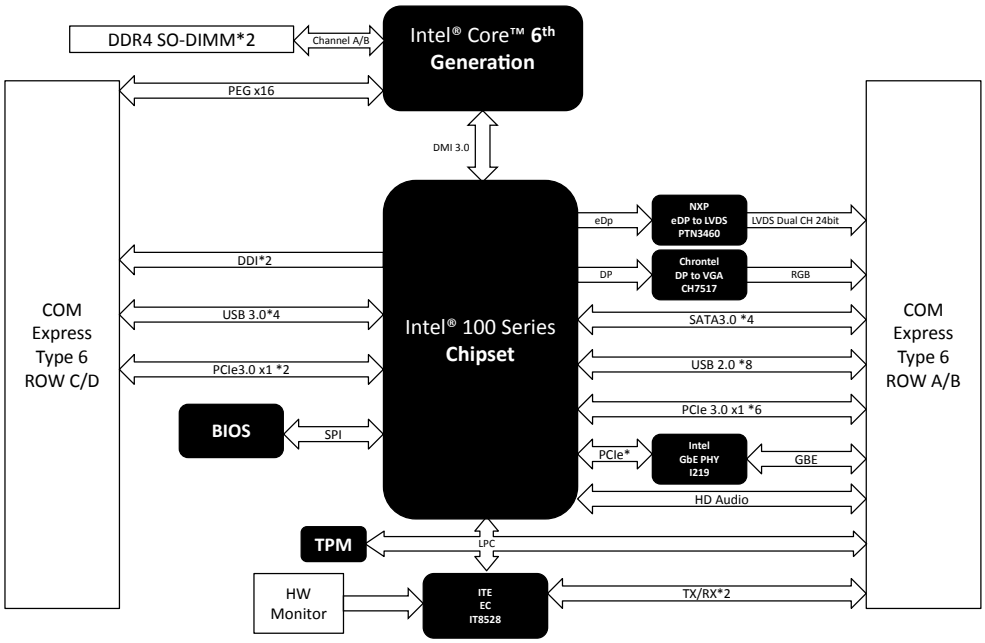
Optional Accessories

- **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, Sliver, use with HSP
- **COM-SKHB6-HSP01**
  Heat Spreader, For COM-SKHB6, Onboard CPU

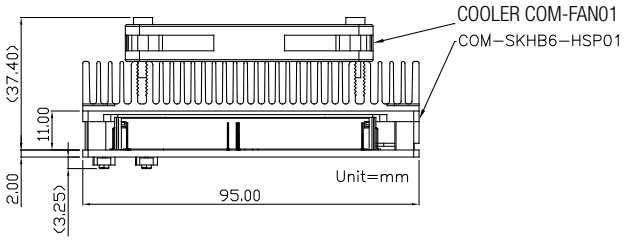
Note: All specifications are subject to change without notice.

COM-SKHB6

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-SKHB6-A10-0001	COM Express Type 6	i7-6820EQ, 2.8 GHz	DDR4 SODIMM x 2 (Max 32GB)	CRT, LVDS/ eDP, DDI x 2	24bit, 2CH	SATA x 4	GbE x 1	USB3.0 x 4, UBS2.0 x 8	2-wire (Tx/Rx) x 2	PCIe[x1] x8, PCIe[x16] x 1	+12V (ATX)	0˚C ~ 60˚C	LPC,GPIO 8Bit, HDA, I2C, SMBus
COM-SKHB6-A10-0003	COM Express Type 6	i3-6100E, 2.7 GHz	DDR4 SODIMM x 2 (Max 32GB)	CRT, LVDS/ eDP, DDI x 2	24bit, 2CH	SATA x 4	GbE x 1	USB3.0 x 4, UBS2.0 x 8	2-wire (Tx/Rx) x 2	PCIe[x1] x8, PCIe[x16] x 1	+12V (ATX)	0˚C ~ 60˚C	LPC,GPIO 8Bit, HDA, I2C, SMBus

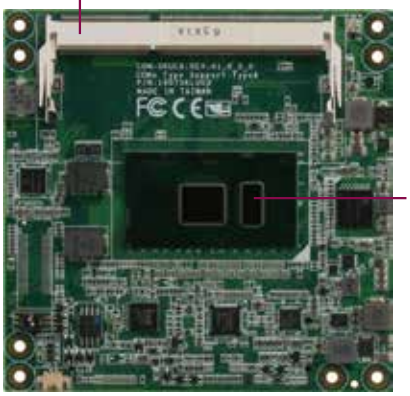
CPU Support Chart

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

CPU	Base Frequency/ Turbo Boost GHz	Core/ Thread	Last level Cache	ECC Support/ Chipset	TDP	Graphic
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

COM-SKUC6

COM Express Type 6 Compact Size with 6th Gen Core U-series Processor



Features

- Intel® Core™ i3/i5/i7 U-series SoC
- DDR3L SODIMM x 1, up to 8 GB, non-ECC only
- Gigabit Ethernet x 1
- 18/24-bit Dual-Channel LVDS LCD/eDP, DDI x 1, VGA (via DDI2), High Definition Audio Interface
- SATA x 3 (SATA Port 3 for i5 i7 sku only)
- USB2.0 x 8, USB3.0 x 4, GPIO 8-bitPCI-Express Lanes x 8
- COM Express Type 6 Compact Size 95mm x 95mm

Specifications

System	
Form Factor	COM Express Compact Size
CPU	Onboard 6th Gen Intel® Core™ U-series Processor, BGA type
CPU Frequency	Up to i7-6600U 2.6 GHz, vPro™
Chipset	Onboard 6th Gen Intel® Core™ U-series Processor
Memory Type	DDR3L 1333/1600, SODIMM x 1
Max. Memory Capacity	8 GB
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)	i7-6600U, 4GB DDR3:, full loading 1.07A@12V during 100% loading burn in test
Dimension (L x W)	3.75in x 3.75in (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	Onboard 6th Gen Intel® Core™ U-series Processor, GT2/GT1
Video Output	VGA, LVDS/eDP, DDI x 1 (up to 2)
I/O	
Ethernet	Intel I219, Gigabit Ethernet
Audio	HD Audio
USB Port	USB2.0 x 8, USB3.0 x 4
Serial Port	2-Wire UART (Tx/Rx) x 2
HDD Interface	SATA x 3 (SATA Port 3 optional)
Onboard SSD	—
Expansion Slot	PCI-Express Lanes x 8, I2C, LPC, SMBus
DIO	GPIO 8-bit
TPM	optional

Gigo LAN · HD Audio · DDR 3L · USB 2 0 · USB 3.0 · PCI Express · CE FC

Packing List

- M2.5 Screw x 4
- Product CD
- COM-SKUC6

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, Sliver, use with HSP
- **COM-SKUC6-HSP01**
  Heat Spreader, For COM-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 (i5/i7 only)	SATA#2 (i5/i7 only)
Remark	6 PCIe Devices 9 PCIe Lanes	6 PCIe Devices 12 PCIe Lanes

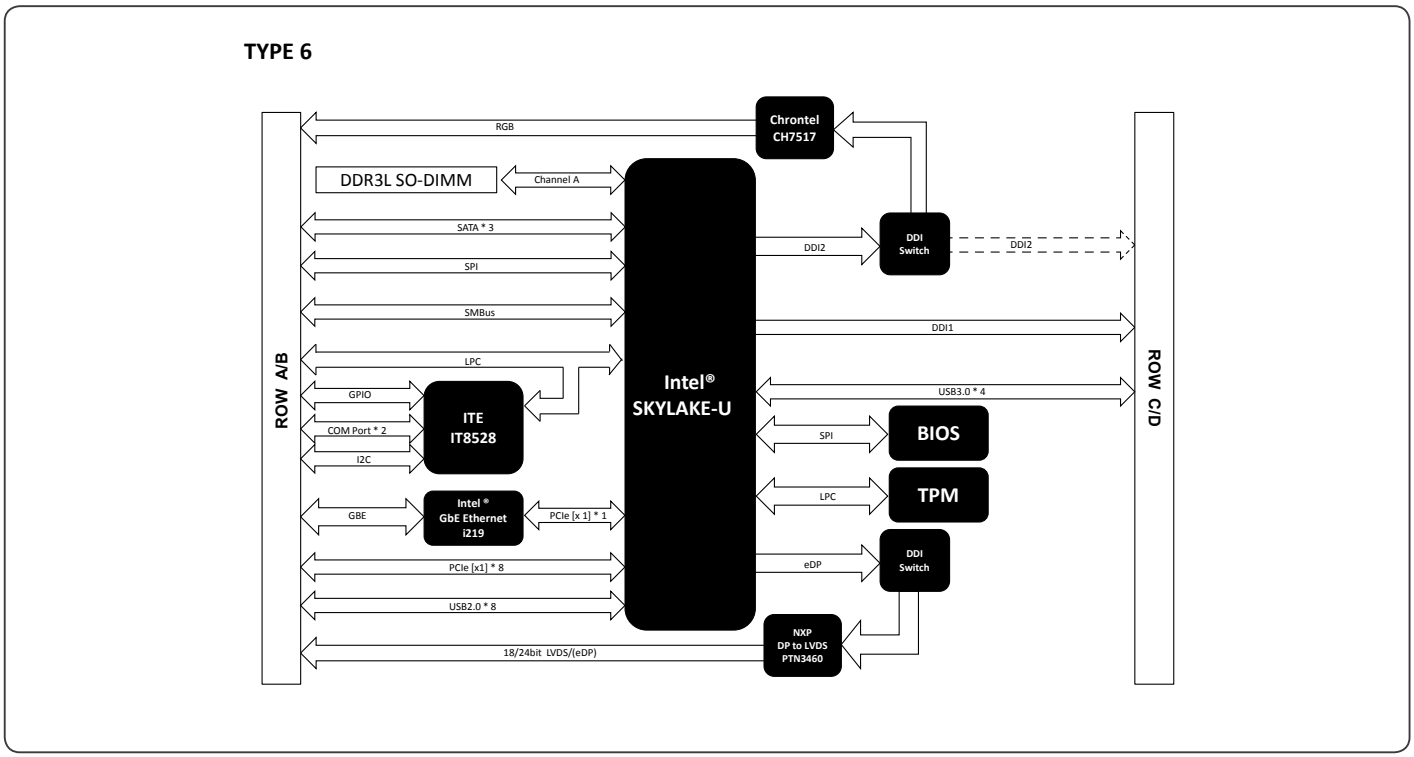
*Only a maximum of 6 PCIe port or (Devices) or 12 PCIe Lanes can be enabled at any time

**SATA#2 default disable, and only functional with i5/i7

Note: All specifications are subject to change without notice.

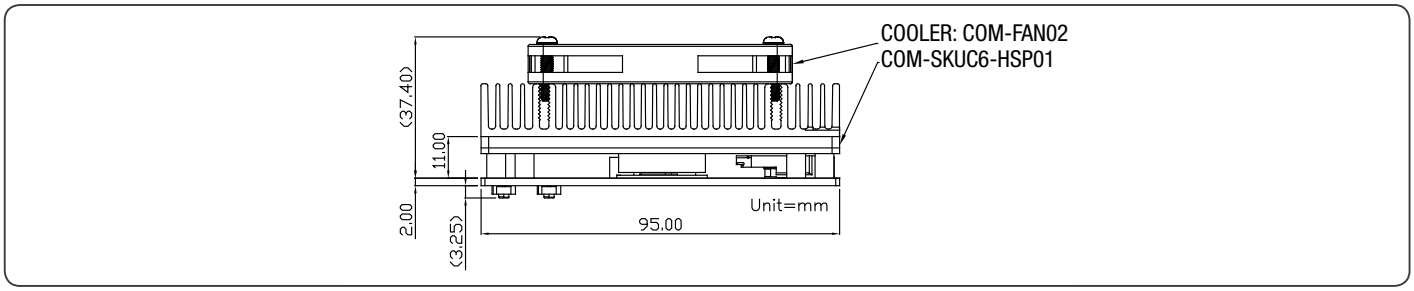
Block Diagram

Unit: mm



Dimension

Unit: mm



Ordering Information

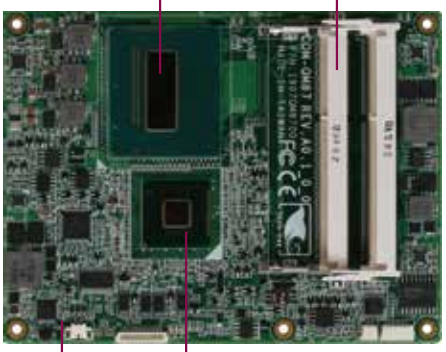
Part Number	Form Factor	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion	Power	Temperature	Other
COM-SKUC6-A10-0001	COM Express Type 6	i7-6600U, 2.6/3.4GHz	DDR3L up to 8GB SODIMM x 1	CRT, LVDS/eDP, DDI x 1	24bit, 2CH	SATA x2 (up to 3)	GbE x 1	USB3.0 x 4, UBS2.0 x 8	2-wire (Tx/Rx) x 2	PCIe Lanes x 8	+12V (ATX)	0˚C ~ 60˚C	LPC,GPIO 8Bit, HDA, I2C, SMBus
COM-SKUC6-A10-0003	COM Express Type 6	i3-6100U, 2.3GHz	DDR3L up to 8GB SODIMM x 1	CRT, LVDS/eDP, DDI x 1	24bit, 2CH	SATA x 2	GbE x 1	USB3.0 x 4, UBS2.0 x 8	2-wire (Tx/Rx) x 2	PCIe Lanes x 8	+12V (ATX)	0˚C ~ 60˚C	LPC,GPIO 8Bit, HDA, I2C, SMBus

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

COM-QM87

COM Express CPU Type 6 Module with Intel® Core™ i7/i5 Processor, BGA1364



Features

- **Onboard 4th Generation Intel® Core™ i7/i5 Processor**
- **Intel® QM87 PCH**
- **Dual-Channel DDR3L 1333/1600 MHz SODIMM, Up to 16 GB**
- **Gigabit Ethernet (iAMT 9.0 Support)**
- **CRT, eDP, 18/24-bit Dual-Channel LVDS**
- **USB3.0 x 4, USB2.0 x 8, SATA x 4**
- **PCI-Express [x16] x 1, PCI-Express [x1] x 7**
- **COM Express Compact, Pin-out Type 6, COM.0 Rev. 2.1**

Specifications

System	
Form Factor	COM Express, Compact, Pin-out Type 6
CPU	Onboard 4th Generation Intel® Core™ i5 Processor
CPU Frequency	Up to 2.7GHz
Chipset	Intel® PCH QM87
Memory Type	DDR3/DDR3L 1333/1600, SODIMM x 2, Supports Dual Channel function
Max. Memory Capacity	16GB
BIOS	ANI BIOS
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Nominal: +12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Intel® Core™ i5-4400E 2.7GHz, DDR3 1600 8GB, 3.21A @+12V
Dimension (L x W)	4.92" x 3.74" (125mm 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)	80,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Core™ i7/i5/i3 Celeron® integrated
Video Output	CRT, LVDS LCD, DDI
I/O	
Ethernet	Intel® 217LM, Gigabit Ethernet
Audio	High definition audio
USB Port	USB2.0 x 8, USB3.0 x 4
Serial Port	Tx/Rx x 2
Parallel Port	—
HDD Interface	SATA x 4
SSD	—
Expansion Slot	PCI-Express[x1] x 7 (Gen 2.0) PCI-Express[x16] x 1 (Gen 3.0) Configurable to 2 x 8-lane PCI Express Ports Configurable to 1 x 8-lane or 2 x 4-lane PCI Express Ports LPC Bus x 1, SM Bus x 1, I2C x 1
DIO	GPIO 8-bit
TPM	Optional

Packing List

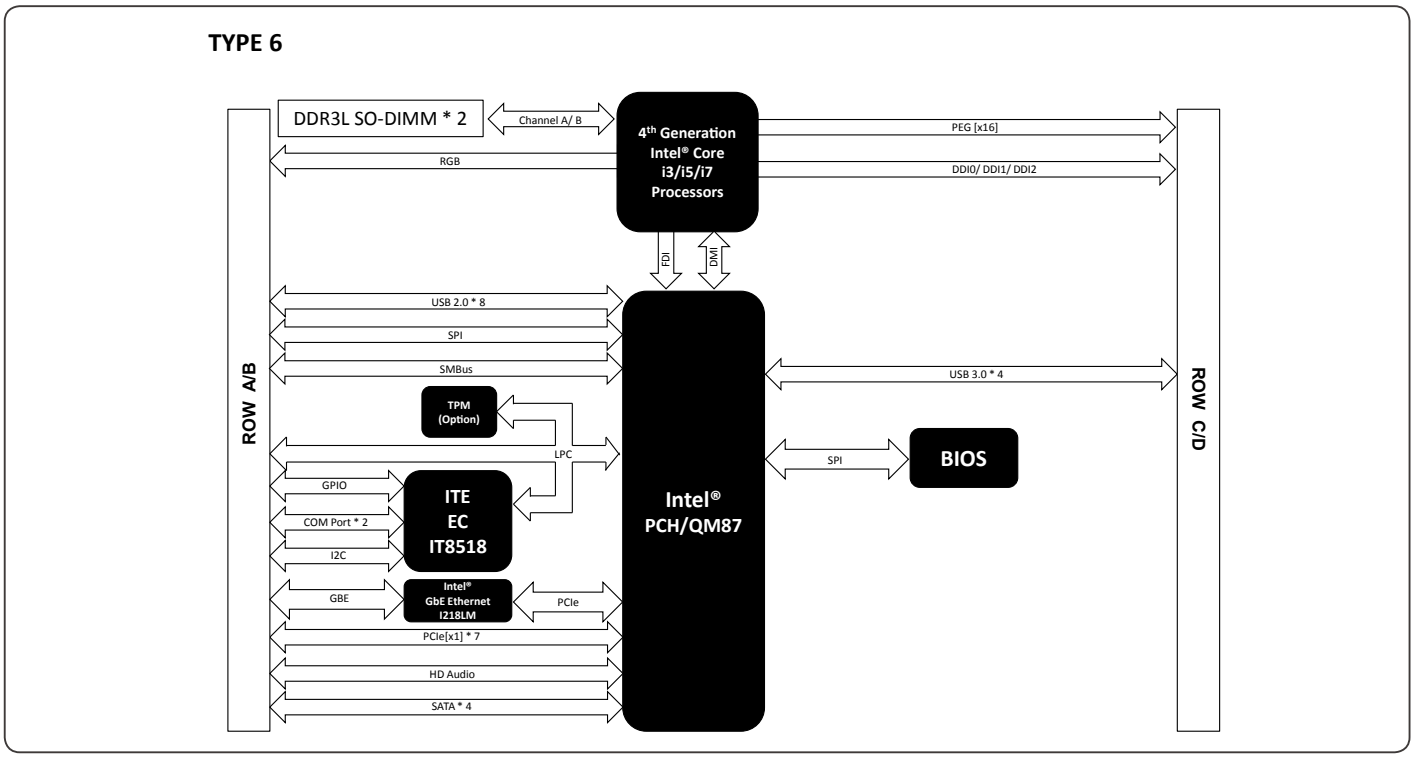
- **M2.5 Screw x 5**
- **Product CD**
- **COM-QM87**

Optional Accessories

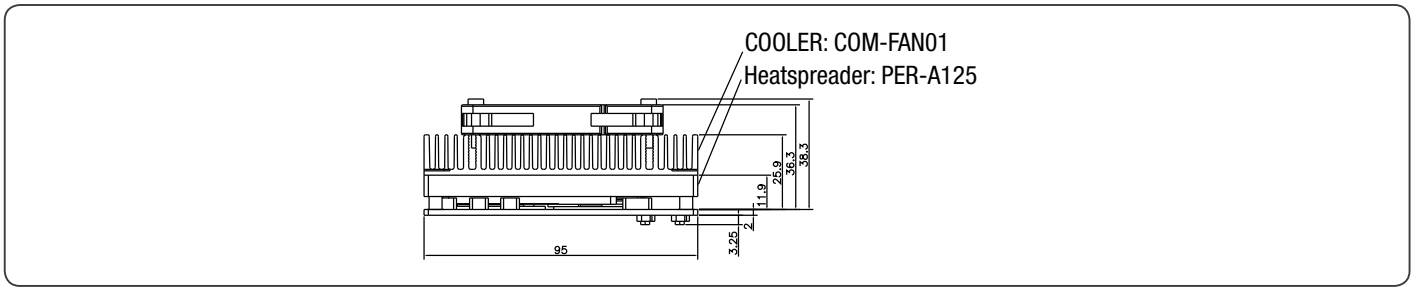
- **ECB-920A-A10-0001**
  COM Express Type 1/6/10 Carrier Board, Gigabit Ethernet, USB, 2 COM, 4 SATA, PCIe, AT/ATX, Legacy Free, Rev. A1.0
- **PER-A125**
  Heat Spreader, For COM-QM87, Onboard CPU
- **COM-FAN01**
  CPU Cooler, 125 x 95 x 26.4mm, Sliver, use with HSP

Note: All specifications are subject to change without notice.

Block Diagram Unit: mm



Dimension Unit: mm

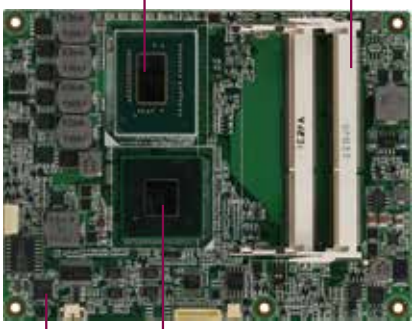


Ordering Information

Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Power Temp	Others
COM-QM87-A10	6 (COM.0 Rev 2.1)	4th Gen. Intel® Core™ i5-4400E/2.7 GHz (BGA1364)	DDR3L SODIMM x 2 up to 16 GB	CRT, DDI, eDP/ LVDS	18/24b 2CH (LVDS shared with eDP)	SATA x 4	GbE x 1	USB3.0 x 4 USB2.0 x 8	2 (Tx/Rx)	PCI-E[x1] x 7 PCI-E[x16] x 1	12V	0°C~60°C	—
COM-QM87-A10-0001	6 (COM.0 Rev 2.1)	4th Gen. Intel® Core™ i5-4402E/1.6 GHz (BGA1364)	DDR3L SODIMM x 2 up to 16 GB	CRT, DDI, eDP/ LVDS	18/24b 2CH (LVDS shared with eDP)	SATA x 4	GbE x 1	USB3.0 x 4 USB2.0 x 8	2 (Tx/Rx)	PCI-E[x1] x 7 PCI-E[x16] x 1	12V	0°C~60°C	—
COM-QM87-A10-0002	6 (COM.0 Rev 2.1)	4th Gen. Intel® Core™ i7-4700EQ/2.4 GHz (BGA1364)	DDR3L SODIMM x 2 up to 16 GB	CRT, DDI, eDP/ LVDS	18/24b 2CH (LVDS shared with eDP)	SATA x 4	GbE x 1	USB3.0 x 4 USB2.0 x 8	2 (Tx/Rx)	PCI-E[x1] x 7 PCI-E[x16] x 1	12V	0°C~60°C	—

COM-QM77 Rev. B

COM Express Type 6 CPU Module with Onboard Intel® Core™ i7/i5/i3/Celeron® Processor



Features

- **Onboard Intel® Core™ i7/i5/i3/Celeron® Processor (FCBGA1023)**
- **Intel® QM77/HM76 PCH**
- **Dual-Channel DDR3 1333/1600 MHz SODIMM x 2, Up to 16 GB**
- **Gigabit Ethernet (iAMT 8.0 Support)**
- **CRT, Up to 24-bit Dual-Channel LVDS LCD, DDI x 2**
- **USB3.0 x 4, USB2.0 x 8, SATA x 4**
- **PCI-Express [x16] x 1, PCI-Express [x1] x 7**
- **COM Express Compact, Pin-out Type 6, COM.0 Rev. 2.0**
- **IEEE 1588 Compatible**
- **-20°C ~ 70°C Wide Temperature Range Available for Selected Model**

Specifications

System	
Form Factor	COM Express, Compact, Pin-out Type 6
CPU	On board 3rd Gen. Intel® Core™ i7/i5/i3/Celeron® (FCBGA1023)
CPU Frequency	Up to 2.5GHz
Chipset	Intel® PCH QM77/HM76
Memory Type	DDR3 1333/1600, SODIMM x 2, Supports Dual Channel function
Max. Memory Capacity	16GB
BIOS	AMI BIOS
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Nominal: +12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Intel® Core™ i3-3217UE 1.6GHz, DDR3 1066 4GB, 2.23A @+12V
Dimension (L x W)	4.92" x 3.74" (125mm x 95mm)
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)	80,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Core™ i7/i5/i3 Celeron® integrated
Video Output	CRT, LVDS LCD, DDI x 2
I/O	
Ethernet	Intel® 82579LM, Gigabit Ethernet
Audio	High definition audio
USB Port	USB2.0 x 8
Serial Port	Tx/Rx x 2
Parallel Port	—
HDD Interface	SATA 2 x 4
SSD	—
Expansion Slot	PCI-Express [x16] x 1, PCI-Express [x1] x 7, LPC Bus x 1, SM Bus x 1, I2C x 1
DIO	GPIO 8-bit
TPM	Optional

Packing List

- **M2.5 Screw x 5**
- **Product DVD**
- **COM-QM77 Rev. B**

Optional Accessories

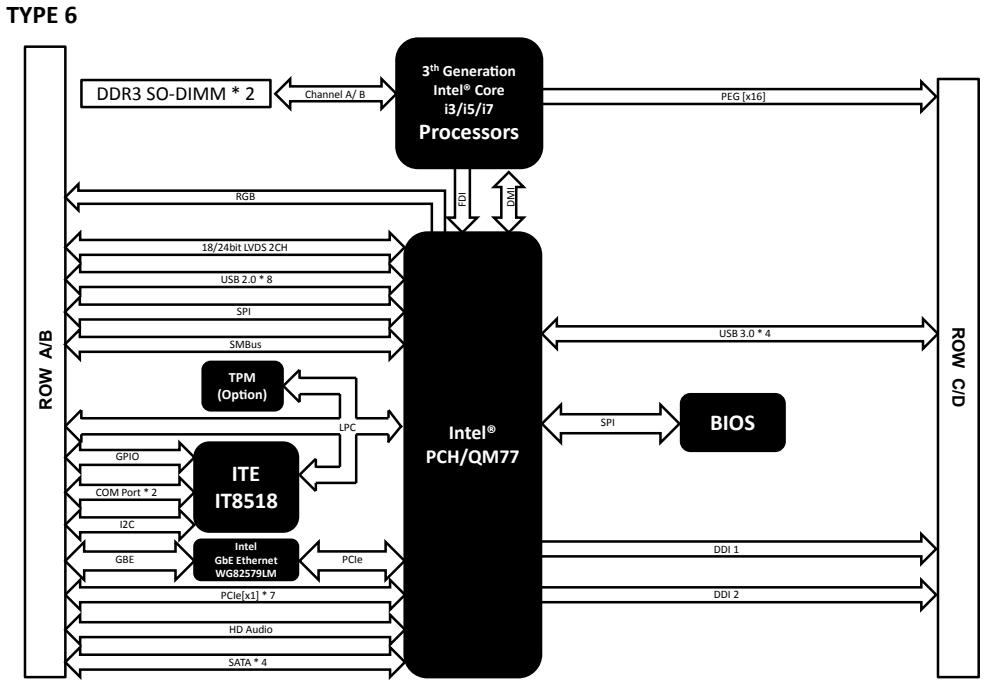
- **ECB-920A-A10-0001**
  COM Express Type 1/6/10 Carrier Board, Gigabit Ethernet, USB, 2 COM, 4 SATA, PCIe, AT/ATX, Legacy Free, Rev. A1.0
- **PER-A122**
  Heat Spreader, For COM-QM77, Onboard CPU
- **COM-FAN01**
  CPU Cooler, 125 x 95 x 26.4mm, Sliver, use with HSP

Note: All specifications are subject to change without notice.

COM-QM77 Rev. B

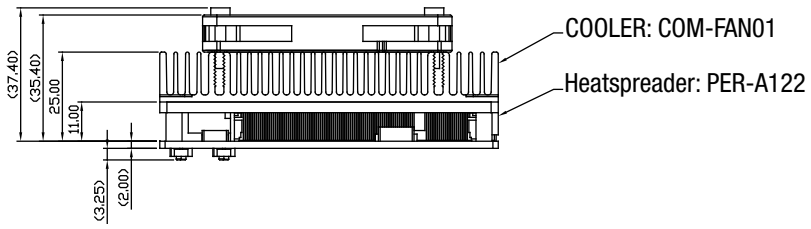
Block Diagram

Unit: mm



Dimension

Unit: mm



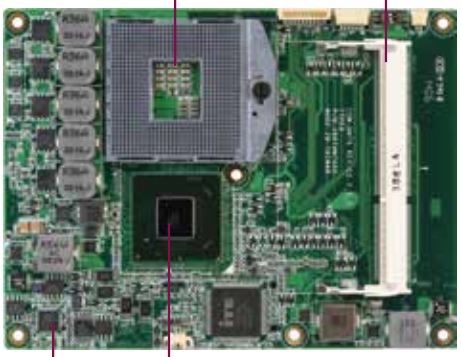
Ordering Information

Part Number	COM Express Type	Chipset	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Temp.
COM-QM77-B11	6 (COM.0 Rev.2.0)	QM77	3rd Generation Intel® Core™ i7-3555LE/2.5 GHz (FCBGA1023)	DDR3 SODIMM x 2 up to 16 GB	CRT, LVDS, DDI x 2	24b, 2CH	SATA x 4	GbE x 1	USB3.0 x 4 USB2.0 x 8	2 (Tx/Rx)	PCI-E [16] x 1,PCI-E [1] x 7	12V	0°C ~ 60°C
COM-QM77-B11-01	6 (COM.0 Rev.2.0)	QM77	3rd Generation Intel® Core™ i7-3517UE/1.7 GHz (FCBGA1023)	DDR3 SODIMM x 2 up to 16 GB	CRT, LVDS, DDI x 2	24b, 2CH	SATA x 4	GbE x 1	USB3.0 x 4 USB2.0 x 8	2 (Tx/Rx)	PCI-E [16] x 1, PCI-E [1] x 7	12V	0°C ~ 60°C
COM-QM77-B11-02	6 (COM.0 Rev.2.0)	HM76	3rd Generation Intel® Core™ i3-3217UE/1.6 GHz (FCBGA1023)	DDR3 SODIMM x 2 up to 16 GB	CRT, LVDS, DDI x 2	24b, 2CH	SATA x 4	GbE x 1	USB3.0 x 4 USB2.0 x 8	2 (Tx/Rx)	PCI-E [16] x 1, PCI-E [1] x 7	12V	0°C ~ 60°C
COM-QM77W1-B11	6 (COM.0 Rev.2.0)	QM77	3rd Generation Intel® Core™ i7-3555LE/2.5 GHz (FCBGA1023)	DDR3 SODIMM x 2 up to 16 GB	CRT, LVDS, DDI x 2	24b, 2CH	SATA x 4	GbE x 1	USB3.0 x 4 USB2.0 x 8	2 (Tx/Rx)	PCI-E [16] x 1, PCI-E [1] x 7	12V	WiTAS 1 (-20°C ~ 70°C)

Remark: Wide temperature criteria does not apply to Audio function. If audio function is required, please select industrial grade audio codec IC for design and apply thermal solution.

COM-HM76

COM Express CPU Type 6 Module, Socket G2 for Intel® 2nd & 3rd Generation Core™ i7/i5/i3/Pentium®/Celeron® Processor, HM76, DDR3L, GbE



Features

- **Socket G2 for Intel® 2nd & 3rd Generation Core™ i7/i5/i3/ Pentium®/Celeron® Processor**
- **Intel® HM76 PCH**
- **Single Channel SODIMM DDR3L 1333/1600 Memory, Max. 8 GB**
- **Gigabit Ethernet**
- **CRT, 18/24-bit Dual-channel LVDS, DDI x 2**
- **SATA x 4, USB3.0 x 4, USB2.0 x 8**
- **PCI-Express [x16] x 1, PCI-Express [x1] x 7**
- **COM Express Basic Size, Pin-out Type 6, COM.0 Rev. 2.1**

Specifications

System	
Form Factor	COM Express, Basic Module, Pin-out Type 6
CPU	Socket G2 for Intel® 2nd & 3rd generation Core™ i7/i5/i3/Pentium®/Celeron® processor
CPU Frequency	Up to i7-3610QE, Quad core, 2.3GHz
Chipset	Intel® HM76
Memory Type	Non-ECC DDR3L 1333/1600
Max. Memory Capacity	Single-channel SODIMM DDR3L 1333/1600 Memory, Max. 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)	i7-3610QE 2.3GHz, DDR3L 8GB 2.73A@12V, 1.18A@5V, 0.31A@3.3V. 100% loading on ECB-920A
Dimension (L x W)	4.92" x 3.75" (125mm 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)	150,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Core™ i7/ i5/i3/Celeron® processor integrated
Video Output	CRT, 18/24-bit Dual-channel LVDS, DDI x 2
I/O	
Ethernet	Intel® 82579LM for 10/1000/1000Base-TX
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8, USB 3.0 x4
Serial Port	Tx/Rx x 2
Parallel Port	—
HDD Interface	SATA x 4
FDD Interface	—
SSD	—
Expansion Slot	PCI-Express [x16] x 1, PCI-Express [1] x 7, LPC bus x 1, SMBus x 1
DIO	GPIO x 8
TPM	—

Packing List

- **M2.5 Screw x 4**
- **Product CD**
- **COM-HM76**

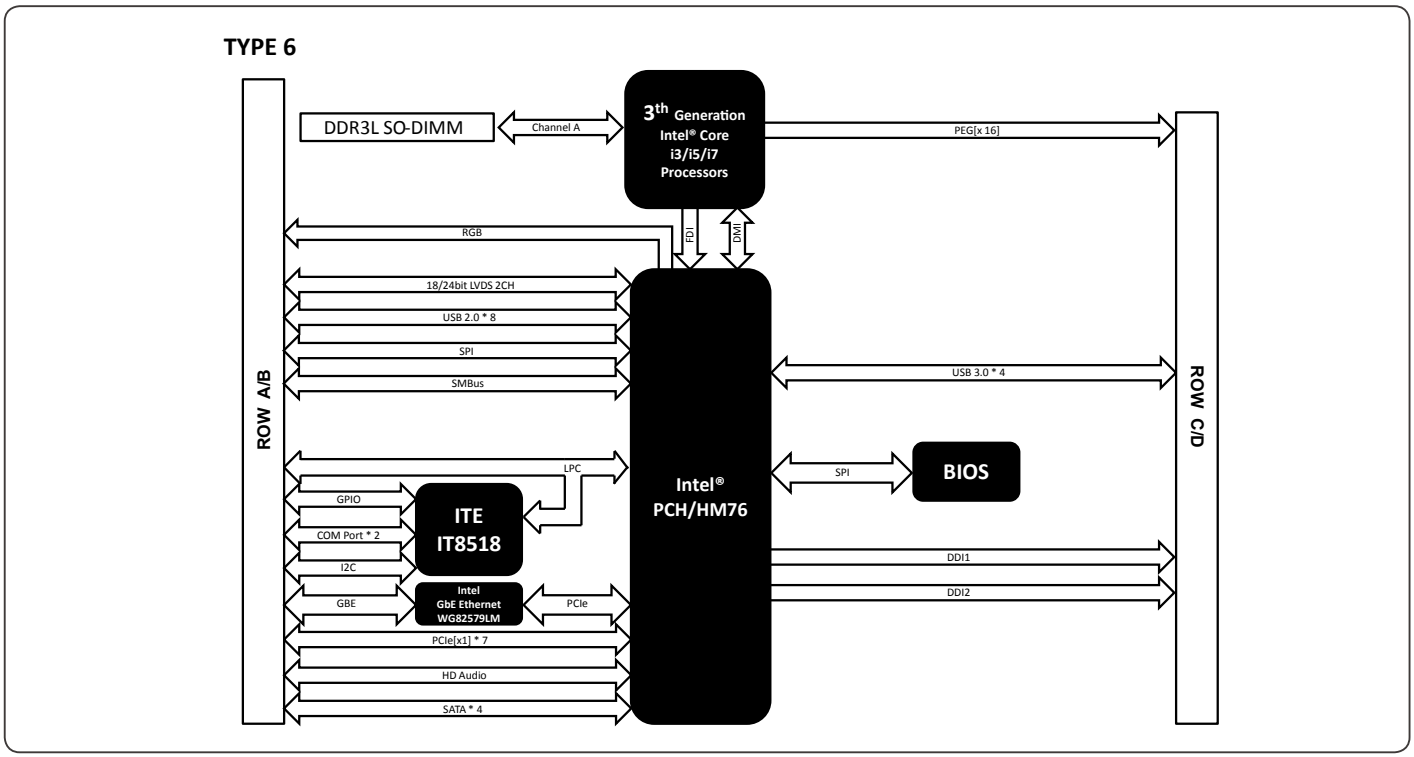
Optional Accessories

- **ECB-920A-A10-0001**
  COMe Type 1/6/10 Carrier Board, ATX, GbE, 8USB, 2COM, 4SATA. PCIe, AT/ATX, Legacy Free, Rev. A1.0
- **PER-A129**
  Heat Spreader, For COM-HM76, Socket Type
- **COM-FAN01**
  CPU Cooler, 125 x 95 x 26.4mm, Sliver, use with HSP

Note: All specifications are subject to change without notice.

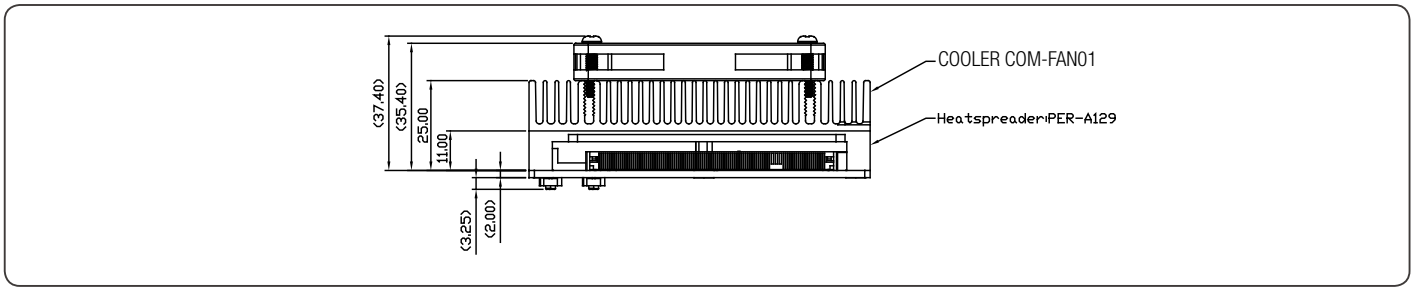
Block Diagram

Unit: mm



Dimension

Unit: mm

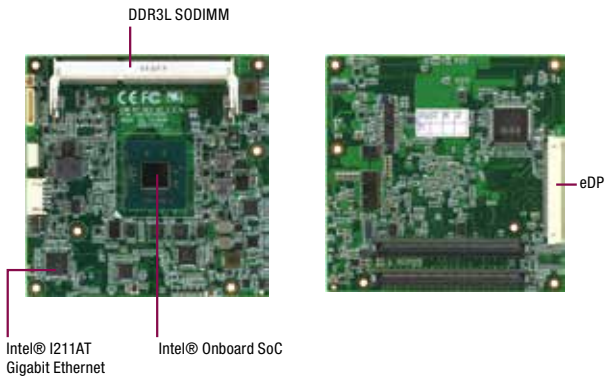


Ordering Information

Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	URAT	Expansion Slot	Power	Temp
COM-HM76-C11	6 (COM.0 Rev. 2.1)	Socket G2 for 2nd & 3rd Generation Intel® Core™ i7/ i5/ i3/Celeron® Processor	DDR3L SODIMM x 1 Max. 8 GB	LVDS, VGA, DDI x 2	18/24b, 2CH	SATA x 4	GbE x 1	USB3.0 x 4 USB2.0 x 8	2 (Tx/Rx)	PCI-E [16] x 1, PCI-E [1] x 7	12V	0°C ~ 60°C

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
- USB2.0 x 6, USB 2.0/ USB 3.0 x 1
- PCI-Express [x1] x 3
- COM Express Compact Module, Pin-out Type 6, COM.0 Rev. 2.1

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)
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 Integrated
Video Output	CRT, LVDS LCD, DDI, eDP(on module, by switch)
I/O	
Ethernet	Intel® 211, Gigabit Ethernet
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 6, USB 2.0/3.0 x 1
Serial Port	Tx/Rx x 2
Parallel Port	—
HDD Interface	SATA x 2
FDD Interface	—
SSD	—
Expansion Slot	PCI-Express[x1] x 3 (Gen 2.0) LPC Bus x 1 SMbus x 1
DIO	GPIO 8-bit
TPM	—

Packing List

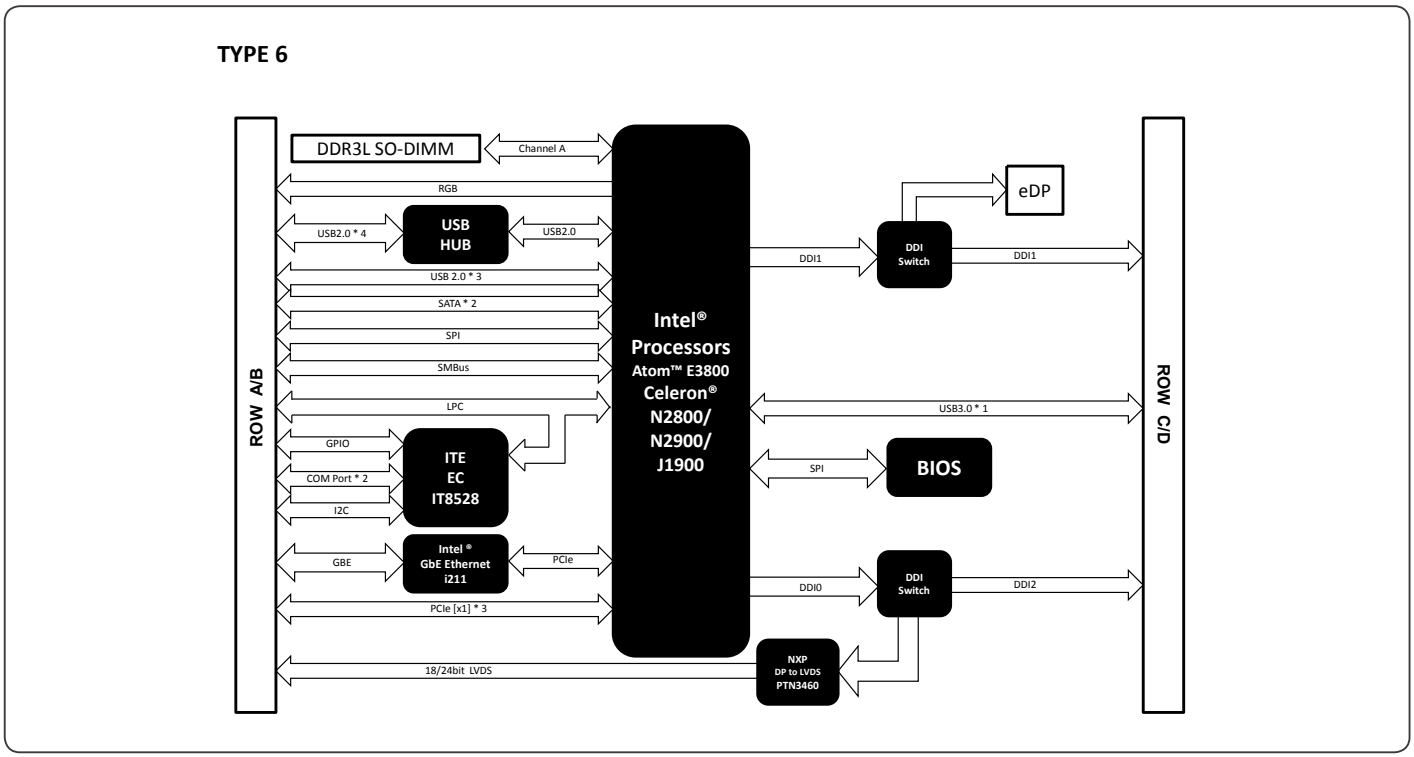
- M2.5 Screw x 4
- Product DVD
- COM-BT Rev. A

Optional Accessories

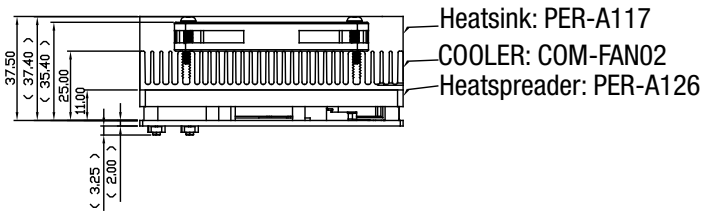
- **ECB-920A-A10-0001**
  COM Type 1/6/10 Carrier Board, ATX, GbE, 8 USB, 2 COM, 4 SATA, PCIe, AT/ATX, Legacy Free, Rev. A1.0
- **PER-A126**
  Heat Spreader, For COM-BT, Onboard CPU
- **TF-PER-A117**
  Passive Heatsink, to be used with Heat Spreader
- **COM-FAN02**
  CPU Cooler, 95 x 95 x 26.5mm, Sliver, use with HSP

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	Temp.
COM-BT-A10-0001	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	USB3.0 x 1 USB2.0 x 7	2 (Tx/Rx)	PCI-Express [x1] x 3, LPC bus x 1, SMBUS x 1	12V	0°C - 60°C
COM-BT-A10-0002	6 (COM.0 Rev. 2.1)	Dual Core N2807 (1.58 GHz)	DDR3L1066/1333, Max. 8 GB	VGA, HDMI, LVDS, DP, eDP (Optional)	18/24b 2CH LVDS	SATA x 2	GbE x 1	USB3.0 x 1 USB2.0 x 7	2 (Tx/Rx)	PCI-Express [x1] x 3, LPC bus x 1, SMBUS x 1	12V	0°C - 60°C
COM-BT-A10-0003	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	USB3.0 x 1 USB2.0 x 7	2 (Tx/Rx)	PCI-Express [x1] x 3, LPC bus x 1, SMBUS x 1	12V	0°C - 60°C
COM-BT-A10-0004	6 (COM.0 Rev. 2.1)	Dual Core E3827 (1.75 GHz)	DDR3L1066/1333, Max. 8 GB	VGA, HDMI, LVDS, DP, eDP (Optional)	18/24b 2CH LVDS	SATA x 2	GbE x 1	USB3.0 x 1 USB2.0 x 7	2 (Tx/Rx)	PCI-Express [x1] x 3, LPC bus x 1, SMBUS x 1	12V	0°C - 60°C
COM-BT-A10-0008	6 (COM.0 Rev. 2.1)	Quad Core J1900 (2.0 GHz)	DDR3L1066/1333, Max. 8 GB	VGA, HDMI, LVDS, DP, eDP (Optional)	18/24b 2CH LVDS	SATA x 2	GbE x 1	USB3.0 x 1 USB2.0 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, USB 3.0 x 1, GPIO 8-bitPCI-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
I/O	
Ethernet	Intel® I210IT, Gigabit Ethernet
Audio	HD Audio
USB Port	USB2.0 x 7
Serial Port	—
HDD Interface	SATA x 1, PATA x 1
Onboard SSD	—
Expansion Slot	PCIe[x1] x 2, PCI x 4, I2C, LPC, SMBus
DIO	GPIO 8-bit
TPM	Optional

Packing List

- M2.5 Screw x 5
- Product CD
- COM-BYTC2

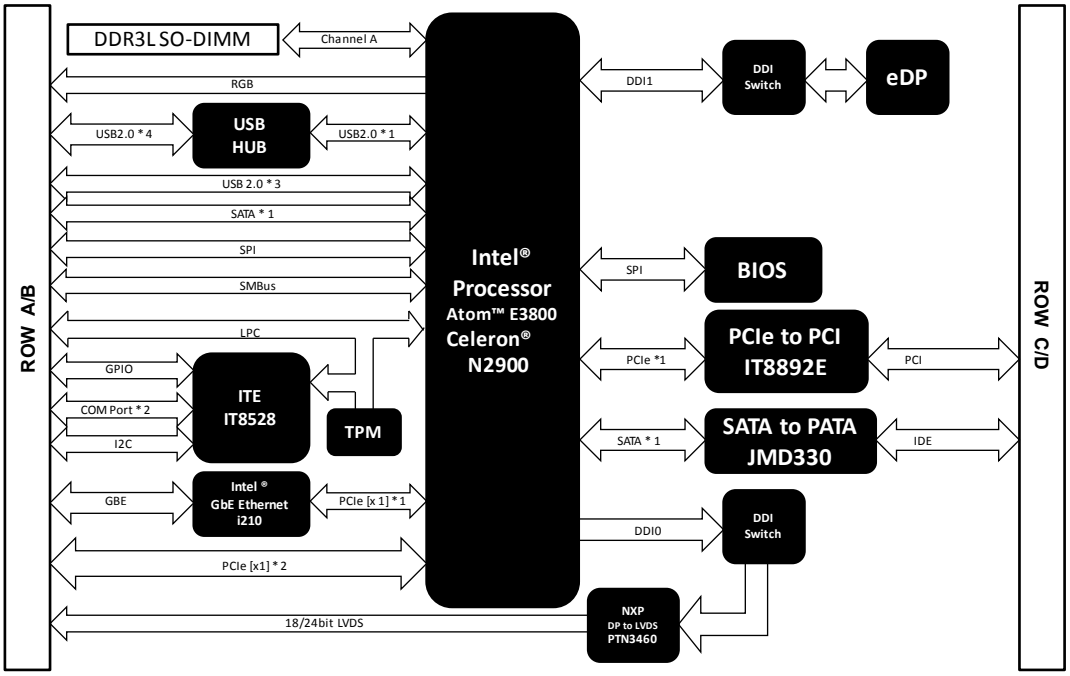
Optional Accessories

- **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
- **TF-PER-A117**
  Passive Heatsink, to be used with Heat Spreader
- **COM-FAN02**
  CPU Cooler, 95 x 95 x 26.5mm, Sliver, use with HSP

Note: All specifications are subject to change without notice.

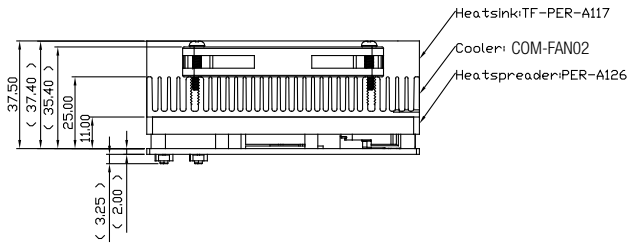
Block Diagram

Unit: mm



Dimension

Unit: mm

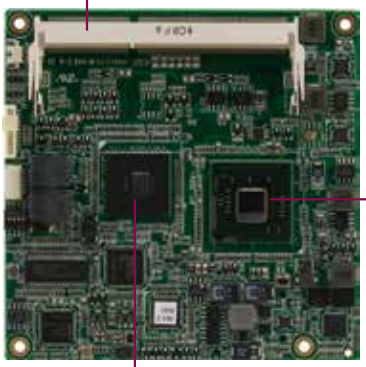


Ordering Information

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	UBS2.0 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	UBS2.0 x 7	—	PCIe[x1] x2(up to 3), PCI	+12V (ATX)	0˚C ~ 60˚C	LPC,GPIO 8Bit, HDA, I2C, SMBus

COM-CV Rev. B

COM Express Type 6 CPU Module with Onboard Intel® Atom™ D2550/N2600 Processor



Features

- **Onboard Intel® Atom™ D2550/N2600 Processor**
- **Intel® NM10**
- **DDR3 1066 MHz SODIMM x 1, Up to 4 GB**
- **Intel® 82583V Gigabit Ethernet**
- **CRT, Up to 24-bit Dual-Channel LVDS LCD, DDI x 2**
- **SATA 3.0 Gb/s x 2, USB3.0 x 2, USB2.0 x 8**
- **PCI-Express[x1] x 4**
- **COM Express Compact Module, 95mm x 95mm, Pin-out Type 6, COM.0 Rev. 2.0**
- **-40°C ~ 85°C Wide Temperature Range Available for Selected Model**

Specifications

System	
Form Factor	COM Express, Compact, Pin-out Type 6
CPU	Onboard Intel® Atom™ D2550/N2600, Dual Core Processors up to 1.86 GHz
CPU Frequency	Up to 1.86 GHz
Chipset	Intel® NM10
Memory Type	DDR3 1066, SODIMM x 1
Max. Memory Capacity	Up to 4 GB
BIOS	AMI BIOS
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Nominal: +12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Intel® D2550 1.86 GHz, DDR3 1066/4GB, 1.39A@+12V
Dimension (L x W)	3.74" x 3.74" (95mm x 95mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) (D2550/N2600) -40°F ~ 185°F (-40°C ~ 85°C)(N2600)
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™ D2550/N2600 Processor integrated
Video Output	CRT/ LVDS LCD/ DisplayPort™/ HDMI
I/O	
Ethernet	Intel® 82583V, Gigabit Ethernet
Audio	High Definition Audio Interface
USB Port	USB2.0 x 8, USB3.0 x 2
Serial Port	Tx/Rx x 2
Parallel Port	—
HDD Interface	SATA 2 x 2
FDD Interface	—
SSD	—
Expansion Slot	PCI-Express [x1] x 4 LPC Bus x 1 SM Bus x 1
DIO	GPIO 8-bit
TPM	Optional

Packing List

- **M2.5 Screw x 4**
- **Product CD**
- **COM-CV Rev. B**

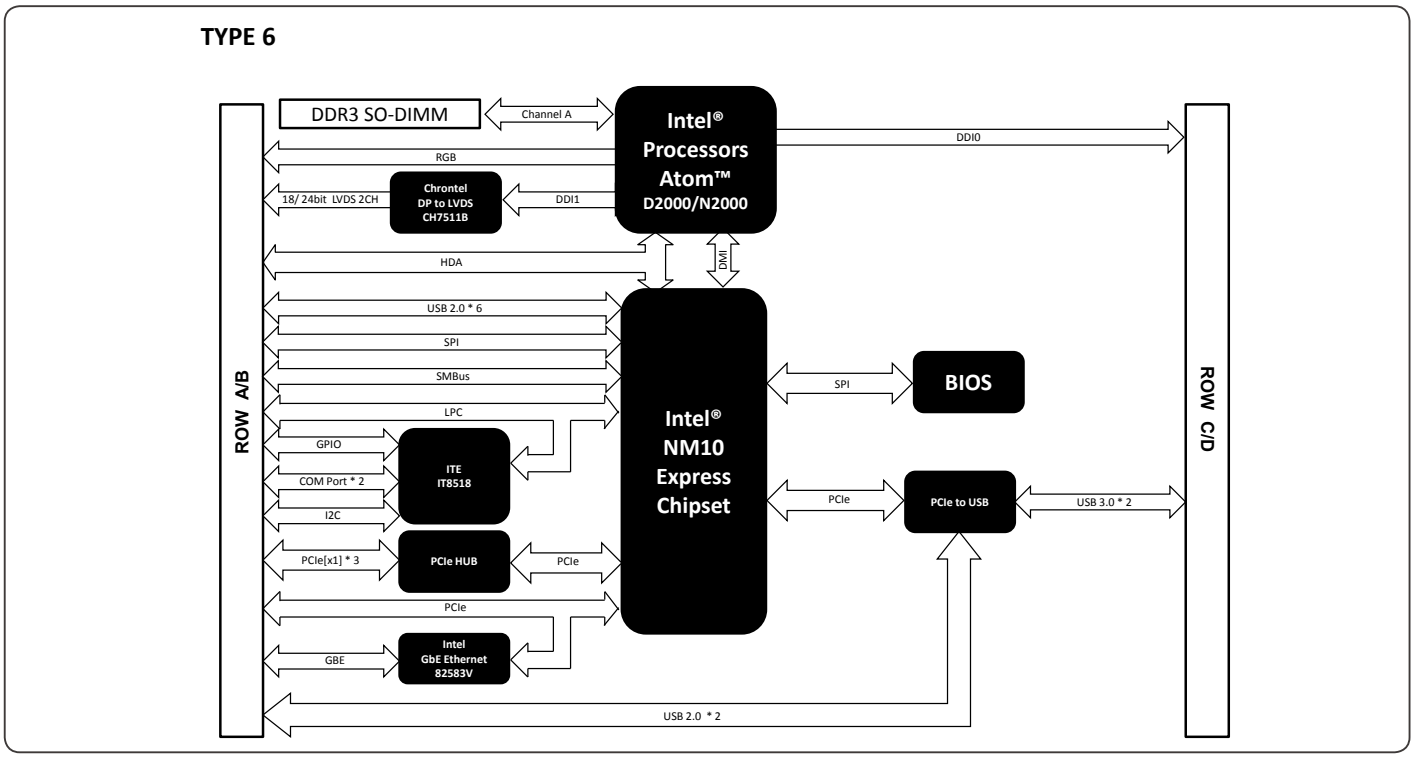
Optional Accessories

- **TF-ECB-920-A10-0001**
  COMe Type 1/6/10 Carrier Board, ATX, GbE, 8 USB, 2 COM, 4 SATA, PCIe, AT/ATX, Legacy Free, Rev. A1.0
- **TF-PER-A116**
  Heat Spreader, For COM-CV
- **TF-PER-A117**
  Passive Heatsink, to be used with Heat Spreader
- **COM-FAN02**
  CPU Cooler, 95 x 95 x 26.5mm, Sliver, use with HSP

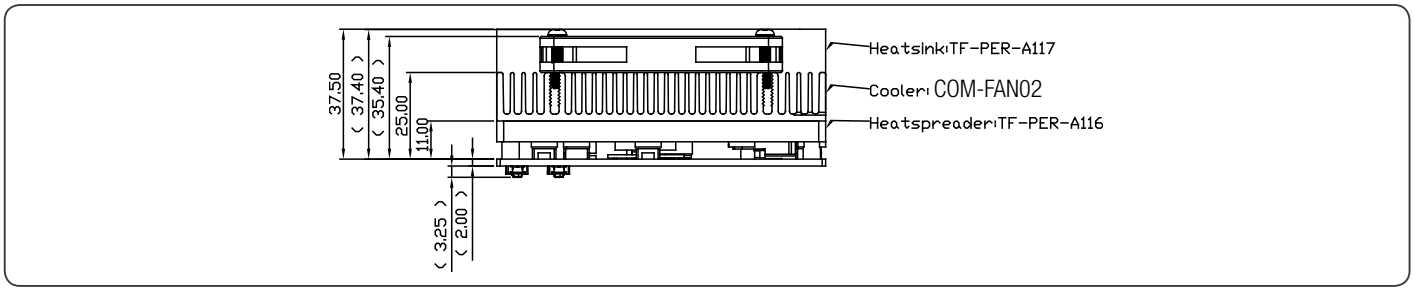
Note: All specifications are subject to change without notice.

