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PRODUCT CATALOG 2023

Embedded Platforms

Your Smart Computing Partner

www.aaeon.com

Table of Contents

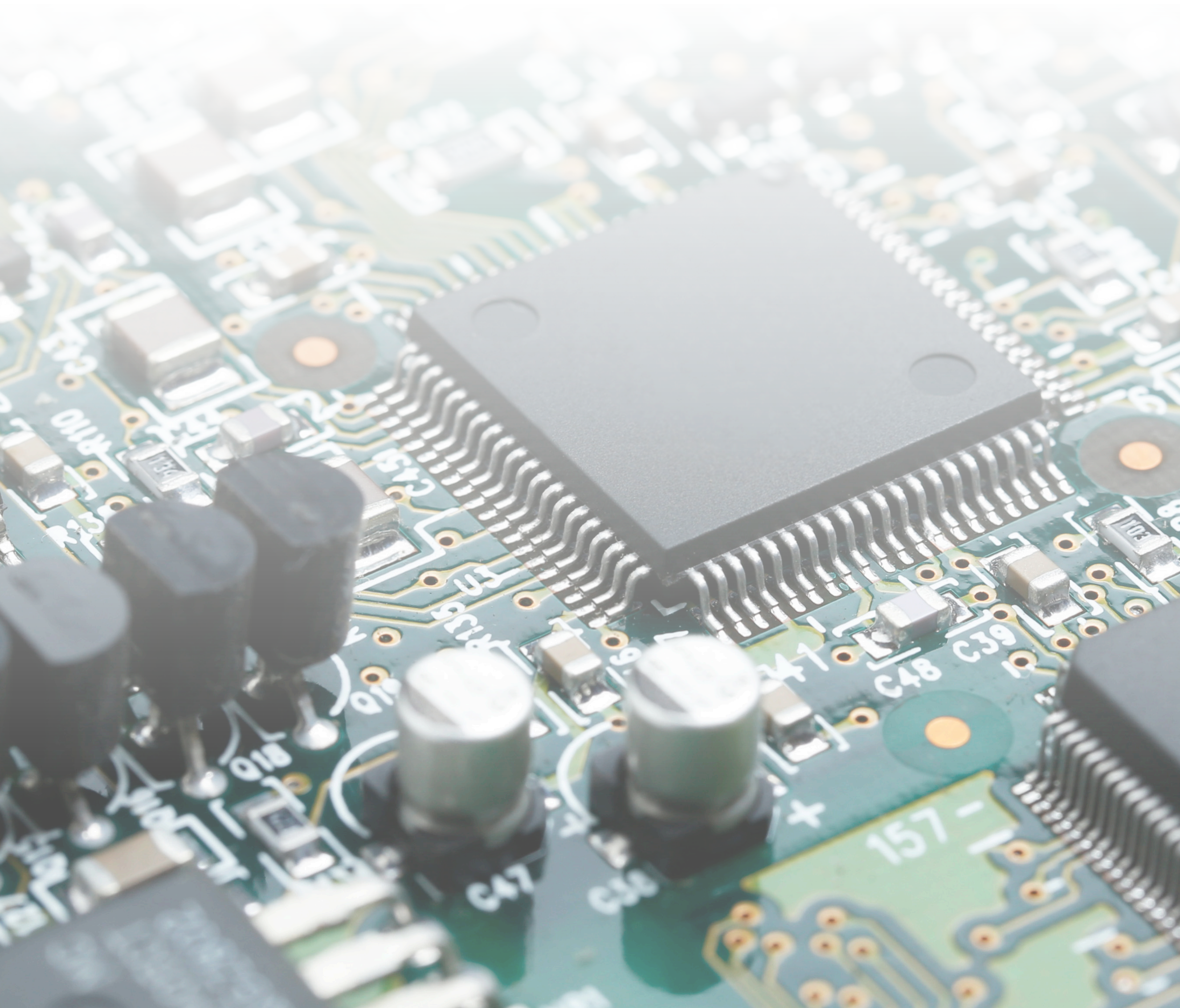
00 Introduction

Table of Contents

Table of Contents

Table of Contents

Table of Contents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C47

About AAEON

A Leader and Partner in Embedded Computing Platforms

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

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

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

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

AAEON Core Values

Reliability:

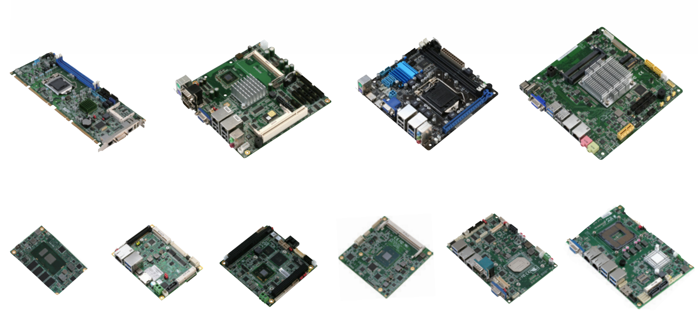
Delivering dependable products in a timely manner

Integrity:

Valuing business integrity and ethics

Innovation:

Turning cutting-edge concepts into reality



System Level Products

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

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

Board Level Products

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

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

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

Milestones

2022
- AAEON awarded 2022 Best Choice Golden Award

2021
- AAEON awarded 2021 System Integration Outbound Award
- AAEON awarded 2021 COMPUTEX d&i Awards
- AAEON awarded the 30th Taiwan Symbol of Excellence Award
- AAEON awarded the 26th National Quality Award

2020
- AAEON awarded the 29th Taiwan Symbol of Excellence Award

2019
- AAEON awarded two 2019 COMPUTEX d&i Awards
- AAEON awarded the 28th Taiwan Symbol of Excellence Award

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1998
- AAEON established sales offices in Europe and China

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

1992
- AAEON established its first office in Taipei, Taiwan

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

ASUS Technology and Financing

AAEON Design Flexibility and Domain Know-how

OEM/ODM Capability

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

Core Competence

Product Innovation

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

Market Focus

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

R&D Strength

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

Design Capability

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

Manufacturing Capability

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

Quality Assurance

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

DQA

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

MQA

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

SQA

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

Technical Support

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

Repair Service

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

Quality Certification

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

ISO 9001: 2015	QMS
ISO 13485: 2016	Medical Devices-QMS
ISO 14001: 2015	EMS
ISO 27001: 2013	ISMS
3C:	China Compulsory Certification
CE/FCC:	All AAEON products undergo and meet CE and FCC test standards which prove their design quality and integrity

AAEON AI Website

Introduction

To keep ahead of the ever-growing markets and demand for AI hardware solutions, AAEON is pleased to announce our new webpage, AAEON.ai. AAEON.ai offers developers and systems integrators a centralized resource for finding the latest AI edge computing technology from AAEON.

Market analysts have consistently pointed to expanded growth and deployment of Industry 4.0 technologies, especially AI edge computing, in various vertical markets. AAEON.ai collects all of AAEON's rugged, compact, industrial grade AI edge solutions in one convenient location. From boards and systems to AI accelerator modules, AI developers and systems integrators can easily find the platforms that meet their project, budget and performance needs. AAEON.ai will also feature solutions partners, allowing visitors to connect with local vendors and software providers, and building an AI ecosystem designed to make creating and deploying AI applications easier than ever. Visitors to AAEON.ai will also have a chance to learn about the latest news and browse a library of application stories and white papers of real-world applications using AAEON technology.

Visit AAEON.ai today and explore the latest in AI Edge technology from AAEON!

Shop Online for Prompt Global Service

AAEON eShop offers customers a convenient way to quickly place orders from a selection of our latest and most popular IPC, AI and Edge Computing platforms. Orders are processed and shipped within two working days on all in stock items, with 50% off worldwide shipping on all orders over US$500. Customers can also order any accessories or configurations listed on the AAEON.com product page through eShop. Registering an account on eShop allows customers access to benefits including managing multiple shipping addresses, order tracking, price drop and in stock notifications and more! Visit AAEON eShop today at eshop.aaeon.com.

AI Platform

Embedded Single Board Computers

Industrial Panel PCs and Displays

Embedded Box PCs

Industrial Motherboards

Digital Signage Media Players

Network Appliance and Video Surveillance

Internet of Things

Rugged Tablet Computers

eshop.aaeon.com

AAEON eShop Benefits

Fast Processing

eShop brings you the convenience of fast order processing. Orders are processed and shipped within two working days for all in-stock items.

Easy Payment

eShop supports payment options including credit card, PayPal™ and even wire transfer. (Advanced notification is needed when using wire transfer.)

50% off Shipping

Save more when you shop more with eShop! Receive 50% off global shipping on all eShop orders over US$500.

Official Warranty

All products sold on eShop are backed by the same official warranty and industry leading support offered on every AAEON product.

Flexible Service

Purchase any product accessory or configuration listed on the AAEON.com product page, including processor, memory, storage and more. Contact AAEON eShop service representatives for more details.(eShop@aaeon.com)

Join Us Now, Enjoy Regular Promotions.
https://eshop.aaeon.com/

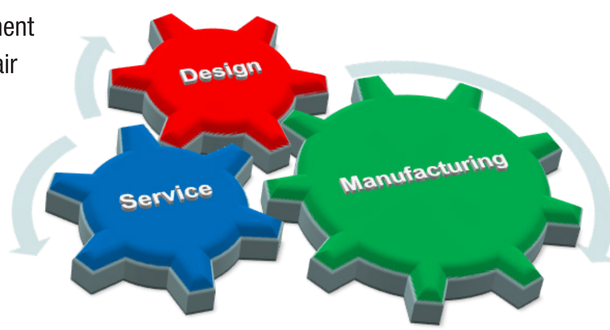
Design Manufacturing Service

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.

Collaboration Models

- 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

Customers can consign to AAEON the manufacturing of their existing products, customize existing AAEON COTS products, or joint 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 need of our customers for every kind of computing platform requirements.

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.

Service
Plus

What is Q Service Plus?

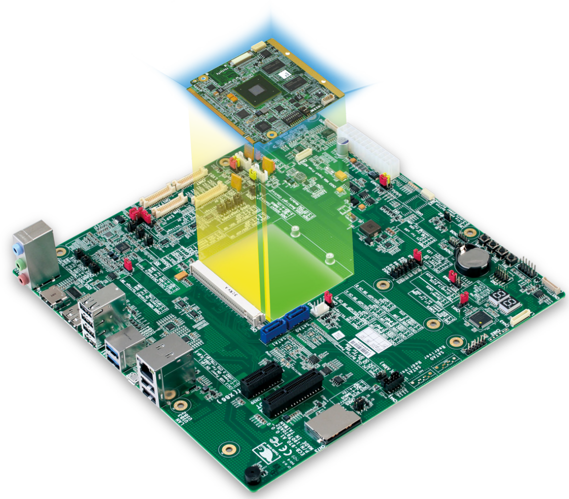
Q Service is a Quick and Quality Service for reducing the time spent on troubleshooting and expediting the development process. With COM technology getting more and more complex and versatile, product failure can originate from numerous sources and may be difficult to identify. AAEON's Q Service Plus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

Q Service Plus Commitment:

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

Benefits:

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



AAEON Carrier Board Design Service

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

NanoCOM Module

COM Module

Carrier Board

Wide Temperature Assurance Service (WiTAS)

Wide Temperature Embedded Computing

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

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

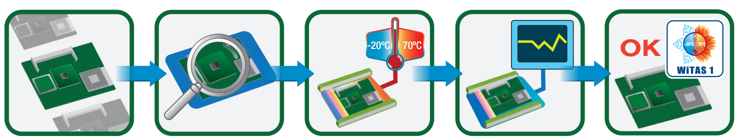
AAEON's WiTAS (Wide Temperature Assurance Service) program produces boards in two temperature range categories:

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

Processes for WiTAS Production

WiTAS 1 Production

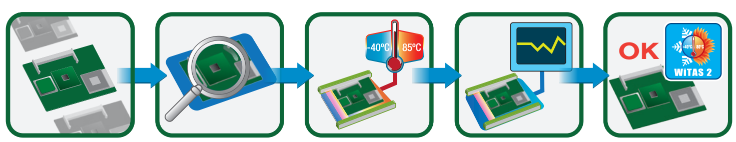
WiTAS 1



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

WiTAS 2



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

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

Application

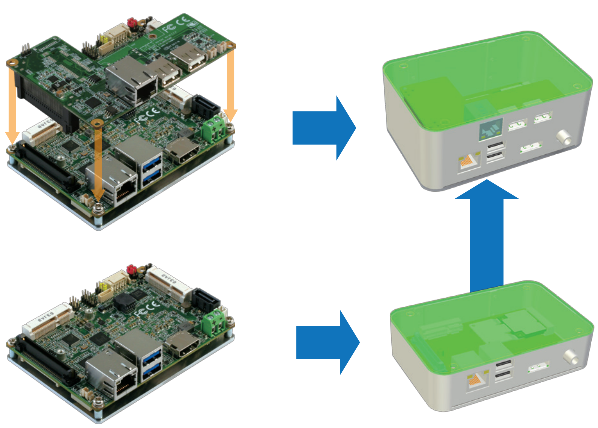
Applications for WiTAS CPU boards can be found in a range of industries and markets:

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

Note: All specifications are subject to change without notice.

BIO Board Design Service

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

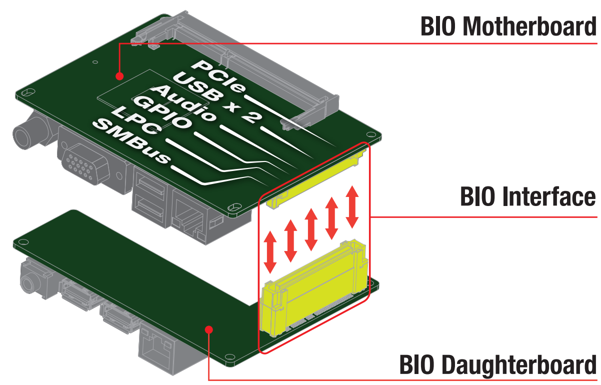


BIO Standardized Pin Definition

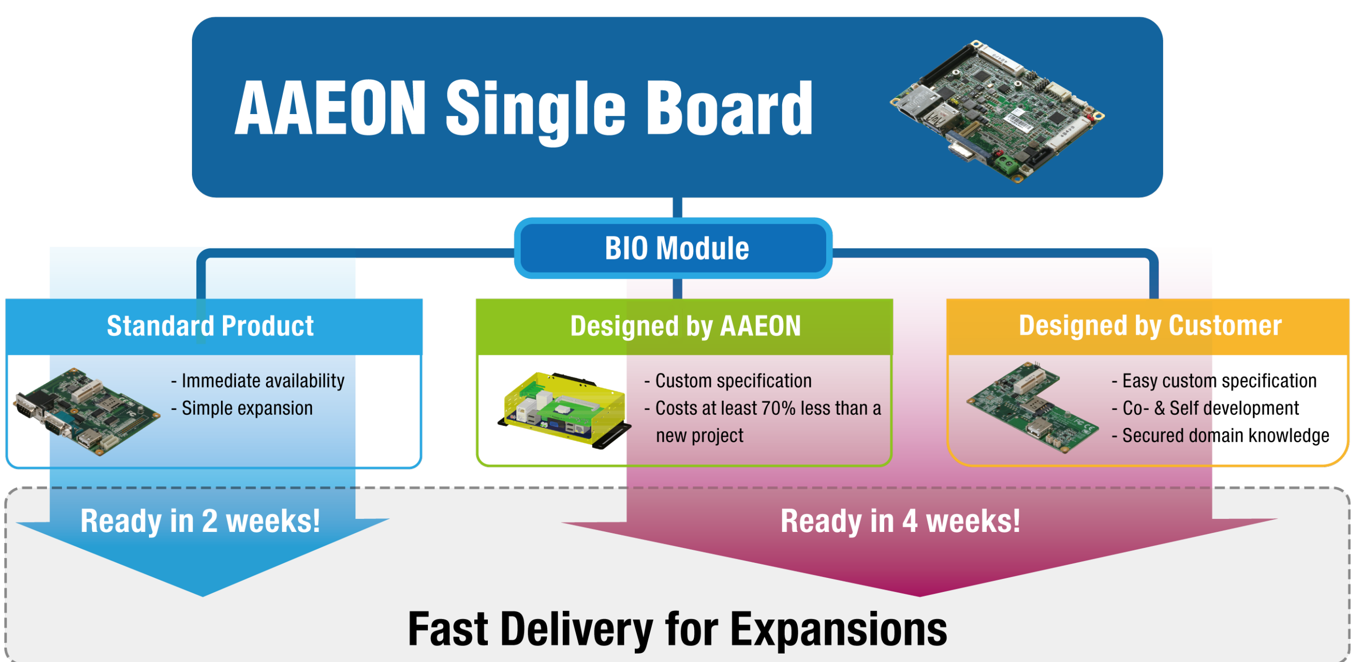
While there are many ways in which a product can be customized, AAEON recommends the BIO daughterboards, a series of daughterboards equipped with AAEON's Board-to-board Interface for AAEON's Standard Products. Simple in design and made to order, these boards take the time and effort out of customization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

Some key features include:

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



Customization Made Easy



AAEON's Embedded OS Solution

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

Windows® Embedded Products

Windows 10 IoT

Windows 10 IoT Enterprise LTSC 1607/1809/ 2021

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

AAEON Embedded OS Solution

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

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

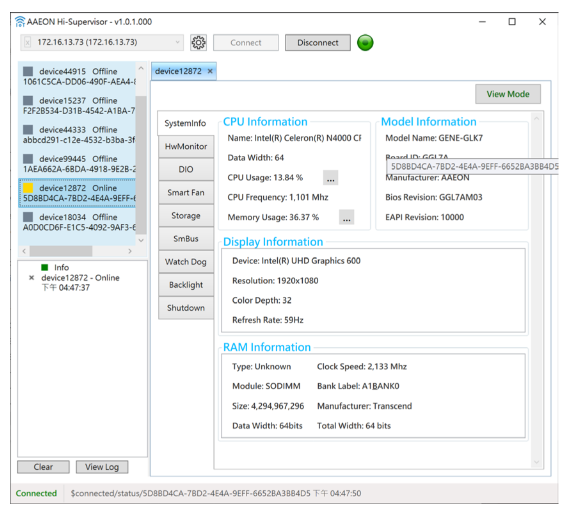
AAEON's Embedded OS Solution/Hi-Supervisor

Embedded OS Main Features

OS Family	Windows® Embedded Standard	Windows® Embedded POS Ready	Windows® Embedded Enterprise
Features	Full Customization	Simple Installation	Full Function
Windows® Product Sku	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 LTSC 1607/1809/ 2021
CPU Type	x86	x86	x86
Development Tool	Customization Image	CD Installation	CD Installation
Development Time	Short	None	None
Maintenance Cost	Middle	Low	Low
Embedded Features	Custom Shell/ EWF/ FBWF/ USB Boot/ HORM	Custom Shell/ FBWF/ USB Boot	Standard Shell/ UWF

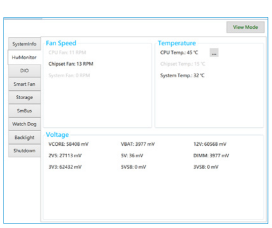
AAEON Hi-Supervisor

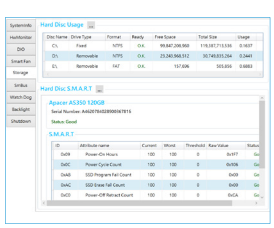
Hi-Supervisor is a remote hardware monitor application for Windows based on MQTT protocol. This software allows users to get device status and set device configurations like GPIO, Fan, Watch Dog Timer, SMBus, .., etc. It supports remote reboot and shutdown, too. Hi-Supervisor supports AAEON Windows platforms which support Hi-Safe. Users can set warning thresholds to acknowledge users abnormal conditions by e-mail.

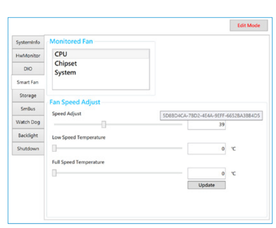


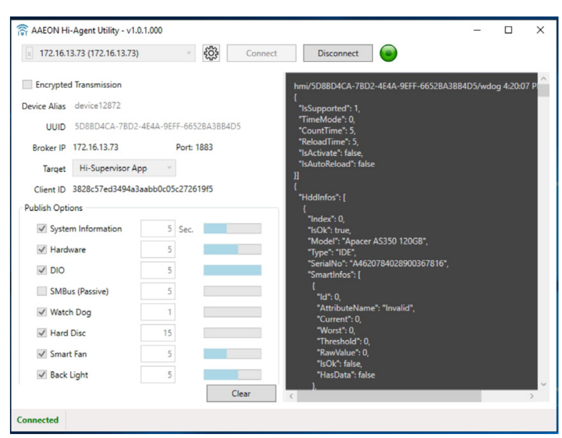
Hi-Supervisor Advantages

- Support Hi-Safe full functions remotely
- Customized support
- Support Azure IoT Central









Hardware Monitor: Retrieves fan, temperature and voltage data

Hard Disk: obtain hard disk S.M.A.R.T information

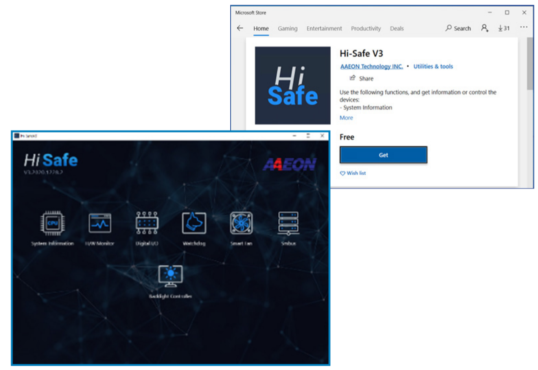
Remote Control Fan

AAEON Hi-Safe

Hi-Safe is a powerful, free program which provides SDKs for systems and UIs running Microsoft® Windows® operating systems. Hi-Safe controls system hardware by utilizing the Windows Management Interface, providing a safe and standard interface for Windows machines. Hi-Safe allows end users to easily develop their own UI software to monitor vital system components such as the processor, RAM and display. It also provides interface and functionality for Hardware Monitor, Digital I/O, Watchdog timer, Smart Fan settings, SM Bus, and backlight controller for LVDS and eDP. With the SDK user interface, no coding is needed, and customers can create their own user interface by using the function codes provided by AAEON. Customers can download the Hi-Safe V3 application directly from the Microsoft Store.

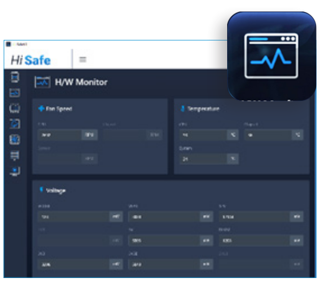
Hi-Safe V3 Advantages

- **Modern and Flexible User Interface**
- **Easy and Friendly to Use**
- **Safe Operation Control for Windows**



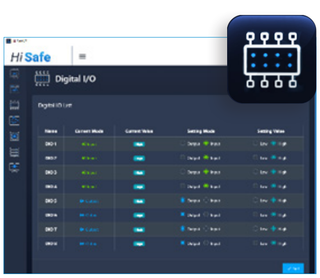
System Information:

Receives CPU, display and RAM information



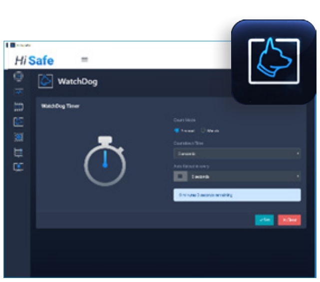
Hardware Monitor:

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



DIO:

Obtains DIO information:
sets the pin direction and pin data

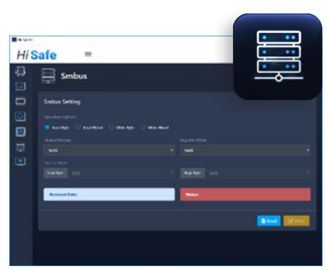


Watchdog:

Sets the system reboot timer

Smart Fan:

Supports multi-stage adjustment of temperature and speed controls



SM Bus:

Reads and writes to SMBus device and detects SMBus base address automatically

Backlight Controller:

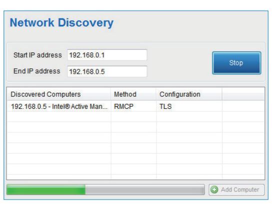
Controls LVDS or eDP display

AAEON Hi-Manager

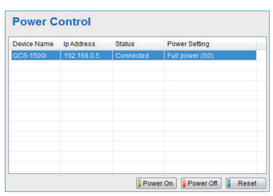
Hi-Manager is a tool based on the Intel® Active Management Technology 12.0 (iAMT 12.0) and has backward compatibility with earlier versions of iAMT. This allows users to locate all iAMT devices within the intranet, power On/Off target devices remotely, set power On/Off scheduling, arrange device groupings 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® M67/ Q77/ QM77/ HM76/ B75A/Q87/QM87/QM170/Q370/C246 chipsets and run Microsoft® Windows® XP, Windows® 7, and Windows® 10 Operating Systems.

Hi-Manager Advantages

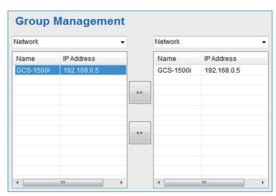
- Easy to use and build custom applications
- Supports AAEON products with iAMT
- In-depth technical support



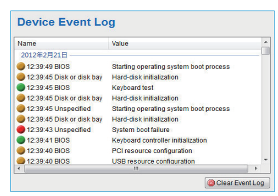
Network Discovery: AMT device discovery



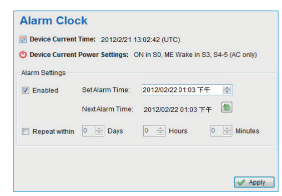
Power Control: Powers On/Off the target device



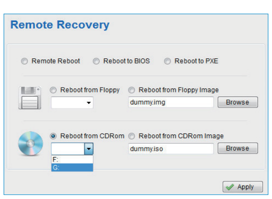
Group Management: Arrange devices in this function



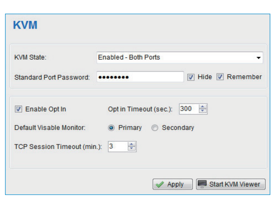
Event Log: Logs boot records of the selected device



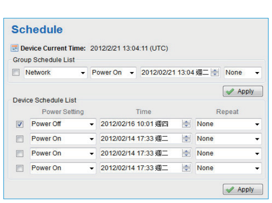
Alarm Clock: Sets timer to wake up a sleeping device



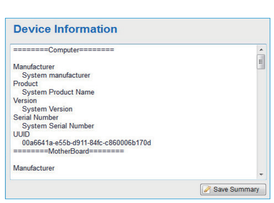
Remote Recovery: Mounts boot image or physical CD-Rom to target device



KVM: Controls remotely from the target device



Schedule: Schedules the power On/ Off target devices



Device Information: Shows target device assets

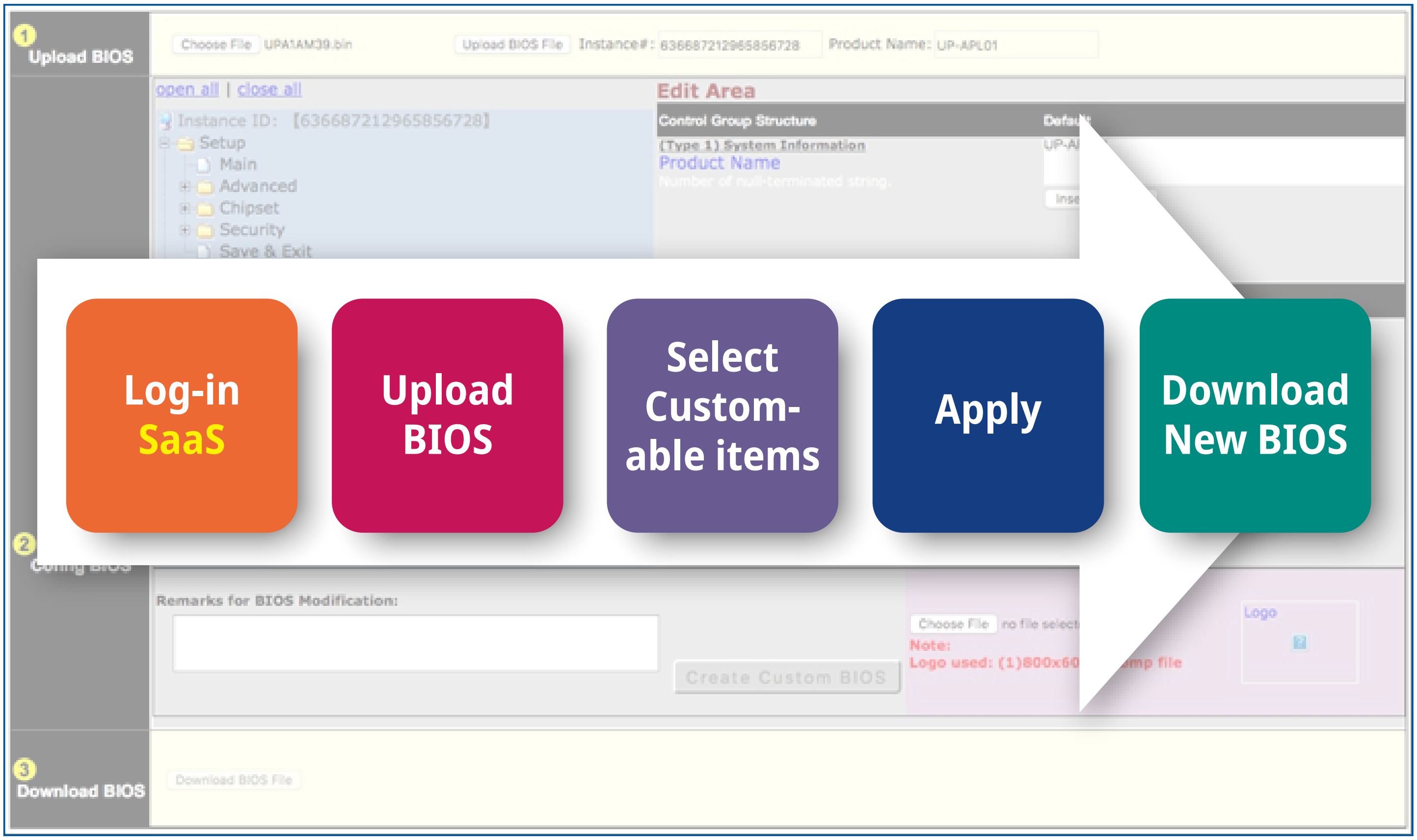
Intel® Active Management Technology Features

Intel® Chipset	M67/ Q77/ QM77/ HM76/ B75A/ Q87/ QM87/QM170/Q170/Q370/ Q470/C246
Intel® AMT Version	7.0/8.0/9.0/10.0/11.0/12.0/14.0
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.

AAEON BIOX

BIOX is a BIOS customization SaaS solution for AAEON products. Most field applications and deployments require BIOS customization for platforms and systems to meet a customer's requirements. Often this requires constant communication with vendors, possibly delaying deployment or slowing down maintenance. With BIOX, the end user can customize the BIOS on their own, anytime, in five simple steps, without the need to contact a service rep.



BIOX Advantages

Modern and Flexible User Interface

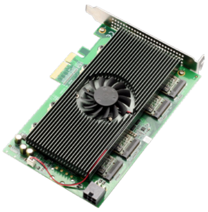
- Logo
- Boot Order
- Setup Values
- SMBIOS Strings
- Password Management

Version Control Access

- Retrievable
- Re-customizable
- History Traceable

AAEON Software Support Portal: https://aaeoncm.github.io/

Board Product Lines



AI Edge Computing Solutions

Accelerate your project with AI Edge Computing modules from AAEON. AAEON offers two series of AI Edge Computing solutions; the AI Core X family with Intel® Movidius™ Myriad™ X VPU, and the AAEON Deep Learning series of modules with Kneron KL520 NPU.

Pico-ITX Boards

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

COM Express CPU Modules

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

UP Series

AAEON's UP Board family of SBCs provide a compact solution for applications in Edge Computing, IoT, AI and more. Featuring energy efficient Intel® processors, UP Board SBCs offer greater processing power over traditional "maker boards" while operating in mobile applications. UP Board SBCs are designed for ultimate flexibility, making integration into your projects even easier.

EPIC Boards

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

SubCompact Boards

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

Board Product Lines

de next

With extreme power in an unprecedentedly small board measuring just 84mm x 55mm, AAEON continues to push the limits of innovation with the new de next series.

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.

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.

Smart Display Modules

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

Industrial Motherboards

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

Peripheral Modules

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

Focus • Agility • Competitiveness

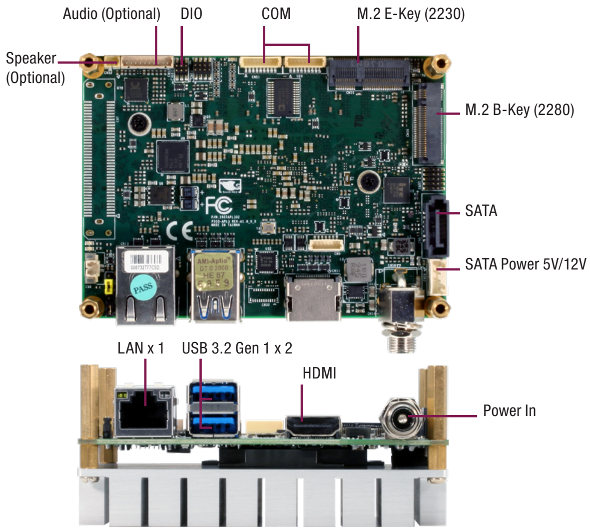
01

01

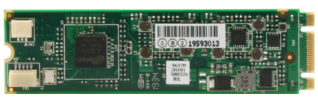
AI Edge Computing Solutions

PICO-APL3-A10-FAI1

AI Edge Computing Kit with Kneron KL520 NPU



M2AI-2280-520



EverFocus Full HD Camera EUA1200

Specifications

SYSTEM	
FORM FACTOR	PICO-ITX
CPU	Intel® Celeron® Processor: Pentium N4200 (4C/4T,1.10GHz,up to 2.50GHz, TDP 6W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	Onboard DDR3L 4GB
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.18 lbs. (0.08 kg)
OS Support	Windows 10 (64 bit)
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Lockable DC Jack Connector
POWER CONSUMPTION	Intel® N4200 processor, DDR3L 4GB, 1.1A@12V
DISPLAY	
CONTROLLER	Intel® HD Graphics 505
LVDS/eDP	—
Display Interface	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
Multiple Display	1 Simultaneous Displays
AUDIO	
CODEC	—
AUDIO INTERFACE	—
Speaker	—

Features

- Intel® Pentium® N4200 Processor SoC
- Onboard Storage eMMC 32GB
- Onboard DDR3L 4GB
- Single Gigabit Ethernet Support
- HDMI 1.4b for Display
- USB 3.2 Gen 1 x 2, USB 2.0 x 2, SATA 6.0Gb/s x 1
- M.2 B Key (2280) x 1, M.2 E Key (2230) x 1
- M2AI-2280-520 x 1
- EverFocus Full HD Camera EUA1200 x 1

1000 Giga LAN | DDR 3L | USB 2.0 | USB 3.2 Gen 1 | HDMI | CE | FC

EXTERNAL I/O	
ETHERNET	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 1
USB	USB 3.2 Gen 1 x 2
SERIAL PORT	—
VIDEO	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
INTERNAL I/O	
USB	USB 2.0 x 2 (Internal, co-use with FAN connector)
SERIAL PORT	COM1 (RS232)
VIDEO	eDP x 1 (up to 3840x2160@60Hz, Optional)
SATA	SATA III x 1 +5V SATA Power Connector x 1 eMMC 32GB
AUDIO	—
DIO/GPIO	4-bit
SMBus/I2C	I2C/SMBus x 1 (I2C as default)
Touch	—
FAN	—
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	—
M.2	M.2 E-Key 2230 x 1 (PCIe/USB) M.2 B-Key 2280 x 1 (SATA/USB)
Others	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	110,000
EMC	CE/FCC Class A

PICO-APL3-A10-FAI1

Packing List

- PICO-APL3
- M2AI-2280-520
- EverFocus Full HD Camera EUA1200

Ordering Information

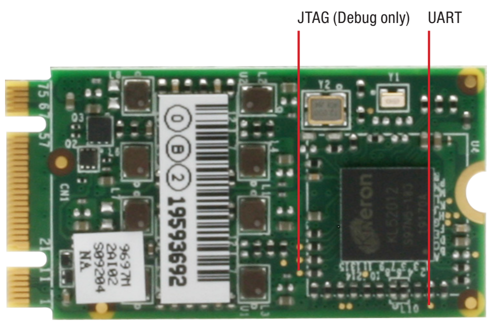
Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/ 422/485	Expansion Slot	Power	Temp.	Others
PICO-APL3-A10-FAI1	Celeron® N4200 (Quad Core)	Onboard DDR3L 4GB	w/ Heatsink	HDMI x 1	SATA 3.0 x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 1	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	1	—	M.2 2230 (E Key) x 1	+12V (DC Jack)	0°C ~ 60°C	DIO 4 bit

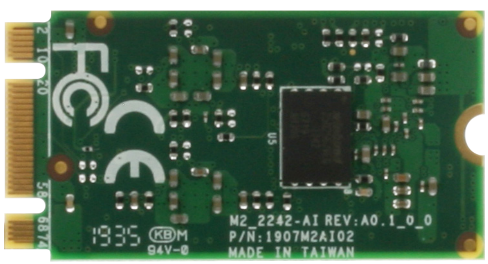
Optional Accessories

Part Number	Description	Qty
1709070500	(TF) SATA Cable, 50cm	1
1702150155	(TF) SATA Power Cable, 15cm	1
1700040151	(TF) USB Cable, 15cm	2
1701090122	(TF)Flat Cable, D-Sub 9P(M), 9P 1.0mm Housing, 12cm	1
125530040C	(TF)Power Adapter.12V.40W.FSP.FSP040-DHAN3	1
1702031802	Power Cord (US Type)	1
1702031803	Power Cord (European Type)	1
170203180E	Power Cord (Japan Type)	1

M2AI-2242-520

AI Edge Computing Module with Kneron KL520 NPU

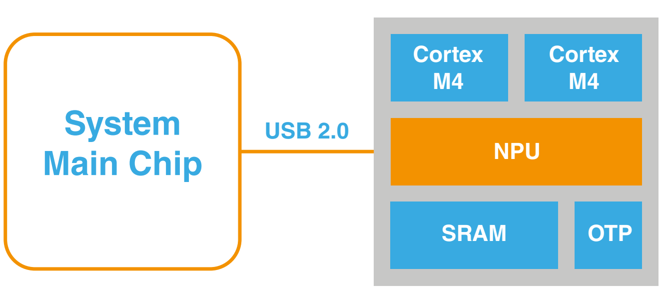




AI Vision + Edge Computing Development Kit

Part Number: PER-T520-M2AI-A11-K421

AI Architecture



Features

- Kneron KL520 NPU (Designed by ARM architecture)
- Mini card (USB2.0 interface, Full size)
- Accelerator for AI Edge Computing
- Good for people monitoring, retail application

Specifications

System	
IC	Kneron KL520
Type	Integrated SoC
Support Framework	ONNX, TensorFlow, Keras, Caffe
Support Model	Vgg16, Resnet, GoogleNet, YOLO, Tiny YOLO, Lenet, MobileNet, DenseNet
Memory Type	LPDDR2
NPU Performance	0.35 TOPS
Overall Power Consumption	0.5 W
Others	
Operating Temperature	32°F ~ 158°F (0°C ~ 70°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A

Packing List

- M3 screw x 2
- M2AI-2242-520 x 1

Optional Accessories

- EverFocus Full HD Camera EUA1200

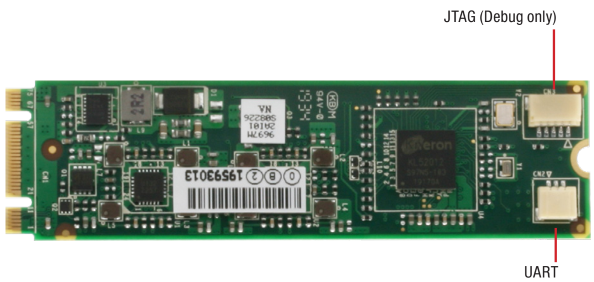
Ordering Information

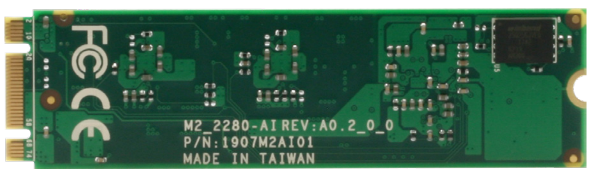
Part Number	Description
PER-T520-M2AI-A11-0421	AI.NPU 520.M.2 2242(USB interface).A1.1
PER-T520-M2AI-A11-K421	AI.NPU KL520.M.2 2242.w/ HD Camera.A1.1

Note: All specifications are subject to change without notice.

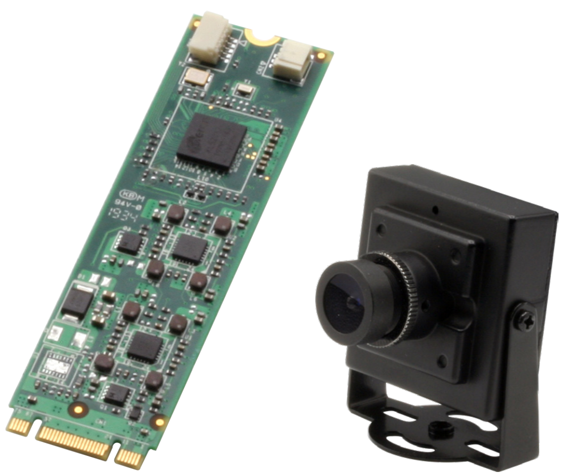
M2AI-2280-520

AI Edge Computing Module with Kneron KL520 NPU



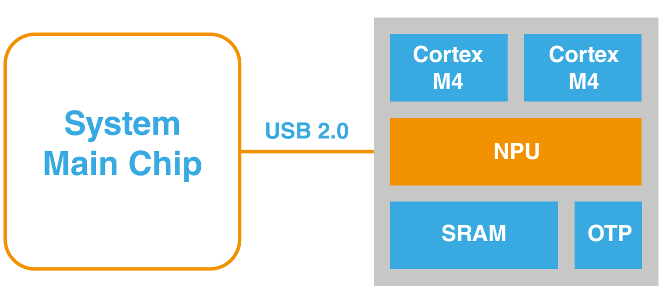


AI Vision + Edge Computing Development Kit



Part Number: PER-T520-M2AI-A11-K801

AI Architecture



Features

- Kneron KL520 NPU (Designed by ARM architecture)
- M.2 B Key (22x80mm)
- Accelerator for AI Edge Computing
- Good for people monitoring, retail application

Specifications

System	
IC	Kneron KL520
Type	Integrated SoC
Support Framework	ONNX, TensorFlow, Keras, Caffe
Support Model	Vgg16, Resnet, GoogleNet, YOLO, Tiny YOLO, Lenet, MobileNet, DenseNet
Memory Type	LPDDR2
NPU Performance	0.35 TOPS
Overall Power Consumption	0.5 W
Others	
Operating Temperature	32°F ~ 158°F (0°C ~ 70°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A

Packing List

- M3 screw x 1
- M2AI-2280-520 x 1

Optional Accessories

- EverFocus Full HD Camera EUA1200

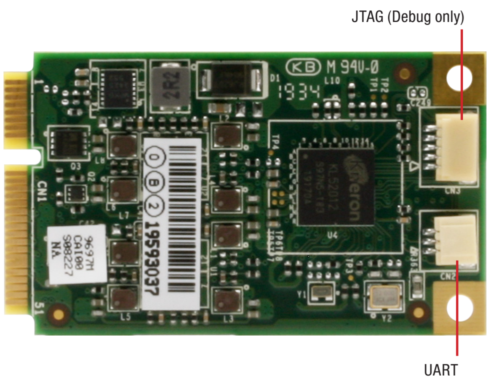
Ordering Information

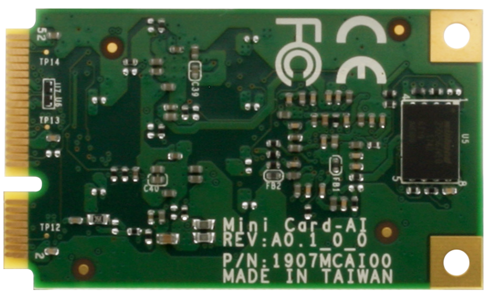
Part Number	Description
PER-T520-M2AI-A11-0801	AI.NPU 520.M.2 2280(USB interface).A1.1
PER-T520-M2AI-A11-K801	AI.NPU KL520.M.2 2280.w/ HD Camera.A1.1

Note: All specifications are subject to change without notice.