COM-CV Rev. B

Block Diagram Unit: mm



Dimension Unit: mm



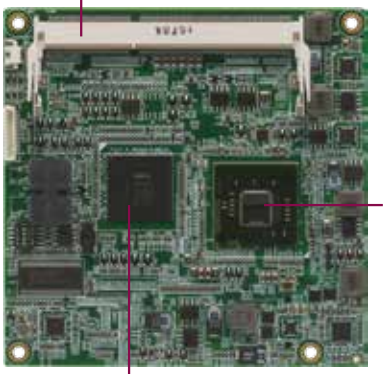
Ordering Information

Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Temp
COM-CV-B10-02	6 (COM.0 Rev.2.0)	Intel® Atom™ D2550, B3/1.86 GHz	DDR3 SODIMM x 1 up to 4 GB	CRT, LVDS, HDMI, DP	24b, 2CH	SATA2 x 2	GbE x 1	USB3.0 x 2 USB2.0 x 8	2 (Tx/Rx)	PCI-E [x1] x 4	12V	0°C ~ 60°C
COM-CV-B10-03	6 (COM.0 Rev.2.0)	Intel® Atom™ N2600, B3/1.6 GHz	DDR3 SODIMM x 1 2 GB	CRT, LVDS, HDMI, DP	24b, 2CH	SATA2 x 2	GbE x 1	USB3.0 x 2 USB2.0 x 8	2 (Tx/Rx)	PCI-E [x1] x 4	12V	0°C ~ 60°C
COM-CVW2-B10-01	6 (COM.0 Rev.2.0)	Intel® Atom™ N2600, B3/1.6 GHz	DDR3 SODIMM x 1 2 GB	CRT, LVDS, HDMI, DP	24b, 2CH	SATA2 x 2	GbE x 1	USB3.0 x 2 USB2.0 x 8	2 (Tx/Rx)	PCI-E [x1] x 4	12V	WiTAS 2 (-40°C ~ 85°C)

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

COM-CV Rev. A11

COM Express Type 2 CPU Module with Onboard Intel® Atom™ D2550/N2600 Processor



Features

- Intel® Atom™ D2550/N2600 Processor
- Intel® NM10
- DDR3 1066/800 MHz SODIMM x 1, Up to 4 GB
- Gigabit Ethernet x 1
- 18/24-bit Dual-Channel LVDS LCDs
- High Definition Audio Interface
- SATA 3.0 Gb/s x 2, PATA x 1 (Shared with SATA)
- USB2.0 x 8, GPIO 8-bitPCI-Express [x1] x 3, 32-bit PCI x 2
- COM Express Pin-out Type 2
- 95mm x 95mm, COM.0 Rev. 2.0

Specifications

System	
Form Factor	COM Express, Compact, Pin-out Type 2
CPU	Onboard Intel® Atom™ D2550/N2600 Dual Core Processors up to 1.86 GHz
CPU Frequency	Up to 1.86 GHz
Chipset	Intel® NM10
Memory Type	DDR3 1066, SODIMM x 1
Max. Memory Capacity	Up to 4 GB
BIOS	AMI BIOS
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Nominal: +12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Intel® D2550 1.86 GHz, DDR3 1066/4GB, 1.21A@+12V
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)	80,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Atom™ D2550/N2600 Processor integrated
Video Output	CRT/ LVDS LCD
Backlight inverter supply	—
I/O	
Ethernet	Intel® 82583V, Gigabit Ethernet
Audio	High Definition Audio Interface
USB Port	USB2.0 x 8
Serial Port	From LPC interface
Parallel Port	From LPC interface
HDD Interface	SATA 2 x 4, PATA x 1
FDD Interface	—
SSD	—
Expansion Slot	PCI-Express [x1] x 3, 32-bit PCI x2 LPC Bus x 1 SM Bus x 1
DIO	GPIO 8-bit
TPM	—

Packing List

- M2.5 Screw x 4
- Product CD
- COM-CV Rev. A11

Optional Accessories

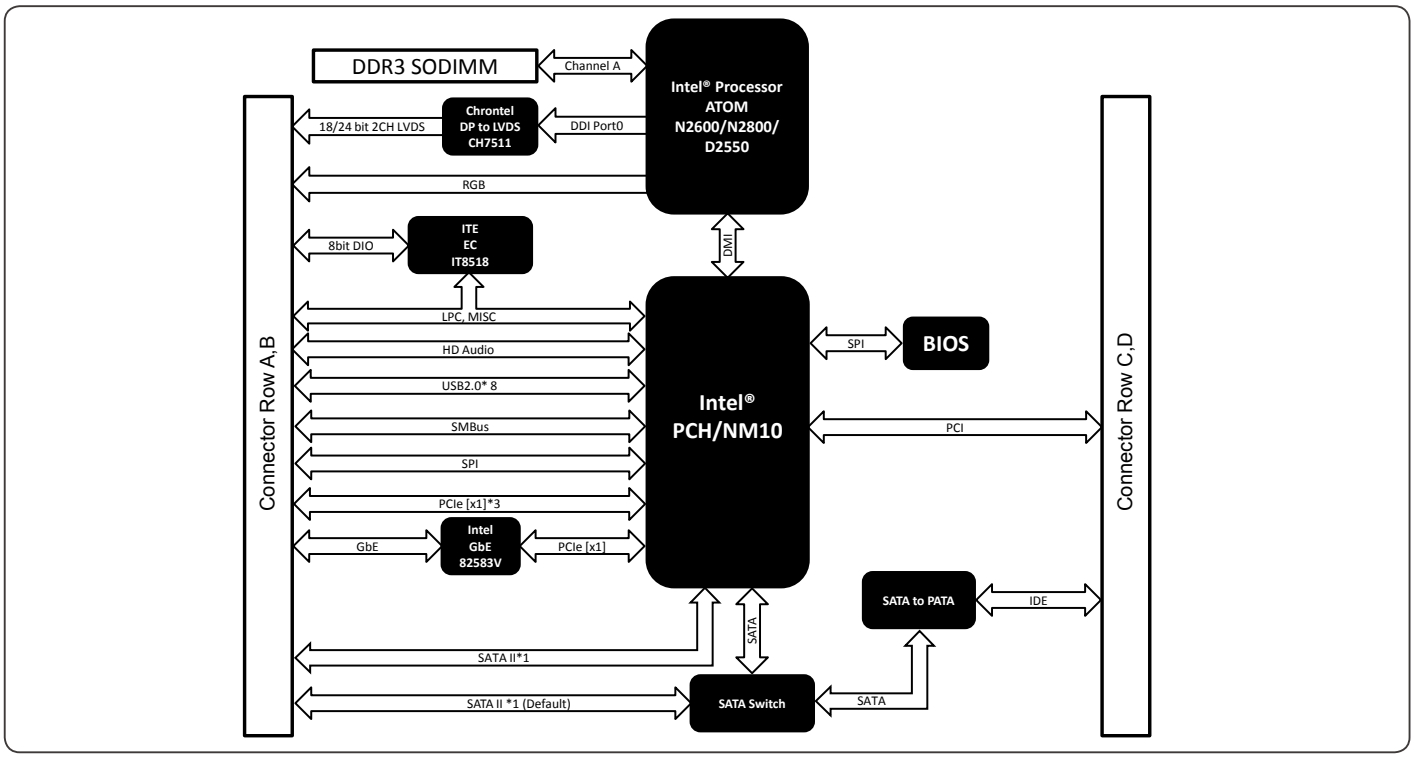
- **TF-ECB-916M-B11-01**
  COM Express Carrier Board, microATX, Dual Ethernet, 2 COM (Winbond), USB, PCI-Express, AT/ATX, Rev. B1.1
- **TF-PER-A116**
  Heat Spreader, For COM-CV
- **TF-PER-A117**
  Passive Heatsink, to be used with Heat Spreader
- **COM-FAN02**
  CPU Cooler, 95 x 95 x 26.5mm, Sliver, use with HSP

Note: All specifications are subject to change without notice.

COM-CV Rev. A11

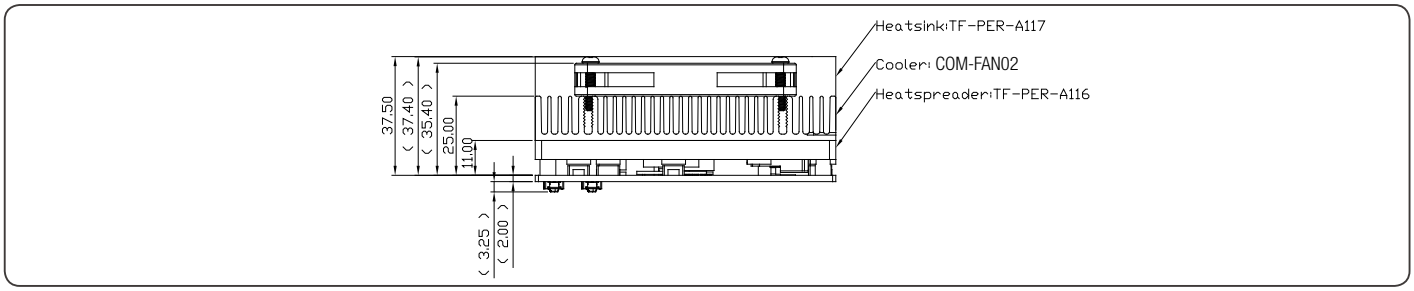
Block Diagram

Unit: mm



Dimension

Unit: mm



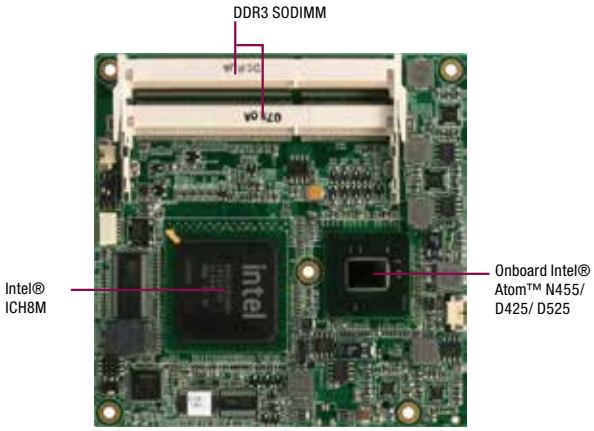
Ordering Information

Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Temp
COM-CV-A11-01	2 (COM.0 Rev.2.0)	Intel® Atom™ N2600/B3/1.6 GHz	DDR3 SODIMM x 1 up to 2 GB	CRT, LVDS	18/24b, 2CH	SATA2 x 2 PATA x 1	GbE x 1	USB2.0 x 8	—	PCI-E [x1] x 3 32-bit PCI x 2	12V	0°C ~ 60°C
COM-CV-A11-02	2 (COM.0 Rev.2.0)	Intel® Atom™ D2550/B3/1.86 GHz	DDR3 SODIMM x 1 up to 4 GB	CRT, LVDS	18/24b, 2CH	SATA2 x 2 PATA x 1	GbE x 1	USB2.0 x 8	—	PCI-E [x1] x 3 32-bit PCI x 2	12V	0°C ~ 60°C

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

COM-LN Rev. B

COM Express Type 2 CPU Module with Onboard Intel® Atom™ D525 Processor



Features

- Onboard Intel® Atom™ D525 Processor
- Intel® ICH8M
- DDR3 800 MHz SODIMM x 2, Up to 4 GB
- Intel® 82567V Gigabit Ethernet
- CRT, 18-bit Single Channel LVDS LCD
- High Definition Audio Interface
- PATA x 1, SATA 3.0 Gb/s x 3
- USB2.0 x 8
- PCI x 4, PCI-Express [x1] x 5 (x 6: Optional)
- Wide DC Input Range, +8.5V to +19V (Optional)
- COM Express Pin-out Type 2
- Compact Module Size, 95mm x 95mm, COM.0 Rev. 2.0

Specifications

System	
Form Factor	COM Express, Compact Module, Pin-out Type 2
CPU	Onboard Intel® Atom™ D525
CPU Frequency	Up to 1.8 GHz
Chipset	Intel® ICH8M
Memory Type	DDR3 667/800, SODIMM x 2
Max. Memory Capacity	4 GB
BIOS	AMI BIOS
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+8.5V ~ +19V (Optional) Nominal: +12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Intel® Atom™ D525 1.8 GHz, DDR3 800 1GB, 1.24A@+12V
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)	90,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Atom™ D525 Processor Integrated
Video Output	CRT/ LVDS LCD
Backlight inverter supply	—
I/O	
Ethernet	Intel® 82567V, Gigabit Ethernet
Audio	High Definition Audio Interface
USB Port	USB2.0 x 8
Serial Port	From LPC interface
Parallel Port	From LPC interface
HDD Interface	PATA x 1 (Two devices) SATA 2 x 3
FDD Interface	From LPC interface
SSD	—
Expansion Slot	PCI-Express [x1] x 5 (x 6: Optional) 32-bit PCI x 4 LPC Bus x 1 SM Bus x 1 I2C x 1
DIO	GPIO 8-bit
TPM	Optional

HD Audio | Giga LAN | LVDS | DDR 3 | USB 2.0 | PCI Express | CE FC

Packing List

- M2.5 Screw x 4
- Product CD
- COM-LN Rev. B

Optional Accessories

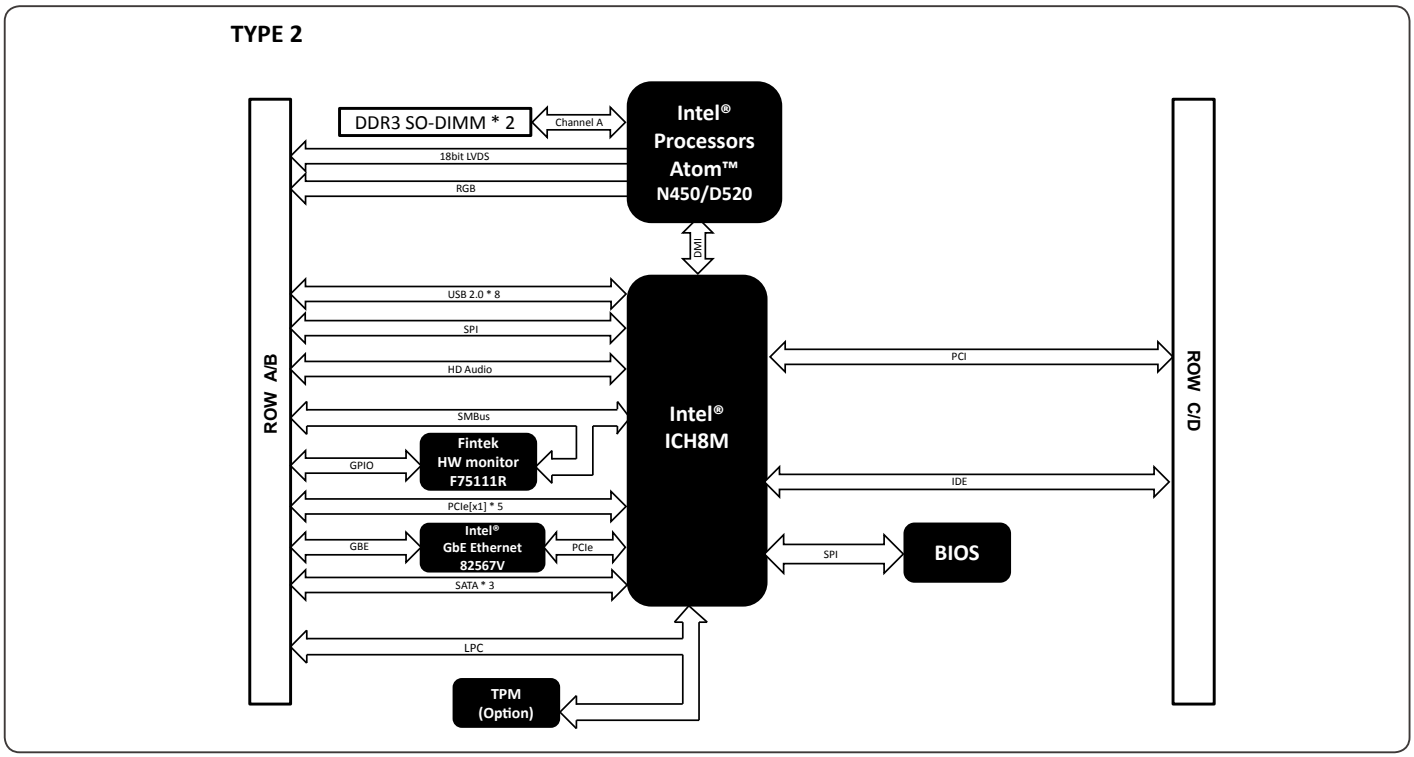
- **TF-ECB-916M-B11-01**
  COM Express Carrier Board, microATX, Dual Ethernet, 2 COM (Winbond), USB, PCI-Express, AT/ATX, Rev. B1.1
- **TF-PER-A083**
  CPU Cooler, For COM-LN, Onboard CPU, 12V Fan
- **TF-PER-A084**
  Passive Heatsink, For COM-LN, Onboard CPU
- **TF-PER-A085**
  Heat Spreader Kit, For COM-LN, Onboard CPU

Note: All specifications are subject to change without notice.

COM-LN Rev. B

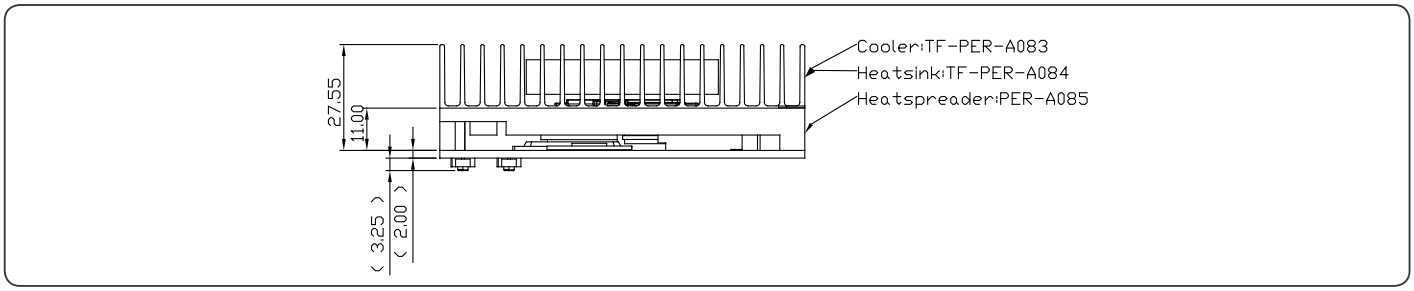
Block Diagram

Unit: mm



Dimension

Unit: mm

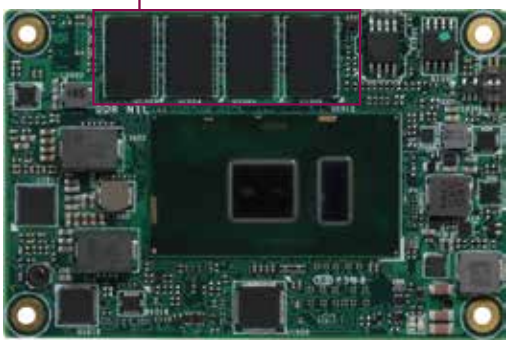


Ordering Information

Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Temp
TF-COM-LN-B10-02	2 (COM.0 Rev.2.0)	Intel® Atom™ D525/1.8 GHz	DDR3 SODIMM x 2 up to 4 GB	CRT, LVDS	18b, 1CH	SATA2 x 3 PATA x 1	GbE x 1	USB2.0 x 8	—	PCI-E [1] x 5 32-bit PCI x 4	12V	0°C ~ 60°C

NanoCOM-SKU

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



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
Processor	Intel® 6th Gen U series CPU upto i7-6600U
System Memory	Non-EEC DDR4-2133, 4GB
Chipset	Intel® SoC
Ethernet	Intel® I219 GbE
BIOS	AMI BIOS, Legacy free BIOS
Wake on LAN	Yes
Watchdog Timer	ITE IT8528VG
H/W Status Monitoring	Support CPU temperature monitoring
Expansion Interface	PCIe [x1] x 4, I2C, LPC, SMBus, GPIO
Power Requirement	Normal: +12V
Power Consumption	i7-6600U 12V@1.5A, i3-6100U 12V@1.42A. Under 100% loading. CPU Set to 15W TDP. CPU base frequency may change accordingly.
Board Size	84mm x 55mm
Operation Temperature	32°F~ 140°F (0°C ~ 60°C)
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	80,000
Display	
Chipset	Onboard 6th Gen. intel® Core™ U-Series Processor, GT2
Graphic Engine	LVDS/eDP, DDI x1
LVDS Interface	Supports 18bit and 24bit Single channel
I/O	
Storage	SATA 6.0 Gb/s x 2
USB	USB3.0 x 2, USB2.0 x 8
Audio	HD Audio x 1
GPIO	8-bit
Serial Port	2-wire UART x 2 (TX/RX)

Packing List

- Screws
- DVD
- NANOCOM-SKU

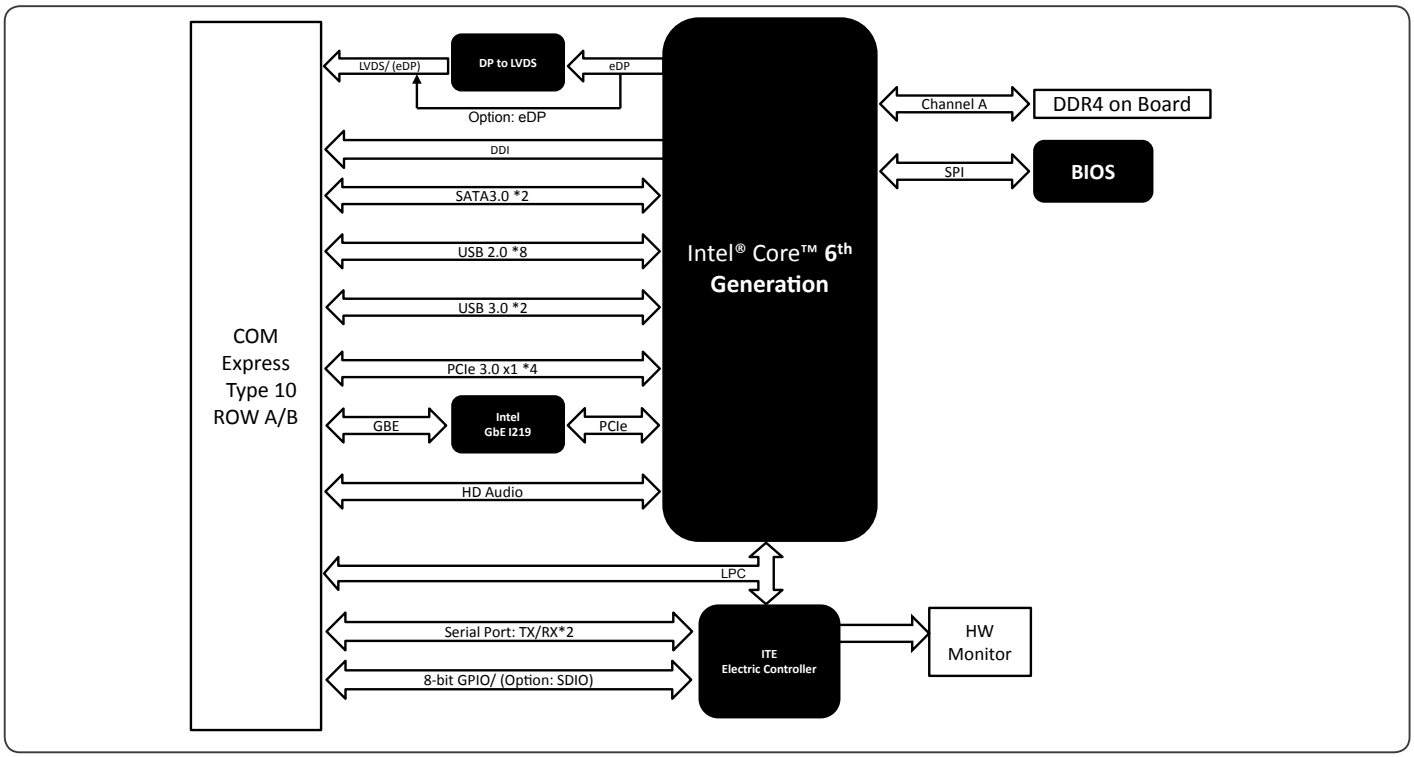
Optional Accessories

- **TF-ECB-920-A10-0001**
  COMe 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, Sliver use w/ HSP

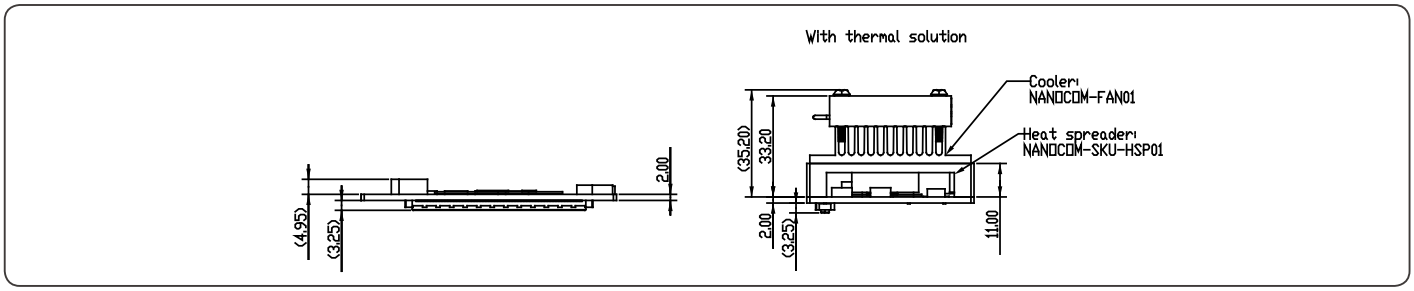
Note: All specifications are subject to change without notice.

NanoCOM-SKU

Block Diagram Unit: mm



Dimension Unit: mm



Ordering Information

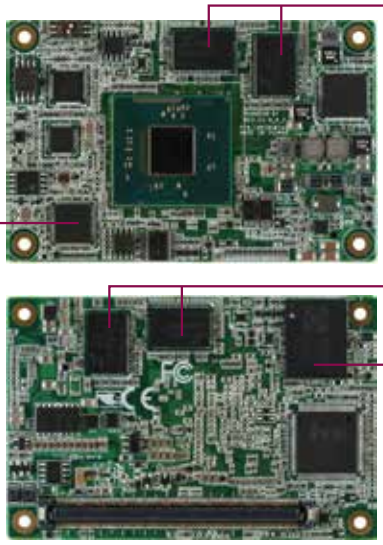
Standard Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Power Temp	Others
NANOCOM-SKU-A10-0001	10 (COM.0 Rev 2.1)	6th Gen. Intel® Core™ i7-6600U 2c/2.6GHz	4GB DDR4	LVDS/(eDP), DDI x1	18/24b 1CH (LVDS share with eDP)	SATA x2	GbE x1	USB3.0 x2 USB2.0 x8	2 (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)

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

NanoCOM-BT

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



Features

- Intel® Atom™ E3800 Product Family/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)
- USB2.0 x 6 + USB2.0/USB3.0 x 1, GPIO 8-bitPCI-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® SoC Processor (M/I)
CPU Frequency	Up to E3845, 1.91 GHz
Chipset	Intel® Atom™/ Celeron® SoC Processor
Memory Type	Non-ECC DDR3L-1333
Max. Memory Capacity	2 GB DDR3L Onboard (up to 4 GB)
BIOS	AMI BIOS
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" (84mm x 55mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) by E3845
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
Display	
VGA/LCD Controller	Intel® Atom™ SoC
Video Output	LVDS LCD/eDP, DDI x 1
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
Parallel Port	From LPC interface
HDD Interface	SATA 2 x 2
FDD Interface	—
SSD	Optional for 8GB/16GB eMMC
Expansion Slot	PCI Express [x1] x 3 LPC Bus x 1 SMbus x 1
DIO	GPIO 8-bit
TPM	—

Packing List

- M2.5 Screw x 4
- Product CD
- NanoCOM-BT

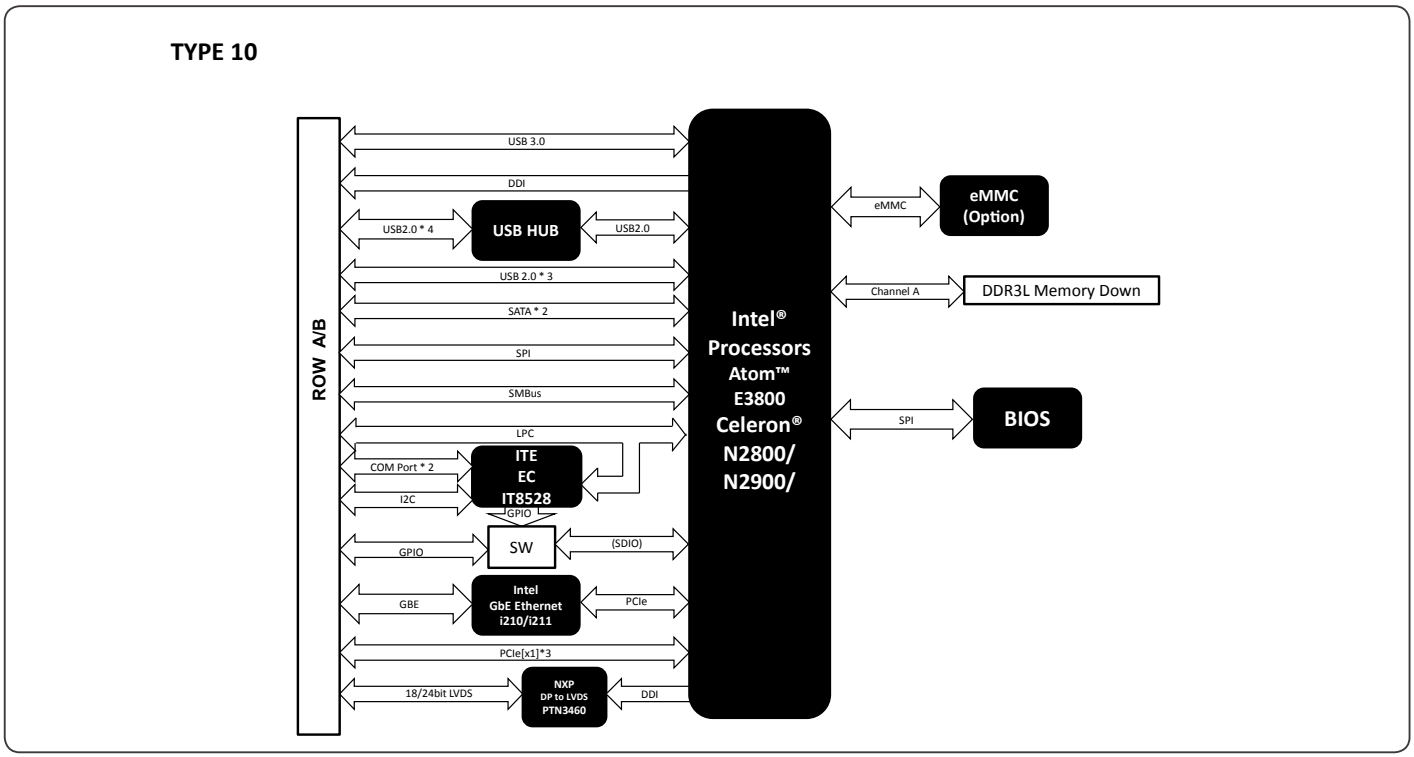
Optional Accessories

- **ECB-920A-A10-0001**
  COMe 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
- **PER-A133**
  CPU Cooler, 10W, for NanoCOM, to be used with Heat Spreader
- **PER-A123**
  Passive Heatsink, for NanoCOM size, to be used with Heat Spreader

Note: All specifications are subject to change without notice.

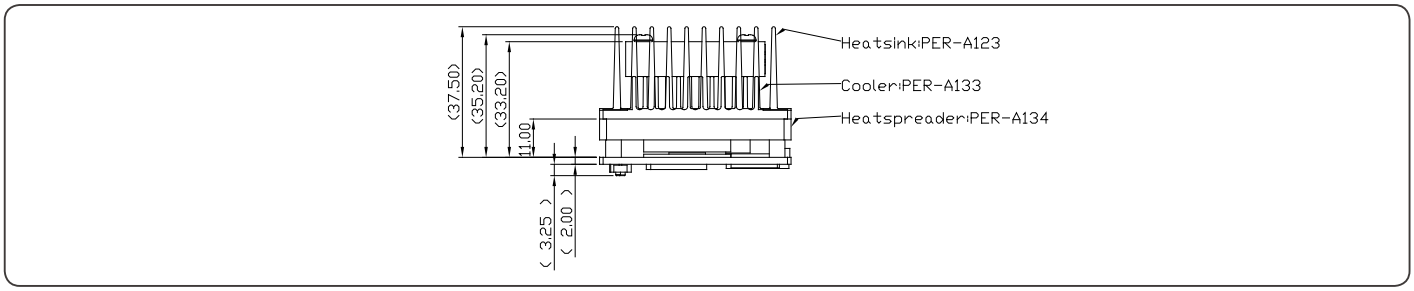
Block Diagram

Unit: mm



Dimension

Unit: mm

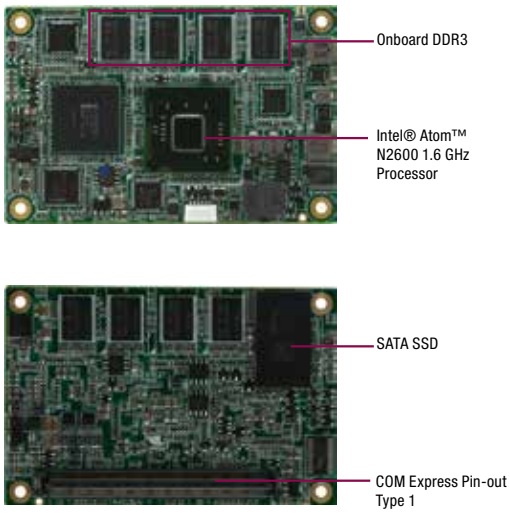


Ordering Information

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	USB3.0 x 1, USB2.0 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	USB3.0 x 1, USB2.0 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	USB3.0 x 1, USB2.0 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	USB3.0 x 1, USB2.0 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	USB3.0 x 1, USB2.0 x 7	2 (Tx/Rx)	PCIe [x1] x 3	+12V (ATX)	0°C ~ 60°C	LPC, GPIO 8Bit, HDA, I2C, SMBus
NANOCOM-BT-A10-0004	10 (COM.0 Rev. 2.1)	E3827, 2C/1.75 GHz	2GB DDR3L	LVDS/eDP, DDI	18/24bit,1CH	SATA x 2	GbE x 1	USB3.0 x 1, USB2.0 x 7	2 (Tx/Rx)	PCIe [x1] x 3	+12V (ATX)	0°C ~ 60°C	LPC, GPIO 8Bit, HDA, I2C, SMBus
NANOCOM-BT-A10-0005	10 (COM.0 Rev. 2.1)	E3826, 2C/1.46 GHz	2GB DDR3L	LVDS/eDP, DDI	18/24bit,1CH	SATA x 2	GbE x 1	USB3.0 x 1, USB2.0 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	USB3.0 x 1, USB2.0 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	USB3.0 x 1, USB2.0 x 7	2 (Tx/Rx)	PCIe [x1] x 3	+12V (ATX)	0°C ~ 60°C	LPC, GPIO 8Bit, HDA, I2C, SMBus
NANOCOM-BT-A10-0007	10 (COM.0 Rev. 2.1)	E3815, 1C/1.46 GHz	2GB DDR3L	LVDS/eDP, DDI	18/24bit,1CH	SATA x 2	GbE x 1	USB3.0 x 1, USB2.0 x 7	2 (Tx/Rx)	PCIe [x1] x 3	+12V (ATX)	0°C ~ 60°C	LPC, GPIO 8Bit, HDA, I2C, SMBus

NanoCOM-CV Rev. A

COM Express Type 1 CPU Module with Onboard Intel® Atom™ N2600 Processor



Features

- Intel® Atom™ N2600 1.6 GHz Processor
- Intel® NM10
- Onboard DDR3 800 MHz Memory, Up to 2 GB
- Gigabit Ethernet x 1
- 18-bit Single Channel LVDS LCD
- High Definition Audio Interface
- SATA x 2, 4 GB SATA SSD (Shared with SATA)
- USB2.0 x 8, GPIO 8-bitPCI-Express [x1] x 3
- COM Express Pin-out Type 1
- Ultra/Mini Size, 84mm x 55mm, COM.0 Rev. 2.0

Specifications

System	
Form Factor	COM Express, Ultra (Nano) Module, Pin-out Type 1
CPU	Onboard Intel® Atom™ N2600
CPU Frequency	Up to 1.6GHz
Chipset	Intel® NM10
Memory Type	Non-ECC DDR3 800
Max. Memory Capacity	2GB, DDR3 onboard
BIOS	AMI BIOS
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Nominal: +12V
Power Supply Type	Nominal: +12V, +4.75V ~ +14.7V (Optional)
Power Consumption (Typical)	0.65A@12V, full load, N2600
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) for WiTAS 2
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Atom™ N2600 integrated
Video Output	LVDS, CRT
I/O	
Ethernet	Intel® 82583V
Audio	Mic-in, Line-in, Line-out
USB Port	USB 2.0 x 8 via NM10
Serial Port	—
Parallel Port	—
HDD Interface	SATA 3.0Gb/s x 2 (one share with SSD) SATA SSD x 1 up to 4GB (optional)
FDD Interface	—
SSD	Optional
Expansion Slot	PCI-Express [x1] x 3 LPC bus x 1 SMBus x 1
DIO	GPIO 8-bit
TPM	—

Packing List

- M2.5 Screw x 4
- Product CD
- NanoCOM-CV Rev. A

Optional Accessories

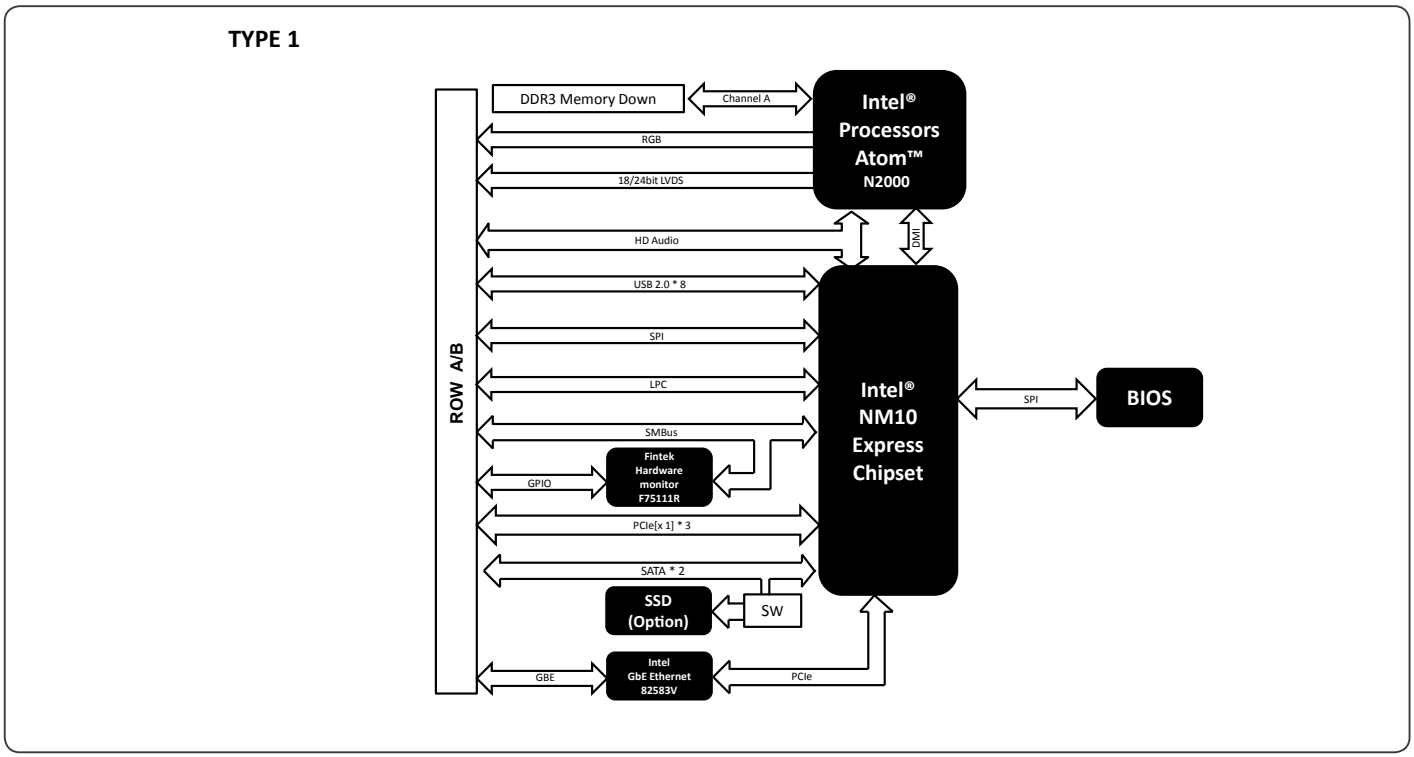
- **TF-ECB-920-A10-0001**
  COMe Type 1/6/10 Carrier Board, ATX, GbE, 8 USB, 2 COM, 4 SATA, PCIe, AT/ATX, Legacy Free, Rev. A1.0
- **PER-A123**
  Passive Heatsink, for NanoCOM size, to be used with Heatsink Spreader
- **PER-A124**
  Heat Spreader, for NanoCOM-CV Rev. A & B, Onboard CPU

Note: All specifications are subject to change without notice.

NanoCOM-CV Rev. A

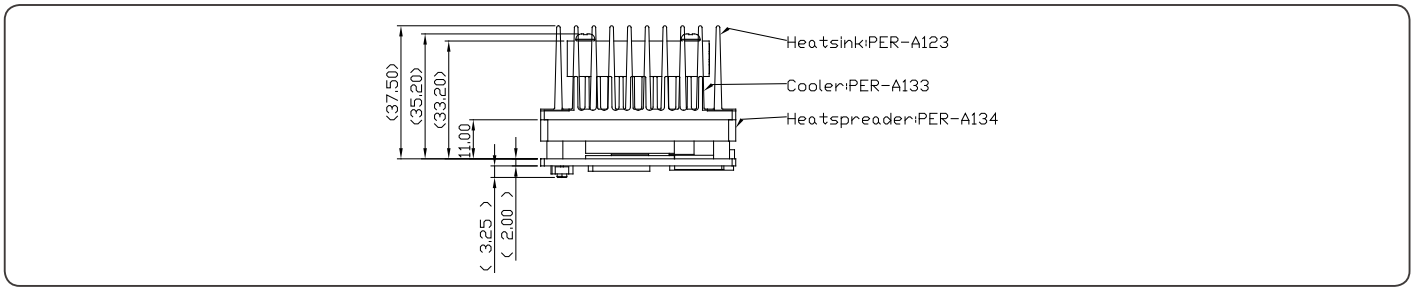
Block Diagram

Unit: mm



Dimension

Unit: mm



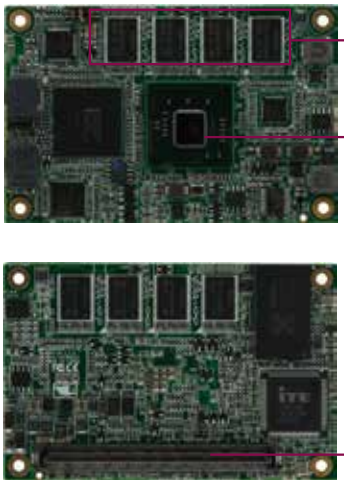
Ordering Information

Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Temp
NanoCOM-CV-A10	1 (COM.0 Rev.2.0)	Intel® Atom™ N2600 B3/ 1.6 GHz	Onboard 2 GB DDR3	CRT, LVDS	18b, 1CH	SATA2 x 2	GbE x 1	USB2.0 x 8	—	PCI-Express [x1] x 3	12V	0°C ~ 60°C
NanoCOM-CV-A10-01	1 (COM.0 Rev.2.0)	Intel® Atom™ N2600 B3/ 1.6 GHz	Onboard 2 GB DDR3	CRT, LVDS	18b, 1CH	4 GB SSD, SATA2 x 1	GbE x 1	USB2.0 x 8	—	PCI-Express [x1] x 3	12V	0°C ~ 60°C

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

NanoCOM-CV Rev. B

COM Express Type 10 CPU Module with Onboard Intel® Atom™ N2600 Processor



Features

- Intel® Atom™ N2600 1.6 GHz Processor
- Intel® NM10
- Onboard DDR3 800 MHz Memory, Up to 2 GB
- Gigabit Ethernet x 1
- 18-bit Single Channel LVDS LCD
- High Definition Audio Interface
- SATA x 2, 4 GB SATA SSD (Shared with SATA)
- USB2.0 x 8, GPIO 8-bitPCI-Express [x1] x 3
- COM Express Pin-out Type 10
- Ultra/Mini Size, 84mm x 55mm, COM.0 Rev. 2.0

Specifications

System	
Form Factor	COM Express, Ultra (Nano) Module, Pin-out Type 10
CPU	Onboard Intel® Atom™ N2600
CPU Frequency	Up to 1.6GHz
Chipset	Intel® NM10
Memory Type	Non-ECC DDR3 800
Max. Memory Capacity	2GB, DDR3 onboard
BIOS	AMI BIOS
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Nominal: +12V
Power Supply Type	Nominal: +12V, +4.75V ~ +14.7V (Optional)
Power Consumption (Typical)	0.72A@12V, full load, N2600
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) for WiTAS 2
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Atom™ N2600 integrated
Video Output	LVDS, DDI
I/O	
Ethernet	Intel® 82583V
Audio	Mic-in, Line-in, Line-out
USB Port	USB 2.0 x 8 via NM10
Serial Port	TX/RX x 2
Parallel Port	—
HDD Interface	SATA 3.0Gb/s x 2 (one share with SSD) SATA SSD x 1 up to 4GB (optional)
FDD Interface	—
SSD	Optional
Expansion Slot	PCI-Express [x1] x 3 LPC bus x 1 SMBus x 1
DIO	GPIO 8-bit
TPM	—

Packing List

- M2.5 Screw x 4
- Product CD
- NanoCOM-CV Rev. B

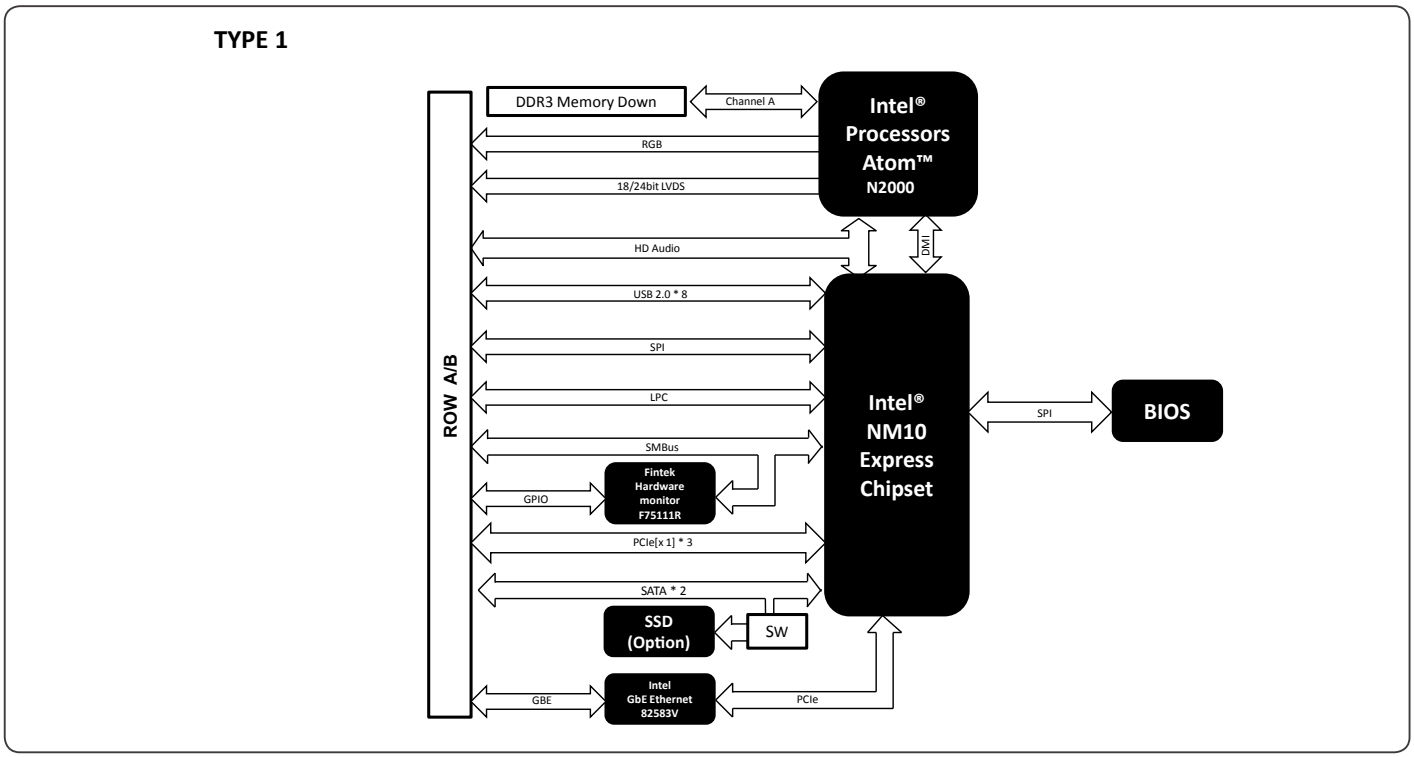
Optional Accessories

- **TF-ECB-920-A10-0001**
  COMe Type 1/6/10 Carrier Board, ATX, GbE, 8 USB, 2 COM, 4 SATA, PCIe, AT/ATX, Legacy Free, Rev. A1.0
- **PER-A123**
  Passive Heatsink, for NanoCOM size, to be used with Heatsink Spreader
- **PER-A124**
  Heat Spreader Kit, for NanoCOM-CV Rev. A & B, Onboard CPU

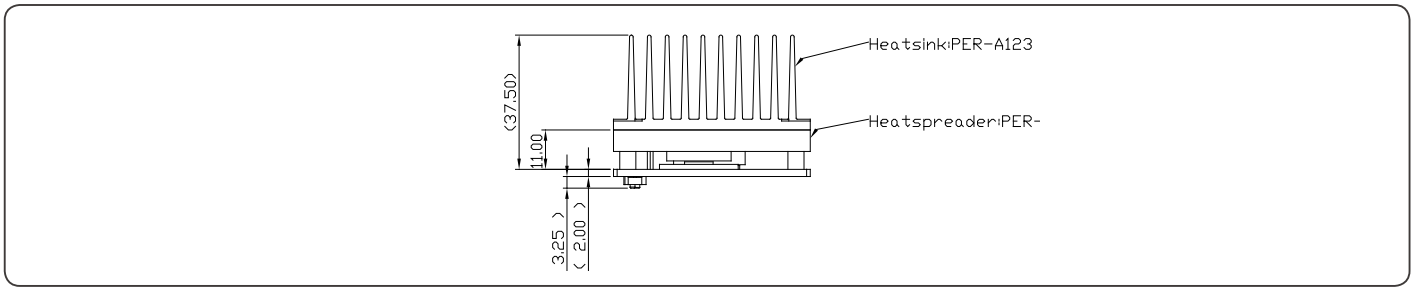
Note: All specifications are subject to change without notice.

NanoCOM-CV Rev. B

Block Diagram Unit: mm



Dimension Unit: mm



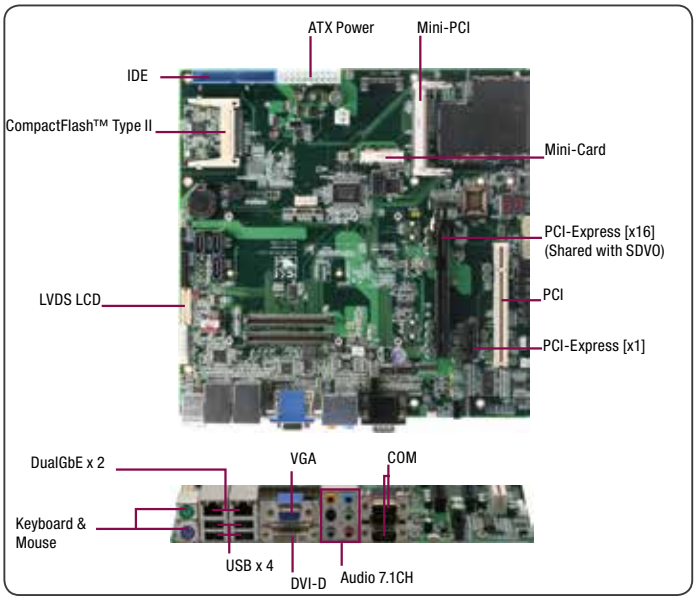
Ordering Information

Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion Slot	Power	Temp
NanoCOM-CV-B10	10 (COM.0 Rev.2.0)	Intel® Atom™ N2600 B3/1.6 GHz	Onboard 2 GB DDR3	LVDS, DDI	18b, 1CH	SATA2 x 2	GbE x 1	USB2.0 x 8	Tx/Rx x 2	PCI-Express [x1] x 3	12V	0°C ~ 60°C
NanoCOM-CV-B10-01	10 (COM.0 Rev.2.0)	Intel® Atom™ N2600 B3/1.6 GHz	Onboard 2 GB DDR3	LVDS, DDI	18b, 1CH	4 GB SSD, SATA2 x 1	GbE x 1	USB2.0 x 8	Tx/Rx x 2	PCI-Express [x1] x 3	12V	0°C ~ 60°C

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

ECB-916M Rev. B11

COM Express Carrier Board



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
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
PS/2 Port	x 1
Digital I/O	Supports 8-bit (Programmable)
Audio	Audio jack x 6, support 7.1 channel audio Audio Codec: Realtek ALC888 Buzzer x 1
Switch/Button	Power button x 1 Reset button x 1

Packing List

- **9681916M00**

  Cable Kit

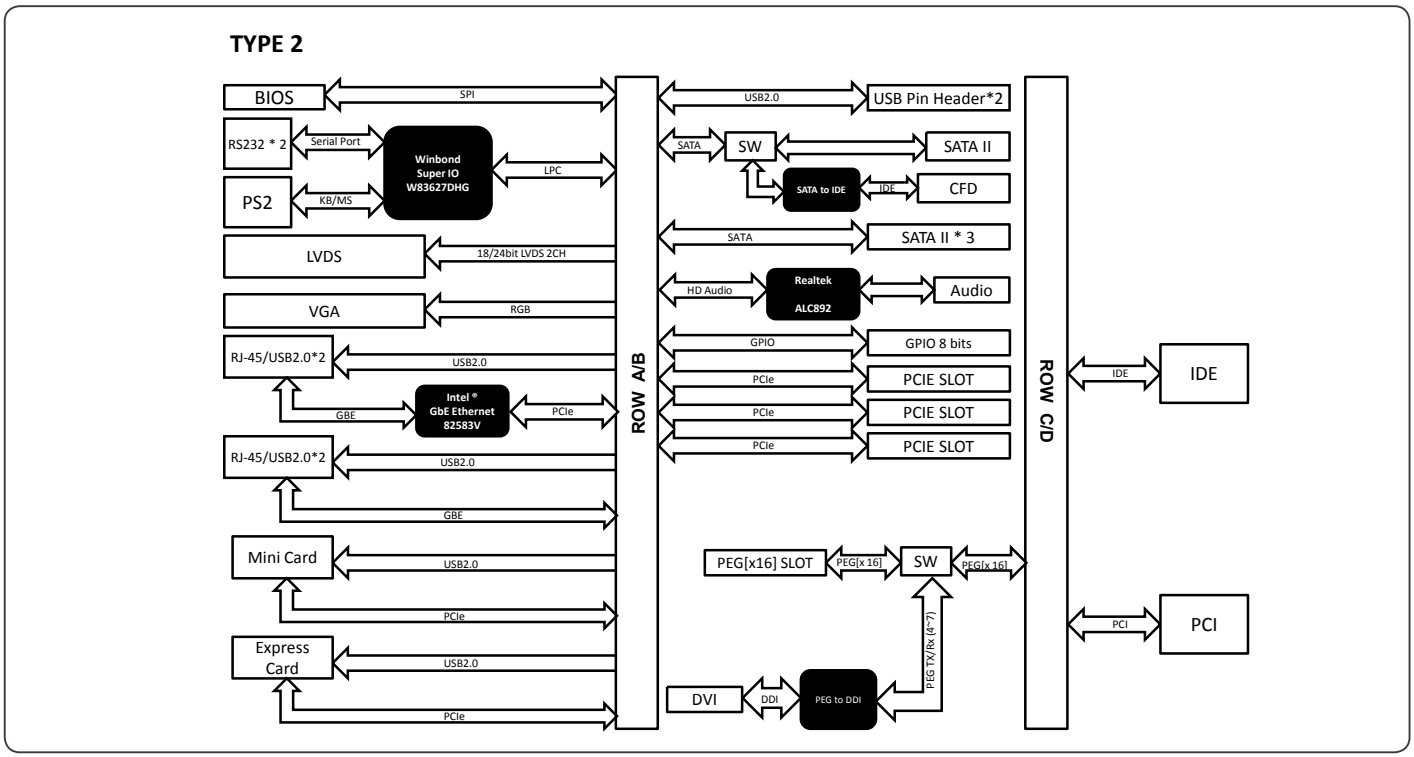
1701400453	IDE Cable x 1
1709070500	SATA Cable x 1
1702150150	SATA Power Cable x 1
1701100207	COM Port Cable x 1
S1DD308042	Copper Stud x 1
S1DC002510	Nut x 1

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

Note: All specifications are subject to change without notice.

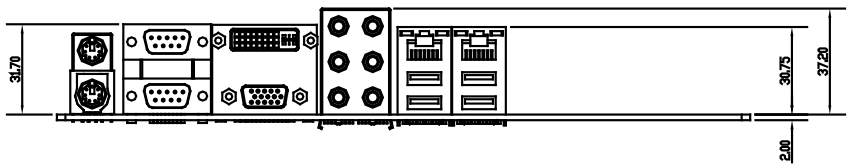
Block Diagram

Unit: mm



Dimension

Unit: mm

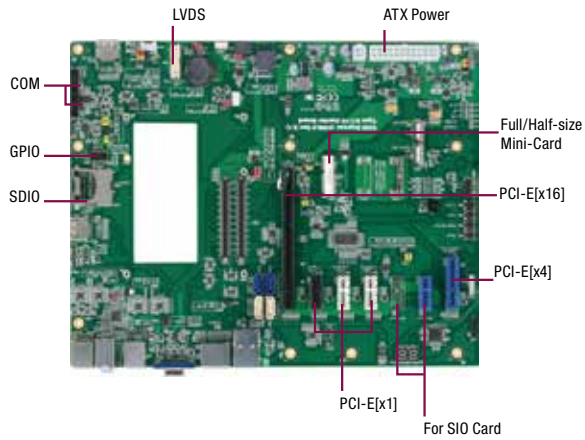


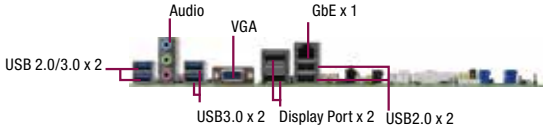
Ordering Information

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

ECB-920A

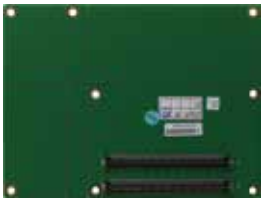
Universal Type 1/6/10 Carrier Board





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**
- **USB2.0 x 8, USB3.0 x 4**
- **ATX Power Input**
- **LPC Connector x 1, ATX Form Factor**

Specifications

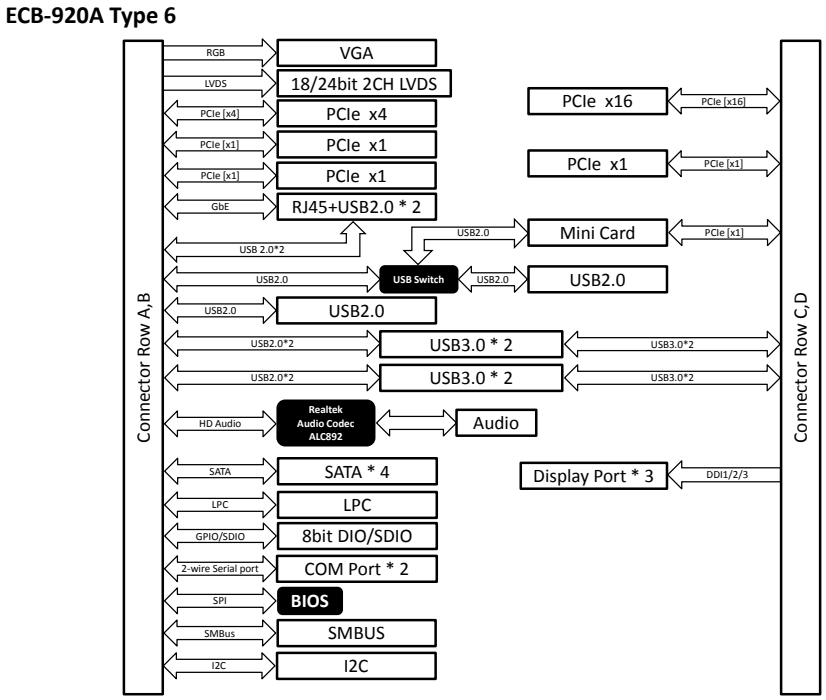
System	
Form Factor	ATX
COM Express Connector	x 2
I/O Chipset	—
Front Panel Control	10-pin (5x2) header
Ethernet	10/1000/1000Base-TX, RJ-45 x 1 (From CPU module)
Expansion Interface	PCI-Express [x1] slot x 4 (3 by PCI-E[x1] x 1 pin-out, 1 by SIO pin-out) PCI-Express [x4] slot x 1 PCI-Express [x16] slot 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
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 (USB3.0) for Type 6, USB2.0 port x 4
Audio	Audio Jack, supports Line-in, Line-out, Microphone
Debug LED	80 PORT
I2C	1

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

Note: All specifications are subject to change without notice.