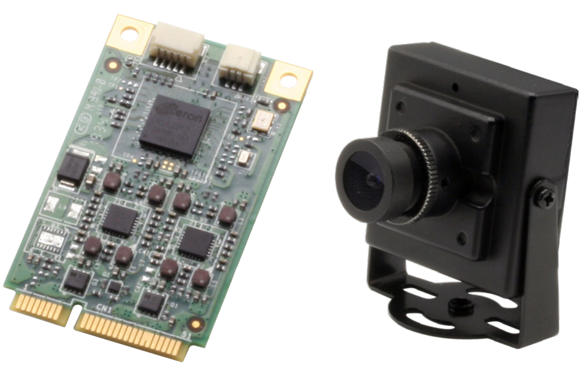
Mini-AI-520

AI Edge Computing Module with Kneron KL520 NPU



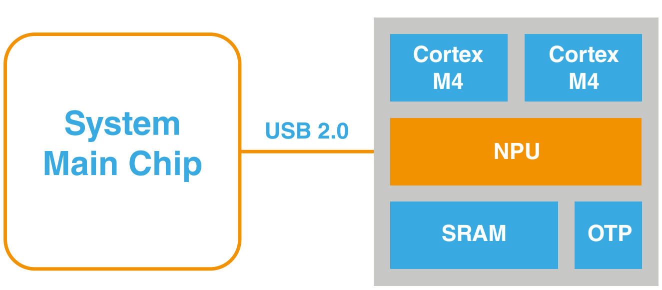


AI Vision + Edge Computing Development Kit



Part Number: PER-T520-MIAI-A11-K001

AI Architecture



Features

- Kneron KL520 NPU (Designed by ARM architecture)
- Mini card(USB2.0 interface,Full size)
- Accelerator for AI Edge Computing
- Good for people monitoring, retail application

Specifications

System	
IC	Kneron KL520
Type	Integrated SoC
Support Framework	ONNX, TensorFlow, Keras, Caffe
Support Model	Vgg16, Resnet, GoogleNet, YOLO, Tiny YOLO, Lenet, MobileNet, DenseNet
Memory Type	LPDDR2
NPU Performance	0.35 TOPS
Overall Power Consumption	0.5 W
Others	
Operating Temperature	32°F ~ 158°F (0°C ~ 70°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A

Packing List

- M3 screw x 2
- Mini-AI-520 x 1

Optional Accessories

- EverFocus Full HD Camera EUA1200

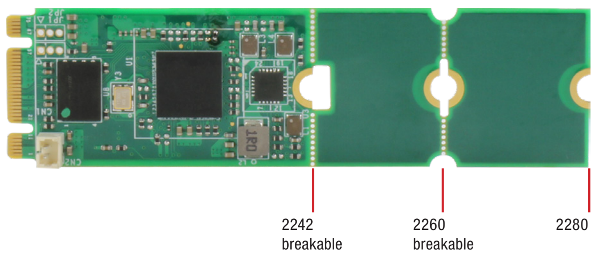
Ordering Information

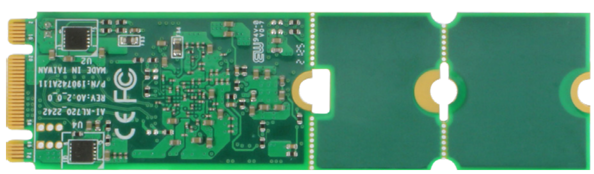
Part Number	Description
PER-T520-MIAI-A11-0001	AI.NPU 520.full size mini Card(USB interface).A1.1
PER-T520-MIAI-A11-K001	AI.NPU KL520.Full size Mini Card.w/ HD Camera.A1.1

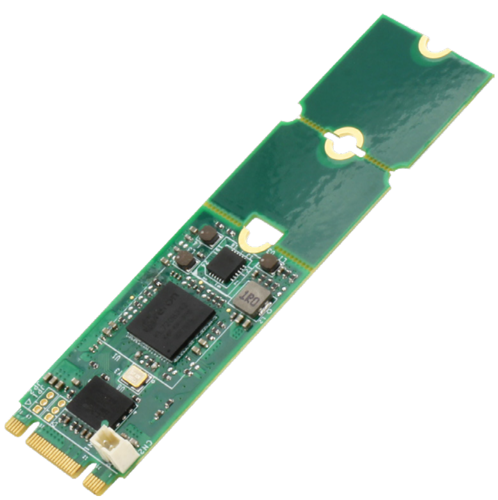
Note: All specifications are subject to change without notice.

M2AI-2242-720

AI Edge Computing Module with Kneron KL720 NPU







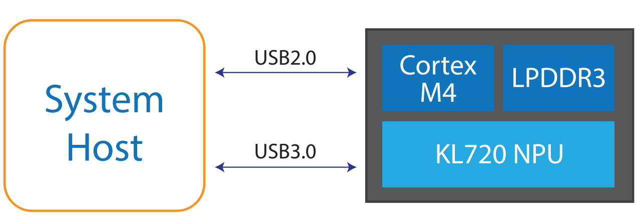
Features

- Kneron KL720 NPU
- Compliant to M.2 2242 B-key (USB2.0 or USB3.0 interface)
- Breakable PCB to support 3 sizes: 2242, 2260 and 2280
- Support 620 x 620, higher resolution recognition

Specifications

System	
IC	Kneron KL720
Type	ARM CM & DSP
Support Framework	Pytorch, ONNX, TensorFlow 1.6, Tensorflow lite, Keras, Caffe
Support Model	Resnet, GoogleNet, YOLO, Tiny YOLO, MobileNet-SSD, DenseNet, RNN, LSTM
Memory Type	128MB LPDDR3
NPU Performance	1.4 TOP/s
Overall Power Consumption	2.3W
Others	
Operating Temperature	32°F~122°F(0°C ~ 50°C with cooler 5m/s)
Storage Temperature	32°F~158°F(0°C ~ 70°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A

AI Architecture



Packing List

- M3 screw x 2
- M2AI-2242-720 x 1

Optional Accessories

- PER-T720-M2AI-FAN01

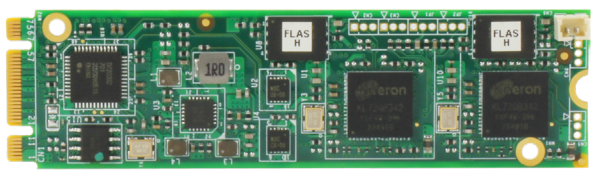
Ordering Information

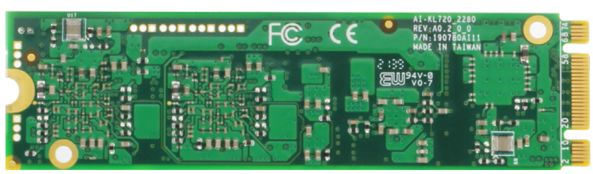
Part Number	Description
PER-T720-M2AI-A10-0421	AI.NPU 720.M.2 B Key 2242(USB interface).A1.0

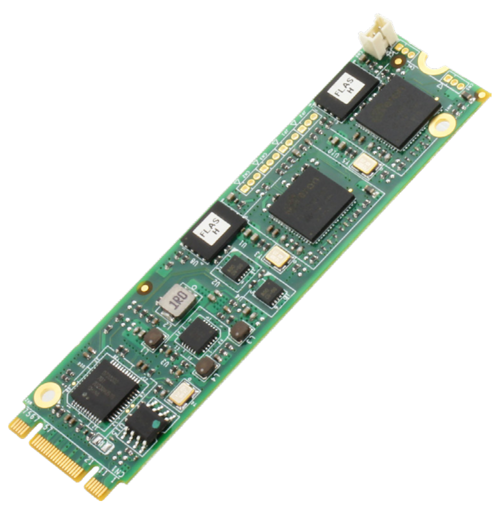
Note: All specifications are subject to change without notice.

M2AI-2280-720

AI Edge Computing Module with Kneron KL720 NPU







Features

- **Kneron KL720 NPU**
- **Compliant to M.2 2280 B-M key (PCIe interface)**
- **Support 620 x 620, higher resolution recognition**

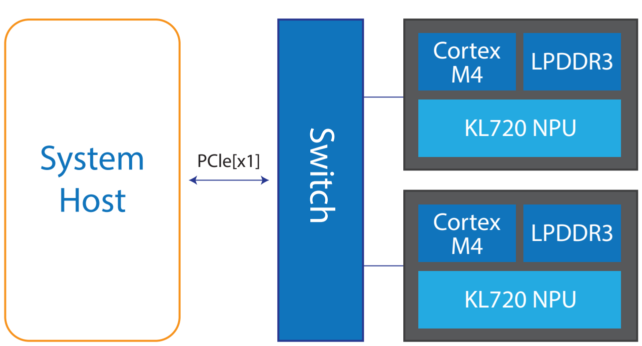
Specifications

System	
IC	Dual Kneron KL720
Type	ARM CM & DSP
Support Framework	Pytorch, ONNX, TensorFlow 1.6, Tensorflow lite, Keras, Caffe
Support Model	Resnet, GoogleNet, YOLO, Tiny YOLO, MobileNet-SSD, DenseNet, RNN, LSTM
Memory Type	128MB LPDDR3
NPU Performance	1.4 TOP/s x2
Overall Power Consumption	5W
Others	
Operating Temperature	32°F~122°F(0°C ~ 50°C with cooler 5m/s)
Storage Temperature	32°F~158°F(0°C ~ 70°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A

Packing List

- **M3 screw x 1**
- **M2AI-2280-720 x 1**

AI Architecture



Optional Accessories

- **PER-T720-M2AI-FAN02**

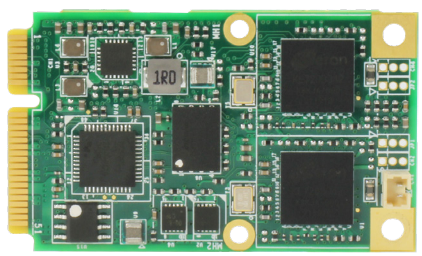
Ordering Information

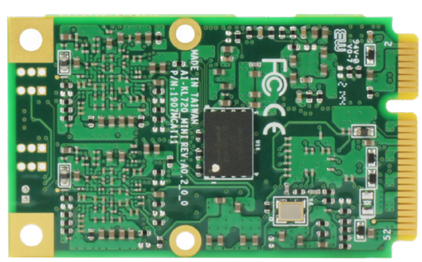
Part Number	Description
PER-T720-M2AI-A10-0801	AI.NPU 720.M.2 B+M Key 2280(PCIe[x1] interface).A1.0

Note: All specifications are subject to change without notice.

Mini-AI-720

AI Edge Computing Module with Kneron KL720 NPU

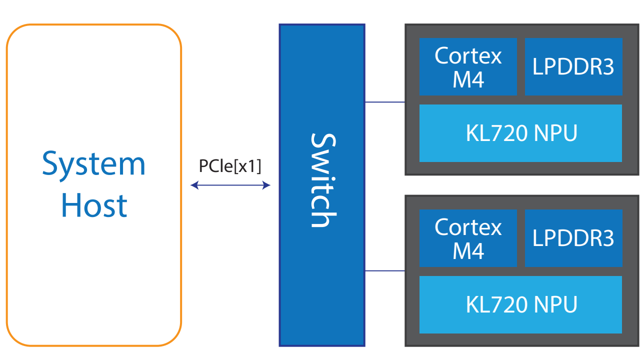




Features

- Kneron KL720 NPU (Designed by ARM architecture)
- Mini card (PCIe[x1] interface,Full size)
- Accelerator for AI Edge Computing
- Enhanced performance to process high resolution video and graphic related computing

AI Architecture



Specifications

System	
IC	Kneron KL720
Type	ARM CM & DSP
Support Framework	Pytorch, ONNX, TensorFlow 1.6, Tensorflow lite, Keras, Caffe
Support Model	Resnet, GoogleNet, YOLO, Tiny YOLO, MobileNet-SSD, DenseNet, RNN, LSTM
Memory Type	LPDDR3
NPU Performance	1.4 TOPS
Overall Power Consumption	5W TDP
Others	
Operating Temperature	32°F~122°F (0°C ~ 50°C with cooler 5m/s)
Storage Temperature	32°F~158°F (0°C~70°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A

Packing List

- M3 screw x 2
- PER-T720-MIAI-A10-0001 x 1

Optional Accessories

- PER-T720-MINI-FAN01

Ordering Information

Part Number	Description
PER-T720-MIAI-A10-0001	AI.NPU 720.full size mini Card(PCIe[x1] interface).A1.0

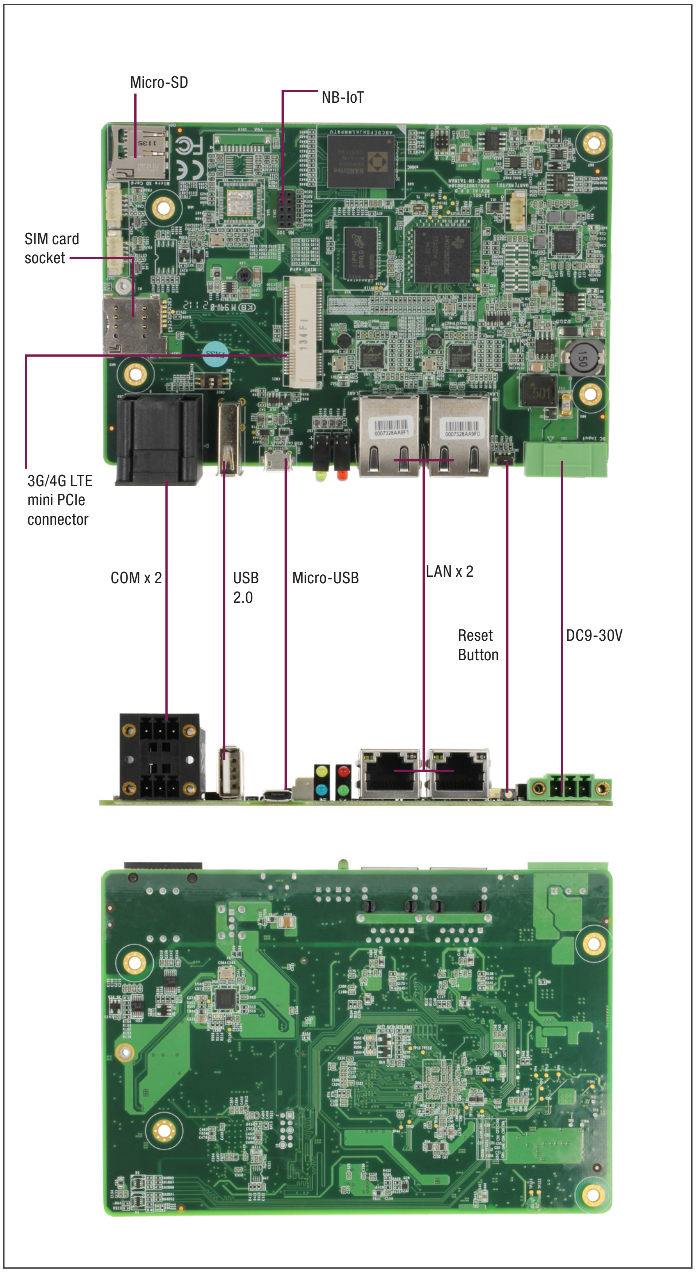
02

02

Gateway Board & Expansion Board

SRT-3352

Standard Gateway Board With Onboard ARM Cortex-A8 800 MHz RISC Processor



Features

- ARM Cortex-A8 800 MHz RISC Processor
- Onboard DDR3L 1 GB / eMMC 16GB
- Gigabit Ethernet port x 2
- USB2.0 x 1, RS-485 x 2
- 4 LED lights controlled through GPIO
- RTC x 1,Micro SD Slot x 1, SIM Slot x 1
- Mini PCIe connector(For RF Module) x 1
- NB-IoT connector x 1
- Micro USB Debug Port x 1
- DC9-30V Power Input
- Pre-Install Linux Debian

Specifications

System	
Processor	ARM Cortex-A8 800 MHz RISC Processor
Memory	Onboard DDR3L 1GB
Storage	eMMC 16G
Real Time Clock	RTC, with 3V CR2032 Lithium battery x 1
Security	—
Indicators	Programmable LED control x 4
Cellular	Mini PCIe Connector x 1
Wireless Lan	—
Operating System	Debian 9
Support Protocol	—
I/O Interfaces	
Serial Port	RS-485, Phoenix Connector x 2
Ethernet	Gigabit Ethernet, RJ-45 x 2
USB	USB 2.0, Type A x 1
ADC	—
DI/DO	—
CAN Bus	—
Display	—
Power Connector	3 Pin Phoenix Connector
Debug Port	Micro USB x 1
Expansion Slot	SIM card slot x 1 Micro SD slot x 1
Other Interface	NB-IoT connector x1
Power Supply	
Power Requirement	DC9-30V
Power Consumption	2.28 W(Full Loading)
MTBF (Hours)	855590
Environmental and Mechanical	
Dimension	3.66" x 5.35"(93mm x 136mm)
Weight	1.94lb (88 g)
Mount Options	—
Operation Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operation Humidity	10% ~ 95% relative humidity, non-condensing

Packing List

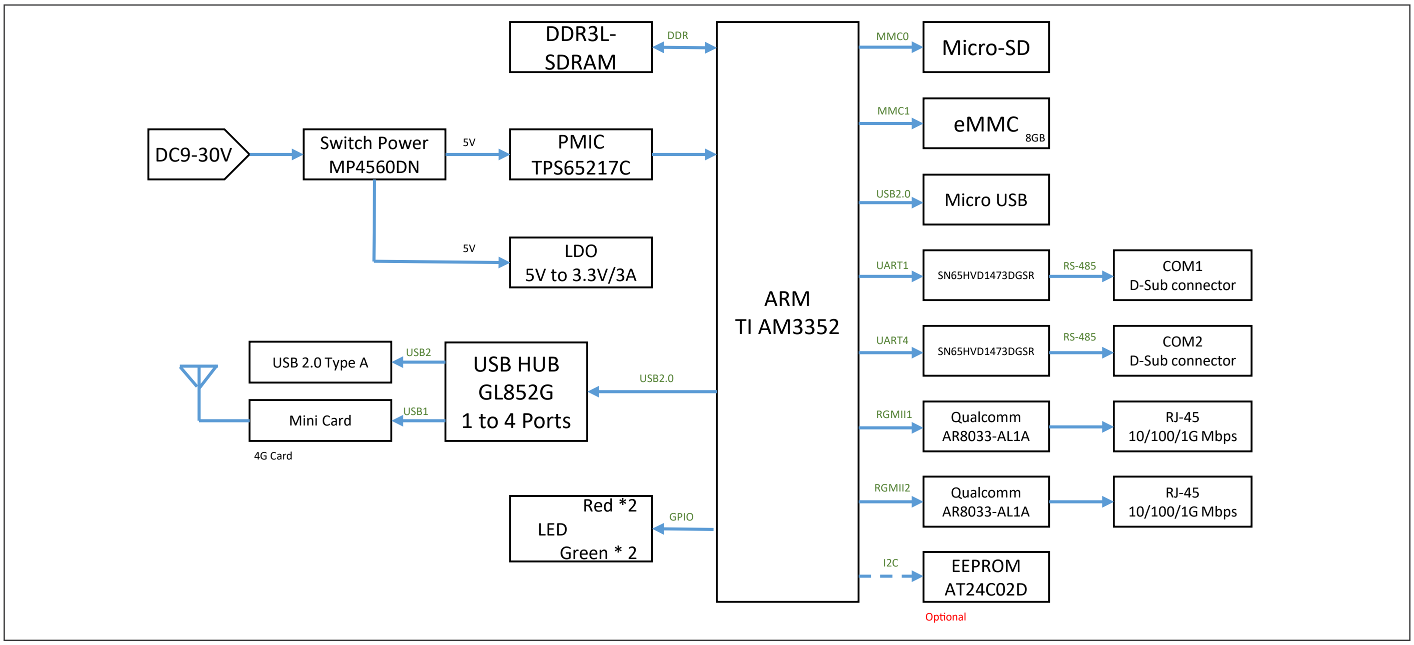
- **SRT-3352**

Optional Accessories

- **1255300368**
  Power Adapter. AC/DC. 100-240VAC. 12VDC/3A. 36W (phoenix connector)
- **9741EC25E0**
  PCIe mini card.4G LTE module kit with cable & Antenna, EC25-E
- **9741EG25G0**
  PCIe mimi card.4G LTE.module kit.Global Band W/SIM holder.W/Cable & antenna.EG25-G

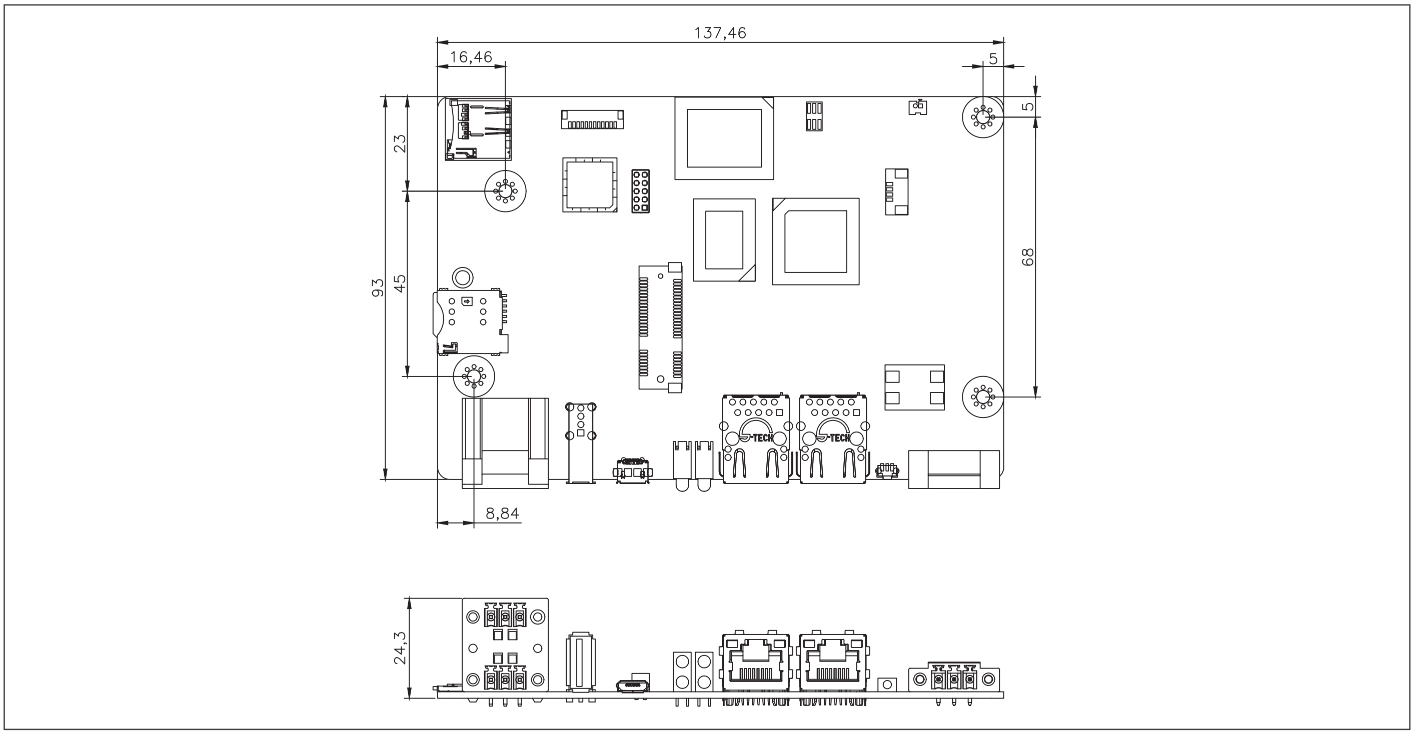
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

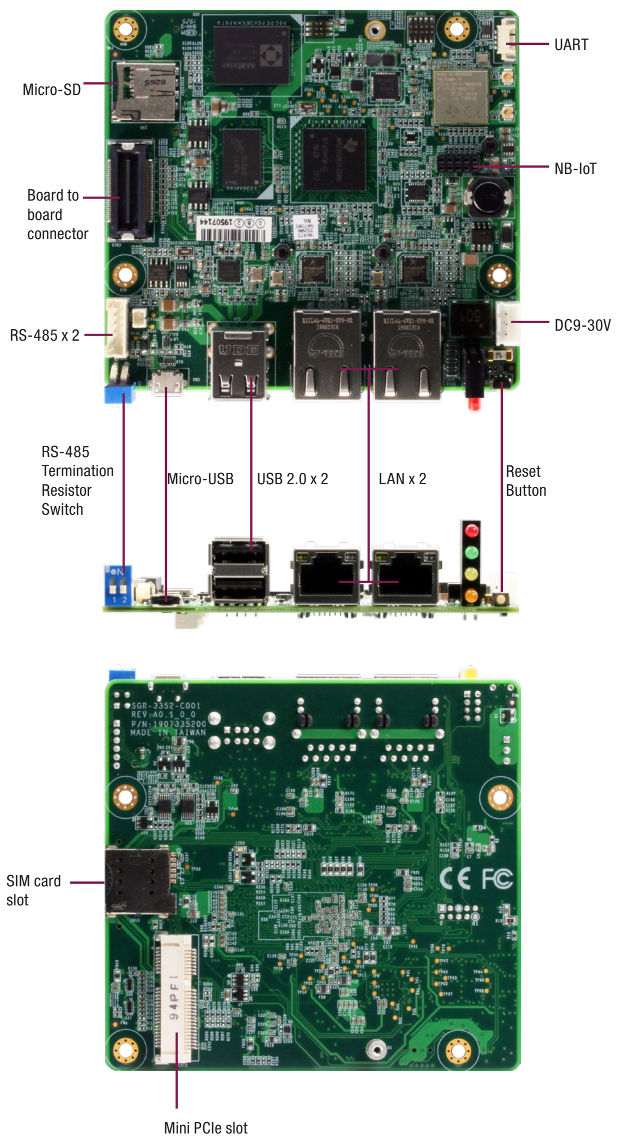


Ordering Information

Part Number	CPU	Memory	Thermal	COM	Storage	LAN	USB	Expansion slot	Power	Operation Temp.	Others
SRT-3352-A10-A002	ARM Cortex-A8 800MHz	Onboard DDR3L 1GB	Fanless	RS-485 x2 (phoenix)	eMMC 16GB, MicroSD x1	GbE x 2	USB 2.0 x 1 Micro USB x 1	Mini PCIe slot x 1, SIM card socket x 1	DC9-30V	0°C ~ 60°C @ 0.5 m/s airflow	3G/4G LTE module (optional)

SRT-3352C

Compact Gateway Board With Onboard ARM Cortex-A8 800 MHz RISC Processor



Features

- ARM Cortex-A8 800 MHz RISC Processor
- Onboard DDR3L 1 GB / eMMC 16GB
- Gigabit Ethernet port x 2
- USB2.0 x 2, RS-485 x 2
- 4 LED lights controlled through GPIO
- RTC x 1,Micro SD Slot x 1, SIM Slot x 1
- Mini PCIe connector(For RF Module) x 1
- NB-IoT connector x 1
- Board to Board connector x 1
- Micro USB Debug Port x 1
- RS-485 termination resistor switch
- DC9-30V Power Input
- Onboard WiFi/Bluetooth Module
- Pre-Install Linux Debian

USB 2.0 DDR 3L

Specifications

System	
Processor	ARM Cortex-A8 800 MHz RISC Processor
Memory	Onboard DDR3L 1GB
Storage	eMMC 16G
Real Time Clock	RTC, with 3V CR2032 Lithium battery x 1
Security	—
Indicators	Programmable LED control x 4
Cellular	Mini PCIe Connector x 1
Wireless Lan	Onboard WiFi 802.11 b/g/n, Bluetooth4.2 / BLE
Operating System	Debian 10
Support Protocol	—
I/O Interfaces	
Serial Port	RS-485 x 2, wafer box
Ethernet	Gigabit Ethernet, RJ-45 x 2
USB	USB 2.0, Type A x 2
ADC	—
DI/DO	—
CAN Bus	—
Display	—
Power Connector	Lockable DC Jack
Debug Port	Micro USB x 1
Expansion Slot	SIM card slot x 1 Micro SD slot x 1
Other Interface	NB-IoT connector x1 Board to Board connector x 1
Power Supply	
Power Requirement	DC9-30V
Power Consumption	3.36 W (Full Loading)
MTBF (Hours)	855590
Environmental and Mechanical	
Dimension	3.94" x 3.78" (100 x 96mm)
Weight	1.54lb (70 g)
Mount Options	—
Operation Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operation Humidity	10% ~ 95% relative humidity, non-condensing

Packing List

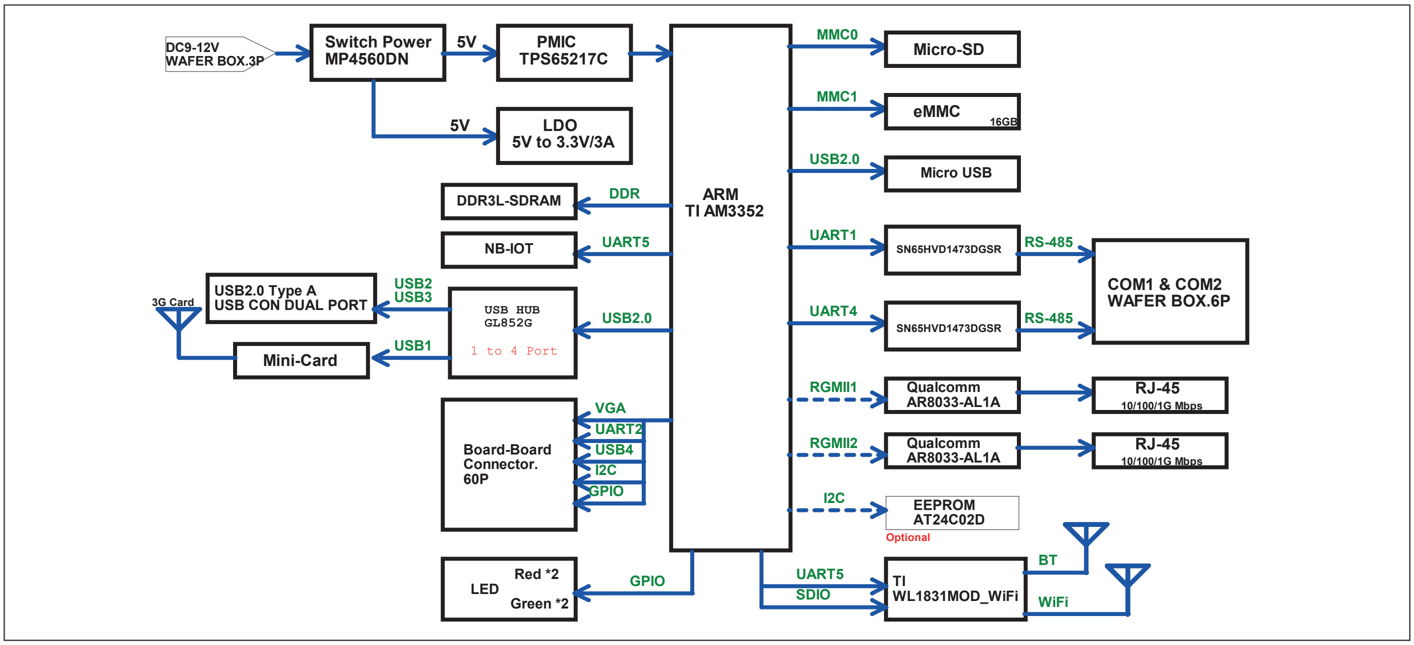
- **SRT-3352C**

Optional Accessories

- **1255300366**
  Power Adapter. AC/DC. 100-240VAC. 12VDC/3A.36W.
- **9741EC25E0**
  PCIe mini card.4G LTE module kit with cable & Antenna, EC25-E
- **9741EG25G0**
  PCIe mimi card.4G LTE.module kit.Global Band W/SIM holder.W/Cable & antenna.EG25-G

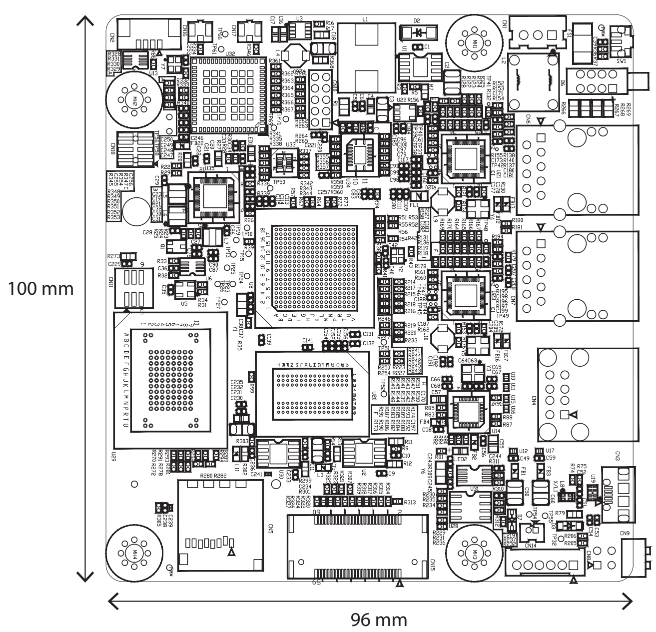
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



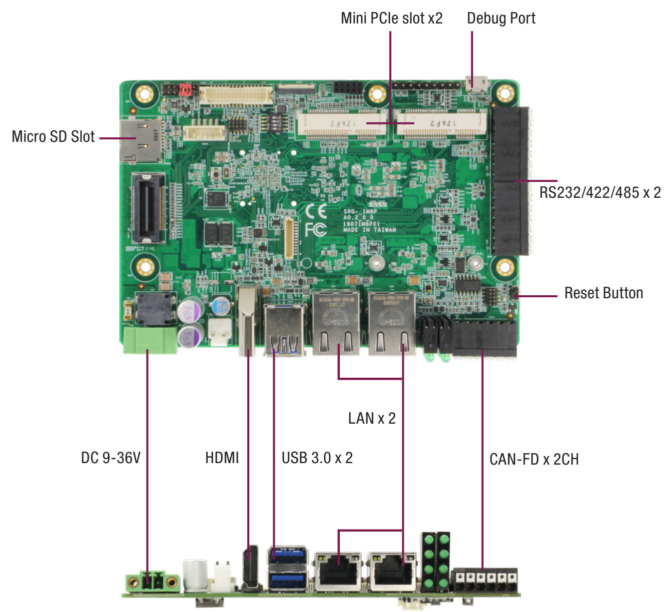
Ordering Information

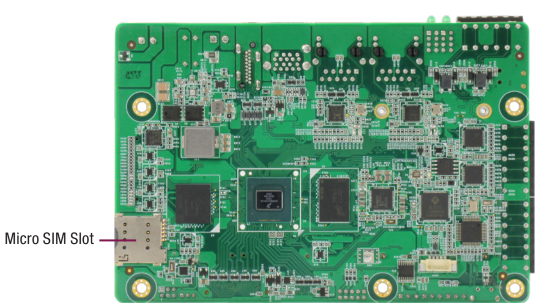
Part Number	CPU	Memory	Thermal	COM	Storage	LAN	USB	Expansion slot	Power	Operation Temp.	Others
SRT-3352C-A10-A001	ARM Cortex-A8 800MHz	Onboard DDR3L 1G	Fanless	RS-485 x 2	eMMC 16GB, MicroSD x1	GbE x 2	USB 2.0 x 2 Micro USB x 1	Mini PCIe slot x 1, SIM card socket x 1	DC 9-30V	0°C ~ 60°C @ 0.5 m/s airflow	3G/4G LTE module (optional)

Note: All specifications are subject to change without notice.

SRT-IMX8P

Standard IoT Gateway with ARM i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor





Features

- i.MX 8M Plus Quad Cortex-A53 1.6 GHz RISC Processor
- Onboard DDR4L 2GB / eMMC 16GB (Optional 4GB RAM/ eMMC 32GB)
- USB 3.0 x 2
- Gigabit Ethernet port x 2
- CAN-FD x 2CH
- Mini PCIe connector (For RF Module) x 2
- Micro SD Card Slot x 1
- Support RTC, TPM 2.0
- Wide Voltage DC 9V-36V
- Wide Temperature -20 °C ~ 70 °C
- Pre-Install Linux Debian

LPDDR4L USB 3.0

Specifications

System	
Processor	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor (NPU Optional)
Memory	Onboard DDR4L 2GB (Optional 4GB)
Storage	eMMC 16GB (Optional 32GB)
Real Time Clock	RTC x 1, with 3V CR2032 Lithium battery
Security	TPM 2.0
Indicators	Programmable LED control x 7
Cellular	Mini PCIe Connector x 1 (USB signal)
Wireless Lan	Mini PCIe Connector x 1 (USB signal)
Operating System	Debian 10
Support Protocol	—
I/O Interfaces	
Serial Port	RS-232/422/485 switchable x 2, Phoenix Connector
Ethernet	Gigabit Ethernet x 2, RJ-45
USB	USB 3.0 Type-A x 2
ADC	—
DI/DO	—
CAN Bus	CAN-FD x 2 CH, Phoenix Connector
Display	HDMI x1 (Output)
Power Connector	2 Pin 3.81mm Pitch Phoenix Connector
Debug Port	Micro USB x 1
Expansion Slot	SIM card slot x 1 Micro SD slot x 1
Other Interface	—
Power Supply	
Power Requirement	DC 9-36V
Power Consumption	9.36W (Full Loading)
MTBF (Hours)	479,374
Environmental and Mechanical	
Dimension	3.66" x 5.43" (93 x 138mm)
Weight	0.7lb (350 g)
Mount Options	—
Operation Temperature	-4 °F ~ 158 °F (-20 °C ~ 70 °C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operation Humidity	10% ~ 95% relative humidity, non-condensing

Packing List

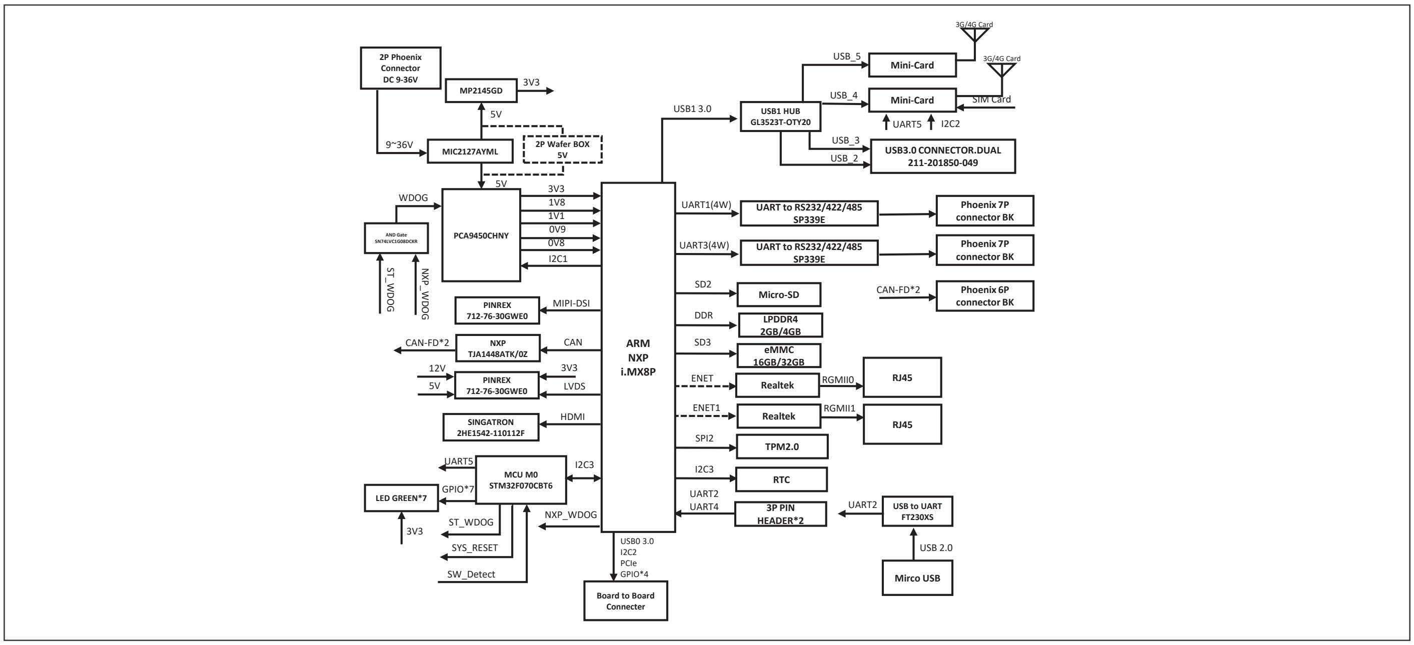
- SRT-IMX8P

Optional Accessories

- **9741EG25G0**
  PCIe mini card. 4G LTE. module kit. Global Band W/ SIM holder. W/Cable & antenna. Quectel. EG25-G
- **9741EC25E0**
  PCIe mini card.4G LTE. module kit. W/Cable & Antenna. Quectel. EC25-E
- **9741236A00**
  Mini card WiFi Kit.802.11ac/a/b/g/n. BT4.2. W/ Cable&Antenna.SparkLan.WPET-236ACN(BT)
- **1255300611**
  Power Adapter.DC.100/240V.12V.5A.60W.2P Phoenix P=3.81mm.
- **1702031802**
  POWER CORD.3P-125V 10A.1.8M.USA.
- **1702031803**
  POWER CORD.3P-250V 10A.1.8M.EU.
- **170203180J**
  POWER CORD.3P-250V 13A.1.8M.UK
- **1702031811**
  POWER CORD.3P-125V 10A.1.8M.TWN
- **170203180E**
  POWER CORD. 3P-125V 7A.1.8M.JPN