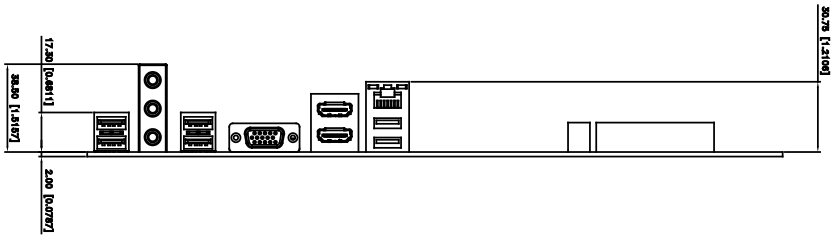
Block Diagram

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
USB3.0	—	4 (Port 0~3)	2 (Port 0~1)
USB2.0	8	8	8
SDIO	—	1	1

XTX/ETX CPU Modules

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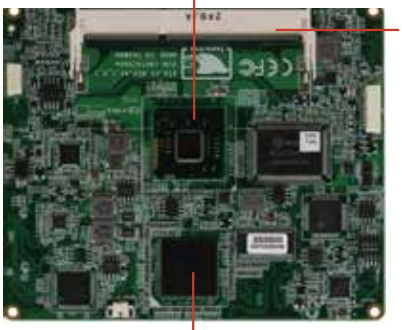
07

XTX-CV Rev. A11

XTX CPU Module with Onboard Intel® Atom™ D2550/N2600 Processor



Features

- **Onboard Intel® Atom™ D2550/N2600 Processor**
- **Intel® NM10**
- **DDR3 1066 MHz SODIMM x 1, Up to 4 GB**
- **10/100Base-TX Ethernet**
- **CRT, Up to 24-bit Dual-channel LVDS LCD**
- **SATA 3.0 Gb/s x 2, USB2.0 x 6, PATA x 1**
- **PCI-Express [x1] x 4, PCI x 4**

Specifications

System	
Form Factor	XTX
CPU	Onboard Intel® Atom™ D2550/N2600 Dual Core Processors, up to 1.86GHz
CPU Frequency	Up to 1.86GHz
Chipset	Intel® NM10
Memory Type	DDR3 1066, SODIMM x 1
Max. Memory Capacity	4 GB (64-bit OS)
BIOS	AMI BIOS
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+5V
Power Consumption (Typical)	Intel® Atom™ N2600 1.6 GHz, DDR 1066 4GB 2.38A@+5V
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)	68,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Atom™ D2550/N2600 Processor integrated
Video Output	CRT/ LVDS LCD
Backlight Inverter Supply	—
I/O	
Ethernet	Realtek 8105E, 10/100Base-TX
Audio	Realtek ALC892
USB Port	USB2.0 x 6
Serial Port	2
Parallel Port	1
HDD Interface	SATA x 2 (one shared with SATA), PATA x 1
FDD Interface	—
SSD	—
Expansion Slot	PCIe[x1] x 4, PCI x 4
DIO	—
TPM	—

Packing List

- **M2.5 Screw x 4**
- **Product CD**
- **XTX-CV Rev. A1.1**

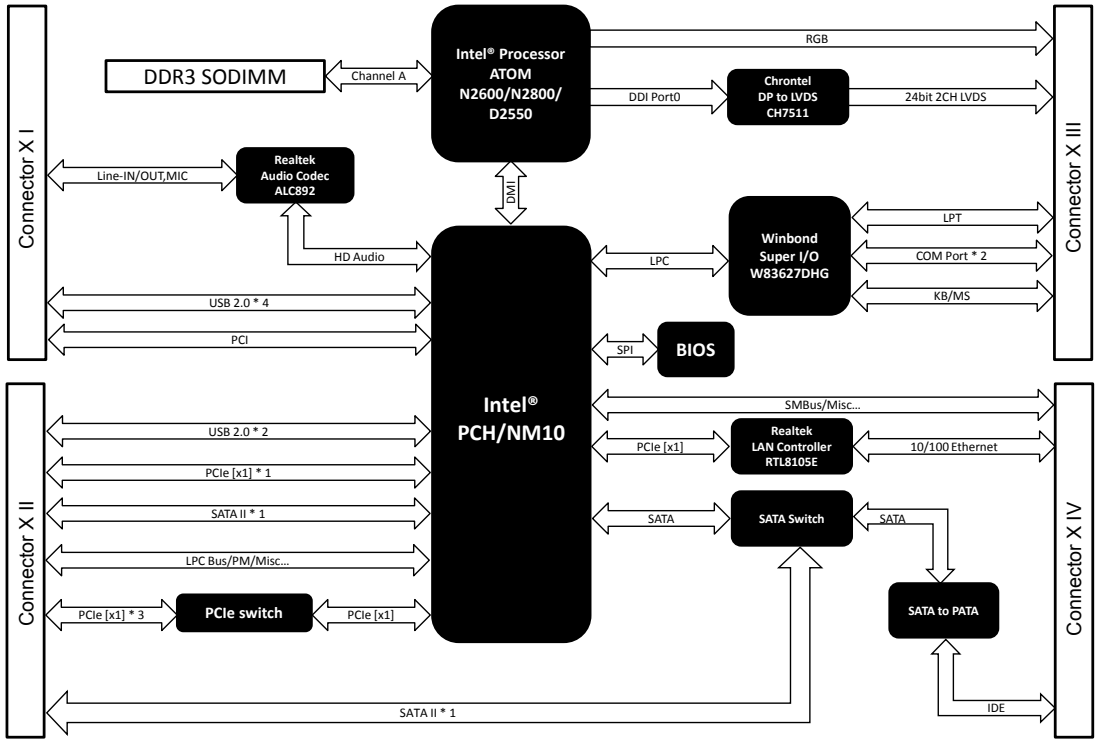
Optional Accessories

- **TF-ECB-910M-A10**
  XTX Carrier Board, LAN, Audio, 4 COM, USB, PCI-E, 2 SATA, AT/ATX, Rev.A1.0
- **TF-PER-A119**
  Heat Spreader, For XTX-CV CPU Module
- **TF-PER-A120**
  Passive Heat-sink, to be used with head spreader
- **TF-PER-A121**
  CPU Cooler, 35W, to be used with head spreader

Note: All specifications are subject to change without notice.

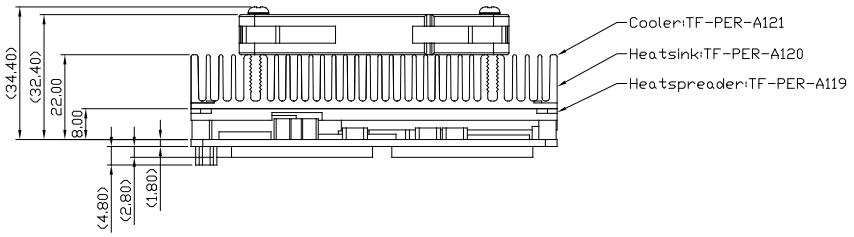
XTX-CV Rev. A11

Block Diagram



Dimension

Unit: mm



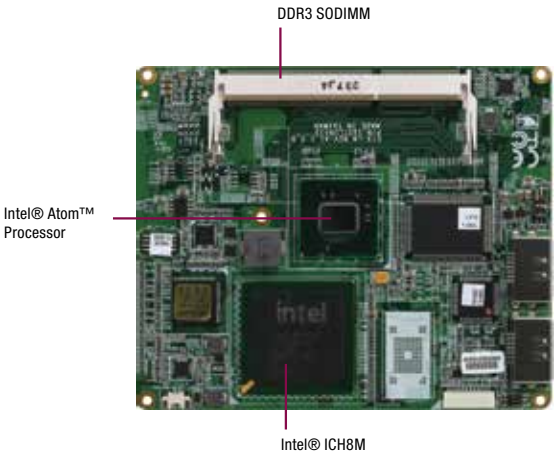
Ordering Information

Part Number	CPU	Memory	Display	LVDS	Storage	LAN	USB2.0	KB/MS	UART	LPT	Expansion Slot	Power	Temp
XTX-CV-A11-01	Intel® Atom™ N2600 B3/1.6 GHz	DDR3 SODIMM x 1 up to 2 GB	CRT, LVDS	24b, 2CH	SATA2 x 2 PATA x 1	FE x 1	6	1	2	1	PCI-E [x1] x 4 32-bit PCI x 4	5V	0°C~60°C
XTX-CV-A11-02	Intel® Atom™ D2550 B3/1.86 GHz	DDR3 SODIMM x 1 up to 4 GB	CRT, LVDS	24b, 2CH	SATA2 x 2 PATA x 1	FE x 1	6	1	2	1	PCI-E [x1] x 4 32-bit PCI x 4	5V	0°C~60°C

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

ETX-LN Rev. A11

ETX CPU Module with Onboard Intel® Atom™ D525/N455 Processor



Features

- Onboard Intel® Atom™ D525/N455 Processor
- Intel® ICH8M
- DDR3 667/800 MHz SODIMM x 1, Up to 4 GB
- 10/100Base-TX Ethernet
- CRT, 24-bit Single Channel LVDS LCD
- High Definition Audio Interface
- SATA 3.0 Gb/s x 2, PATA x 1
- USB2.0 x 4, COM x 2
- +5V Only Operation

Specifications

System	
Form Factor	ETX
CPU	Onboard Intel® Atom™ D525/N455
CPU Frequency	Up to 1.8 GHz/ FSB
Chipset	ICH8M
Memory Type	DDR3 667/800, SODIMM x 1
Max. Memory Capacity	N455 667/2G, D525 800/4G
BIOS	AMI AMI BIOS, 4MB
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+5V
Power Consumption (Typical)	Intel® Atom™ D525 1.8 GHz, DDR3 1066 4 GB, 3.42A@+5V
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)	100,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® D525/N455/D425 integrated
Video Output	CRT, LVDS LCD
Backlight Inverter Supply	—
I/O	
Ethernet	Realtek RTL8105E, 10/100Base-TX
Audio	Realtek ALC662
USB Port	USB2.0 x 4
Serial Port	COM 1/2
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	PATA x 1, SATA 2 x 2
FDD Interface	—
SSD	—
Expansion Slot	PCI ISA I2C x 1
DIO	—
TPM	—

Packing List

- M2.5 Screw x 4
- Product CD
- ETX-LN Rev. A1.1

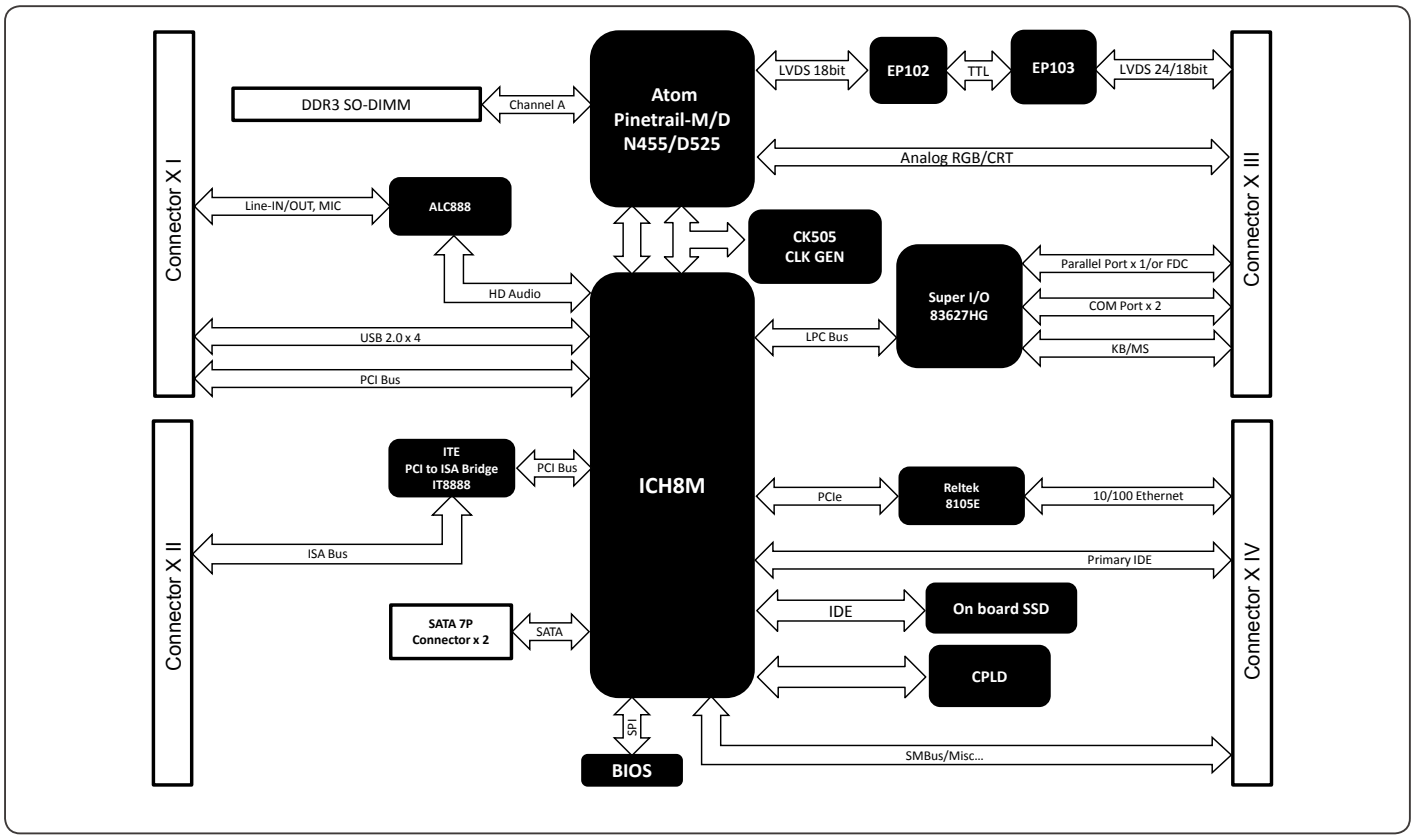
Optional Accessories

- **TF-ECB-902M-A10**
  ETX Carrier Board, LAN, Audio, 2COM, USB2.0, PCI, ISA, AT/ATX, Rev. A1.0 (For ETX-LN, ETX-945GSE, ETX-701)
- **TF-PER-A101**
  CPU Cooler, For ETX-LN, Onboard CPU
- **TF-PER-A102**
  Passive Heatsink, For ETX-LN, Onboard CPU
- **TF-PER-A103**
  Heat Spreader Kit, For ETX-LN, Onboard CPU

Note: All specifications are subject to change without notice.

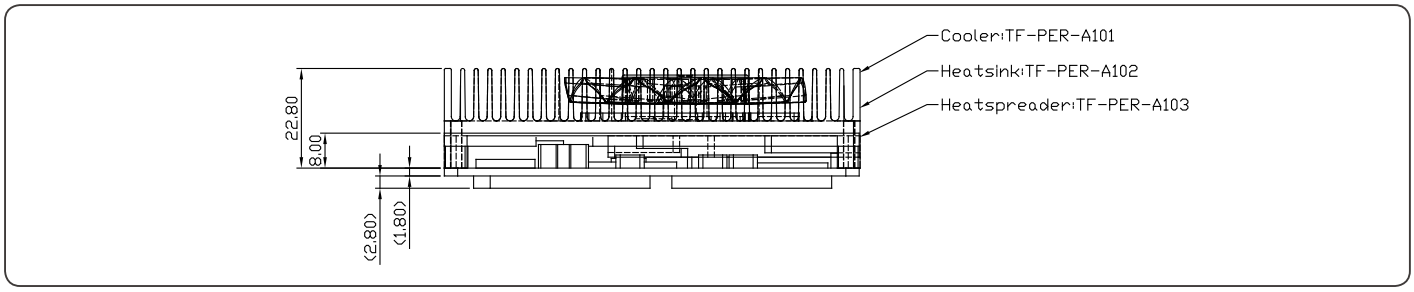
ETX-LN Rev. A11

Block Diagram



Dimension

Unit: mm

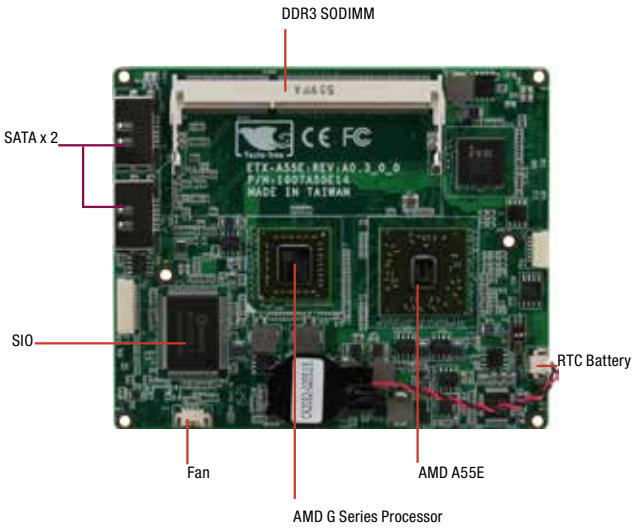


Ordering Information

Part Number	CPU	Memory	Display	LVDS	Storage	LAN	USB2.0	KB/MS	UART	LPT	Expansion Slot	Power	Temp.
ETX-LN-A11	Intel® Atom™ N455/1.66 GHz	DDR3 SODIMM x 1 up to 2 GB	CRT, LVDS	24b, 1CH	SATA2 x 2 PATA 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-LN-A11-01	Intel® Atom™ D525/1.8 GHz	DDR3 SODIMM x 1 up to 4 GB	CRT, LVDS	24b, 1CH	SATA2 x 2 PATA 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-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

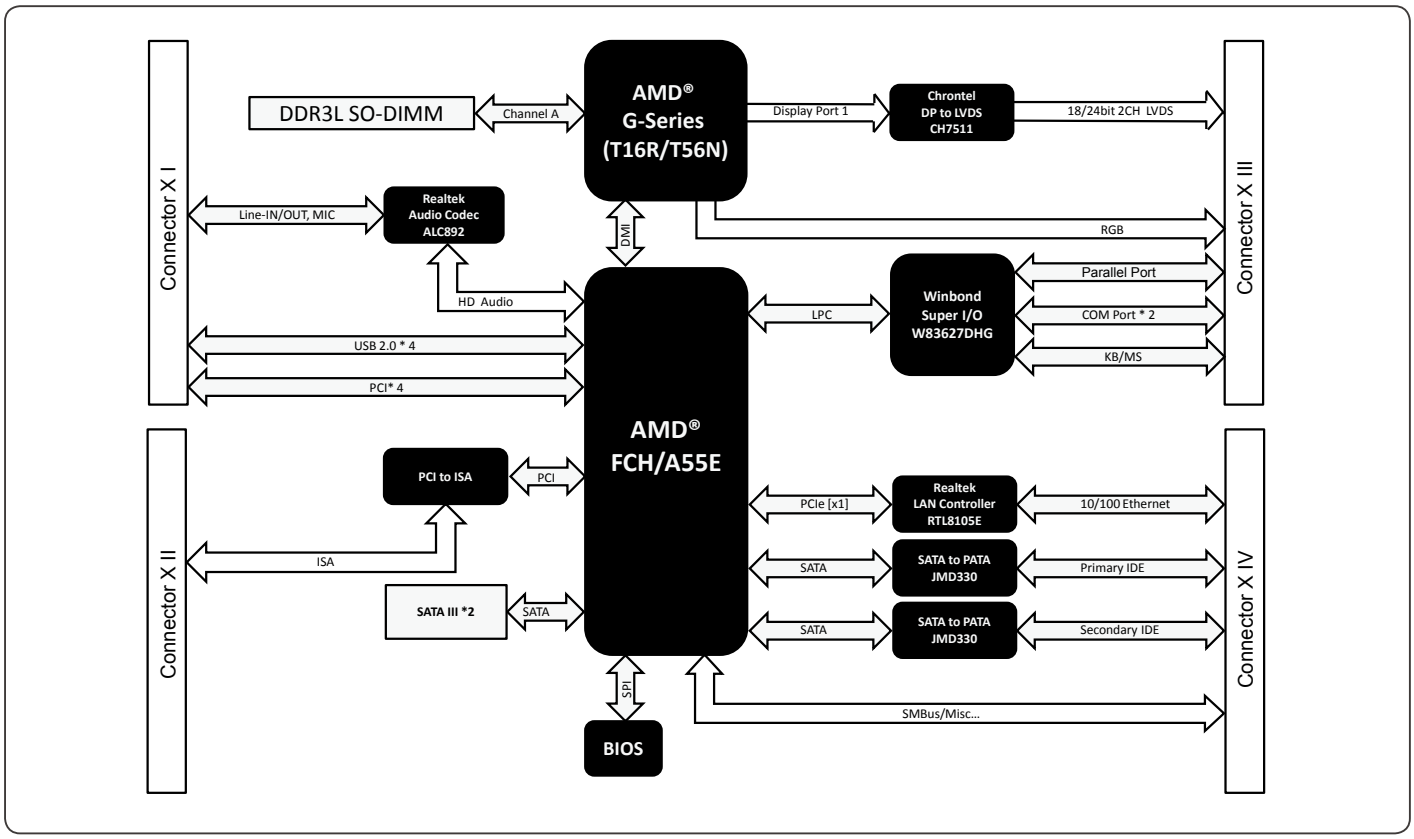
- M2.5 Screw x 4
- Product CD
- ETX-A55E

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
- **TF-PER-A120**
  Passive Heat-sink, to be used with head spreader
- **TF-PER-A121**
  CPU Cooler, 35W, to be used with head spreader

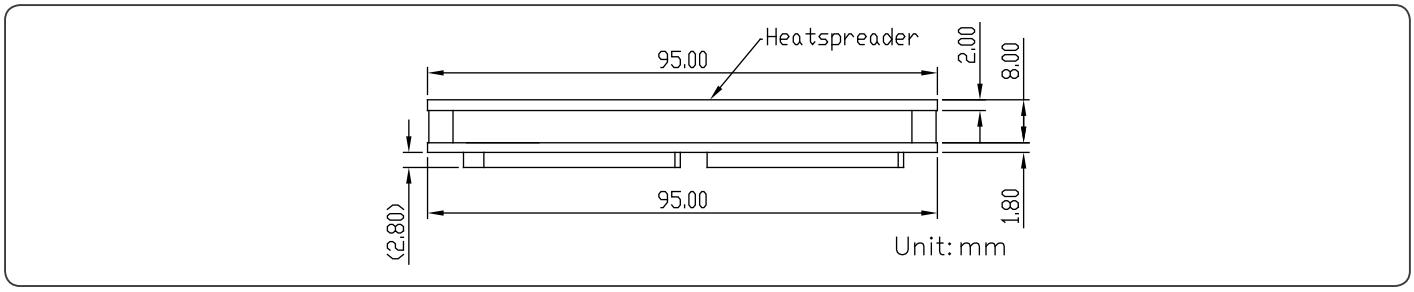
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

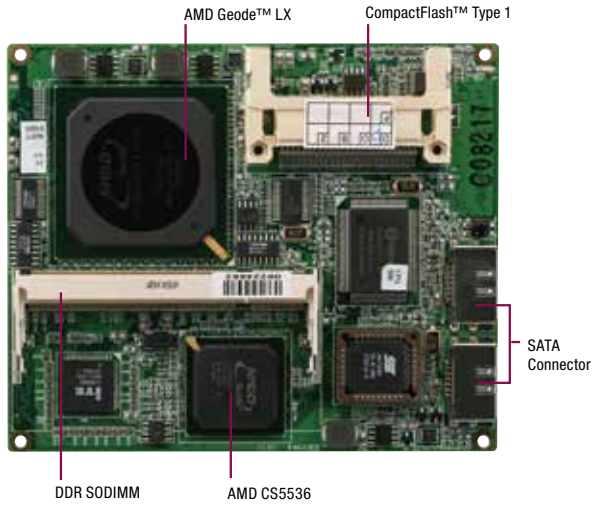


Ordering Information

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-701

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

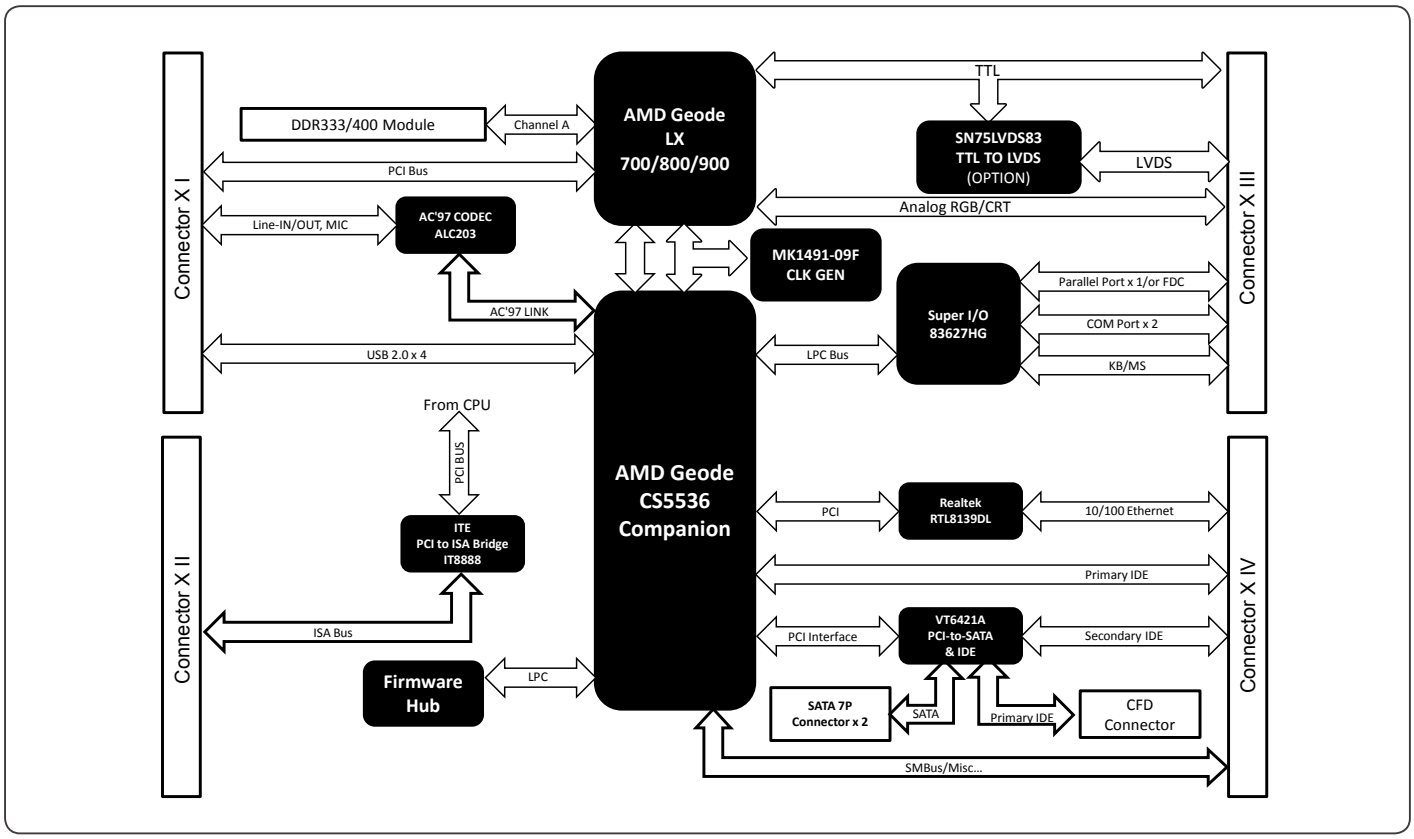
- M2.5 Screw x 4
- Product CD
- ETX-701

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)

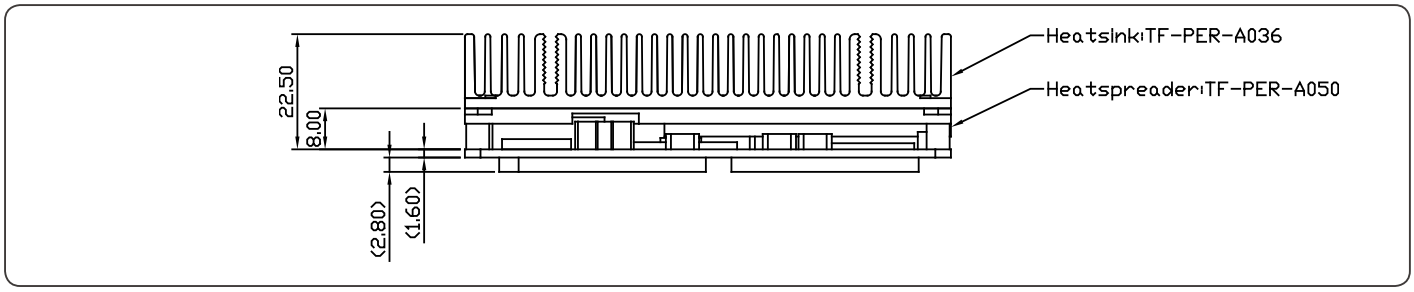
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

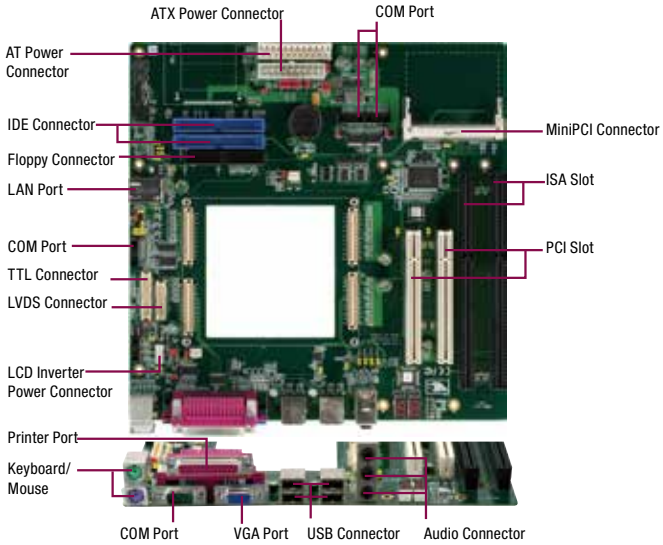


Ordering Information

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

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

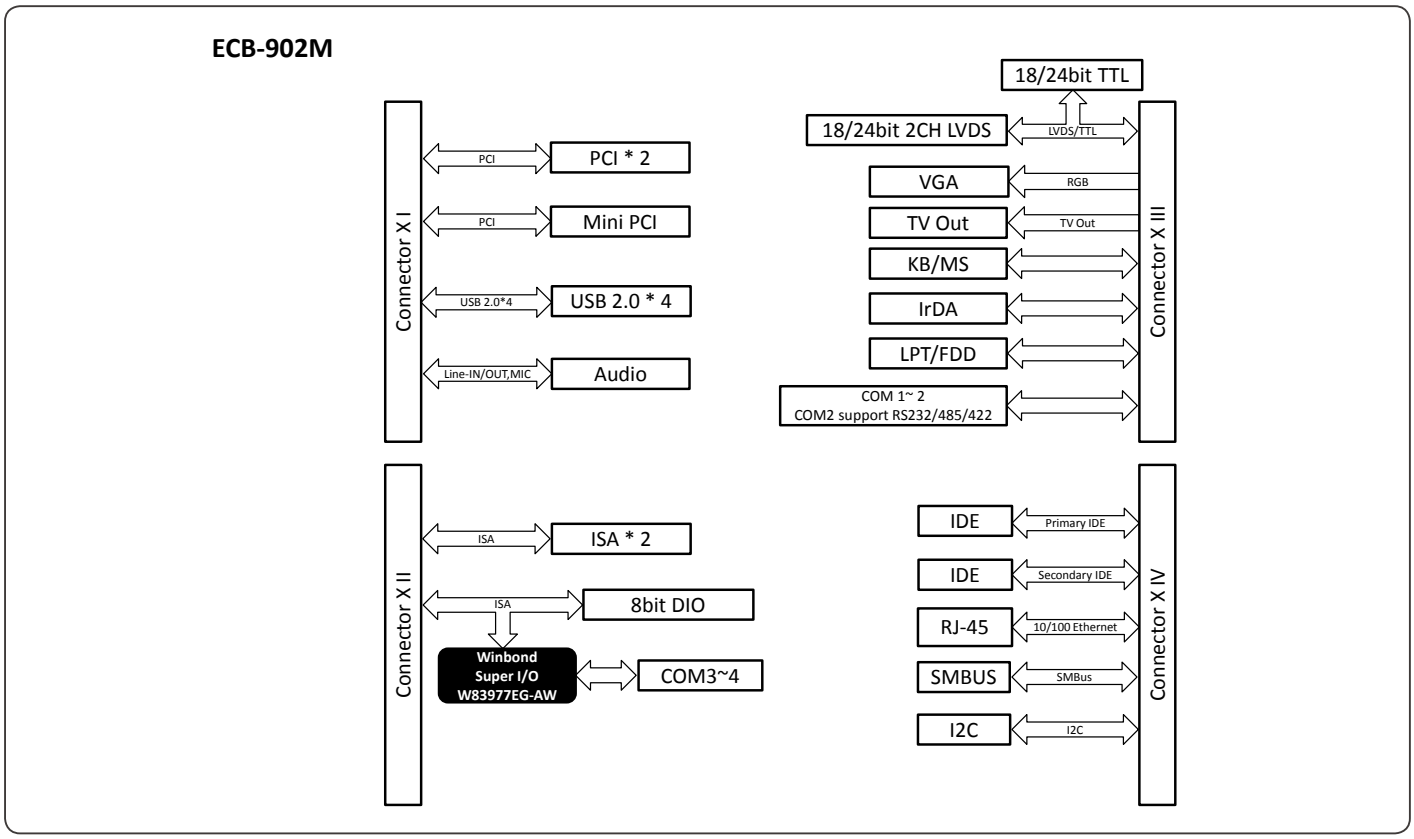
- **9681902M00:**
  Cable Kit

1701400453	IDE Cable x 1
1701340704	FDD Cable x 1
1701100207	FPC x 1

- **Quick Installation Guide**
- **ECB-902M**

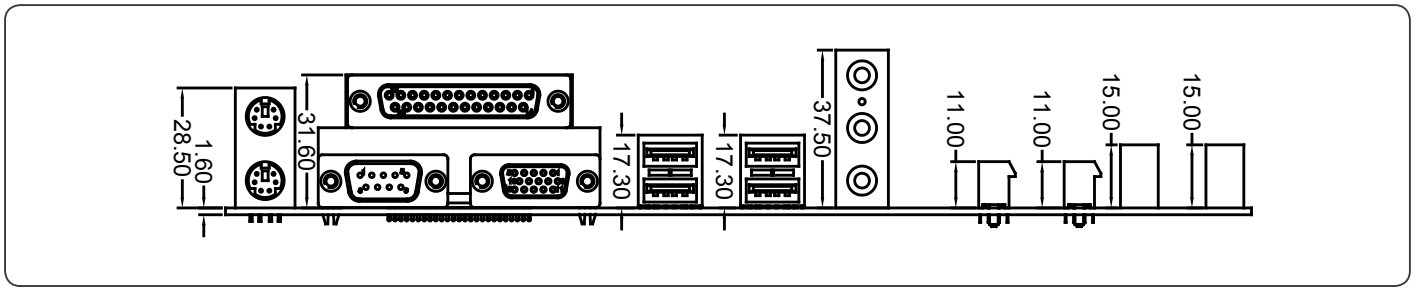
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

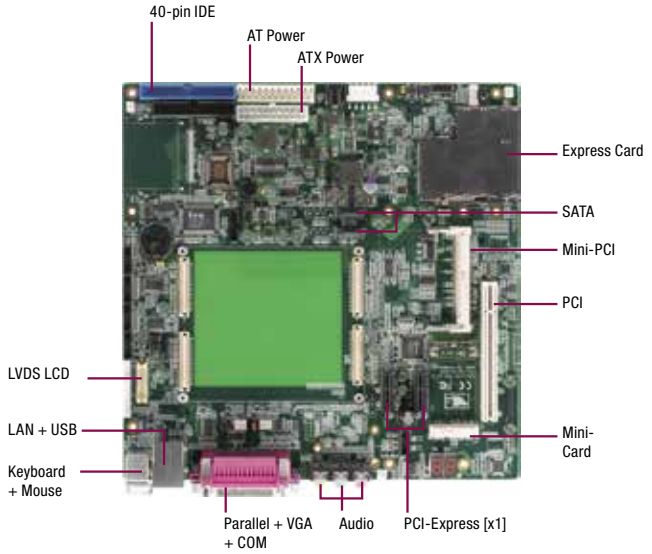


Ordering Information

- **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)

ECB-910M

XTX Carrier Board



Features

- **Supports XTX Module**
- **10/100Base-TX Ethernet, RJ-45 x 1**
- **VGA, LVDS Connector**
- **5.1 Channel Audio (Optional)**
- **PATA Connector x 1, SATA Port x 2**
- **USB Port x 3, COM Port x 4**
- **PCI-Express [x1] Slot x 2, PCI Slot x 1**
- **Express Card Slot x 1, Mini-PCI Slot x 1, Mini-Card Slot x 1, LPC Connector x 1**
- **AT/ ATX Power Input**
- **MicroATX Form Factor**

Specifications

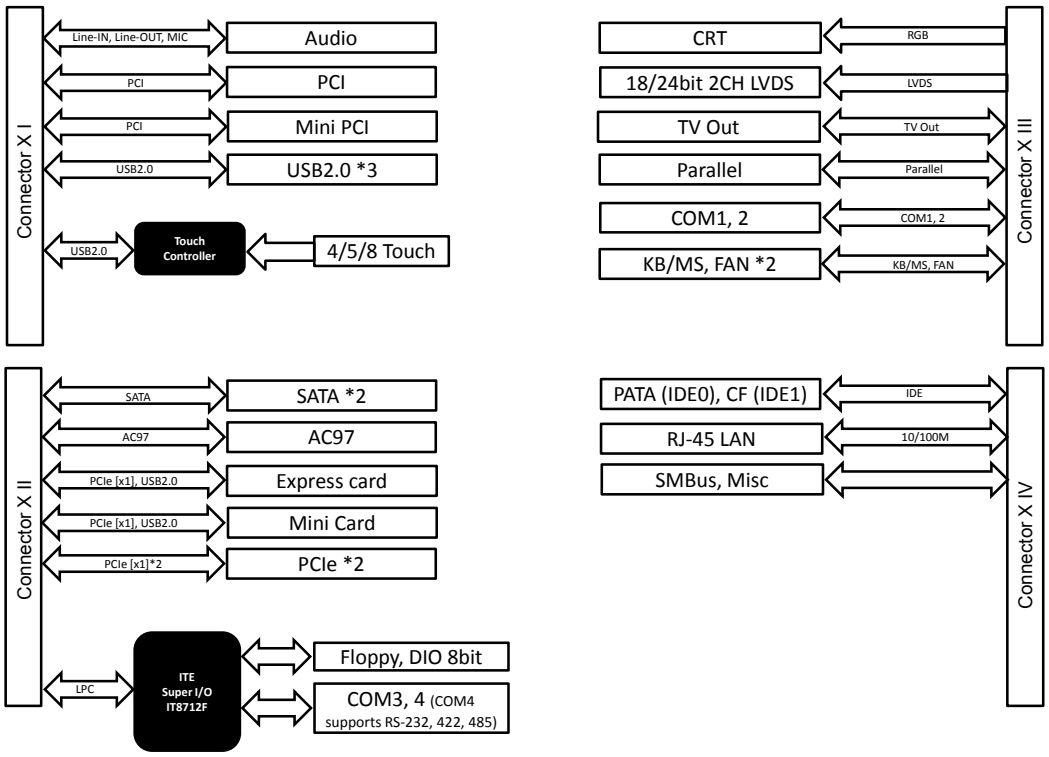
System	
Form Factor	MicroATX
I/O Chipset	ITE IT8712KX
Ethernet	10/100Base-TX, RJ-45 x 1
Expansion Interface	PCI-Express [x1] Slot x 2 PCI Slot x 1 Express Card slot x 1 Mini-PCI slot x 1 Mini-Card slot x 1 LPC Connector x 1
Power Supply Type	AT/ ATX
Board Size	9.6" x 9.6" (243.8mm x 243.8mm)
Gross Weight	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)	60,000
Display	
VGA	DB15 connector x 1
LVDS	30-pin (15x2) dual-channel LVDS connector x 1
I/O	
Storage	PATA connector x 1 SATA Port x 2
Serial Port	RS-232 port x 3 (9-pin D-Sub connector x 1 + 5x2-pin box header x 2) RS-232/422/485 port x 1 (5x2-pin box header)
Parallel Port	DB25 connector x 1, supports SPP/ EPP/ ECP mode
USB	Type A connector x 2, Wafer x 1
PS/2 Port	Keyboard x 1, Mouse x 1
Digital I/O	Supports 8-bit (Programmable)
IrDA	One IrDA Tx/Rx header
Audio	Audio jack, supports 5.1 channel audio

Packing List

- **9681910M00**
  Cable Kit
  1701400453 IDE Cable x 1
  1709070780 SATA Cable x 1
  1701340704 FDD Cable x 1
  1701100207 FPC x 1
- **Quick Installation Guide**
- **ECB-910M**

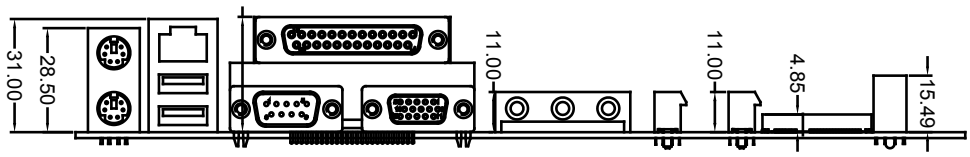
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

- **TF-ECB-910M-A10**
  XTX Carrier Board, LAN, Audio, 4 COM, USB, PCI-E, 2 SATA, AT/ATX, Rev. A1.0

Qseven Modules

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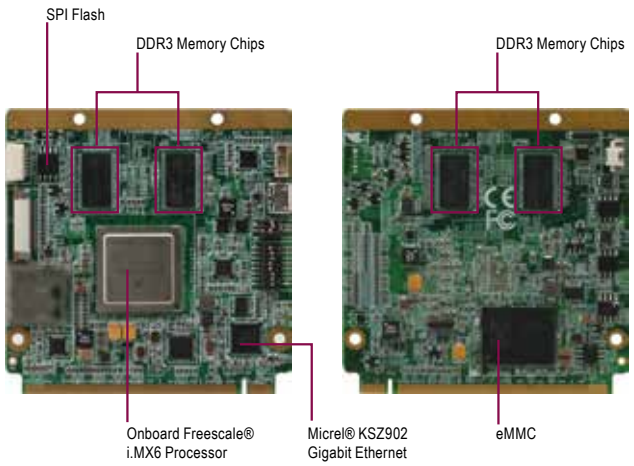
08

AQ7-IMX6

Qseven CPU Module with Onboard Freescale® i.MX6 Dual Lite/ Quad ARM Cortex A9 Processor



Features

- Freescale® i.MX6 Dual Lite/ Quad Processor (Commercial or Automotive Grade)
- Onboard DDR3 Memory 1 GB
- Gigabit Ethernet x 1 (KSZ9021RN)
- 18/24-bit Single Channel LVDS LCD x 2, HDMI
- I2S Audio Interface
- SATA x 1, eMMC (Optional)
- USB 2.0 x 5 (One for USB OTG), PCI-Express [x1] x 1
- Qseven Module Size, 70mm x 70mm, Qseven Rev. 2.0

Specifications

System	
Form Factor	Qseven Rev. 2.0
CPU	Freescale® i.MX6 SoC Processor
CPU Frequency	1.0 GHz (Dual lite), 1.2 GHz(Quad)
Chipset	Freescale® i.MX6 Quad 1.0GHz Processor (Automotive) Freescale® i.MX6 Quad 1.2GHz Processor (Commercial) Freescale® i.MX6 Dual Lite 800MHz Processor (Commercial)
Memory Type	Onboard DDR3 1066MHz (Quad) Onboard DDR3 800MHz (Dual lite)
Max. Memory Capacity	Onboard DDR3 1066MHz, 1GB, up to 2GB (Quad) Onboard DDR3 800MHz, 1GB, up to 2GB (Dual lite)
BIOS	—
Wake on LAN	No
Watchdog Timer	255 level (per levelo 0.5 sec)
Power Requirement	+5V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Freescale iMX6 Quad 1.2GHZ, DDR3 1GB, eMMC 8GB, 5.375W (w/ECB-970)
Dimension	2.75" x 2.75" (70mm x 70mm)
Operating Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C) -40 °F ~ 185 °F (-40 °C ~ 80 °C) WiTAS 2
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	100,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Freescale® i.MX6 Quad 1.0GHz Processor (Automotive) Freescale® i.MX6 Quad 1.2GHz Processor (Commercial) Freescale® i.MX6 Dual Lite 800MHz Processor (Commercial)
Video Output	LVDS x 2, HDMI 1.4
Backlight Inverter Supply	—
I/O	
Ethernet	Micrel® KSZ9021RNI, 10/1000/1000Base-TX
Audio	I2S x 1
USB Port	USB 2.0 x 5 (Shared with USB OTG client x 1)
Serial Port	4-Wire UART x 1
Parallel Port	—
HDD Interface	SATA 3.0GB/s x 1 (Quad)
FDD Interface	—
SSD	eMMC x 1 (optional)
Expansion Slot	PCI Express [x1] x 1, CAN Bus x 1, I2C x 1, SDIO x 1
DIO	8 bit
TPM	—

Packing List

- M2.5 Srews x 4
- Product CD
- AQ7-IMX6

Optional Accessories

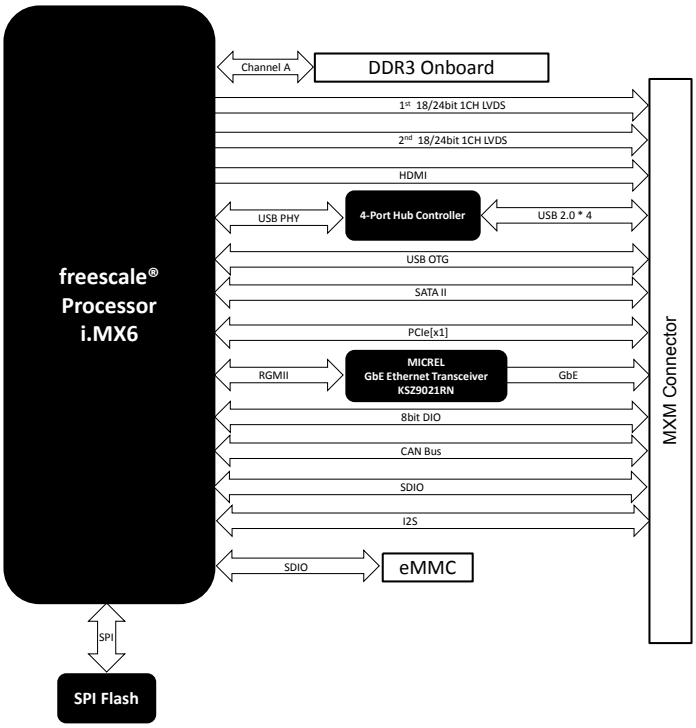
- **ECB-970-A10-01**
  Qseven Rev. 2.0 Carrier Board for ARM Solution
- **PER-A128**
  Heat Spreader, for AQ7-IMX6, Onboard CPU

Starter Kit

- **SKC-AQ7-IMX6-A10**
  Starter Kit, AQ7-IMX6-A10-01, ECB-970, 12.1" LVDS, eMMC: Android, SDx 2: Linux, Rev1.0

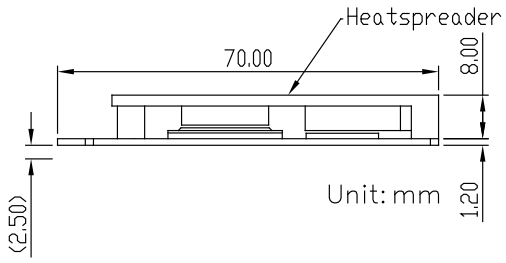
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	Memory	Fan/Fanless	Display	LVDS	Storage	LAN	USB	Expansion Slot	Power	Temp
AQ7-IMX6-A10-01	Freescale i.MX6 Quad- Automotive grade- 1.0 GHz	Onboard DDR3 1 GB	Fanless	HDMI, LVDS x 2	18/24b, 1 CH	SATA x 1	GbE x 1	USB 2.0 x 5 (1 for USB OTG)	PCI-Express [x1] x 1	5V	0°C~60°C
AQ7-IMX6-A10-02	Freescale i.MX6 Quad- Commercial grade- 1.2 GHz	Onboard DDR3 1 GB	Fanless	HDMI, LVDS x 2	18/24b, 1 CH	SATA x 1	GbE x 1	USB 2.0 x 5 (1 for USB OTG)	PCI-Express [x1] x 1	5V	0°C~60°C
AQ7-IMX6-A10-03	Freescale i.MX6 DualLite-Commercial grade- 1.0 GHz	Onboard DDR3 1 GB	Fanless	HDMI, LVDS x 2	18/24b, 1 CH	SATA x 1	GbE x 1	USB 2.0 x 5 (1 for USB OTG)	PCI-Express [x1] x 1	5V	0°C~60°C
AQ7-IMX6W2-A10-0001	Freescale i.MX6 Quad-Automotive grade- 1.0 GHz	Onboard DDR3 1 GB	Fanless	HDMI, LVDS x 2	18/24b, 1 CH	SATA x 1	GbE x 1	USB 2.0 x 5 (1 for USB OTG)	PCI-Express [x1] x 1	5V	-40°C~85°C

AQ7-BT

Qseven CPU Module with Onboard Intel® Atom™ E3800 Product Family Processor SoC

Features

- Intel® Atom™ E3800 Product Family Processor SoC
- Onboard DDR3L up to 4 GB Memory
- Gigabit Ethernet x 1
- 18/24-bit Single Channel LVDS LCD, DDI
- High Definition Audio Interface
- SATA x 1, One for Onboard SSD
- USB 2.0 x 6, USB 3.0 x 1, LPC(GPIO), PCI-Express [x1] x 3
- Qseven Rev. 2.0, 70mm x 70mm

Specifications

System	
Form Factor	Qseven Rev.2.0
CPU	Intel® Atom™ SoC Processor
CPU Frequency	up to 1.91GHz
Chipset	Intel® Atom™ E3800 series
Memory Type	Onboard DDR3L
Max. Memory Capacity	2GB (Optional to 4 GB)
BIOS	AMI BIOS
Wake on LAN	no
Watchdog Timer	255 Levels
Power Requirement	+5V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	2A@5V, full load, E3845
Dimension	2.75" x 2.75" (70mm x 70mm)
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)	80,000
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® Atom™ SoC
Video Output	24-bit LVDS LCD, DDI x 1
Backlight inverter supply	—
I/O	
Ethernet	Intel® I210IT, 10/1000/1000Base-TX
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 6, USB 3.0 x 1
Serial Port	4-Wire UART x 1, 2-wire UART x 1
Parallel Port	—
HDD Interface	SATA x 1, onboard SSD x 1 (optional)
FDD Interface	—
SSD	Optional
Expansion Slot	PCI Express [x1] x 3 LPC Bus x 1(shared with GPIO) SMbus x 2
DIO	GPIO 8 bit (shared w/ LPC, optional)
TPM	—

Packing List

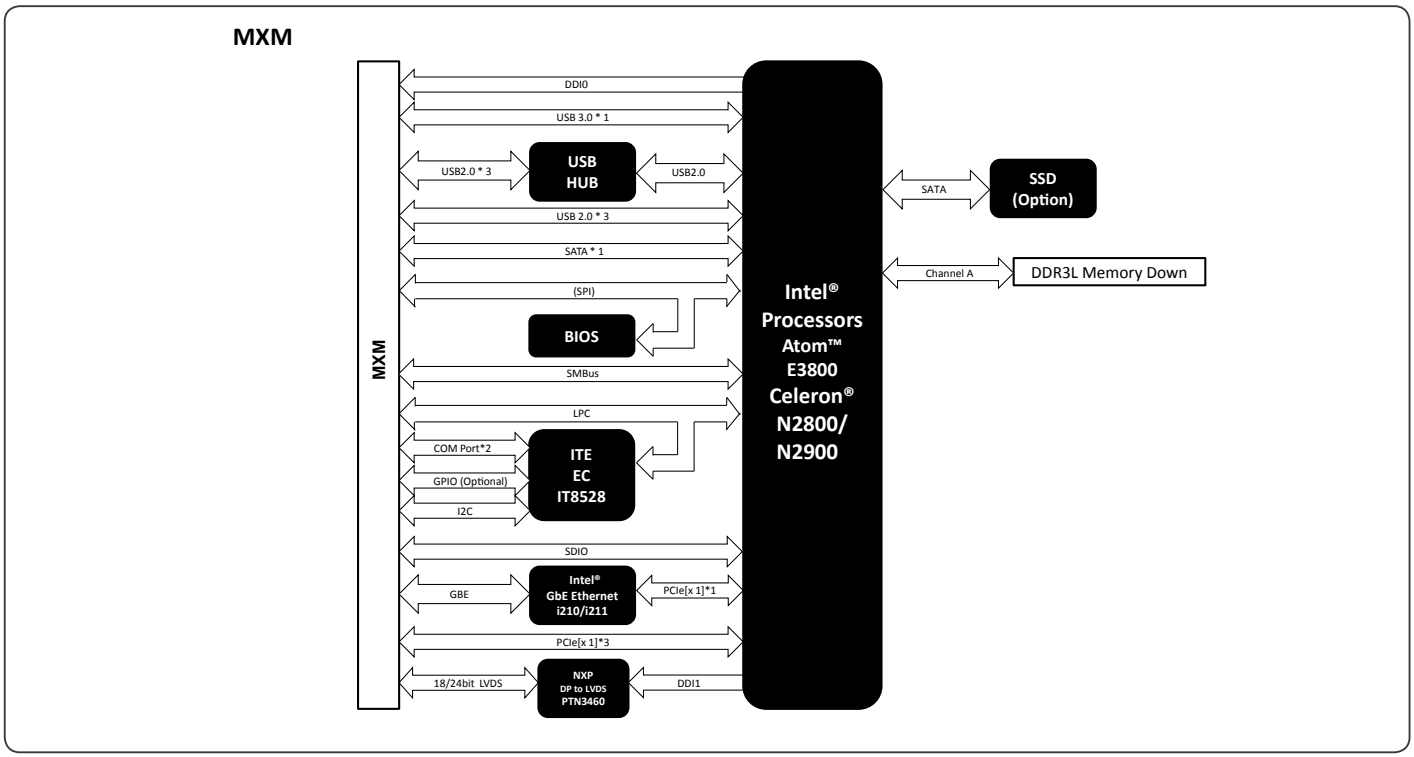
- M2.5 Srews x 4
- Product CD
- AQ7-BT

Optional Accessories

- **ECB-970-A10**
  Q7 Carrier Board for x86
- **AQ7-BT-HSP01**
  Heat Spreader, For AQ7-BT, Onboard CPU
- **AQ7-HSK01**
  Heatsink, for AQ7-BT, to be used with Heat Spreader
- **TF-PER-A096**
  Active Cooler, for AQ7 Module, to be used with Heat Spreader

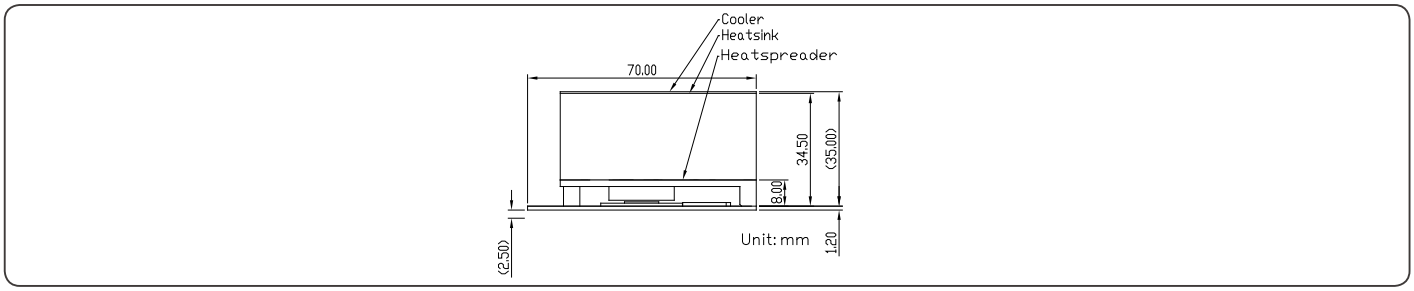
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

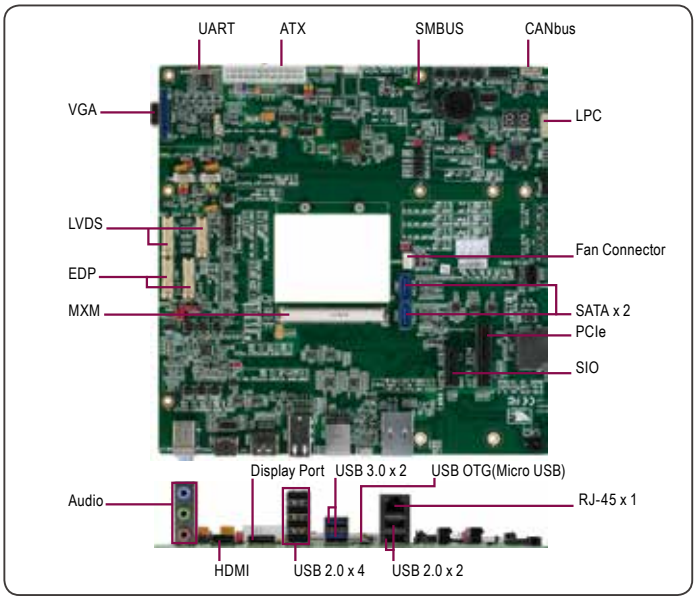


Ordering Information

Part Number	Form Factor	CPU	Memory	Display	LVDS	Storage	LAN	USB	Expansion	Power	Temperature	Other
AQ7-BT-A20-0001	Qseven 2.0	N2807, 1.58Ghz	2GB DDR3L	LVDS, DDI	24bit,1CH	SATA x 1	GbE x 1	USB3.0 x 1, UBS2.0 x 6	PCIe[x1] x 3	+5V	0˚C ~ 60˚C	I2C, LPC or (GPIO), SDIO, UART x 2 (4-wire and 2-wire)
AQ7-BT-A20-0002	Qseven 2.0	E3825, 1.33GHz	2GB DDR3L	LVDS, DDI	24bit,1CH	SATA x 1, 8 GB SSD	GbE x 1	USB3.0 x 1, UBS2.0 x 6	PCIe[x1] x 3	+5V	0˚C ~ 60˚C	I2C, LPC or (GPIO), SDIO, UART x 2 (4-wire and 2-wire)
AQ7-BT-A20-0003	Qseven 2.0	E3845, 1.91GHz	4GB DDR3L	LVDS, DDI	24bit,1CH	SATA x 1, 8 GB SSD	GbE x 1	USB3.0 x 1, UBS2.0 x 6	PCIe[x1] x 3	+5V	0˚C ~ 60˚C	I2C, LPC or (GPIO), SDIO, UART x 2 (4-wire and 2-wire)

ECB-970

Qseven Rev. 2.0 Carrier Board for ARM/x86 Solutions



Features

- Supports Qseven Module
- Supports Both ARM/x86 Based Q7 CPU module
- Gigabit Ethernet, RJ-45 x 1
- Up to 18-bit Single Channel LVDS Connector, VGA (for X86)
- Up to 24-bit Dual-Channel LVDS Connector or EDP, DP or HDMI (for ARM)
- High Definition Audio (for X86), I2S Audio Interface (for ARM)
- SATA Port x 2, SDIO x 1 (for X86), SATA Port x 1 (for ARM)
- USB 2.0 x 8, USB 3.0 x 2 (for X86), USB 2.0 x 5 (Shared One USB OTG)
- Qseven Specification 2.0
- LPC Connector x 1, Micro-ATX Form Factor

Specifications

System	X86 (A10)	ARM (A10-01)
Form Factor	Micro ATX	
I/O Chipset	—	—
Ethernet	10/100/1000Base-TX, RJ-45 x 1 (From CPU module)	
Expansion	Interface PCI-E [x4] x 1(For Super I/O Card only), LPC Connector x 1	PCI-E [x1] x 1
Power Requirement	+5V DC	+5V DC
Power Consumption (Typical)	—	3~5 Watt @5V
Board Size	9.65" x 9.65" (243.84mm x 243.84mm)	
Gross Weight	1.32 lb (0.6 kg)	
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	
Operation Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	75,000	
Display	LVDS or EDP, DP or HDMI	
DVI/CRT	—	—
LVDS	18-bit Single Channel LVDS	24-bit Dual-Channel LVDS
DDI	—	LVDS x 2, eDP x 2, HDMI x 1
I/O		
Storage	SATA x 2, SDIO x 1	SATA 2 x 1
Serial Port	RS-232 x 1, RS-232/422/485 x 1	One, For debug only
Parallel Port	—	—
USB	USB 2.0 x 8, USB 3.0 x 2	USB 2.0 x 5(one shared with USB OTG)
PS/2 Port	—	—
I2C	—	1
Audio	Line-out, Microphone	Headphone
Debug LED	Port 80	—

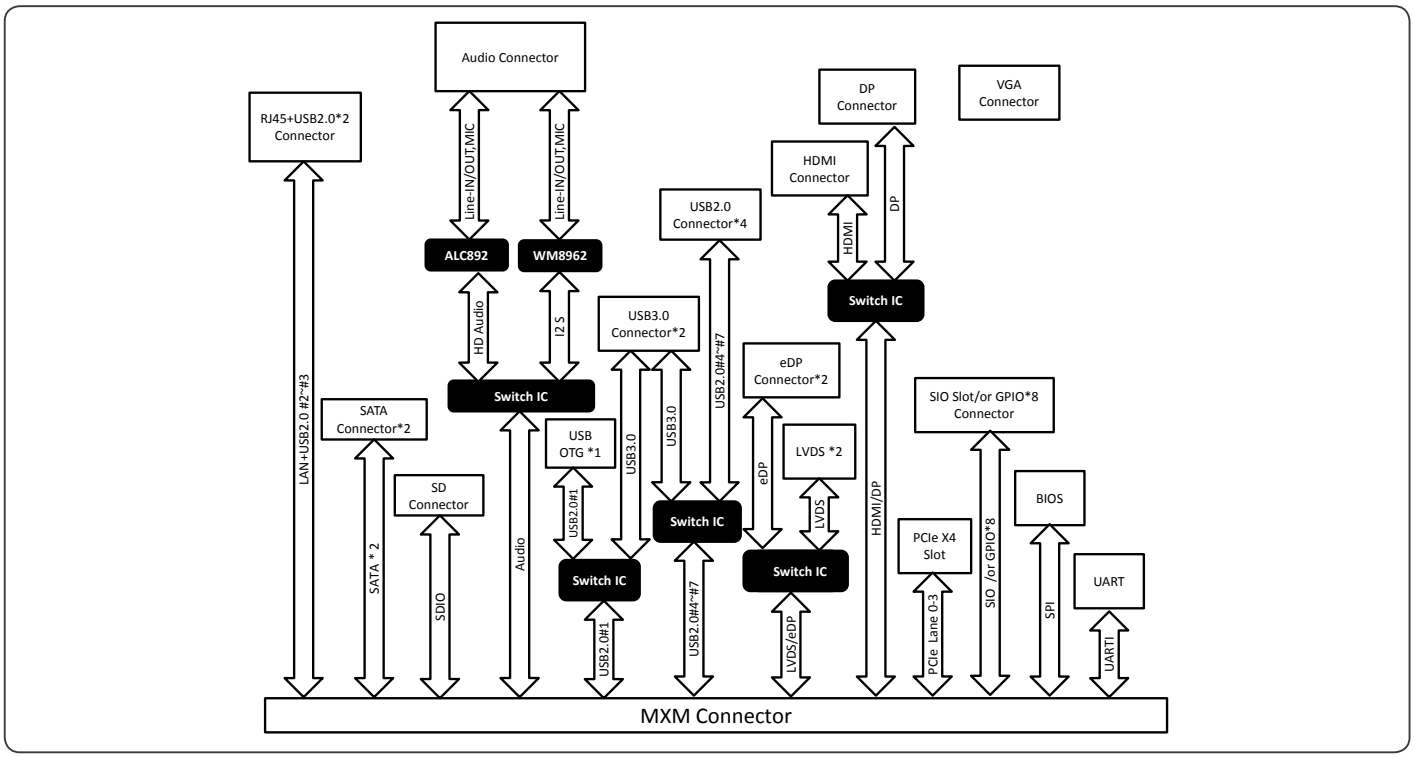
* Above function support will vary by different Q7 CPU modules or Platforms

Packing List

- **PER-T289**
  (PCI-E[x4] to PCI-E[x1]) Converter Board
- **1701090150**
  COM Port Cable x 2
- **1709070500**
  SATA Cable x 2
- **Product CD**
- **ECB-970**

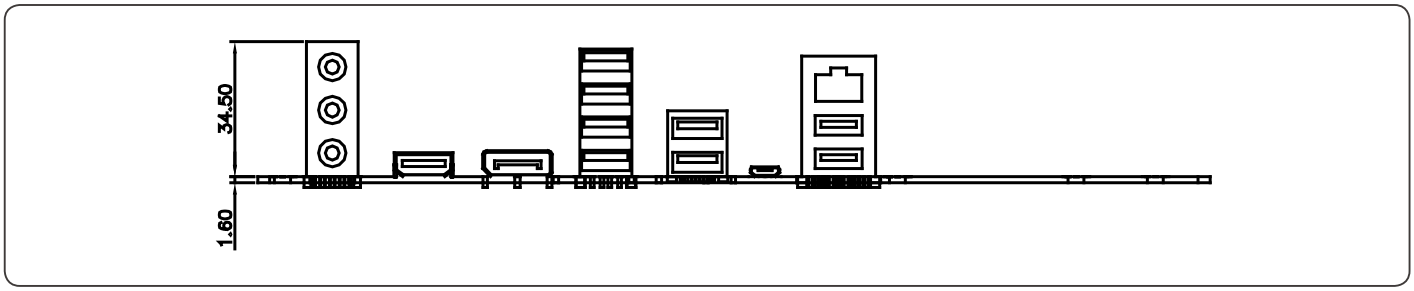
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

- **ECB-970-A10**
  Qseven Carrier Board,GbE, LVDS, Audio, COM, USB 2.0, USB 3.0, DC, Rev. A1.0 for X86
- **ECB-970-A10-01**
  Qseven Carrier Board,GbE, LVDS, Audio, COM, USB 2.0, USB 3.0, USB OTG, DC, Rev. A1.0 for ARM

SMARC CPU Modules

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µCOM-BT

SMARC CPU Module with Onboard Intel® Atom™/Celeron® Processor SoC

Features

- Intel® Atom™ E3800 and N2807 Product Family Processor SoC
- Onboard DDR3L up to 4 GB Memory
- Gigabit Ethernet x 1
- 18/24-bit Single Channel LVDS, HDMI
- High Definition Audio Interface
- SATA x 2
- USB2.0 x 3, GPIO up to 12-bit, USB3.0 x 1
- PCI-Express [x1] x 3
- SMARC Spec v1.1, 82mm x 50mm

Specifications

System	
Form Factor	SMARC Version 1.1
CPU	Intel® Atom™ SOC Processor
CPU Frequency	up to 1.91 GHz
Chipset	Intel® Atom™ E3800 series
Memory Type	Onboard DDR3L
Max. Memory Capacity	2 GB (optional to 4 GB)
BIOS	AMI BIOS
Wake on LAN	No
Watchdog Timer	255 Levels
Power Requirement	Normal: 3.3V - 5V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	0.7A@12V, full load, E3845
Dimension	3.23" x 1.96" (82 x 50 mm)
Operating Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C) -40 °F ~ 185 °F (-40 °C ~ 80 °C) WiTAS 2
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°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	24-bit LVDS LCD, HDMI
Backlight Inverter Supply	—
I/O	
Ethernet	Intel® I211AT, 10/1000/1000Base-TX
Audio	HD Audio x 1
USB Port	USB3.0 x 1, USB2.0 x 3
Serial Port	UART x 2 (1 for TX/RX/RTS#/ CTS#; 1 for TX/RX)
Parallel Port	—
HDD Interface	SATA x 2
FDD Interface	—
SSD	Optional for onboard eMMC up to 64GB
Expansion Slot	PCI Express [x1] x 3 I2C, SMBus x 1, SDIO SPI x 2, SPI 0 for boot only
DIO	GPIO, 11-bit
TPM	—
Touch	—

Packing List

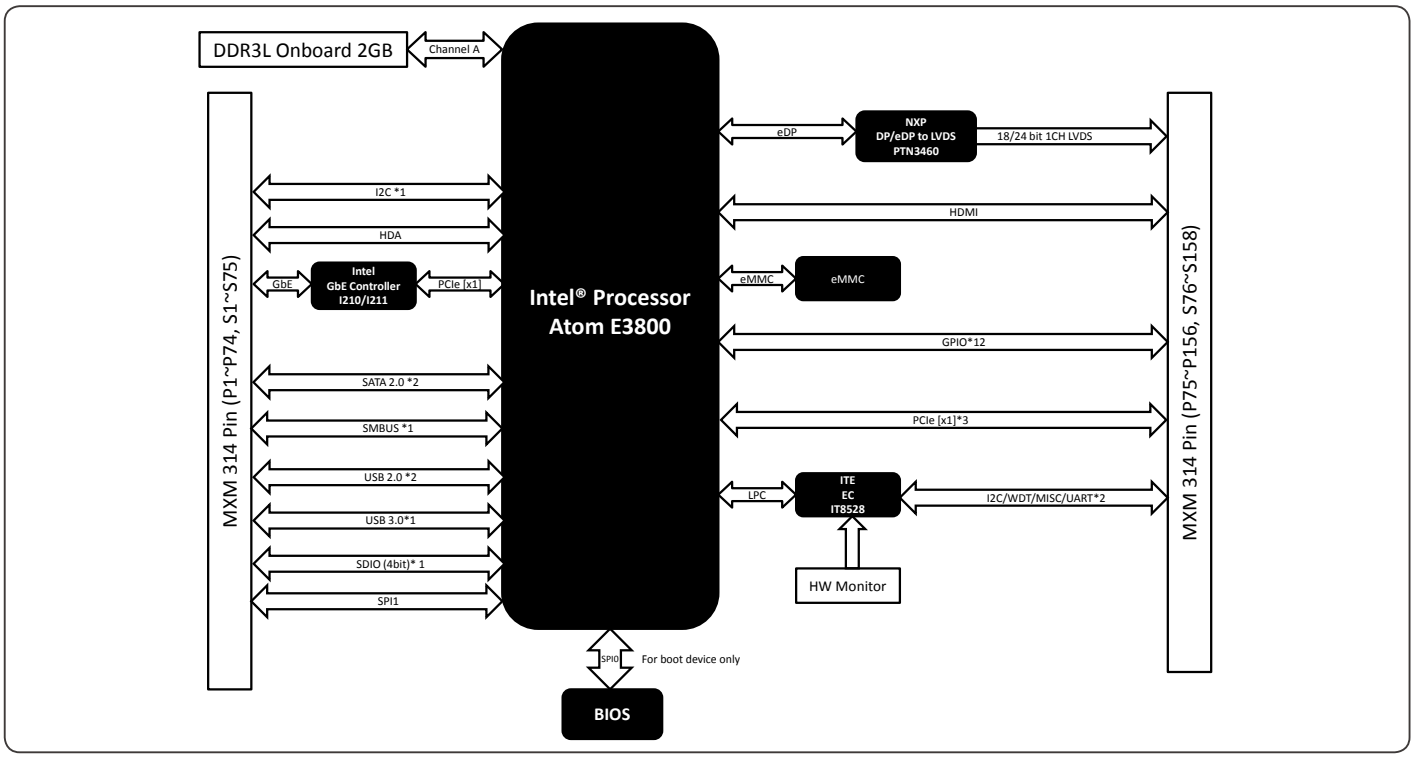
- M2.5 Screw x 4
- Product CD
- µCOM-BT

Optional Accessories

- **ECB-960T-A10-0001**
  SMARC Carrier Board for x86
- **uCOM-BT-HSP01**
  Heat Spreader for µCOM-BT
- **uCOM-HSK01**
  Heatsink for µCOM Series, to be used with Heatspreader
- **uCOM-FAN01**
  Cooler for µCOM Module, to be used with Heatspreader

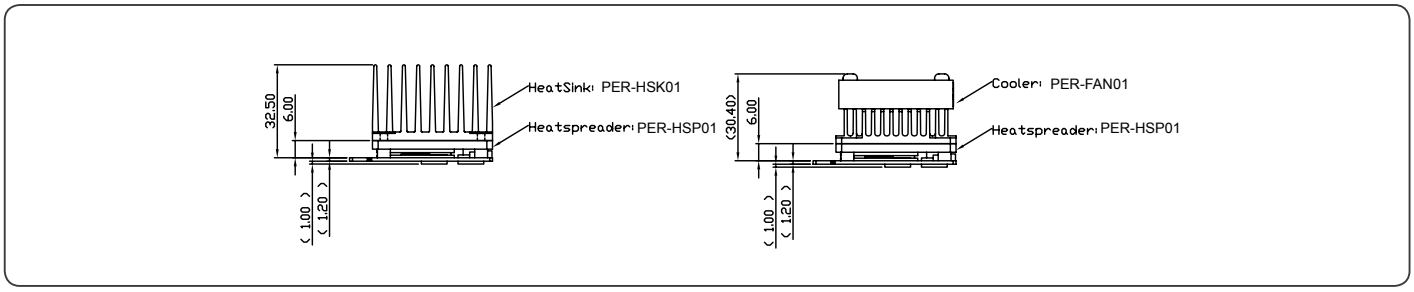
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

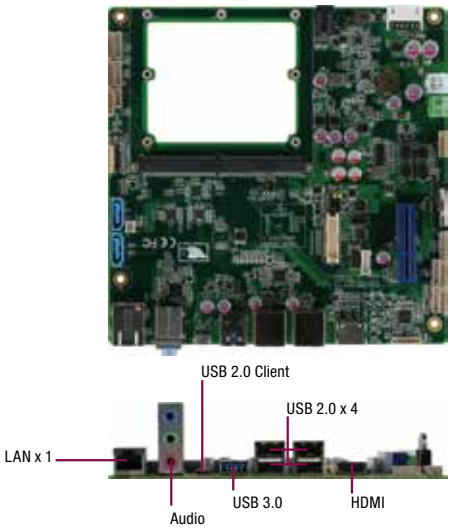


Ordering Information

Part Number	Form Factor	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion	Others	Power	Temperature
UCOM-BT-A20-0004	SMARC1.1	N2807, 2c/1.58GHz	Onboard 2GB DDR3L	DDI x 1	18/24b 1CH	SATA x 2	GbE x1	USB2.0 x3 USB3.0 x1	2-wire x1 4-wire x1	PCIe[x1] x3	GPIO x11, SMBus, SDIO, I2C,	3.3V/5V	0°C~60°C
UCOM-BT-A20-0005	SMARC1.1	E3825, 2c/1.33GHz	Onboard 2GB DDR3L	DDI x 1	18/24b 1CH	SATA x 2, 8GB eMMC	GbE x1	USB2.0 x3 USB3.0 x1	2-wire x1 4-wire x1	PCIe[x1] x3	GPIO x11, SMBus, SDIO, I2C,	3.3V/5V	0°C~60°C
UCOM-BT-A10-0006	SMARC1.1	E3845, 4c/1.91GHz	onboard 4GB DDR3L	DDIx1	18/24b 1Ch	SATA x 2, 16GB eMMC	GbE x1	USB2.0 x3 USB3.0 x1	2-wire x1 4-wire x1	PCIe[x1] x3	GPIO x11, SMBus, SDIO, I2C,	3.3V/5V	0°C~60°C

ECB-960T

SMARC Carrier Board for x86 Solutions



Features

- Support x86 Based SMARC Module
- Supports Gigabit Ethernet, RJ-45 x 1
- HDMI, 18/24-bit Single Channel LVDS
- High Definition Audio
- I2C Interface, SPI Interface, UART x 2
- PCI-Express [x1] x 3
- SATA 3.0 Gb/s x 2, USB2.0 x 4, USB2.0 Device Mode x 1
- microSD CARD Slot
- CSI Interface for Camera (Optional)
- Mini-ITX Form Factor (170 mm x 170mm)
- SMARC SPEC: Version 1.1

Features only available if the SMARC module supports it

Specifications

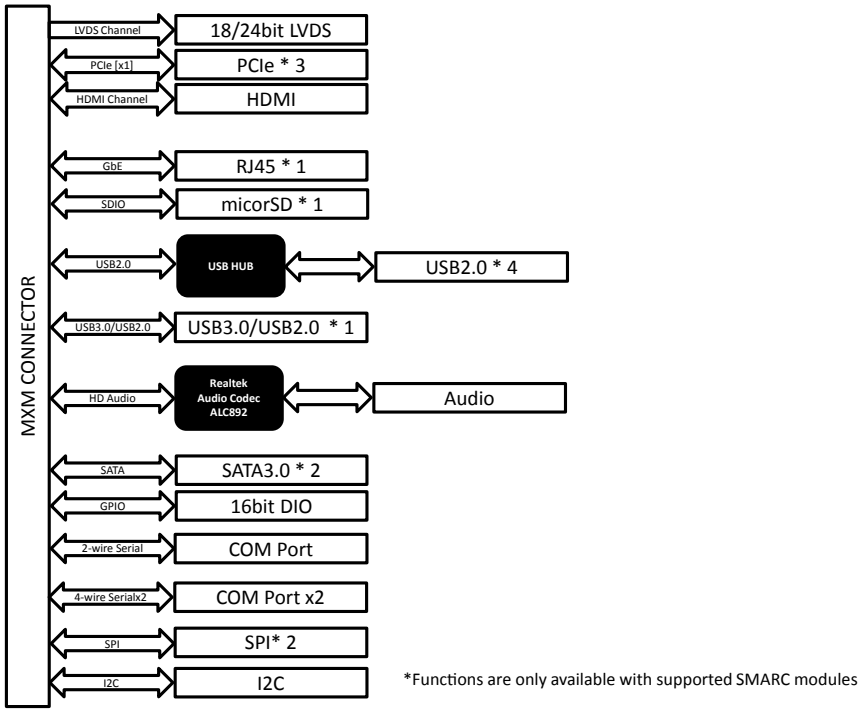
System	
Form Factor	Mini-ITX form Factor (170mmx 170mm)
I/O Chipset	N/A (Legacy Support)
Ethernet	10/100/1000Base-TX, RJ-45 x 1 (From CPU module)
Expansion Interface	PCI-Express [x1] x 3 via adapter card
Power Consumption (Typical)	Denpends on module
Power Requirement	+12V DC; +8~20VDC-in on seperate connector
Board Size	6.69" x 6.69" (170mm x 170mm)
Gross Weight	—
Operation Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)
Storage Temperature	-4 °F ~ 158 °F (-20 °C ~ 70 °C)
Operation Humidity	10% ~ 80% relative humidity, non-condensing
MTBF	80,000
Display	
LVDS	18/24-bit Single channel LVDS
I/O	
Storage	SATA x 1, microSD card x 1
Serial Port	2-wire x 1, 4-wire x 1
USB	USB port 3.0 x 1 USB port 2.0 x 5 (Port 0 for client only)
I2C	Client mode
Audio	Line-in, Line-out, Microphone

Optional Accessories

- TBD

Note: All specifications are subject to change without notice.

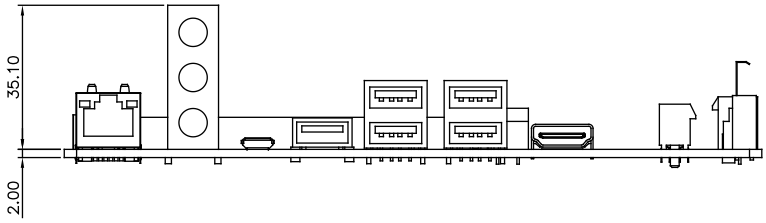
Block Diagram



*Functions are only available with supported SMARC modules

Dimension

Unit: mm



Ordering Information

Part Number	Form Factor	Main Connector	Display	USB	Storage	Audio	LAN	UART	Expansion	Power	Power Temp	Others
ECB-960T-A10-0001	Mini ITX	SMARC 1.1	LVDS, HDMI	USB2.0 x 4, USB2.0/3.0 x 1, USB OTG x 1	SATA x 2 uSD card x 1	Audio Jack via HAD I2S (pin header)	GbE x 1	2-wire x 1 4-wire x 1	PCIe[x1] x 3 (in same connector), GPIO x 12, SMBus, SDIO, I2C	12V (default), 9V~20V (optional), 19V-in and Smart Battery connector (optional)	0°C~60°C	—

Industrial Motherboards

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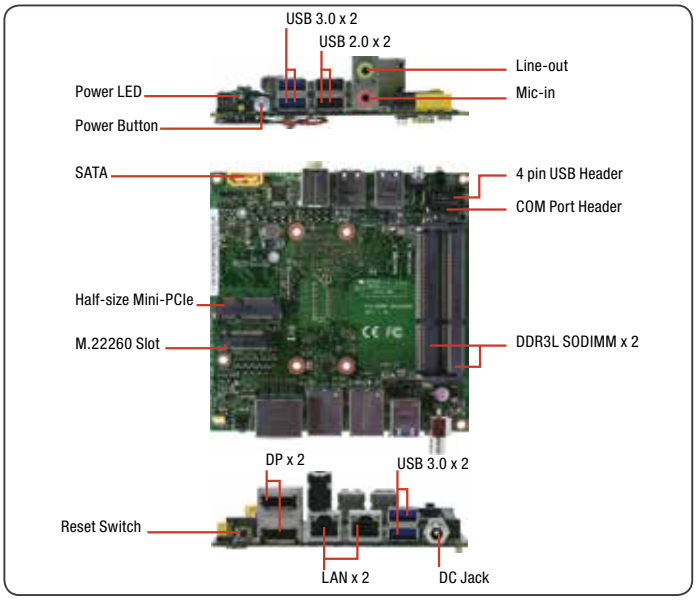
NITX-BD1

Intel® 5th Gen. Processor Nano-ITX Board with DP x 2, LVDS x 1 and USB Port x 7



Features

- **Intel® 5th Generation ULT 15W Processor**
- **Three Independent Display: Display Port x 2, LVDS Port x 1 (Optional)**
- **Dual Gigabit Ethernet**
- **USB 3.0 Port x 4, USB 2.0 Port x 3**
- **Mini-PCIe Slot x 1, M.2 Slot x 1**

Specifications

System	
Processor	Intel® 5th gen. 14nm ULT i7-5650U/ i5-5350U/ i3-5010U, BGA CPU, 15W TDP.
Chipset	Intergrate into SoC
Memory	SODIMM x 2, max. 16GB, DDR3L 1600 MHz, non-ECC, un-buffered memory
Graphics	Integrated Graphics LVDS via Chrontel CH7511, support by add on M2 module
I/O Chipset	NCT5538D
Ethernet	Realtek 8111G Giga LAN 10/100/1000Mb LANs x 2, RJ-45 x 2
Audio	Realtek® ALC887
TPM	—
Expansion Slots	M.2 slot (M-key) x 1, length: 60mm (mSATA colay LVDS), auto detect, Mini-Card half size (USB+PCIe+mSATA) x 1, default USB+PCIe, mSATA BOM change
BIOS	128M 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
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Integrated Graphics, LVDS via Chrontel CH7511, support by add on M2 module
Graphics Multi Display	DP1+DP2+LVDS, DP1+DP2, LVDS+DP1, LVDS+DP2
VGA	—
DVI	—
HDMI	—
Display Port	DP 1.2a (U): 3840 x 2160, (H): 4096 x 2304
LVDS	1920 x 1200
eDP	—
Backlight Control	Yes
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	DC power jack x 1 (DC: 12V~19V, wide rage: 12V-5%~ 19V+10%)
Operating Temperature	32°F ~ 131°F (0°C ~ 50°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	20% ~ 90% RH, non-condensing
Certificate	CE & FCC class A
Form Factor	NANO ITX: 120mm x 120mm (4.72" x 4.72")
Weight	—
MTBF (Hours)	434,910
Front Panel I/O Ports	
USB	USB 3.0 port x 2, USB 2.0 port x 2, USB header support USB 2.0 port x 1 (p=2.00mm)
Display I/O	—
Audio I/O	Audio jack x 2: Line-out (green), Mic-in (pink)
LAN I/O	—
Serial Port	—
PS/2 Port	—
Others	On/Off Button x 1, Power LED + HD LED x 1
Rear Panel I/O Ports	
USB	USB 3.0 port x 2
Display I/O	DP 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 Connectors	
Storage	SATA 6.0 Gb/s port x 1, M.2 slot for mSATA x 1 (optional)
USB	USB header support USB 2.0 port x 1 (p=2.00mm)
Display I/O	LVDS connector x 1, support by add on M.2 module
Audio I/O	—
Serial Port	COM port header x 1, p=1.25mm (RS-232)
PS/2 Port	—
Parallel Port	—
DIO	—
FAN	Chassis Fan connector x 1 (3-pin, p=2.00mm)
Power	SATA power connector x 1, support by add on M.2 module, int. 2-pin reset switch x 1, int. 2-pin power switch x 1,
Others	Mini-Card half size x 1 (USB+PCIe+mSATA, default USB+PCIe, mSATA BOM change), LVDS inverter x 1, support by add on M.2 module
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 64-bit, Linux Fedora

Packing List

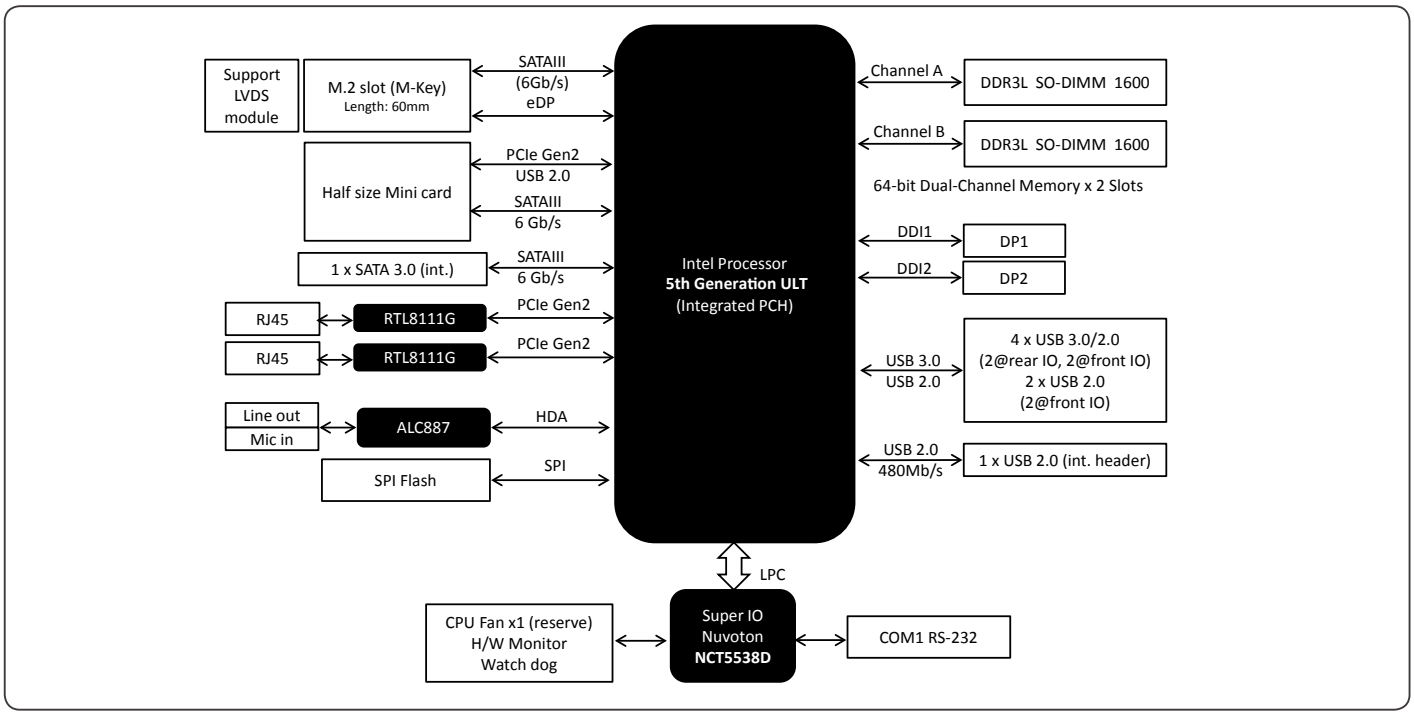
- **NITX-BD1**
- **Product DVD**

Optional Accessories

Part Number	Description
PER-V03B-A10	M2 (M-KEY), LVDS module
1702150300	SATA Power Cable (4P, 300mm, P=2.54mm)
968C032G0Z	M.2 2260 32G SSD
968C064G1G	M.2 2260 64G SSD
968C128G1L	M.2 2260 128G SSD
968C256G0C	M.2 2260 256G SSD
968C512G07	M.2 2260 512G SSD
1701090150	(TF)Flat Cable.D-Sub 9(M).9P Housing.9P 1.25mm pitch Housing.15cm

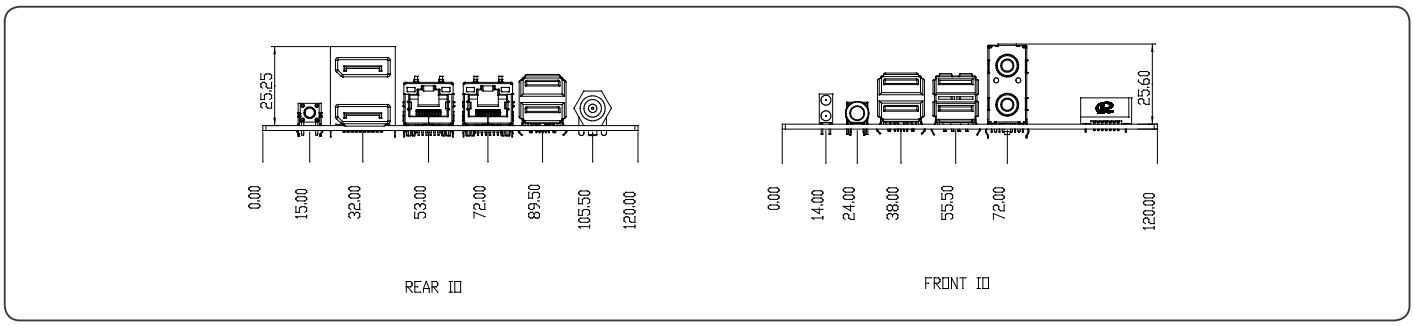
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

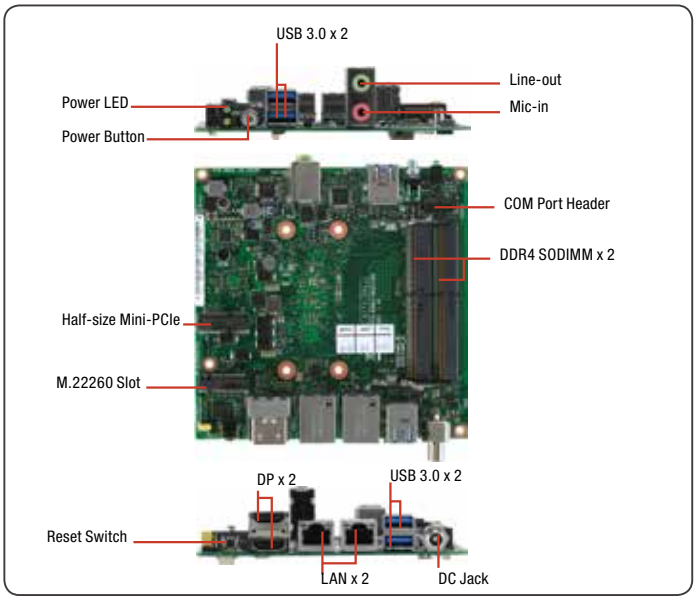


Order Information

Part number	CPU	RAM	Fan/ Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
NITX-BD1-A10-5650	I7-5650U 2.2G/4M	DDR3 1600/1333	Fan/Fanless	DP x 2	SATA3 x 1	support by add on M.2 module	GbE x 2	USB3 x 4, USB2 x 2, Int. USB2 x 1	Int. RS-232 x 1	0	M.2 x 1, Mini PCI-E x 1	DC12-19V	—	32°F ~140°F (0°C ~ 60°C)
NITX-BD1-A10-5350	I5-5350U 1.8G/3M	DDR3 1600/1333	Fan/Fanless	DP x 2	SATA3 x 1	support by add on M.2 module	GbE x 2	USB3 x 4, USB2 x 2, Int. USB2 x 1	Int. RS-232 x 1	0	M.2 x 1, Mini PCI-E x 1	DC12-19V	—	32°F ~140°F (0°C ~ 60°C)
NITX-BD1-A10-5010	I3-5010U 2.1G/3M	DDR3 1600/1333	Fan/Fanless	DP x 2	SATA3 x 1	support by add on M.2 module	GbE x 2	USB3 x 4, USB2 x 2, Int. USB2 x 1	Int. RS-232 x 1	0	M.2 x 1, Mini PCI-E x 1	DC12-19V	—	32°F ~140°F (0°C ~ 60°C)

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



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	
CPU	6th gen. 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	Intergrate into SoC
System Memory	SODIMM x 2, max. 16GB, DDR4 2133/1867 MHz
I/O Chipset	non-ECC, un-buffered memory
Storage Devices	NCT5538D
Ethernet	Realtek 8111G Giga LAN 10/100/1000Mb LAN x 2, RJ-45 x 2
Audio	Realtek® ALC887
TPM	No
Expansion Slots	M.2 2280 M-Key slot x 1(PCIex4+mSATA), default mSATA M.2 2230 E-Key slot x 1(PCIe+USB), default PCIe
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
Resolution	HDMI 1.4 up to 4096x2160@24Hz
Brightness Control	—
Graphics Multi Display	HDMI+HDMI
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
Operating Humidity	20%~90%RH, non-condensing
Certificate	CE & FCC class A
Form Factor	NANO ITX: 120mm x 120mm (4.72" x 4.72")
Weight	—
Front Panel I/O	
USB	USB 3.0 port x 2
Audio	Audio Jack x 2: Line-out (green), Mic-in(pink)
Serial port	COM port RS-232
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	
Storage	M.2 2280 M-Key slot x 1 for mSATA
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	
MS Windows	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.

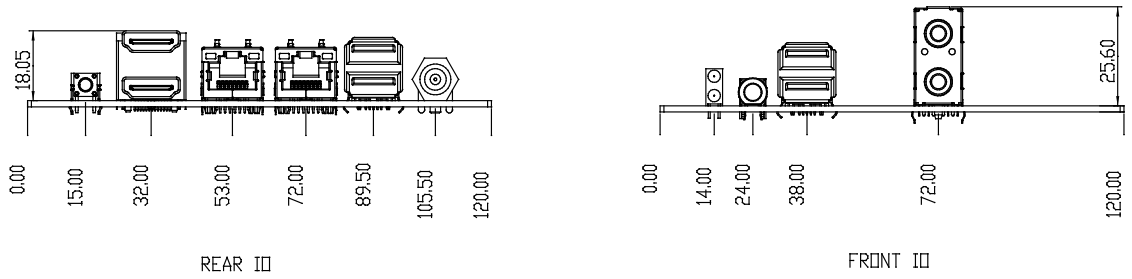
NITX-SKL1

Block Diagram

Launching in Q1

Dimension

Unit: mm

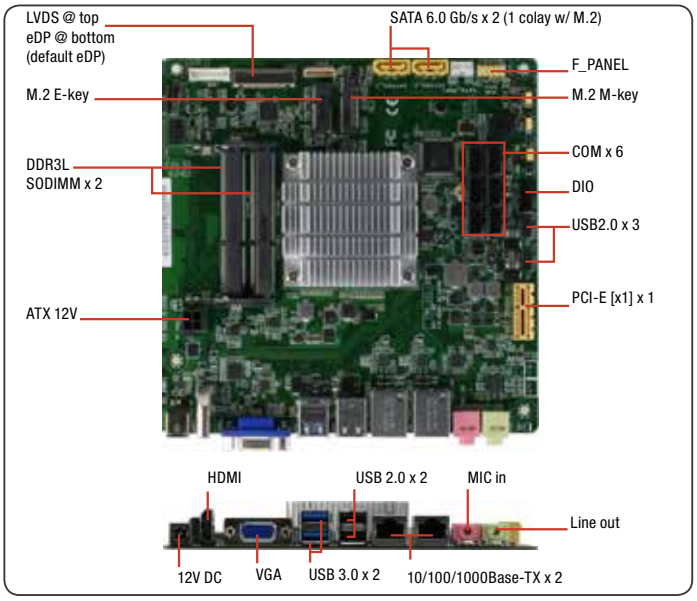


Ordering Information

P/N	CPU	RAM	Display	Cooler	Storage	LAN	USB	COM Header	Expansion Slot	Power
NITX-SKL1-A10-3955	Celeron 3955U 2.0G/2M	DDR4 2133/1867 SODIMM	HDMI x 2	Fan/Fanless	M.2 2280 Slot	GbE x 2	USB3.0 Port x 4	RS-232 x 1 9P,1.25MM	M.2 2230 x 1	DC12-19V
NITX-SKL1-A10-6100	I3-6100U 2.3G/3M	DDR4 2133/1867 SODIMM	HDMI x 2	Fan/Fanless	M.2 2280 Slot	GbE x 2	USB3.0 Port x 4	RS-232 x 1 9P,1.25MM	M.2 2230 x 1	DC12-19V
NITX-SKL1-A10-6300	I5-6300U 2.4G/3M	DDR4 2133/1867 SODIMM	HDMI x 2	Fan/Fanless	M.2 2280 Slot	GbE x 2	USB3.0 Port x 4	RS-232 x 1 9P,1.25MM	M.2 2230 x 1	DC12-19V
NITX-SKL1-A10-6600	I7-6600U 2.6G/4M	DDR4 2133/1867 SODIMM	HDMI x 2	Fan/Fanless	M.2 2280 Slot	GbE x 2	USB3.0 Port x 4	RS-232 x 1 9P,1.25MM	M.2 2230 x 1	DC12-19V

EMB-APL1

Mini-ITX Embedded Motherboard with Intel® Atom™ N3350(DC)/N3450(QC) 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)**
- **Onboard TPM2.0 Optional**
- **12~24 Wide Range Voltage Power Input**
- **Low Profile**
- **PCIe[x1] x 1, M.2 x 2**

Specifications

System	
Processor	Intel® N3450 Processor (4C, 2.2GHz (burst mode), 200/700 MHz GFX, ~6W TDP) Intel® N3350 Processor (2C, 2.4GHz (burst mode), 200/650 MHz GFX, ~6W TDP)
Chipset	Intergrate into SoC
Memory	DDR3L 1333/1600/1867MHz SODIMM x 2, max. 8GB, non-ECC, un-buffered memory
I/O Chipset	F81866D
Ethernet	Realtek PCIe Gb LAN 8111G x 2
Audio	Realtek® ALC3236-CG
TPM	Nuvoton NPCT650ABAYX TPM2.0 (option)
Expansion Slots	PCIe [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 x 1 (Fanless)
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	3 independent display
VGA	Up to 1920 x 1200 @60Hz
DVI	—
HDMI	Up to 3840 x 2160 @ 30Hz
Display Port	—
LVDS	Up to 1920 x 1080 @60Hz, Daul 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 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)	—

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.2 M key (22 x 42mm) x 1
USB	USB 2.0 headers support additional 3 USB ports (2*5PIN, 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	PS/2 header x 1
Parallel Port	—
DIO	8-bit x 1 (In/Out programmable)
FAN	4-pin Chassis Fan x 1
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, Linux Fedora

Packing List

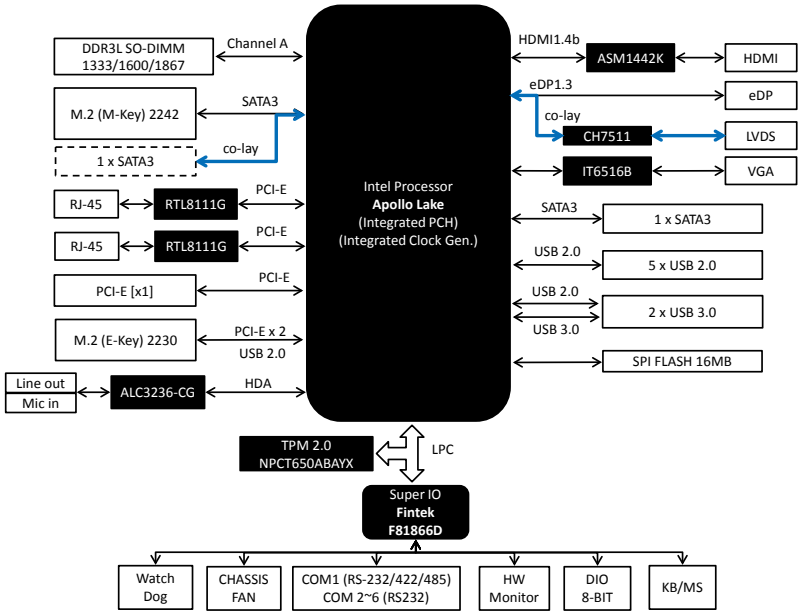
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in1)
- **14001-00230100**
  SATA to Power Cable (4P, 120MM)
- **Heatsink**
- **I/O Shield**
- **Product CD**
- **EMB-APL1**

Optional Accessories

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

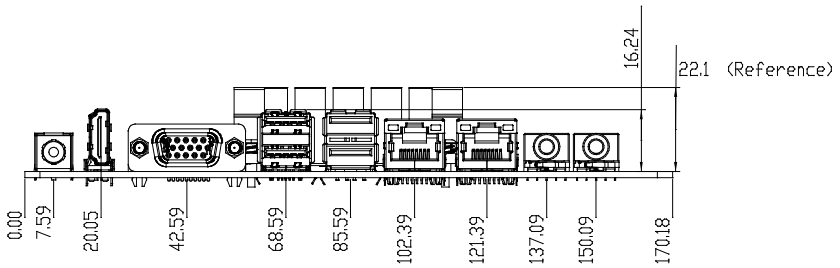
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

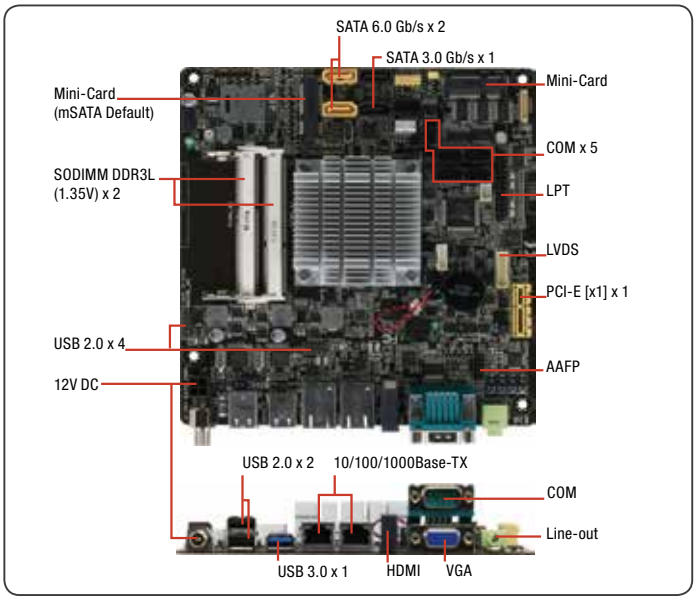


Ordering Information

- **TBD**

EMB-BT1

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



Features

- **Intel® Atom™ J1900/N2807/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**

Specifications

System	
Processor	Intel® Atom™ J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP), Intel® Atom™ 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
Graphics	Intel® HD Graphics
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%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)	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 (2x5PIN, 2.54mm) x 2 ports support additional 4 USB, USB 2.0 (1x 5PIN, 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

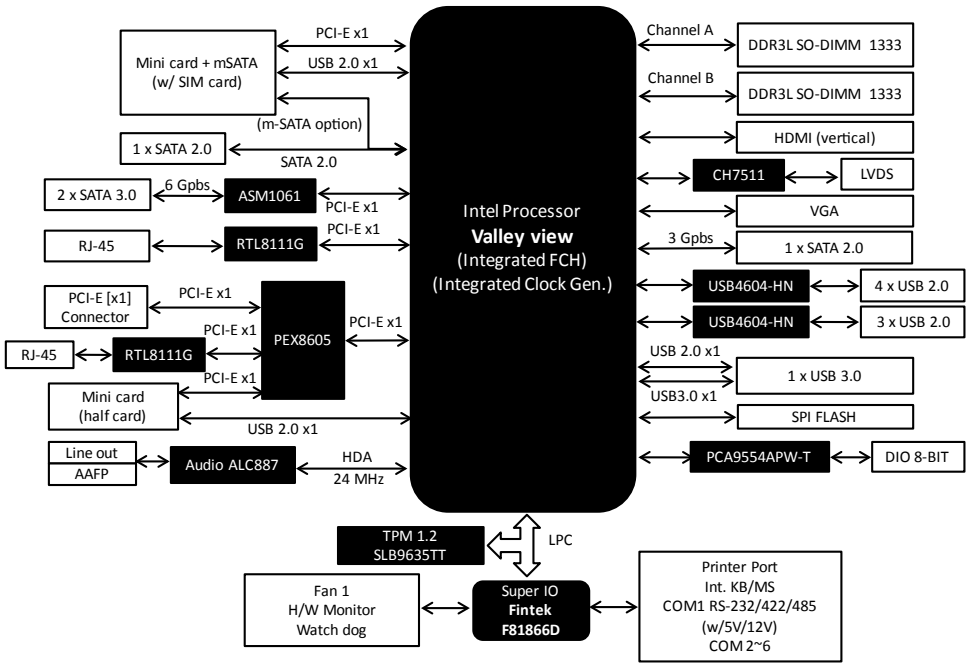
- **SATA Cable**
- **SATA Power Cable**
- **I/O Shield**
- **Heatsink**
- **Product CD**
- **EMB-BT1**

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

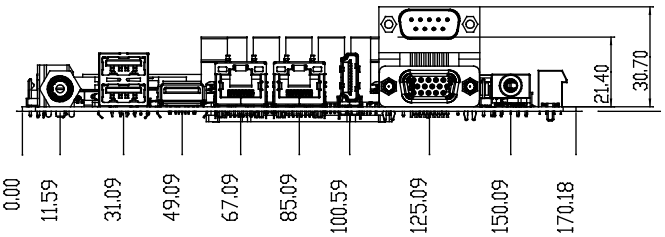
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

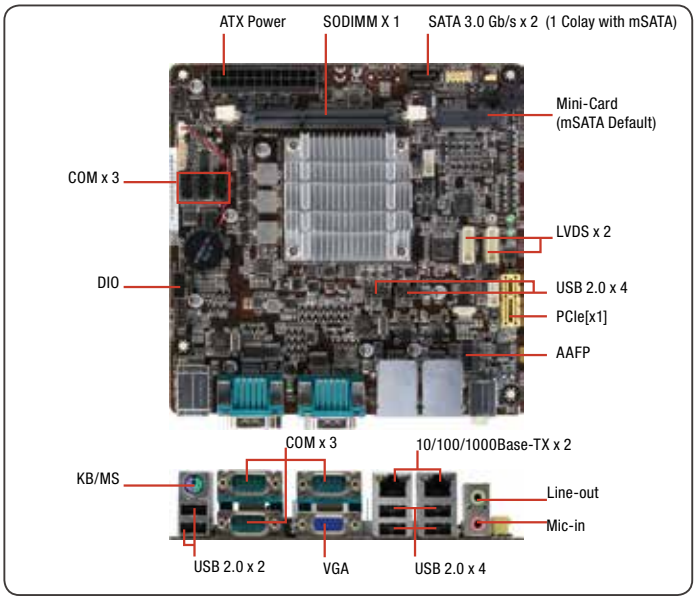


Ordering Information

Part Number	CPU	RAM	Fan/ Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-BT1-A22-1900-MS	J1900 C0	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	No	32°F ~ 140°F (0°C ~ 60°C)
EMB-BT1-A22-2807-MS	N2807 C0	DDR3L-1333 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	No	32°F ~ 140°F (0°C ~ 60°C)
EMB-BT1-A22-3845-MS	E3845 D0	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	No	32°F ~ 140°F (0°C ~ 60°C)
EMB-BT1-A22-3825-MS	E3825 D0	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	No	32°F ~ 140°F (0°C ~ 60°C)
EMB-BT1-A22-1900-NoCOM	J1900 C0	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	4	1	PCIe [x1] x 1, half size Mini-Card x 1 (PCIe [x1] x 1 & USB)	12V DC	No	32°F ~ 140°F (0°C ~ 60°C)

EMB-BT2

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



Features

- **Intel® Atom™ 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® Atom™ 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
Graphics	Intel® HD Graphics
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%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)	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 (2x5PIN, 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

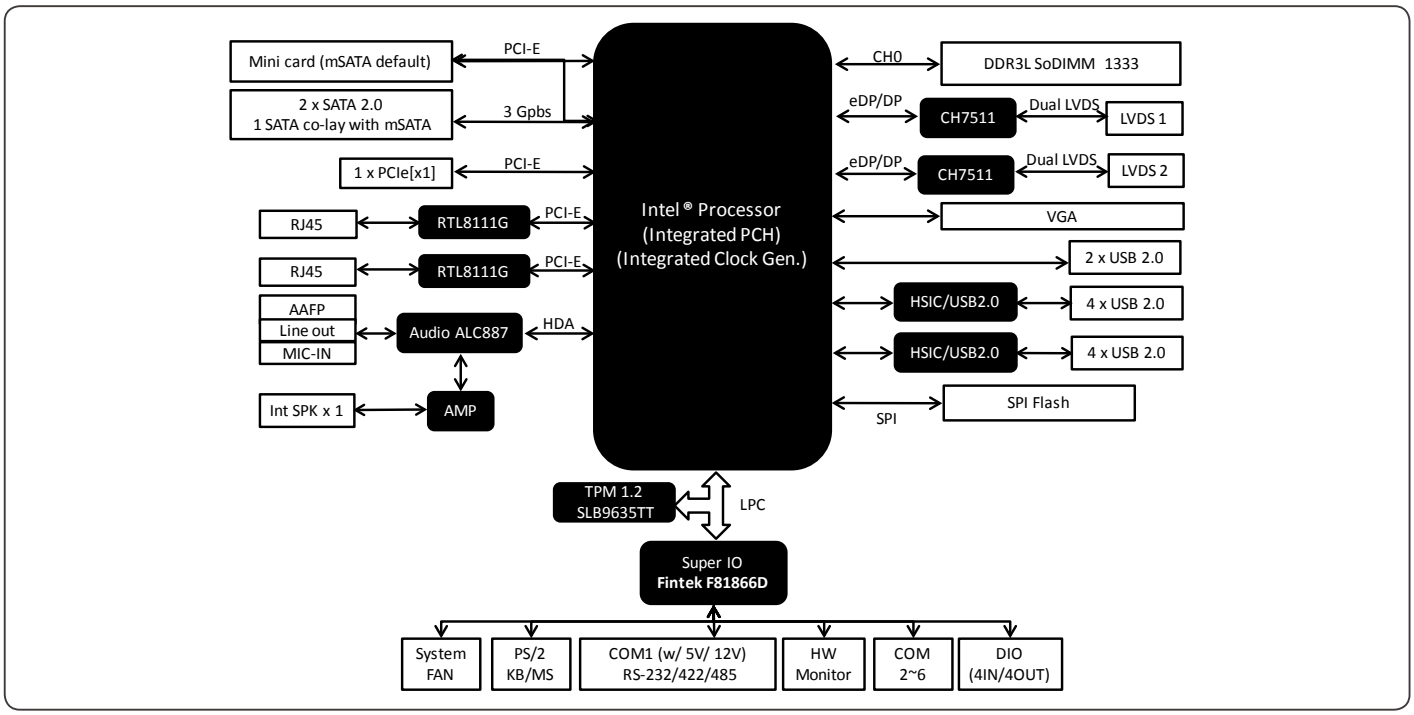
- **SATA 3G Cable**
- **Heatsink**
- **I/O Shield**
- **Product CD**
- **EMB-BT2**

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)

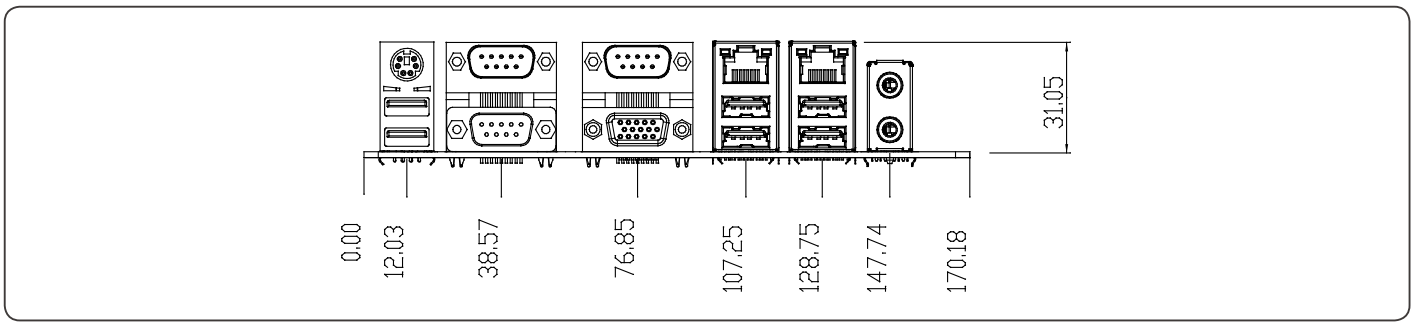
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

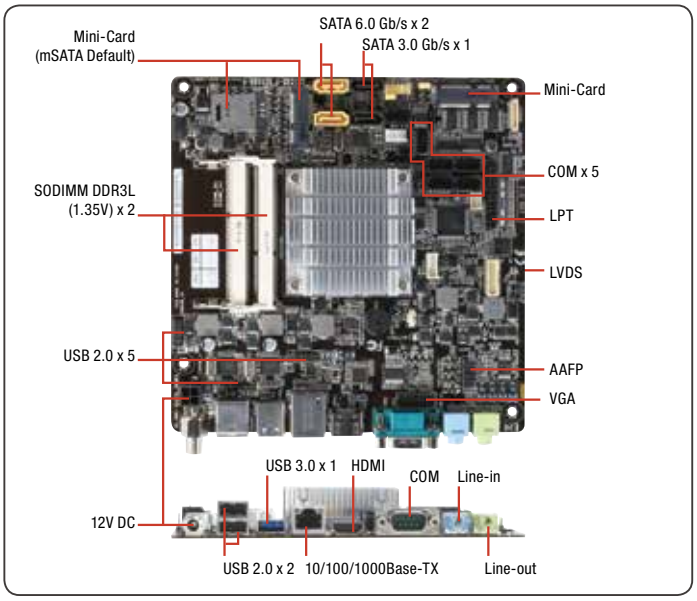


Order Information

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)

EMB-BT4

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



Features

- **Intel® Atom™ 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**

Specifications

System	
Processor	Intel® Atom™ J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP), Intel® Atom™ 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
Graphics	Intel® HD Graphics
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%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)	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 (2x5PIN, 2.54mm) x 2 ports support additional 4 USB, USB 2.0 (1x 5PIN, 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

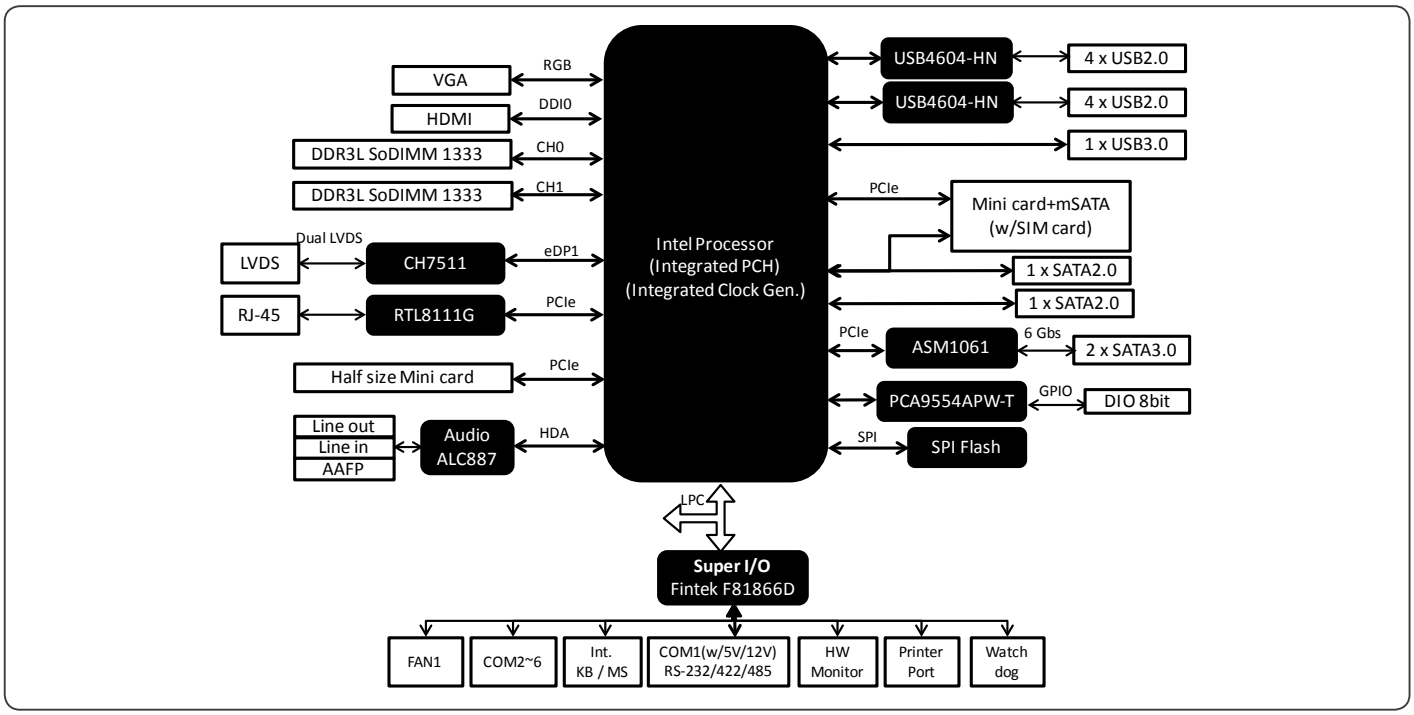
- **SATA Cable**
- **SATA Power Cable**
- **I/O Shield**
- **Heatsink**
- **Product CD**
- **EMB-BT4**

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

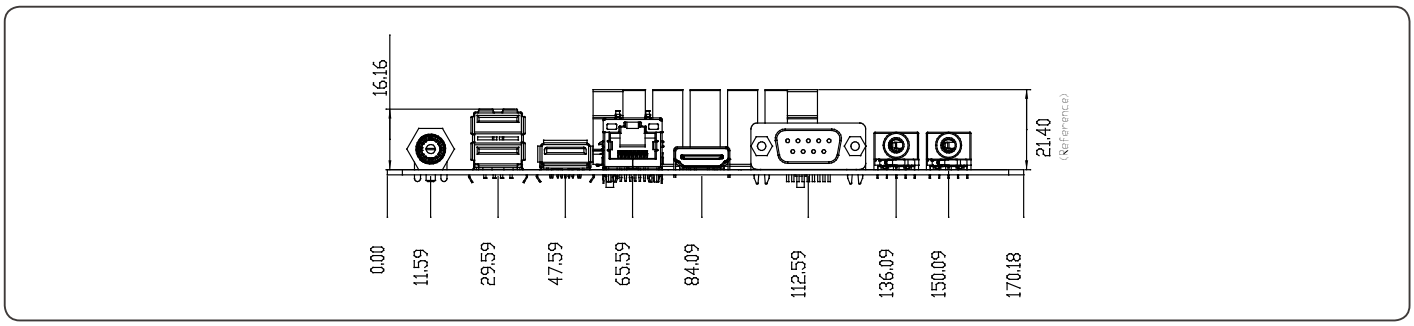
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

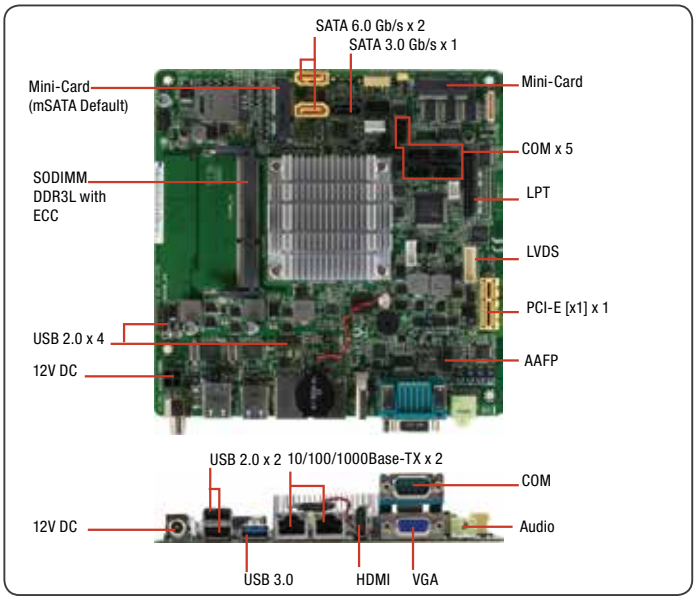


Order Information

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	No	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	No	32°F ~ 140°F (0°C ~ 60°C)

EMB-BT7

Mini-ITX Embedded Motherboard with Intel® Atom™ E3845 Processor, SATA3 x 2, SATA2 x 2, USB x 8



Features

- **Intel® Atom™ E3845 Processor**
- **ECC SODIMM x 1, up to 8GB**
- **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 with mSATA x 1, Half-size Mini-Card x 1, PCI-E [x1] x 1**

Specifications

System	
Processor	Intel® Atom™ E3845 Processor (4C @ 1.91 GHz CPU, 542/792 MHz GFX, 10W TDP)
Chipset	—
Memory	DDR3L 1333 MHz SODIMM x 1 up to 8 GB, ECC, un-buffered memory, flat type
Graphics	Intel® HD Graphics
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) + 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%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)	283,770
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) 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 (2x5PIN, 2.54mm) x 2 ports support additional 4 USB, USB 2.0 (1x 5PIN, 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

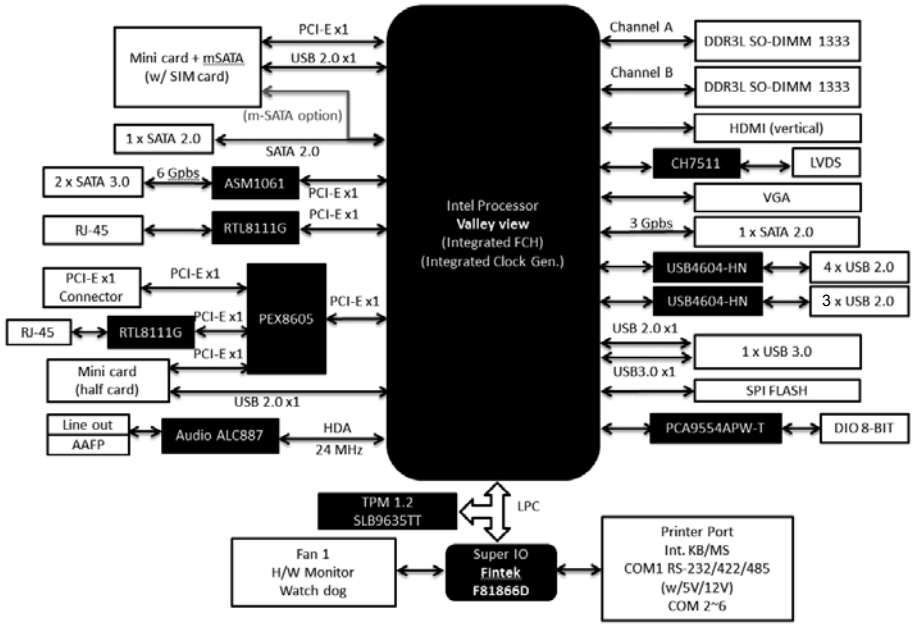
- **SATA Cable**
- **SATA Power Cable**
- **I/O Shield**
- **Heatsink**
- **Product CD**
- **EMB-BT7**