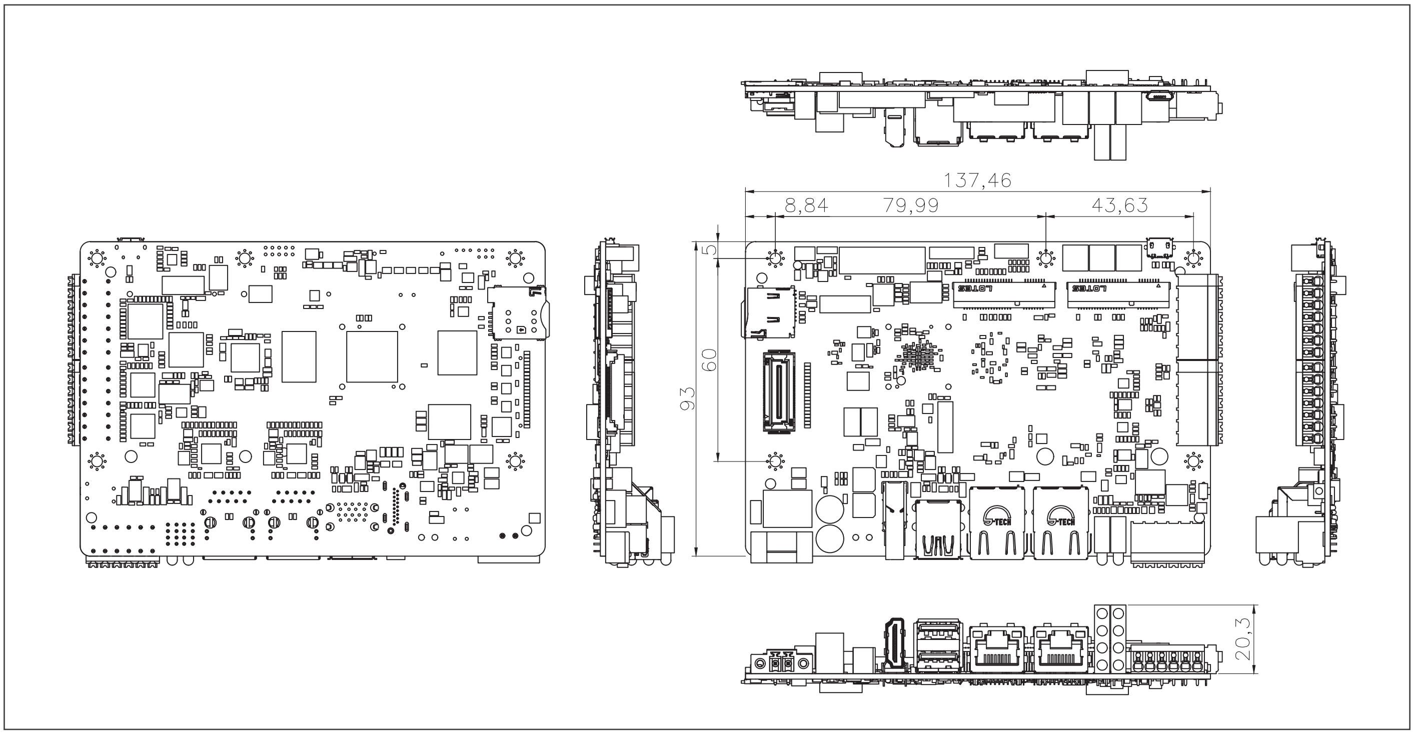
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

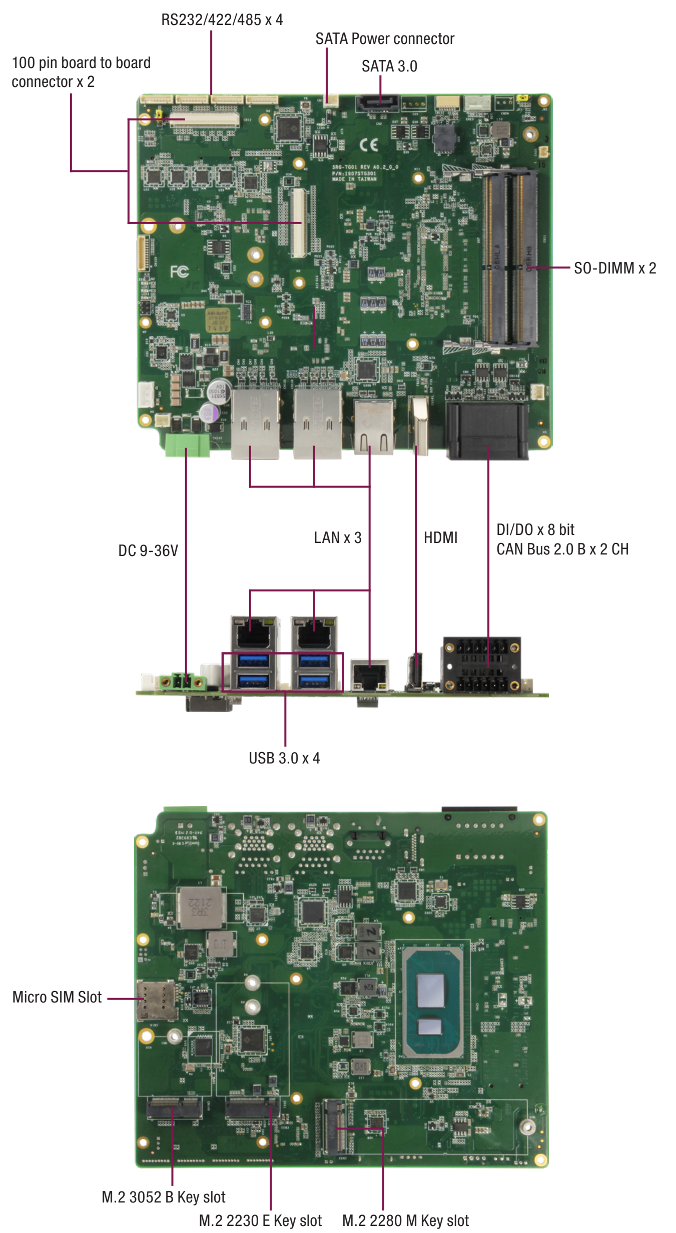


Ordering Information

Part Number	CPU	Memory	NPU	Thermal	Ports	Storage	LAN	USB	Expansion slot	Power	Operation Temp.	Others
SRT-IMX8P-A10-0216	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor	Onboard LPDDR4 1866MHz 2GB	—	Fanless	RS-232/422/485 x 2, Phoenix HDMI x 1 (Output) CAN-FD x 2 CH, Phoenix	eMMC 16GB, MicroSD x1	GbE x 2	USB 3.0 x 2	Mini PCIe slot x 2 SIM card socket x 1	DC 9-36V	-20°C ~ 70°C @ 0.5 m/s airflow	3G/4G LTE module Wifi/BT Module (optional)
SRT-IMX8P-A10-0432	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor	Onboard LPDDR4 1866MHz 4GB	1X	Fanless	RS-232/422/485 x 2, Phoenix HDMI x 1 (Output) CAN-FD x 2 CH, Phoenix	eMMC 32GB, MicroSD x1	GbE x 2	USB 3.0 x 2	Mini PCIe slot x 2 SIM card socket x 1	DC 9-36V	-20°C ~ 70°C @ 0.5 m/s airflow	3G/4G LTE module Wifi/BT Module (optional)

SRT-TG01

Standard IoT Gateway System with 11th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC



Features

- 11th Generation Intel Core i7/i5/i3/Celeron Processor SoC
- DDR4 3200MHz, SO-DIMM x 2, up to 64GB
- USB 3.2 Gen 1 x 3, USB 3.2 Gen 2 x 1
- HDMI 2.0b x 1 (Output)
- GbE x2 (Intel I219, I211) + 2.5 GbE x1 (Intel I225)
- M.2 3052 B Key x1, M.2 2280 M Key x1, M.2 2230 E Key x1
- DC 9 ~ 36V Power Input
- 100 pin board to board connector x 2
- PCIE, USB3.0, USB2.0, UART, GPIO, I2C, DDI, SPI

DDR 4 USB 3.2

I/O Interfaces	
Serial Port	RS-232/422/485 x 4, Wafer Box
Ethernet	Intel ®i211-LM,10/100/1000Base x 1,RJ45 Intel ®i219-LM,10/100/1000Base x 1,RJ45 Intel ®i225-LM,10/100/1000Base x 1,RJ45 (Support Vpro)
USB	USB3.2 Gen 2 x 1, Type A USB3.2 Gen 1 x 3, Type A
ADC	—
DI/DO	8 bit, Phoenix Connector
CAN Bus	CAN 2.0 B x 2 CH, Phoenix Connector
Display	HDMI 2.0b x 1
Power Connector	2 Pin 3.81mm Pitch Phoenix Connector
Debug Port	—
Expansion Slot	Micro SIM slot x 1
Other Interface	SATA 3.0 x 1 SATA Power connector x 1 (5V) 100 pin board to board connector x 2 PCIE, USB3.0, USB2.0, UART, GPIO, I2C, DDI, SPI
Power Supply	
Power Requirement	DC 9 ~ 36V (Optional DC12V), AT Type
Power Consumption	67 W (Full Loading)
MTBF (Hours)	306,575
Environmental and Mechanical	
Dimension	6.69" x 5.74" (170 x 146 mm)
Weight	1.4lb (650g)
Mount Options	—
Operation Temperature	32 °F ~ 122 °F (0 °C ~ 50 °C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operation Humidity	10% ~ 95% relative humidity, non-condensing

Specifications

System	
Processor	11th Generation Core Intel® i7-1185G7E SoC 11th Generation Core Inte® i5-1145G7E SoC 11th Generation Core Inte® i3-1115G4E SoC 11th Generation Core Inte® Celeron 6305E SoC TDP 12W Only
Memory	DDR4 3200MHz, SO-DIMM x 2, Up to 64GB
Storage	M.2 2280 M Key slot x 1 (PClex4) 2.5"" SATA SSD/HDD bay x 1
Real Time Clock	RTC x 1, with 3V CR2032 Lithium battery
Security	TPM 2.0
Indicators	—
Cellular	M.2 3052 B Key slot x 1 (4G/5G)
Wireless Lan	M.2 2230 E Key slot x 1 (Wifi 802.11 ac/b/g/n, BT 5.0)
Operating System	Windows 10 IoT Enterprise / Linux (by request)
Support Protocol	—

Packing List

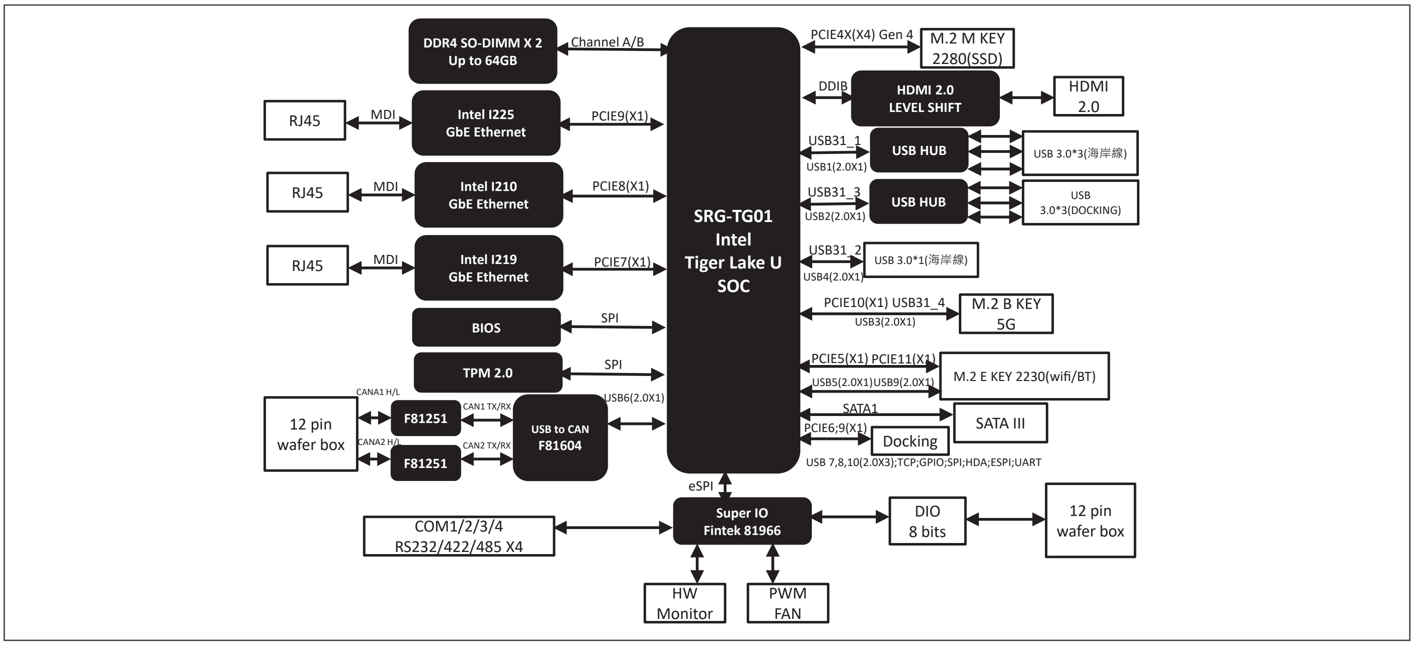
- SRT-TG01

Optional Accessories

- **1255300611**
  Power Adapter.DC.100/240V.12V.5A.60W.2p phoenix P=3.81mm.FSP.FSP060-DHAN3/9NA0608085
- **9686Y00124**
  M. 2 3042 LTE Cat4 module,for global market. SIMCOM. SIM7600G-H with LTE antenna
- **9741364A00**
  M.2 2230 Wireless.802.11 ac/a/b/g/n + BT 5.0.2T2R,Enli QCNFA364A.w/2 sets of cable and antenna
- **1702031802**
  POWER CORD.3P-125V 10A 180D.1.8M.USA.FANJET. YP12/YC-12
- **1702031803**
  POWER CORD.3P-250V 10A 180D.1.8M.EU.FAN-JET. YP-22/YC-12
- **170203180J**
  POWER CORD.3P-250V 13A.UK type.1830mm
- **1702031811**
  POWER CORD.3P-125V.10A.180D.1.8M.TWN/BSMI. FANJET.YP-12/YC-12
- **170203180E**
  Power cord.3P.125V/7A.1.8M.PSE YP12/YC12 Certificate

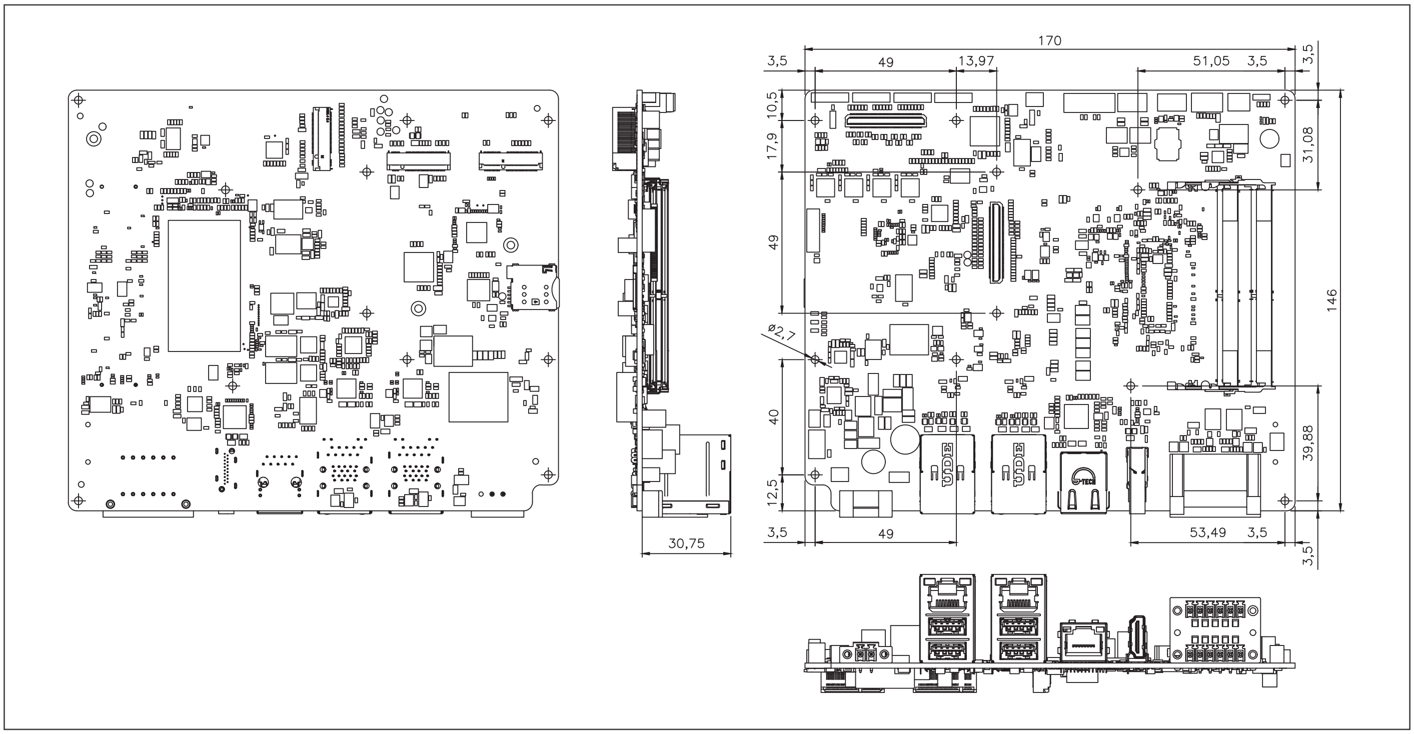
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

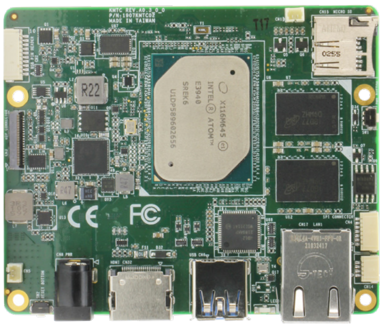


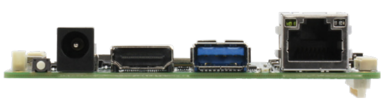
Ordering Information

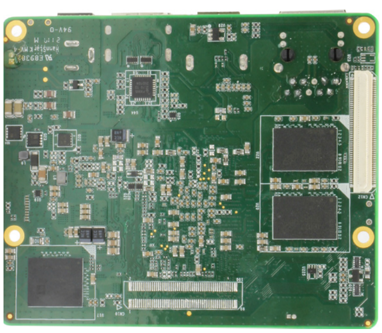
Part Number	CPU	Memory	Thermal	Ports	Storage	LAN	USB	Expansion slot	Power	Operation Temp.	Others
SRT-TG01-A10-0701	11th Generation Core Intel® i7-1185G7E SoC	DDR4 3200MHz, SO-DIMM x 2, Up to 64GB	Fanless	HDMI 2.0b x 1, RS-232/422/485 x 4, CAN 2.0B x2 CH, DIO x8 bit	SATA 3.0 x 1 M.2 M Key 2280 x1	GbE x 2 2.5 GbE x1	USB3.1 Gen 2 x 1 USB3.1 Gen 1 x 3	M.2 B Key 3042 x 1,M.2 E Key 2230 x 1 M.2 M Key 2280 x 1, Micro SIM slot x 1	DC 9 ~ 36V	0°C ~ 60°C @ 0.5 m/s airflow	3G/4G LTE module WiFi/BT module (optional)
SRT-TG01-A10-0501	11th Generation Core Inte® i5-1145G7E SoC	DDR4 3200MHz, SO-DIMM x 2, Up to 64GB	Fanless	HDMI 2.0b x 1, RS-232/422/485 x 4, CAN 2.0B x2 CH, DIO x8 bit	SATA 3.0 x 1 M.2 M Key 2280 x1	GbE x 2 2.5 GbE x1	USB3.1 Gen 2 x 1 USB3.1 Gen 1 x 3	M.2 B Key 3042 x 1, M.2 E Key 2230 x 1 M.2 M Key 2280 x 1, Micro SIM slot x 1	DC 9 ~ 36V	0°C ~ 60°C @ 0.5 m/s airflow	3G/4G LTE module WiFi/BT module (optional)
SRT-TG01-A10-0301	11th Generation Core Inte® i3-1115G4E SoC	DDR4 3200MHz, SO-DIMM x 2, Up to 64GB	Fanless	HDMI 2.0b x 1, RS-232/422/485 x 4, CAN 2.0B x2 CH, DIO x8 bit	SATA 3.0 x 1 M.2 M Key 2280 x1	GbE x 2 2.5 GbE x1	USB3.1 Gen 2 x 1 USB3.1 Gen 1 x 3	M.2 B Key 3042 x 1, M.2 E Key 2230 x 1 M.2 M Key 2280 x 1, Micro SIM slot x 1	DC 9 ~ 36V	0°C ~ 60°C @ 0.5 m/s airflow	3G/4G LTE module WiFi/BT module (optional)
SRT-TG01-A10-0C01	11th Generation Core Inte® Celeron 6305E SoC	DDR4 3200MHz, SO-DIMM x 2, Up to 64GB	Fanless	HDMI 2.0b x 1, RS-232/422/485 x 4, CAN 2.0B x2 CH, DIO x8 bit	SATA 3.0 x 1 M.2 M Key 2280 x1	GbE x 2 2.5 GbE x1	USB3.1 Gen 2 x 1 USB3.1 Gen 1 x 3	M.2 B Key 3042 x 1, M.2 E Key 2230 x 1 M.2 M Key 2280 x 1, Micro SIM slot x 1	DC 9 ~ 36V	0°C ~ 60°C @ 0.5 m/s airflow	3G/4G LTE module WiFi/BT module (optional)

SRT-APLC PRELIMINARY

Standard IoT Gateway Board with Intel Atom X5-E3940 Processor SoC







Features

- **Intel Atom X5-E3940 Quad Core 1.6GHz**
- **Onboard LPDDR4 4 GB / eMMC 32G**
- **Built-in Micro SD Card Slot x 1**
- **HDMI output x1**
- **Gigabit Ethernet RJ-45 x 1 LAN port**
- **USB 3.0 x 1**
- **2 x 100 pin board to board connector**

DDR 4 USB 3.0

Specifications

System	
Processor	Intel Atom X5-E3940 Processor SoC / Intel HD 500 Graphics
Memory	Onboard LPDDR4 1866MHz 4GB / 8GB (Optional)
Storage	eMMC 5.1 32GB / 64GB (Optional)
Real Time Clock	RTC x 1, with 3V CR2032 Lithium battery
Security	—
Indicators	—
Cellular	—
Wireless Lan	—
Operating System	Windows 10 IoT Enterprise / Linux (by request)
Support Protocol	—
I/O Interfaces	
Serial Port	—
Ethernet	Gigabit Ethernet x 1, RJ-45
USB	USB 3.0 x 1, Type A
ADC	—
DI/DO	—
CAN Bus	—
Display	HDMI 1.4 x 1 (Output)
Power Connector	DC Jack
Debug Port	—
Expansion Slot	Micro SD slot x 1 100 pin board to board connector x 2 PCIE, USB3.0, USB2.0, UART, GPIO, I2C, DDI, SPI
Other Interface	Power switch button x 1 Reset switch button x 1
Power Supply	
Power Requirement	12V DC-In @ 3A-5A 5.5/2.5 mm
Power Consumption	20 W (Full Loading)
MTBF (Hours)	826,592
Environmental and Mechanical	
Dimension	3.54" x 2.9" x 0.85" (90 x 74 x 21.5 mm)
Weight	0.44lb (200 g)
Mount Options	—
Operation Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operation Humidity	10% ~ 95% relative humidity, non-condensing

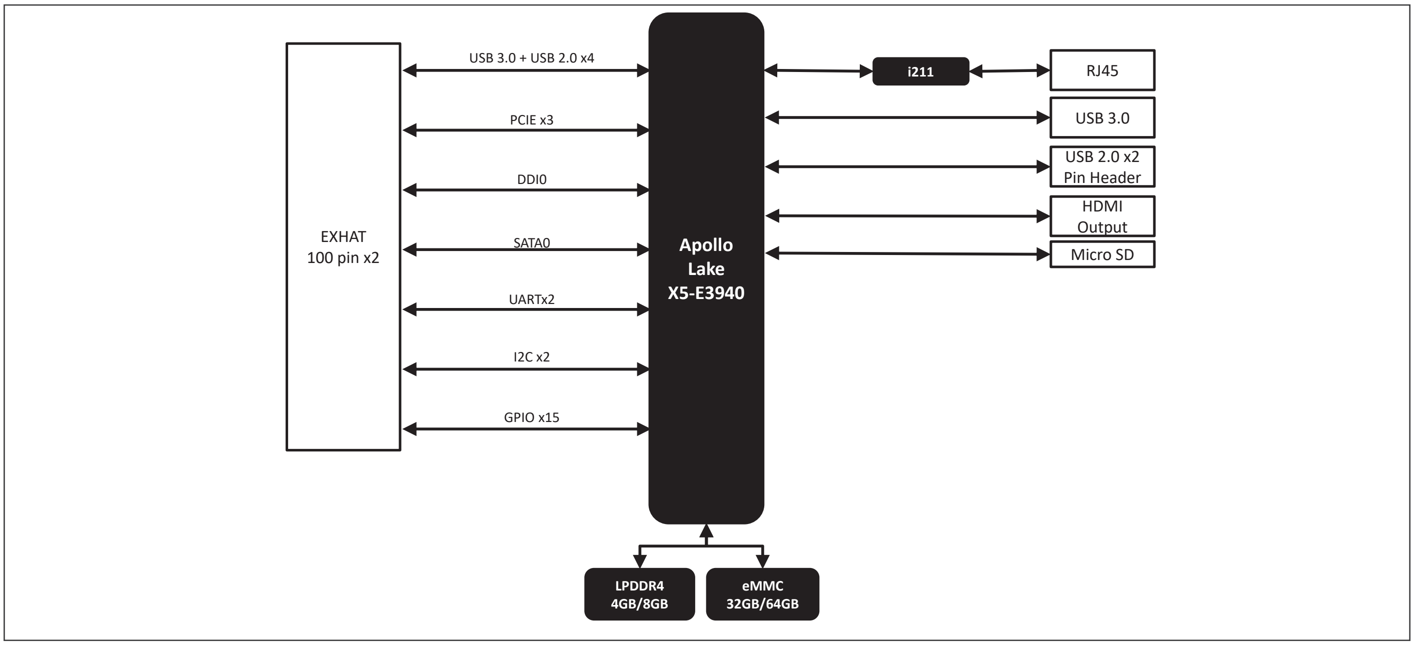
Packing List

- **SRT-APLC**

Optional Accessories

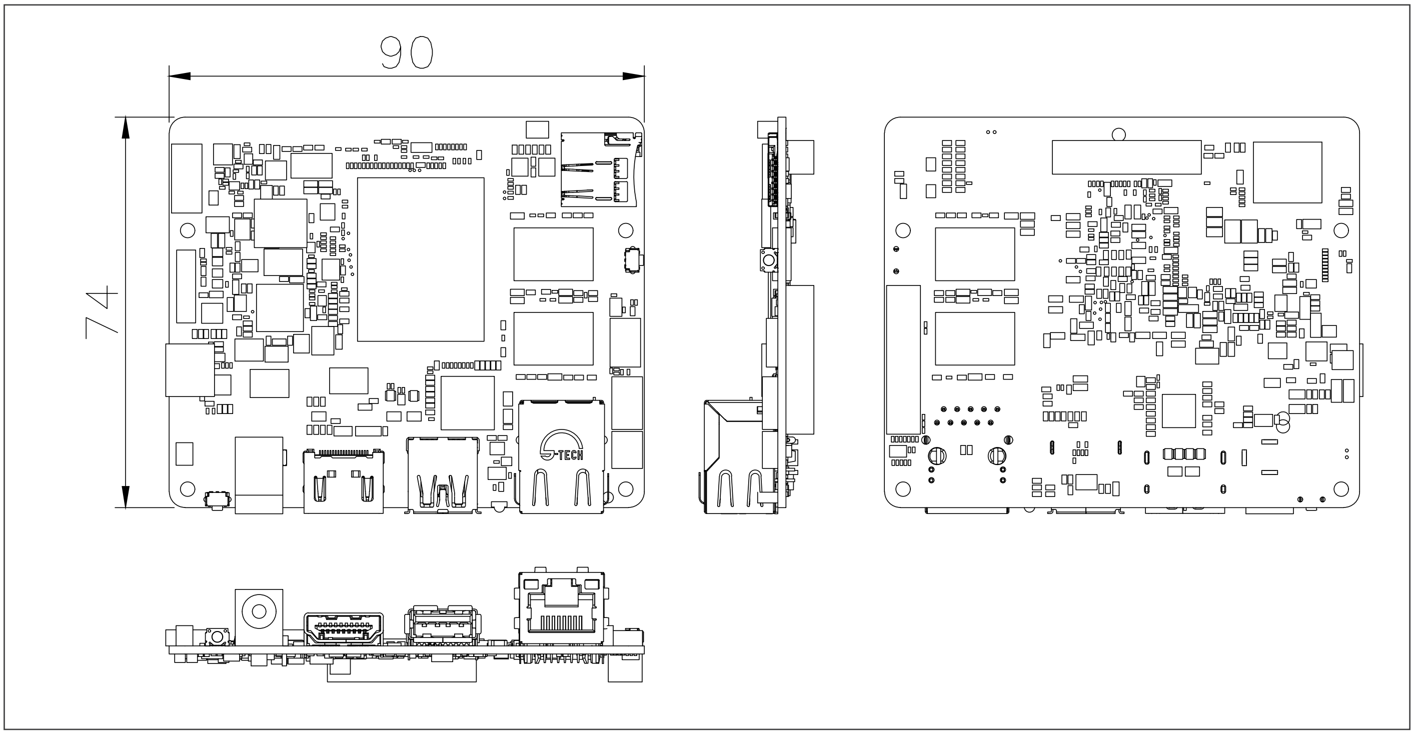
- **1255300409**
  Power Adapter.AC Input 90~264V.DC output 12v/3.34A.
- **1702031802**
  POWER CORD.3P-125V 10A 180D.1.8M.USA.FANJET.YP12/YC-12
- **1702031803**
  POWER CORD.3P-250V 10A 180D.1.8M.EU.FAN-JET.YP-22/YC-12
- **170203180J**
  POWER CORD.3P-250V 13A.UK type.1830mm
- **1702031811**
  POWER CORD.3P-125V.10A.180D.1.8M.TWN/BSMI.FANJET.YP-12/YC-12
- **170203180E**
  Power cord.3P.125V/7A.1.8M.PSE YP12/YC12 Certificat

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	Memory	Thermal	Ports	Storage	LAN	USB	Expansion slot	Power	Operation Temp.	Others
SRT-APLC-A10-0432	Intel Atom X5-E3940, 1.6GHz	Onboard LPDDR4 1866MHz 4GB	Fanless	HDMI x 1 (Output)	eMMC 32GB, MicroSD x1	GbE x 1	USB 3.0 x 1	—	DC 12V	0°C ~ 60°C @ 0.5 m/s airflow	—
SRT-APLC-A10-0832	Intel Atom X5-E3940, 1.6GHz	Onboard LPDDR4 1866MHz 8GB	Fanless	HDMI x 1 (Output)	eMMC 32GB, MicroSD x1	GbE x 1	USB 3.0 x 1	—	DC 12V	0°C ~ 60°C @ 0.5 m/s airflow	—
SRT-APLC-A10-0464	Intel Atom X5-E3940, 1.6GHz	Onboard LPDDR4 1866MHz 4GB	Fanless	HDMI x 1 (Output)	eMMC 64GB, MicroSD x1	GbE x 1	USB 3.0 x 1	—	DC 12V	0°C ~ 60°C @ 0.5 m/s airflow	—
SRT-APLC-A10-0864	Intel Atom X5-E3940, 1.6GHz	Onboard LPDDR4 1866MHz 8GB	Fanless	HDMI x 1 (Output)	eMMC 64GB, MicroSD x1	GbE x 1	USB 3.0 x 1	—	DC 12V	0°C ~ 60°C @ 0.5 m/s airflow	—

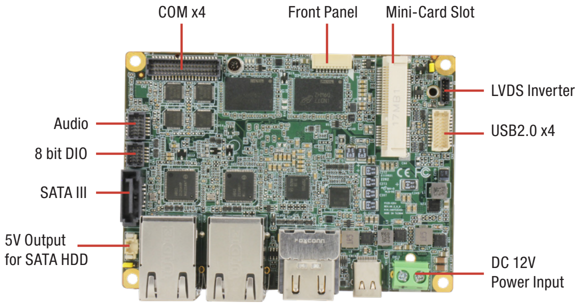
03

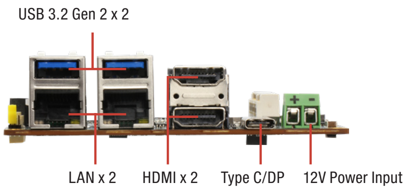
03

Pico-ITX Boards

PICO-V2K4

Pico-ITX Board with AMD RYZEN™ V2000 embedded Processor Family





Features

- **AMD RYZEN™ V2000 embedded Processor Family (V2718/V2516)**
- **LPDDR4x onboard memory, up to 32 GB**
- **Intel® i226, 10/100/2500Base x 1**
- **Intel® i210, 10/100/1000Base x 1**
- **HDMI x 2 (4Kx2K, 2.0b x 1, 1.4 x 1)**
- **Type C to DP x 1; LVDS/eDP x 1**
- **M.2 2280 M key (PCIE x4 GEN3/SATA) x 1**
- **Full size mPCIe/mSATA x 1**
- **USB 3.2 Gen 2 x 2, USB 3.2 Gen 2 Type C x 1 , USB 2.0 x 4**
- **RS-232/422/485 x 4**

1000 Giga LAN | LPDDR 4 | USB 2.0 | USB 3.2 Gen 2 | HDMI

Specifications

SYSTEM	
FORM FACTOR	PICO-ITX
CPU	AMD RYZEN™ V2000 embedded Processor Family V2718 (8C/16T, 1.7~4.15 GHz,TDP 10-25W) V2516 (6C/12T, 2.1~3.95 GHz,TDP 10-25W)
CHIPSET	AMD RYZEN™ V2000 embedded Processor Family
MEMORY TYPE	LPDDR4x 3733 MHz onboard memory
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.18 lbs (0.08 kg)
OS Support	Windows 10 (64 bit), Linux Ubuntu 20.04.3/Kernel 5.11
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
POWER CONSUMPTION	V2718, LPDDR4x onboard 32GB, 4.24A @ +12V(TYPICAL) V2718, LPDDR4x onboard 32GB, 4.82A @ +12V(MAX)
DISPLAY	
CONTROLLER	AMD Radeon 6, 7 Graphics (Renoir)
LVDS/eDP	eDP or LVDS x 1 (eDP 1.4: 3840x2160, 60Hz; LVDS: 12V/3.3V, 18-24 bit, single channel)
Display Interface	Type C to DP x 1 HDMI 2.0b x 1, 4K x 2K 60Hz HDMI 1.4 x 1, 4K x 2K 30Hz (3840 x 2160)
Multiple Display	Up to 4 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC269 (Optional)
AUDIO INTERFACE	High Definition Audio Interface, Line-in/Line-out/MIC (Optional)
Speaker	—
EXTERNAL I/O	
ETHERNET	Intel® i226, 10/100/2500Base x 1 Intel® i210, 10/100/1000Base x 1
USB	USB3.2 Gen2 Type C x 1 USB3.2 Gen2 x 2
SERIAL PORT	—
VIDEO	Type C to DP x 1 HDMI 2.0b x 1, 4K x 2K 60Hz HDMI 1.4 x 1, 4K x 2K 30Hz (3840 x 2160)
INTERNAL I/O	
USB	USB2.0 x 4
SERIAL PORT	COM1~COM4 (RS232/422/485, supports 5V/12V/RI)
VIDEO	eDP or LVDS x 1 (eDP 1.4: 3840x2160, 60Hz; LVDS: 12V/3.3V, 18-24 bit, single channel)
SATA	SATA III x 1 +5V SATA Power Connector x 1 Onboard NVME SSD (Optional, up to 64GB, PCIE x 2, by BOM)
AUDIO	Audio Header x 1 (Optional)
DIO/GPIO	8-bit
SMBus/I2C	SMBUS/I2C x 1 (SMBUS as default, I2C selected by HW BOM)
Touch	—
FAN	4pins Smart Fan x1
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	mini-PCIe(Full) x 1 (PCIe [x1] x 1/ USB2.0 as default, mSATA selected by HW BOM)
M.2	M.2 2280 M-key (PCIe Gen3 x 4 as default, SATA selected by BIOS) x 1
Others	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	407,784
EMC	CE/FCC Class A

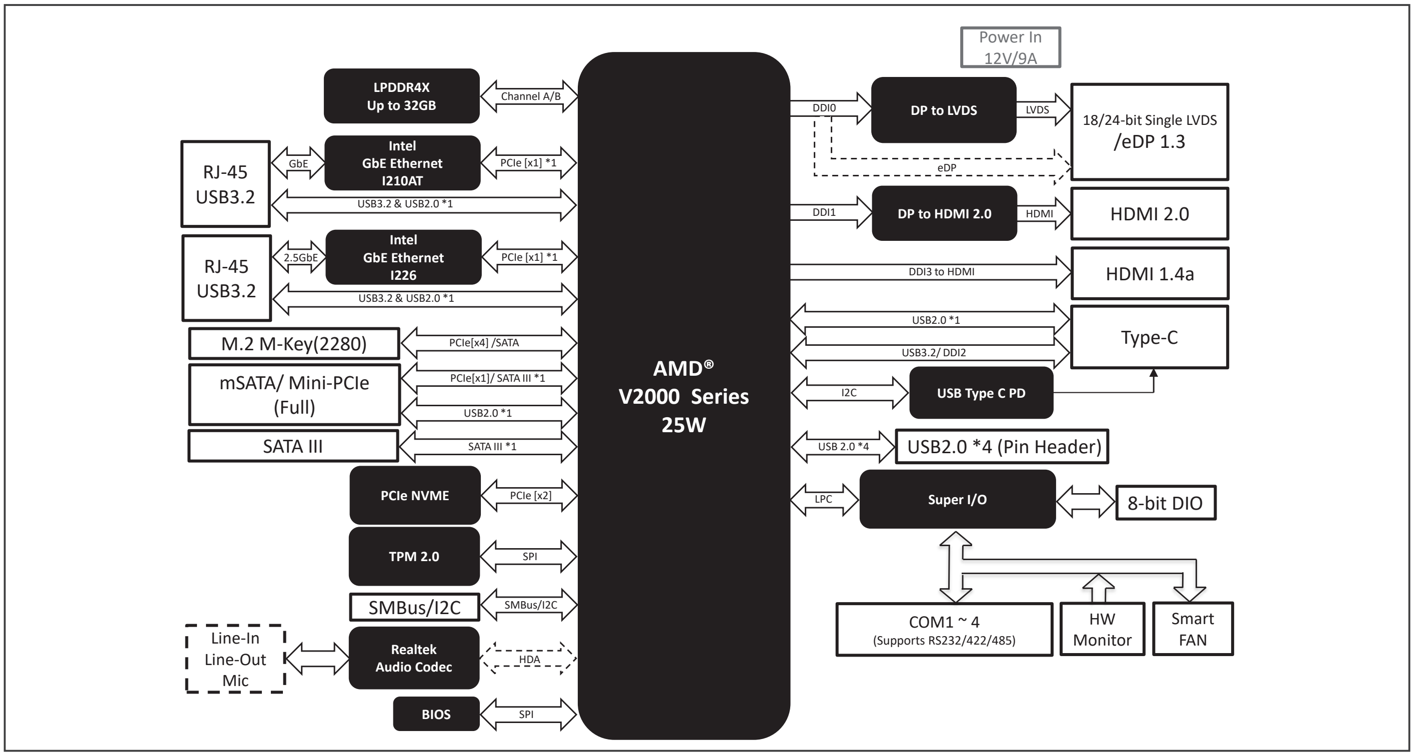
Packing List

- **PICO-V2K4**

Optional Accessories

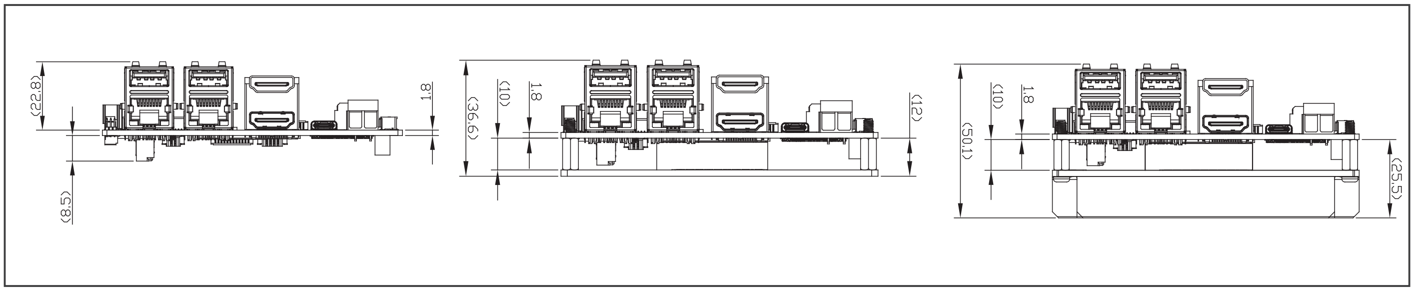
Part Number	Description	Qty.
170X000287	Front Panel cable	1
170X000317	COM *4port cable	1
170X000390	USB2.0 *4port cable	1
170X000446	LVDS cable (LVDS panel model: G121XN01)	1
170X000445	eDP cable (eDP panel model: B173ZAN01.0)	1
1709070500	(TF)SATA CABLE.7P Pitch 1.27mm.50cm	1
170X000322	SATA power cable	1
170X000156	Audio cable	1
PICO-V2K4-FAN01	Cooler	1
PICO-V2K4-HSP01	Heat Spreader.AL Fin+CU Block.100*72*10.7mm	1

Block Diagram



Dimension

Unit: mm

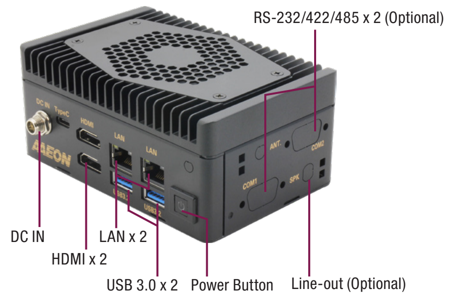


Ordering Information

Part number	CPU	Memory	Display	Storage	LAN	USB	RS-232/ 422/485	Expansion slot	Power	Operating Temp	Audio	Others
PICO-V2K4-A11-0002	V2516	4GB	Type C to DP x 1 HDMI x 2 LVDS x 1	SATAIII x 1	GbE x 2	USB 2.0 x 4 USB3.2 Gen 2 x 2 USB 3.2 Gen 2 Type C x 1	4	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (Terminal block)	0~60˚C	—	SMBUS x 1 (I2C Optional) TPM2.0
PICO-V2K4-A11-0003	V2516	8GB	Type C to DP x 1 HDMI x 2 LVDS x 1	SATAIII x 1 Onboard NVME SSD 64GB x 1	GbE x 2	USB 2.0 x 4 USB3.2 Gen 2 x 2 USB 3.2 Gen 2 Type C x 1	4	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (Terminal block)	0~60˚C	—	SMBUS x 1 (I2C Optional) TPM2.0
PICO-V2K4-A11-0004	V2718	8GB	Type C to DP x 1 HDMI x 2 LVDS x 1	SATAIII x 1	GbE x 2	USB 2.0 x 4 USB3.2 Gen 2 x 2 USB 3.2 Gen 2 Type C x 1	4	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (Terminal block)	0~60˚C	—	SMBUS x 1 (I2C Optional) TPM2.0
PICO-V2K4-A11-0005	V2718	16GB	Type C to DP x 1 HDMI x 2 LVDS x 1	SATAIII x 1	GbE x 2	USB 2.0 x 4 USB3.2 Gen 2 x 2 USB 3.2 Gen 2 Type C x 1	4	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (Terminal block)	0~60˚C	—	SMBUS x 1 (I2C Optional) TPM2.0

PICO-V2K4-SEMI

PICO-SEMI with AMD RYZEN™ V2000 embedded Processor Family



Features

- **AMD RYZEN™ V2000 embedded Processor Family (V2718/V2516)**
- **Onboard NVME SSD 64GB**
- **LPDDR4x onboard memory, up to 32 GB**
- **Intel® i226, 10/100/2500Base x 1**
- **Intel® i210, 10/100/1000Base x 1**
- **HDMI x 2 (4Kx2K, 2.0b x 1, 1.4 x 1), Type C to DP x 1**
- **M.2 2280 M key (PCIE x4 GEN3/SATA) x 1**
- **Full size mPCIe/mSATA x 1**
- **USB 3.2 Gen 2 x 2, USB 3.2 Gen 2 Type C x 1, USB 2.0 x 2(Optional)**
- **RS-232/422/485 x 2 (Optional)**

Specifications

SYSTEM	
FORM FACTOR	PICO-SEMI
CPU	AMD RYZEN™ V2000 embedded Processor Family V2718 (8C/16T, 1.7~4.15 GHz,TDP 10-25W) V2516 (6C/12T, 2.1~3.95 GHz,TDP 10-25W)
CHIPSET	AMD RYZEN™ V2000 embedded Processor Family
MEMORY TYPE	LPDDR4x 3733 MHz onboard memory
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	4.80" x 3.18" x 2.13" (122mm x 80.8mm x 54 mm)
Gross Weight	0.84 lbs (0.38 kg)
OS Support	Windows 10 (64 bit), Linux Ubuntu 20.04.3/Kernel 5.11
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	ATX
CONNECTOR	DC Jack Connector
POWER CONSUMPTION	V2718, LPDDR4x onboard 32GB, 4.24A @ +12V(TYPICAL) V2718, LPDDR4x onboard 32GB, 4.82A @ +12V(MAX)
DISPLAY	
CONTROLLER	AMD Radeon 6, 7 Graphics (Renoir)
LVDS/eDP	—
Display Interface	Type C to DP x 1 HDMI 2.0b x 1, 4K x 2K 60Hz HDMI 1.4 x 1, 4K x 2K 30Hz (3840 x 2160)
Multiple Display	Up to 3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC269 (Optional)
AUDIO INTERFACE	Line-out (Optional)
Speaker	—
EXTERNAL I/O	
ETHERNET	Intel® i226, 10/100/2500Base x 1 Intel® i210, 10/100/1000Base x 1
USB	USB3.2 Gen2 Type C x 1 USB3.2 Gen2 x 2 USB2.0 x 2 (Optional)
SERIAL PORT	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)(Optional)
VIDEO	Type C to DP x 1 HDMI 2.0b x 1, 4K x 2K 60Hz HDMI 1.4 x 1, 4K x 2K 30Hz (3840 x 2160)
INTERNAL I/O	
USB	—
SERIAL PORT	—
VIDEO	—
SATA	Onboard NVME SSD 64GB
AUDIO	Audio Header x 1 (Optional)
DIO/GPIO	8-bit (Optional)
SMBus/I2C	SMBUS/I2C x 1 (SMBUS as default, I2C selected by HW BOM)
Touch	—
FAN	4pins Smart Fan x1
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	mini-PCIe(Full) x 1 (PCIe [x1] x 1/ USB2.0 as default, mSATA selected by HW BOM)
M.2	M.2 2280 M-key x 1 (PCIe Gen3 x 4 as default, SATA selected by BIOS)
Others	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 122°F (0°C ~ 50°C) with 0.2 m/s airflow
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	407,784
EMC	CE/FCC Class A

Packing List

- **PICO-V2K4-SEMI**

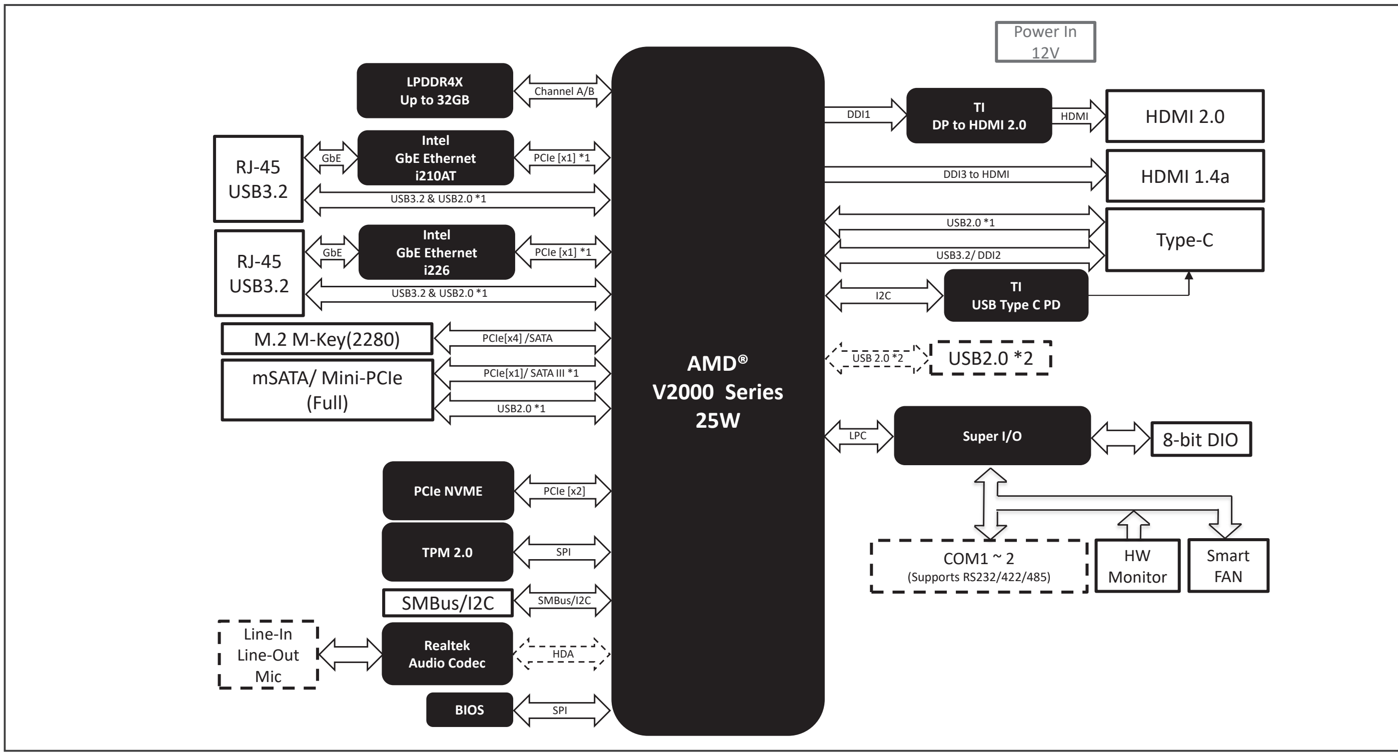
Optional Accessories

Part Number	Description	Qty.
1702031802	Power Cord (US Type)	1
1702031803	Power Cord (Europe Type)	1
170203180E	Power Cord (Japan)	1
1255201200	Power Adapter 12V/10A 120W FSP120-AHAN3 w/o Lock	1
1255X00063	Power Adapter 12V/12.5A 150W DPS-150AB-15 w/Lock	1
170X000568	Dual COM port cable	1
170X000576	Dual USB2.0 port cable	1
170X000482	Audio cable	1
PICO-V2K4-SEMI-VESA1	PICO-V2K4-SEMI VESA bracket kit	1
PICO-V2K4-SEMI-WMT1	PICO-V2K4-SEMI Wallmount bracket kit	1
PICO-V2K4-SEMI-DIN1	Din rail kit	1

Note: All specifications are subject to change without notice.