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

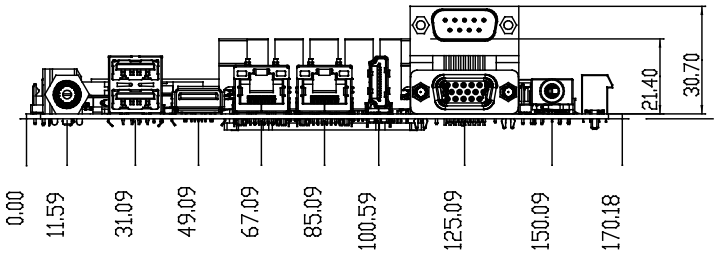
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

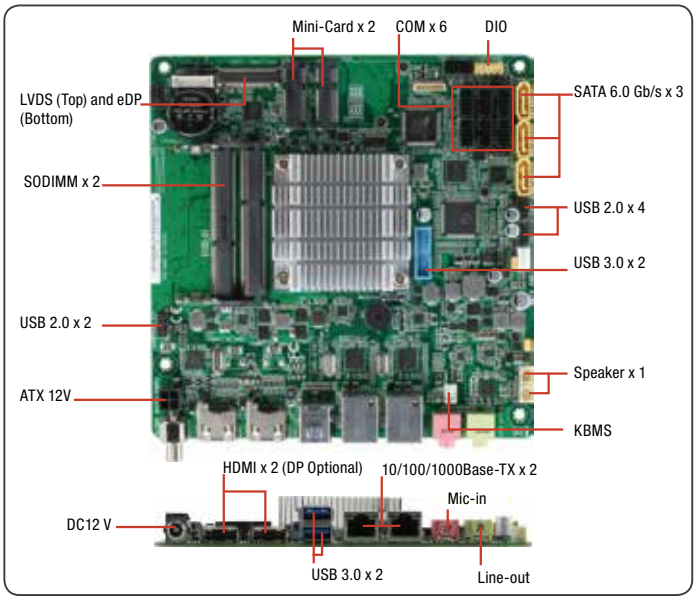


Order Information

Part Number	CPU	RAM	Fan/ Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-BT7-A11-3845-MS	E3845 D0	DDR3L-1333 x 1 ECC Supported	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	No	32°F ~ 140°F (0°C ~ 60°C)

EMB-BSW1

Thin Mini-ITX Embedded Motherboard with Intel® Atom™ N3710/N3060 Processor, SATA 6.0 Gb/s x 3, USB x 10



Features

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

Specifications

System	
Processor	Intel® Atom™ N3710 Processor, (4C @ 2.4GHz CPU (Burst Mode), 400/700 MHz GFX (Turbo), ~6W TDP), Intel® Atom™ N3060 Processor, (2C @ 2.08GHz CPU (Burst Mode), 20/600MHz 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
Graphics	Intel® HD Graphics
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 1080 @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%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)	229,000
Rear Panel I/O Ports	
USB	USB 3.0 x 2
Display I/O	HDMI 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 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 (2x5PIN, 2.00mm) x 3 ports support additional 6 USB
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, Linux Fedora

Packing List

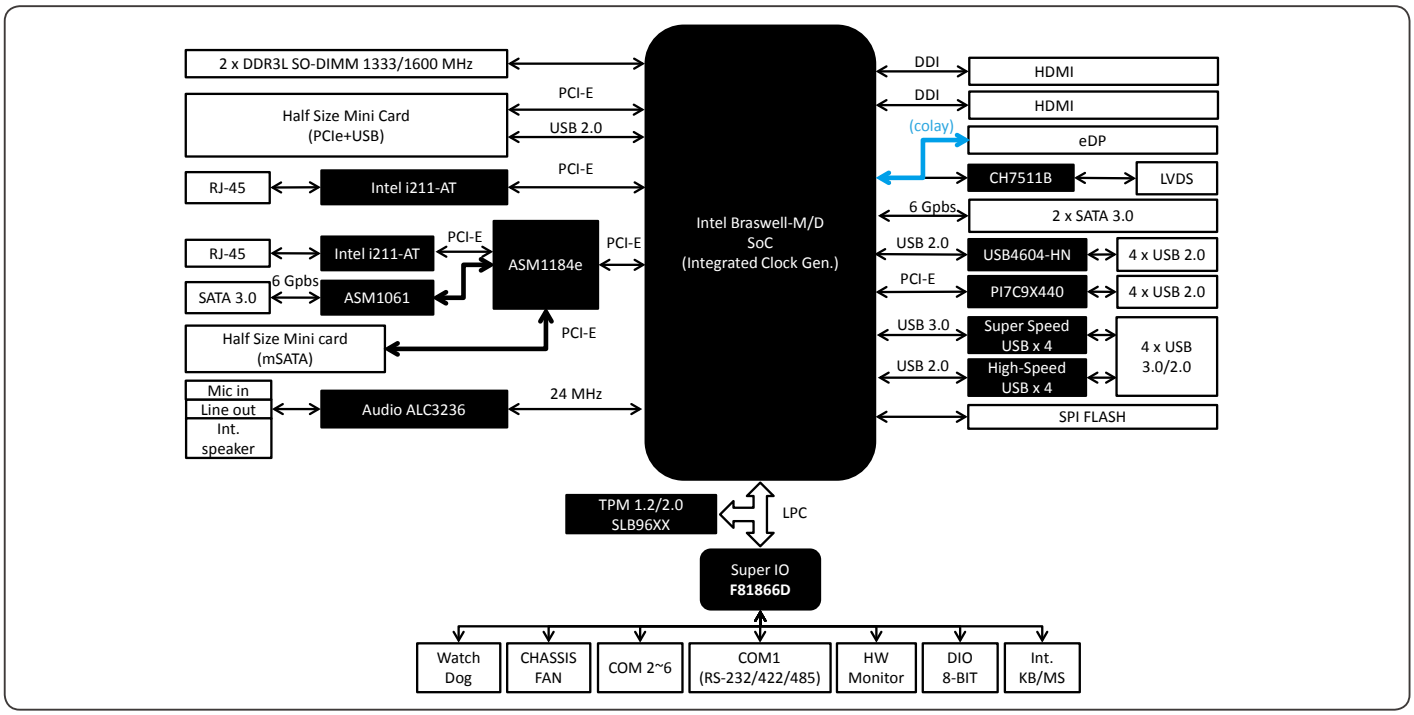
- **SATA Cable**
- **SATA Power Cable**
- **I/O Shield**
- **Heatsink**
- **Product CD**
- **EMB-BSW1**

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)

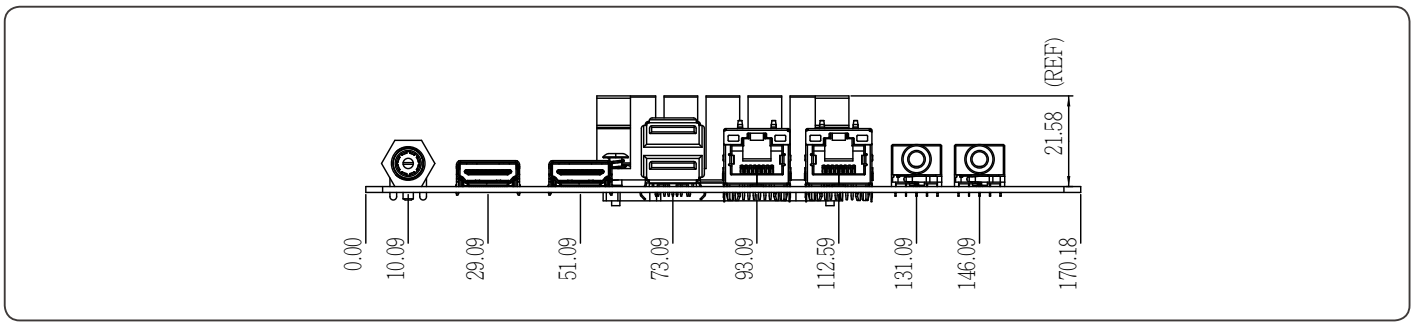
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

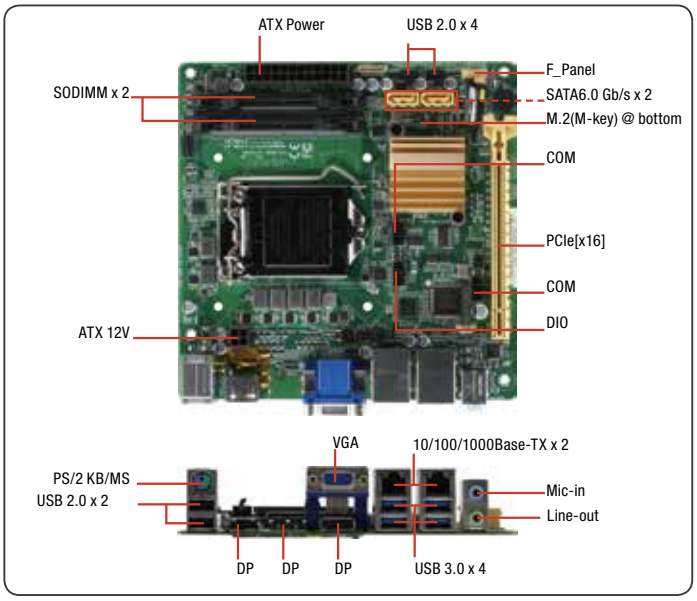


Order Information

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	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	0°C ~ 60°C

EMB-Q170A

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

Specifications

System	
Processor	Intel® 6th Generation 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
Graphics	Intel® HD Graphics
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	PCIe [x16] x 1, M.2 M-key(22x80mm) 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%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)	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 (6.0Gb/s) x 2, SATA power connector x 1, M.2 M-key(22 x 80mm) at bottom side x 1
USB	USB 2.0 (2x5PIN, 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	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 on board 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

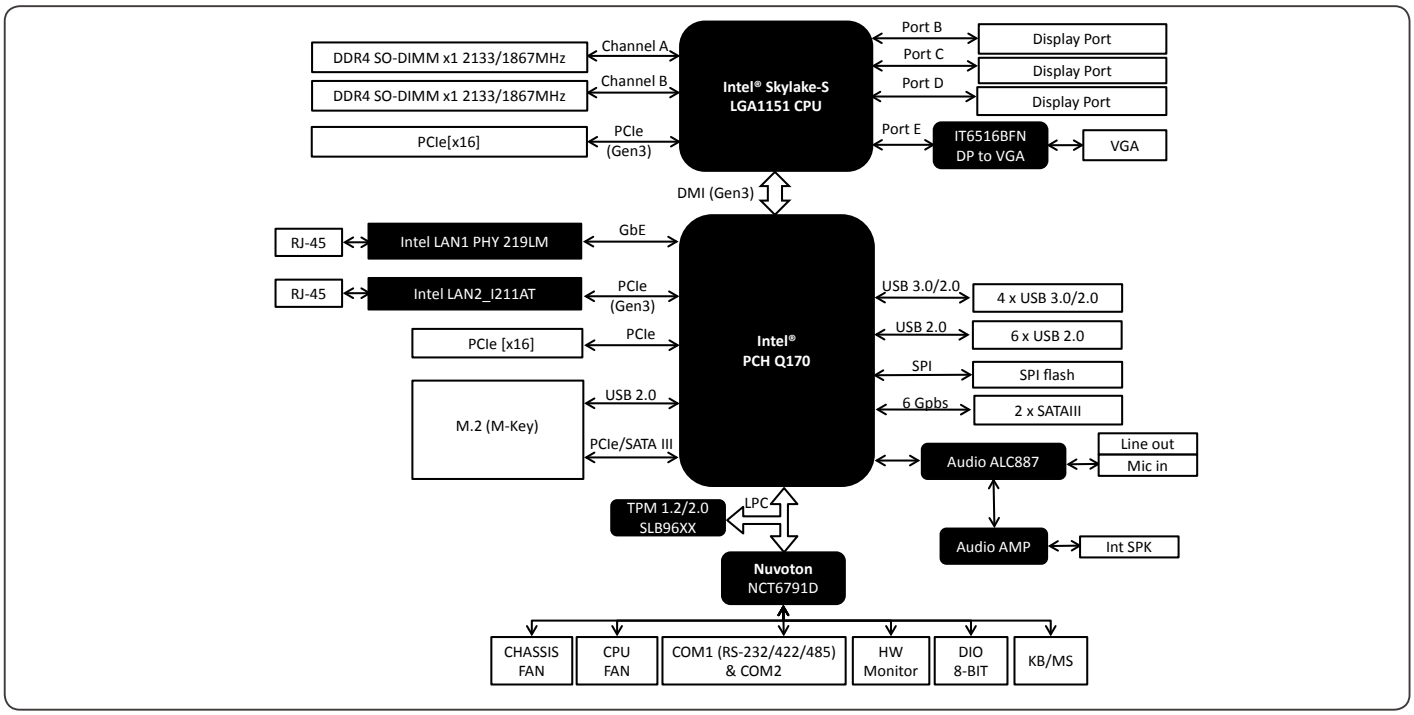
- **SATA Cable**
- **I/O Shield**
- **Product DVD**
- **EMB-Q170A**

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)

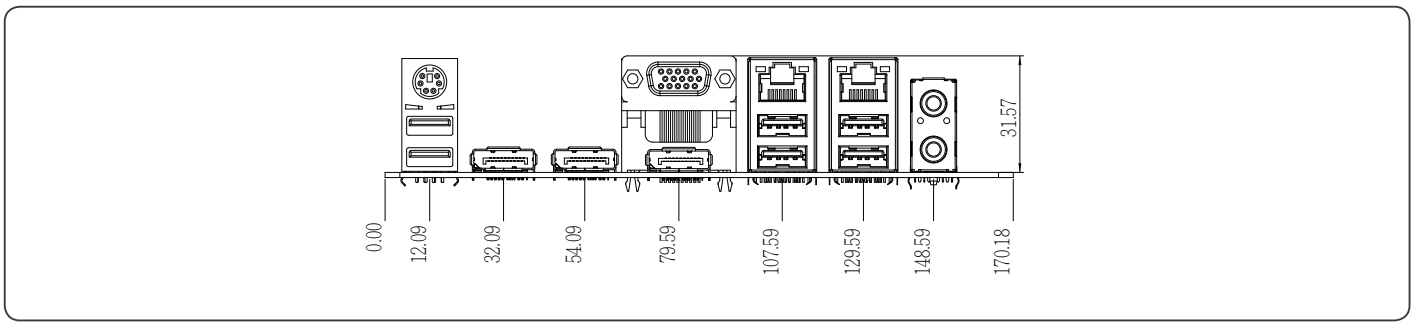
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

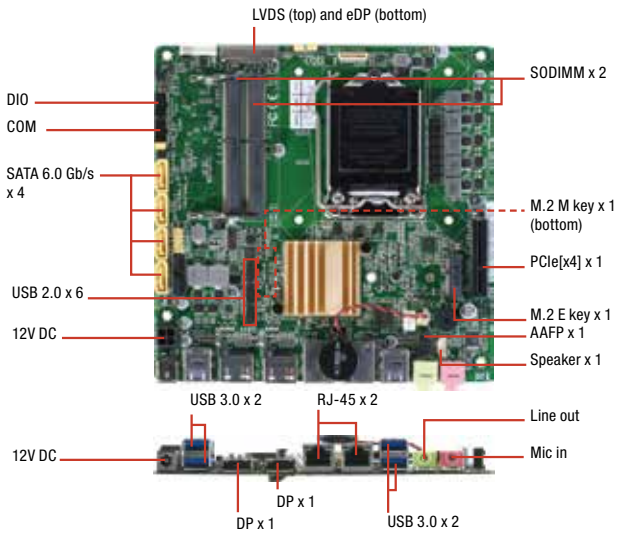


Ordering Information

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	Socket	SODIMM x 2	Fan	VGA x 1, DP x 3	SATA3 x 2, M.2 (M-key) (22x80mm) @ bottom side x 1	No	GbE x 2	USB3.0 x 4, USB2.0 x 6	1	1	PCIe [x16] x 1 M.2, M-key (22x80mm) @ bottom side x 1	ATX	No	0°C ~ 60°C

EMB-Q170B

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



Features

- **Intel® 6th Generation 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 Support iAMT11.0**

Specifications

System	
Processor	Intel® 6th Generation 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
Graphics	Intel® HD Graphics
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 [x4] 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
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 (2x5PIN, 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 on board (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-Q170B**

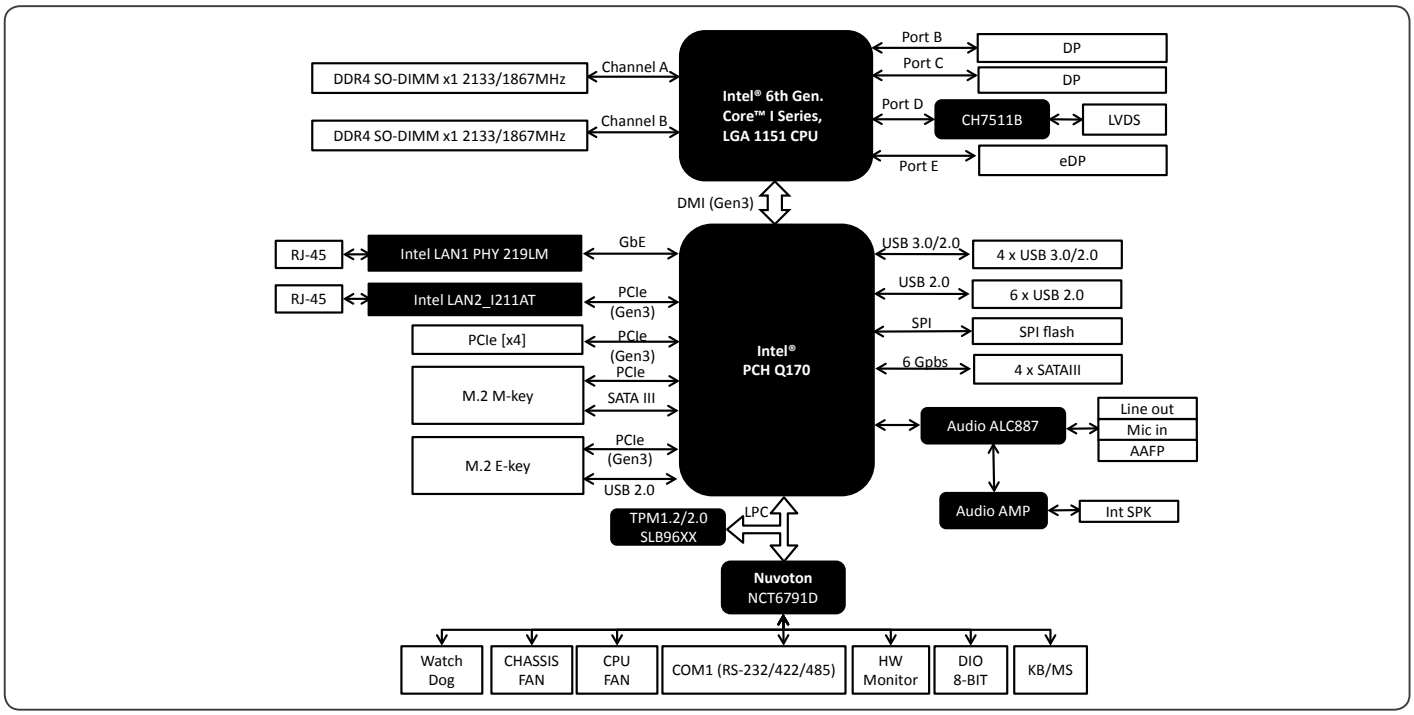
Optional Accessories

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.

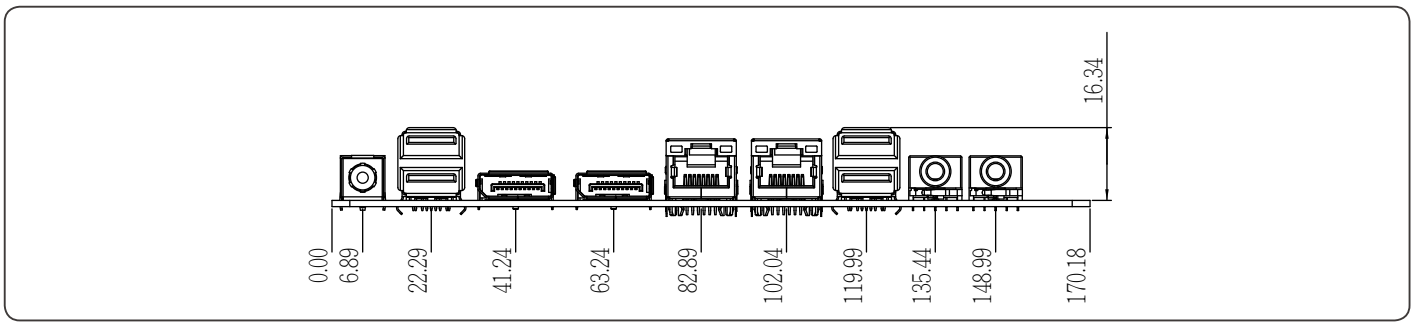
EMB-Q170B

Block Diagram



Dimension

Unit: mm

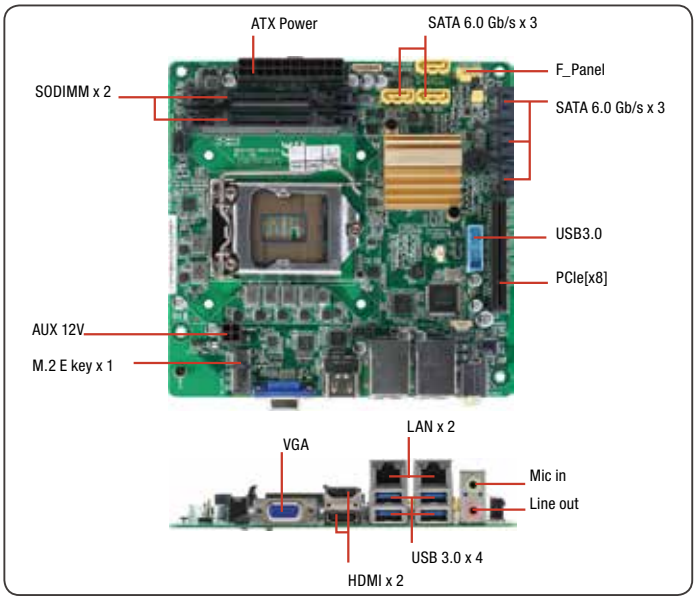


Order Information

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	Socket	SODIMM x 2	Fan	DP x 2, LVDS x 1, eDP x 1	SATA3 x 4, M.2 (M-key) x 1	Dual Channel 18/24-bit	GbE x 2	USB3.0 x 4, USB2.0 x 6	0	1	PCIe [x4] x 1, M.2 (M-key) x 1, M.2 (E-key) (22 x 30mm) x 1	12V DC	No	32°F ~ 140°F (0°C ~ 60°C)

EMB-Q170C

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



Features

- **Intel® 6th Generation 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 Support iAMT11.0**

Specifications

System	
Processor	Intel® 6th Generation 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
Graphics	Intel® HD Graphics
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	PCIe [x8] x 1, M.2 E-key (22x30mm) 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
Power Compliance	—
Operating Temperature	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(22x30mm) for PCIe x 1, Front Panel connector x 1, Chassis Intrusion x 1, Buzzer on board x 1, CMOS jumper x 1,
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 64-bit, Windows® 10 64-bit, Linux Fedora (uBuntu)

Packing List

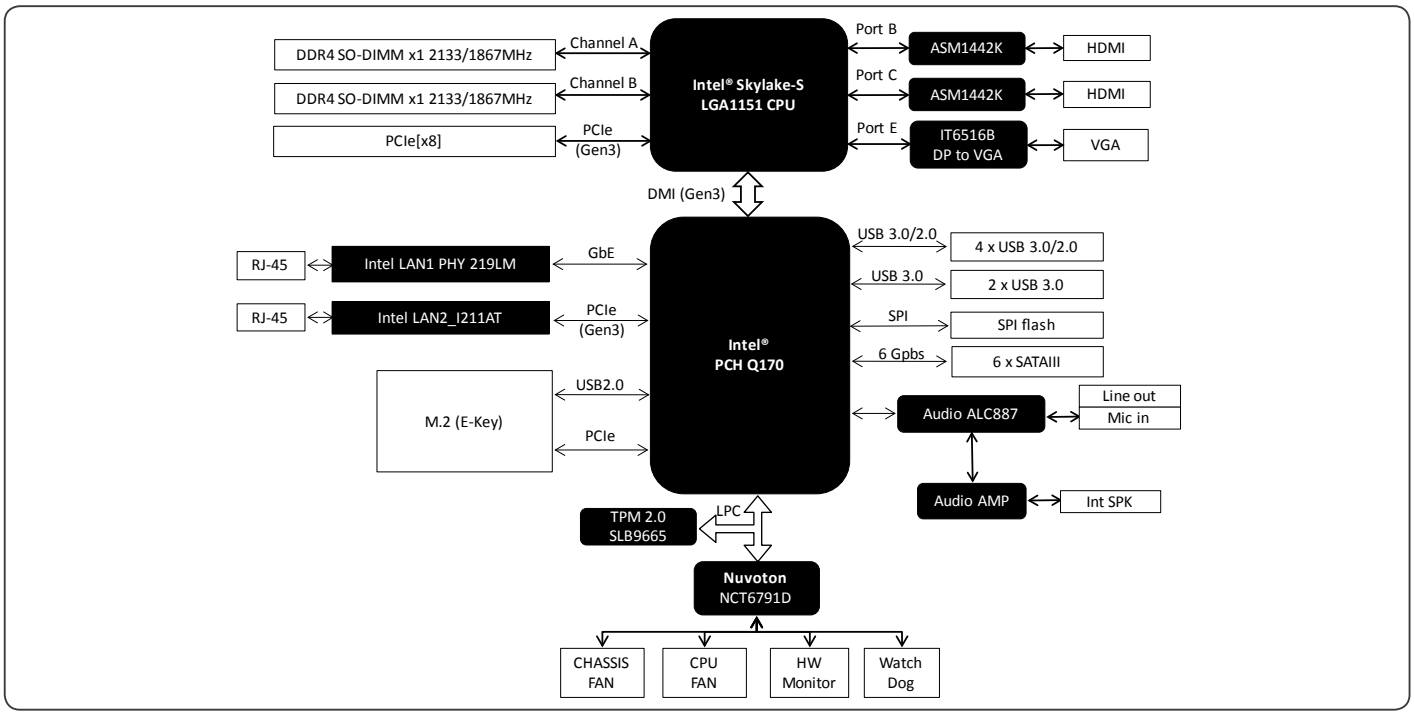
- **SATA Cable**
- **I/O Shield**
- **Product DVD**
- **EMB-Q170C**

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
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1709100201	USB 2.0 Cable (10P, 200mm, p=2.00mm w/ bracket)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)

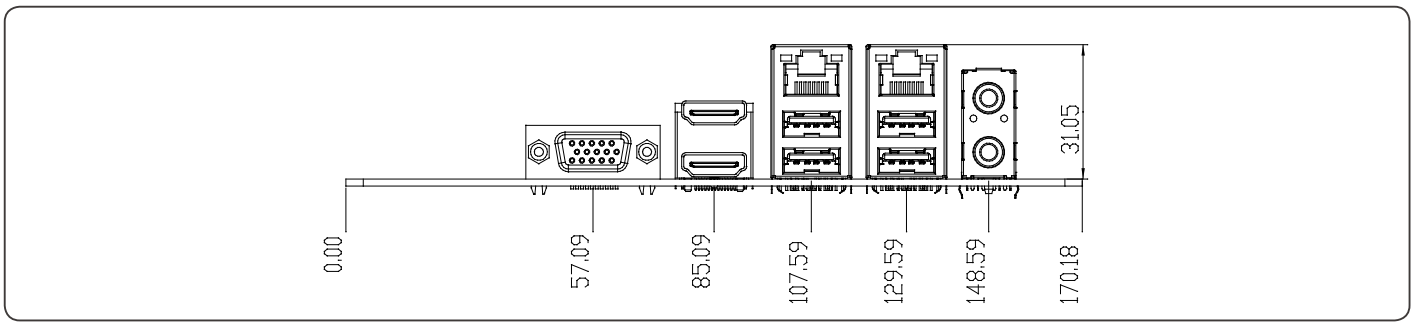
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

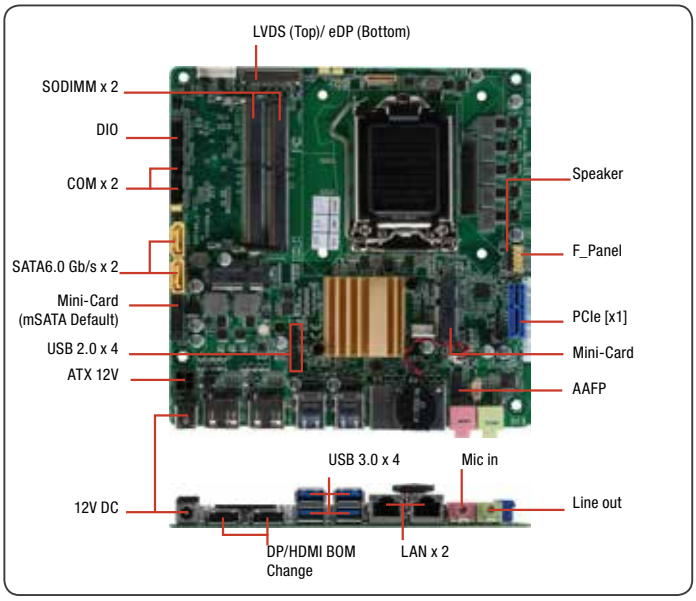


Order Information

Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-Q170C-A10	Socket	SODIMM x 2	Fan	VGA x 1, HDMI x 2	SATA3 x 6	No	GbE x 2	USB3.0x 6	0	0	PCIe [x8] x 1 M.2, E-key (22x30mm) x 1	ATX	No	32°F ~ 140°F (0°C ~ 60°C)

EMB-H110B

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



Features

- **LGA1151 Socket For 6th Gen. 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/DP/eDP**

Specifications

System	
Processor	Intel® 6th Generation 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
Graphics	Intel® HD Graphics
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	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	—
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 4096 x 2160 @24 Hz / 3840 x 2160 @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%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)	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 (2x5PIN, 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 on board (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

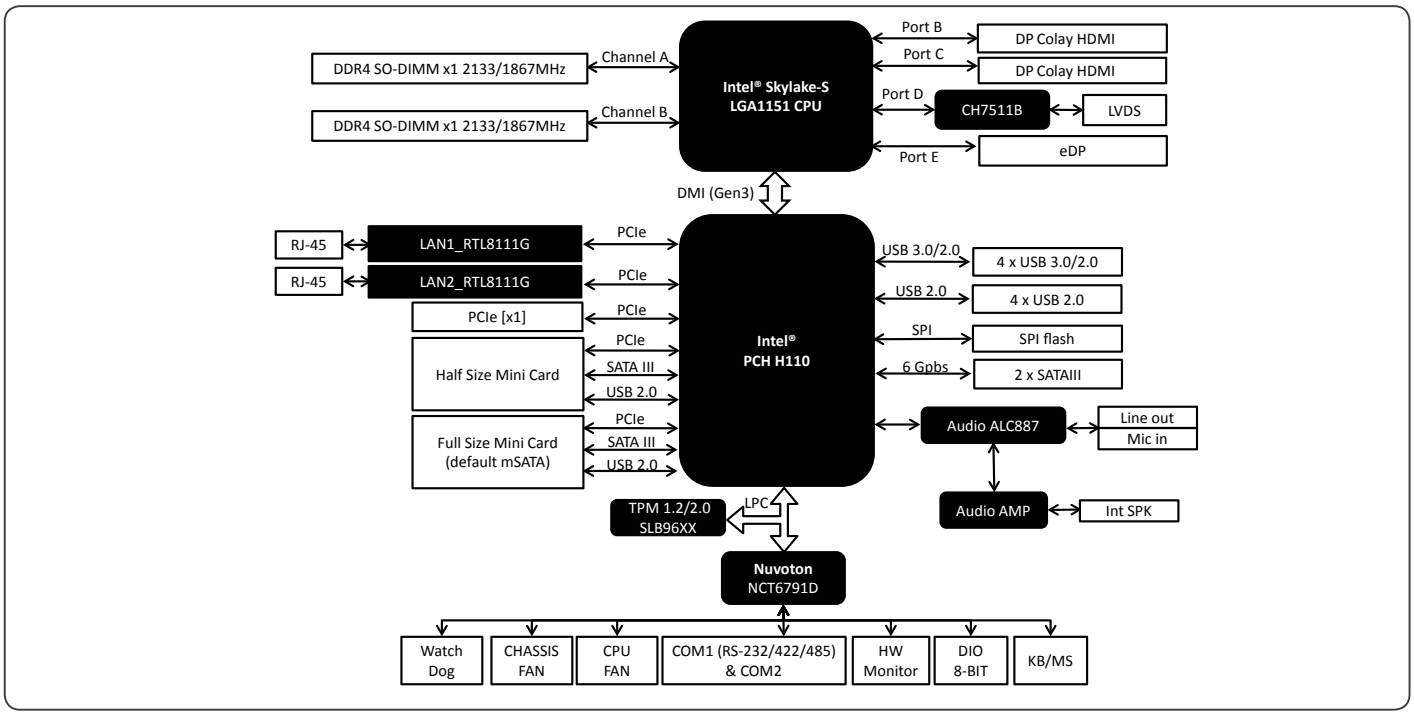
- **SATA Cable**
- **SATA Power Cable**
- **I/O Shield**
- **Product DVD**
- **EMB-H110B**

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)

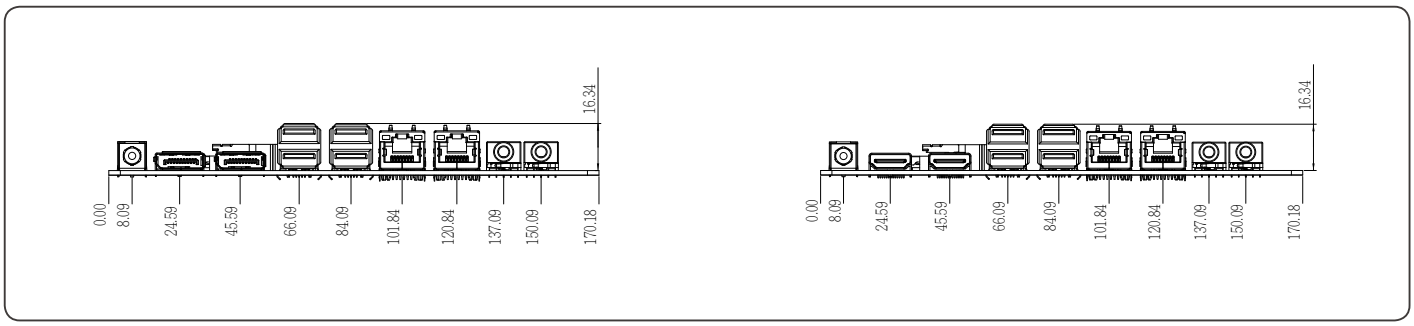
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

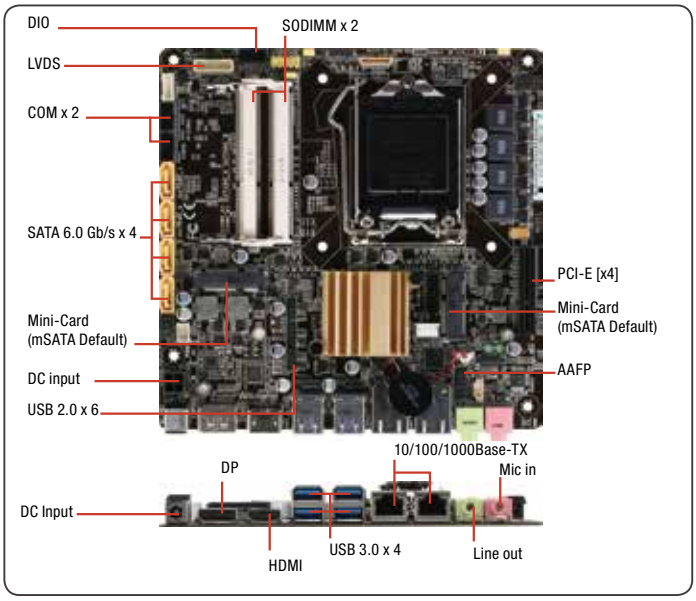


Ordering Information

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	Socket	SODIMM x 2	Fan	HDMI x 2, LVDS x 1, eDP x 1	SATA3 x 2, Full/Half Size Mini Card (mSATA) x 1	Dual Channel 18/24 bit colay	GbE x 2	USB3.0 x 4, USB2.0 x 4	1	1	PCIe[x1] x 1 Half Size Mini Card (PCIe+USB) x 1	12V DC	No	32°F ~ 140°F (0°C ~ 60°C)

EMB-Q87A

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



Features

- **LGA1150 Socket For Intel® 4th Generation Core™ i Series 22nm Processor**
- **LAN1 Support 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**
- **DC 12~24V**
- **Low Profile**

Specifications

System	
Processor	Intel® 4th Gen. 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)
Graphics	Intel® HD Graphics
I/O Chipset	NCT6791D
Ethernet	Intel® PHY I217LM Giga LAN x 1, Intel® I210AT Giga 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 BIOS), Half-size Mini-Card x 1 (PCIe+USB default, selected by BIOS).
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%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)	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 (2x5PIN, 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

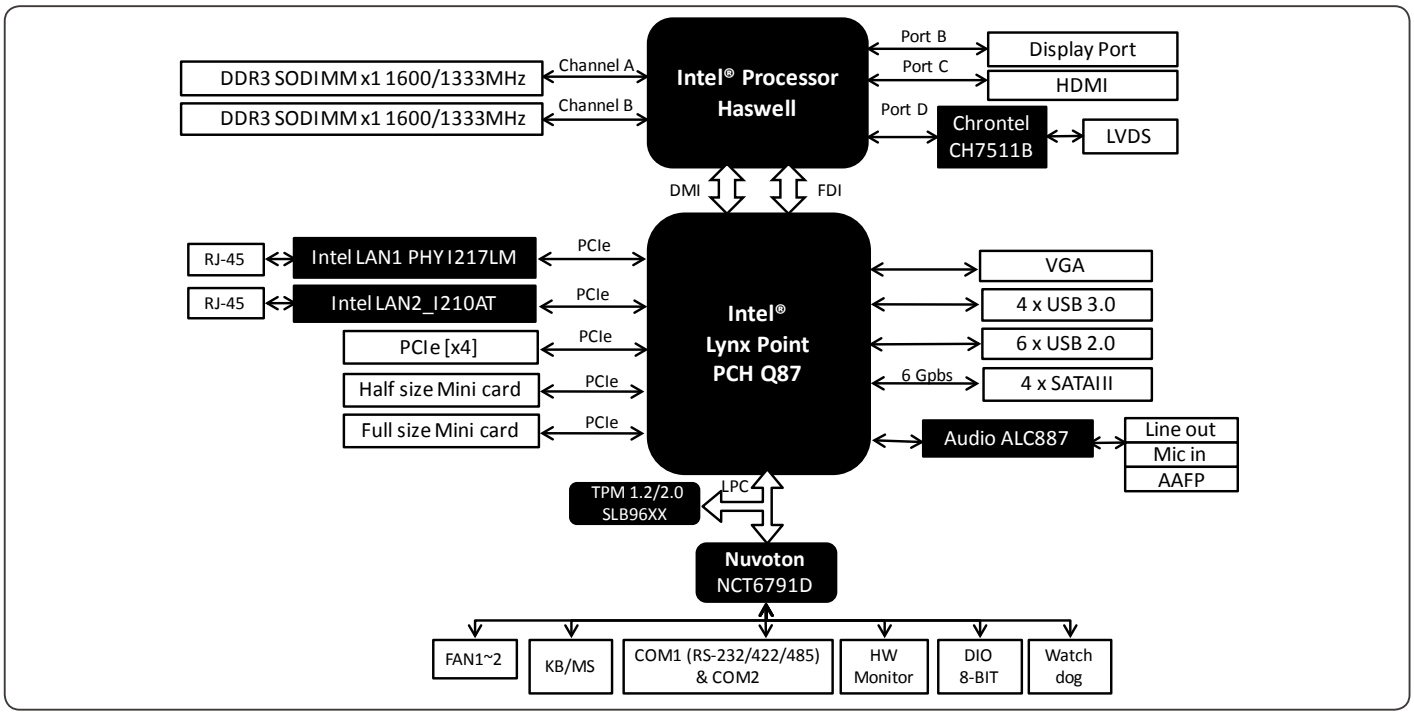
- **SATA Cable**
- **SATA Power Cable**
- **I/O Shield**
- **Product CD**
- **EMB-Q87A**

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

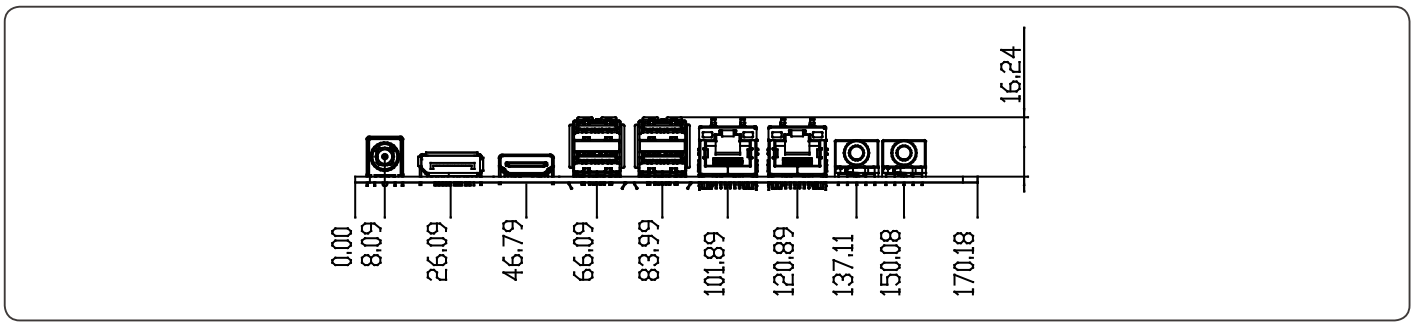
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

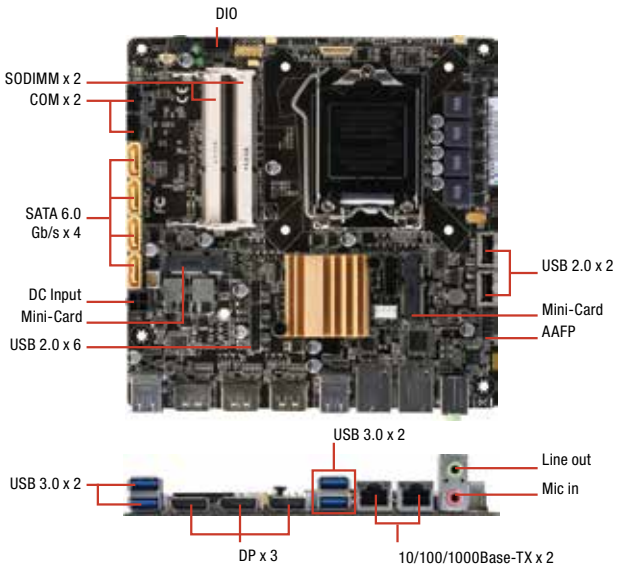


Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	LVDS	Storage	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-Q87B

Mini-ITX, LGA1150 Socket for Intel® 4th Gen Core™ i Series Processor with 12V~24V Wide Range Power Input, USB x 12, DP x 3



Features

- **Intel® 4th Generation Core™ i Series 22nm Processor**
- **DDR3 1333/1600 MHz SODIMM x 2, Up to 16 GB**
- **Three Independent Display: DP x 3**
- **SATA 6.0 Gb/s x 4**
- **USB 3.0 x 4, USB 2.0 x 8**
- **Full-size Mini-Card with Default mSATA x 1, Half-size Mini-Card with Optional mSATA x 1**
- **DC 12V ~ 24V**
- **LAN1 Support iAMT9.0**

Specifications

System	
Processor	Intel® 4th Gen. 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)
Graphics	Intel® HD Graphics
I/O Chipset	NCT6791D
Ethernet	Intel® PHY I217LM Giga LAN x 1, Intel® I210AT Giga LAN x 1
Audio	Realtek® ALC887
TPM	Infineon SLB9655 TT 1.2(default: No)
Expansion Slots	Full-size Mini-Card x 1 (mSATA default) (PCIe+USB optional, selected by jumper), Half-size Mini-Card x1 (PCIe+USB default) (mSATA optional, selectd 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	DP, DP+DP, DP+DP+DP
VGA	—
DVI	—
HDMI	—
Display Port	Up to 3840 x 2160 @60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
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%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)	48,944

Rear Panel I/O Ports	
USB	USB 3.0 x 4
Display I/O	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	—
Others	—
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 (2x5PIN, 2.00mm) x 3 ports support additional 6 USB, USB 2.0 vertical connectors x 2
Display I/O	—
Audio I/O	AAFP 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® 10 64-bit, Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Linux Fedora

Packing List

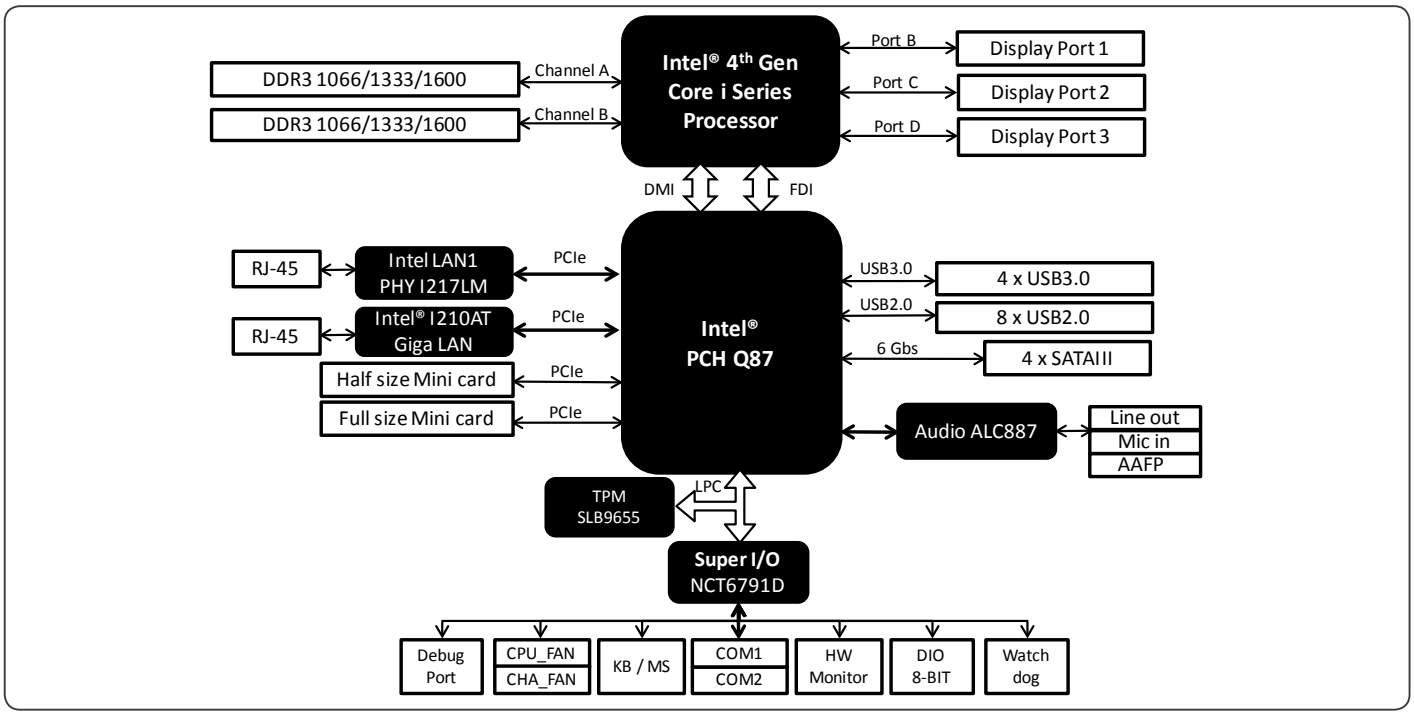
- **SATA Cable**
- **SATA Power Cable**
- **I/O Shield**
- **Poroduct DVD**
- **EMB-Q87B**

Optional Accessories

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

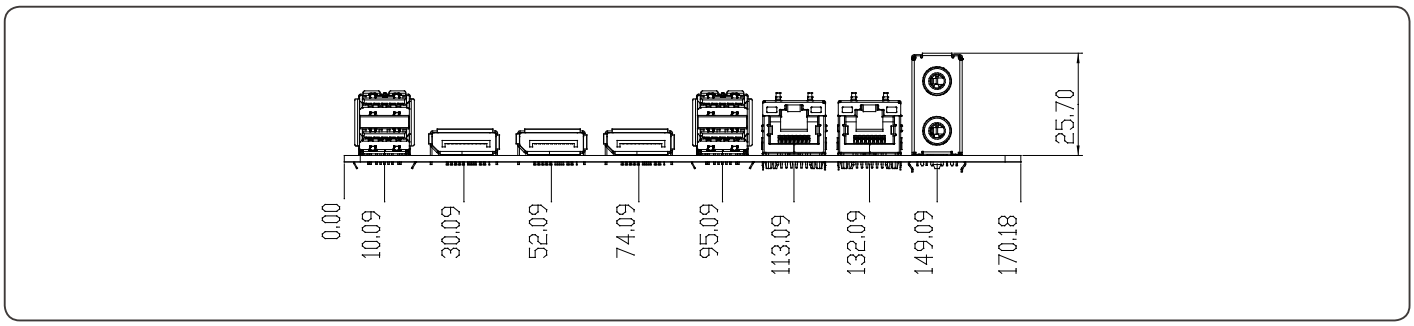
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

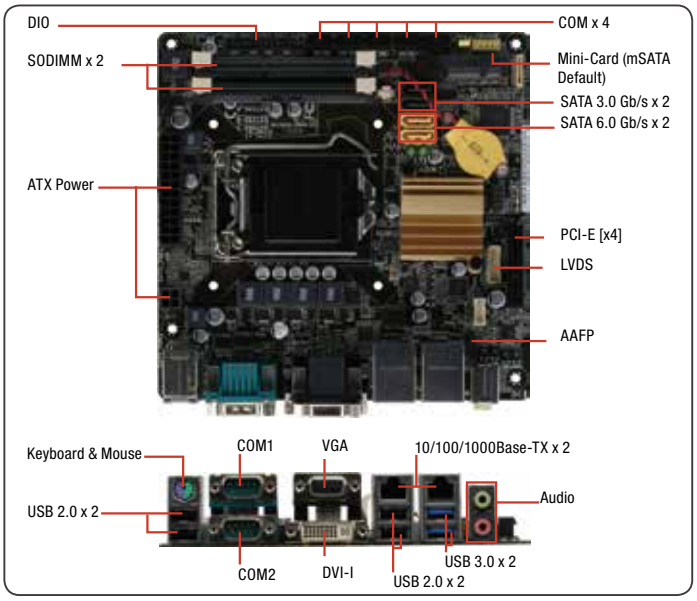


Order Information

Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-Q87B-B10	Socket	SODIMM x 2	Fan	DP x 3	SATA3 x 4 Full size Mini-Card (mSATA)	—	GbE x 2	USB 3.0 x 4, USB 2.0 x8	2	1	Full size Mini-Card x 1, Half size Mini-Card x 1	12~24VDC	Onboard	32°F ~ 140°F (0°C ~ 60°C)

EMB-H81A

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



Features

- **LGA1150 Socket for Intel® 4th Generation 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	Intel®4th Gen. 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)
Graphics	Intel® HD Graphics
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 Support LVDS
eDP	—
Backlight Control	Voltage / PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24pin 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%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)	288,500
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

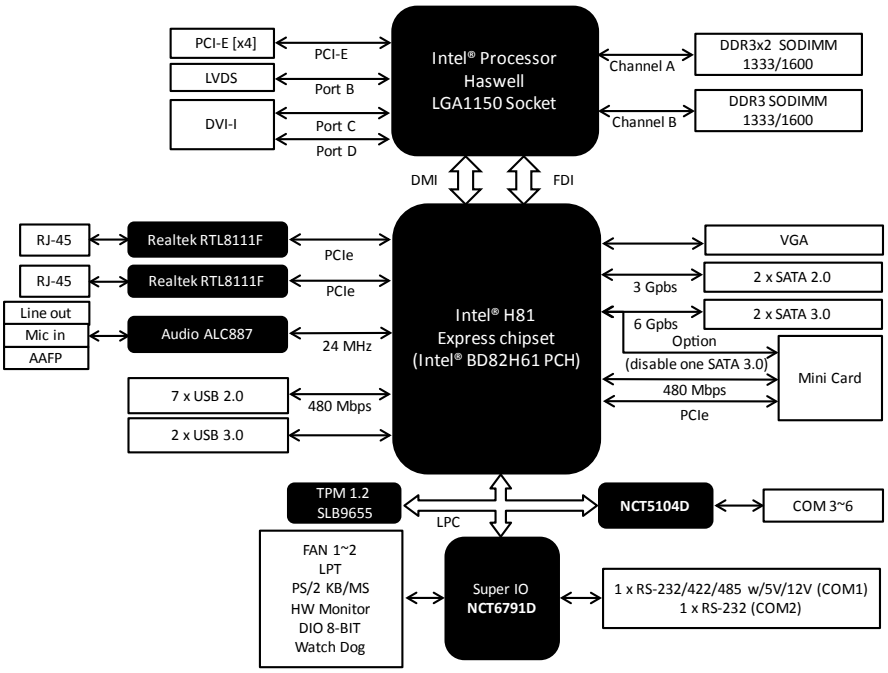
- **SATA Cable**
- **I/O Shield**
- **Product CD**
- **EMB-H81A**

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)

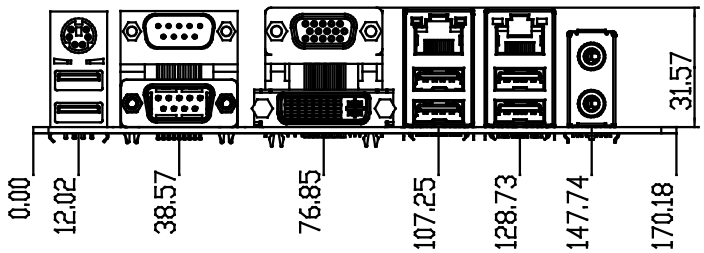
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

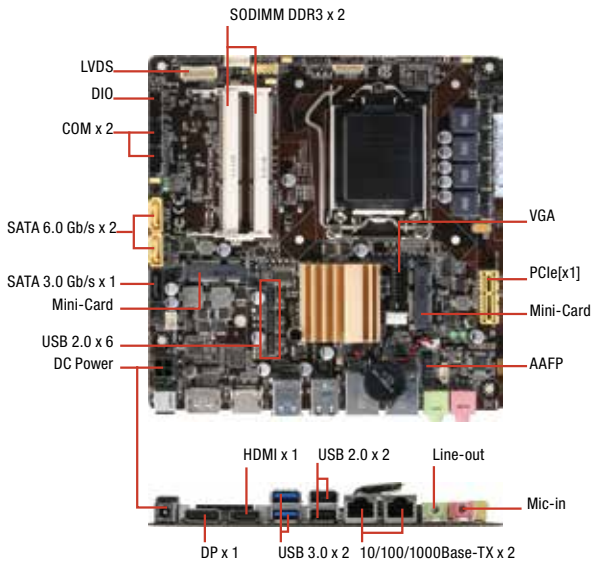


Order Information

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 Intel® 4th Generation Core™ i Series Processor, 12V~24V Wide Range Power Input



Features

- **Intel® 4th Generation 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**
- **DC 12~24V**
- **Low Profile**

Specifications

System	
Processor	Intel®4th Gen. 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)
Graphics	Intel® HD Graphics
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 range: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%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)	288,850
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 (2x5PIN, 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 on board (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

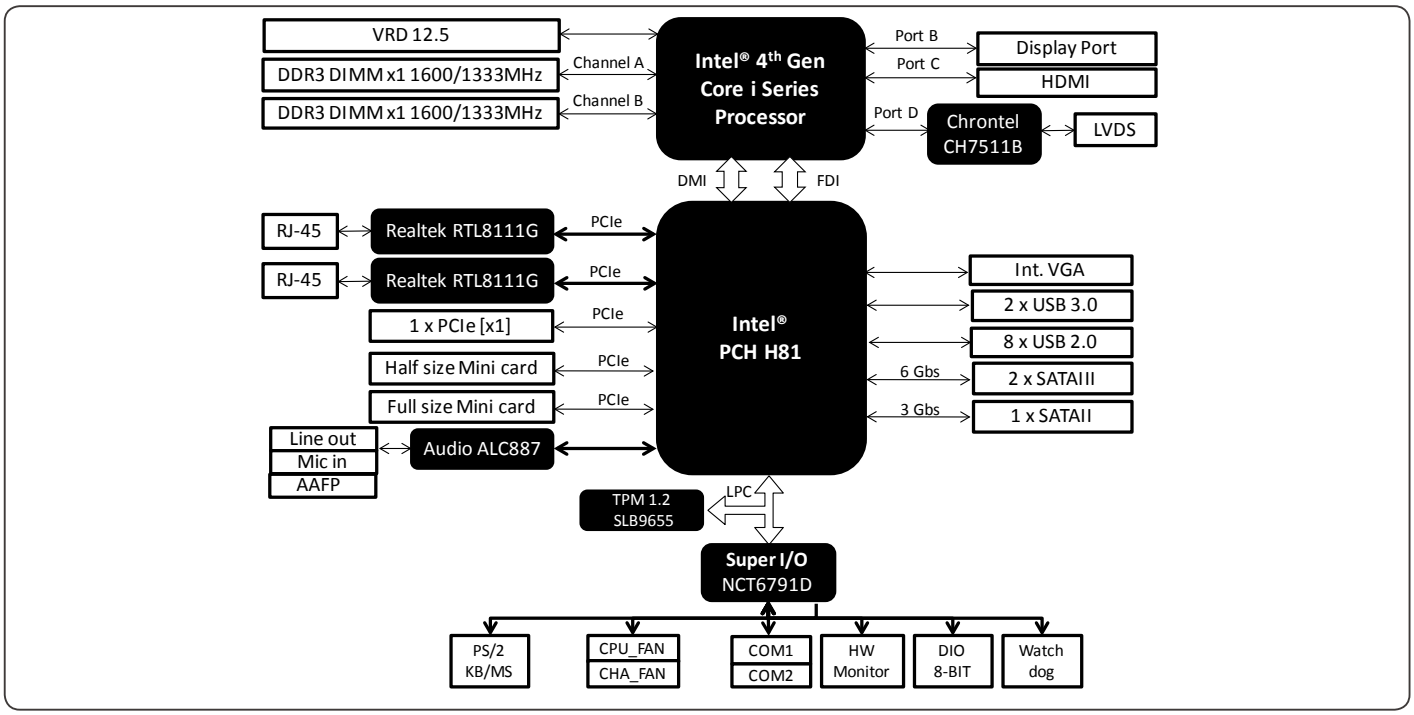
- **SATA Cable**
- **SATA Power Cable**
- **I/O Shield**
- **Product DVD**
- **EMB-H81B**

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)
1701160201	VGA Cable (200mm, p=2.00mm)(w/o I/O BKT)
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)

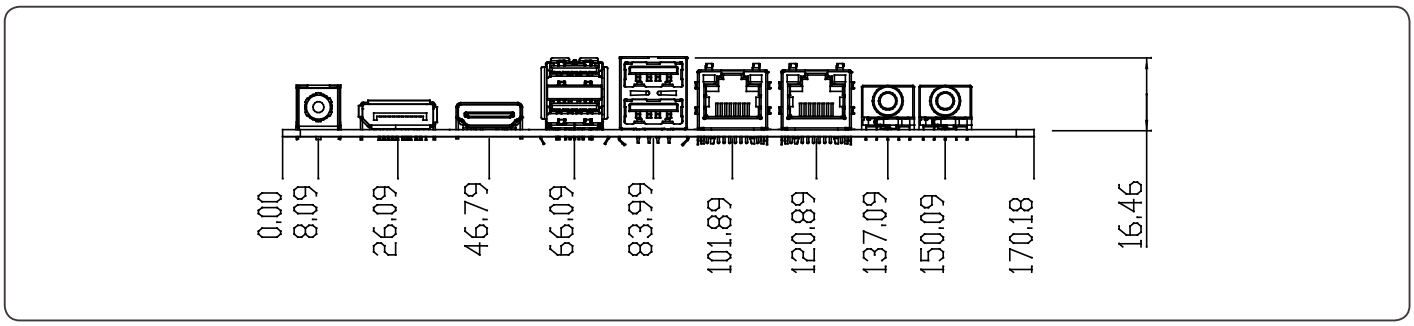
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

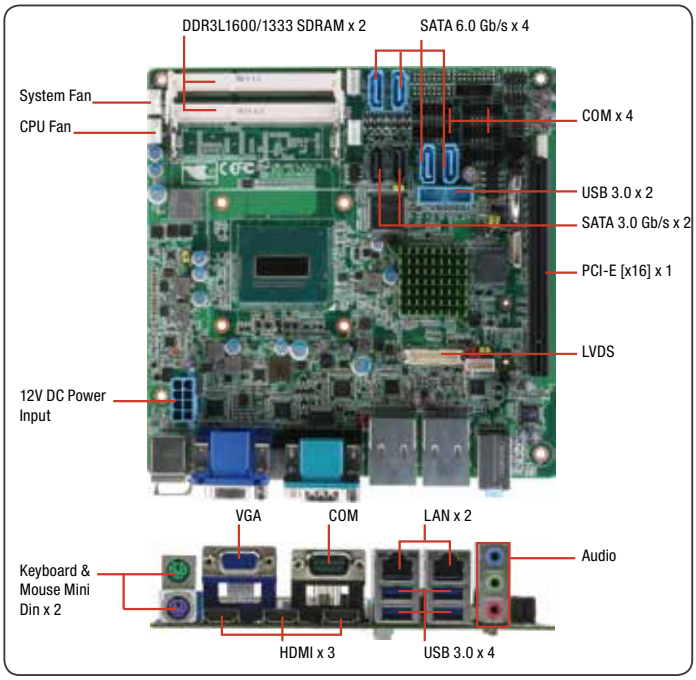


Order Information

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 Intel® 4th Generation BGA 1364 Processor & iAMT Support



Features

- **Onboard Intel® 4th Generation 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, Support RAID 0,1,5,10**
- **PCI-E[x16] x 1, Mini-PCIe x 1, COM x 5**

Specifications

System	
Processor	On board Intel® 4th generation BGA 1364 Processor
Chipset	Intel® QM87
Memory	Dual-Channel with 204-pin SDRAM x 2, DDR3L 1600/1333, up to 16GB
Graphics	Intel® HD Graphics
I/O Chipset	Fintek F81866D-I
Ethernet	Intel® I217-LM / Realtek RTL 8111E, Gigabit 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	System Reset: 1~255 steps programmable
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
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, Support 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

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**

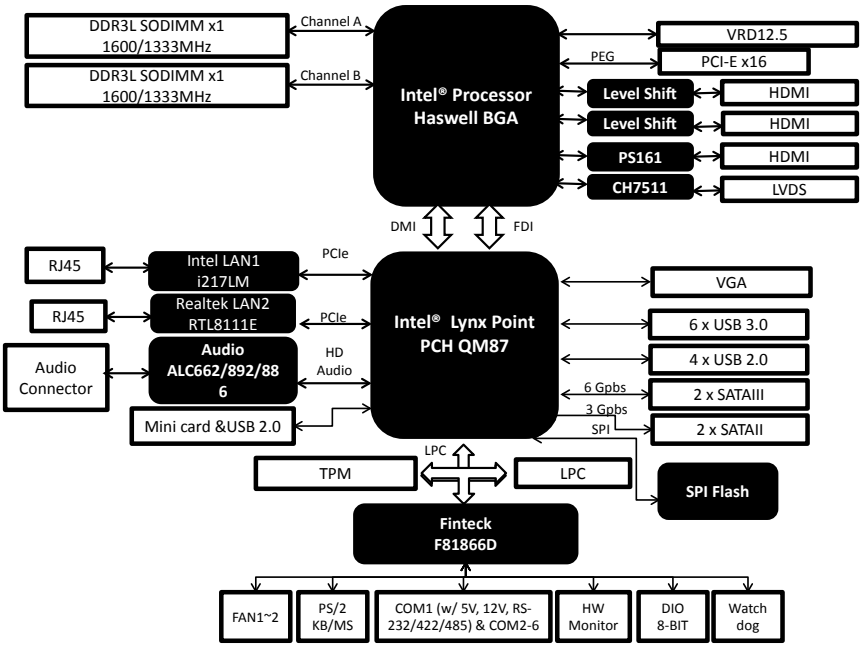
Optional Accessories

- **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.

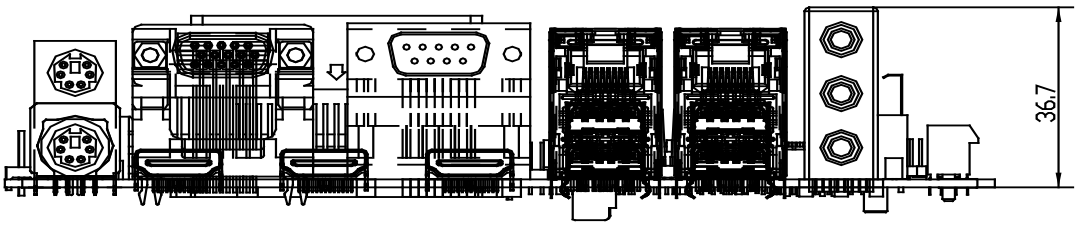
EMB-QM87A

Block Diagram



Dimension

Unit: mm

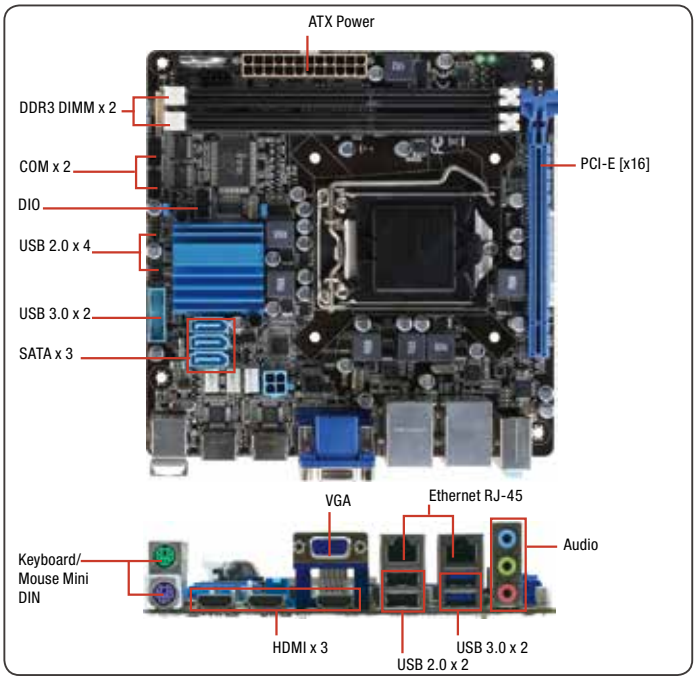


Order Information

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	USD3.0 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	USD3.0 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	USD3.0 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-B75A

Mini-ITX Embedded Motherboard with Intel® 2nd/3rd Generation Core™ i7/i5/i3 Processor



Features

- **Intel® 2nd/3rd Generation Core™ i7/i5/i3 Processor**
- **Intel® B75 Express Chipset**
- **DDR3 1600/1333 MHz DIMM x 2, Up to 16 GB**
- **Dual/Three Independent Display: VGA, HDMI x 3**
- **Gigabit Ethernet x 2**
- **Onboard TPM Infineon SLB9635 TT 1.2**
- **USB 3.0 and SATA 6.0 Gb/s**

Rear Panel I/O Ports	
USB	USB 3.0 x 2, USB 2.0 x 2
Display I/O	VGA x 1, HDMI x 3
Audio I/O	Mic-in x 1, Line in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) ports x 2
Serial Port	—
PS/2 Port	PS/2 Port (Keyboard & Mouse) x 2
Others	—
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) connectors x 1, SATA2 (3.0Gb/s) connectors x 2
USB	USB 3.0 connector supports additional 2 USB port x 1, USB 2.0 connectors support additional 4 USB port x 2
Display I/O	—
Audio I/O	—
Serial Port	Boxer header for COM (RS-232) x 1, Boxer header for COM (RS-232/422/485) x 1
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (4-in /4-out) x 1
FAN	CPU Fan connector (4-pin) x 1, Chassis Fan connectors (4-pin) x 1
Power	24-pin EATX Power connector, 4-pin AUX 12V Power connector
Others	Front panel header x 1
OS	
OS Support	Windows® XP 32-bit, Windows® 7 32/64-bit, Linux Fedora

Specifications

System	
Processor	LGA1155 socket for Intel® 3rd/2nd Generation Core™ i7/ i5/ i3/ Pentium® / Celeron® Processor
Chipset	Intel® B75 Express Chipset
Memory	DDR3 1333/1600 MHz DIMM x 2, Up to 16GB, Non-ECC, Dual-channel memory architecture
Graphics	Intel® HD Graphics
I/O Chipset	ITE 8728F
Ethernet	Realtek PCIe Gb LAN 8111F x 2
Audio	Realtek® ALC887
TPM	Infineon SLB9635 TT 1.2
Expansion Slots	PCI-E [x16] slot x 1
BIOS	AMI BIOS, 64 M bit ROM x 2
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	S1, S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+HDMI, HDMI+HDMI, VGA+HDMI+HDMI, HDMI+HDMI+HDMI
VGA	Up to 1920 x 1200 @60Hz
DVI	—
HDMI	Up to 1920 x 1080 @60Hz
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24pin 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%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)	116,656

Packing List

- **SATA Cable**
- **Metal I/O Bracket**
- **Product CD**
- **EMB-B75A**

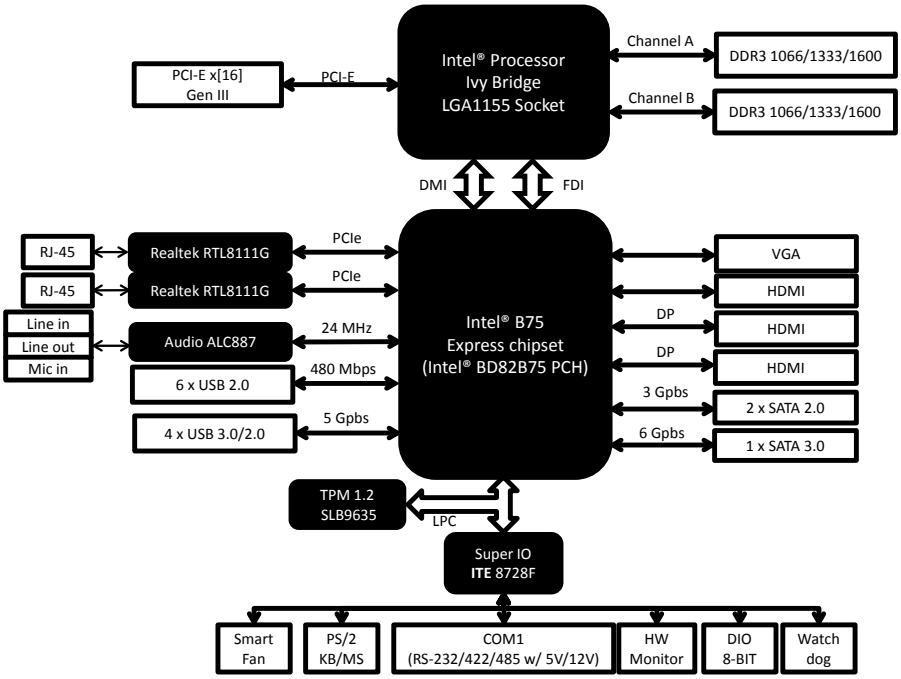
Optional Accessories

Part Number	Description
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1700190450	2U CPU Cooler (2-Ball, Push-pin Type)
1709070800	SATA Cable
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/ bracket)
1701100206	COM Cable (200MM, p=2.00mm)

Note: All specifications are subject to change without notice.

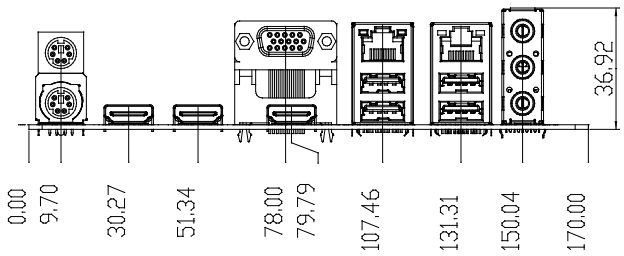
EMB-B75A

Block Diagram



Dimension

Unit: mm

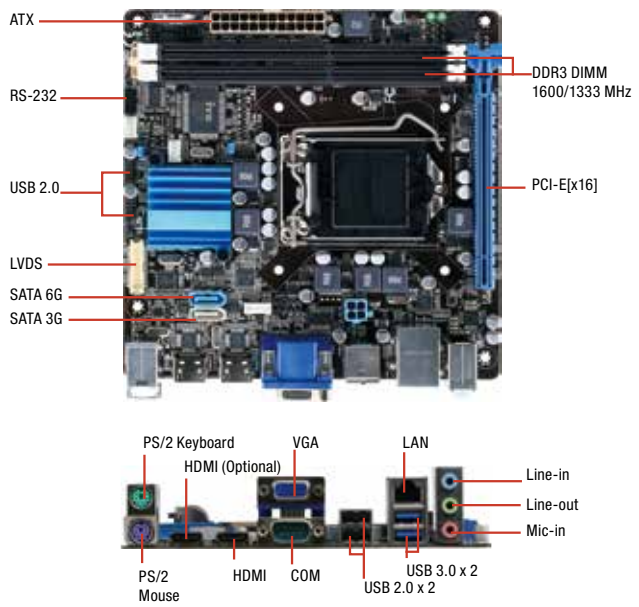


Ordering Information

Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-B75A-B10	Socket	DIMM x 2	Fan	VGA, HDMI x 3	SATA3 x 1, SATA2 x 2	-	GbE x 2	USB 3.0 x 4, USB 2.0 x6	1	1	PCI-E[x16] x 1	ATX	Onboard	32°F ~ 140°F (0°C ~ 60°C)

EMB-B75B

Mini-ITX Embedded Motherboard with Intel® 2nd/3rd Generation Core™ i7/i5/i3 Processor



Features

- **Intel® Socket 1155 for 2nd/3rd Generation Core™ i7/i5/i3 Processor**
- **Intel® B75 Express Chipset**
- **DDR3 1600/1333 MHz DIMM x 2, Up to 16 GB**
- **Dual Independent Display:**
  VGA, LVDS, HDMI (Dual HDMI Optional for Supporting Three Independent Display)
- **Realtek RTL8111F, Gigabit Ethernet x 1**
- **SATA 6.0 Gb/s x 1, USB 3.0 x 2, PCI-E3.0/2.0 [x16] x 1**

PCI Express · Gigo LAN · DDR 2 · USB 2.0

Rear Panel I/O Ports	
USB	USB 3.0 x 2, USB 2.0 x 2
Display I/O	VGA x 1, HDMI x 2 (1 optional)
Audio I/O	Mic-in x 1, Line in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 1
Serial Port	RS-232 x 1
PS/2 Port	PS/2 Port (Keyboard & Mouse) x 2
Others	—
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) connector x 1, SATA2 (3.0Gb/s) connector x 1
USB	USB port x 2, USB 2.0 connectors support additional x 4
Display I/O	LVDS x 1
Audio I/O	—
Serial Port	Boxer header for COM (RS-232) x 1
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (4-in /4-out) x 1
FAN	CPU Fan connector (4-pin) x 1, Chassis Fan connectors (4-pin) x 1
Power	24-pin EATX Power connector, 4-pin AUX 12V Power connector
Others	Front panel header x 1
OS	
OS Support	Windows® XP 32-bit, Windows® 7 32/64-bit, Linux Fedora

Specifications

System	
Processor	LGA1155 socket for Intel® 3rd/2nd Generation Core™ i7/ i5/ i3/ Pentium® / Celeron® Processor
Chipset	Intel® B75 Express Chipset
Memory	DDR3 1333/1600 MHz DIMM x 2, Up to 16GB, Non-ECC, Dual-channel memory architecture
Graphics	Intel® HD Graphics
I/O Chipset	ITE 8728F
Ethernet	Realtek PCIe Gb LAN 8111F x 1, RJ-45 x 1
Audio	Realtek® ALC887
TPM	—
Expansion Slots	PCIe [x16] x 1
BIOS	64M bit Flash ROM x 2, 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	S1, S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+HDMI, LVDS+VGA, LVDS+HDMI, HDMI+HDMI, VGA+HDMI+HDMI (optional), LVDS+HDMI+HDMI (optional)
VGA	Up to 1920 x 1200 @60Hz
DVI	—
HDMI	Up to 1920 x 1080 @60Hz
Display Port	—
LVDS	Up to 1920 x 1200 @60 Hz, Dual Channel 18/24-bit, support EDID LVDS autodetect
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24pin ATX connector x 1, 4pin ATX 12V Power connector x 1
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
Form Factor	Mini-ITX 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	199,397

Packing List

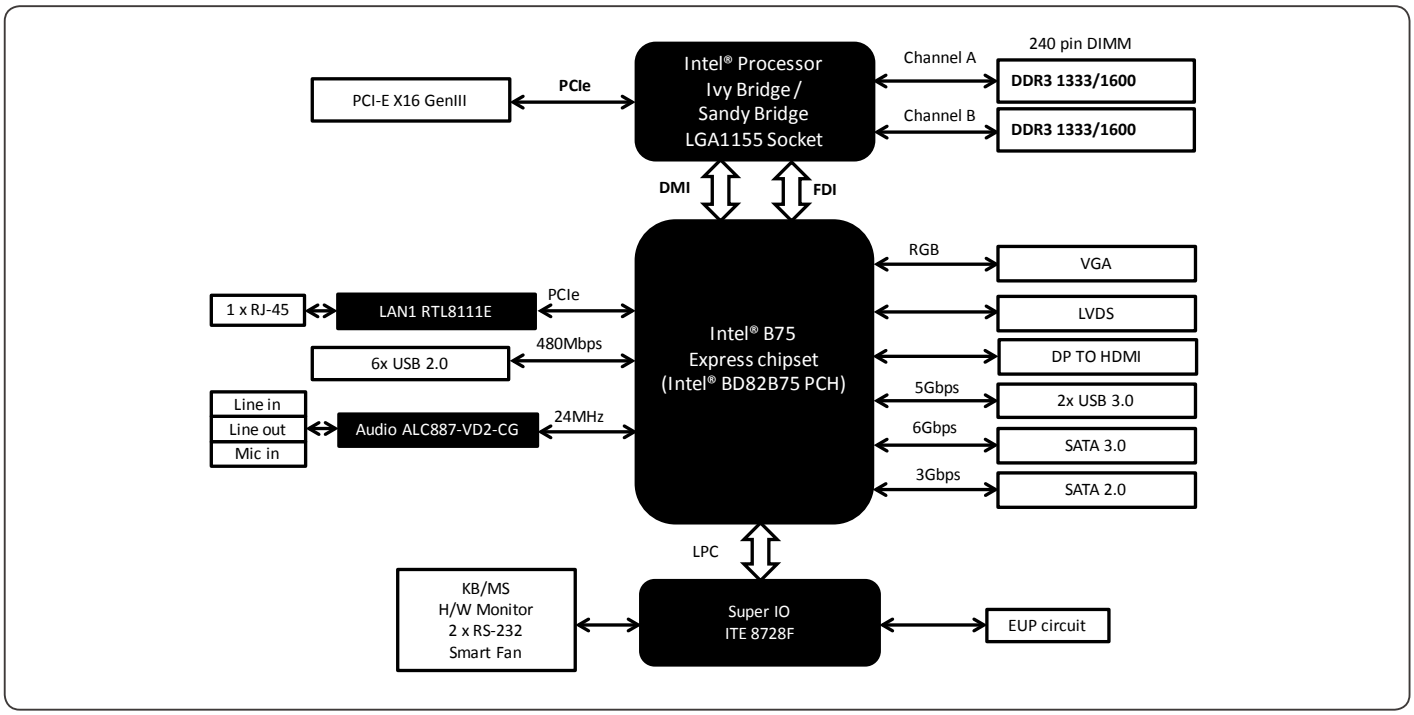
- **I/O Shield**
- **SATA Power Cable**
- **SATA Cable x 2**
- **Product CD**
- **EMB-B75B**

Optional Accessories

Part Number	Description
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1700190450	2U CPU Cooler (2-Ball, Push-pin Type)
1709070800	SATA Cable
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/ bracket)
1701100206	COM Cable (200MM, p=2.00mm)

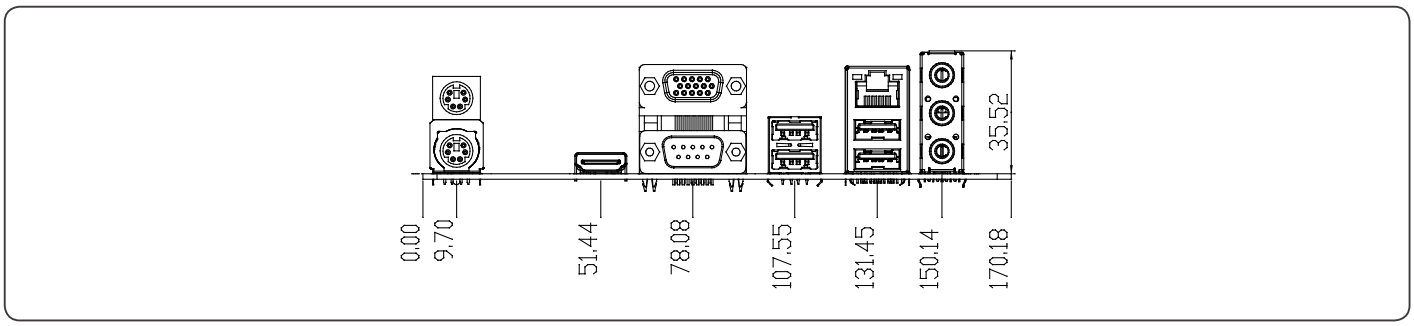
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

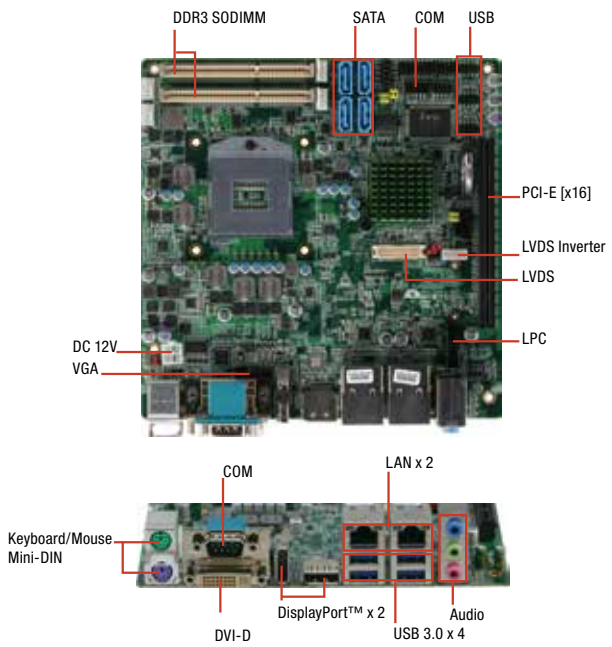


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-B75B-A10	Socket	DIMM x 2	Fan	VGA, HDMI, LVDS	SATA3 x 1, SATA2 x 1	Dual Channel 18/24-bit	GbE x 1	USB 3.0 x 2, USB 2.0 x 6	2	—	PCI-E[x16] x 1	ATX	—	32°F ~ 131°F (0°C ~ 55°C)

EMB-QM77

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



Features

- **Socket rPGA988, Intel® 3rd Generation 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, Support 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 Intel® 3rd generation rPGA988 Processor
Chipset	Intel® QM77
Memory	Dual-Channel with 204-pin SDRAM x 2, DDR3 1600/1333/1066, up to 16GB
Graphics	Intel® HD Graphics
I/O Chipset	ITE IT8728F+Fintek F81216DG
Ethernet	Intel® PHY WG82579LM / Realtek RTL 8111E, Gigabit 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	System Reset: 1~255 steps programmable
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, Support 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**
- **Product DVD**
- **EMB-QM77**

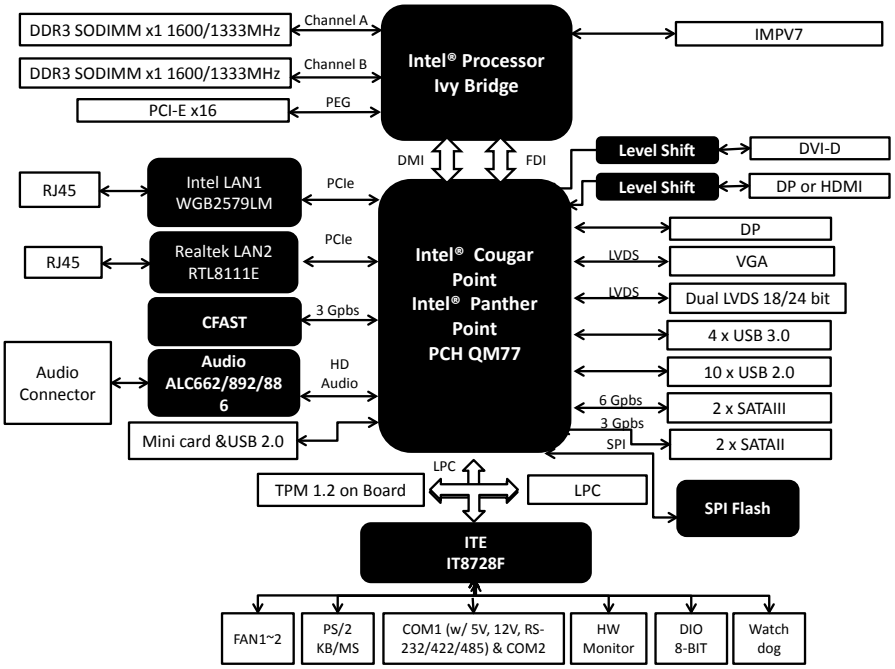
Optional Accessories

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

Note: All specifications are subject to change without notice.

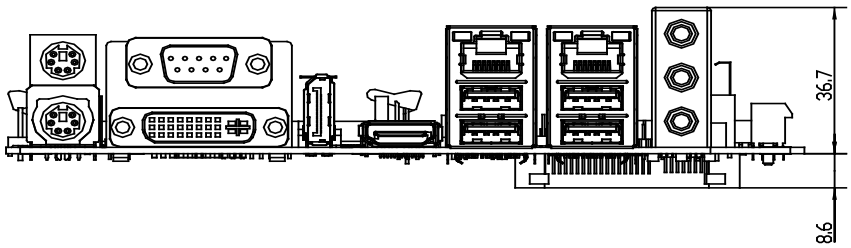
EMB-QM77

Block Diagram



Dimension

Unit: mm

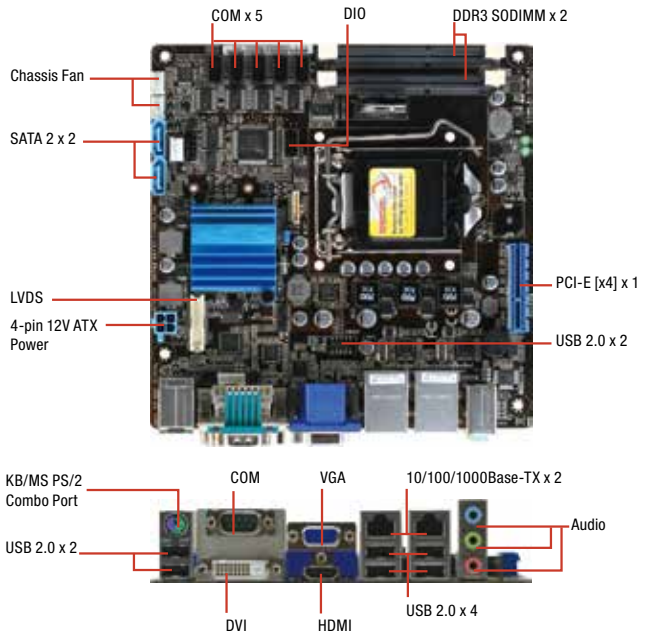


Ordering Information

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	USD3.0 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 2.0 x 8	1	1	PCIe [x16] x 1, mPCIe x 1	+12V DC	1.2	32°F ~ 140°F (0°C ~ 60°C)

EMB-H61A

Mini-ITX Embedded Motherboard with Intel® 2nd/3rd Generation Core™ i7/i5/i3/Pentium® Processor



Features

- **Intel® Socket 1155 for 2nd/3rd Generation Core™ I7/i5/i3 Processor Up to 65W**
- **Dual-Channel DDR3 1333/1066 MHz SODIMM x 2, Up to 16 GB**
- **Gigabit Ethernet x 2**
- **Intel® Integrated Graphics Engine Supports Dual Display By VGA, DVI, HDMI, LVDS**
- **HD 5.1CH Audio**
- **SATA 3.0 Gb/s x 2**
- **USB 2.0 x 8, COM x 6**
- **PCI-Express[x4] x 1, Mini-Card x 1 (mSATA Optional), TPM Module**

Specifications

System	
Processor	LGA1155 socket for Intel® 3rd/2nd Generation Core™ i7/ i5/ i3/ Pentium® / Celeron® Processors (Supports Intel® 32 nm CPU up to 35W)
Chipset	Intel® H61
Memory	DDR3 1333/1600 MHz SODIMM x 2, Up to 16GB, Non-ECC, Dual-channel memory architecture
Graphics	Intel® HD Graphics
I/O Chipset	Fintek F81866D-I
Ethernet	Realtek PCIe Gb LAN 8111E x 2
Audio	Realtek® ALC887
TPM	Infineon SLB9635 TT 1.2
Expansion Slots	PCIe [x4] x 1, Full-size Mini-Card (PCIe + USB) (mSATA Default)+ SIM Card 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	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S1, S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+LVDS, VGA+HDMI, VGA+DVI, LVDS+HDMI, LVDS+DVI, HDMI+DVI
VGA	Up to 2048 x 1536 @ 75 Hz
DVI	Up to 1920 x 1200 @60 Hz
HDMI	Up to 1920 x 1200 @60 Hz
Display Port	—
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	12V DC with 4pin Power connector x 1
Operating Temperature	32~131°F (0~55°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)	117,673

Rear Panel I/O Ports	
USB	USB 2.0 x 6
Display I/O	VGA x 1, DVI-D x 1, HDMI x 1
Audio I/O	Mic-in x 1, Line 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
PS/2 Port	PS/2 Keyboard Mouse Connector x 1
Others	—
Internal I/O Connectors	
Storage	SATA connectors x 2, SATA power connector x 1, Mini-Card slot x 1
USB	USB 2.0 connectors support additional 2 USB port x 1
Display I/O	LVDS connector x 1, LVDS Power select jumper x 1, LVDS Brightness Control Type Selection x 1, LVDS Panel Backlight Power Selection x 1, LCD_POWER 5 pin connector x 1
Audio I/O	—
Serial Port	COM header x 5 (RS-232)
PS/2 Port	—
Parallel Port	—
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, AT/ATX mode select jumper x 1
Others	SIM Card Socket x 1, Front Panel connector x 1, CMOS jumper x 1
OS	
OS Support	Windows® XP 32-bit, Windows® 7 32/64-bit, Linux Fedora

Packing List

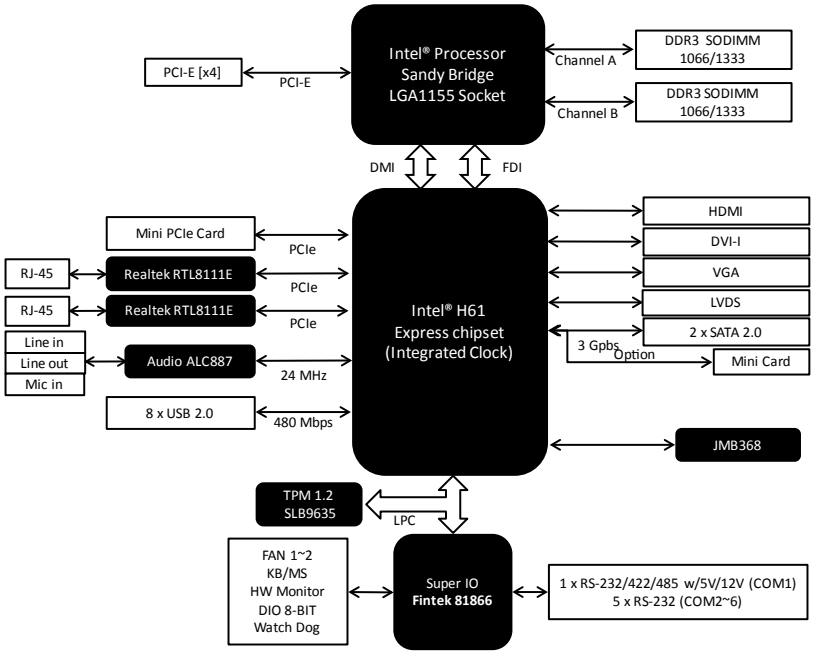
- **SATA Cable**
- **SATA Power Cable**
- **I/O Shield**
- **Product CD**
- **EMB-H61A**

Optional Accessories

Part Number	Description
17592H61A0	Proprietary CPU Cooler for EMB-H61A
1701100206	COM Cable (200MM, p=2.00mm)
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/ bracket)
1709070800	SATA Cable
1700060192	PS/2 Cable (6P, 190mm, P=2.0mm)

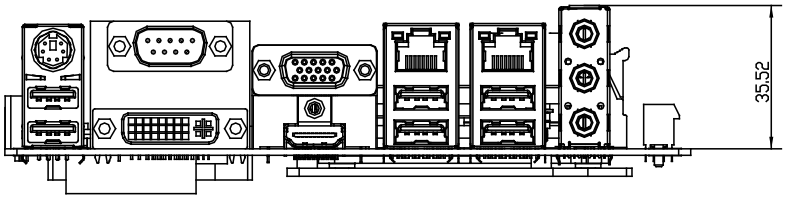
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

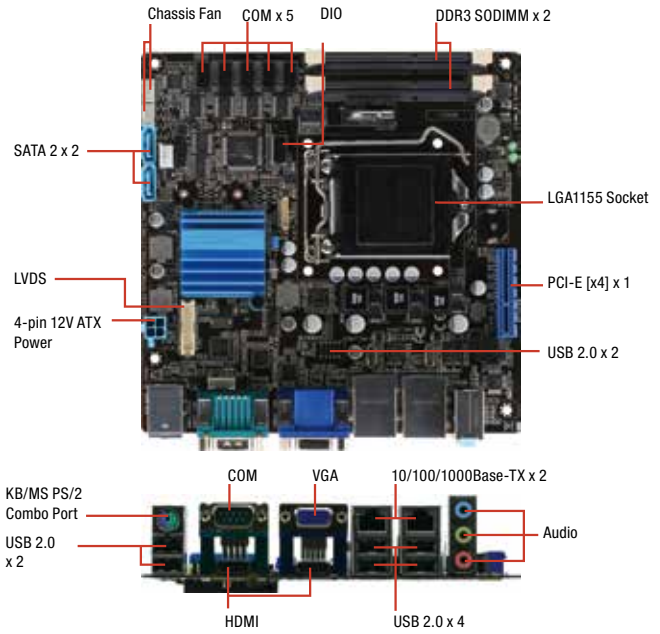


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-H61A-A11-NC	Socket	SODIMM x 2	Fan	VGA, DVI-D, LVDS, HDMI	SATA2 x 2	Dual Channel 18/24-bit	GbE x 2	USB 2.0 x 8	5	1	PCI-E[x4] x 1	12V DC	Onboard	32°F ~ 131°F (0°C ~ 55°C)

EMB-H61B

Mini-ITX Embedded Motherboard with Intel® 2nd/3rd Generation Core™ i7/i5/i3 Processor



Features

- **Intel® Socket 1155 for 2nd/3rd Generation Core™ i7/i5/i3 Processor Up to 65W**
- **Intel® H61 Express Chipset**
- **DDR3 1066/1333 MHz SODIMM x 2, Up to 16 GB**
- **VGA, HDMI x 2, LVDS Dual Independent Display**
- **Realtek 8111F x 2, Gigabit Ethernet x 2**
- **PCI-E [x4] x 1, Full-size Mini-Card x 1 (mSATA Optional) + SIM Card x 1**
- **TPM Infineon SLB9635 TT 1.2**

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

Rear Panel I/O Ports	
USB	USB 2.0 x 6
Display I/O	VGA x 1, HDMI x 2
Audio I/O	Mic-in x 1, Line 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
PS/2 Port	PS/2 Keyboard Mouse Connector x 1
Others	—
Internal I/O Connectors	
Storage	SATA connectors x 2, SATA power connector x 1, Mini-Card slot x 1
USB	USB 2.0 connectors support additional 2 USB port x 1
Display I/O	LVDS connector x 1, LVDS Power select jumper x 1, LVDS Brightness Control Type Selection x 1, LVDS Panel Backlight Power Selection x 1, LCD_POWER 5 pin connector x 1
Audio I/O	—
Serial Port	COM header x 5 (RS-232)
PS/2 Port	—
Parallel Port	—
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, AT/ATX mode select jumper x 1
Others	SIM Card Socket x 1, Front Panel connector x 1, CMOS jumper x 1
OS	
OS Support	Windows® XP 32-bit, Windows® 7 32/64-bit, Linux Fedora

Specifications

System	
Processor	LGA1155 socket for Intel® 3rd/2nd Generation Core™ i7/ i5/ i3/ Pentium® / Celeron® Processors (Supports Intel® 32 nm CPU up to 35W)
Chipset	Intel® H61 Express Chipset
Memory	DDR3 1333/1600 MHz SODIMM x 2, Up to 16GB, Non-ECC, Dual-channel memory architecture
Graphics	Intel® HD Graphics
I/O Chipset	Fintek F81866D-I
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) (mSATA Default) + SIM Card 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	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S1, S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+LVDS, VGA+HDMI1, VGA+HDMI2, LVDS+HDMI1, LVDS+HDMI2, HDMI1+HDMI2
VGA	Up to 2048 x 1536 @ 75 Hz
DVI	—
HDMI	Up to 1920 x 1200 @60 Hz
Display Port	—
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	12V DC with 4pin Power connector x 1
Operating Temperature	32~131°F (0~55°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)	211,000

Packing List

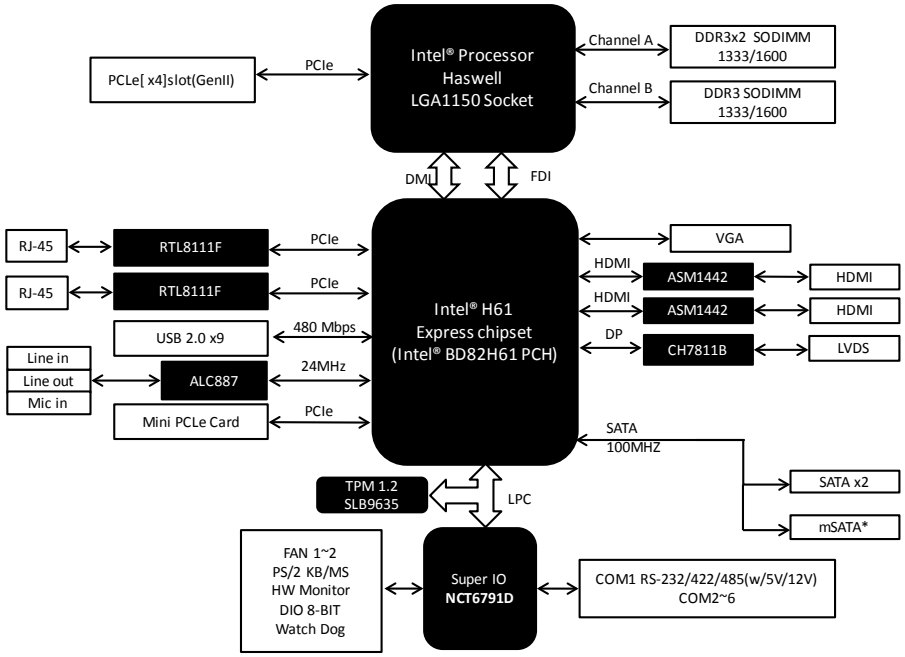
- **I/O Shield**
- **SATA Cable**
- **SATA Power Cable**
- **Product CD**
- **EMB-H61B**

Optional Accessories

Part Number	Description
1701100206	COM Cable (200MM, p=2.00mm)
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/ bracket)
17592H61A0	Proprietary CPU Cooler for EMB-H61B
1709070800	SATA Cable
1700060192	PS/2 Cable (6P, 190mm, P=2.0mm)

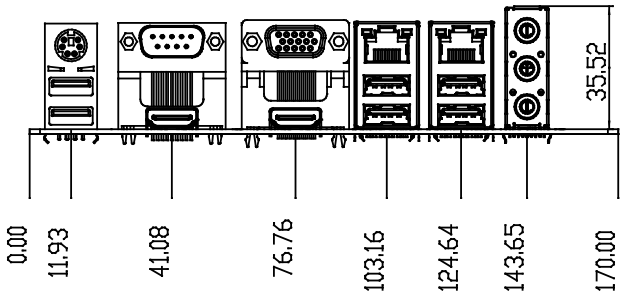
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

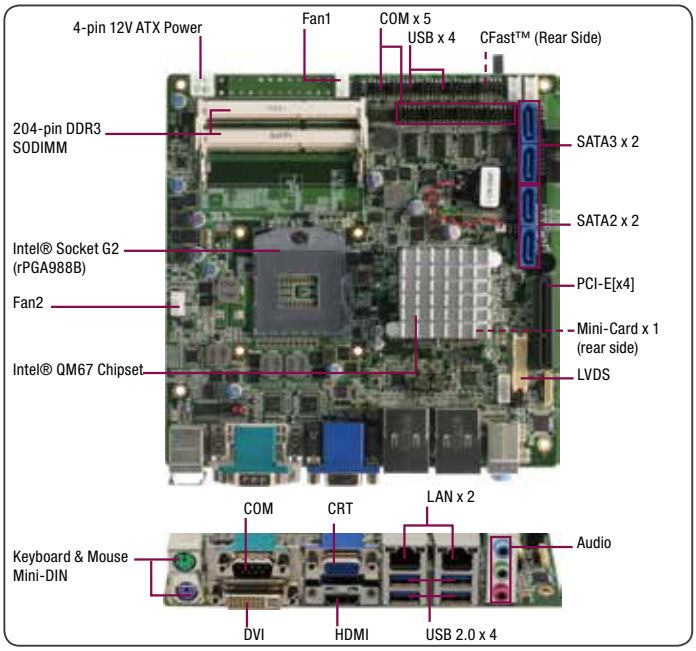


Ordering Information

Part Number	CPU	RAM	Fan/ Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-H61B-A10-NC	Socket	SODIMM x 2	Fan	VGA, LVDS, HDMI x 2	SATA2 x 2	Dual Channel 18/24-bit	GbE x 2	USB 2.0 x 8	5	1	PCI-E[x4] x 1, Mini-Card x 1 (pCI-E [x1] and USB)	12V DC	Onboard	32°F ~ 131°F (0°C ~ 55°C)

EMB-QM67

Embedded Motherboard with Socket G2 (rPGA988B) 2nd Generation for 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, Support 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 Intel® 2rd generation rPGA988 Processor
Chipset	Intel® QM67
Memory	Dual-Channel with 204-pin SDRAM x 2, DDR3 1600/1333/1066, up to 16GB
Graphics	Intel® HD Graphics
I/O Chipset	ITE IT8728F+Fintek F81216DG
Ethernet	Intel® PHY WG82579LM / Realtek RTL 8111E, Gigabit 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	System Reset: 1~255 steps programmable
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" (170mm x 170mm)
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, Support RAID 0,1,5,10
USB	USB 2.0 x 4
Display I/O	LVDSx1
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

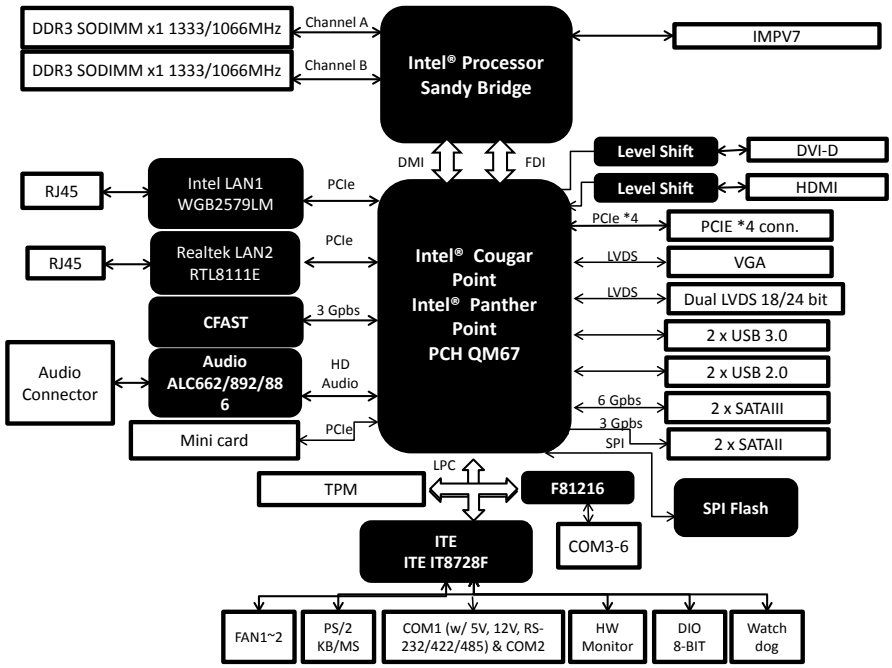
- **1709070800**
  SATA Cable
- **1702151201**
  SATA Power Cable
- **M20QM6700**
  Metal I/O Bracket
- **1701100206**
  COM Cable
- **Product DVD**
- **EMB-QM67**

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

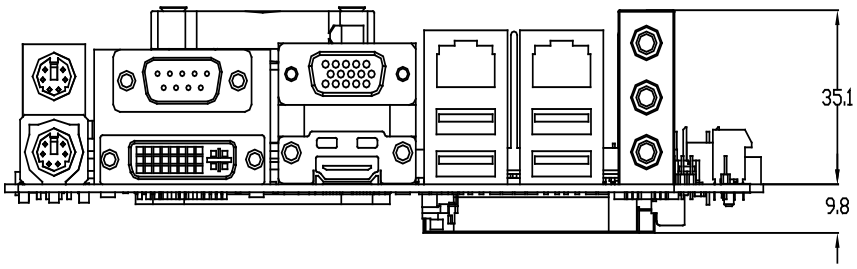
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

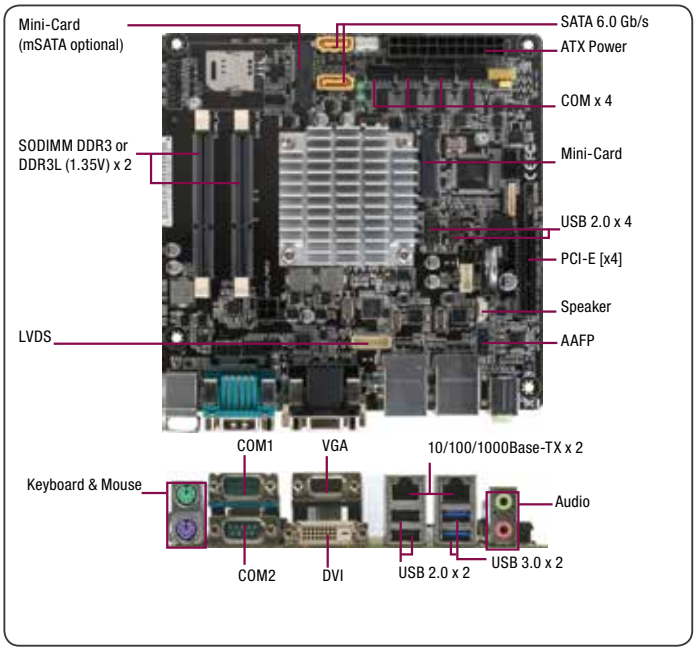


Ordering Information

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)

EMB-KB1

Mini-ITX Embedded Motherboard with AMD 1st Generation APU SoC Processor, USB x 8 and SATA 3 x 2



Features

- **AMD 1st Generation APU SoC Processor**
- **DDR3 1600 MHz SODIMM x 2, Up to 16 GB**
- **Realtek 8111F, Gigabit Ethernet x 2**
- **Dual Independent Display: VGA, DVI-D, LVDS**
- **USB 3.0 x 2 and SATA 6.0 Gb/s x 2**
- **Rich Expansion: PCI-E[x4] x 1, Mini-Card x 2**

Specifications

System	
Processor	AMD 1st generation APU SoC (FT3 BGA Package), Quad(2G,1.5G), Dual (1.6G,1.0G)
Chipset	—
Memory	SODIMM x 2, max. 16GB, DDR3L (1.35V)/DDR3 (1.5V) 1600 MHz /1333 MHz , Non-ECC, un-buffered memory, Single channel memory architecture
Graphics	"Sea Islands" Family (Integrated)
I/O Chipset	Fintek F81866D-I
Ethernet	Realtek PCIe Gb LAN 8111F x 2
Audio	Realtek® ALC887 with Amplifier
TPM	Infineon SLB9635 TT 1.2 (default: No)
Expansion Slots	PCIe [x4] x 1, Full-size Mini-Card (PCIe + USB + mSATA) + SIM Card (mSATA optional) x 1, Half-size Mini-Card (PCIe + USB) x 1
BIOS	64Mbit 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
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	"Sea Islands" Family (Integrated)
Graphics Multi Display	VGA+LVDS, VGA+DVI, LVDS+DVI
VGA	Up to 1920 x 1200 @60 Hz
DVI	Up to 1920 x 1200 @60 Hz
HDMI	—
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	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%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)	140,000

Rear Panel I/O Ports	
USB	USB 3.0 x 2, USB 2.0 x 2
Display I/O	VGA x 1, DVI-D 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 1
PS/2 Port	PS/2 x 2
Others	—
Internal I/O Connectors	
Storage	SATA connectors x 2, SATA power connector x 1, Mini-Card slot (half size) x 1, Mini-Card slot (full size) x 1
USB	USB 2.0 connectors support additional 4 USB ports (2.54mm) x 2
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	Speaker x 1
Serial Port	COM header x 4 (RS-232)
PS/2 Port	—
Parallel Port	—
DIO	DIO x 1
FAN	CPU Fan connector x 1, Chassis Fan connector x 1
Power	24-pin ATX connector x 1, 4-pin ATX connector x 1, AT/ATX mode select jumper x 1
Others	SIM Card Socket x 1, Front Panel connector x 1, on board buzzer x 1, CMOS jumper x 1
OS	
OS Support	Windows® XP 32 / 64-bit, Windows® 7 32 / 64-bit, Windows® 8, Linux Fedora

Packing List

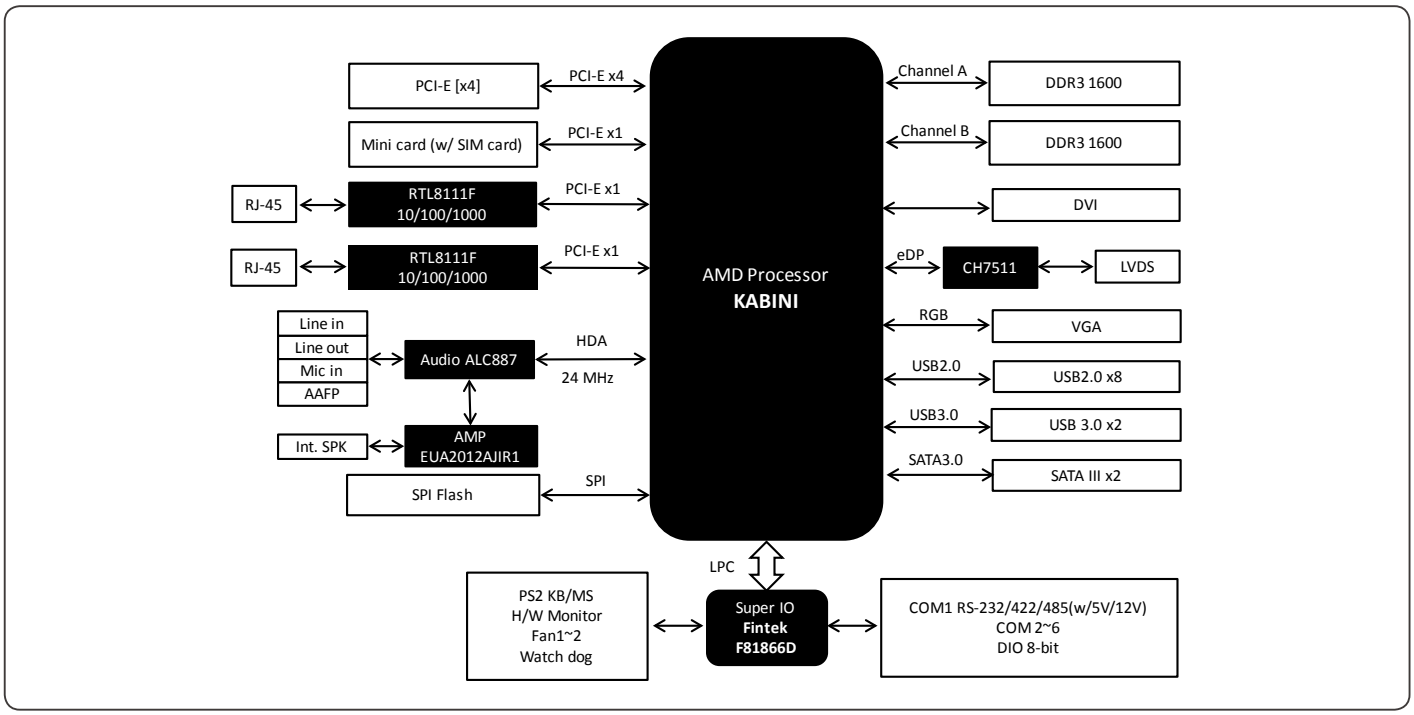
- **SATA Cable**
- **I/O Shield**
- **Product CD**
- **Heatsink for EMB-KB1-A10-217**
- **CPU Cooler for EMB-KB1-A10-420**
- **EMB-KB1**

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)

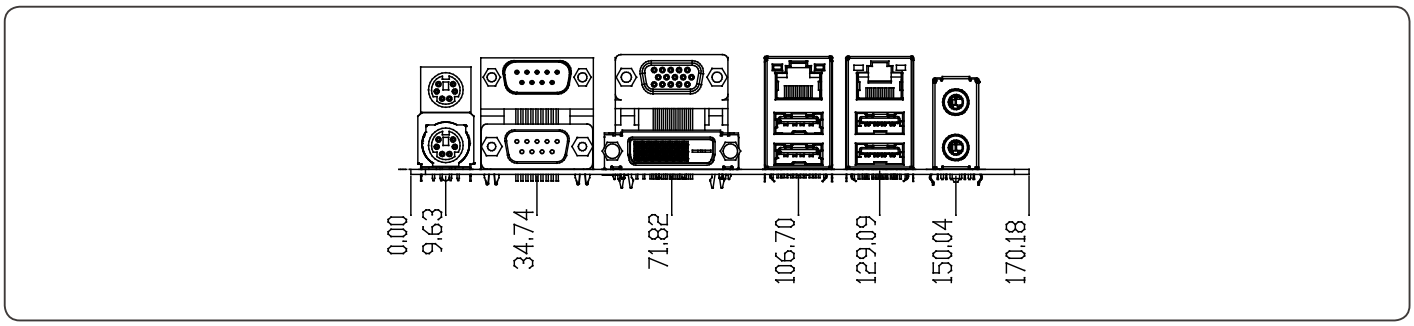
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

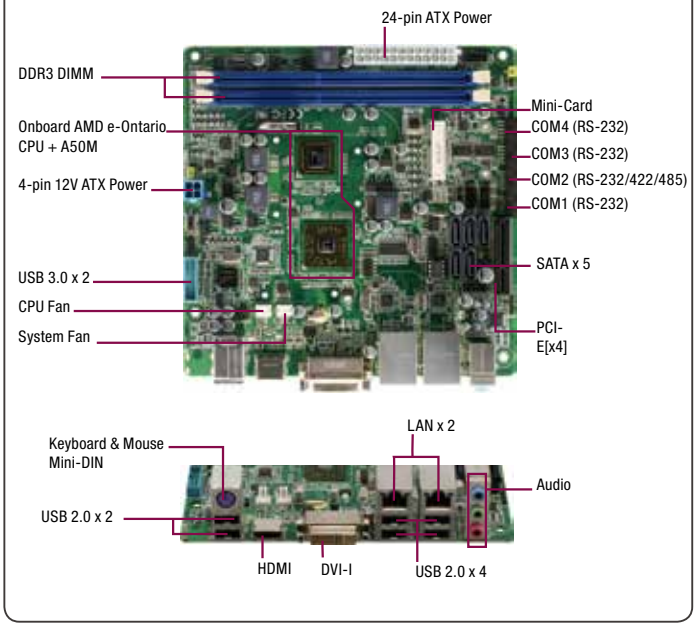


Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-KB1-A10-420	GX-420CA	SODIMM x 2	Fan	VGA, DVI, LVDS	SATA3 x 2	18/24-bit Dual-channel	GbE x 2	USB 2.0 x 6, USB 3.0 x 2	5	1	PCIe[x4] x 1, Mini-Card x 2 (PCIe[x1] and USB)	ATX	—	32°F ~ 140°F (0°C ~ 60°C)
EMB-KB1-A10-217	GX-217GA	SODIMM x 2	Fanless	VGA, DVI, LVDS	SATA3 x 2	18/24-bit Dual-channel	GbE x 2	USB 2.0 x 6, USB 3.0 x 2	5	1	PCIe[x4] x 1, Mini-Card x 2 (PCIe[x1] and USB)	ATX	—	32°F ~ 140°F (0°C ~ 60°C)

EMB-A50M

Embedded Motherboard with Onboard AMD Fusion APU Processor



Features

- **Onboard AMD CPU, Fusion APU T56N/ T44R Dual-Core/ Single Core Processor**
- **AMD Hudson M1/ A50M**
- **240-pin DDR3 800/1066 MHz DIMM x 2, Unbuffered Memory, Up to 8 GB (Supports Up To DDR3 1333 For T56N APU)**
- **Gigabit Ethernet x 2**
- **Integrated AMD Radeon™ HD 6310 (6250 for T44R)**
- **DVI-I, HDMI**
- **HD 5.1CH Audio**
- **SATA 6.0 Gb/s x 5**
- **USB 3.0 x 2, USB 2.0 x 10, COM x 4**
- **PCI-Express 2.0 [x4] x 1, Mini-PCIe (Half-size) x 1, 8-bit Digital I/O**

Specifications

System	
Processor	On board AMD® Fusion APU T56N/T44R
Chipset	AMD® M1/A50M
Memory	Dual-Channel with 204-pin SDRAM x 2, DDR3 1066/800, up to 8GB
Graphics	AMD Raden HD 6310 Graphic Engine
I/O Chipset	ITE IT8771E
Ethernet	Realtek® 8111E, Gigabit Ethernet, RJ-45 x 2
Audio	Realtek® ALC892
TPM	—
Expansion Slots	PCIe [x4] x 1, Mini-PCIe x 1, mSATA x 1
BIOS	AMI BIOS - 32MB ROM
H/W Monitor	Supports System temperature, Voltage, and Cooling fan status monitoring
WatchDog Timer	System Reset: 1~255 steps programmable
Smart Fan Control	—
Wake On LAN/ PXE	Yes
Power State	S3,S4,S5
Graphics	
Graphics Chipset	AMD® M1/A50M
Graphics Multi Display	HDMI+DVI
VGA	—
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	Mini-ITX 6.7" x 6.7" (170mm x 170mm)
Weight	1.32 lb(0.6 kg)
MTBF (Hours)	70,000
Rear Panel I/O Ports	
USB	USB 2.0 x 6 with Type A connectors
Display I/O	HDMI x 1, DVI-Dx1
Audio I/O	Line-in, Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	—
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 5
USB	USB 3.0 x 2, USB 2.0 x 4
Display I/O	—
Audio I/O	—
Serial Port	RS-232 x 3, RS-232/422/485 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	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