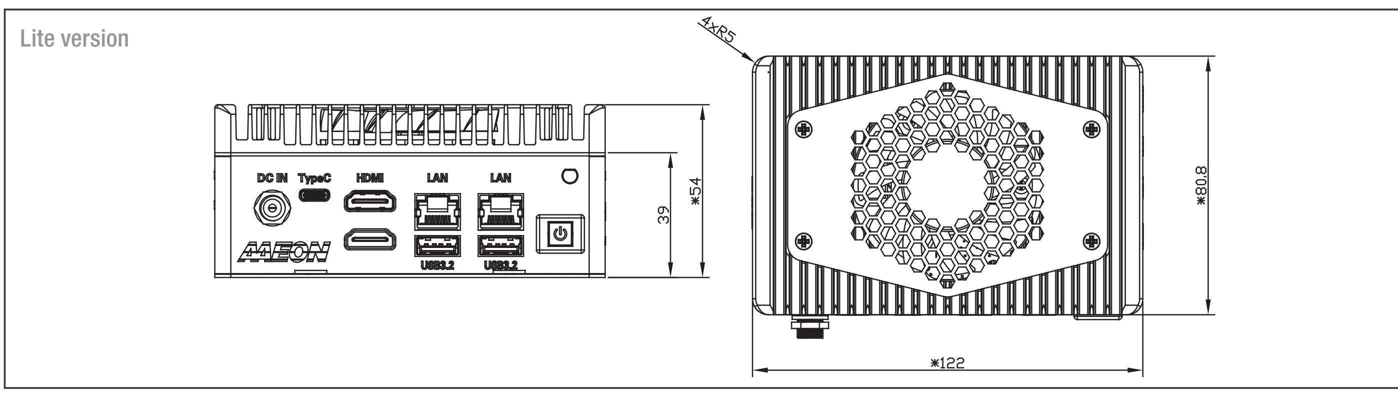
PICO-V2K4-SEMI

Block Diagram



Dimension

Unit: mm

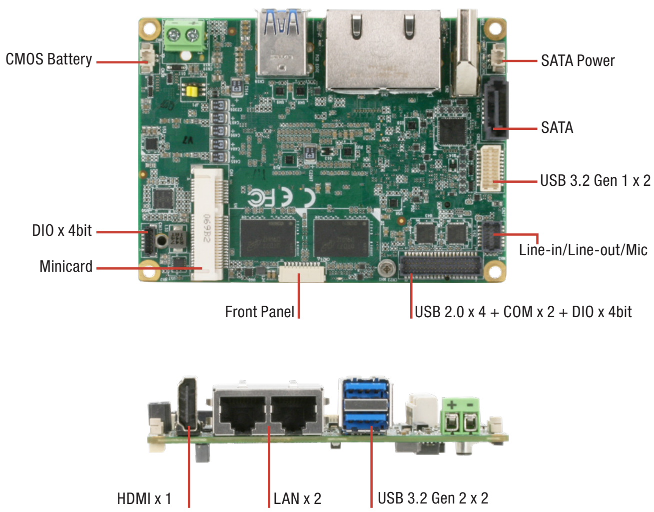


Ordering Information

Part number	CPU	Memory	Display	Storage	LAN	USB	RS-232/ 422/485	Expansion slot	Power	Operating Temp	Audio	Others
PICO-V2K4-SEMI-A11-S001	V2516	8GB	Type C to DP x 1 HDMI x 2	Onboard NVME SSD 64GB x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 3.2 Gen 2 Type C x 1	—	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (ATX)	0~50˚C	—	SMBUS x 1 (I2C Optional) TPM2.0
PICO-V2K4-SEMI-A11-S002	V2718	16GB	Type C to DP x 1 HDMI x 2	Onboard NVME SSD 64GB x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 3.2 Gen 2 Type C x 1	—	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (ATX)	0~50˚C	—	SMBUS x 1 (I2C Optional) TPM2.0
PICO-V2K4-SEMI-A11-S003	V2718	32GB	Type C to DP x 1 HDMI x 2	Onboard NVME SSD 64GB x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 3.2 Gen 2 Type C x 1	—	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (ATX)	0~50˚C	—	SMBUS x 1 (I2C Optional) TPM2.0

PICO-TGU4

Pico-ITX Board with 11th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC



Features

- 11th Gen Intel® Core™ i7/i5/i3/Celeron Processor SoC
- LPDDR4x Onboard memory, Max. 32 GB
- 2.5GbE Intel i225 + 1GbE Intel i219
- HDMI2.0b x 1, 4Kx2K + eDP, up to HBR3 8K
- M.2 2280 M key(PCIE by4 GEN4/SATA) x 1
- SATA 6.0 Gb/s x 1
- Full size mPCIe/mSATA x 1
- USB 3.2 Gen 2 x 2, USB 3.2 Gen 1 x 2, USB 2.0 x 4
- RS-232/422/485 x 2
- Line-in/Line-out/MIC (Optional)
- DIO 8 bit

1000 Giga LAN LPDDR 4 USB 2.0 USB 3.2 Gen 2 HDMI

Specifications

SYSTEM	
FORM FACTOR	PICO-ITX
CPU	Intel® Core™/ Celeron® Processor: i7-1185G7E (4C/8T, 1.8GHz, up to 4.4GHz, TDP up to 28W) i5-1145G7E (4C/8T, 1.5GHz, up to 4.1GHz, TDP up to 28W) i3-1115G4E (2C/4T, 2.2GHz, up to 3.9GHz, TDP up to 28W) Celeron® 6305E (2C/2T, 1.8GHz, TDP 15W)
CHIPSET	11th Generation Intel® Core™ i7/i5/i3/Celeron SoC
MEMORY TYPE	Onboard LPDDR4x 3200MHz,up to 32GB,In-Band ECC (select SKUs)
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.18 lbs. (0.08 kg)
OS Support	Windows 10 (64bit) Linux Ubuntu 20.04.2/Kernel 5.8
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
POWER CONSUMPTION	Intel® i7-1185G7E, LPDDR4x onboard 32GB, 2.89A@ +12V (TYPICAL)
DISPLAY	
CONTROLLER	Intel® Iris® Xe (i5/i7 support) Intel® UHD Graphics (i3/Celeron support)
LVDS/eDP	eDP x 1 (up to HBR3, 8K x 4K 30Hz)
Display Interface	HDMI2.0b x 1 (4K x 2K 60Hz)
Multiple Display	Up to 2 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC269 (Optional)
AUDIO INTERFACE	Line-in/Line-out/MIC (Optional)
Speaker	—
EXTERNAL I/O	
ETHERNET	Intel® i225, 10/100/1000/2500Base, RJ45 x 1 Intel® i219, 10/100/1000Base, RJ45 x 1
USB	USB3.2 Gen 2 x 2
SERIAL PORT	—
VIDEO	HDMI2.0b x 1 (4K x 2K 60Hz)
INTERNAL I/O	
USB	USB3.2 Gen 1 x 2 USB2.0 x 4
SERIAL PORT	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)
VIDEO	eDP x 1 (up to HBR3, 8Kx4K 30Hz)
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	Audio Header x 1 (Optional)
DIO/GPIO	8-bit
SMBus/I2C	I2C/SMBus x1 (SMBUS as default, I2C select by BOM)
Touch	—
FAN	4pins Smart Fan x1
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	Full-size mSATA/mPCIe or USB2.0 x 1 (PCIe as default, select by BIOS option)
M.2	M.2 M Key 2280 x 1 (PCIe Gen 4 [x4] as default, SATA select by HW BOM)
Others	SMBUS/I2C/eSPI x 1
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 140°F (0°C ~ 60°C) WiTAS1 -4°F ~ 158°F (-20°C ~ 70°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	424,208
EMC	CE/FCC Class A

Packing List

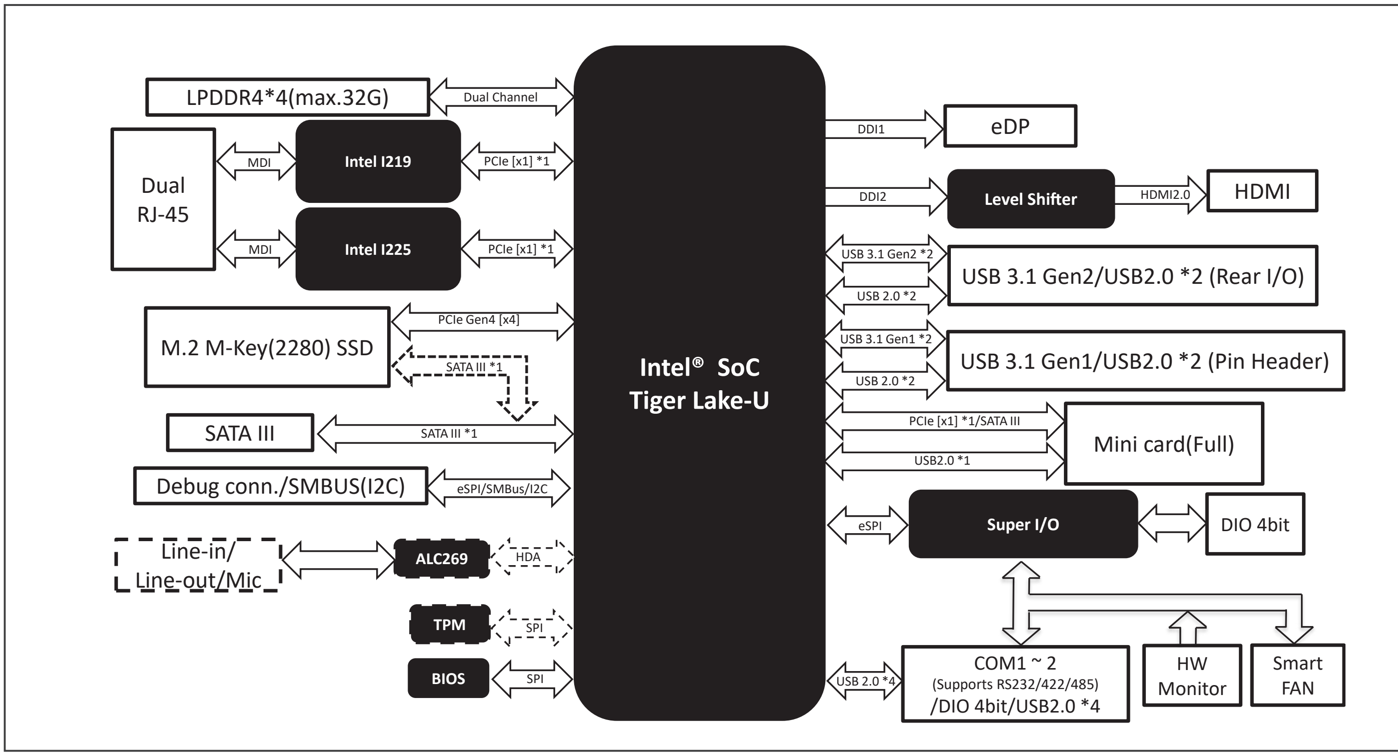
- PICO-TGU4

Optional Accessories

Part Number	Description	Qty.
170X000285	USB3.2 GEN 1 cable	1
170X000284	USB2.0 x 4 + COM x 2 +DIO 4bit x 1 cable	1
170X000287	Front panel cable	1
170X000156	250mm Audio cable	1
1709070500	(TF)SATA CABLE.7P Pitch 1.27mm.50cm	1
170X000322	SATA power cable	1
PICO-TGU4-FAN01	Integrated Cooler for PICO-TGU4, assemble with PICO-TGU4 directly	1
PICO-TGU4-HSP01	Integrated Heat spreader for PICO-TGU4, assemble with PICO-TGU4 directly	1

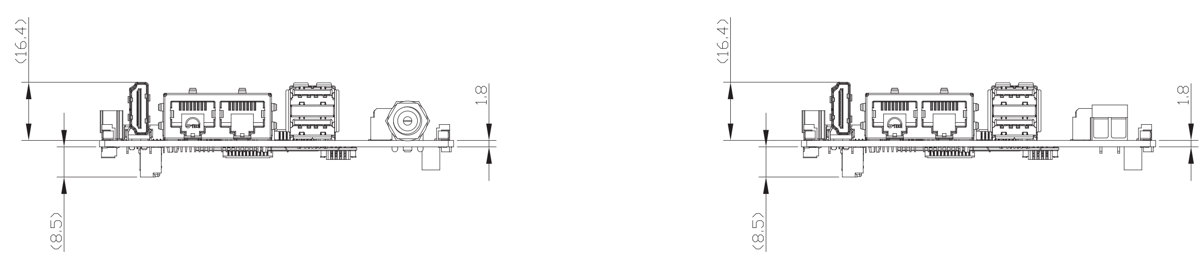
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



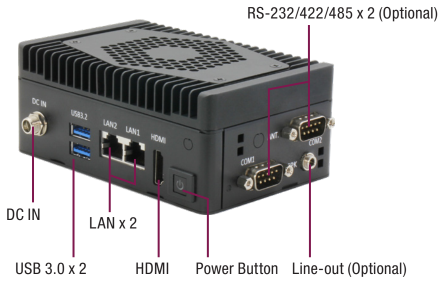
Ordering Information

Part Number	CPU	Memory	Display	Storage	LAN	USB	RS-232/ 422/485	Expansion Slot	Power	Power Temp	Audio	Others
PICO-TGU4-A10-0001	Celeron® 6305E	4G	HDMI x 1 eDP x 1	SATAIII x 1	2.5GbE x 1 GbE x 1	USB3.2 GEN2 x 2 (Rear) USB3.2 GEN1 x 2 (header) USB2.0 x 4 (header)	2	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (Terminal block)	0°C ~ 60°C	—	DIO, SMBUS/eSPI x 1 (I2C optional)
PICO-TGU4-A10-0002	i3-1115G4E	4G	HDMI x 1 eDP x 1	SATAIII x 1	2.5GbE x 1 GbE x 1	USB3.2 GEN2 x 2 (Rear) USB3.2 GEN1 x 2 (header) USB2.0 x 4 (header)	2	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (Terminal block)	0°C ~ 60°C	—	DIO, SMBUS/eSPI x 1 (I2C optional)
PICO-TGU4-A10-0003	i3-1115G4E	8G	HDMI x 1 eDP x 1	SATAIII x 1	2.5GbE x 1 GbE x 1	USB3.2 GEN2 x 2 (Rear) USB3.2 GEN1 x 2 (header) USB2.0 x 4 (header)	2	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (Terminal block)	0°C ~ 60°C	—	DIO, SMBUS/eSPI x 1 (I2C optional)
PICO-TGU4-A10-0004	i5-1145G7E	8G	HDMI x 1 eDP x 1	SATAIII x 1	2.5GbE x 1 GbE x 1	USB3.2 GEN2 x 2 (Rear) USB3.2 GEN1 x 2 (header) USB2.0 x 4 (header)	2	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (Terminal block)	0°C ~ 60°C	—	DIO, SMBUS/eSPI x 1 (I2C optional)
PICO-TGU4-A10-0005	i7-1185G7E	8G	HDMI x 1 eDP x 1	SATAIII x 1	2.5GbE x 1 GbE x 1	USB3.2 GEN2 x 2 (Rear) USB3.2 GEN1 x 2 (header) USB2.0 x 4 (header)	2	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (Terminal block)	0°C ~ 60°C	—	DIO, SMBUS/eSPI x 1 (I2C optional)
PICO-TGU4-A10-0006	i7-1185G7E	32G	HDMI x 1 eDP x 1	SATAIII x 1	2.5GbE x 1 GbE x 1	USB3.2 GEN2 x 2 (Rear) USB3.2 GEN1 x 2 (header) USB2.0 x 4 (header)	2	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (Terminal block)	0°C ~ 60°C	—	DIO, SMBUS/eSPI x 1 (I2C optional)
PICO-TGU4-A10-0007	i7-1185G7E	16G	HDMI x 1 eDP x 1	SATAIII x 1	2.5GbE x 1 GbE x 1	USB3.2 GEN2 x 2 (Rear) USB3.2 GEN1 x 2 (header) USB2.0 x 4 (header)	2	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (Terminal block)	0°C ~ 60°C	—	DIO, SMBUS/eSPI x 1 (I2C optional)
PICO-TGU4-A10-0008	i5-1145G7E	16G	HDMI x 1 eDP x 1	SATAIII x 1	2.5GbE x 1 GbE x 1	USB3.2 GEN2 x 2 (Rear) USB3.2 GEN1 x 2 (header) USB2.0 x 4 (header)	2	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (Terminal block)	0°C ~ 60°C	—	DIO, SMBUS/eSPI x 1 (I2C optional)
PICO-TGU4W1-A10-0005	i7-1185G7E	8G	HDMI x 1 eDP x 1	SATAIII x 1	2.5GbE x 1 GbE x 1	USB3.2 GEN2 x 2 (Rear) USB3.2 GEN1 x 2 (header) USB2.0 x 4 (header)	2	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V (Terminal block)	-20°C~70°C	—	DIO, SMBUS/eSPI x 1 (I2C optional)

PICO-TGU4-SEMI

PICO-SEMI Embedded with 11th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC

Lite version



Features

- 11th Gen Intel® Core™ i7/i5/i3/Celeron Processor SoC
- LPDDR4x onboard memory, up to 32 GB
- 2.5GbE Intel i225 + 1GbE Intel i219
- HDMI2.0b x 1, 4K x 2K
- M.2 2280 M key (PCIe Gen4 x 4 as default) x 1
- Full size mPCIe/mSATA x 1
- USB 3.2 Gen 2 x 2
- RS-232/422/485 x 2 (Optional)
- Line-out (Optional)

LPDDR 4 2.5GbE USB 2.0 USB 3.2 Gen 2 PCI Express

Specifications

SYSTEM	
FORM FACTOR	PICO-SEMI
CPU	Intel® Core™/ Celeron® Processor: i7-1185G7E (4C/8T, 1.8GHz, up to 4.4GHz, TDP up to 28W) i5-1145G7E (4C/8T, 1.5GHz, up to 4.1GHz, TDP up to 28W) i3-1115G4E (2C/4T, 2.2GHz, up to 3.9GHz, TDP up to 28W) Celeron® 6305E (2C/2T, 1.8GHz, TDP 15W)
CHIPSET	11th Generation Intel® Core™ i7/i5/i3/Celeron SoC
MEMORY TYPE	Onboard LPDDR4x 3200MHz,up to 32GB,In-Band ECC (select SKUs)
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	4.80” x 3.18” x 1.98” (122mm x 80.8mm x 50.4 mm)
Gross Weight	0.84 lbs. (0.38 kg)
OS Support	Windows 10 (64bit) Linux Ubuntu 20.04.2/Kernel 5.8
POWER	
POWER REQUIREMENT	12V only
POWER SUPPLY TYPE	ATX
CONNECTOR	DC Jack Connector
POWER CONSUMPTION	Intel® i7-1185G7E, LPDDR4x onboard 32GB, 2.89A@ +12V (TYPICAL)
DISPLAY	
CONTROLLER	Intel® Iris® Xe (i5/i7 support) Intel® UHD Graphics (i3/Celeron support)
LVDS/eDP	—
Display Interface	HDMI2.0b x 1 (4K x 2K 60Hz)
Multiple Display	Up to 2 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC269 (Optional)
AUDIO INTERFACE	Line-out (Optional)
Speaker	—
EXTERNAL I/O	
ETHERNET	Intel® i225, 10/100/1000/2500Base, RJ45 x 1 Intel® i219, 10/100/1000Base, RJ45 x 1
USB	USB3.2 Gen 2 x 2
SERIAL PORT	—
VIDEO	HDMI2.0b x 1 (4Kx2K 60Hz)

INTERNAL I/O	
USB	—
SERIAL PORT	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)(Optional)
VIDEO	—
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	Audio Header x 1 (Optional)
DIO/GPIO	—
SMBus/I2C	I2C/SMBus x 1 (SMBUS as default, I2C select by BOM)
Touch	—
FAN	4pins Smart Fan x 1
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	Full-size mSATA/mPCIe or USB2.0 x 1 (PCIe as default, select by BIOS option)
M.2	M.2 M Key 2280 x 1 (PCIe Gen 4 [x4] as default, SATA select by HW BOM)
Others	SMBUS/I2C/eSPI x 1
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 122°F (0°C ~ 50°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	424,208
EMC	CE/FCC Class A

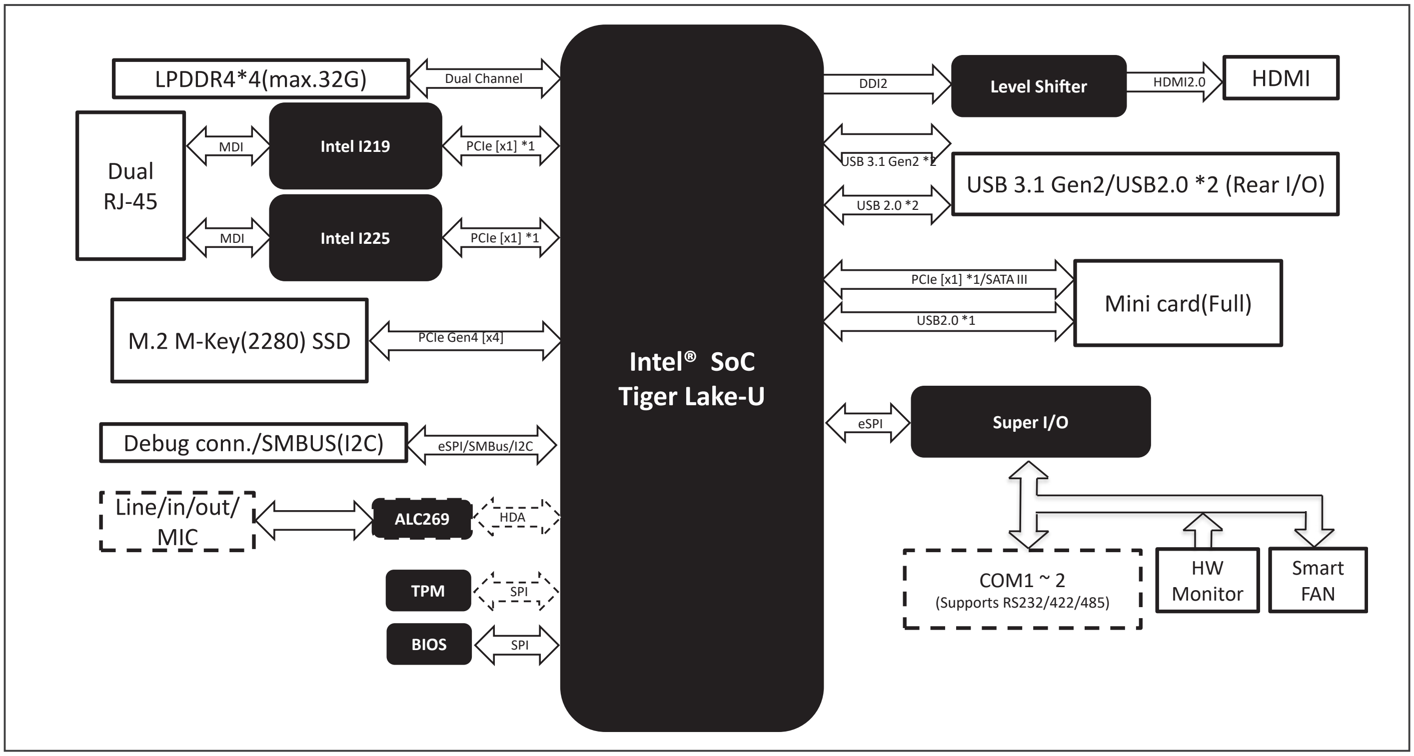
Packing List

Description	Qty.
PICO-TGU4-SEMI	1

Optional Accessories

Part Number	Description	Qty.
1702031802	Power Cord (US Type)	1
1702031803	Power Cord (Europe Type)	1
170203180E	Power Cord (Japan)	1
1255201200	Power Adapter 12V/10A 120W FSP120-AHAN3/9NA1206701	1
170X000482	Line out cable	1
170X000483	Dual COM port cable	1
PICO-TGU4-SEMI-VESA1	PICO-TGU4-SEMI VESA bracket kit	1
PICO-TGU4-SEMI-WMT1	PICO-TGU4-SEMI Wallmount bracket kit	1
PICO-TGU4-SEMI-DIN1	Din rail kit	1

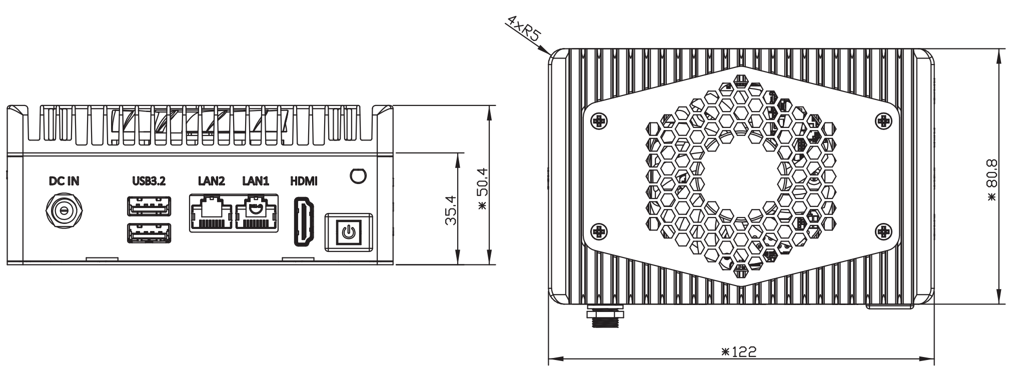
Block Diagram



Dimension

Unit: mm

Lite version

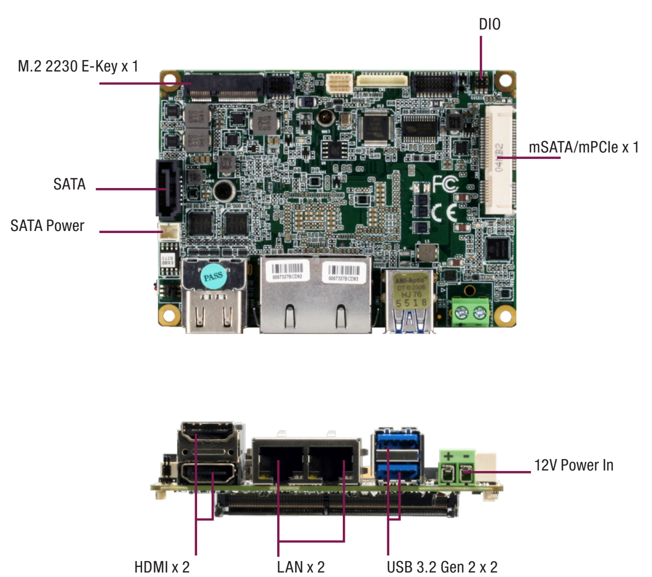


Ordering Information

Part number	CPU	Memory	Thermal	Display	LAN	USB	Expansion slot	Power	Operating Temp	Others
PICO-TGU4-SEMI-A10-0001	Celeron 6305E	4GB	Cooler	HDMI x 1	2.5GbE x 1, GbE x 1	USB3.2 Gen 2 x 2	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V ATX	0~50˚C	SMBUS/eSPI x 1 (I2C Optional)
PICO-TGU4-SEMI-A10-0002	i3-1115G4E	8GB	Cooler	HDMI x 1	2.5GbE x 1, GbE x 1	USB3.2 Gen 2 x 2	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V ATX	0~50˚C	SMBUS/eSPI x 1 (I2C Optional)
PICO-TGU4-SEMI-A10-0003	i5-1145G7E	8GB	Cooler	HDMI x 1	2.5GbE x 1, GbE x 1	USB3.2 Gen 2 x 2	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V ATX	0~50˚C	SMBUS/eSPI x 1 (I2C Optional)
PICO-TGU4-SEMI-A10-0004	i7-1185G7E	8GB	Cooler	HDMI x 1	2.5GbE x 1, GbE x 1	USB3.2 Gen 2 x 2	M.2 2280 M-key x 1 mini-PCIe(Full) x 1	+12V ATX	0~50˚C	SMBUS/eSPI x 1 (I2C Optional)

PICO-WHU4

Pico-ITX Board with 8th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC



Features

- 8th Gen Intel® Core™ i7/i5/i3/Celeron Processor SoC
- Non-ECC DDR4 SODIMM Slot x 1, up to 32GB
- Dual HDMI ports (HDMI 1.4b)
- GbE x 2, SATA 6.0 Gb/s x 1, GPIO x 4
- USB 3.2 Gen 2 x 2 (Rear), USB 2.0 x 2 Pin header, RS-232/422/485 x 2
- Full size mSATA/mPCIe x 1 (Select by BIOS), M.2 2230 (E key) x 1
- 12V Only (Terminal block and DC barrel co-design)

Specifications

SYSTEM	
FORM FACTOR	PICO-ITX
CPU	Intel® 8th Generation Core™ i7/i5/i3/Celeron SoC i7-8665UE (4C/8T, 1.7GHz, up to 4.4GHz, TDP 15W) i5-8365UE (4C/8T, 1.6GHz, up to 4.1GHz, TDP 15W) i3-8145UE (2C/4T, 2.2GHz, up to 3.9GHz, TDP 15W) Celeron® 4305UE (2C/2T, 2GHz, TDP 15W)
CHIPSET	Intel® 8th Generation Core™ i7/i5/i3/Celeron SoC
MEMORY TYPE	DDR4 up to 2400MHz SODIMM x 1, up to 32GB, Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0 (Optional by accessory card)
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.18 lbs. (0.08 kg)
OS Support	Windows 10 (64 bit) Ubuntu 18.04.3/Kernel 5.0
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
POWER CONSUMPTION	Intel® i7-8665UE @ DDR4 16GB, 2.23A@ +12V(TYPICAL)
DISPLAY	
CONTROLLER	Intel® UHD Graphics 610/620
LVDS/eDP	—
Display Interface	HDMI 1.4b x 2 (up to 3840 x 2160)
Multiple Display	Up to 2 Simultaneous Displays
AUDIO	
CODEC	—
AUDIO INTERFACE	—
Speaker	—
EXTERNAL I/O	
ETHERNET	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2
USB	USB 3.2 Gen 2 x 2
SERIAL PORT	—
VIDEO	HDMI 1.4b x 2 (up to 3840 x 2160)

INTERNAL I/O	
USB	USB2.0 x 2
SERIAL PORT	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)
VIDEO	—
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	—
DIO/GPIO	4-bit
SMBus/I2C	I2C/SMBus x1 (SMBUS as default)
Touch	—
FAN	4pins Smart Fan x1
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	Full size mSATA/mPCIe or USB2.0 x 1 (PCIe as default, mSATA selected by BIOS)
M.2	M.2 E-Key 2230 x 1 (for WIFI/BT, PCIe/USB signal only)
Others	SMBUS/I2C/LPC/eSPI x 1
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 140°F (0°C ~ 60°C) WiTAS 2 -40°F ~ 185°F (-40°C ~ 85°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	298,762
EMC	CE/FCC Class A

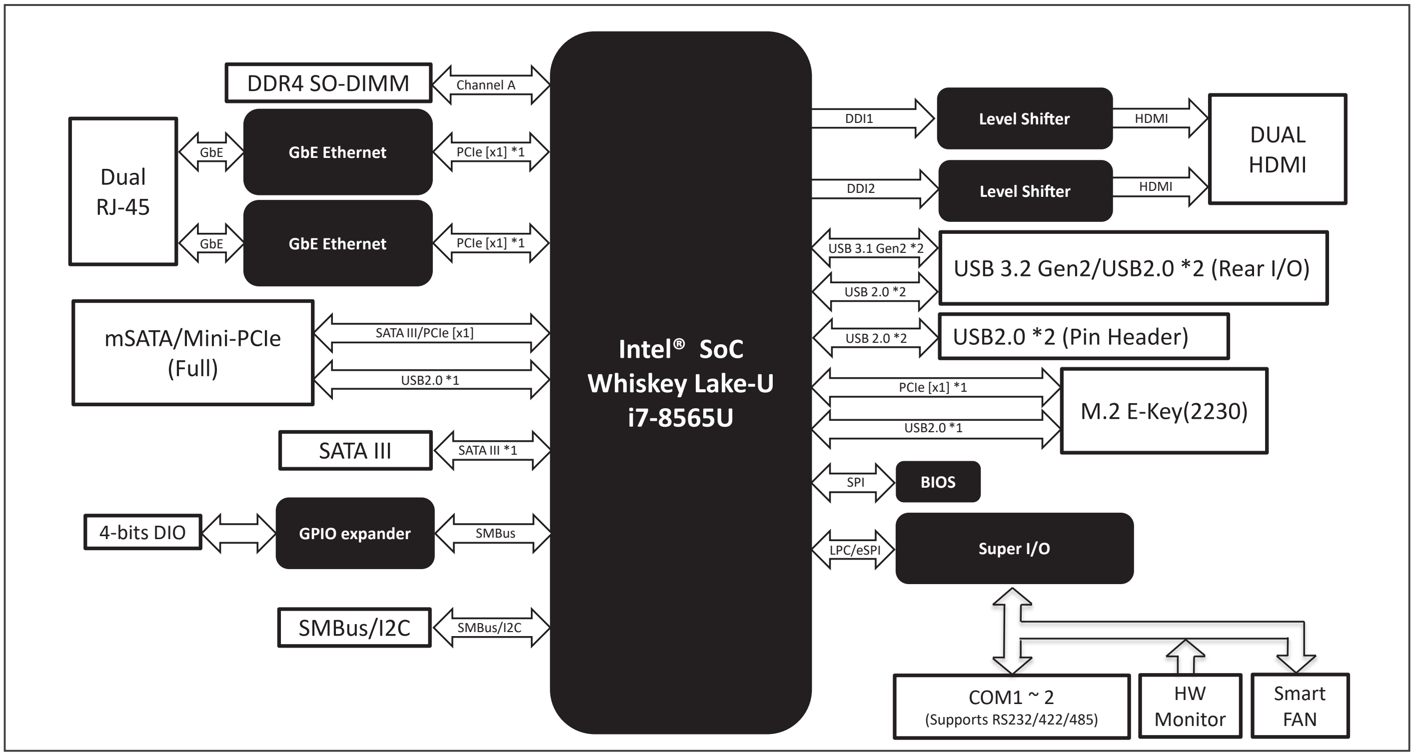
Packing List

- PICO-WHU4

Optional Accessories

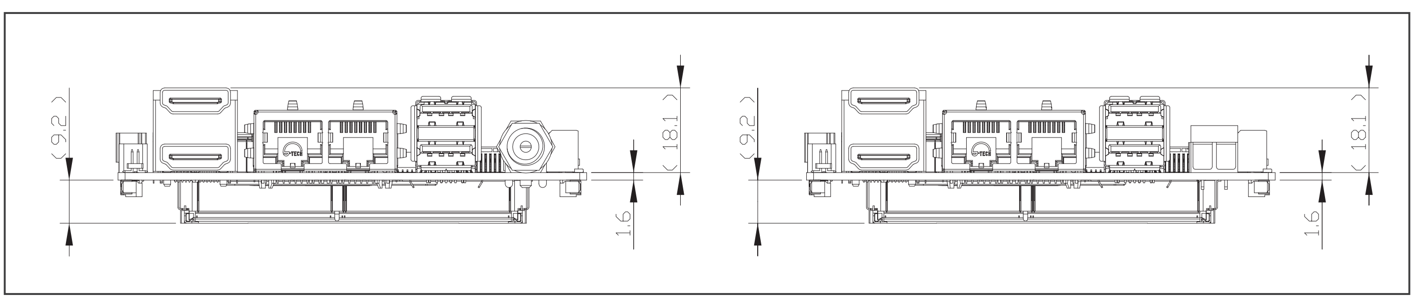
Part Number	Description	Qty.
1702150155	(TF)Power Cable.15P SATA(F).2P 2.0mm Housing(PH).15cm	1
1709070500	(TF)SATA CABLE.7P Pitch 1.27mm.50cm	1
1701200102	(TF)SERIAL Cable.WL1010H-2*10P 1.0mm Housing.Dual DB9(M).10cm	1
170010010D	USB cable (2 Port), 10cm	1
1702030176	(TF)Power Cable.3P DC jack.TERMINAL*2.17cm.TKS-G21-LN05	1
PICO-WHU4-FAN01	Integrated Cooler for PICO-WHU4, assemble with PICO-WHU4 directly	1
PICO-WHU4-HSP01	Heat Spreader for PICO-WHU4	1
PER-T457-A01-0002	TPM Board.TPM 2.0.w/LPC cable	1

Block Diagram



Dimension

Unit: mm



Ordering Information

Part number	CPU	Display	Storage	LAN	USB	RS-232/ 422/485	Expansion slot	Power	Operating Temp	Others
PICO-WHU4-A11-0001	Celeron 4305UE	HDMI x 2	SATAIII x 1 mSATA (Full size) x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 2	2	M.2 2230 E-key x 1	+12V (Terminal block)	0°C ~ 60°C	—
PICO-WHU4-A11-0002	i3-8145UE	HDMI x 2	SATAIII x 1 mSATA (Full size) x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 2	2	M.2 2230 E-key x 1	+12V (Terminal block)	0°C ~ 60°C	—
PICO-WHU4-A11-0003	i5-8365UE	HDMI x 2	SATAIII x 1 mSATA (Full size) x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 2	2	M.2 2230 E-key x 1	+12V (Terminal block)	0°C ~ 60°C	—
PICO-WHU4-A11-0004	i7-8665UE	HDMI x 2	SATAIII x 1 mSATA (Full size) x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 2	2	M.2 2230 E-key x 1	+12V (Terminal block)	0°C ~ 60°C	—
PICO-WHU4-A11-DC02	i3-8145UE	HDMI x 2	SATAIII x 1 mSATA (Full size) x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 2	2	M.2 2230 E-key x 1	+12V (DC Jack)	0°C ~ 60°C	—
PICO-WHU4W2-A11-0004	i7-8665UE	HDMI x 2	SATAIII x 1 mSATA (Full size) x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 2	2	M.2 2230 E-key x 1	+12V (Terminal block)	-40°C ~ 85°C	—