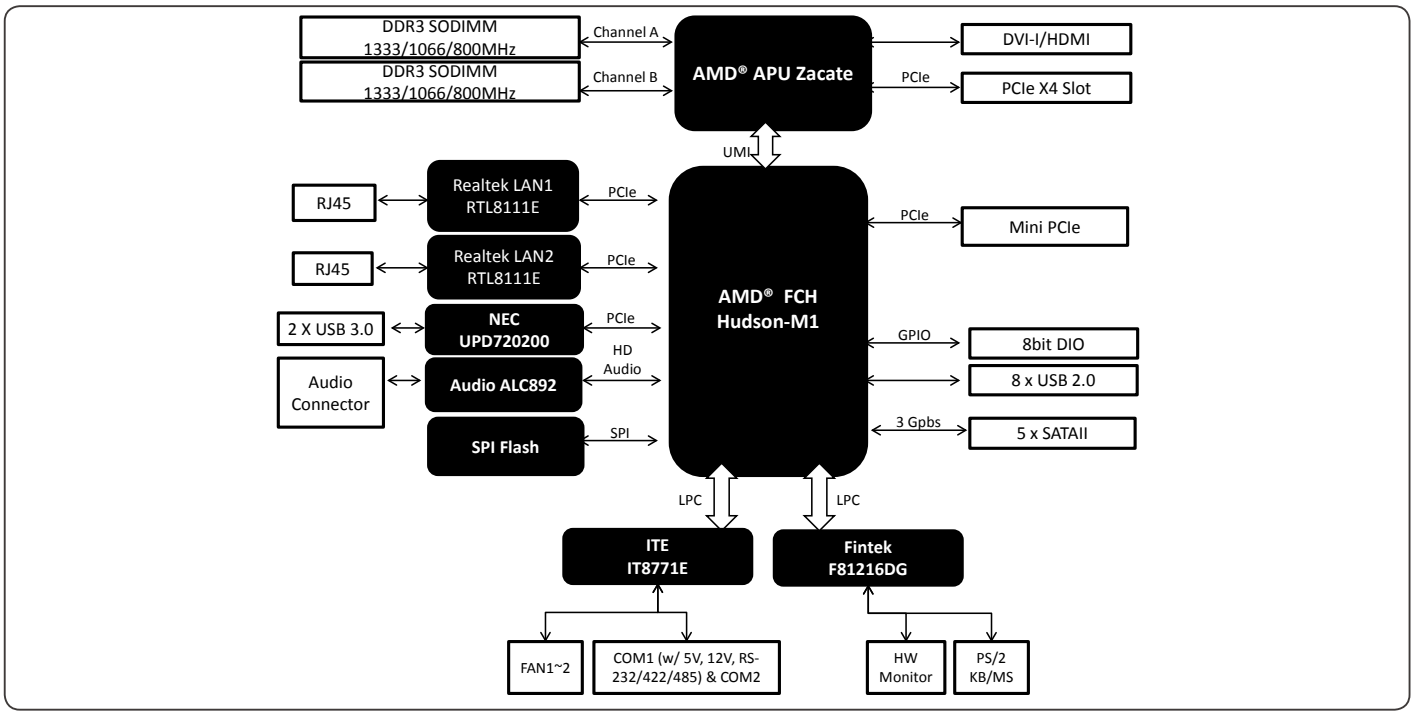
- **1709070800**
  SATA Cable
- **M20A50M000**
  I/O Shield
- **Product DVD**
- **EMB-A50M**

Optional Accessories

- **1700200301**
  (TF)USB 3.0 Cable, 2 PORTS USB 3.0, to 20P 2.0mm Housing, 30.5cm, For EMB-A50M
- **1709100208**
  (TF)USB Cable, 10pin, (5P x 2, 2.0mm Housing), 20cm, W/O Bracket, Modified from 1709100201
- **1701100206**
  (TF)Flat Cable, 9P DB 9P Male, 10P 2.00mm Pitch Housing, 20cm
- **1709070800**
  (TF)SATA Cable, 7P Pitch 1.27mm, 80cm, W/ Lock
- **1702151201**
  (TF)Power Cable, 4P 2.5mm Housing, 15P SATA (F), 12cm

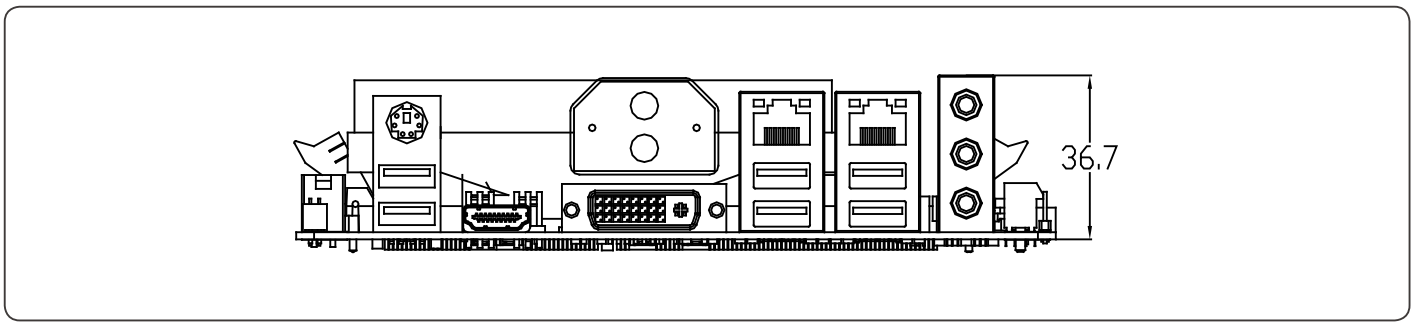
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

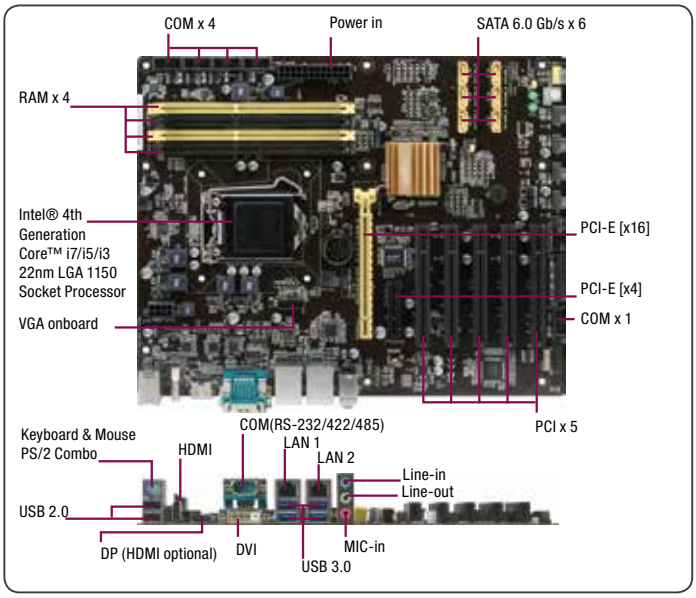


Ordering Information

Part number	CPU	RAM	Fan/Fanless	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
TF-EMB-A50M-A10	T56N	DDR3 8GB	Fan	DVI-D/HDMI	SATA3 x 5	GbE x 2	USD3.0 x 2, USB 2.0 x 10	3	1	PCIe [x4] x 1, mPCIe x 1	ATX	—	32°F ~ 140°F (0°C ~ 60°C)
TF-EMB-A50M-A10-01	T44R	DDR3 8GB	Fanless	DVI-D/HDMI	SATA3 x 5	GbE x 2	USD3.0 x 2, USB 2.0 x 10	3	1	PCIe [x4] x 1, mPCIe x 1	ATX	—	32°F ~ 140°F (0°C ~ 60°C)

IMBA-Q87A

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



Features

- **Intel® 4th Generation 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)**

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
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	Intel® 4th Generation 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 Giga LAN (supports iAMT 9.0) x 1 LAN2: Intel® I210AT Giga 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

Packing List

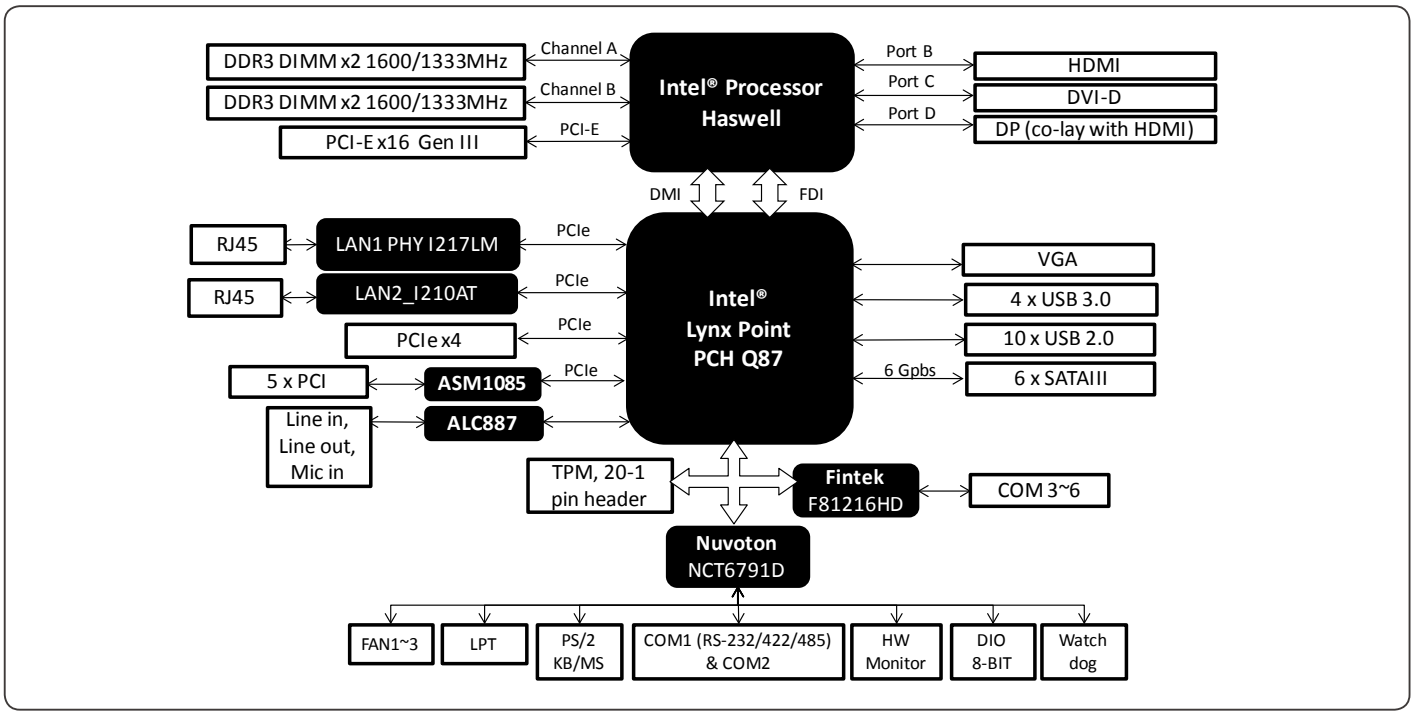
- **14001-00400100**
  COM Cable (9P, 260mm, P=2.54mm w/ bracket)
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500MM) 2 in 1
- **I/O Shield**
- **Product DVD**
- **IMBA-Q87A**

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
- **TPM Module**

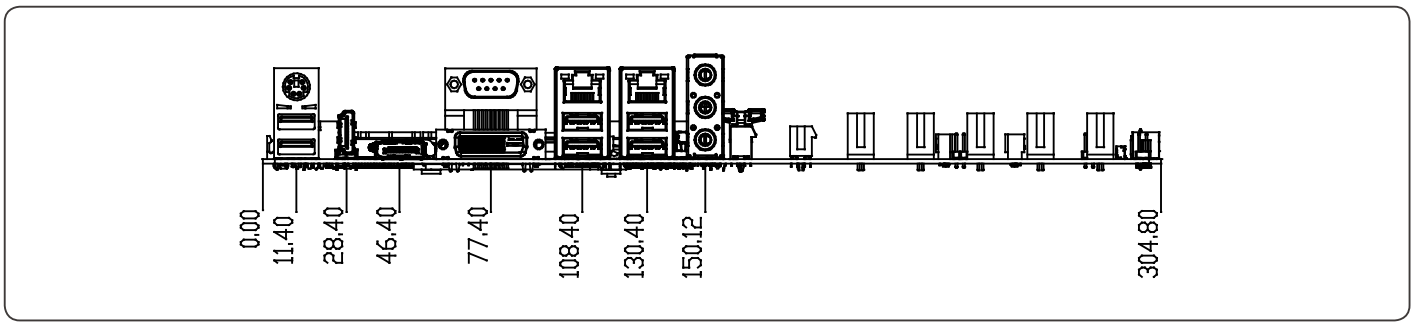
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

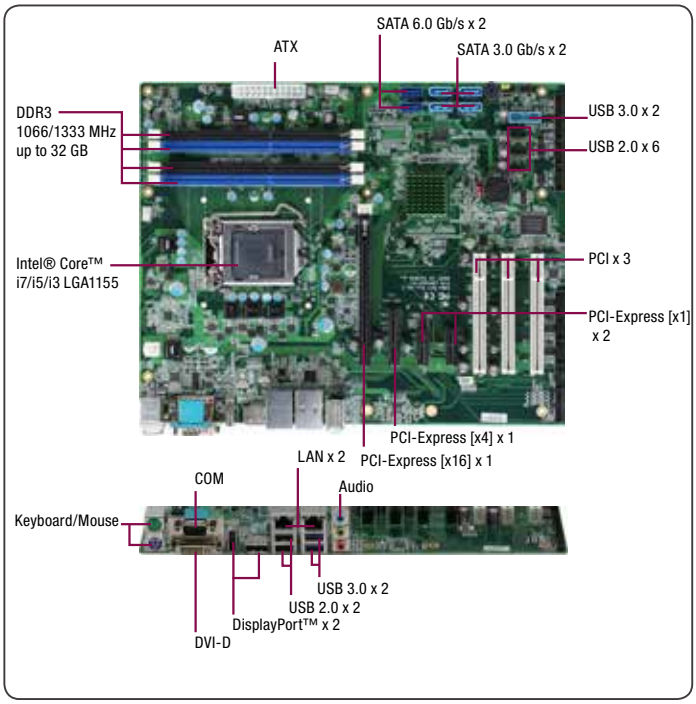


Ordering Information

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 Intel® 3rd Generation Core™ i7/i5/i3 Processor



Features

- **Intel® 3rd Generation 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, Support 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 Intel® 3rd generation LGA 1155 Processor
Chipset	Intel® Q77
Memory	Dual-Channel with 240-pin DRAM x 4, DDR3 1600/1333/1066, up to 32GB
Graphics	Intel® HD Graphics
I/O Chipset	Winbond W83627DHG
Ethernet	Intel® 82579 / 82583V, Gigabit 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	Supports System temperature, Voltage, and Cooling fan status monitoring
WatchDog Timer	System Reset: 1~255 steps programmable
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	Mini-ITX 6.7" x 6.7" (170mm x 170mm)
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, Support 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

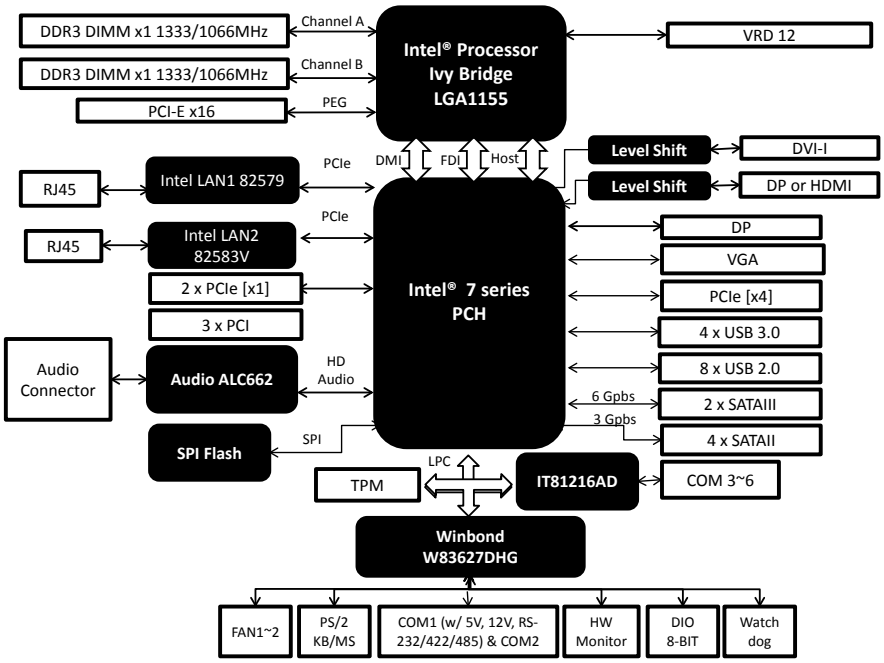
- **1700100353**
  USB 2.0 Cable
- **1701100305**
  COM Port Cable
- **1709070800**
  SATA Cable
- **Product DVD**
- **IMBA-Q77**

Optional Accessories

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

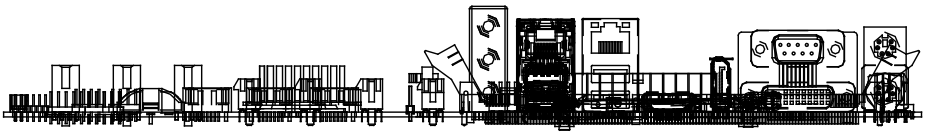
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

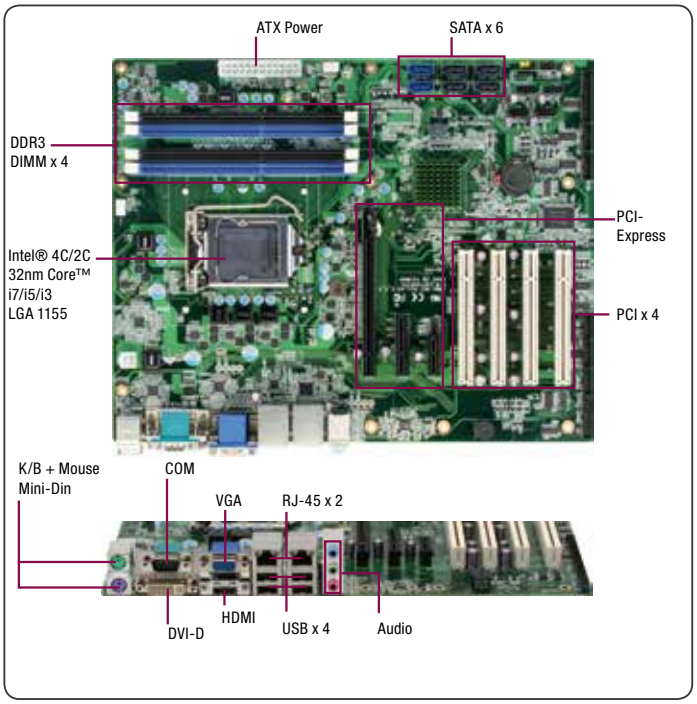


Ordering Information

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 (on board 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 (on board 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 Support Dual Display By VGA, DVI, HDMI**
- **HDAC with Realtek ALC662**
- **SATA 6.0 Gb/s and 3.0 Gb/s x 6, Support 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 Intel® 2rd generation LGA 1155 Processor
Chipset	Intel® Q67
Memory	Dual-Channel with 240-pin DRAM x 4, DDR3 1333/1066, up to 32GB
Graphics	Intel® Graphics
I/O Chipset	Winbond W83627DHG
Ethernet	Intel® 82579LM / 82574L, Gigabit 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	System Reset: 1~255 steps programmable
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	Mini-ITX 6.7" x 6.7" (170mm x 170mm)
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, Support 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

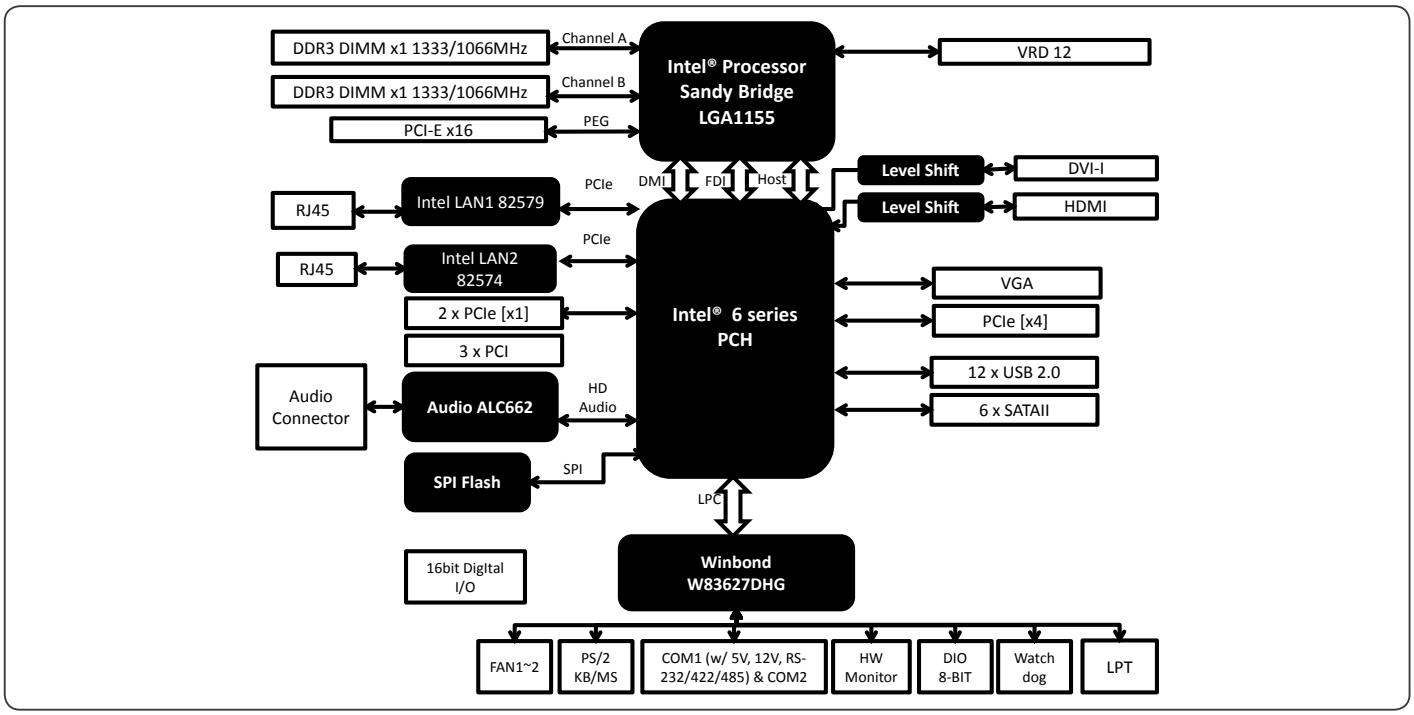
- **1700100353**
  USB Cable
- **1701100305**
  COM Port Cable
- **1709070800**
  SATA Cable
- **M20QM57000**
  I/O Shield
- **Product DVD**
- **IMBA-967**

Optional Accessories

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

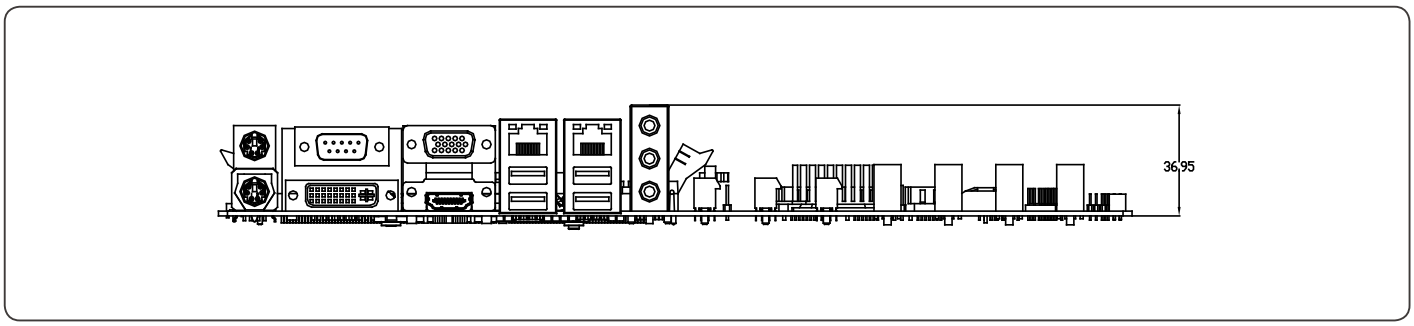
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

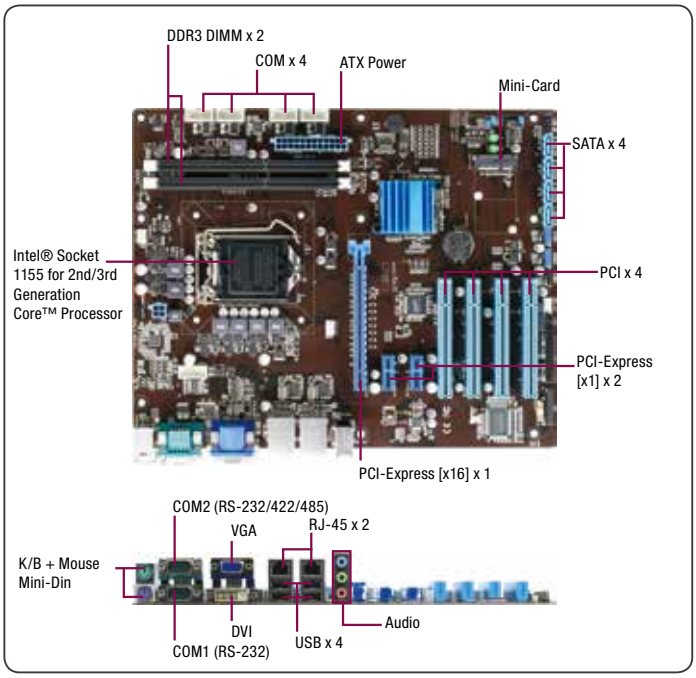


Ordering Information

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)

IMBA-H61A

ATX Industrial Motherboard with Intel® 2nd/3rd Generation Core™ i7/i5/i3/ Pentium® Processor



Features

- **Intel® Socket 1155 for 2nd/3rd Generation Core™ Processor**
- **Intel® H61 Express Chipset**
- **DDR3 1066/1333 MHz DIMM x 2, Up to 16 GB**
- **VGA, DVI Dual Independent Display**
- **Realtek RTL8111F x 2, Gigabit Ethernet x 2**
- **PCI-E [x16] x 1, PCI-E [x1] x 2, PCI x 4, Mini-Card x 1**
- **TPM Optional (Via Pin Header)**

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

Rear Panel I/O Ports	
USB	USB 2.0 port x 4
Display I/O	VGA x 1, DVI-D 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	DB-9 connector COM x 2 (COM2 supports RS-232/422/485)
PS/2 Port	PS/2 Keyboard Connector x 1, PS/2 Mouse Connector x 1
Others	—
Internal I/O Connectors	
Storage	SATA2 (3.0Gb/s) connector x 4
USB	USB 2.0 2x5-pin connector x 2 supports additional USB port x 4, USB 2.0 1x5-pin connector x 1 supports USB port x 1
Display I/O	—
Audio I/O	—
Serial Port	RS-232 header x 4
PS/2 Port	—
Parallel Port	LPT connector x 1, supports SPP/EPP/ECP Mode
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 1
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
OS	
OS Support	Windows® XP 32-bit, Windows® 7 32/64-bit, Windows® 8.1 32/64-bit

Specifications

System	
Processor	Intel® 3rd/ 2nd Generation Core™ i7/i5/i3/Pentium® / Celeron® 22nm LGA 1155 Processors
Chipset	Intel® H61 Express Chipset
Memory	240-pin DIMM x 2, max. 16GB, DDR3 1333/1066/800 MHz, non-ECC, un-buffered memory, Dual channel memory architecture
I/O Chipset	NCT6776F
Ethernet	Realtek RTL8111F Giga LAN x 2
Audio	Realtek® ALC887 (Colay with ALC886)
TPM	20-1 PIN header for TPM1.2/FW3.19
Expansion Slots	PCIe 2.0[x16] Slot x 1, PCIe 2.0 [x1] slot x 2, PCI x 4, Full/Half Size Mini-card x 1
BIOS	64Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/VBAT/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+DVI
VGA	Up to 1920 x 1200 @60 Hz
DVI	Up to 1920 x 1200 @60 Hz
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
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	1.45 lb (0.66Kg)
MTBF (Hours)	136,599

Packing List

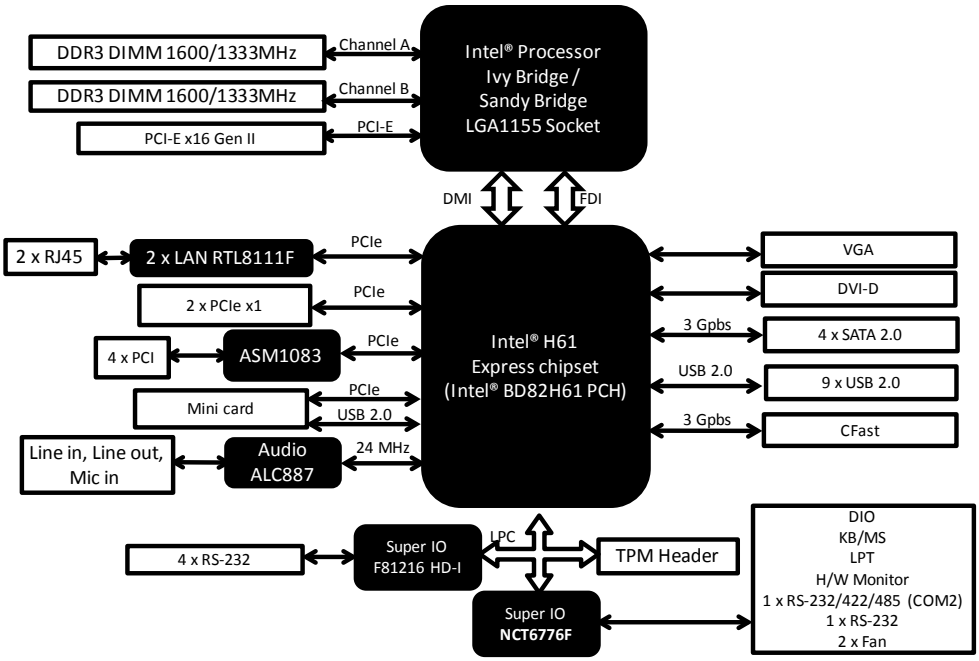
- **I/O Shield**
- **14001-00700100**
  SATA 3G Cable (7P, 180; 90, 500mm) 2 in 1
- **14001-00400100**
  COM Cable (9P, 260MM, p=2.54mm) w/bracket
- **Product CD**
- **IMBA-H61A**

Optional Accessories

- **175921156B**
  CPU Cooler (2-Ball, Push-pin Type)
- **1759200172**
  CPU Cooler (2-Ball, Screw with Retention Plate)
- **1709070800**
  SATA Cable
- **1701260305**
  LPT Cable (25p, 270MM)
- **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)
- **170910020A**
  USB 2.0 Cable (5P, 220MM, p=2.00mm)

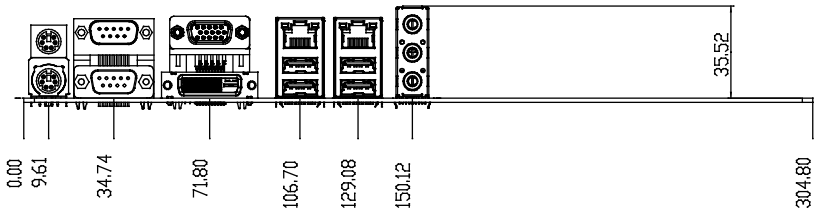
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

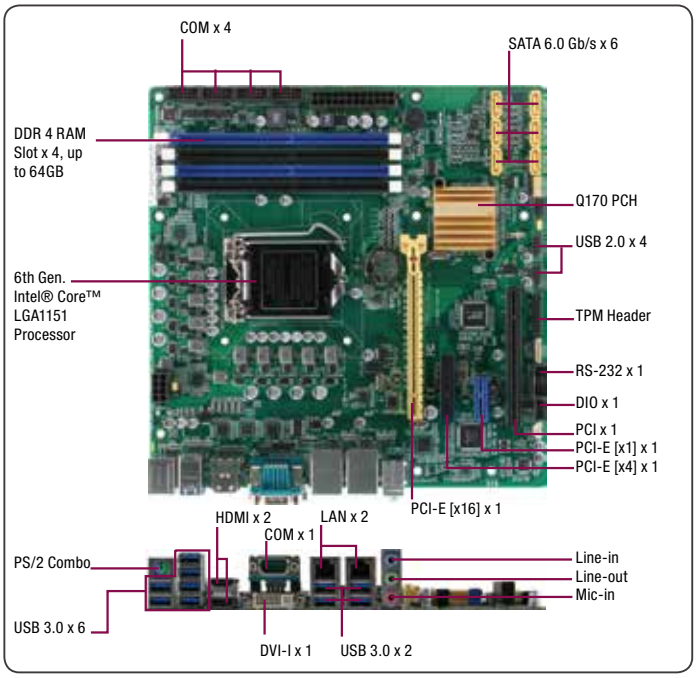


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBA-H61A-A20	LGA1155 socket	DDR3 1333/1066	Fan	VGA, DVI	SATA2 x 4	—	GbE x 2	USB 2.0 x9	5	1	PCIe[x16] x 1, PCIe[x1] x 2, PCI x 4, Mini-Card x 1	ATX	20-1 Pin Header	32°F ~ 140°F (0°C ~ 60°C)

IMBM-Q170A

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



Features

- **6th Gen. 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 Support iAMT 11.0**
- **USB 3.0 Port x 10, USB 2.0 Port x 4**
- **TPM Optional (Via Pin Header)**

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
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	Intel® 6th Generation(Skylake-S) 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 Giga LAN (supports iAMT 11.0) x 1 LAN 2: Intel® i211AT Giga 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-D+HDMI, HDMI+HDMI, VGA+HDMI, DVI-D+HDMI+HDMI, VGA+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

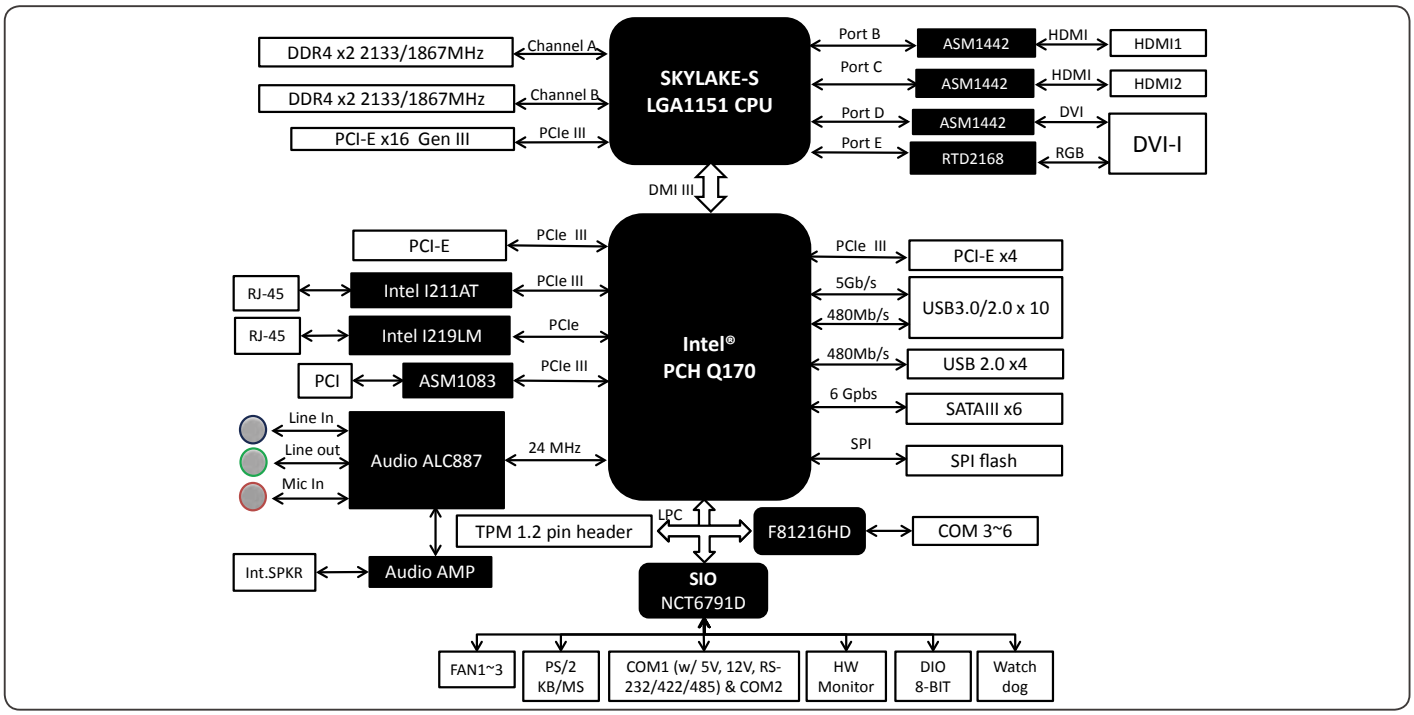
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)
- **14001-00400100**
  COM Port Cable (9P, 260mm, p=2.54mm w/bracket)
- **I/O Shield**
- **Product CD**
- **IMBM-Q170A**

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

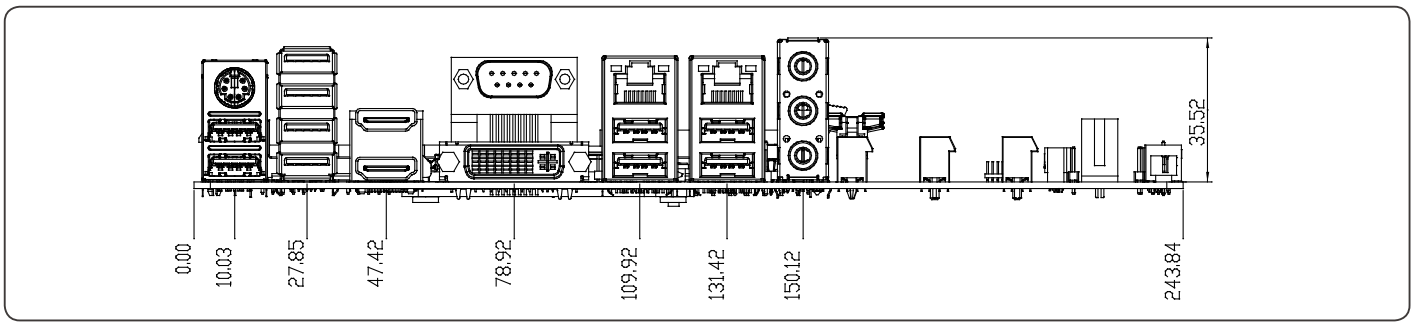
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

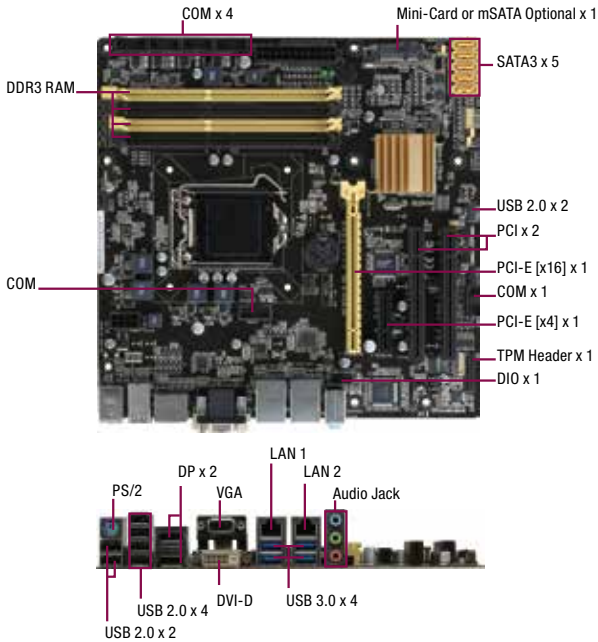


Ordering Information

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	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-Q87A

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



Features

- **Intel® 4th Generation 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

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
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, Linux Fedora

Specifications

System	
Processor	Intel® 4th Generation 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 Giga LAN (supports iAMT 9.0) x 1, Intel® I210AT Giga 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**

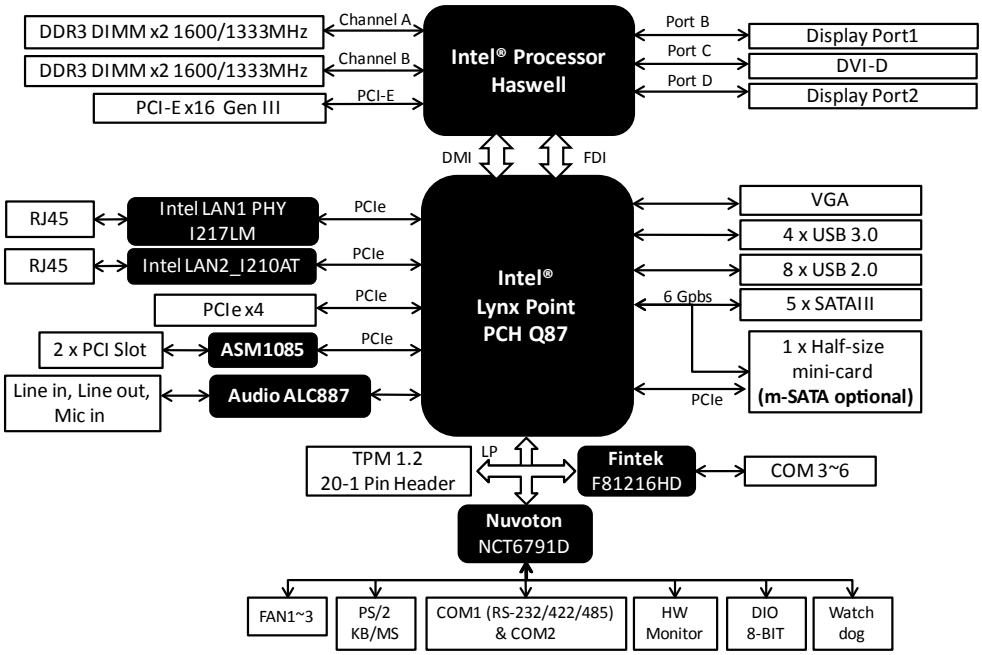
Optional Accessories

- **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
- **TPM Module**

Note: All specifications are subject to change without notice.

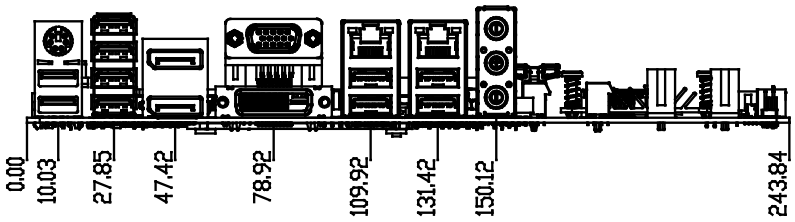
IMBM-Q87A

Block Diagram



Dimension

Unit: mm

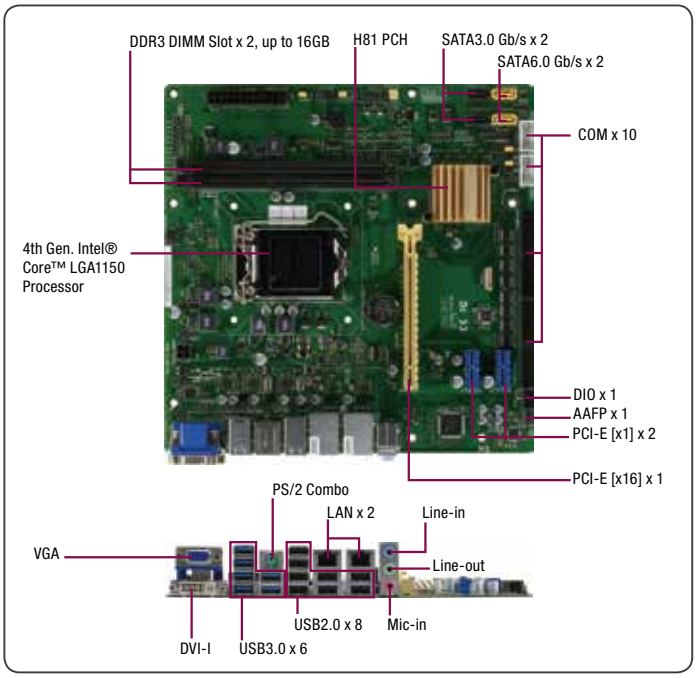


Ordering Information

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 x8	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 x8	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 Intel® 4th Generation Core™ Processor, DDR3 DRAM, USB x 14



Features

- **4th Gen. 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)**

Specifications

System	
Processor	Intel® 4th Generation 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-D, VGA+VGA
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

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
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

Packing List

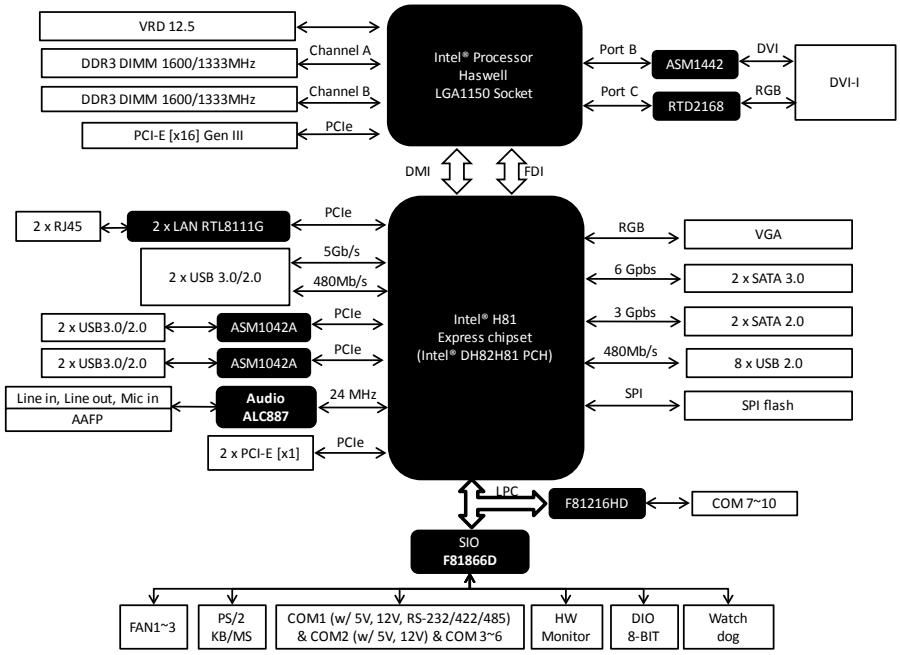
- **I/O Shield**
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)
- **Product CD**
- **IMBM-H81B**

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)

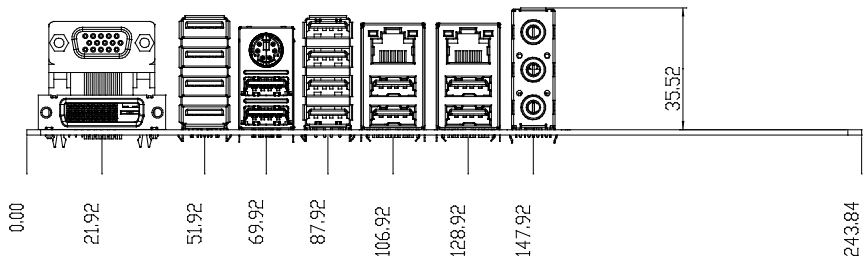
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

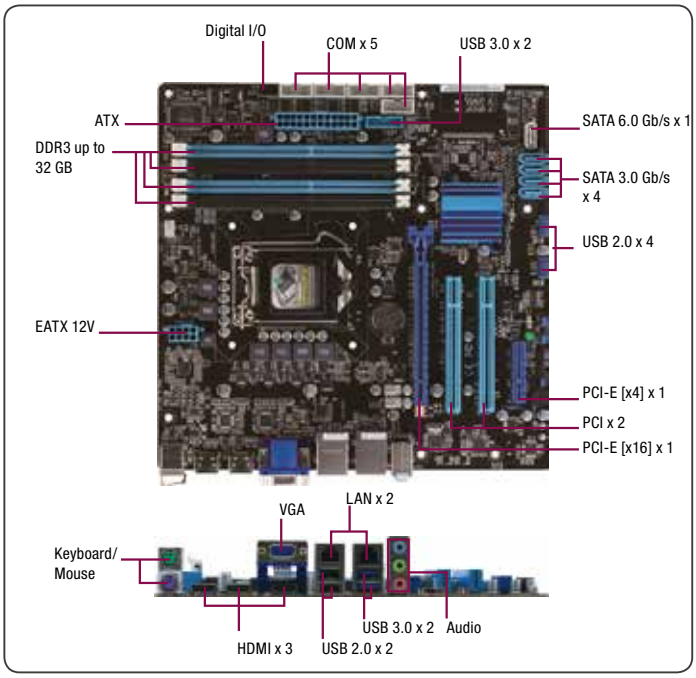


Ordering Information

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)

IMBM-B75A

Micro-ATX Industrial Motherboard with Intel® 2nd/3rd Generation Core™ i7/i5/i3 Pentium® Processor



Features

- **Intel® 2nd/3rd Generation Core™ i7/i5/i3 Processors**
- **Intel® B75**
- **DDR3 1600/1333/1066 MHz DIMM x 4, Up to 32 GB**
- **Dual/Three Independent Display: VGA, HDMI x 3**
- **Gigabit Ethernet x 2**
- **TPM Onboard**
- **SATA 6.0 Gb/s x 1, SATA 3.0 Gb/s x 4**
- **USB 3.0 x 4, USB 2.0 x 6**

Rear Panel I/O Ports	
USB	USB 3.0 port x 2, USB 2.0 port x 2
Display I/O	VGA x 1, HDMI x 3
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	Keyboard connector x 1, Mouse connector x 1
Others	—
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) connector x 1, SATA2 (3.0Gb/s) connector x 4
USB	USB 3.0 connector x 1 supports additional USB port x 2, USB 2.0 connector x 2 supports additional USB port x 4
Display I/O	—
Audio I/O	—
Serial Port	RS-232/422/485 header x 1 (COM1), RS-232 header x 4
PS/2 Port	—
Parallel Port	LPT connector x 1, supports SPP/EPP/ECP mode
DIO	8-bit Digital I/O interface x 1 (In/Out programmable)
FAN	CPU Fan connector (4-pin) x 1, Chassis Fan connector (4-pin) x 1
Others	Front panel header x 2, IrDA header x 1, Clear CMOS jumper x 1, BIOS flash header (2[x4]P p=1.27mm) x 1
OS	
OS Support	Windows® XP 32/64-bit, Windows® 7 32/64-bit, Linux Fedora

Specifications

System	
Processor	Intel® 3rd/ 2nd Generation Core™ i7/i5/i3/Pentium®/ Celeron® 22nm LGA 1155 Processors
Chipset	Intel® B75 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	ITE IT8783F
Ethernet	Realtek RTL8111F Giga LAN x 2
Audio	Realtek® ALC887
TPM	Infineon SLB9635 TT 1.2
Expansion Slots	PCIe 3.0/2.0[x16] x 1, PCIe 2.0[x4] x 1, PCI x 2
BIOS	64Mbit 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
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; 3rd Generation Processors support: VGA+HDMI+HDMI, HDMI+HDMI+HDMI
VGA	Up to 1920 x 1200 @60Hz
DVI	—
HDMI	Up to 1920 x 1080 @60Hz
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)	83,621

Packing List

- **14001-00400100**
  COM Cable (9P, 260MM, p=2.54mm) w/bracket
- **I/O Shield**
- **14001-00700100**
  SATA 3G Cable (7P, 180; 90, 500mm) 2 in 1
- **Product CD**
- **IMBM-B75A**

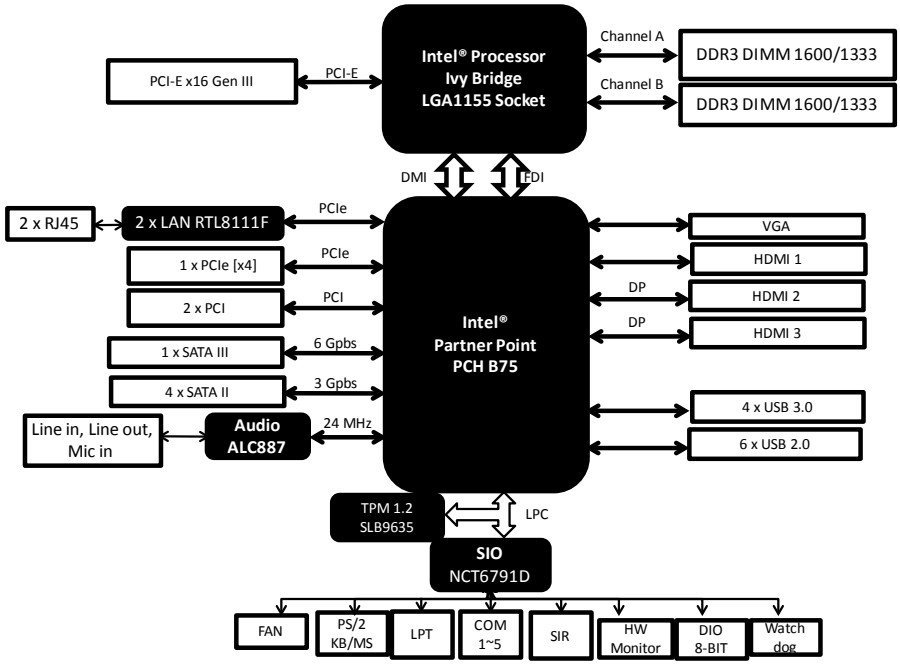
Optional Accessories

- **175921156B**
  CPU Cooler (2-Ball, Push-pin Type)
- **1759200172**
  CPU Cooler (2-Ball, Screw with Retention Plate)
- **1709070800**
  SATA Cable
- **1701100260**
  COM Cable (4P, 260MM, p=2.54mm)
- **1701260305**
  LPT Cable (25P, 270MM)
- **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)
- **1700190450**
  USB 3.0 Cable (450MM, p=2.54mm)

Note: All specifications are subject to change without notice.

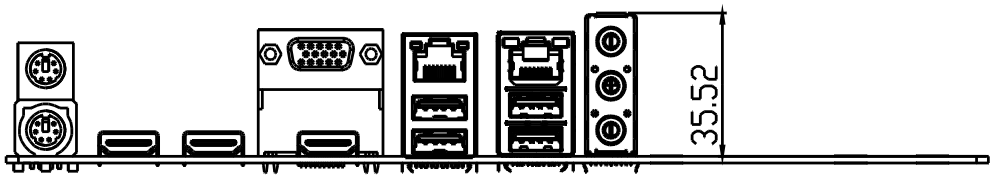
IMBM-B75A

Block Diagram



Dimension

Unit: mm

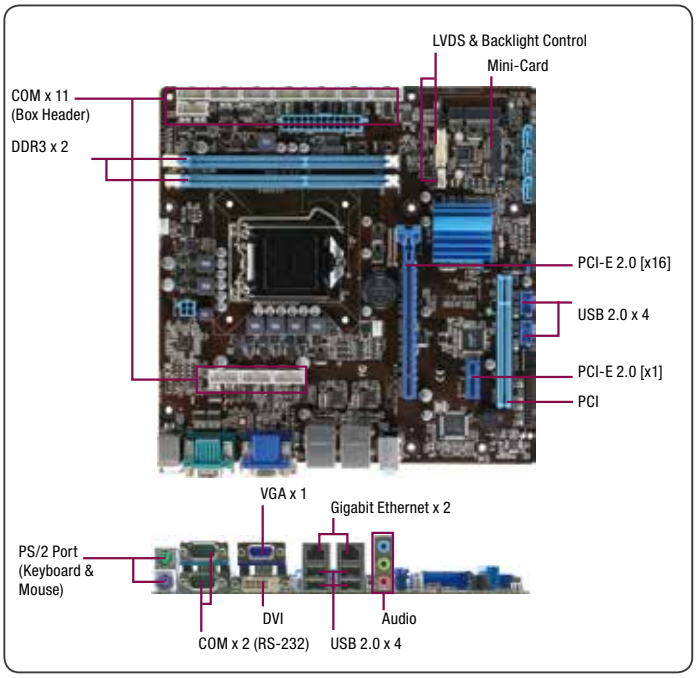


Ordering Information

Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBM-B75A-A30	LGA1155 socket	DDR3 1600/1333/1066	Fan	VGA, HDMI x 3	SATA2 x 4, SATA3 x 1	—	GbE x 2	USB 3.0 x 4, USB 2.0 x6	4	1	PCIe[x16] x 1, PCIe[x4] x 1, PCI x 2	ATX	Onboard	32°F ~ 140°F (0°C ~ 60°C)

IMBM-H61A

Micro-ATX Industrial Motherboard with Intel® 2nd/3rd Generation Core™ i7/i5/i3 Processor



Features

- **Intel® 2nd/3rd Generation Core™ i7/i5/i3 Processor**
- **Intel® H61**
- **VGA x 1, DVI x 1, LVDS x 1**
- **Gigabit Ethernet x 2**
- **COM x 13 (RS-232 x 11, RS-232/422/485 x 2)**
- **SATA 3.0 Gb/s x 3 + CFast™ Socket x 1**
- **Multiple Expansion Slot: PCI-E 2.0 [x16] x 1, PCI-E 2.0 [x1] x 1, PCI x 1, Mini-Card x 1**

Specifications

System	
Processor	Intel® 3rd/ 2nd Generation Core™ i7/i5/i3/Pentium®/ Celeron® 22nm LGA 1155 Processors
Chipset	Intel® H61 Express Chipset
Memory	240-pin DIMM x 2, max. 16GB, DDR3 1333/1066/800 MHz, non-ECC, un-buffered memory, Dual channel memory architecture
I/O Chipset	Fintech 81866D (5 COM), Fintech 81216HD (8 COM) x 2
Ethernet	Realtek RTL8111F Giga LAN x 2
Audio	Realtek ALC887
TPM	—
Expansion Slots	PCIe 2.0[x16] Slot x 1, PCIe 2.0 [x1] Slot x 1, PCI x 1, Half Size Mini-Card x 1
BIOS	64Mbit 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, LVDS+DVI
VGA	Up to 1920 x 1200 @75Hz
DVI	Up to 1920 x 1200 @60 Hz
HDMI	—
Display Port	—
LVDS	Up to 1920 x 1200 @60 Hz
eDP	—
Backlight Control	Voltage/ PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 4-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% ~ 80% RH , non-condensing
Certificate	CE & FCC Class A
Form Factor	Micro-ATX Form Factor, 9.6" x 9.6" (244mm x 244mm)
Weight	1.55 lb (0.7 Kg)
MTBF (Hours)	87,274

Rear Panel I/O Ports	
USB	USB 2.0 port x 4
Display I/O	VGA x 1, DVI-D 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	RS232 DB-9 connector x 2
PS/2 Port	PS/2 Keyboard Connector x 1, PS/2 Mouse Connector x 1
Others	—
Internal I/O Connectors	
Storage	SATA2 (3.0Gb/s) connector x 3, CFast™ Socket x 1
USB	USB 2.0 connector x 2 supports additional USB port x 4
Display I/O	LVDS x 1
Audio I/O	—
Serial Port	RS-232/422/485 box header x 2, RS-232 box header x 9
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 (4-pin) x 1, Chassis Fan connector (4-pin) x 1
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® XP 32-bit, Windows® 7 32/64-bit, Linux Fedora

Packing List

- **14001-00400100**
  COM Cable (9P, 260MM, p=2.54mm) w/bracket
- **I/O Shield**
- **14001-00700100**
  SATA 3G Cable (7P, 180; 90, 500mm) 2 in 1
- **Product CD**
- **IMBM-H61A**

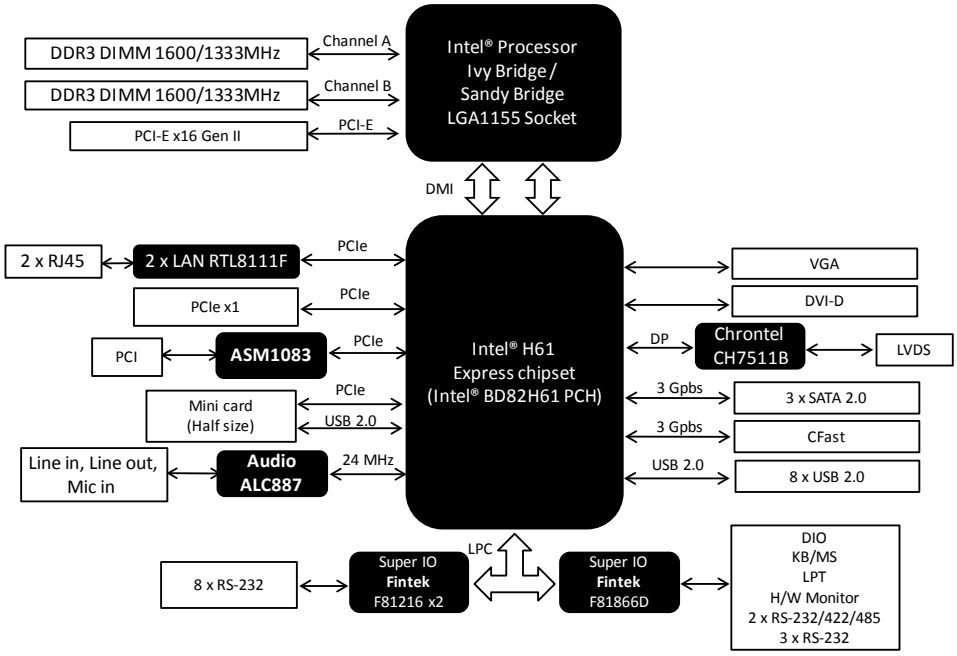
Optional Accessories

- **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)
- **1759200172**
  CPU Cooler (2-Ball, Screw with Retention Plate)
- **175921156B**
  CPU Cooler (2-Ball, Push-pin Type)
- **1709070800**
  SATA Cable
- **1701260305**
  LPT Cable (25P, 270MM)

Note: All specifications are subject to change without notice.

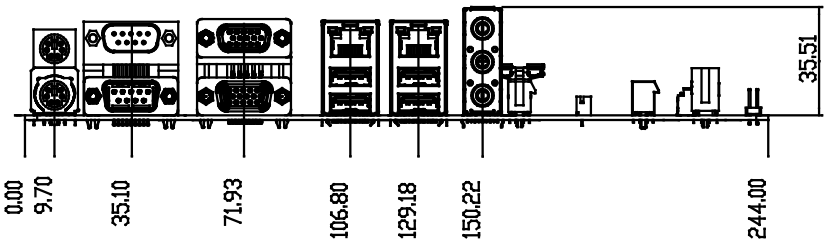
IMBM-H61A

Block Diagram



Dimension

Unit: mm

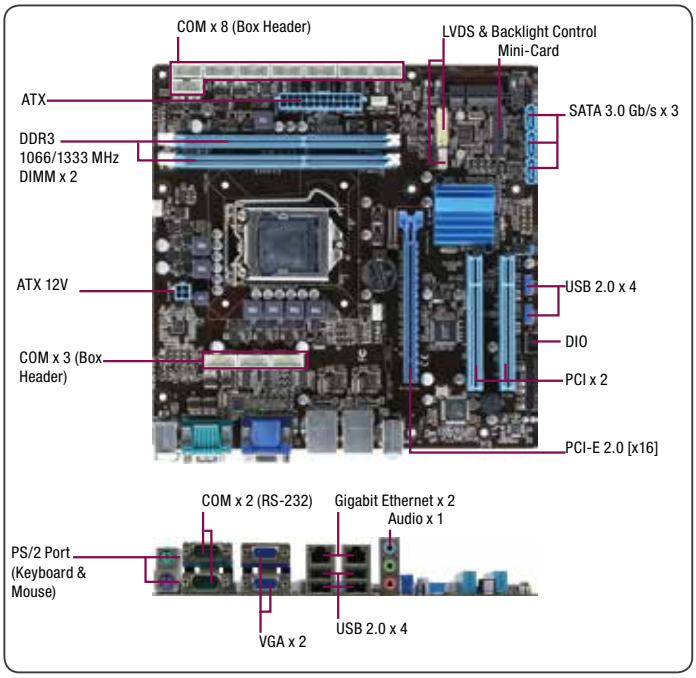


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp.
IMBM-H61A-A10-G2	LGA1155 socket	DDR3 1600/1333/1066	Fan	VGA, DVI	SATA2 x 3, CFast Socket x 1	24b, 2CH	GbE x 2	USB 2.0 x8	11	2	PCIe[x16] x 1, PCIe[x1] x 1, PCI x 1, Mini-Card x 1	ATX	32°F ~ 140°F (0°C ~ 60°C)

IMBM-H61B

Micro-ATX Board with Intel® 3rd/2nd Generation Core™ i7/i5/i3 Processor, COM x 13 & USB x 8



Features

- **Intel® Socket 1155 for 2nd/3rd Generation Core™ i7/i5/i3 Processor**
- **Intel® H61 Express Chipset**
- **DDR3 1066/1333 MHz DIMM x 2, Up to 16 GB**
- **Realtek RTL8111F x 2, Gigabit Ethernet x 2**
- **Realtek ALC887**
- **VGA x 2, LVDS Dual Independent Displays**
- **COM x 13, USB 2.0 x 8, SATA 3.0 Gb/s x 3, CFast™ x 1**
- **PCI-E [x16] x 1, PCI x 2, Mini-Card x 1**

PCI Express · 1000 Giga LAN · DDR 2 · USB 2.0 · CE FC

Rear Panel I/O Ports	
USB	USB 2.0 port x 4
Display I/O	VGA 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	RS232 DB-9 connector x 2
PS/2 Port	PS/2 Keyboard Connector x 1, PS/2 Mouse Connector x 1
Others	—
Internal I/O Connectors	
Storage	SATA2 (3.0Gb/s) connector x 3, CFast™ Socket x 1
USB	USB 2.0 connector x 2 supports additional USB port x 4
Display I/O	LVDS x 1
Audio I/O	—
Serial Port	RS-232/422/485 box header x 2 (COM4 & COM9, COM 4 supports 5V/12V/RI option), RS-232 box header x9 (COM3, COM5~8, COM10~13)
PS/2 Port	—
Parallel Port	LPT connector x 1, SPP/EPP/ECP mode support
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 (Fan2 optional)
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® XP 32-bit, Windows® 7 32/64-bit, Linux Fedora

Specifications

System	
Processor	Intel® 3rd/ 2nd Generation Core™ i7/i5/i3/Pentium®/ Celeron® 22nm LGA 1155 Processors
Chipset	Intel® H61 Express Chipset
Memory	240-pin DIMM x 2, max. 16GB, DDR3 1333/1066/800 MHz, non-ECC, un-buffered memory, Dual channel memory architecture
I/O Chipset	Fintech 81866D (5 COM), Fintech 81216HD (8 COM) x 2
Ethernet	Realtek RTL8111F Giga LAN x 2
Audio	Realtek ALC887
TPM	—
Expansion Slots	PCIe 2.0[x16] Slot x 1, PCI x 2, Half Size Mini-Card x 1
BIOS	64Mbit 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_1+LVDS, VGA1+VGA2, LVDS+VGA2
VGA	Up to 1920 x 1200 @75Hz
DVI	—
HDMI	—
Display Port	—
LVDS	Up to 1920 x 1200 @60 Hz
eDP	—
Backlight Control	Voltage/ PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 4-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% ~ 80% RH , non-condensing
Certificate	CE & FCC Class A
Form Factor	Micro-ATX Form Factor, 9.6" x 9.6" (244mm x 244mm)
Weight	1.55 lb (0.7 Kg)
MTBF (Hours)	—

Packing List

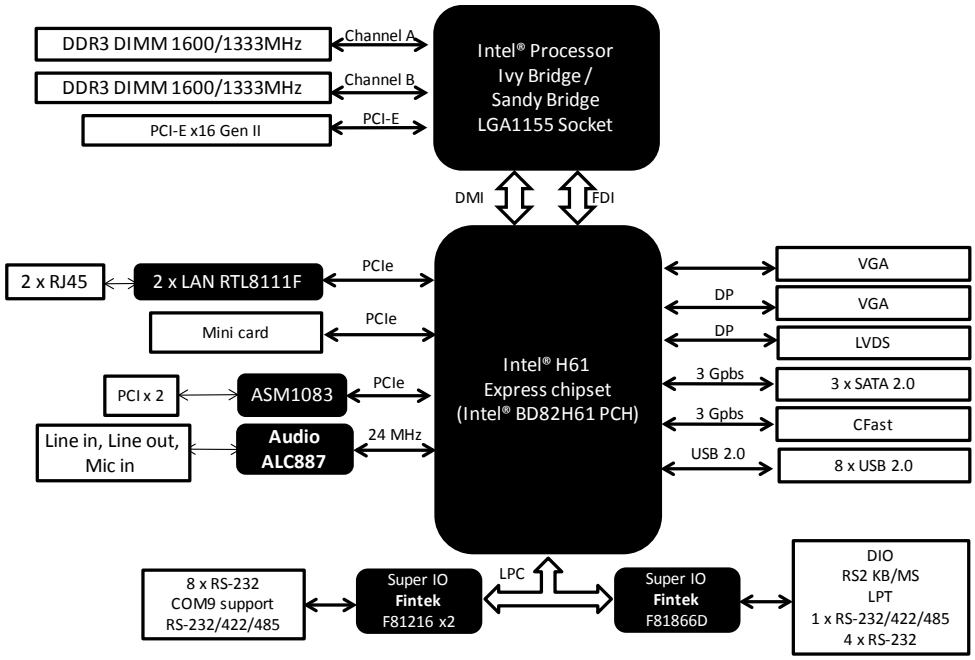
- **14001-00400100**
  COM Cable (9P, 260MM, p=2.54mm) w/bracket
- **I/O Shield**
- **14001-00700100**
  SATA 3G Cable (7P, 180; 90, 500mm) 2 in 1
- **I/O Shield**
- **Product CD**
- **IMBM-H61B**

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)
- **1709070800**
  SATA Cable

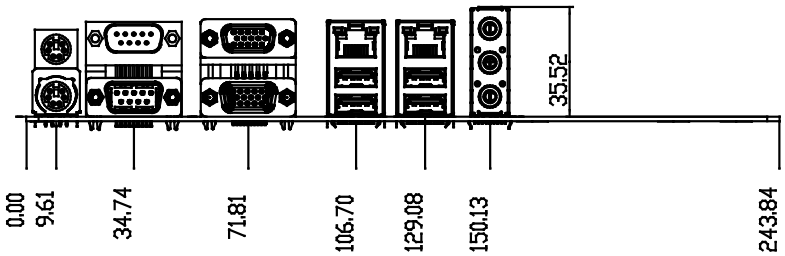
Note: All specifications are subject to change without notice.

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-H61B-A10	LGA1155 socket	DDR3 1333/1066	Fan	VGA x 2	SATA2 x 3, CFast Socket x 1	18/24b, 2CH	GbE x 2	USB 2.0 x8	11	2	PCIe[x16] x 1, PCI x 2, Mini-Card x 1	ATX	—	32°F ~ 140°F (0°C ~ 60°C)

Networking Motherboards

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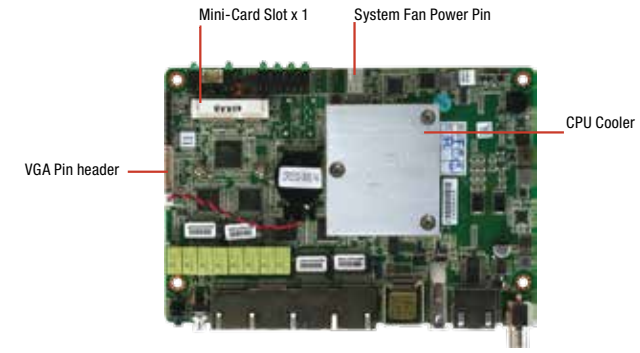
11

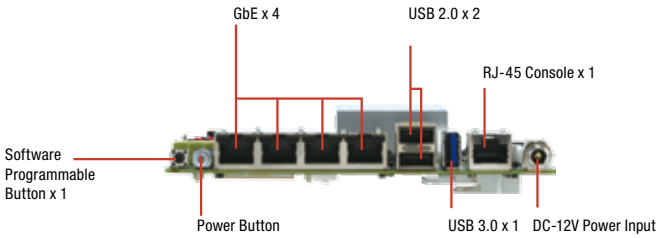
FWB-2250

4 LAN Ports Networking Motherboard with Intel® Atom™ E3815 Processor SoC

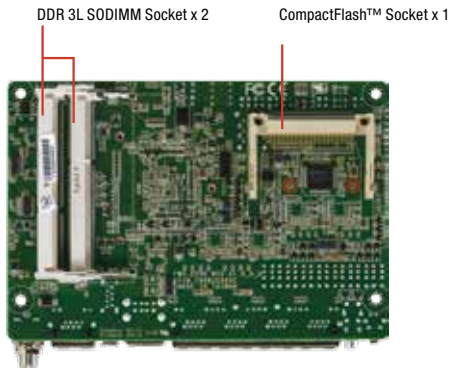
Front View



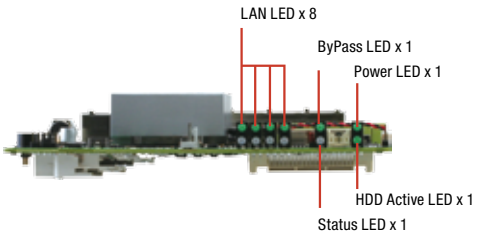
IO View



Rear View



Side View



Features

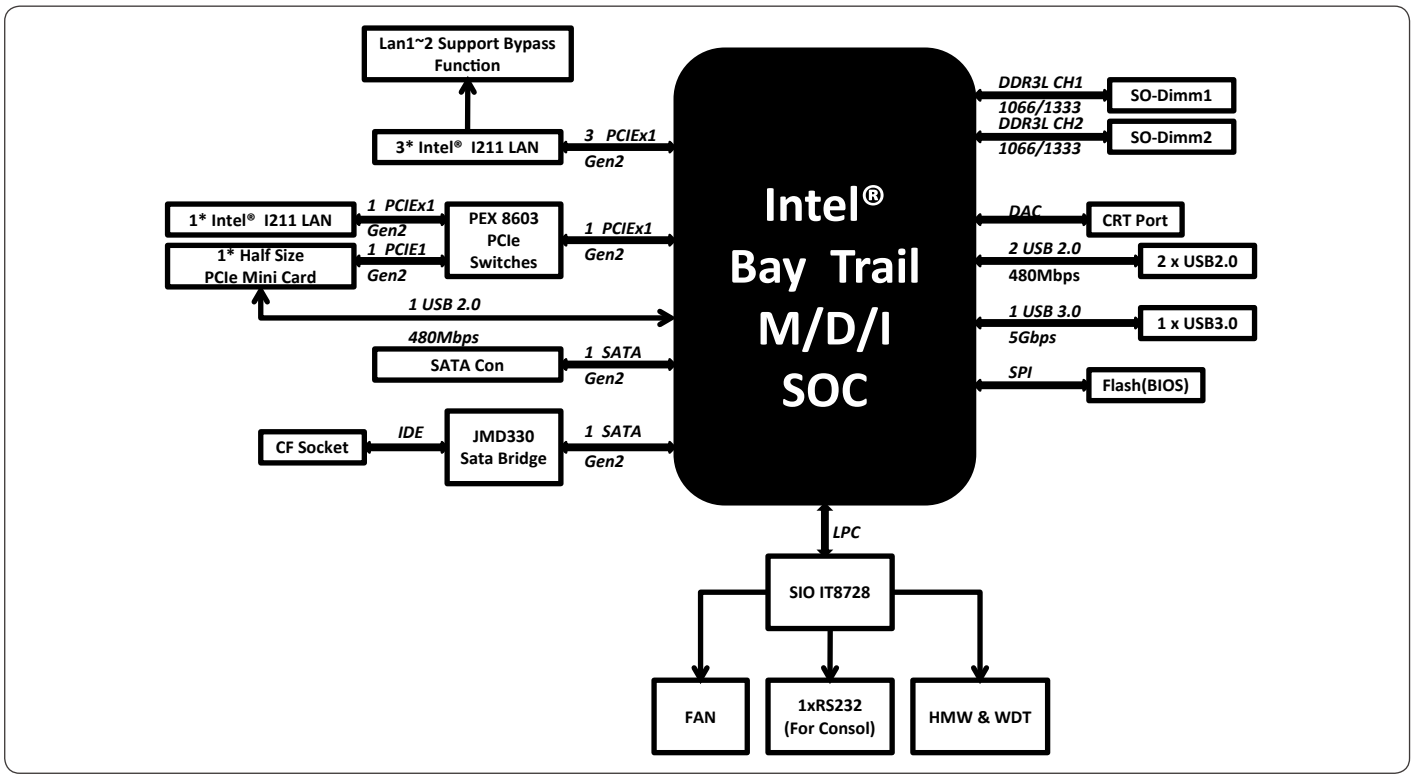
- **Intel® Atom™ E3815 Processor SoC**
- **204-pin Signle-channel DDR3L 1066/1333MHz SODIMM x 1, Up to 8 GB**
- **10/100/1000Base-TX Ethernet Port x 4**
- **SATA 3.0 Gb/s x 1**
- **CompactFlash™ Socket x 1**
- **Mini-Card Slot x 1**
- **RJ-45 Console x 1, USB 3.0 x 1, USB 2.0 x 2**

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% @RH, 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

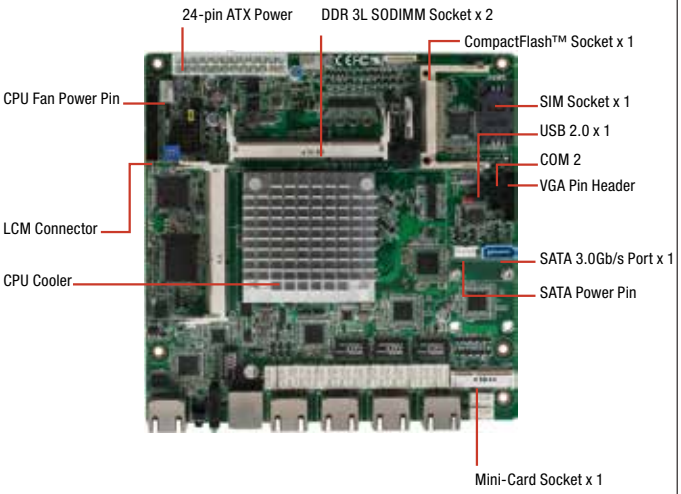
Ordering Information

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

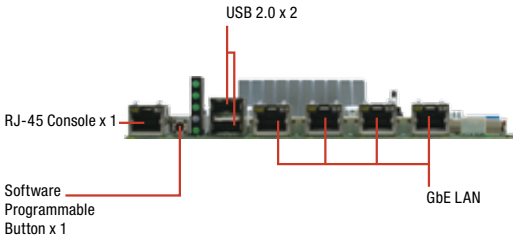
FWB-7250

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**

DDR 3L 1000 Giga LAN USB 2.0 CE FC

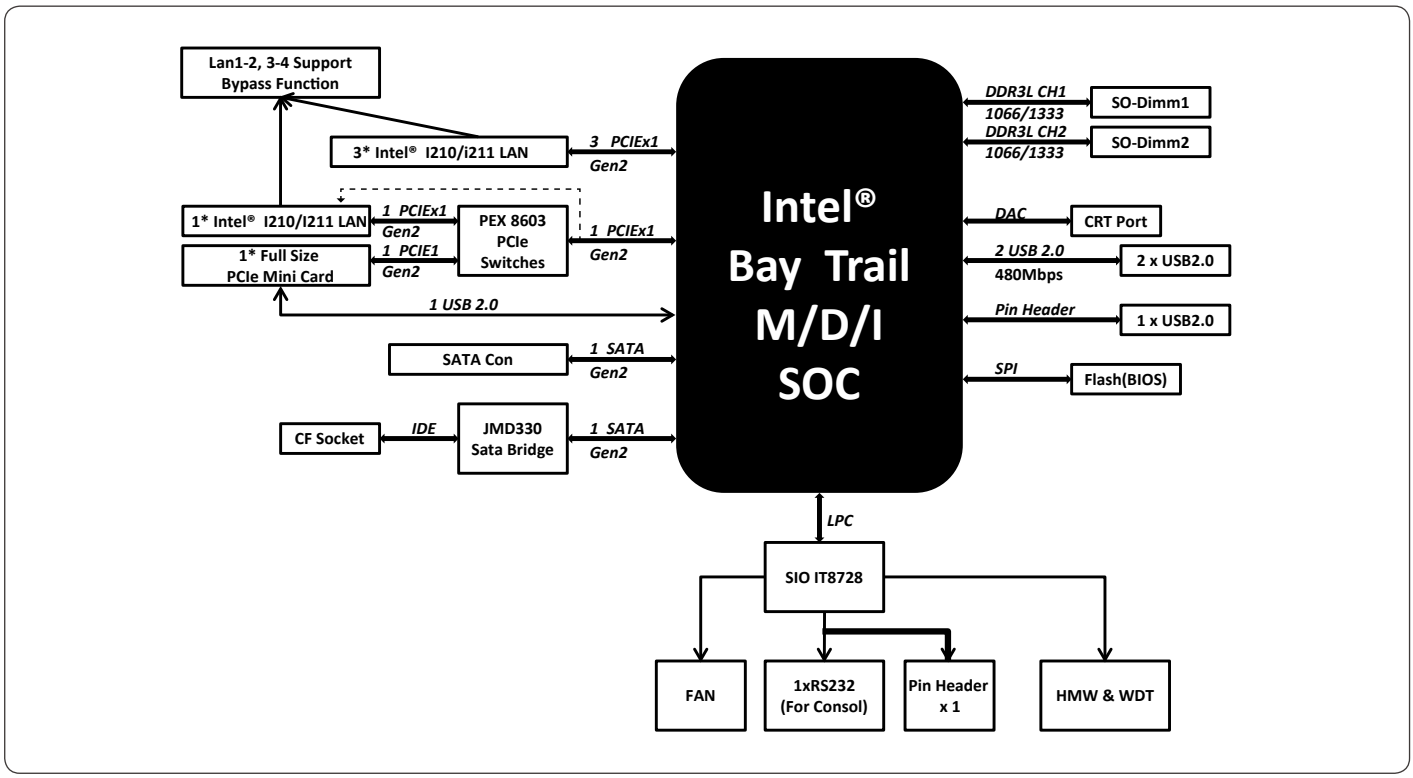
Specifications

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, SATA II connector x 1 (Optional SATA II 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" (170mm x 170mm)
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.

FWB-7250

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

IoT Gateway Boards

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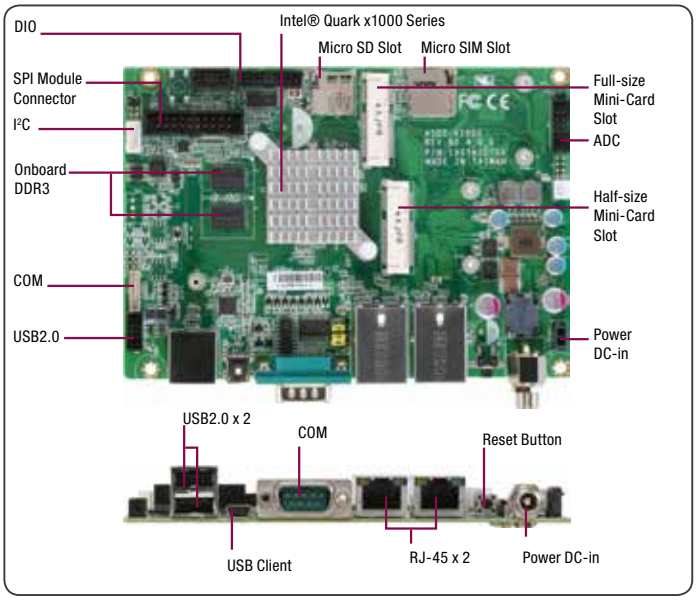
AIOT-X1000

3.5” SubCompact Board with Intel® Quark x1000 Series Processor SoC



Features

- **Intel® Quark x1000 Series Processor SoC**
- **Onboard 1 GB DDR3 800 MHz**
- **Micro SD Slot x 1**
- **USB2.0 x 4**
- **COM x 2 (RS-232 x 1, RS-232/422/485 x 2)**
- **Moon Island Capable with McAfee Security**
- **VDC 5V or 9~24V (Phoenix/Lockable VDC Connector)**

Specifications

System	
Processor	Intel® Quark x1000 Series Processor SoC, 400MHz
System Memory	Onboard DDR3 800 MHz ECC, un-buffered memory, up to 1 GB
TPM	SLB9645TT1.2
Expansion Interface	Full Size Mini-PCIe Slot for PCIe and USB Host Interface x 1 Half-size Mini-PCIe Slot for PCIe x 1
Boot Loader	8 MB SPI Flash
I/O	
Storage	Micro SD card slot x 1
Serial Port	RS-232 x 1, RS-232/422/485 x 1
USB	USB2.0 x 4, USB client port x 1
LAN	10/100Base-TX, RJ-45 x 2
DIO	16-bit Digital I/O interface
ADC	Supports 8-pin with 12-bit resolution, Analog input range: 0 V to 2.5 V (0 - 20mA)
SPI	2 pairs (support optional module)
I2C	1 pair (supports optional module)
Power	
Power Requirement	VDC 5V, or 9~24V
Environmental	
Operating Temperature	Standard Version: 32°F ~ 140°F (0°C ~ 60°C) Wide-Temp Version: -40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Mechanical	
Board Size	5.75" x 4" (146mm x 101.6mm)
Gross Weight	0.88 lb (0.4 kg)
Others	
Operating System	Wind River Linux with McAfee for Moon Island Support Yocto linux
Optional Module	Wi-Fi, Bluetooth, ZigBee, 3G (Wind River) Wi-Fi, Bluetooth, 3G (Yocto)

Packing List

- **1709100208**
  USB cable
- **1701090201**
  COM cable
- **Product CD**
- **AIOT-X1000 with Heatsink**

I/O Ports Placement

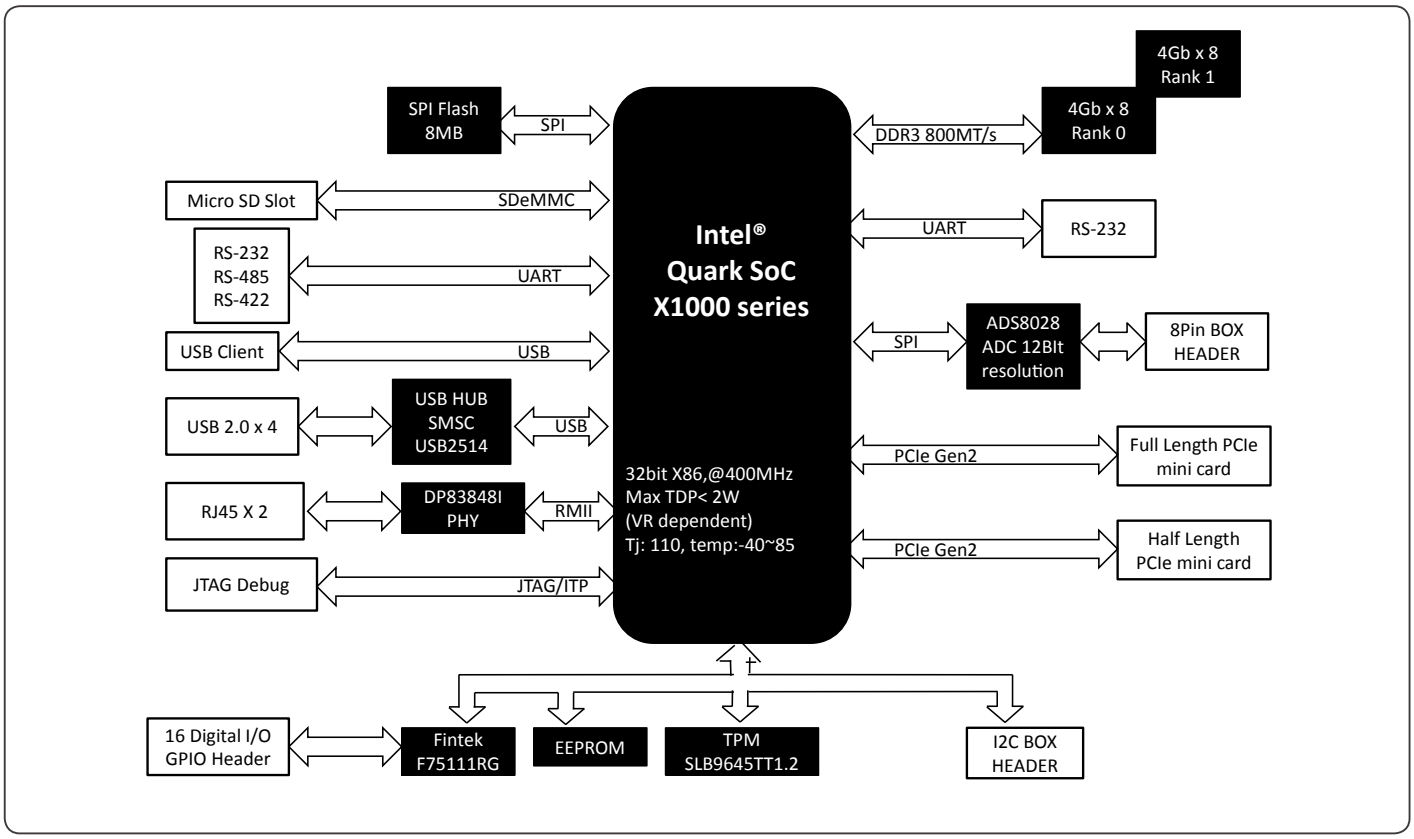
Rear I/O Port
USB2.0 Port x 2 Mini USB Port x 1 Serial Port (RS-232/422/485) x 1 LAN (RJ-45) Port x 2 Reset Button x 1 Lockable DC connector (VDC 5V, or 9~24V) x 1
Internal I/O Connectors
Full Size Mini-Card Slot x 1 Half-size Mini-Card Slot x 1 Micro SD Card Slot x 1 RS-232 Header x 1 (Optional for RS-422/485) USB2.0 Header x 1 support 2 ports I2C x 1 ZigBee SPI Module connector x 1 SPI x 2 DIO x 1 ADC x 1 SYS LED x 1 Reset Button x 1 (Software) DC power Input connector x 1 Reset Button x 1 (Hardware) Micro SIM Slot x 1 HDD LED x 1

Optional Accessories

- **1255300607**
  Power Adapter for AIOT-X1000

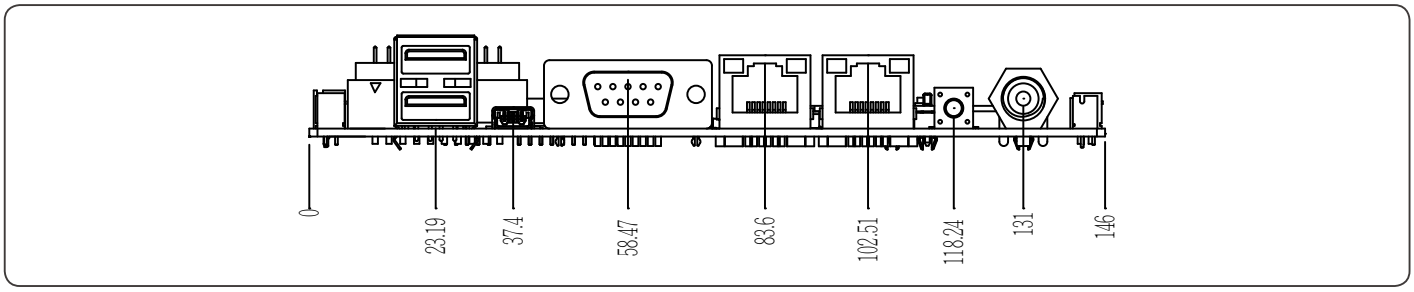
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	Moon Island Production Kit	DRAM	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion slot	Temp	ADC	DIO	USB Client	I2C
AIOT-X1000-B10-01	Quark x1021	1	DDR3 1 GB	4 GB	10/100 x 2	2.0 x 4	1	1	Mini PCIe slot x 2	-20°C ~ 70°C	1	1	1	1
AIOT-X1000-B10-03	Quark x1000	—	DDR3 512 MB	4 GB	10/100 x 2	2.0 x 4	1	1	Mini PCIe slot x 1	0°C ~ 60°C	—	—	—	—

Full-Size SBCs

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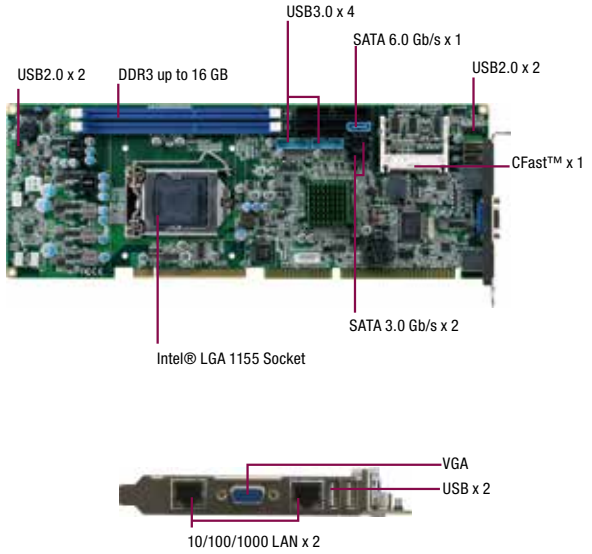
FSB-B75G

Full-Size SBC with Intel® 3rd Generation 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

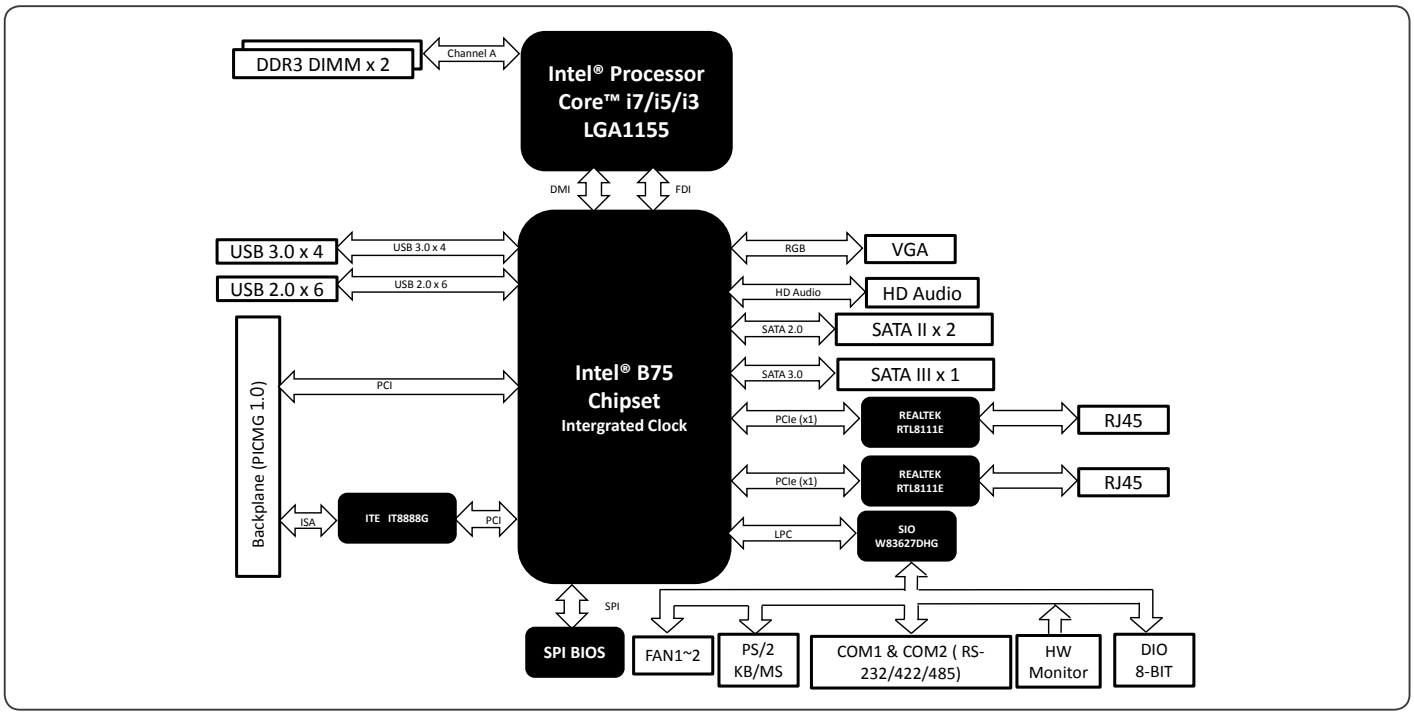
- **1701260307**
  Flat Cable, 9P/DB9P Male & 25P DB25P Female, 10P 2mm & 26P 2mm/IDC No Fold
- **1701100305**
  Flat Cable, 9P/DB9P Male, 10P/2.0mm Pitch/IDC No Fold, 30cm with Bracket
- **1709100201**
  USB Cable, 20cm, 2.0mm Pitch, with Bracket
- **1709070460**
  SATA Cable, 1.27mm Pitch, 46cm with 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

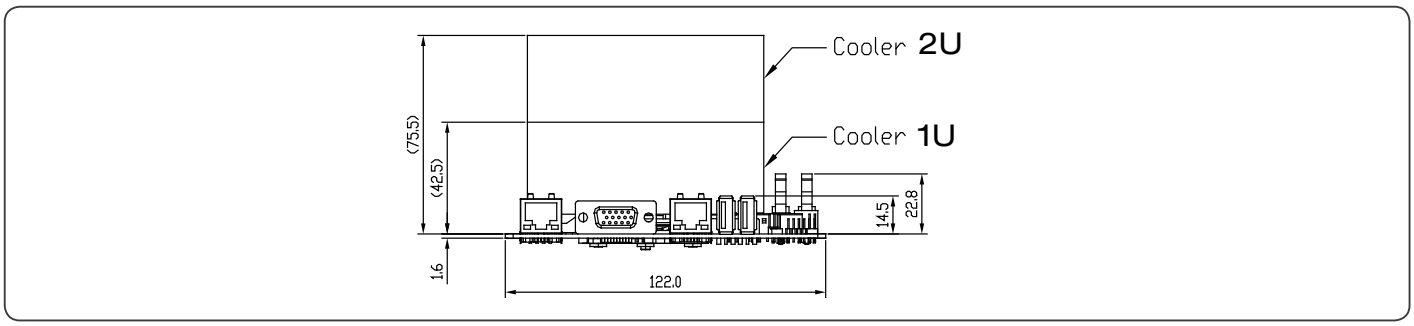
Note: All specifications are subject to change without notice.

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.

PICMG 1.0 Backplanes

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

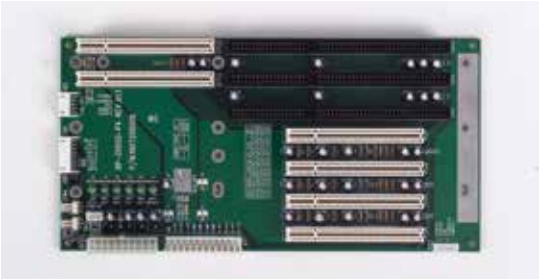
Master	PICMG 1.0
PICMG	2
PCI	4
ISA	3
System	Single
Fan Connector	2
ATX Control Connector	1
ATX Power Connector	1
AT Power Connector	1
Dimension	10.4" x 8.6" (264mm x 219mm)

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.

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Half-size SBCs

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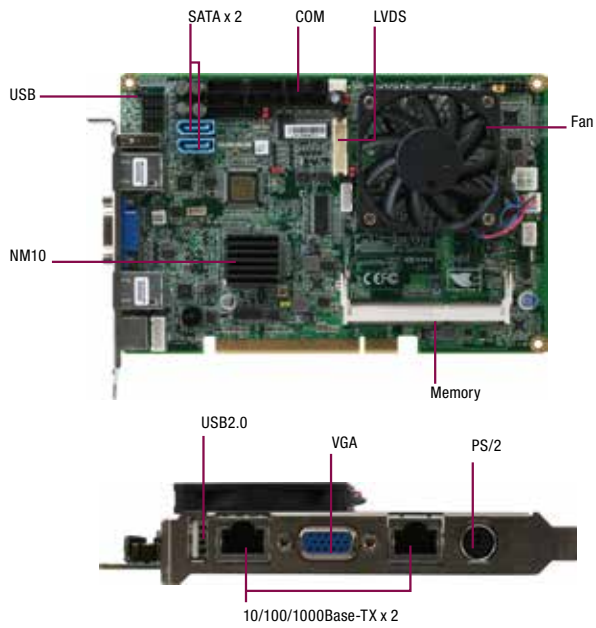
HSB-CV1P

PCI Half-Size SBC with Intel® Atom™ D2550/N2600 Processor



Features

- Onboard Intel® Atom™ D2550/N2600 Processor
- Intel® NM10
- DDR3 800/1066 MHz SODIMM x 1, Up to 4 GB (D2550), 2 GB (N2600)
- HD Codec Audio Daughter Board (Optional)
- Gigabit Ethernet x 2
- USB 2.0 x 8
- COM x 4 (RS-232 x 3, RS-232/422/485 x 1)
- SATA 3.0 Gb/s x 2, Digital I/O, Parallel Port x 1, IrDA Port x 1
- Up to 24-bit Single Channel LVDS (N2600 Supports 18-bit Single Channel Only)
- Note: The IrDA function will be disabled under Windows® 7 Operating System.

Specifications

System	
Form Factor	Half-size CPU Card
Bus Interface	PCI
CPU	Onboard Intel® Atom™ D2550/ N2600
Memory Type	DDR 3 800/ 1066 SODIMM x 1, max. 4 GB
Chipset	Intel® NM10
BIOS	AMI
Wake on LAN	No
Watchdog Timer	255 Levels
Power Requirement	ATX 2.1
Power Consumption (Typical)	Intel® Atom™ D2550 1.86 GHz, DDR3 4 GB 0.1A @+12V, 0.95A@+5V, 5.95W
Power Supply Type	ATX 2.1 (+12V)
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)	80,000
Certification	CE/FCC, Class A
Display	
VGA/LCD Controller	Intel® NM10
Video Output	Up to 1920 x 1200 for CRT Up to 1440 x 900, (D2550) 18-bit & 24-bit Single channel for LVDS Up to 1366 x 768, (N2600) 18 bit single channel for LVDS
Backlight inverter supply	5V/12V
I/O	
Ethernet	10/100/1000Base-TX x 2
Audio	HD codec daughter board (optional)
USB Port	USB2.0 x 8
Serial Port	RS-232 x 3 (-12V Required) RS-232/422/485 x 1
Parallel Port	1
HDD Interface	SATA 2 x 2
FDD Interface	—
SSD	—
Expansion Slot	PCI x 4
DIO	8-bit Programmable (4-in/4-out)
TPM	—

Packing List

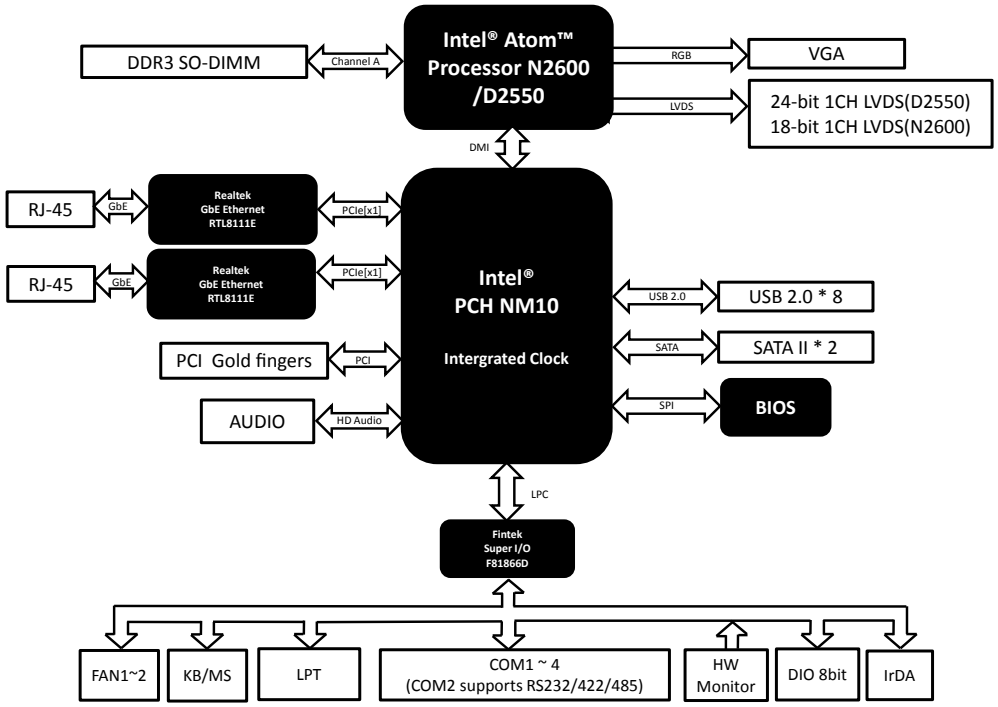
- Cable Kit for HSB Series
- SATA Cable
- USB Cable
- PS2 KB/MS Cable
- COM Port Cable
- LPT and COM Port Cable
- ATX Cable
- Product CD
- HSB-CV1P

Optional Accessories

- TF-PER-U01H-A10
  High Definition Codec Audio Daughter Board, Rev. A1.0

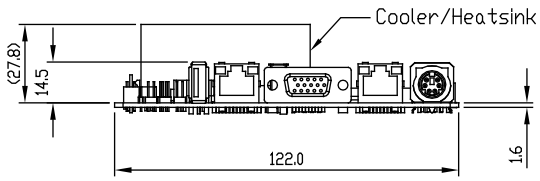
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Passive Backplane Options

P/N	Description	Master Interface	Slots (PCI/ ISA/ PICMG_PCI)	Power ATX Extend Function
TF-BP-204SP-P3	Wallmount, 4-slot Backplanes, 3 PCI, Single Segment, AT/ATX	PCI	(3/0/1)	AT/ATX, 3-pin ATX Extend

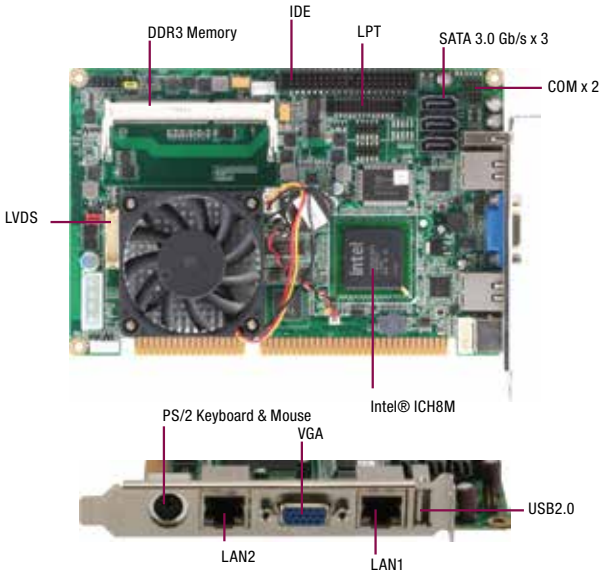
Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Temp.
HSB-CV1P-A12-G2-00	Intel® D2550	SODIMM	With Fan	VGA + LVDS	SATA2 x 2	18/24b, 1CH	GbE x 2	USB2.0 x 8	3	1	PCI	ATX	0°C ~ 60°C
HSB-CV1P-A12-G2-01	Intel® N2600	SODIMM	Fanless	VGA + LVDS	SATA2 x 2	18b, 1CH	GbE x 2	USB2.0 x 8	3	1	PCI	ATX	0°C ~ 60°C

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

HSB-LN2I

ISA Half-Size SBC with Intel® Atom™ D525/N455 Processor



Features

- Intel® Atom™ D525/N455 Processor
- Intel® ICH8M
- 204-pin DDR3 800 MHz SODIMM x 2, Up to 4 GB (D525), Up to 2 GB (N455)
- Gigabit Ethernet x 2
- Intel® Atom™ D525/N455 Integrated VGA, Shared Memory Up To 324 MB with DVMT4.0
- Optional HD Codec Audio Daughter Board
- SATA 3.0 Gb/s x 3, CompactFlash™ Type 2, ATA100 x 1
- USB2.0 x 5, RS-232/422/485 x 1, RS-232 x 1
- ISA Expansion
- +5V, +12V Operation, AT Power

Specifications

System	
Form Factor	Half-size CPU Card
Bus Interface	ISA
CPU	Intel® Atom™ D525/N455
Memory Type	Up to 4 GB (DDR 3 800 SODIMM)
Chipset	Intel® Atom™ D525/N455 + ICH8M
BIOS	AMI
Wake on LAN	No
Watchdog Timer	255 Levels
Power Requirement	ATX 2.1
Power Consumption (Typical)	Intel® Atom™ D525 1.8GHz,DDR3 4 GB (Full load) 0.5A@+12V, 2.86A@ +5V
Power Supply Type	+5V, +12V for ISA bus
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)	73,000
Certification	CE/FCC, Class A
Display	
VGA/LCD Controller	Intel® Atom™ D525/N455 integrated
Video Output	VGA, 18b 1 CH LVDS
Backlight inverter supply	5V/12V
I/O	
Ethernet	10/100/1000Base-TX x 2
Audio	Yes
USB Port	USB2.0 x 5
Serial Port	RS-232 x 1 (-12V required) RS-232/422/485 x 1
Parallel Port	1
HDD Interface	IDE x 1, SATA 2 x 3
FDD Interface	1
SSD	CompactFlash™
Expansion Slot	ISA
DIO	8-bit Programmable (4-in/ 4-out)
TPM	—

Packing List

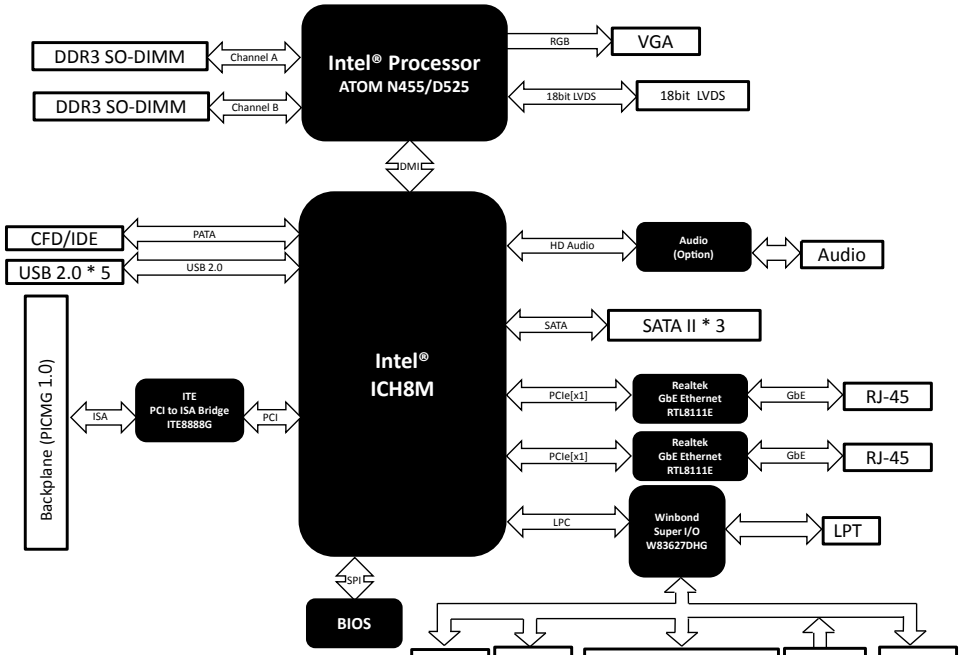
- FDD Cable
- IDE Cable
- PS2 KB/MS Cable
- LPT and COM Port Cable
- COM Port Cable
- ATX Cable
- USB Cable
- SATA Cable
- Product CD
- HSB-LN2I

Optional Accessories

- TF-PER-U01H
  HD Code Audio Daughter Board

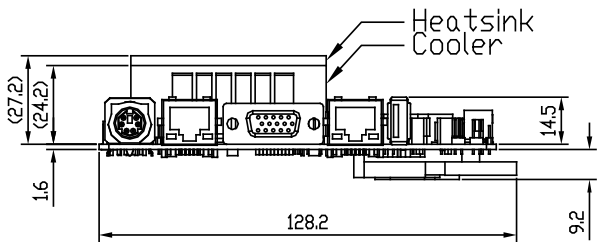
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Passive Backplane Options

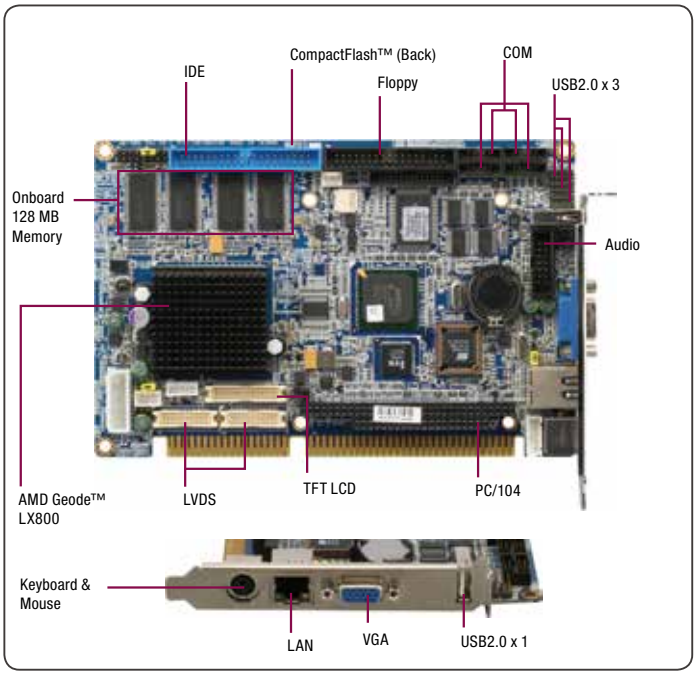
P/N	Description	Master Interface	Slots (PCI/ ISA/ PICMG_PCI)	Power ATX Extend Function
TF-BP-204SI	Wallmount, ISA, 4-slot Backplane, 4 ISA, Single Segment, AT	ISA	(0/4/0)	AT
TF-BP-206SI	Wallmount, ISA, 6-slot Backplane, 6 ISA, Single Segment, AT/ATX	ISA	(0/6/0)	AT/ATX
TF-BP-214SI	Rackmount, ISA, 14-slot 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.
HSB-LN2I-A12-G2-00	Intel® Atom™ D525	SODIMM	Fan	VGA + LVDS	SATA2 x 3, IDE x 1, CF x 1	18b, 1CH	GbE x 2	USB2.0 x 5	1	1	ISA	+5V, +12V, AT	0°C ~ 60°C
HSB-LN2I-A12-G2-01	Intel® Atom™ N455	SODIMM	Fanless	VGA + LVDS	SATA2 x 3, IDE x 1, CF x 1	18b, 1CH	GbE x 2	USB2.0 x 5	1	1	ISA	+5V, +12V, AT	0°C ~ 60°C

HSB-800I

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

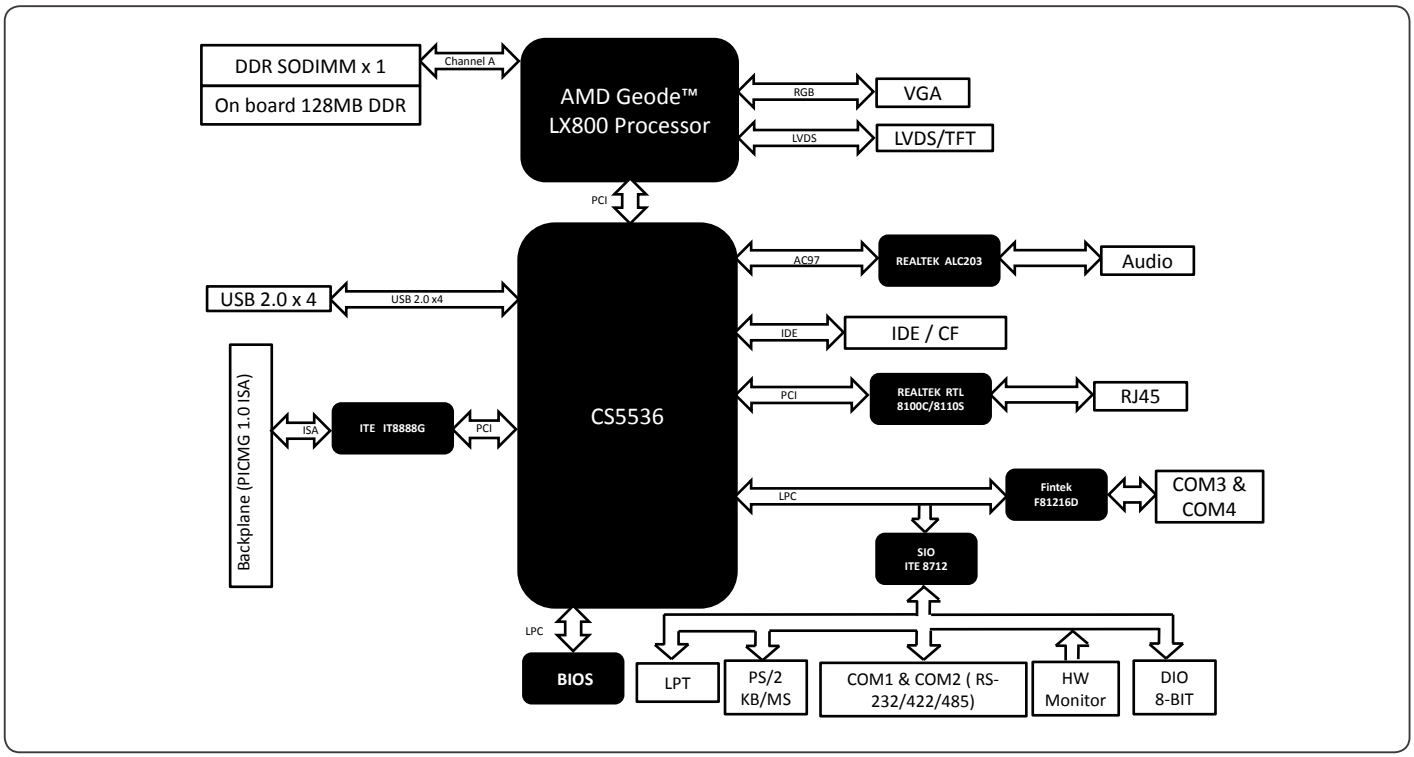
- **1701340704**
  Flat Cable, 34P, 70cm, GRAY for FDD
- **1701400453**
  Cable, 40P 2.54mm IDC with Nose with Fold, 40P 2.54mm IDC with Nose with Fold, 45cm, Blue ATA100
- **1700060192**
  Cable, 6P-6P-6P, 19cm, IVORY PS2/KB & Mouse
- **1709140302**
  Cable, Phone Jack x 3, to 14P, 2.54mm Housing, DB9P(M) 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

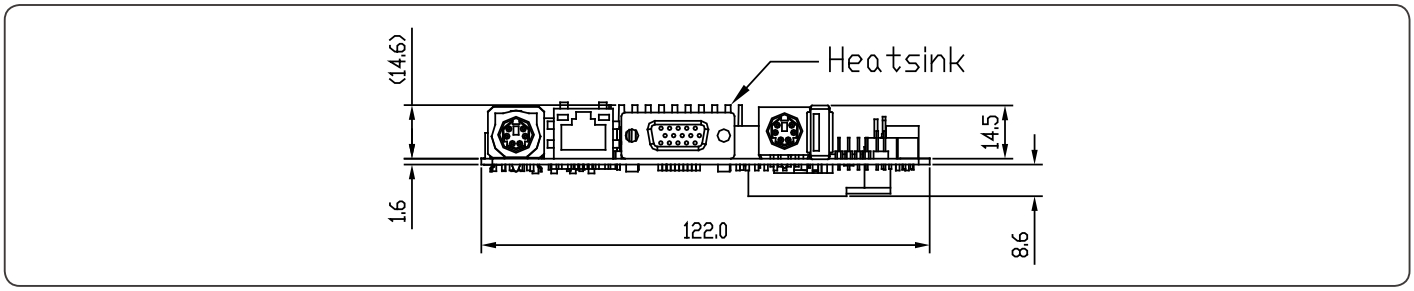
Note: All specifications are subject to change without notice.

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-VE	AMD Geode™ LX800	Onboard 128 MB DDR 400	Fanless	VGA + LVDS/TTL	IDE x 1, Floppy x 1, CF x 1	24b, 1CH	FE x 1	USB2.0 x 4	3	1	ISA, PC/104	+5V, +12V, AT	0°C ~ 60°C
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-204SP-P3

Wallmount, PCI, 4-Slot Backplane, 3 PCI, Single Segment

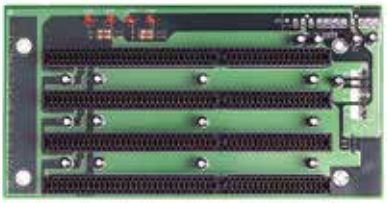
Master	PCI
PCI	3
System	Single
Fan Connector	1
ATX Control Connector	1
ATX Power Connector	1
AT Power Connector	1
Dimension	7.3" x 3.9" (186mm x 100mm)

Ordering Information

- **TF-BP-204SP-P3-A11**
  Wallmount, PCI, 4-slot Backplane, 3 PCI, Single Segment, AT/ATX , Rev.A1.1
- **TF-BP-204SP-P3-A11-01**
  Wallmount, PCI, 4-slot Backplane, 3 PCI, Single Segment, AT/ATX, Rev.A1.1, Bulk Pack

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

Note: All specifications are subject to change without notice.

BP-206SI

Wallmount, ISA, 6-Slot Backplane, Single Segment

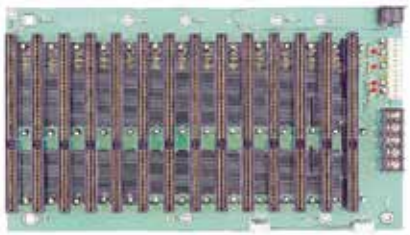
Master	ISA
ISA	6
System	Single
Fan Connector	2
AT Power Connector	1
ATX Control Connector	1
ATX Power Connector	1
Dimension	9.2” x 5.3” (234mm x 134mm)

Ordering Information

- **TF-BP-206SI-A11**
  Wallmount, ISA, 6-slot Backplane, AT/ATX , Rev.A1.1

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

Memo

Note: All specifications are subject to change without notice.

Memo