PICO-WHU4-SEMI

PICO-SEMI Embedded with 8th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC

Features

- 8th Intel® Core™ i7/i5/i3/Celeron Processor SoC
- Non-ECC DDR4 SODIMM Slot x 1, up to 32GB
- Dual HDMI ports (HDMI 1.4b), GbE x 2
- SATA 6.0 Gb/s x 1, support 2.5" SSD
- Full size mSATA/mPCIe x 1 (Select by BIOS), M.2 2230 (E key) x 1
- USB 3.2 Gen 2 x 2, USB 2.0 x 2
- RS-232/422/485 x 2 (Optional)
- Lockable DC 12V

Giga LAN | DDR 4 | USB 2.0 | USB 3.2 Gen 2 | HDMI

Specifications

SYSTEM	
FORM FACTOR	PICO-SEMI
CPU	Intel® 8th Generation Core™ i7/i5/i3/Celeron SoC i7-8665UE (4C/8T, 1.7GHz, up to 4.4GHz, TDP 15W) i5-8365UE (4C/8T, 1.6GHz, up to 4.1GHz, TDP 15W) i3-8145UE (2C/4T, 2.2GHz, up to 3.9GHz, TDP 15W) Celeron® 4305UE (2C/2T, 2GHz, TDP 15W)
CHIPSET	Intel® 8th Generation Core™ i7/i5/i3/Celeron SoC
MEMORY TYPE	DDR4 up to 2400MHz SODIMM x 1, up to 32GB, Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	5.90" x 3.94" x 2.36" (150mm x 100mm x 60mm)
Gross Weight	1.41 lbs. (0.64 kg)
OS Support	Windows 10 (64 bit) Ubuntu 18.04.3/Kernel 5.0
POWER	
POWER REQUIREMENT	+12V only
POWER SUPPLY TYPE	ATX
CONNECTOR	DC Jack Connector
POWER CONSUMPTION	Intel® i7-8665UE @ DDR4 16GB, 2.23A@ +12V(TYPICAL)
DISPLAY	
CONTROLLER	Intel® UHD Graphics 610/620
LVDS/eDP	—
Display Interface	HDMI 1.4b x 2 (up to 3840 x 2160)
Multiple Display	Up to 2 Simultaneous Displays
AUDIO	
CODEC	—
AUDIO INTERFACE	—
Speaker	—
EXTERNAL I/O	
ETHERNET	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x2
USB	USB 3.2 Gen 2 x 2 USB 2.0 x 2
SERIAL PORT	—
VIDEO	HDMI 1.4b x 2 (up to 3840 x 2160)
INTERNAL I/O	
USB	—
SERIAL PORT	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)(Optional)
VIDEO	—
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	—
DIO/GPIO	4-bit
SMBus/I2C	SMBus/I2C x1 (SMBUS as default)
Touch	—
FAN	4pins Smart Fan x1
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	Full size mSATA/mPCIe or USB2.0 x 1 (PCIe as default, mSATA selected by BIOS)
M.2	M.2 E-Key 2230 x 1 (for WIFI/BT, PCIe/USB signal only)
Others	SMBUS/I2C/LPC/eSPI x 1
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 122°F (0°C ~ 50°C) with airflow 0.5m/s for SSD SKU
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	298,762
EMC	CE/FCC Class A

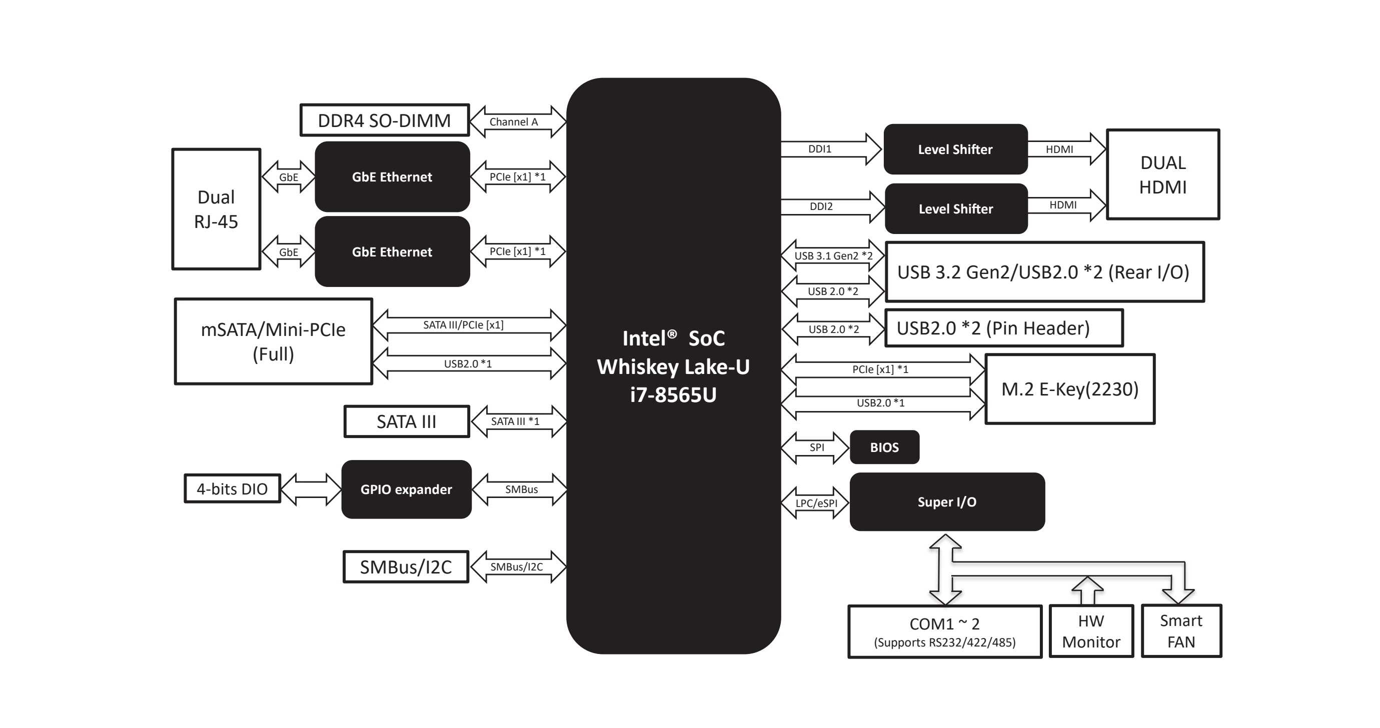
Packing List

- **PICO-WHU4-SEMI**

Optional Accessories

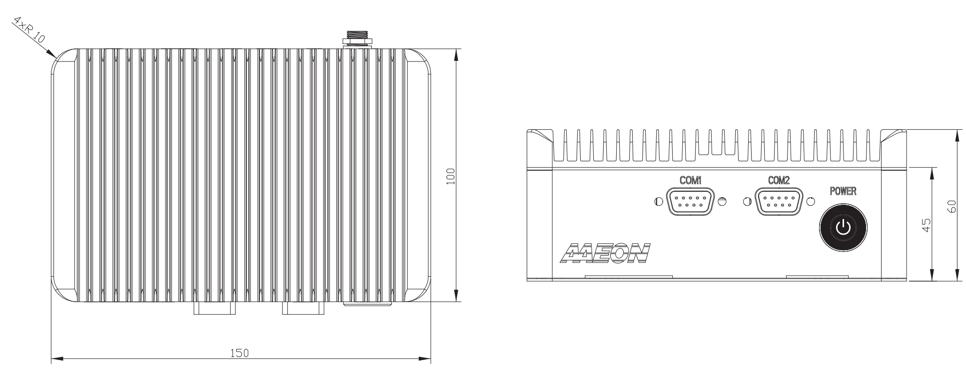
Part Number	Description	Qty.
1701200102	(TF)SERIAL Cable.WL1010H-2*10P 1.0mm Housing.Dual DB9(M).10cm	1
1255300960	Power Adapter 12V/8A 96W FSP096-AHAN3	1
1702031802	Power Cord (US Type)	1
1702031803	Power Cord (Europe Type)	1
170203180E	Power Cord (Japan)	1
PICO-WHU4-SEMI-VESA1	PICO-WHU4-SEMI VESA bracket kit	1
PICO-WHU4-SEMI-WMT1	PICO-WHU4-SEMI Wallmount bracket kit	1

Block Diagram



Dimension

Unit: mm

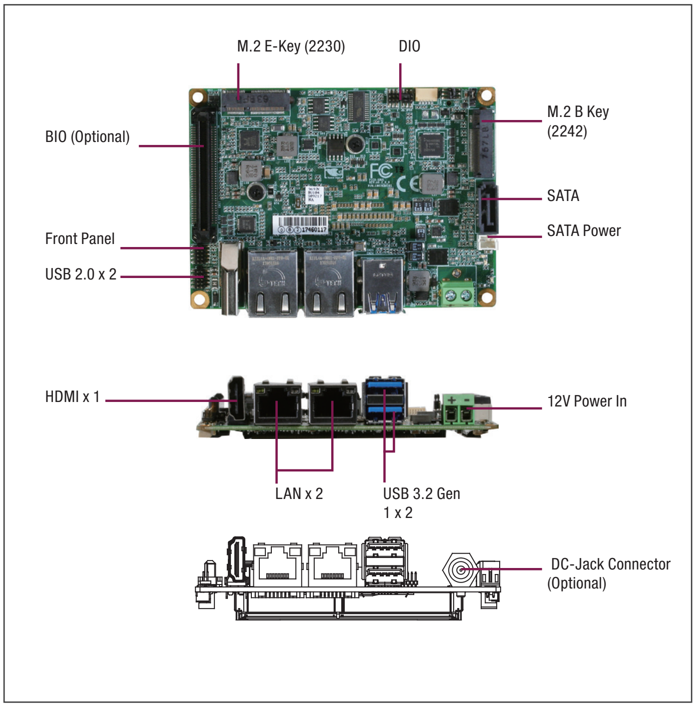


Ordering Information

Part number	CPU	Memory	FAN/ FANLESS	Display	Storage	LAN	USB	RS-232/422/485	Expansion slot	Power	Operating Temp	Others
PICO-WHU4-SEMI-A11-S001	Celeron 4305UE	DDR4 Socket	Cooler	HDMI x 2	SATAIII x 1 mSATA (Full size) x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 2	—	M.2 2230 E-key x 1	+12V (ATX)	0~50˚C	—
PICO-WHU4-SEMI-A11-S002	i3-8145UE	DDR4 Socket	Cooler	HDMI x 2	SATAIII x 1 mSATA (Full size) x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 2	—	M.2 2230 E-key x 1	+12V (ATX)	0~50˚C	—
PICO-WHU4-SEMI-A11-S003	i5-8365UE	DDR4 Socket	Cooler	HDMI x 2	SATAIII x 1 mSATA (Full size) x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 2	—	M.2 2230 E-key x 1	+12V (ATX)	0~50˚C	—
PICO-WHU4-SEMI-A11-S004	i7-8665UE	DDR4 Socket	Cooler	HDMI x 2	SATAIII x 1 mSATA (Full size) x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 2	—	M.2 2230 E-key x 1	+12V (ATX)	0~50˚C	—
PICO-WHU4-SEMI-A11-S005	i7-8665UE	8GB DDR4 2400Mhz SODIMM	Cooler	HDMI x 2	SATAIII x 1 mSATA (Full size) x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 2	2	M.2 2230 E-key x 1	+12V (ATX)	0~50˚C	—

PICO-KBU4

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



Features

- **7th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC**
- **DDR4 SODIMM Slot x 1, up to 16 GB**
- **Dual Gigabit Ethernet Support**
- **HDMI 1.4b, LVDS 2CH Display**
- **USB 3.2 Gen 1 x 2, USB 2.0 x 2, SATA 6.0Gb/s x 1**
- **COM1: RS-232; COM2: RS-232/422/485**
- **M.2 B Key (2242) x 1, M.2 E Key (2230) x 1**
- **BIO (Optional)**

Giga LAN DDR 4 USB 2.0 USB 3.2 Gen 1 HDMI

Specifications

SYSTEM	
FORM FACTOR	PICO-ITX
CPU	Intel® 7th Generation Core™ /Celeron Processor: Intel® i7-7600U (2C/4T, 2.80GHz, up to 3.90GHz, TDP-up 25W) Intel® i5-7300U (2C/4T, 2.60GHz, up to 3.50GHz, TDP-up 25W) Intel® i3-7100U (2C/4T, 2.40GHz, TDP-up 25W) Intel® Celeron 3965U (2C/2T, 2.20GHz, TDP-up 15W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR4 up to 2133MHz, SODIMM x 1, up to 16GB,Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.18 lbs (0.08 kg)
OS Support	Windows 10 (64 bit)
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
POWER CONSUMPTION	Intel® i7-7600, DDR4 16GB, 2.3A@ +12V(TYPICAL)
DISPLAY	
CONTROLLER	Intel® HD Graphics 510/620
LVDS/eDP	LVDS (18/24-bit 2CH) 1920 x 1200
Display Interface	HDMI 1.4b x 1 (up to 4096 x 2304) DDI (BIO, Optional)
Multiple Display	Up to 3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC269
AUDIO INTERFACE	Line-out
Speaker	—
EXTERNAL I/O	
ETHERNET	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2
USB	USB 3.2 Gen 1 x 2
SERIAL PORT	—
VIDEO	HDMI 1.4b x 1 (up to 4096 x 2304)

INTERNAL I/O	
USB	USB 2.0 x 2
SERIAL PORT	COM1: RS-232 x 1 COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V)
VIDEO	LVDS (18/24-bit 2CH) 1920 x 1200
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	4-bit
SMBus/I2C	I2C/SMBus x1 (SMBUS as default)
Touch	—
FAN	4pins Smart Fan x1
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	—
M.2	M.2 B-Key 2242 x 1 (PCIe[x1]/SATA select by BIOS) M.2 E-Key 2230 x 1 (PCIe/USB)
Others	BIO (Optional)
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	163,000
EMC	CE/FCC Class A

Packing List

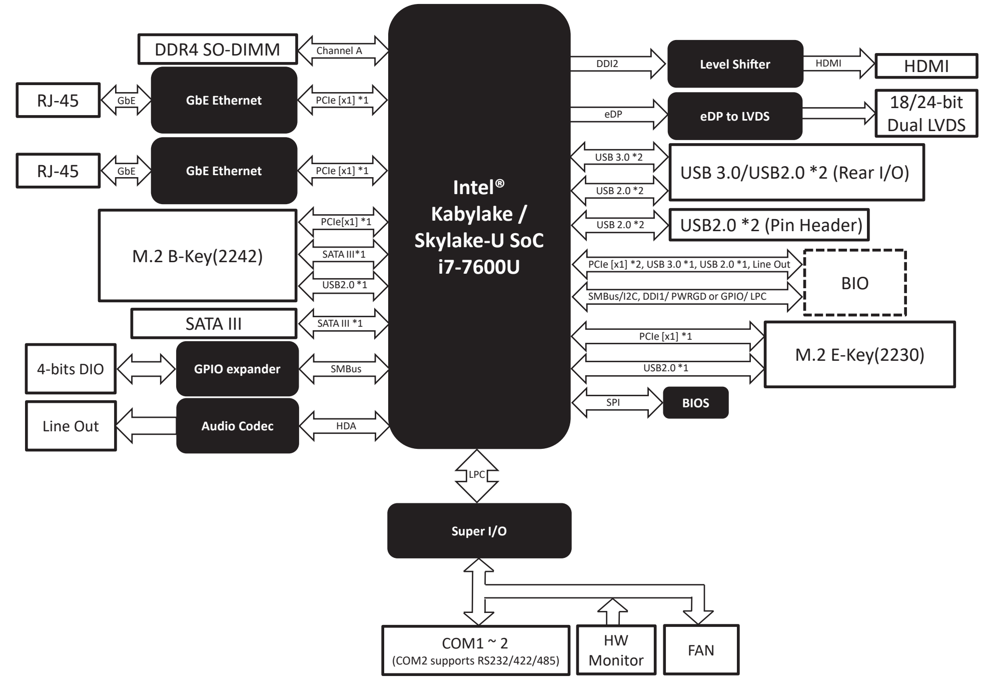
- **PICO-KBU4**

Optional Accessories

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

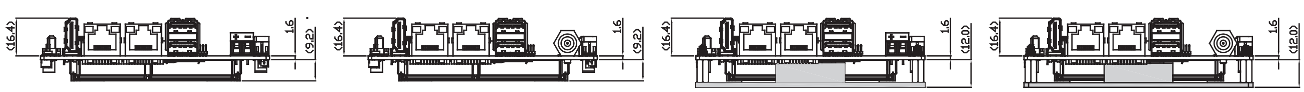
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Without Heat-spreader

With Heat-spreader

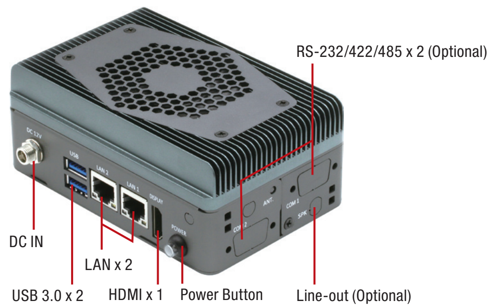
* DC Jack is optional

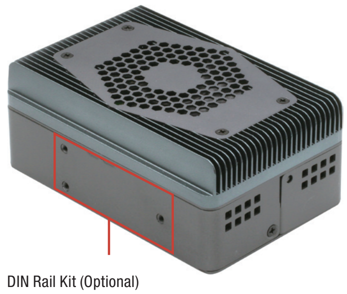
Ordering Information

Part Number	CPU	Memory	Display	Storage	LAN	USB	RS-232	RS-232/ 422/485	Expansion Slot	Power	Power Temp	Others
PICO-KBU4-A10-0001	Celeron ® 3965	DDR4 Socket	HDMI x 1 LVDS x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (Terminal block)	0°C ~ 60°C	DIO x 4 bit
PICO-KBU4-A10-0002	i3-7100U	DDR4 Socket	HDMI x 1 LVDS x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (Terminal block)	0°C ~ 60°C	DIO x 4 bit
PICO-KBU4-A10-0003	i5-7300U	DDR4 Socket	HDMI x 1 LVDS x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1 BIO x 1	+12V (Terminal block)	0°C ~ 60°C	DIO x 4 bit
PICO-KBU4-A10-0004	i7-7600U	DDR4 Socket	HDMI x 1 LVDS x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1 BIO x 1	+12V (Terminal block)	0°C ~ 60°C	DIO x 4 bit
PICO-KBU4-A10-0005 (6th Gen)	Celeron® 3955	DDR4 Socket	HDMI x 1 LVDS x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (Terminal block)	0°C ~ 60°C	DIO x 4 bit
PICO-KBU4-A10-DC06	I3-7100U	DDR4 Socket	HDMI x 1 LVDS x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (DC Jack)	0°C ~ 60°C	DIO x 4 bit
PICO-KBU4-A10-0007 (6th Gen)	I5-6300U	DDR4 Socket	HDMI x 1 LVDS x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1 BIO x 1	+12V (Terminal block)	0°C ~ 60°C	DIO x 4 bit
PICO-KBU4W1-A10-0004	i7-7600U	DDR4 Socket	HDMI x 1 LVDS x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1 BIO x 1	+12V (Terminal block)	-20°C ~ 70°C	DIO x 4 bit

PICO-KBU4-SEMI

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





Features

- Extreme light system, easy to adopt everywhere
- DDR4 Non-ECC SODIMM Slot x 1, up to 16GB
- GbE x 2, HDMI x 1.4
- M.2 2242 B key for storage
- M.2 2230 E key for wireless Module
- COM x 2 (Optional)
- USB 3.2 Gen 1 x 2 (Rear IO)
- Lockable DC 12V

DDR 3L 1000 Giga LAN USB 3.2 Gen 1 PCI Express CE FC

Specifications

SYSTEM	
FORM FACTOR	PICO-SEMI
CPU	Intel® 7th Generation Core™ /Celeron Processor: Intel® i7-7600U (2C/4T, 2.80GHz, up to 3.90GHz, TDP-up 25W) Intel® i5-7300U (2C/4T, 2.60GHz, up to 3.50GHz, TDP-up 25W) Intel® i3-7100U (2C/4T, 2.40GHz, TDP-up 25W) Intel® Celeron 3965U (2C/2T, 2.20GHz, TDP-up 15W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR4 up to 2133MHz, SODIMM x 1, up to 16GB,Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	4.80" x 3.18" x 1.98" (122 mm x 80.8 mm x 50.4 mm)
Gross Weight	0.88 lb (0.4 kg)
OS Support	Windows 10 (64 bit)
POWER	
POWER REQUIREMENT	12V only
POWER SUPPLY TYPE	ATX
CONNECTOR	Lockable DC Jack Connector
POWER CONSUMPTION	Intel® i7-7600, DDR4 16GB, 2.3A@ +12V(TYPICAL)
DISPLAY	
CONTROLLER	Intel® HD Graphics 510/620
LVDS/eDP	—
Display Interface	HDMI 1.4b x 1 (up to 4096 x 2304)
Multiple Display	1 Simultaneous Display
AUDIO	
CODEC	Realtek ALC269 (Optional)
AUDIO INTERFACE	Line-out (Optional)
Speaker	—
EXTERNAL I/O	
ETHERNET	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2
USB	USB 3.2 Gen 1 x 2
SERIAL PORT	COM1: RS-232 x 1 (Optional) COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V) (Optional)
VIDEO	HDMI 1.4b x 1 (up to 4096 x 2304)
INTERNAL I/O	
USB	—
SERIAL PORT	—
VIDEO	—
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	Audio Header x 1 (Optional)
DIO/GPIO	4-bit (Optional)
SMBus/I2C	I2C/SMBus x1 (SMBUS as default) (Optional)
Touch	—
FAN	4pins Smart Fan x1
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	—
M.2	M.2 B-Key 2242 x 1 (PCIe[x1]/SATA select by BIOS) M.2 E-Key 2230 x 1 (PCIe/USB)
Others	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 122°F (0°C ~ 50°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	163,000
EMC	CE/FCC Class A

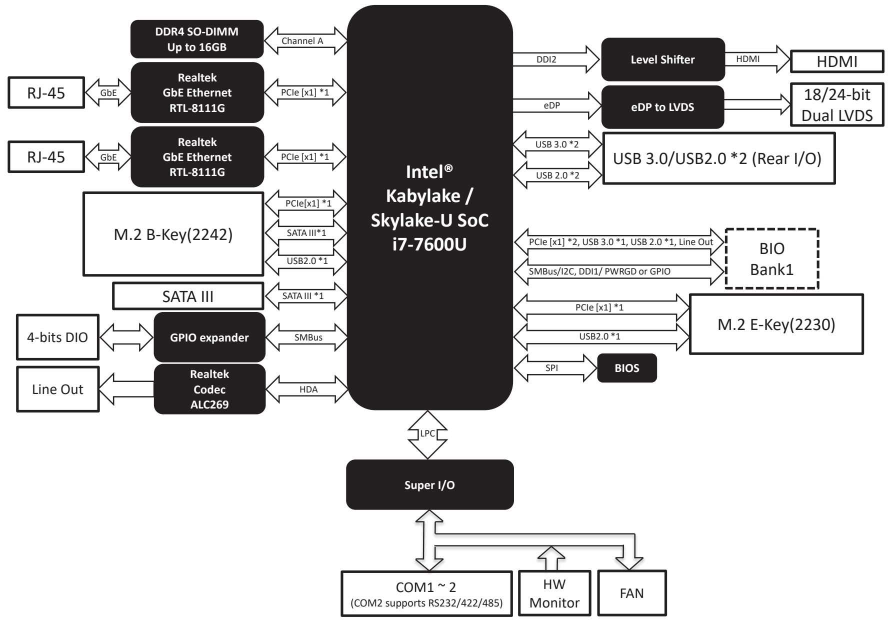
Packing List

- **PICO-KBU4-SEMI**

Optional Accessories

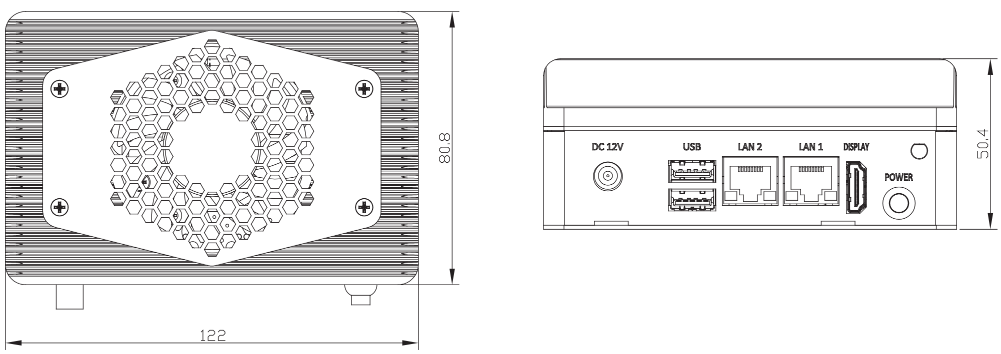
Part Number	Description	Qty.
125530040C	(TF)Power Adapter.12V.40W.FSP.FSP040-RHAN3	1
125530060Z	Power Adapter 12V/5A 60W FSP060-DHAN3	1
1702031802	Power Cord (US)	1
1702031803	Power Cord(European Type)	1
170203180E	Power Cord(Japan Type)	1
1701200101	M.2 2242 -D2-B-M.64GB.SATA3,MLC	1
9761SEMI01	Din Rail Kit	1
9761SEMI00	Wall mount Kit	1

Block Diagram



Dimension

Unit: mm

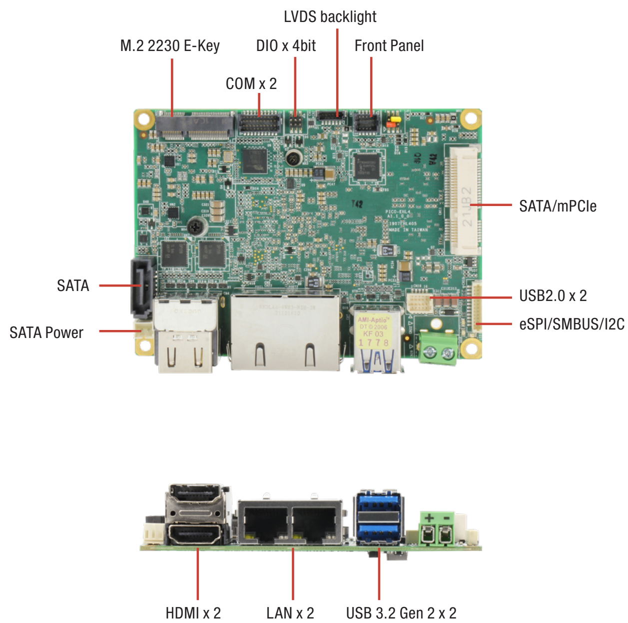


Ordering Information

Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
PICO-KBU4-SEMI-A10-B001	Celeron 3965	DDR4 Socket	w/Cooler	HDMI x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear)	—	—	M.2 2230 (E Key) x 1	+12V (ATX)	0°C ~ 50°C	DIO 4 bit
PICO-KBU4-SEMI-A10-B002	I3-7100U	DDR4 Socket	w/Cooler	HDMI x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear)	—	—	M.2 2230 (E Key) x 1	+12V (ATX)	0°C ~ 50°C	DIO 4 bit
PICO-KBU4-SEMI-A10-B003	I5-7300U	DDR4 Socket	w/Cooler	HDMI x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear)	—	—	M.2 2230 (E Key) x 1	+12V (ATX)	0°C ~ 50°C	DIO 4 bit
PICO-KBU4-SEMI-A10-B004	i7-7600U	DDR4 Socket	w/Cooler	HDMI x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear)	—	—	M.2 2230 (E Key) x 1	+12V (ATX)	0°C ~ 50°C	DIO 4 bit
PICO-KBU4-SEMI-A10-B005 (6th Gen)	Celeron 3955	DDR4 Socket	w/Cooler	HDMI x 1	SATAIII x 1 M.2 2242 (B Key) x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear)	—	—	M.2 2230 (E Key) x 1	+12V (ATX)	0°C ~ 50°C	DIO 4 bit

PICO-EHL4

Pico-ITX Board with Intel® Atom® x6000E Series, Intel® Pentium®, and Celeron® N and J series processors



Features

- **Intel® Atom® x6000E series, Intel® Pentium®, and Celeron® N and J series processors (formerly Elkhart Lake)**
- **HDMI2.0b x 2 + LVDS/eDP1.3 x 1**
- **GbE x 2**
- **2 x USB 3.2 Gen 2, 2 x USB2.0**
- **LPDDR4x onboard memory, In-Band ECC**
- **eMMC x 1, SATA x 1**
- **COM x 2 Full, CANBUS x 2(optional), mSATA x 1, M.2 E-Key 2230 x 1**

1000 Gigo LAN LPDDR4 USB 2.0 USB 3.2 Gen 2 HDMI

Specifications

SYSTEM	
FORM FACTOR	PICO-ITX
CPU	Intel® Atom® x6000E series, Intel® Pentium®, and Celeron® N and J series processors: Intel® Atom® x6425RE (4C, 1.9GHz, TDP 12W) Intel® Atom® x6414RE (4C, 1.5GHz, TDP 9W) Intel® Atom® x6212RE (2C, 1.2GHz, TDP 6W) Intel® Atom® x6425E (4C, 2.0GHz, up to 3GHz, TDP 12W) Intel® Atom® x6413E (4C, 1.5GHz, up to 3GHz, TDP 9W) Intel® Atom® x6211E (2C, 1.3GHz, up to 3GHz, TDP 6W) Intel® Pentium® J6426 (4C, 2.0GHz, up to 3GHz, TDP-up 10W) Intel® Pentium® N6415 (4C, 1.2GHz, up to 3GHz, TDP 6.5W) Intel® Celeron® J6412 (4C, 2.0GHz, up to 2.6GHz, TDP-up 10W) Intel® Celeron® N6210 (2C, 1.2GHz, up to 2.6GHz, TDP-up 6.5W) (Intel® Atom® x6414RE/x6413E/x6427FE/x6200FE/N6415 by customer's request)
CHIPSET	Intel® Elkhart Lake SoC Processor
MEMORY TYPE	LPDDR4x up to 3200MHz, up to 16GB
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	Intel® PTT (Integrated TPM)
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.18 lbs (0.08 kg)
OS Support	Windows 10 (64 bit) Ubuntu 20.04.3(IOT)/Kernel 5.13
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
POWER CONSUMPTION	Intel® Atom™ x6425E, LPDDR4x onboard 16GB, 2.48A@ +12V(TYPICAL) Intel® Atom™ x6425E, LPDDR4x onboard 16GB, 2.62A@ +12V(MAX)
DISPLAY	
CONTROLLER	Intel® UHD Graphics for 10th Gen Intel® Processors
LVDS/eDP	eDP (up to HBR3, 8K x 4K 30Hz) LVDS (18/24bit 2CH)
Display Interface	HDMI 2.0b x 2 (4K x 2K 60Hz)
Multiple Display	Up to 3 Simultaneous Displays

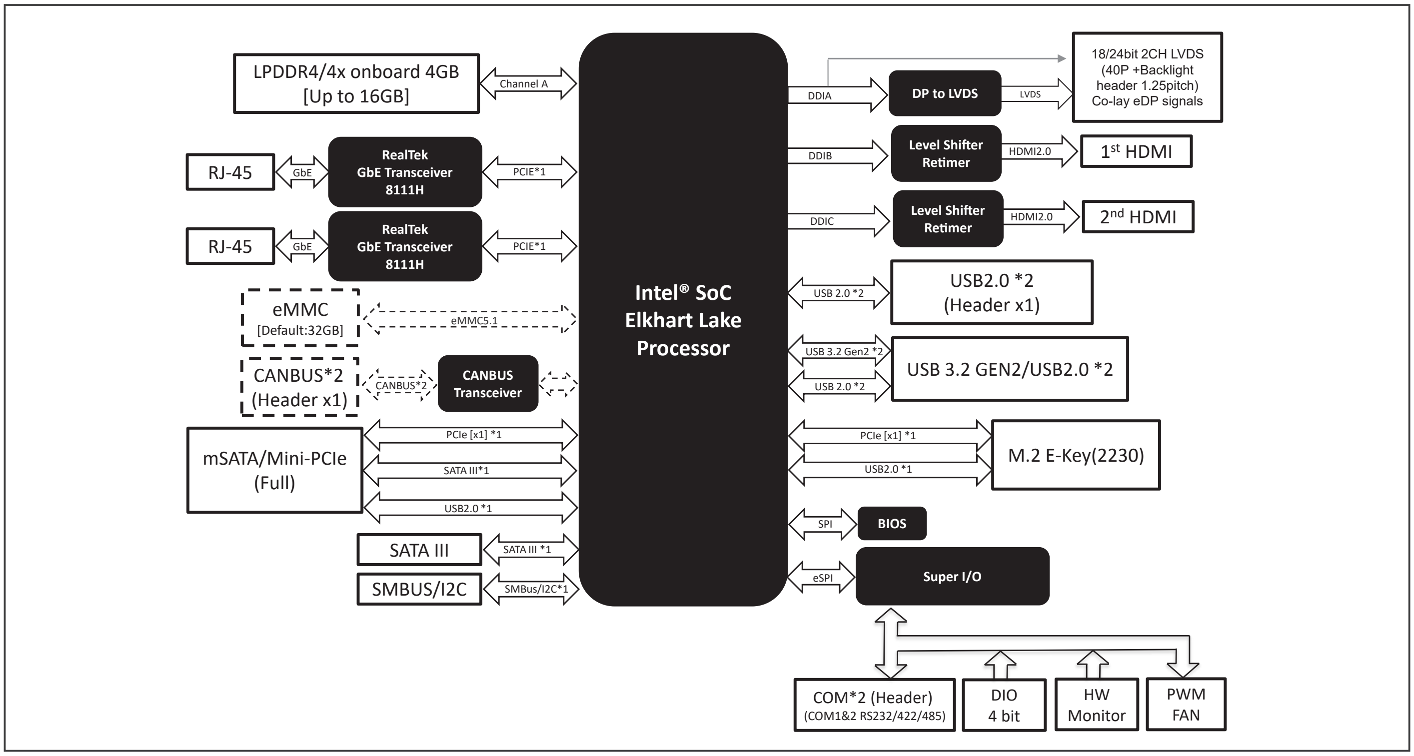
AUDIO	
CODEC	—
AUDIO INTERFACE	—
Speaker	—
EXTERNAL I/O	
ETHERNET	Realtek RTL8111H-CG , 10/100/1000Base-TX, RJ-45 x 2
USB	USB 3.2 Gen 2 x 2
SERIAL PORT	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)
VIDEO	HDMI 2.0b x 2 (4K x 2K 60Hz)
INTERNAL I/O	
USB	USB 2.0 x 2
SERIAL PORT	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)
VIDEO	eDP (up to HBR3, 8K x 4K 30Hz) LVDS (18/24bit 2CH)
SATA	SATA III x 1 +5V SATA Power Connector x 1 Onboard eMMC 5.1, up to 128GB
AUDIO	—
DIO/GPIO	4-bit
SMBus/I2C	SMBus/I2C and eSPI x 1 (SMBus as default, I2C select by HW BOM)
Touch	—
FAN	4pins Smart Fan x1
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	Full size mPCIe/mSATA x 1 (SATA as default, PCIe selected by BIOS)
M.2	M.2 E key 2230 x 1 (PCIe x 1/USB2.0)
Others	CANBUS x 2 (optional, N6210/J6412 not support, support up to 5Mbit/s)
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	489,989
EMC	CE/FCC Class A

Optional Accessories

Part Number	Description	Qty.
170X000231	COM cable	1
170010010D	USB2.0 cable	1
1709070500	SATA cable	1
1702150155	SATA power cable	1
1703120130	eSPI/SMBUS/I2C cable	1
1709100108	Front panel cable	1
PICO-EHL4-HSP01	Heat Spreader.AL.100*72*6.8mm.for Pentium/Celeron of PICO-EHL4	1
PICO-EHL4-HSP02	Heat Spreader.AL.100*72*5.8mm.for Atom series of PICO-EHL4	1
PICO-EHL4-HSK01	Heat Sink.100*72*15.5mm.Silver.To be used with HSP	1
PICO-EHL4-FAN01	Cooler.100*72*20.3mm.for Pentium/Celeron of PICO-EHL4	1
PICO-EHL4-FAN02	Cooler.100*72*19.3mm.for Atom series of PICO-EHL4	1

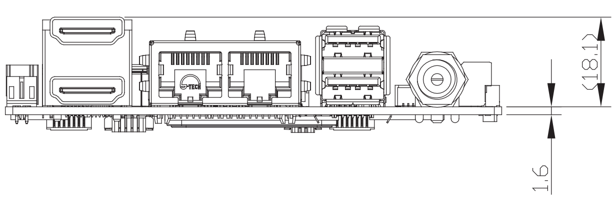
Note:
eDP Panel : B173ZAN01.0-AUO LVDS Panel : G121XN01 V0-AUO

Block Diagram



Dimension

Unit: mm



Packing List

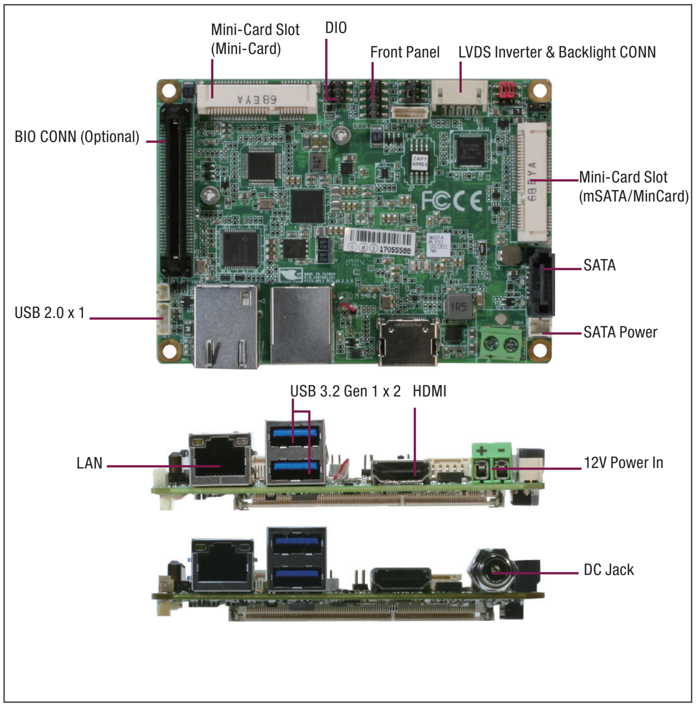
- PICO-EHL4

Ordering Information

Part number	CPU	Memory	Display	Storage	LAN	USB	RS-232/422/485	Expansion slot	Power	Operating Temp	Others
PICO-EHL4-A11-0001	N6210	4GB	HDMI x 2 LVDS x 1	SATAIII x 1 eMMC 32GB	GbE x 2	USB3.2 Gen 2 x 2 USB2.0 x 2	2	M.2 2230 E-key x 1 mSATA(Full-size) x 1	+12V	0°C ~ 60°C	DIO 4 bit SMBUS/eSPI x 1
PICO-EHL4-A11-0002	J6412	4GB	HDMI x 2 LVDS x 1	SATAIII x 1 eMMC 32GB	GbE x 2	USB3.2 Gen 2 x 2 USB2.0 x 2	2	M.2 2230 E-key x 1 mSATA(Full-size) x 1	+12V	0°C ~ 60°C	DIO 4 bit SMBUS/eSPI x 1
PICO-EHL4-A11-0003	J6412	4GB	HDMI x 2 eDP x 1	SATAIII x 1 eMMC 64GB	GbE x 2	USB3.2 Gen 2 x 2 USB2.0 x 2	2	M.2 2230 E-key x 1 mSATA(Full-size) x 1	+12V	0°C ~ 60°C	DIO 4 bit SMBUS/eSPI x 1
PICO-EHL4-A11-0004	J6412	8GB	HDMI x 2 LVDS x 1	SATAIII x 1	GbE x 2	USB3.2 Gen 2 x 2 USB2.0 x 2	2	M.2 2230 E-key x 1 mSATA(Full-size) x 1	+12V	0°C ~ 60°C	DIO 4 bit SMBUS/eSPI x 1

PICO-APL1

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



Features

- Intel® Atom®/ Pentium® N4200/ Celeron® N3350 Processor SoC
- DDR3L 1600MHz (max.8GB)/1866MHz (max.4GB), SODIMM x 1, Non-ECC
- 18/24-bit Dual Channel LVDS LCD (Optional)
- Supports Triple Display (Optional)
- HDMI 1.4b Supports 3840 x 2160 (4K x 2K)
- SATA 6.0Gb/s x 1, mSATA (Full Size) x 1
- Intel® Gigabit Ethernet x 1, RJ-45 x1
- USB 3.2 Gen 1 x 2, USB 2.0 x 1
- RS-232 x 1, RS-232/422/485 x 1 (Optional by Cable)
- Mini-Card x 1 (Half-Size)
- Digital I/O 4-bit
- BIO Connector for Daughter Board (Optional)

Giga LAN DDR 3L USB 2.0 USB 3.2 Gen 1 HDMI

Specifications

SYSTEM	
FORM FACTOR	PICO-ITX
CPU	Pentium N4200 (4C/4T,1.10GHz,up to 2.50GHz, TDP 6W) Celeron N3350 (2C/2T,1.10GHz,up to 2.40GHz, TDP 6W) Atom E3950 (4C/4T,1.60GHz,up to 2.00GHz, TDP 12W) Atom E3940 (4C/4T,1.60GHz,up to 1.80GHz, TDP 9.5W) Atom E3930 (2C/2T,1.30GHz,up to 1.80GHz, TDP 6.5W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR3L 1600MHz (max.8GB)/1866MHz (max.4GB), SODIMM x 1, Non-ECC *1866MHz is limited to the verified DDR module in AAEON's Approved Vendor List
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0 (Optional via LPC cable)
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.18 lbs (0.08 kg)
OS Support	Windows 10 (64 bit) Linux Ubuntu 21.04.0/Kernel 5.10
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
POWER CONSUMPTION	Intel® N3350 Processor, DDR3L 8GB, 0.91A@+12V(TYPICAL)
DISPLAY	
CONTROLLER	Intel® HD Graphics 500/505
LVDS/eDP	LVDS (18/24bit 2CH) 1920 x 1200 (Optional)
Display Interface	HDMI 1.4b x 1 (up to 3840 x 2160) DDI (BIO, Optional)
Multiple Display	Up to 3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897/892
AUDIO INTERFACE	Line-out
Speaker	—
EXTERNAL I/O	
ETHERNET	Intel® i210/i211, 10/100/1000Base, RJ-45 x 1
USB	USB 3.2 Gen 1 x 2
SERIAL PORT	—
VIDEO	HDMI 1.4b x 1 (up to 3840 x 2160)

INTERNAL I/O	
USB	USB 2.0 x 1
SERIAL PORT	COM1: RS-232 x 1, COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V)
VIDEO	LVDS (18/24bit 2CH) 1920 x 1200 (Optional)
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	Line-out
DIO/GPIO	4-bit
SMBus/I2C	SMBUS/I2C x 1 (SMBUS as default)
Touch	—
FAN	—
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	Half-size Mini Card (mPCIe as default) x 1, Full size mPCIe/mSATA or USB2.0 x 1 (SATA as default, PCIe selected by HW BOM)
M.2	—
Others	BIO (Optional)
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	170,000
EMC	CE/FCC Class A

Packing List

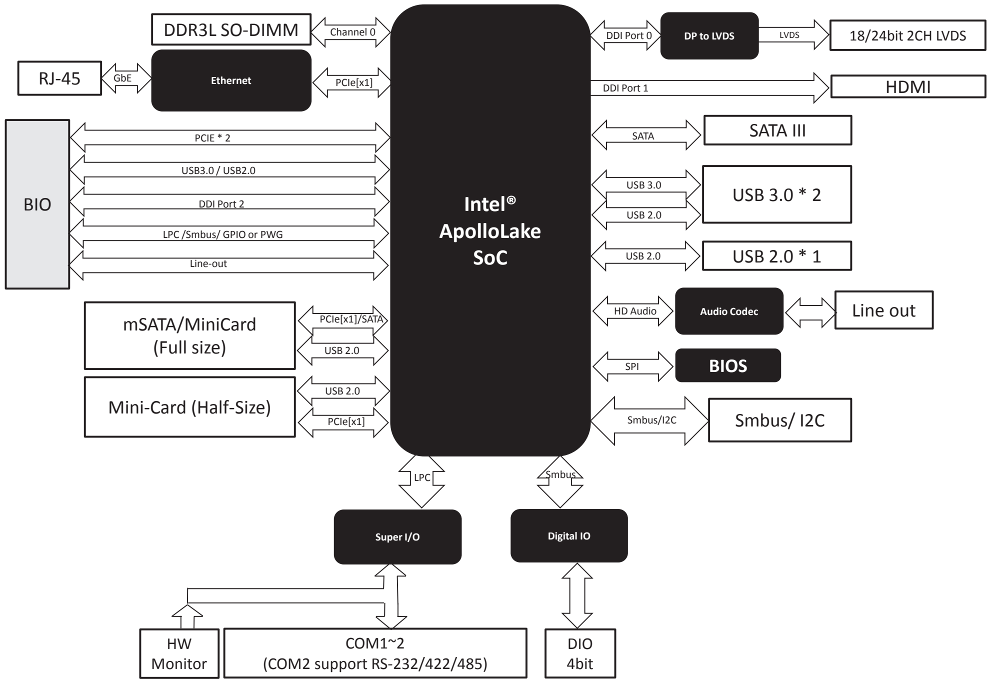
- **1703200153 (Optional by model)**
  COM x 2, Line-out Cable
- **PICO-APL1**

Optional Accessories

Part Number	Description	Qty.
1709070500	SATA CABLE.7P Pitch 1.27mm.50cm	1
1702150155	SATA Power Cable	1
1700050207	USB cable 20cm	1
1703200153	COM x 2, line-out cable	1
PICO-APL1-HSP01	Heat-spreader for PICO-APL1 N4200/N3350 SKUs	1
PICO-APL1-HSP02	Heat-spreader for PICO-APL1 E3950/E3940/E3930 SKUs	1
PICO-APL1-HSK02	Heat-sink for all PICO-APL1 series, to be used with Heat-spreader	1

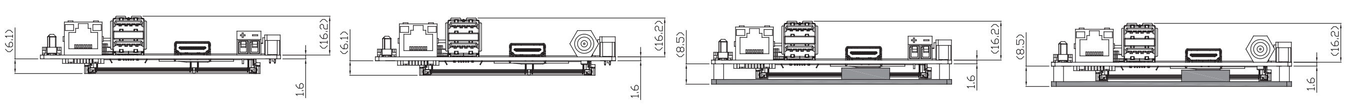
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Without Heat-spreader

With Heat-spreader

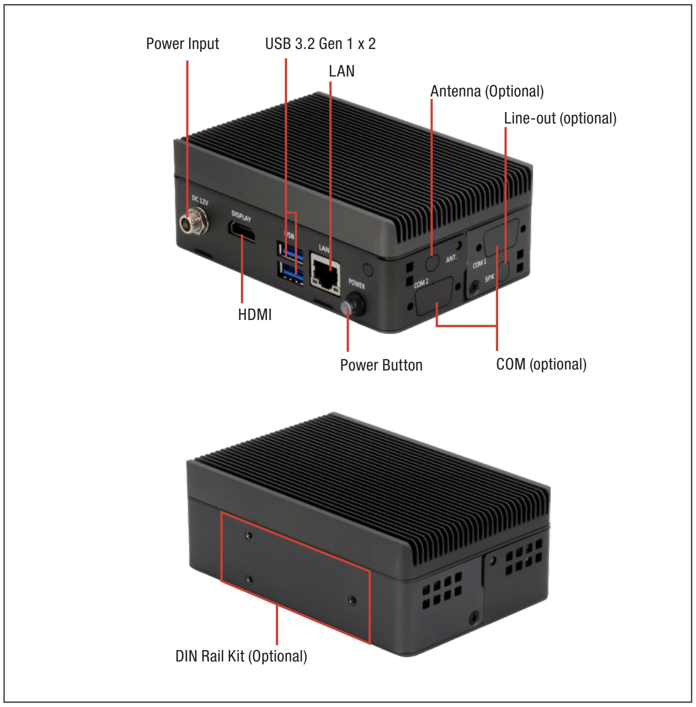
Ordering Information

Part number	CPU	FAN/FANLESS	Display	Storage	LAN	USB	RS-232	RS-422/485	Expansion slot	Power	Operating Temp	Others
PICO-APL1-A11-F0A1	N4200	W/o Heat-spreader	LVDS x 1 HDMI x 1	SATAIII x 1 mSATA (Full size) x 1	GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 1	1	1	miniCard x 1 (Half-size)	12V Phoenix Terminal	0°C ~ 60°C	DIO x 4, Line-out
PICO-APL1-A11-FDA2	N3350	W/o Heat-spreader	HDMI x 1	SATAIII x 1 mSATA (Full size) x 1	GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 1	(Optional the COM cable)	(Optional the COM cable)	miniCard x 1 (Half-size)	12V DC-Jack	0°C ~ 60°C	DIO x 4
PICO-APL1-A11-F0A3	N3350	W/o Heat-spreader	LVDS x 1 HDMI x 1	SATAIII x 1 mSATA (Full size) x 1	GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 1	1	1	miniCard x 1 (Half-size)	12V Phoenix Terminal	0°C ~ 60°C	DIO x 4, Line-out, BIO
PICO-APL1-A11-F0A4	E3940	W/o Heat-spreader	LVDS x 1 HDMI x 1	SATAIII x 1 mSATA (Full size) x 1	GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 1	1	1	miniCard x 1 (Half-size)	12V Phoenix Terminal	0°C ~ 60°C	DIO x 4, Line-out

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

PICO-APL1-SEMI

PICO-SEMI Embedded Barebone Kit with Intel® Atom® Processor SoC



Features

- 270g Extreme Light System, Easy To Adapter Everywhere
- Gigabit Ethernet for Networking Connection
- USB 3.2 Gen 1 Connectivity
- HDMI
- mSATA and miniCard Slot for WiFi/3G/4G Bluetooth Module
- Fix Holes for Antenna, Wallmount, DIN-Rail Kit Optional
- Lockable 12V DC Input

DDR 3L Giga LAN USB 2.0 USB 3.2 Gen 1 PCI Express

Specifications

SYSTEM	
FORM FACTOR	PICO-SEMI
CPU	Intel® Celeron® Processor: Celeron N3350 (2C/2T,1.10GHz,up to 2.40GHz, TDP 6W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR3L up to 1866MHz, SODIMM x 1,up to 8GB, Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	4.8" x 3.15" x 1.73" (122 x 80 x 44 mm)
Gross Weight	0.59 lb (0.27 kg)
OS Support	Windows 10 (64 bit)
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	ATX
CONNECTOR	Lockable DC Jack Connector
POWER CONSUMPTION	Intel® N3350 Processor, DDR3L 8GB, 0.91A@+12V(TYPICAL)
DISPLAY	
CONTROLLER	Intel® HD Graphics 500
LVDS/eDP	—
Display Interface	HDMI 1.4b x 1 (up to 3840 x 2160)
Multiple Display	1 Simultaneous Display
AUDIO	
CODEC	Realtek ALC897/892 (Optional)
AUDIO INTERFACE	Line-out (Optional)
Speaker	—
EXTERNAL I/O	
ETHERNET	Intel® i210, 10/100/1000Base, RJ-45 x 1
USB	USB 3.2 Gen 1 x 2
SERIAL PORT	COM1: RS-232 x 1 (Optional) COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V) (Optional)
VIDEO	HDMI 1.4b x 1 (up to 3840 x 2160)
INTERNAL I/O	
USB	—
SERIAL PORT	—
VIDEO	—
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	Line-out (Optional)
DIO/GPIO	4-bit (Optional)
SMBus/I2C	SMBUS/I2C x 1 (SMBUS as default) (Optional)
Touch	—
FAN	—
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	Half-size Mini Card (mPCIe as default) x 1, Full size mPCIe/mSATA or USB2.0 x 1 (SATA as default, PCIe selected by HW BOM)
M.2	—
Others	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 122°F (0°C ~ 50°C) with 0.5 m/s airflow
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	170,000
EMC	CE/FCC Class A

Packing List

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

* Customer assembly required.

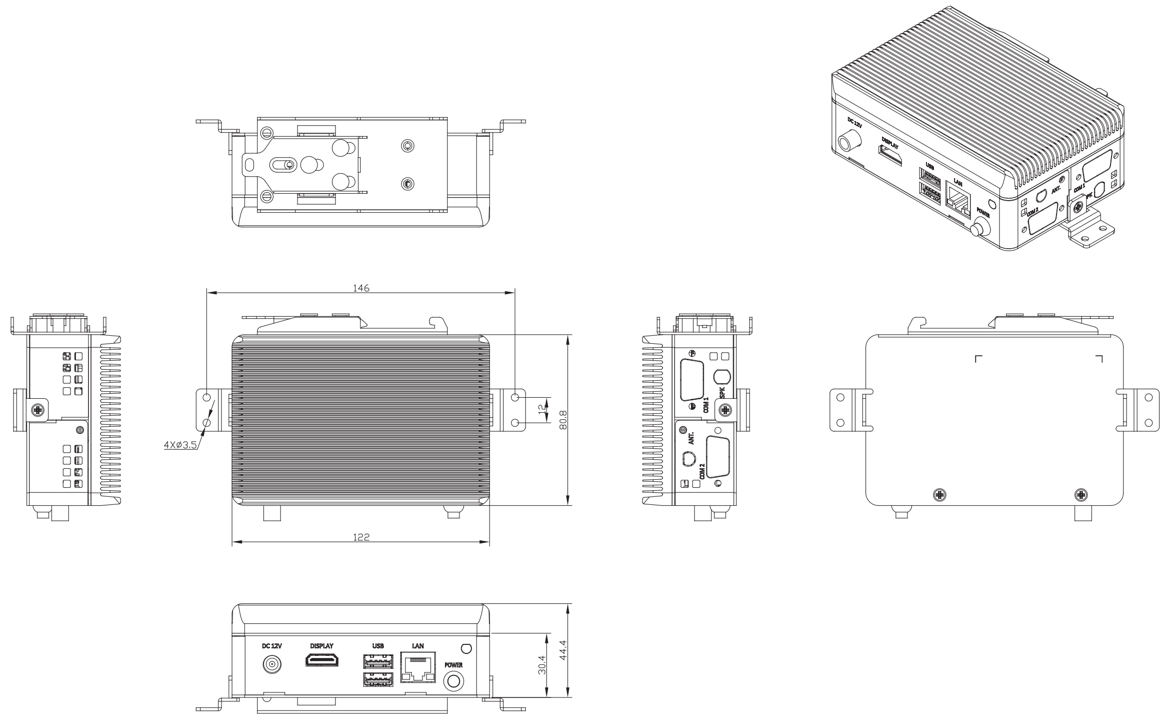
Optional Accessories

Part Number	Description	Qty.
125530040C	(TF)Power Adapter.12V.40W.FSP.FSP040-DHAN3	1
1702031802	Power Cord (US Type)	1
1702031803	Power Cord (European Type)	1
170203180E	Power Cord (Japan Type)	1
1703200052	COM x 2 + LINE_OUT	1
968C016G0V	SATA DOM 16GB (0°C ~ 70°C)	1
9761SEMI00	Wallmount Kit	1
9761SEMI01	DIN-Rail Mount Kit	1

Note: All specifications are subject to change without notice.

Dimension

Unit: mm



Installation Scenario

DIN-Rail Mount Illustration

Wall Mount Illustration

Photos show assembled product, DIN Rail and Wall Mount kit are optional parts.

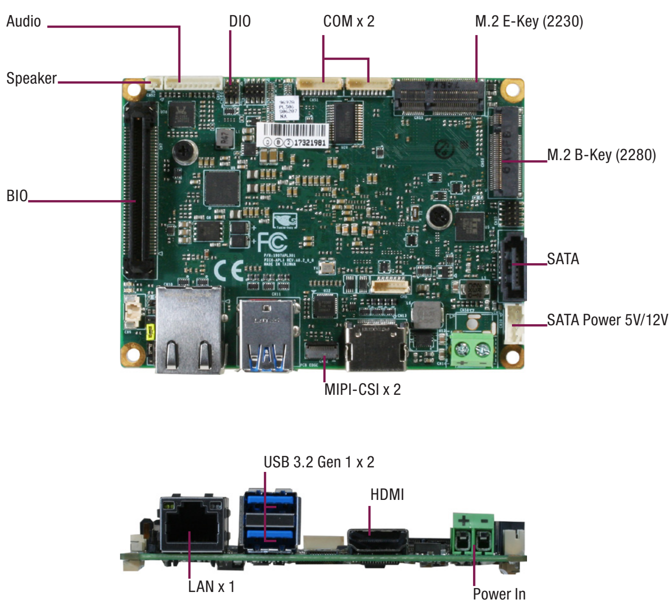
Ordering Information

Part Number	CPU	Memeory	Fan/Fanless	Display	Storage	LAN	USB	Expansion Slot	Power	Temp	Others
PICO-APL1-SEMI-A10-FB02	N3350	DDR3L SODIMM Socket	Fanless	HDMI	SATA x 1, mSATA x 1 (Full-size)	GbE x 1	USB 3.2 Gen 1 x 2, USB2.0 x 1	miniCard x 1 (Half-Size)	12V DC Jack	0°C ~ 50°C @ 0.5 m/s airflow	COM Port optional

* This is a barebones kit, customer assembly is required.

PICO-APL3

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



Features

- Intel® Pentium® N4200/ Celeron® N3350/ Atom® Processor SoC
- Onboard Storage eMMC 32GB (Optional to 16GB/64GB/128GB)
- Onboard DDR3L 2GB or 4GB
- Single Gigabit Ethernet Support
- HDMI 1.4b, eDP for Display
- BIO Reserved (Optional)
- USB 3.2 Gen 1 x 2, USB 2.0 x 2, SATA 6.0Gb/s x 1
- M.2 B Key (2280) x 1, M.2 E Key (2230) x 1
- Onboard HDA Audio Supports (Line in, Line-out, MIC)
- MIPI-CSI 2 Lanes x 1 for 2M Camera (Optional)
- MIPI-CSI 4 Lanes x 1 for 8M Camera (Optional)

1000 Giga LAN · DDR 3L · USB 2.0 · USB 3.2 Gen 1 · HDMI

Specifications

SYSTEM	
FORM FACTOR	PICO-ITX
CPU	Intel® Atom®/Celeron®/Pentium® Processor: Pentium N4200 (4C/4T,1.10GHz,up to 2.50GHz, TDP 6W) Celeron N3350 (2C/2T,1.10GHz,up to 2.40GHz, TDP 6W) Atom E3950 (4C/4T,1.60GHz,up to 2.00GHz, TDP 12W) Atom E3940 (4C/4T,1.60GHz,up to 1.80GHz, TDP 9.5W) Atom E3930 (2C/2T,1.30GHz,up to 1.80GHz, TDP 6.5W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	Onboard DDR3L 2GB (Optional to 4GB)
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.18 lbs (0.08 kg)
OS Support	Windows 10 (64 bit)
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
POWER CONSUMPTION	Intel® N4200 processor, DDR3L 4GB, 1.1A@12V
DISPLAY	
CONTROLLER	Intel® HD Graphics 500/505
LVDS/eDP	eDP x 1 (up to 3840x2160@60Hz, Optional)
Display Interface	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz) DDI (BIO, Optional)
Multiple Display	Up to 3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC269
AUDIO INTERFACE	Line-in/Line-out/MIC
Speaker	Amplifier Header
EXTERNAL I/O	
ETHERNET	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 1
USB	USB 3.2 Gen 1 x 2
SERIAL PORT	—
VIDEO	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
INTERNAL I/O	
USB	USB 2.0 x 2 (Internal, co-use with FAN connector)
SERIAL PORT	COM1, COM2 (RS232)
VIDEO	eDP x 1 (up to 3840x2160@60Hz, Optional)
SATA	SATA III x 1 +5V SATA Power Connector x 1 eMMC 16GB (Optional to 32GB/64GB/128GB)
AUDIO	Audio Header x 1
DIO/GPIO	4-bit
SMBus/I2C	I2C/I2S x 1 (I2C as default)
Touch	—
FAN	—
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	—
M.2	M.2 E-Key 2230 x 1 (PCIe/USB) M.2 B-Key 2280 x 1 (SATA/USB)
Others	MIPI-CSI x 2 Lanes (Optional) MIPI-CSI x 4 Lanes (Optional) BIO (Optional)
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	110,000
EMC	CE/FCC Class A

Packing List

- PICO-APL3

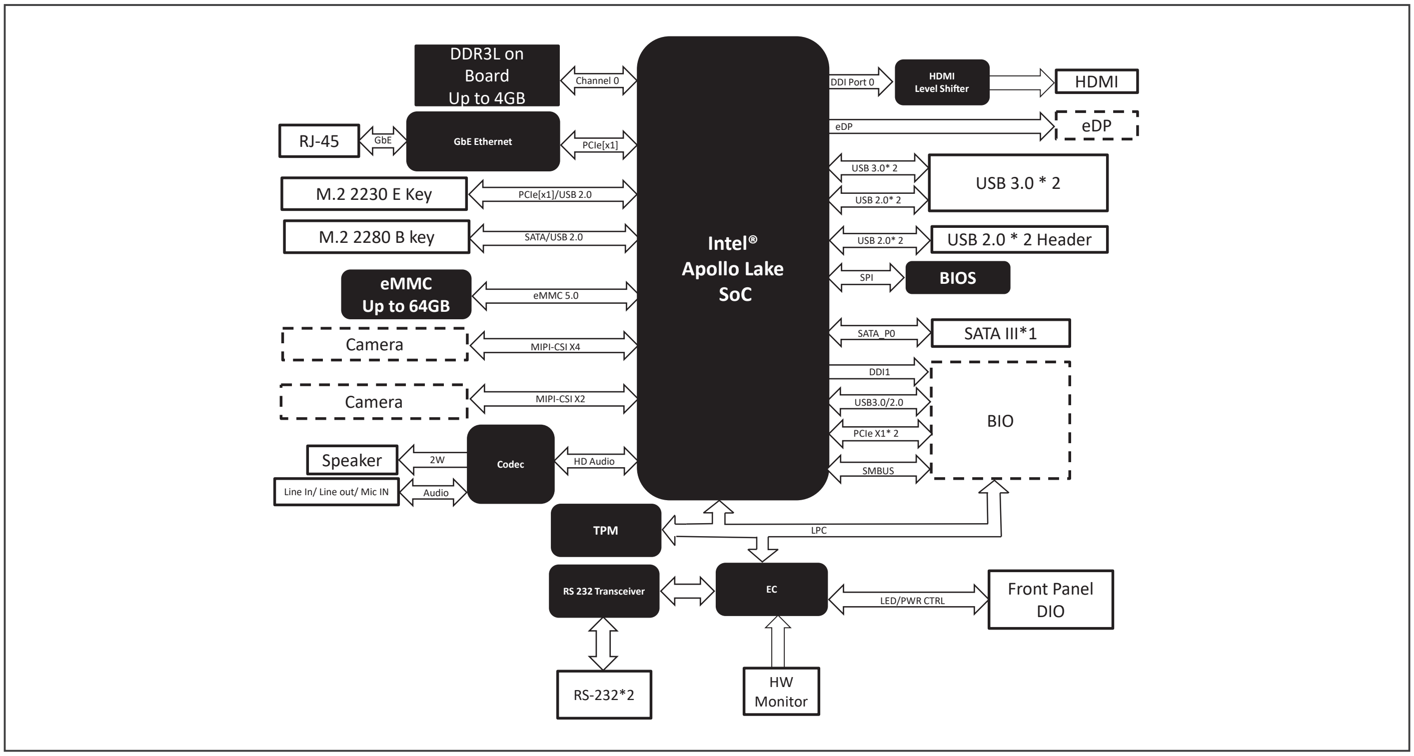
Optional Accessories

Part Number	Description	Qty
1709070500	(TF) SATA Cable, 50cm	1
1702150121	(TF) SATA Power Cable, 15cm	1
PICO-APL3-HSK01	Heatsink, used with heat spreader	1
PICO-APL3-HSP01	Heat Spreader	1
1700040151	(TF) USB Cable, 15cm	2
1701090122	(TF)Flat Cable, D-Sub 9P(M), 9P 1.0mm Housing, 12cm	2
1709100254	(TF) Phone Jack Cable, 25cm	1
1255300408	(TF)Power Adapter, 12V, 40W, FSP, FSP040-RHAN2.9NA0404990, ESD	1
1702030176	(TF)Power Cable, 3P DC jack, TERMINAL*2.17cm, TKS-G21-LN05	1

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

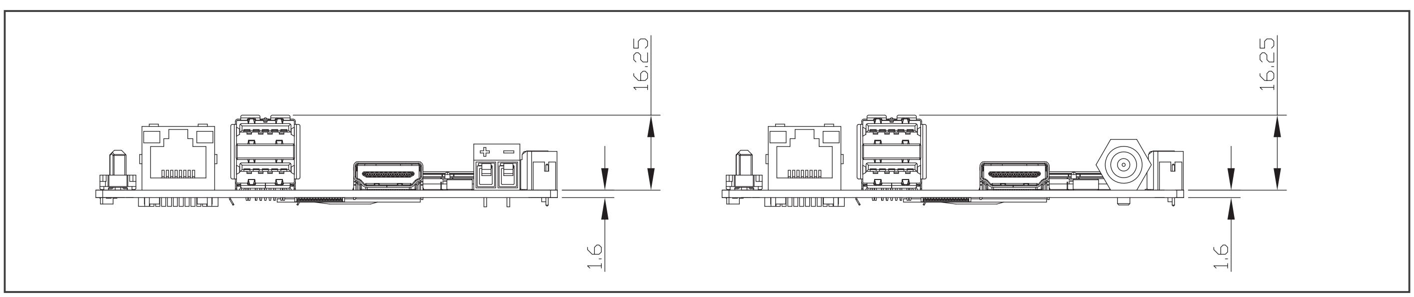
*eDP cable custom by required.

Block Diagram



Dimension

Unit: mm



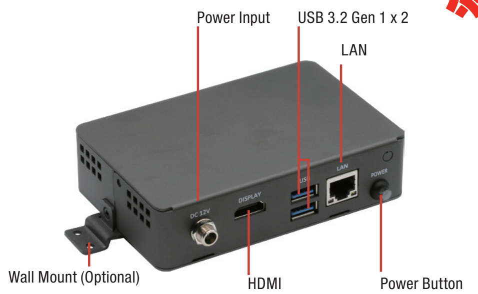
Ordering Information

Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/ 422/485	Expansion Slot	Power	Temp.	Others
PICO-APL3-A10-F001	Celeron® N3350 (Dual Core)	Onboard DDR3L 2GB	W/o Heatspreader	HDMI x 1	SATA 3.0 x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 1	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	2	—	M.2 2230 (E Key) x 1	+12V (Phoenix Terminal)	0°C ~ 60°C	DIO 4 bit Full Audio with Amp
PICO-APL3-A10-F002	Celeron® N3350 (Dual Core)	Onboard DDR3L 4GB	W/o Heatspreader	HDMI x 1 eDP x 1	SATA 3.0 x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 1	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	2	—	M.2 2230 (E Key) x 1	+12V (Phoenix Terminal)	0°C ~ 60°C	DIO 4 bit Full Audio with Amp
PICO-APL3-A10-F003	Pentium® N4200 (Quad Core)	Onboard DDR3L 4GB	W/o Heatspreader	HDMI x 1	SATA 3.0 x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 1	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	2	—	M.2 2230 (E Key) x 1	+12V (Phoenix Terminal)	0°C ~ 60°C	DIO 4 bit Full Audio with Amp
PICO-APL3-A10-FD04	Celeron® N3350 (Dual Core)	On board DDR3L 2GB	W/o Heatspreader	HDMI x 1	SATAIII x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 1	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	2	—	M.2 2230 (E Key) x 1	+12V (DC Jack)	0°C ~ 60°C	DIO 4 bit Full Audio with Amp

PICO-APL3-SEMI

PICO-SEMI Embedded Barebone Kit with Intel® Celeron/Pentium Processor SoC

Front View



With Heat Sink

Features

- 180g Extreme Light System, Easy To Adapter Everywhere
- Gigabit Ethernet for Networking Connection
- USB 3.2 Gen 1 Connectivity
- HDMI
- M.2 2280 (B) M.2 2230 (E) Slot for WiFi/3G/4G Bluetooth Module
- Fix Holes for Antenna, Wallmount, DIN-Rail Kit Optional
- Lockable 12V DC Input

DDR 3L | 1000 Giga LAN | USB 2.0 | USB 3.2 Gen 1 | PCI Express

Specifications

SYSTEM	
FORM FACTOR	PICO-SEMI
CPU	Intel® Celeron®/Pentium® Processor: Pentium N4200 (4C/4T,1.10GHz,up to 2.50GHz, TDP 6W) Celeron N3350 (2C/2T,1.10GHz,up to 2.40GHz, TDP 6W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	Onboard DDR3L up to 4GB
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	W/O heat sink: 4.8"" x 3.15"" x 1.18"" (122 x 80 x 30 mm) W/ heat sink: 4.8"" x 3.15"" x 1.73"" (122 x 80 x 44 mm)
Gross Weight	W/O heat sink: 0.38 lb (0.17 kg) W/ heat sink: 0.91 lb (0.41 kg)
OS Support	Windows 10 (64 bit)
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	ATX
CONNECTOR	DC Jack Connector
POWER CONSUMPTION	Intel® N4200 processor, DDR3L 4GB , eMMC 32GB, 1.1A@+12V(TYPICAL)
DISPLAY	
CONTROLLER	Intel® HD Graphics 500/505
LVDS/eDP	—
Display Interface	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
Multiple Display	1 Simultaneous Display
AUDIO	
CODEC	Realtek ALC269 (Optional)
AUDIO INTERFACE	Line-out (Optional)
Speaker	Amplifier Header (Optional)
EXTERNAL I/O	
ETHERNET	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 1
USB	USB 3.2 Gen 1 x 2
SERIAL PORT	COM1, COM2 (RS232) (Optional)
VIDEO	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
INTERNAL I/O	
USB	—
SERIAL PORT	—
VIDEO	—
SATA	SATA III x 1 +5V SATA Power Connector x 1 eMMC 32GB
AUDIO	—
DIO/GPIO	4-bit (Optional)
SMBus/I2C	I2C/I2S x 1 (I2C as default) (Optional)
Touch	—
FAN	—
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	—
M.2	M.2 B-Key 2280 x 1 (SATA/USB) M.2 E-Key 2230 x 1 (PCIe/USB)
Others	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 122°F (0°C ~ 50°C) with 0.5 m/s airflow
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	110,000
EMC	CE/FCC Class A

Packing List

- PICO-APL3-SEMI

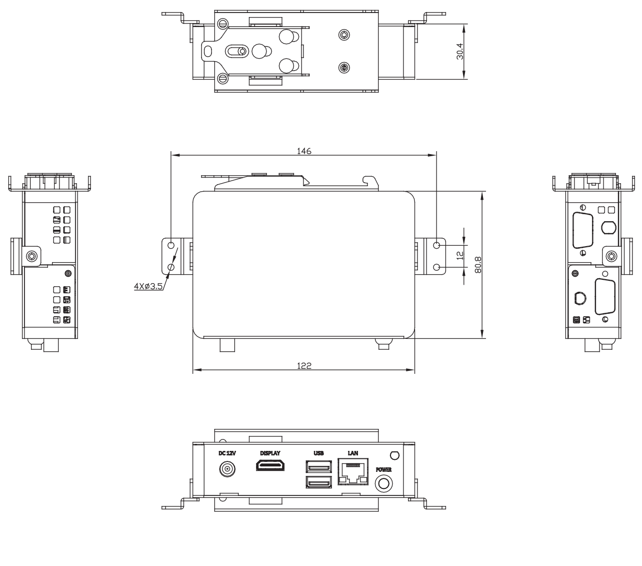
Optional Accessories

Part Number	Description	Qty.
125530040C	Power Adapter.12V.40W.FSP.FSP040-DHAN3	1
125530060Z	Power Adapter 12V/5A 60W FSP060-DHAN3	1
1702031802	Power Cord (US Type)	1
1702031803	Power Cord (European Type)	1
170203180E	Power Cord (Japan Type)	1
1701090122	COM Port Cable	2
1703100084	Audio Line-out	1
9761SEMI00	Wallmount Kit	1
9761SEMI01	DIN-Rail Kit	1

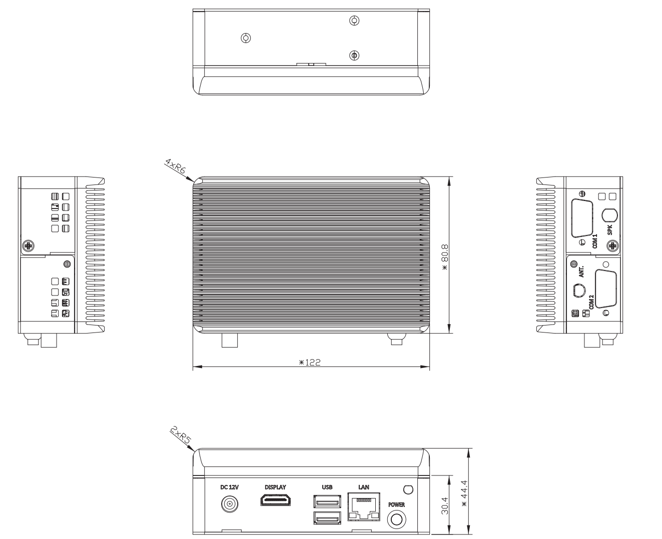
Note: All specifications are subject to change without notice.

Dimension

Unit: mm



Without Heat Sink



With Heat Sink

Installation Scenario

DIN-Rail Mount Illustration

Wall Mount Illustration

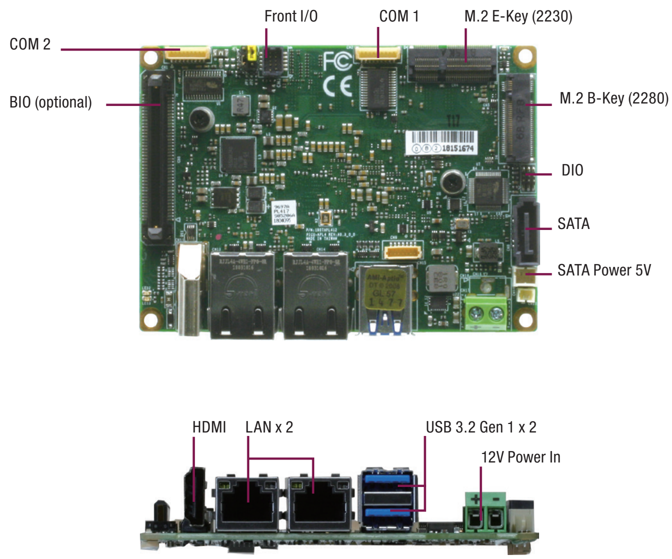
DIN Rail and Wall Mount Kit are optional parts.

Ordering Information

Part number	CPU	Memory	Thermal	Display	Storage	LAN	USB	Expansion slot	Power	Operating Temp	Others
PICO-APL3-SEMI-A10-FS01	N3350	Onboard DDR3L 2GB	W/ heat sink	HDMI x 1	SATAIII x 1 eMMC 32GB	GbE x 1	USB3.2 Gen 1 x 2	M.2 2280 B-key x 1 M.2 2230 E-key x 1	+12V (ATX)	0~50˚C	I2C x 1
PICO-APL3-SEMI-A10-FS02	N3350	Onboard DDR3L 4GB	W/ heat sink	HDMI x 1	SATAIII x 1 eMMC 32GB	GbE x 1	USB3.2 Gen 1 x 2	M.2 2280 B-key x 1 M.2 2230 E-key x 1	+12V (ATX)	0~50˚C	I2C x 1
PICO-APL3-SEMI-A10-FS03	N4200	Onboard DDR3L 4GB	W/ heat sink	HDMI x 1	SATAIII x 1 eMMC 32GB	GbE x 1	USB3.2 Gen 1 x 2	M.2 2280 B-key x 1 M.2 2230 E-key x 1	+12V (ATX)	0~50˚C	I2C x 1
PICO-APL3-SEMI-A10-FS04	N3350	Onboard DDR3L 2GB	W/O heat sink	HDMI x 1	SATAIII x 1 eMMC 32GB	GbE x 1	USB3.2 Gen 1 x 2	M.2 2280 B-key x 1 M.2 2230 E-key x 1	+12V (ATX)	0~50˚C	I2C x 1
PICO-APL3-SEMI-A10-FS05	N3350	Onboard DDR3L 4GB	W/O heat sink	HDMI x 1	SATAIII x 1 eMMC 32GB	GbE x 1	USB3.2 Gen 1 x 2	M.2 2280 B-key x 1 M.2 2230 E-key x 1	+12V (ATX)	0~50˚C	I2C x 1
PICO-APL3-SEMI-A10-FS06	N4200	Onboard DDR3L 4GB	W/O heat sink	HDMI x 1	SATAIII x 1 eMMC 32GB	GbE x 1	USB3.2 Gen 1 x 2	M.2 2280 B-key x 1 M.2 2230 E-key x 1	+12V (ATX)	0~50˚C	I2C x 1

PICO-APL4

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



Features

- Intel® Atom®/ Pentium® N4200/ Celeron® N3350 Processor SoC
- Onboard DDR3L 2GB (Optional to 4GB)
- Onboard Storage eMMC 32GB (optional to 16GB/64GB/128GB)
- Dual Gigabit Ethernet Support
- HDMI 1.4b, eDP (Optional) for Display
- BIO Reserved (Optional)
- USB 3.2 Gen 1 x 2, USB 2.0 x 2, SATA 6.0Gb/s x 1
- M.2 B Key (2280) x 1, M.2 E Key (2230) x 1

Gigo LAN · DDR 3L · USB 2.0 · USB 3.2 Gen 1 · HDMI

Specifications

SYSTEM	
FORM FACTOR	PICO-ITX
CPU	Intel® Atom®/Celeron®/Pentium® Processor: Pentium N4200 (4C/4T,1.10GHz,up to 2.50GHz, TDP 6W) Celeron N3350 (2C/2T,1.10GHz,up to 2.40GHz, TDP 6W) Atom E3950 (4C/4T,1.60GHz,up to 2.00GHz, TDP 12W) Atom E3940 (4C/4T,1.60GHz,up to 1.80GHz, TDP 9.5W) Atom E3930 (2C/2T,1.30GHz,up to 1.80GHz, TDP 6.5W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	Onboard DDR3L 2GB (Optional to 4GB)
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.18 lbs. (0.08 kg)
OS Support	Windows 10 (64 bit)
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
POWER CONSUMPTION	Intel®N4200 processor, DDR3L 4GB, 1.43A@12V
DISPLAY	
CONTROLLER	Intel® HD Graphics 500/505
LVDS/eDP	eDP x 1 (up to 3840x2160@60Hz, Optional)
Display Interface	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz) DDI (BIO, Optional)
Multiple Display	Up to 3 Simultaneous Displays
AUDIO	
CODEC	—
AUDIO INTERFACE	—
Speaker	—
EXTERNAL I/O	
ETHERNET	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2
USB	USB 3.2 Gen 1 x 2
SERIAL PORT	—
VIDEO	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)

INTERNAL I/O	
USB	USB 2.0 x 2 (Internal, co-use with FAN connector)
SERIAL PORT	COM1: RS-232 x 1, COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V)
VIDEO	eDP x 1 (up to 3840x2160@60Hz, Optional)
SATA	SATA III x 1 +5V SATA Power Connector x 1 eMMC 32GB (Optional to 16GB/64GB/128GB)
AUDIO	—
DIO/GPIO	4-bit
SMBus/I2C	I2C/SMBus x 1 (I2C as default)
Touch	—
FAN	—
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	—
M.2	M.2 E-Key 2230 x 1 (PCIe/USB) M.2 B-Key 2280 x 1 (SATA/USB)
Others	BIO (Optional)
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	191,895
EMC	CE/FCC Class A

Packing List

- **PICO-APL4**

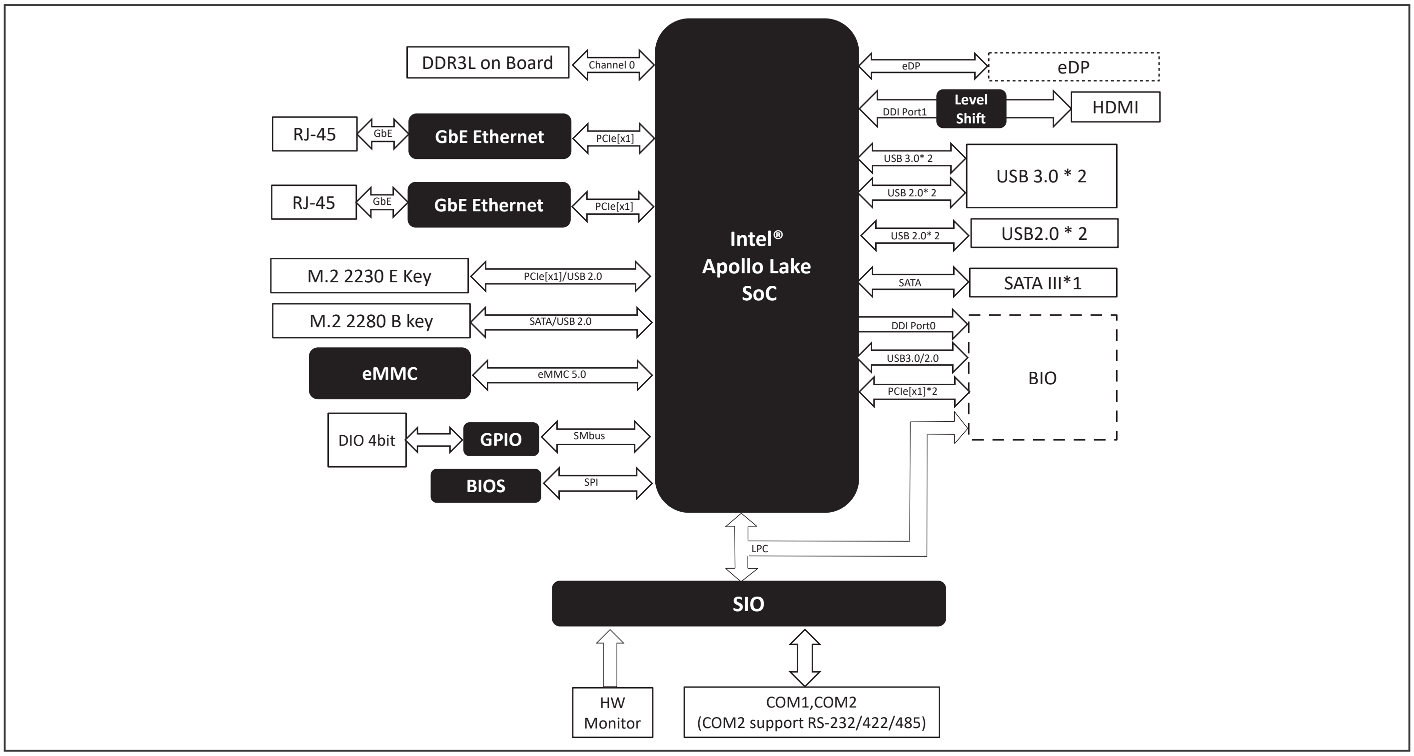
Optional Accessories

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

*FAN Solution will be via one of internal USB port without FAN speed control.
*Please refer to PICO-APL4-SEMI for further option.
*eDP cable custom by required

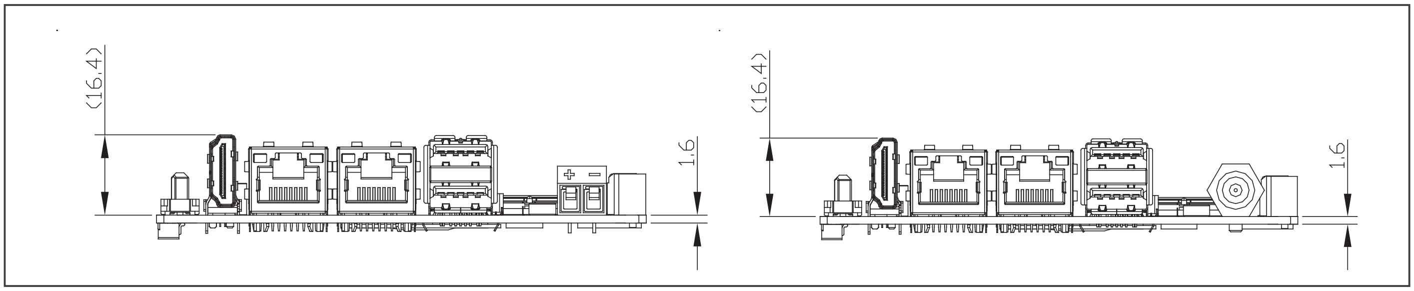
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



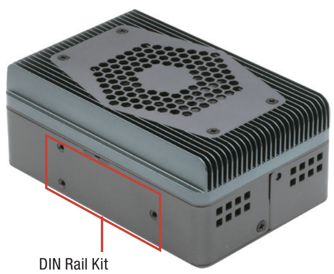
Ordering Information

Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/ 422/485	Expansion Slot	Power	Temp.	Others
PICO-APL4-A10-F001	Celeron® N3350 (Dual Core)	Onboard DDR3L 2GB	W/o Heatspreader	HDMI x 1	SATA 6.0Gb/s x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 2	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (Phoenix Terminal)	0°C ~ 60°C	DIO 4 bit
PICO-APL4-A10-F002	Celeron® N3350 (Dual Core)	Onboard DDR3L 4GB	W/o Heatspreader	HDMI x 1 eDP x 1	SATA 6.0Gb/s x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 2	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (Phoenix Terminal)	0°C ~ 60°C	DIO 4 bit
PICO-APL4-A10-F003	Pentium® N4200 (Quad Core)	Onboard DDR3L 4GB	W/o Heatspreader	HDMI x 1	SATA 6.0Gb/s x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 2	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (Phoenix Terminal)	0°C ~ 60°C	DIO 4 bit
PICO-APL4-A10-FD04	Celeron® N3350 (Dual Core)	Onboard DDR3L 2GB	W/o Heatspreader	HDMI x 1	SATAIII x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 2	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	1	1	M.2 2230 (E Key) x 1	+12V (DC Jack)	0°C ~ 60°C	DIO 4 bit

Remark: cooler is recommended as the thermal solution.

PICO-APL4-SEMI

PICO-SEMI TurnKit with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC



Features

- Extreme light system, easy to adopt everywhere
- Onboard DDR3L 2GB/4G
- Onboard Storage eMMC 32GB
- GbE x 2, HDMI x 1.4
- M.2 2280 B key for storage
- M.2 2230 E key for wireless Module
- COM x 2 (Optional)
- USB 3.2 Gen 1 x 2 (Rear IO), USB2.0 x 1 (Optional)
- Lockable DC 12V

Specifications

SYSTEM	
FORM FACTOR	PICO-SEMI
CPU	Intel® Celeron®/Pentium® Processor: Pentium N4200 (4C/4T,1.10GHz,up to 2.50GHz, TDP 6W) Celeron N3350 (2C/2T,1.10GHz,up to 2.40GHz, TDP 6W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	Onboard DDR3L up to 4GB
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	4.80" x 3.15" x 1.97" (122 mm x 72 mm x 50 mm)
Gross Weight	0.88 lb (0.4 kg)
OS Support	Windows 10 (64 bit)
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	ATX
CONNECTOR	DC Jack Connector
POWER CONSUMPTION	Intel® N4200 processor, DDR3L 4GB, 1.43A@12V
DISPLAY	
CONTROLLER	Intel® HD Graphics 500/505
LVDS/eDP	—
Display Interface	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
Multiple Display	1 Simultaneous Display
AUDIO	
CODEC	—
AUDIO INTERFACE	—
Speaker	—
EXTERNAL I/O	
ETHERNET	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2
USB	USB 3.2 Gen 1 x 2
SERIAL PORT	—
VIDEO	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
INTERNAL I/O	
USB	—
SERIAL PORT	COM1: RS-232 x 1 (Optional) COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V) (Optional)
VIDEO	—
SATA	SATA III x 1 +5V SATA Power Connector x 1 eMMC 32GB (Optional to 16GB/64GB/128GB)
AUDIO	—
DIO/GPIO	4-bit (Optional)
SMBus/I2C	I2C/SMBus x 1 (I2C as default) (Optional)
Touch	—
FAN	—
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	—
M.2	M.2 B-Key 2280 x 1 (SATA/USB) M.2 E-Key 2230 x 1 (PCIe/USB)
Others	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 122°F (0°C ~ 50°C) with 0.5 m/s airflow
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	191,895
EMC	CE/FCC Class A

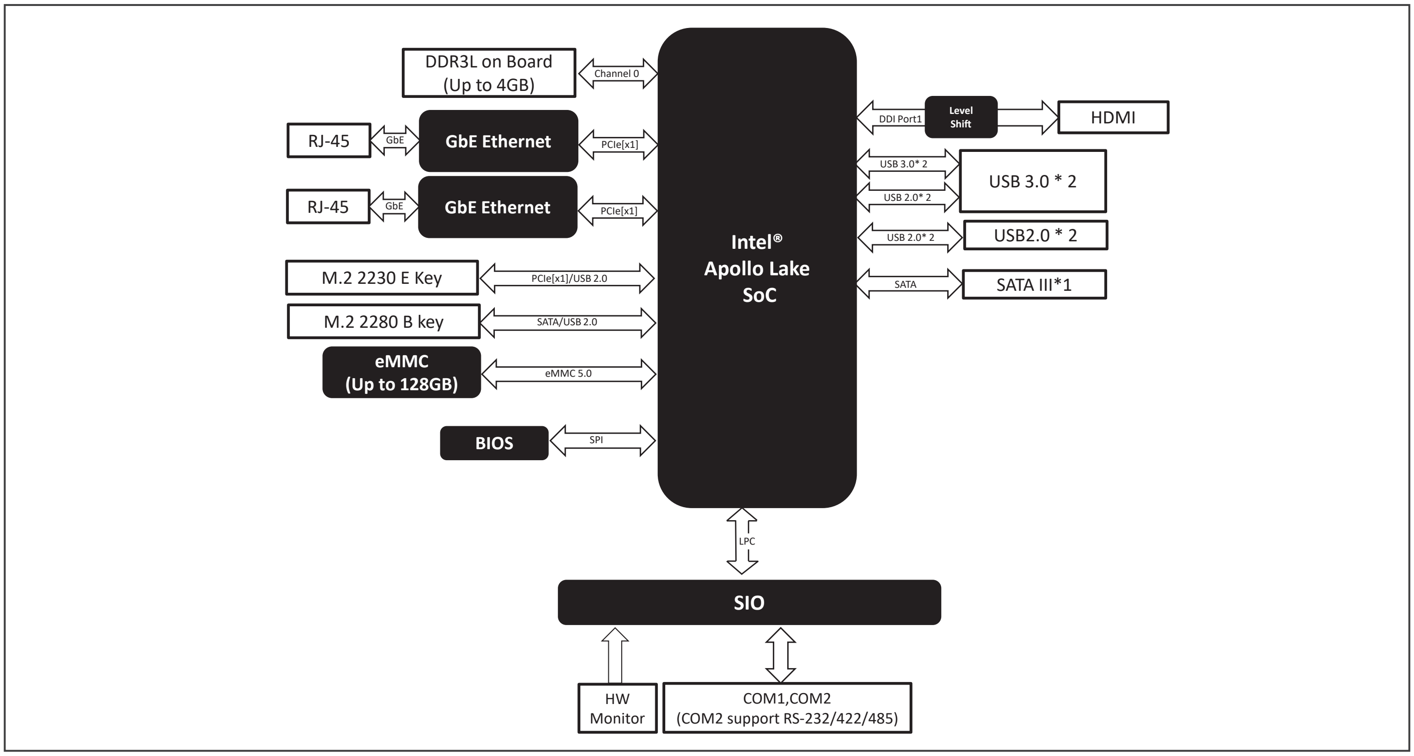
Packing List

- PICO-APL4-SEMI

Optional Accessories

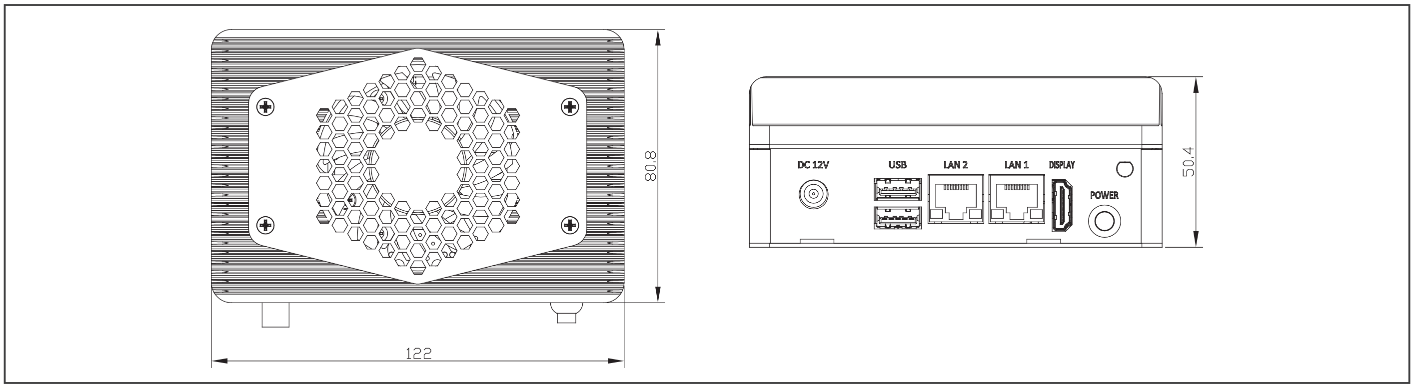
Part Number	Description	Qty.
125530040C	Power Adapter.12V.40W.FSP.FSP040-DHAN3	1
125530060Z	Power Adapter 12V/5A 60W FSP060-DHAN3	1
1702031802	Power Cord (US Type)	1
1702031803	Power Cord (European Type)	1
170203180E	Power Cord (Japan Type)	1
1701090122	COM Port Cable	2
9761SEMI01	Din Rail Kit	1
9761SEMI00	Wall mount Kit	1

Block Diagram



Dimension

Unit: mm

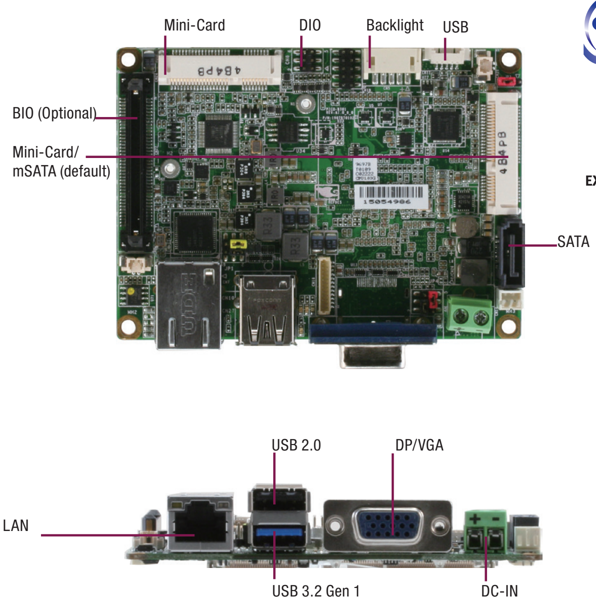


Ordering Information

Part number	CPU	Memory	Thermal	Display	Storage	LAN	USB	Expansion slot	Power	Operating Temp	Others
PICO-APL4-SEMI-A10-FS01	N3350	Onboard DDR3L 2GB	W/Cooler	HDMI x 1	SATAIII x 1 eMMC 32GB	GbE x 2	USB3.2 Gen 1 x 2	M.2 2280 B-key x 1 M.2 2230 E-key x 1	+12V (ATX)	0~50˚C	I2C x 1
PICO-APL4-SEMI-A10-FS03	N4200	Onboard DDR3L 4GB	W/Cooler	HDMI x 1	SATAIII x 1 eMMC 32GB	GbE x 2	USB3.2 Gen 1 x 2	M.2 2280 B-key x 1 M.2 2230 E-key x 1	+12V (ATX)	0~50˚C	I2C x 1

PICO-BT01

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



TAIWAN EXCELLENCE 2015

Features

- Onboard Intel® Atom® E3800/ Celeron® J1900/N2807 Processor SoC
- DDR3L 1066/1333 MHz SODIMM x 1, Up to 8 GB
- 18/24-bit LVDS LCD, CRT Co-lay Display Port
- SATA 3.0Gb/s x 1, Mini-Card(Full size)/mSATA(default) x 1
- USB 3.2 Gen 1 x 1, USB 2.0 x 2
- Gigabit Ethernet x 1, RJ-45 x 1
- RS-232 x 1, RS-232/422/485 x 1
- Mini-card x 1 (Half size)
- 4-Bit Digital I/O
- BIO Connector for Daughter Board Optional

Giga LAN · DDR 3L · USB 2.0 · USB 3.2 Gen 1 · HDMI

Specifications

SYSTEM	
FORM FACTOR	PICO-ITX
CPU	Intel® Atom®/ Celeron® Processor: Celeron® J1900 (4C/4T, 2.00GHz, up to 2.42GHz, TDP 10W) Celeron® N2807 (2C/2T, 1.58GHz, up to 2.16GHz, TDP 4.3W) Atom™ E3845 (4C/4T, 1.91 GHz, TDP 10W) Atom™ E3825 (2C/2T, 1.33 GHz, TDP 6W)
CHIPSET	Integrated with Intel ® SoC
MEMORY TYPE	DDR3L up to 2133MHz, SODIMM x 1, up to 8GB,Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.18 lbs (0.08 kg)
OS Support	Windows 10 (64 bit) Windows 7 (64 bit) Ubuntu 21.04.3/Kernel 5.11
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
POWER CONSUMPTION	Intel® J1900, DDR3L 1333MHz 8GB 1.14A@ +12V(TYPICAL)
DISPLAY	
CONTROLLER	Intel® HD Graphics for Intel Atom® Processor Z3700 Series
LVDS/eDP	LVDS (18/24-bit) up to 1400 x 900 @60Hz
Display Interface	VGA (up to 2048 x 1152 @60Hz) or DP (up to 2560 x 1400 @60Hz)
Multiple Display	Up to 2 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897/892
AUDIO INTERFACE	Line-out
Speaker	—
EXTERNAL I/O	
ETHERNET	Intel® i210, 10/100/1000Base, RJ-45 x 1
USB	USB 3.2 Gen 1 x 1 USB 2.0 x 1
SERIAL PORT	—
VIDEO	VGA (up to 2048 x 1152 @60Hz) or DP (up to 2560 x 1400 @60Hz)

INTERNAL I/O	
USB	USB 2.0 x 1
SERIAL PORT	COM1: RS-232 x 1 COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V)
VIDEO	LVDS (18/24-bit) up to 1400 x 900 @60Hz
SATA	SATA II (3.0Gb/s) x 1 +5V SATA Power Connector x 1
AUDIO	Line-out
DIO/GPIO	4-bit
SMBus/I2C	I2C/SMBus x1 (SMBUS as default)
Touch	—
FAN	—
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	Full size mPCIe/mSATA or USB2.0 x 1 (SATA as default, PCIe selected by HW BOM)
M.2	—
Others	BIO (Optional)
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 140°F (0°C ~ 60°C) WiTAS 2 -40°F ~ 185°F (-40°C ~ 85°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	80,000
EMC	CE/FCC Class A

Packing List

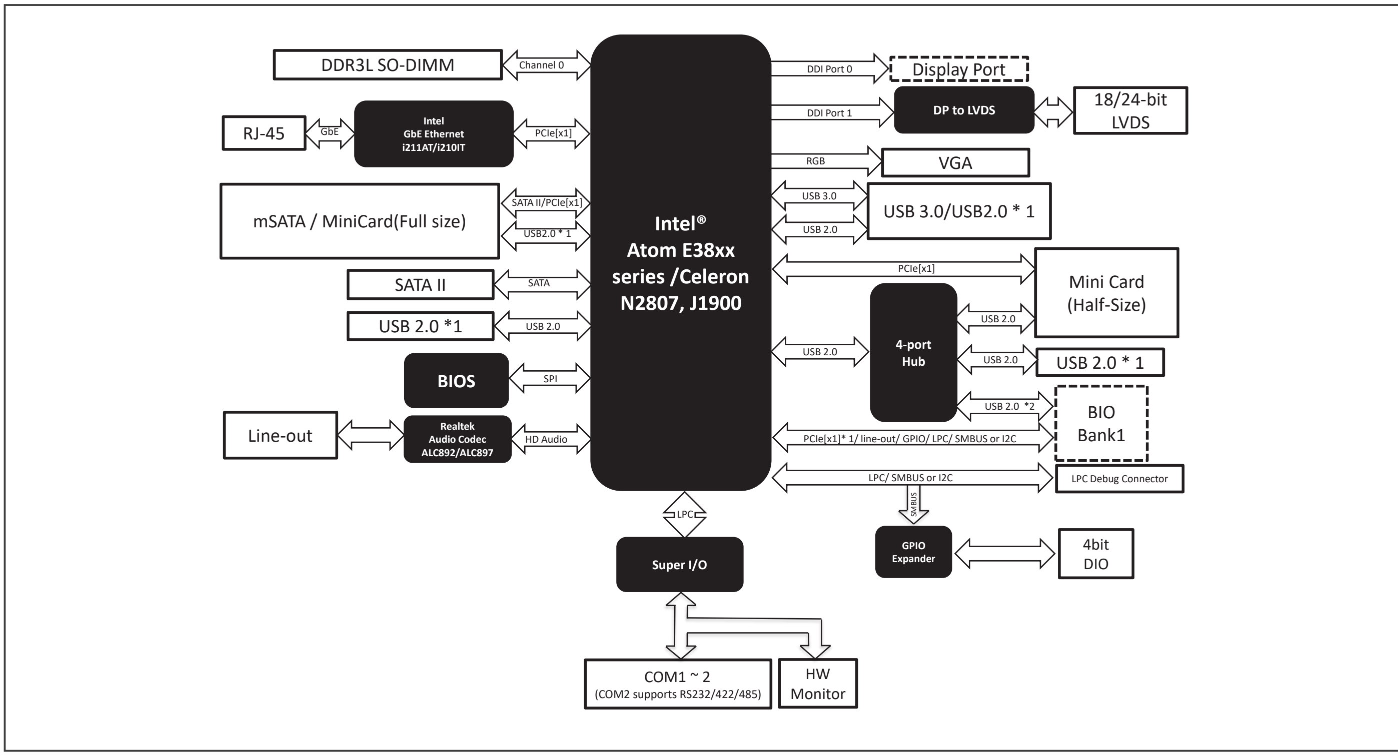
- **PICO-BT01-HSP01**
  Heat Spreader
- **1703200153**
  COM x 2, Line-out Cable
- **PICO-BT01**

Optional Accessories

Part Number	Description	Qty.
1709070500	SATA Cable	1
1702150155	SATA Power Cable	1
1702040167	Power/FAN Cable 16cm	1
1700050207	USB Cable 20cm	1
PICO-BT01-FAN01	CPU Cooler.84 x 53 x 22.2mm.Silver.used with HSP	1
PICO-BT01W1-HSK01	Heatsink for E3845 WiTAS. To be used with heat Spreader	1
PICO-BT01-HSK01	Heatsink. 84 x 53 x 12mm. To be used with heat spreader	1
PICO-BT01-HSK02	Heatsink. 100 x 72 x 15.5mm. To be used with heat spreader	1

Note: All specifications are subject to change without notice.

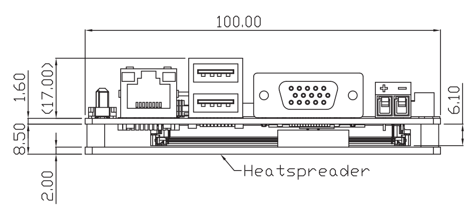
Block Diagram

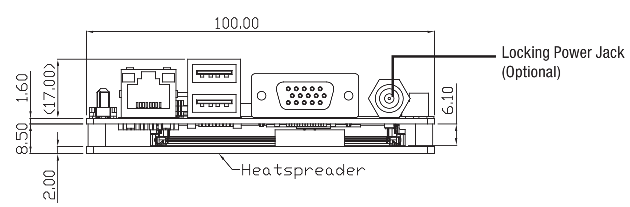


Dimension

Unit: mm

Standard model with Heat-Spreader



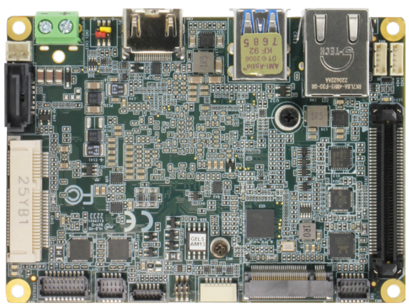


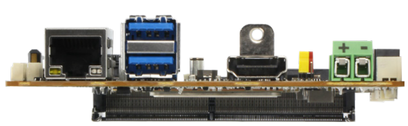
Ordering Information

Part number	CPU	Memory	FAN/FANLESS	Display	Storage	LAN	USB	RS-232	RS-422/485	Expansion slot	Power	Operating Temp	Others
PICO-BT01-A12-00A2	N2807	DDR3L, Max. 4GB	Heat-spreader	LVDS x 1 DP x 1	SATAII x 1 mSATA (Full size) x 1	GbE x 1	USB 3.2 Gen 1 x 1 USB 2.0 x 2	1	1	miniCard x 1 (Half-size)	12V	0°C ~ 60°C	Line-out, DIO
PICO-BT01-A12-00A3	E3845	DDR3L, Max. 8GB	Heat-spreader	LVDS x 1 VGA x 1	SATAII x 1 mSATA (Full size) x 1	GbE x 1	USB 3.2 Gen 1 x 1 USB 2.0 x 2	1	1	miniCard x 1 (Half-size)	12V	0°C ~ 60°C	BIO, Line-out, DIO
PICO-BT01-A12-00A4	E3825	DDR3L, Max. 8GB	Heat-spreader	LVDS x 1 DP x 1	SATAII x 1 mSATA (Full size) x 1	GbE x 1	USB 3.2 Gen 1 x 1 USB 2.0 x 2	1	1	miniCard x 1 (Half-size)	12V	0°C ~ 60°C	Line-out, DIO
PICO-BT01-A12-00A5	J1900	DDR3L, Max. 8GB	Heat-spreader	LVDS x 1 VGA x 1	SATAII x 1 mSATA (Full size) x 1	GbE x 1	USB 3.2 Gen 1 x 1 USB 2.0 x 2	1	1	miniCard x 1 (Half-size)	12V	0°C ~ 60°C	Line-out, DIO
PICO-BT01W2-A12-0003	E3845	DDR3L, Max. 8GB	Heat-spreader	LVDS x 1 VGA x 1	SATAII x 1 mSATA (Full size) x 1	GbE x 1	USB 3.2 Gen 1 x 1 USB 2.0 x 2	1	1	miniCard x 1 (Half-size)	12V	-40°C ~ 85°C	BIO, Line-out, DIO
PICO-BT01W2-A12-0004	E3825	DDR3L, Max. 8GB	Heat-spreader	LVDS x 1 DP x 1	SATAII x 1 mSATA (Full size) x 1	GbE x 1	USB 3.2 Gen 1 x 1 USB 2.0 x 2	1	1	miniCard x 1 (Half-size)	12V	-40°C ~ 85°C	Line-out, DIO

PICO-EHL1 PRELIMINARY

Pico-ITX Board with Intel Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series Processors





Features

- Intel® Elkhart Lake Pentium®/Celeron®/Atom® Processor SoC
- DDR4 3200 MHz, SODIMM x 1, up to 32GB, support IBECC (select SKUs)
- eDP1.4b/LVDS x 1 (default: 18/24-bit dual LVDS, colay eDP signals)
- HDMI1.4 x 1
- Realtek RTL8111-CG x 1
- Full size mPCIe/mSATA x 1
- M.2 B key 2242 x 1 (PCIe[x2]/USB2.0)
- USB 3.2 Gen2 x 2, USB2.0 x 2
- RS-232/422/485 x 2
- BIO (Optional): PCIex2, USB3.2 Gen1, USB2.0, SMBUS/GPIO, line out, DDI2

Giga LAN USB 2.0 USB 3.2 Gen 2 HDMI

Specifications

SYSTEM	
FORM FACTOR	PICO-ITX
CPU	Intel® Atom® x6000E series, Intel® Pentium®, and Celeron® N and J series processors: Intel® Atom® x6425RE (4C, 1.9GHz, TDP-up 12W) Intel® Atom® x6425E (4C, 2.0GHz, up to 3GHz, TDP-up 12W) Intel® Atom® x6211E (2C, 1.2GHz, up to 3GHz, TDP-up 6W) Intel® Pentium® J6426 (4C, 2.0GHz, up to 3GHz, TDP-up 10W) Intel® Celeron® J6412 (4C, 2.0GHz, up to 3GHz, TDP-up 10W) Intel® Celeron® N6210 (2C, 1.2GHz, up to 3GHz, TDP-up 6.5W) (Intel® Atom® x6414RE/x6413E/x6427FE/x6200FE/N6415 by customer's request)
CHIPSET	Intel® Elkhart Lake SoC Processor
MEMORY TYPE	DDR4 up to 3200MHz, SODIMM x 1, up to 32GB, support IBECC (select SKUs)
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.18 lbs (0.08 kg)
OS Support	Windows 10 (64 bit) Ubuntu 20.04.3(IOT)/Kernel 5.13
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
POWER CONSUMPTION	TBD
DISPLAY	
CONTROLLER	Intel® UHD Graphics for 10th Gen Intel® Processors
LVDS/eDP	eDP/LVDS (18/24bit 2CH) 1920 x 1200 (default: LVDS)
Display Interface	HDMI 1.4b x1 (up to 3840 x 2160) DDI (BIO, Optional)
Multiple Display	Up to 3 Simultaneous Displays
AUDIO	
CODEC	—
AUDIO INTERFACE	—
Speaker	—

EXTERNAL I/O	
ETHERNET	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 1
USB	USB 3.2 Gen 2 x 2
SERIAL PORT	—
VIDEO	HDMI 1.4b x1 (up to 3840 x 2160)
INTERNAL I/O	
USB	USB 2.0 x 2
SERIAL PORT	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)
VIDEO	eDP/LVDS (18/24bit 2CH) 1920 x 1200 (default: LVDS)
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	—
DIO/GPIO	4-bit
SMBus/I2C	SMBUS/I2C x 1 (SMBUS as default)
Touch	—
FAN	4pins Smart Fan x1
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	Full size mPCIe/mSATA x 1 (SATA as default, PCIe selected by BIOS)
M.2	M.2 B key 2242 x 1 (PCIe[x2]/USB2.0)
Others	BIO (Optional)
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 140°F (0°C ~ 60°C) WiTAS 2 -40°F ~ 185°F (-40°C ~ 85°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	TBD
EMC	CE/FCC Class A

Packing List

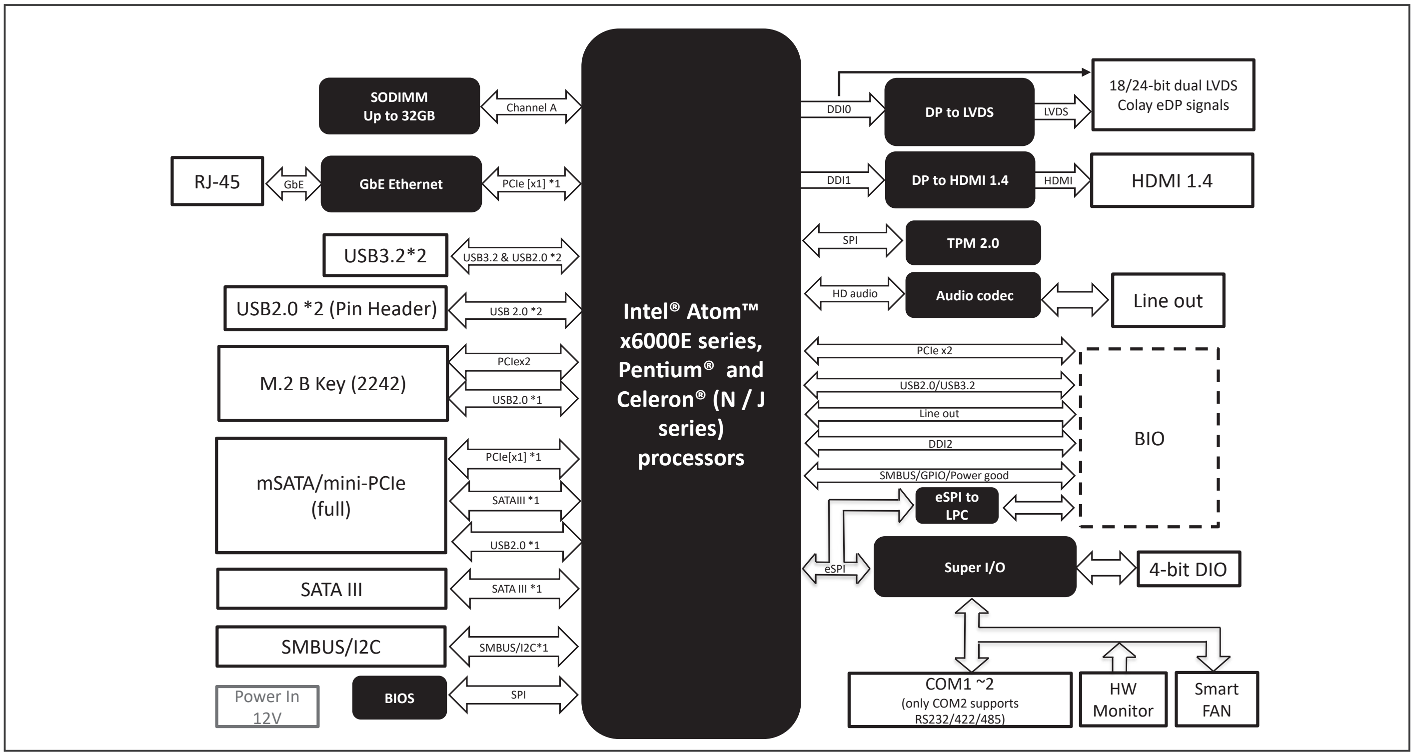
- **TBD**

Optional Accessories

- **TBD**

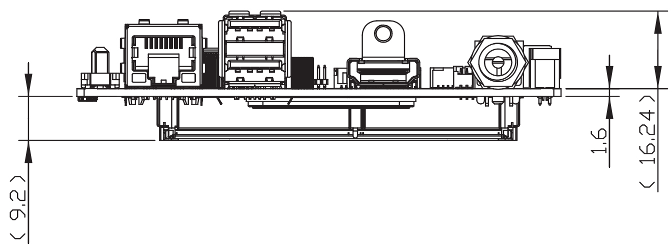
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

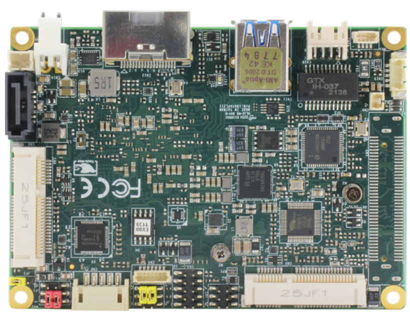


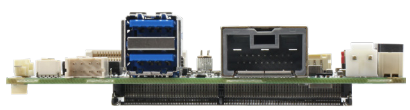
Ordering Information

- TBD

PICO-APL2 PRELIMINARY

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





Features

- Intel Atom® E3900/ Pentium® N4200/ Celeron® N3350 Processor SoC
- DDR3L 1600 MHz SODIMM x 1, up to 8GB
- 18/24-bit Dual Channel LVDS LCD
- HDMI1.4 x 1, Pin header (up to 2K @30Hz)
- SATA 6.0Gb/s x 1, mSATA (Full Size) x 1
- Intel® i210AT/i210IT, 10/100/1000Base x 1 (Pin header) *LED in separated pin header
- USB 3.2 Gen 1 x 2, USB 2.0 x 1
- RS-232 x 1, RS-232/422/485 x 1
- Mini-Card x 1 (Half-Size, PCIe/USB)
- SMBus/I2C x 1 (default SMBus)
- Digital I/O 4-bit
- BIO Connector for Daughter Board (Optional)

1000 Giga LAN | USB 2.0 | USB 3.2 Gen 1 | HDMI

Specifications

SYSTEM	
FORM FACTOR	Pico-ITX
CPU	Intel Atom® x7-E3950 (4C, 1.6GHz, up to 2GHz, TDP 12W) Intel Atom® x5-E3940 (4C, 1.6GHz, up to 1.8GHz, TDP 9.5W) Intel® Pentium® N4200 (4C, 1.1GHz, up to 2.5GHz, TDP 6W) Intel® Celeron® N3350 (2C, 1.1GHz, up to 2.4GHz, TDP 6W)
CHIPSET	Intel® Atom® E3900/ Pentium® N4200/ Celeron® N3350 Processor SoC
MEMORY TYPE	DDR3L SODIMM up to 1600MHz, up to 8GB
BIOS	AMI/SPI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.18 lbs. (0.08 kg)
OS Support	Windows 10 (64 bit) Ubuntu 20.04.4 / 5.13.0
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	AT/ATX (Pin header)
CONNECTOR	2-pin Connector (Pin header)
POWER CONSUMPTION	Intel® Pentium® N4200, DDR3L 8GB x 1, 2.16A@ +12V(TYPICAL) Intel® Pentium® N4200, DDR3L 8GB x 1, 2.28A@ +12V(MAX)
DISPLAY	
CONTROLLER	Intel® Atom® E3900/ Pentium® N4200/ Celeron® N3350 Processor SoC
LVDS/eDP	LVDS (18/24bit 2CH)
Display Interface	HDMI 1.4 x 1 (2K @30Hz) (Pin header type)
Multiple Display	Up to 2 Simultaneous Displays
AUDIO	
CODEC	Realtek 888/897
AUDIO INTERFACE	Line out
Speaker	—
EXTERNAL I/O	
ETHERNET	Intel® i210AT/i210IT, 10/100/1000Base x 1 (Pin header) *LED in separated pin header
USB	USB 3.2 Gen 1 x 2
SERIAL PORT	—
VIDEO	HDMI 1.4 x 1 (2K @30Hz)

INTERNAL I/O	
USB	USB2.0 x 1
SERIAL PORT	COM1: RS-232 x 1 COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V)
VIDEO	—
SATA	SATA III x 1 +5 SATA Power Connector x 1
AUDIO	Line-out x 1
DIO/GPIO	4-bit
SMBus/I2C	SMBus/I2C x 1 (SMBus as default, I2C selected by HW BOM)
Touch	—
FAN	—
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	Full size mPCIe/ mSATA or USB2.0 x 1 (SATA as default, PCIe selected by HW BOM) Half-size Mini Card x 1 (mPCIe as default)
M.2	—
Others	BIO x 1 (Optional) SMBus/I2C x 1 (SMBus as default, I2C selected by HW BOM)
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32 °F~ 140 °F (0°C ~ 60°C)
STORAGE TEMP	-40 °F ~ 176 °F (-40°C ~ 80°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	525,137
EMC	CE/FCC Class A

Packing List

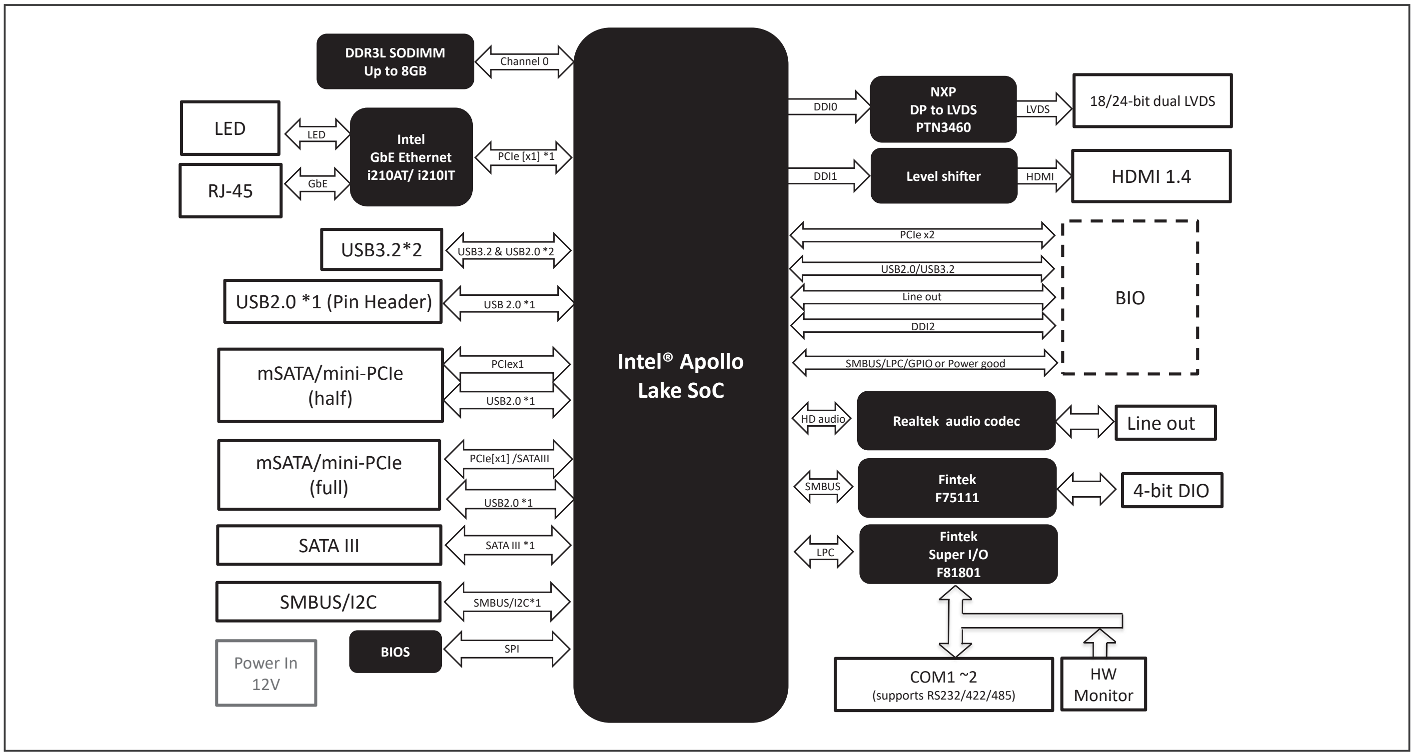
- **1703200153 (Optional by model)**
  COM x 2, Line-out Cable
- **PICO-APL2**

Optional Accessories

Part Number	Description	Qty.
1709070500	SATA CABLE.7P Pitch 1.27mm.50cm	1
1702150155	SATA Power Cable	1
1700050207	USB cable 20cm	1
1703200153	COM x 2, line-out cable	1
PICO-APL1-HSP01	Heat-spreader for PICO-APL1 N4200/N3350 SKUs	1
PICO-APL2-HSP02	Heat-spreader for PICO-APL1 E3950/E3940/E3930 SKUs	1
PICO-APL2-HSK02	Heat-sink for all PICO-APL1 series, to be used with Heat-spreader	1

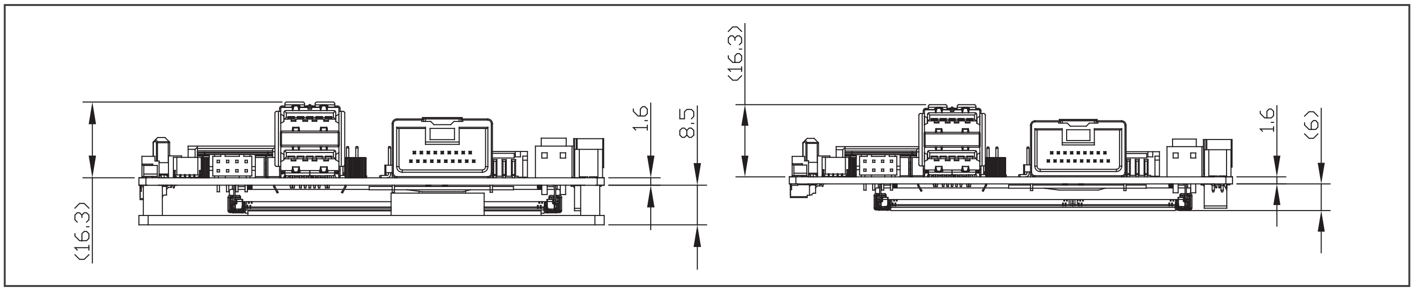
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

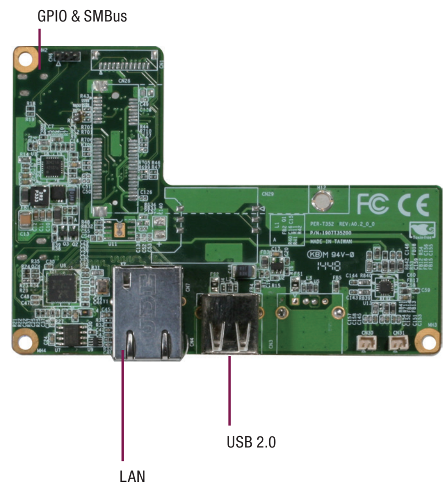


Ordering Information

Part number	CPU	Memory	Display	Storage	LAN	USB	RS-232/422/485	Expansion slot	Power	Operating Temp	Others
PICO-APL2-A10-0001	N4200	8GB	HDMI x 1 LVDS x 1	SATAIII x 1	GbE x 1	USB3.2 Gen 1 x 2 USB2.0 x 1	2	Half-size Mini Card (PCIe/USB) x 1 mSATA(Full-size) x 1	+12V	0°C ~ 60°C	DIO 4 bit SMBus/I2C x 1
PICO-APL2-A10-0002	N3350	8GB	HDMI x 1 LVDS x 1	SATAIII x 1	GbE x 1	USB3.2 Gen 1 x 2 USB2.0 x 1	2	Half-size Mini Card (PCIe/USB) x 1 mSATA(Full-size) x 1	+12V	0°C ~ 60°C	DIO 4 bit SMBus/I2C x 1
PICO-APL2-A10-0003	E3950	8GB	HDMI x 1 LVDS x 1	SATAIII x 1	GbE x 1	USB3.2 Gen 1 x 2 USB2.0 x 1	2	Half-size Mini Card (PCIe/USB) x 1 mSATA(Full-size) x 1	+12V	0°C ~ 60°C	DIO 4 bit SMBus/I2C x 1

BIO-ST01-L1U2

2.5" BIO Daughter Board with Gigabit LAN and USB



Features

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

1000 Giga LAN USB 2.0

Specifications

System	
Form Factor	2.5" Board
BIO	80-Pin high speed board to board connector
Power Requirement	Power Supplied from MB via board to board connector
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.44 lb (0.2 kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40 °F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	—
OS support	Windows 10 (64 bit)
I/O	
Ethernet	Realtek 8111E, 10/100/1000Base-TX, RJ-45 x 1
USB	USB 2.0 x 2 on rear I/O
Audio	Speaker Out with 2W Amp
Expansion Interface	SMbus x 1
PCIe	—
Serial Port	—
SIM	—
DIO	—

Packing List

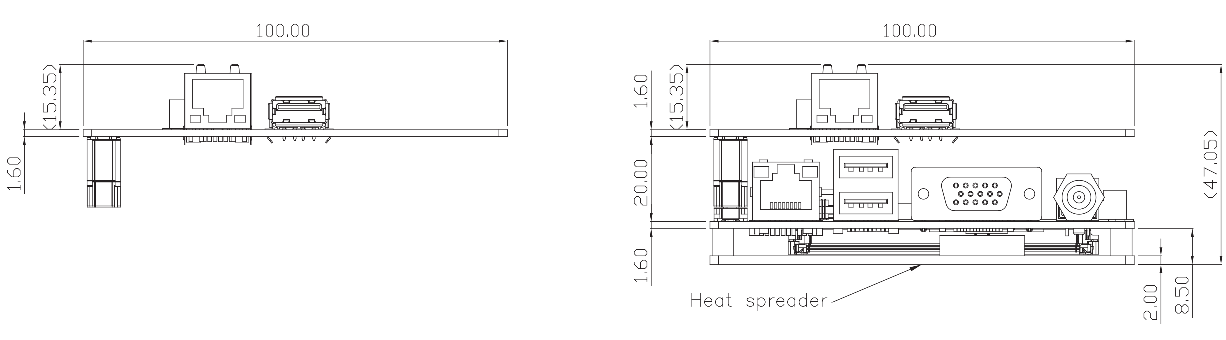
- Accessory Kit
- BIO-ST01-L1U2

Ordering Information

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

Dimension

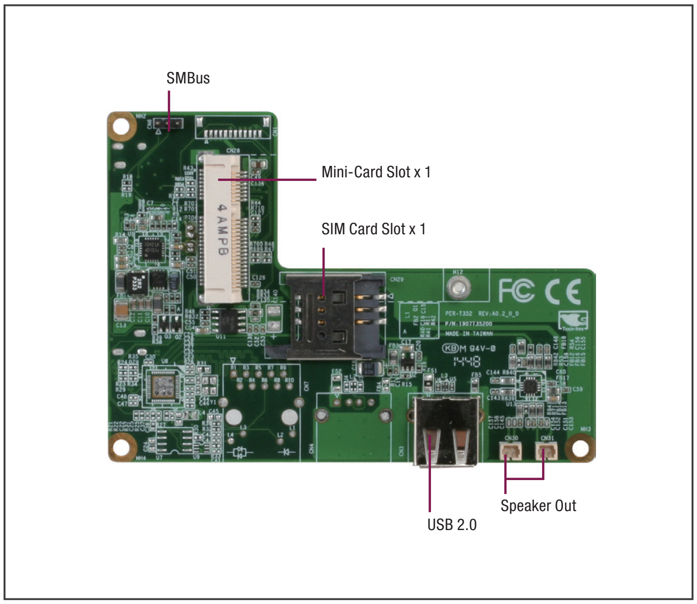
Unit: mm



Note: All specifications are subject to change without notice.

BIO-ST01-M1U1

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



Features

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

USB 2.0

Specifications

System	
Form Factor	2.5" Board
BIO	80-Pin high speed board to board connector
Power Requirement	Power Supplied from MB via board to board connector
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.44 lb (0.2 kg)
Operating Temperature	32°F ~ 140°F(0°C ~ 60°C)
Storage Temperature	-40 °F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	—
OS support	Windows 10 (64 bit)
I/O	
Ethernet	—
USB	USB 2.0 x 1 on rear I/O
Audio	Speaker Out with 2W Amp
Expansion Interface	SMbus x 1
PCIe	Mini-Card x 1
Serial Port	—
SIM	SIM Slot x 1
DIO	—

Packing List

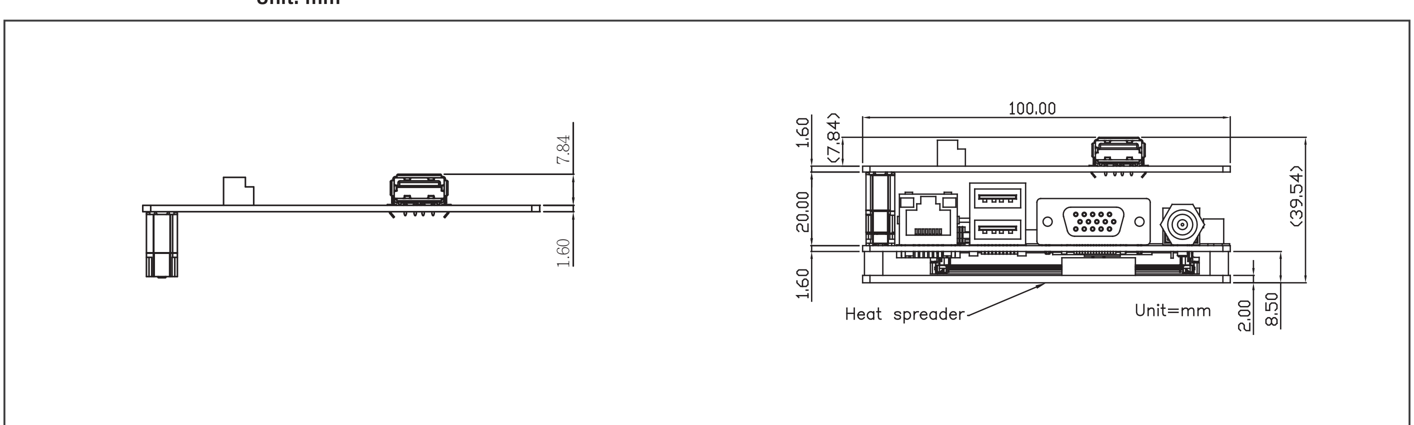
- **Accessory kit**
- **BIO-ST01-M1U1**

Ordering Information

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

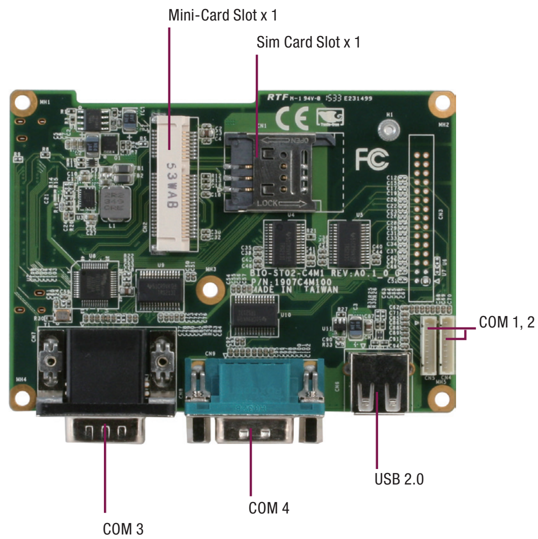
Dimension

Unit: mm



BIO-ST02-C4M1

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



Features

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

• Mini-Card (Full Size): Completely compatible with PICO-BT01. PCIe x1 only for PICO-BSW/ PICO-APL1/ PICO-APL3/ PICO-APL4/ PICO-KBU4/ GENE-SKU6/ GENE-KBU6.

Giga LAN USB 2.0

Specifications

System	
Form Factor	2.5" Board
BIO	80-Pin high speed Board to board connector
Power Requirement	Power Supplied from MB via board to board connector
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.44 lb (0.2 Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40 °F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	—
OS support	Windows 10 (64 bit)
I/O	
Ethernet	—
USB	USB 2.0 x 1 on rear I/O
Audio	—
Expansion Interface	—
PCIe	Mini-Card x 1 (full size), SIM x 1
Serial Port	COM1, COM2 RS-232 by Pin Header COM3, COM4 RS-232 on Rear I/O
SIM	—
DIO	—

Packing List

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

Ordering Information

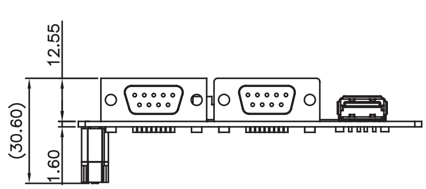
P/N	USB	RS-232	Expansion Slot	Temp.
BIO-ST02-C4M1-A10-01*	1	4	Mini-Card x 1, SIM x 1	0°C ~ 60°C

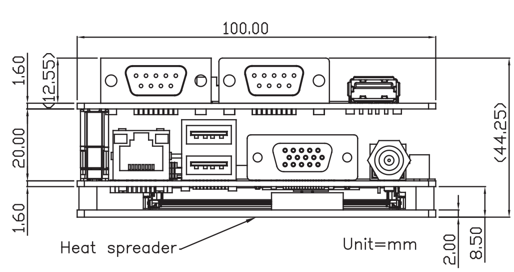
* Customized BIOS is required.

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

Dimension

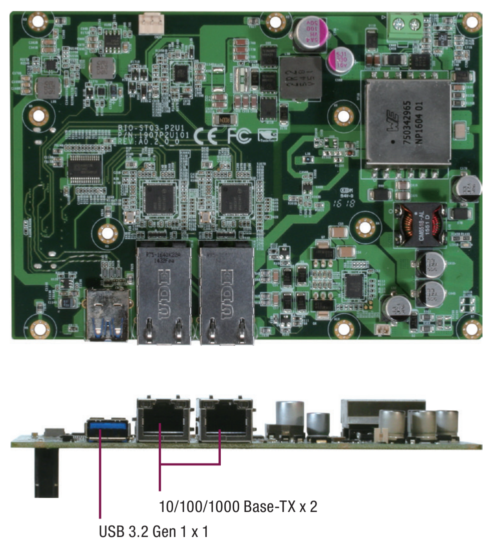
Unit: mm





BIO-ST03-P2U1

3.5" BIO Daughter Board with PoE, USB 3.2 Gen 1



Features

- Intel® i210, 10/100/1000Base-TX x 2 (Supports PoE 802.3af)
- USB 3.2 Gen 1 x 1
- 9~36V DC-in (+12V Only, Optional)
- Supports GENE-SKU6 and Pico-ITX Series BIO Daughter Board

1000 Giga LAN USB 2.0

Specifications

System	
Form Factor	3.5" Board
BIO	—
Power Requirement	12V or +9 ~ 36V input (external power supply)
Dimension	5.25" x 4" (146mm x 101.6mm)
Gross Weight	0.44 lb (0.2 kg)
Operating Temperature	32°F~ 140°F (0°C ~ 60°C)
Storage Temperature	-40˚F ~ 176˚F (-40˚C ~ 80˚C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE,FCC
OS support	Windows 10 (64 bit)
I/O	
Ethernet	Intel® i210/i211, 10/100/1000Base-TX x 2 (support PoE 802.3af)
USB	USB 3.2 Gen 1 x 1
Audio	—
Expansion Interface	—
PCIe	—
Serial Port	—
SIM	—
DIO	—

Packing List

- Accessory Kit
- BIO-ST03-P2U1

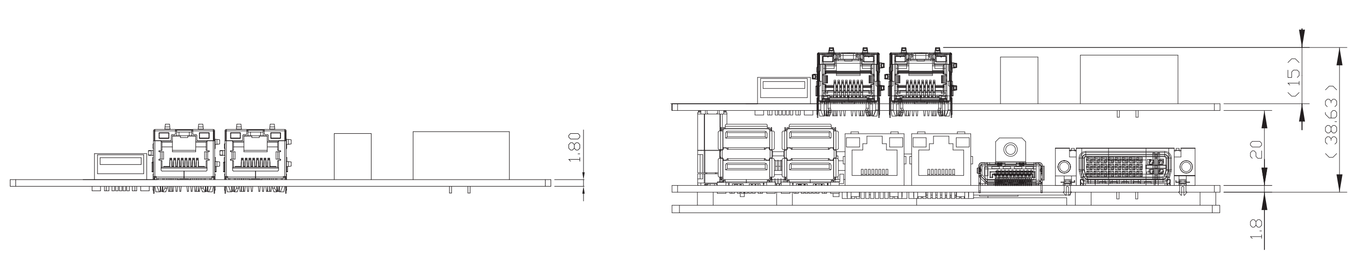
Ordering Information

P/N	LAN	USB	Power	Temp.
BIO-ST03-P2U1	PoE x 2	USB 3.2 Gen 1 x 1	9~36V	0°C ~ 60°C

* Customized BIOS is required.

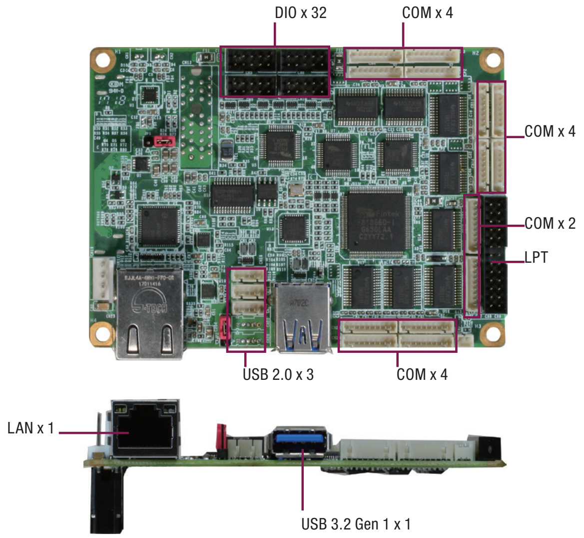
Dimension

Unit: mm



BIO-ST02-C14-D32

2.5" BIO Daughter Board with 14 COM, 32bit DIO, LAN and USB 3.2 Gen 1



Features

- COM x 14, RS-232 only
- 32-bit DIO
- Intel® i211 Giga LAN x 1
- PCI-E [x1] Slot x 1 (Optional)
- USB 3.2 Gen 1 & USB 2.0 x 3
- Speaker w/2W Amp.
- LPT x 1

1000 Giga LAN USB 2.0 CE FC

Specifications

System	
Form Factor	2.5" Board
BIO	80-Pin high speed board to board connector
Power Requirement	Power Supplied from MB via board to board connector
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.44 lb (0.2 kg)
Operating Temperature	32˚F ~ 140˚F (0˚C ~ 60˚C)
Storage Temperature	-40˚F ~ 176˚F (-40˚C ~ 80˚C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE,FCC
OS support	Windows 10 (64 bit)
I/O	
Ethernet	Intel® i211, 10/100/1000Base-TX x 1
USB	USB 3.2 Gen 1 x 1 & USB 2.0 x 3 or USB 2.0 x5(for PICO-BT01)
Audio	Speaker output with 2W Amp.
Expansion Interface	PCIe [x1] x1 (optional), LPT x1
PCIe	—
Serial Port	COM x14, RS-232 by Pin Header
SIM	—
DIO	32 bits

Packing List

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

Ordering Information

Part Number	COM	DIO	LAN	PCIe	USB	LPT	Temp.
BIO-ST02-C14D32-A10-0001	RS-232 x14	x32 bit	GbE x 1	PCIe[x1]	USB 3.2 Gen 1 x 1 USB 2.0 x 3	x1	0°C ~ 60°C

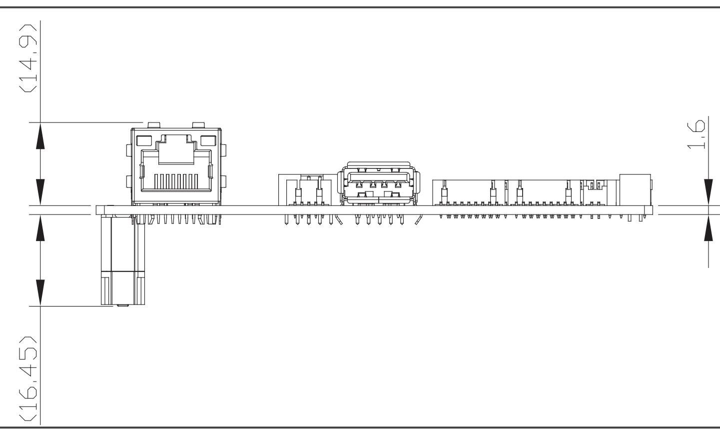
* Customized BIOS is required.

Optional Accessories

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

Dimension

Unit: mm



Note: All specifications are subject to change without notice.

PRELIMINARY PICO-EHL4-SEMI

Pico-SEMI with Intel Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series Processors

Launching in Q1

Features

- Intel® Atom® x6000E series, Intel® Pentium®, and Celeron® N and J series processors (formerly Elkhart Lake)
- LPDDR4x on board memory, In-Band ECC
- HDMI2.0b x 2
- GbE x 2
- USB 3.2 GEN2 x 2
- mini-PCIe x 1/M.2 E-Key 2230 x 1
- eMMC up to 128GB x 1 (Optional)
- COM x 2 Full/CANBUS x 2 (Optional)

LPDDR4 2.5GbE USB 2.0 USB 3.2 Gen 2 PCI Express

Specifications

SYSTEM	
FORM FACTOR	PICO-SEMI
CPU	Intel® Atom® x6000E series, Intel® Pentium®, and Celeron® N and J series processors: Intel® Atom® x6425RE (4C, 1.9GHz, TDP-up 12W) Intel® Atom® x6425E (4C, 2.0GHz, up to 3GHz, TDP-up 12W) Intel® Atom® x6211E (2C, 1.2GHz, up to 3GHz, TDP-up 6W) Intel® Pentium® J6426 (4C, 2.0GHz, up to 3GHz, TDP-up 10W) Intel® Celeron® J6412 (4C, 2.0GHz, up to 3GHz, TDP-up 10W) Intel® Celeron® N6210 (2C, 1.2GHz, up to 3GHz, TDP-up 6.5W) (Intel® Atom® x6414RE/x6413E/x6427FE/x6200FE/N6415 by customer's request)
CHIPSET	Intel® Elkhart Lake SoC Processor
MEMORY TYPE	LPDDR4x up to 3200MHz, up to 16GB
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	TBD
Gross Weight	TBD
OS Support	Windows 10 (64 bit) Ubuntu 20.04.3(IOT)/Kernel 5.13
POWER	
POWER REQUIREMENT	12V only
POWER SUPPLY TYPE	ATX
CONNECTOR	DC Jack Connector
POWER CONSUMPTION	Intel® Atom™ x6425E, LPDDR4x onboard 16GB, 2.48A@ +12V(TYPICAL) Intel® Atom™ x6425E, LPDDR4x onboard 16GB, 2.62A@ +12V(MAX)
DISPLAY	
CONTROLLER	Intel® UHD Graphics for 10th Gen Intel® Processors
LVDS/eDP	—
Display Interface	HDMI 2.0b x 2 (4K x 2K 60Hz)
Multiple Display	Up to 2 Simultaneous Displays
AUDIO	
CODEC	—
AUDIO INTERFACE	—
Speaker	—
EXTERNAL I/O	
ETHERNET	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2
USB	USB 3.2 Gen 2 x 2
SERIAL PORT	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)(Optional)
VIDEO	HDMI 2.0b x 2 (4K x 2K 60Hz)
INTERNAL I/O	
USB	—
SERIAL PORT	—
VIDEO	—
SATA	eMMC 5.1, up to 128GB (Optional)
AUDIO	—
DIO/GPIO	4-bit (Optional)
SMBus/I2C	SMBus x 1 (Optional)
Touch	—
FAN	4pins Smart Fan x1
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	Full size mPCIe/mSATA x 1 (SATA as default, PCIe selected by BIOS)
M.2	M.2 E key 2230 x 1 (PCIe[x1]/USB2.0)
Others	CANBUS x 2 (optional, N6210/J6412 not support, support up to 5Mbit/s)
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 122°F (0°C ~ 50°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	489,989
EMC	CE/FCC Class A

Packing List

- **PICO-EHL4-SEMI**

Optional Accessories

- **TBD**

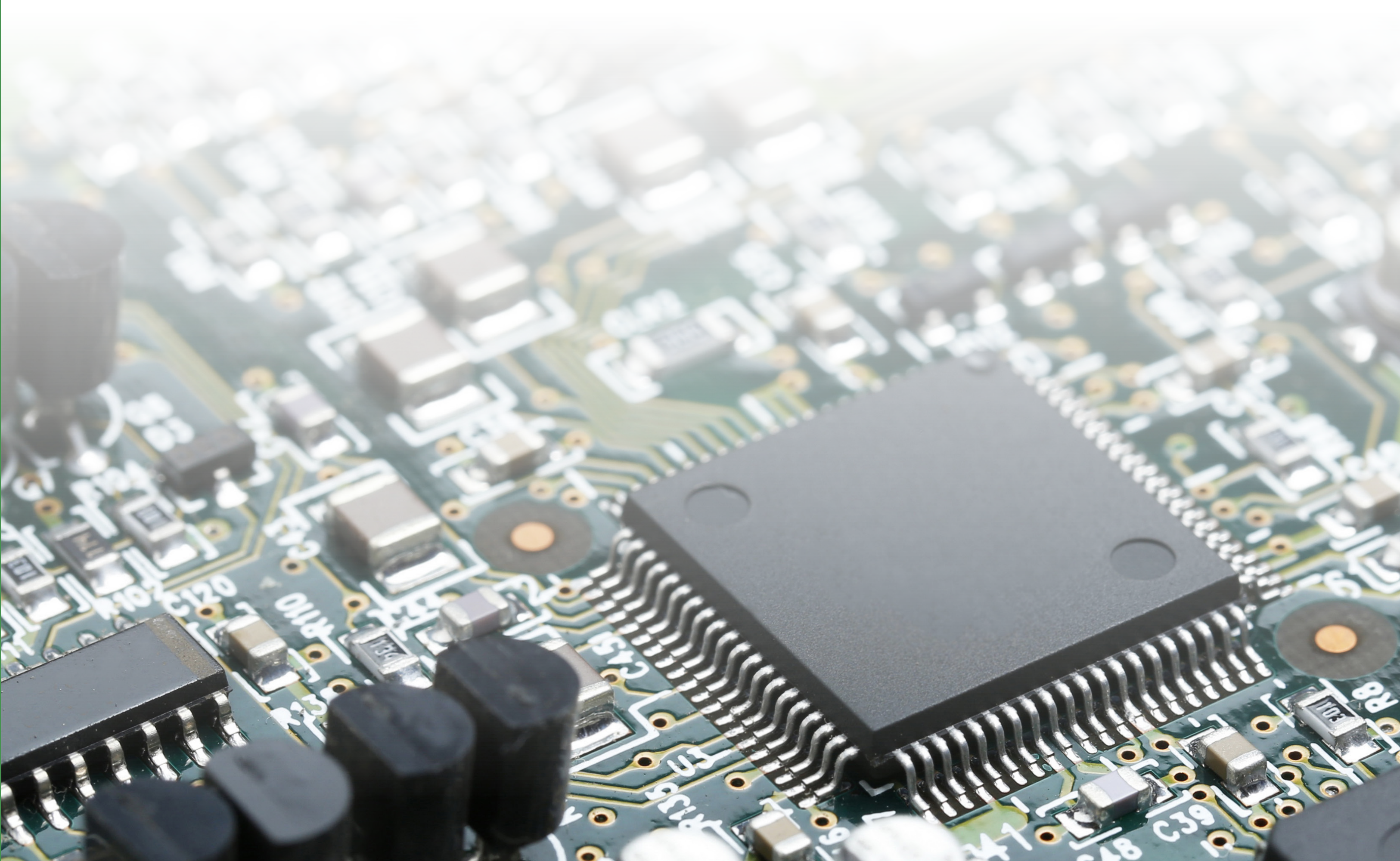
Ordering Information

- **TBD**

04

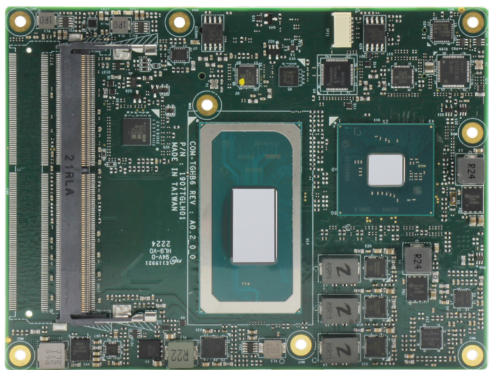
04

COM Express CPU Modules



COM-TGHB6

COM Express Type 6 with 11th Generation Intel® Xeon/Core™ Processor Family



Features

- 11th Generation Intel® Core™ Tiger Lake-H Xeon/Core Series Processor
- Intel 500 Chipset series (RM590E / QM580E)
- DDR4 3200 MHz SODIMM x 2 (ECC Support), up to 64GB
- Intel I225LM 2.5GbE x 1
- VGA, 18/24-bit 2ch LVDS/eDP, DDIx3
- High Definition Audio Interface
- SATA3.0 x 4
- USB2.0 x 8, USB3.2 Gen2 x 4
- PCIe[x16] x 1 (Gen4) , PCIe [x1] x 8 (Gen3) , I2C, SMBus, LPC, TPM2.0 (Optional)
- 12V DC input
- PICMG COM.0 R3.0 Type 6, Basic size, 125mm x 95mm

Giga LAN HD Audio DDR 4 USB2.0 USB3.0 PCI Express

Specifications

System	
Form Factor	COM Express Basic Size, Type 6
CPU	11th Generation Intel® Xeon/Core™ Processor
CPU Frequency	Up to 2.6 GHz, 8 Core, W-11865MRE/ I7-11850HE
Chipset	Intel 500 series PCH QM580E/RM590E
Memory Type	SODIMM DDR4 3200 Socket x 2
Max. Memory Capacity	Up to 64 GB (ECC Support by SKU)
BIOS	AMI BIOS (UEFI)
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12 V and +5 VSB for ATX, +12V for AT
Power Supply Type	AT/ATX
Power Consumption (Typical)	5.26A@12V,W-11865MRE
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 ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE / FCC Class A
Display	
Graphic Controller	Intel® UHD Graphics
Video Output	DDI x 3 LVDS or eDP x 1 (Default: LVDS, 18/24b 2CH LVDS, or 4 lane eDP) VGA x 1
I/O	
Ethernet	Intel® i225/i226LM/IT GbE x 1
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8, USB 3.2 Gen2 x 4
Serial Port	2-Wire UART (Tx/Rx) x2
HDD Interface	SATA3 x4
Expansion Slot	PCIe 4.0 [x16] x 1, PCIe 3.0 [x1] x 8 LPC x 1 SMBus x 1 I2C x 1
GPIO	8-bit
Onboard Storage	N/A
TPM	TPM 2.0

Packing List

- COM-TGHB6-A10 x 1

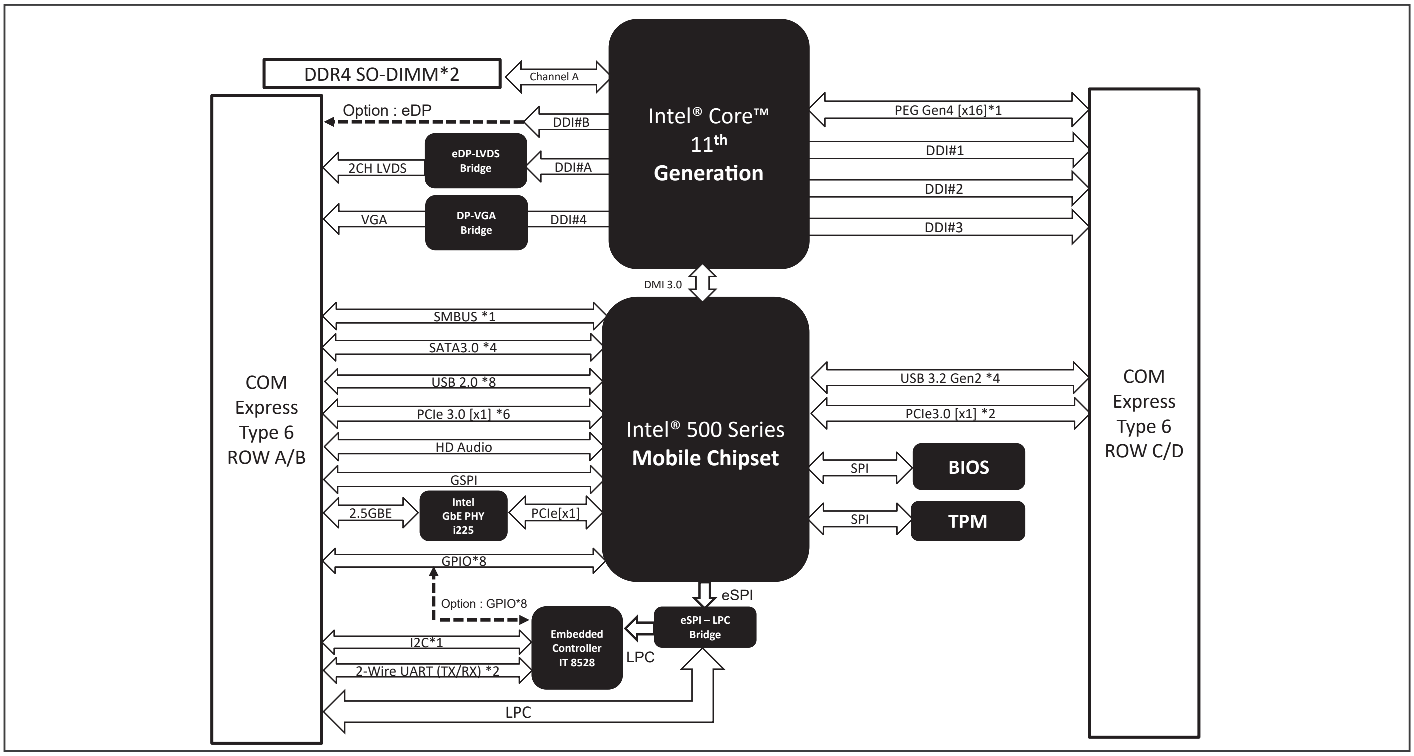
Optional Accessories

- **COM-TGHB6-FAN01**
  Cooler.12V.Smart FAN.125*95*30mm.COM-TGHB6
- **COM-TGHB6-HSP01**
  Heat Spreader.125*95*11mm.Black.COM-TGHB6
- **COM-FAN01**
  CPU Cooler.125*95*26.4mm.Silver.use w/HSP
- **ECB-920A-A11-0001**
  COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB, 2COM.4SATA.PCIe.AT/ATX.Rev. A1.1

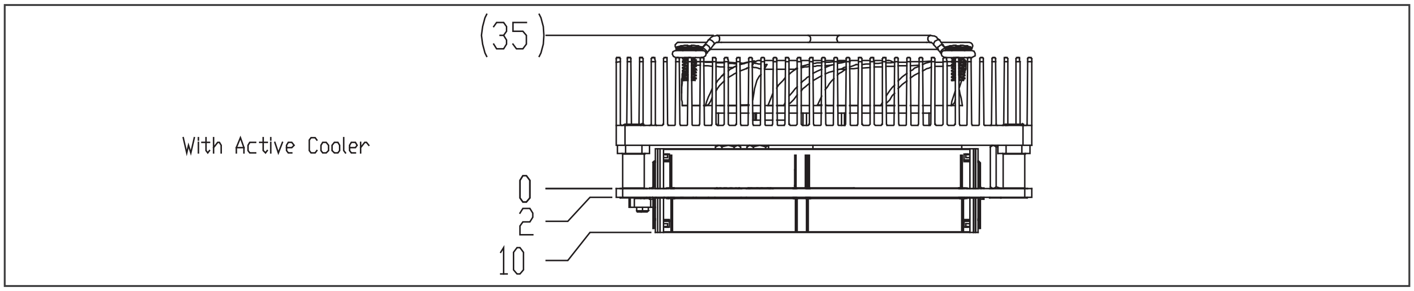
CPU Support Chart

CPU	Core / Thread	Base Frequency	Max Turbo Frequency	Graphic
I7-11850HE	8C/16T	2.6	4.7	Intel® UHD Graphics
I5-11500HE	6C/12T	2.6	4.5	Intel® UHD Graphics
I3-11100HE	4C/8T	2.4	4.4	Intel® UHD Graphics
Celeron 6600HE	2C/2T	2.6	—	Intel® UHD Graphics
W-11865MRE	8C/16T	2.6	4.7	Intel® UHD Graphics
W-11865MLE	8C/16T	1.5	4.5	Intel® UHD Graphics
W-11555MRE	6C/12T	2.6	4.5	Intel® UHD Graphics
W-11155MRE	4C/8T	2.4	4.4	Intel® UHD Graphics
W-11555MLE	6C/12T	1.9	4.4	Intel® UHD Graphics
W-11155MLE	4C/8T	1.8	3.1	Intel® UHD Graphics

Block Diagram Unit: mm



Dimension Unit: mm

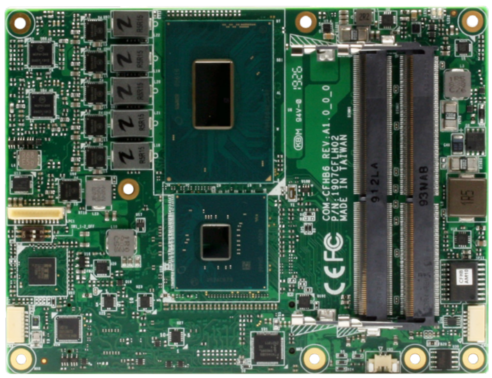


Ordering Information

Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion	Power	Temperature	Other
COM-TGHB6-A10-0001	COM Express Basic Size, Type 6	I7-11850HE	DDR4 SODIMM x 2	DDI x3, LVDS or eDP x1, VGA x1	18/24b 2CH (LVDS,or 4 lanes eDP)	SATA 3 x 4	Intel® I225LM Gigabit Ethernet x 1	USB 2.0 x 8, USB 3.2 Gen2 x 4	2-Wire UART(Tx/Rx) x2	PCIe[x16] x1, PCIe[x1] x 8	+12V	0°C ~ 60°C	LPC/e-SPI, SMBus, I2C
COM-TGHB6-A10-0002	COM Express Basic Size, Type 6	i5-11500HE	DDR4 SODIMM x 2	DDI x3, LVDS or eDP x1, VGA x1	18/24b 2CH (LVDS,or 4 lanes eDP)	SATA 3 x 4	Intel® I225LM Gigabit Ethernet x 1	USB 2.0 x 8, USB 3.2 Gen2 x 4	2-Wire UART(Tx/Rx) x2	PCIe[x16] x1, PCIe[x1] x 8	+12V	0°C ~ 60°C	LPC/e-SPI, SMBus, I2C
COM-TGHB6-A10-0003	COM Express Basic Size, Type 6	I3-11100HE	DDR4 SODIMM x 2	DDI x3, LVDS or eDP x1, VGA x1	18/24b 2CH (LVDS,or 4 lanes eDP)	SATA 3 x 4	Intel® I225LM Gigabit Ethernet x 1	USB 2.0 x 8, USB 3.2 Gen2 x 4	2-Wire UART(Tx/Rx) x2	PCIe[x16] x1, PCIe[x1] x 8	+12V	0°C ~ 60°C	LPC/e-SPI, SMBus, I2C
COM-TGHB6-A10-0004	COM Express Basic Size, Type 6	W-11865MRE	DDR4 SODIMM x 2	DDI x3, LVDS or eDP x1, VGA x1	18/24b 2CH (LVDS,or 4 lanes eDP)	SATA 3 x 4	Intel® I225LM Gigabit Ethernet x 1	USB 2.0 x 8, USB 3.2 Gen2 x 4	2-Wire UART(Tx/Rx) x2	PCIe[x16] x1, PCIe[x1] x 8	+12V	0°C ~ 60°C	LPC/e-SPI, SMBus, I2C
COM-TGHB6-A10-0005	COM Express Basic Size, Type 6	W-11865MLE	DDR4 SODIMM x 2	DDI x3, LVDS or eDP x1, VGA x1	18/24b 2CH (LVDS,or 4 lanes eDP)	SATA 3 x 4	Intel® I225LM Gigabit Ethernet x 1	USB 2.0 x 8, USB 3.2 Gen2 x 4	2-Wire UART(Tx/Rx) x2	PCIe[x16] x1, PCIe[x1] x 8	+12V	0°C ~ 60°C	LPC/e-SPI, SMBus, I2C

COM-CFHB6

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



Features

- 8th / 9th Generation Intel® Core™ i3/i5/i7/Xeon-E Processors
- 3x SODIMM DDR4 2666 Memory up to 96GB, ECC support (by SKU, with CM246 PCH)
- Intel i219LM Gigabit Ethernet x 1
- VGA, 18/24-bit 2ch LVDS or 4-lane eDP, DDI up to 3
- High Definition Audio Interface
- SATA x 4, USB2.0 x 8, USB 3.2 Gen 2 X 4
- PCI-Express [x1] x 8, PCI-Express[x16] x1
- GPIO x 8, SMbus, I2C, LPC
- COM Express Basic Size, Pin-Out Type 6, 125mmx95mm
- Support Intel iAMT

Giga LAN HD Audio DDR 4 PCI Express

Specifications

System	
Form Factor	COM Express Basic size, Type 6
CPU	8th/9th Gen Intel® Core™/ Xeon™-E Series Processor
CPU Frequency	Up to E-2276ME (2.8 GHz)
Chipset	Intel® QM370/CM246 PCH
Memory Type	DDR4, SO-DIMM x 3
Max. Memory Capacity	96GB, ECC Support (only with CM246 PCH)
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12 V and +5 VSB for ATX, +12V for AT
Power Supply Type	AT/ATX
Power Consumption (Typical)	12V@4.65A , full load, E-2276ME
Dimension (L x W)	4.92" x 3.75" (125mm x 95mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) Option
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A
Display	
Graphic Controller	Intel® GT2-P630 (Xeon series)/ GT2-630 (Core I series)
Video Output	3 Simultaneous Displays: 18/24-bit 2 Channel LVDS/eDP x 1 (Default: LVDS), DDI x 2 (Up to 3x DDI shared with VGA), VGA x 1
I/O	
Ethernet	Intel® i219 GbE x 1
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8 , USB 3.2 Gen 2 x 4
Serial Port	2-Wire UART (Tx/Rx) x 2
HDD Interface	SATA 3 x 4
Expansion Slot	PCIe[x1] x 8 PCIe[x16] x 1 LPC SMBus I2C
GPIO	8-bit
Onboard Storage	—
TPM	TPM2.0

Packing List

- COM-CFHB6 x 1

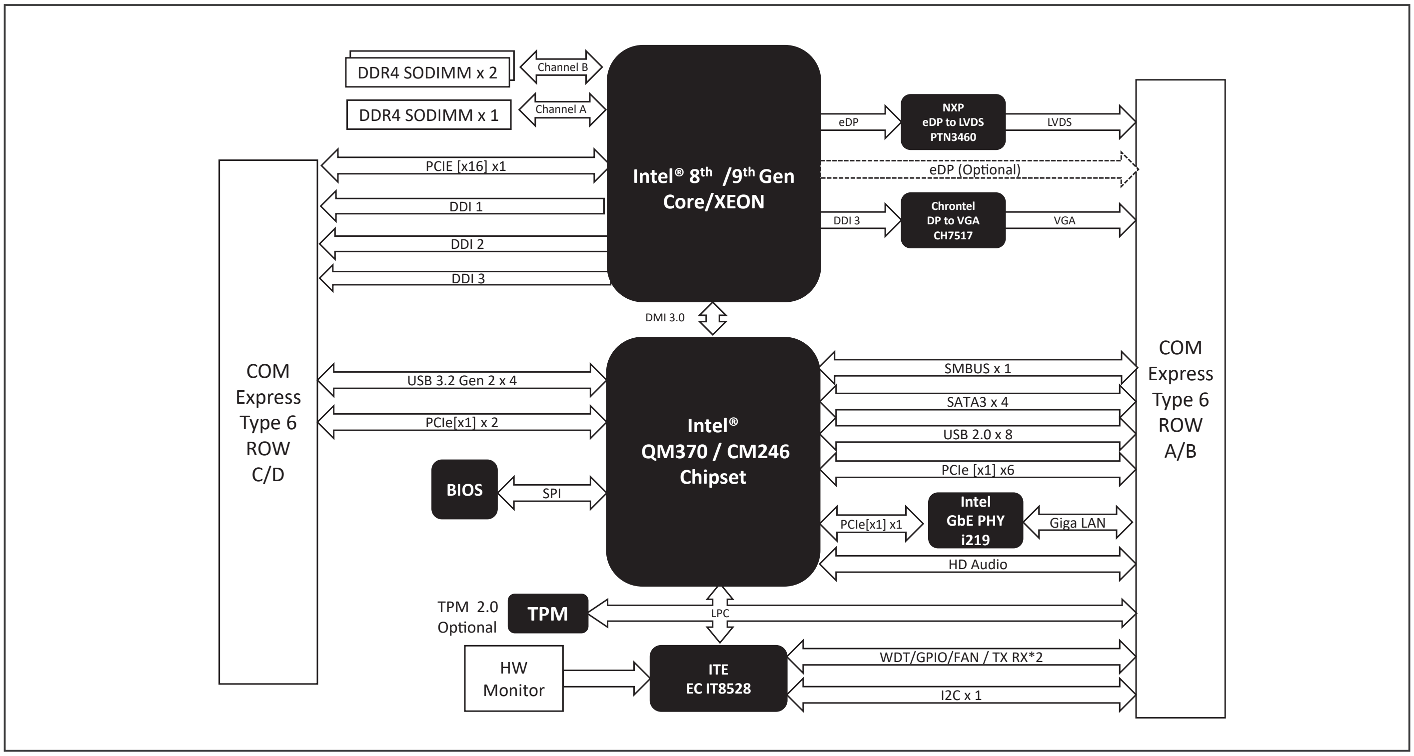
Optional Accessories

- **ECB-920A-A11-0001**
  COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX.Rev. A1.1
- **COM-CFHB6-FAN01**
  CPU Cooler.FAN+Heat Sink.125*95*41.55mm for COM-CFHB6
- **COM-CFHB6-HSP01**
  Heat Spreader.125*95.Black.COM-CFHB6

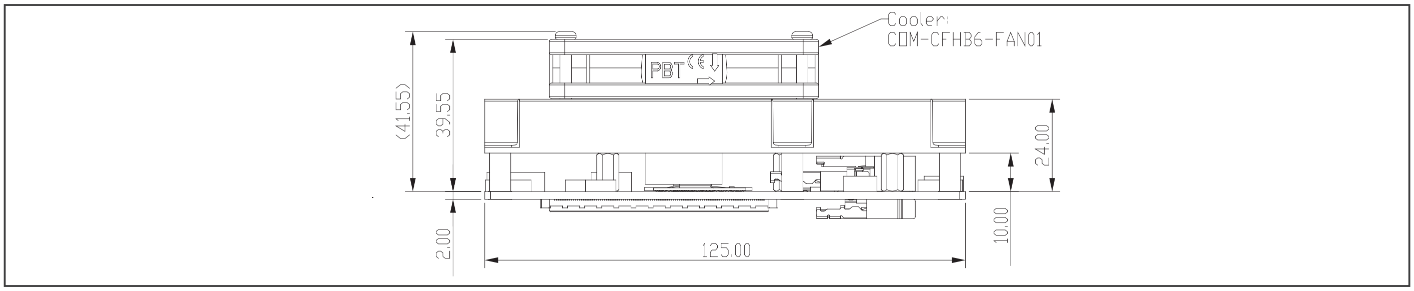
CPU Support Chart

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

Block Diagram
Unit: mm



Dimension
Unit: mm

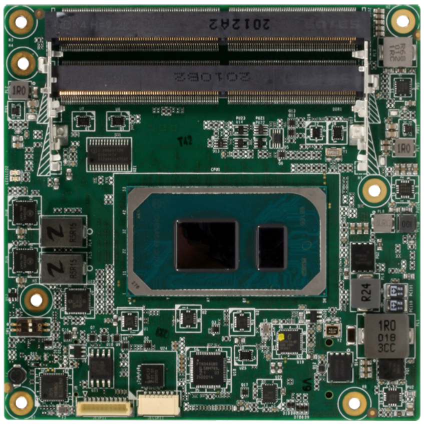


Ordering Information

PART NUMBER	COM EXPRESS TYPE	CPU	MEMORY	DISPLAY	LVDS	STORAGE	LAN	USB	UART	EXPANSION	POWER	TEMPERA-TURE	OTHER
COM-CFHB6-A11-0001	Type 6 (COM.0 Rev. 3.0)	Xeon E-2176M	DDR4 SODIMM x 3	VGA, DDI x 2 (up to 3)	18/24b 2ch LVDS/eDP	SATA3 x 4	GbE x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-wire (Tx/Rx) x 2	PCIe [x1] x 8 PCIe[x16] x 1	+12V	0°C ~ 60°C	LPC, SMBus, I2C
COM-CFHB6-A11-0002	Type 6 (COM.0 Rev. 3.0)	I7-8850H	DDR4 SODIMM x 3	VGA, DDI x 2 (up to 3)	18/24b 2ch LVDS/eDP	SATA3 x 4	GbE x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-wire (Tx/Rx) x 2	PCIe [x1] x 8 PCIe[x16] x 1	+12V	0°C ~ 60°C	LPC, SMBus, I2C
COM-CFHB6-A11-0005	Type 6 (COM.0 Rev. 3.0)	Xeon E-2276ME	DDR4 SODIMM x 3	VGA, DDI x 2 (up to 3)	18/24b 2ch LVDS/eDP	SATA3 x 4	GbE x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-wire (Tx/Rx) x 2	PCIe [x1] x 8 PCIe[x16] x 1	+12V	0°C ~ 60°C	LPC, SMBus, I2C

COM-TGUC6

COM Express Compact Type 6 with 11th Generation Intel® Core™ Processor Family (formerly Tiger Lake UP3)



Features

- 11th Generation Intel® Core™ Processor Family (formerly Tiger Lake UP3)
- 2 x SODIMM DDR4 3200MHz Memory, up to 32GB (in-band ECC)
- Intel I225LM Gigabit Ethernet x 1
- VGA, 18/24-bit 2ch LVDS/eDP, DDI x 3
- High Definition Audio Interface
- SATA3.0 x 2
- USB 2.0 x 8, USB 3.2 Gen2 x 4
- PCI-Express [x1] x 5 (Gen3), PEG [x4] x1 (Gen4)
- 12V DC input
- COM Express Type 6, Compact size, 95mm x 95mm

Giga LAN | HD Audio | DDR 4 | USB 2.0 | USB 3.2 Gen 2 | PCI Express

Specifications

System	
Form Factor	COM Express Mini size, Type 6
CPU	11th Generation Intel® Core™ Processor Family (formerly Tiger Lake UP3)
CPU Frequency	Up to 1.8 GHz, i7-1185GRE
Chipset	11th Gen Intel® Core™ Series Processor
Memory Type	DDR4, SO-DIMM x 2
Max. Memory Capacity	32 GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12 V and +5 VSB for ATX, +12V for AT
Power Supply Type	AT/ATX
Power Consumption (Typical)	3.5A@12V, full load, i7-1185GRE
Dimension (L x W)	3.75" x 3.75" (95mm x 95mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) Option
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A
Display	
Graphic Controller	Intel® Iris® Xe Graphics Intel® UHD Graphics for 11th Gen Intel® Processors
Video Output	4 Simultaneous Displays: Single/Dual Channel LVDS (18/24bit) or eDP, DDI x 3, VGA x 1
I/O	
Ethernet	Intel® i225LM GbE x 1
Audio	High Definition Audio Interface
USB Port	USB2.0 x 8, USB3.2 Gen2 x 4
Serial Port	2-Wire UART (Tx/Rx) x 2
HDD Interface	SATA 3 x 2
Expansion Slot	PCIe[x1] x 5 PEG[x4] x 1 LPC SMBus I2C
GPIO	8-bit
Onboard Storage	—
TPM	TPM 2.0

Packing List

- COM-TGUC6

Optional Accessories

- **COM-TGUC6-FAN01**
  Cooler.12V.Smart FAN.95x95x24MM.COM-TGUC6
- **COM-TGUC6-HSP01**
  Heat Spreader.AL.95x95x11mm.Black.COM-TGUC6
- **ECB-920A-A11-0001**
  COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB, 2COM.4SATA.PCIe.AT/ATX.Rev. A1.1
- **COM-FAN02**
  CPU Cooler.95*95*26.5mm.Silver.use w/HSP

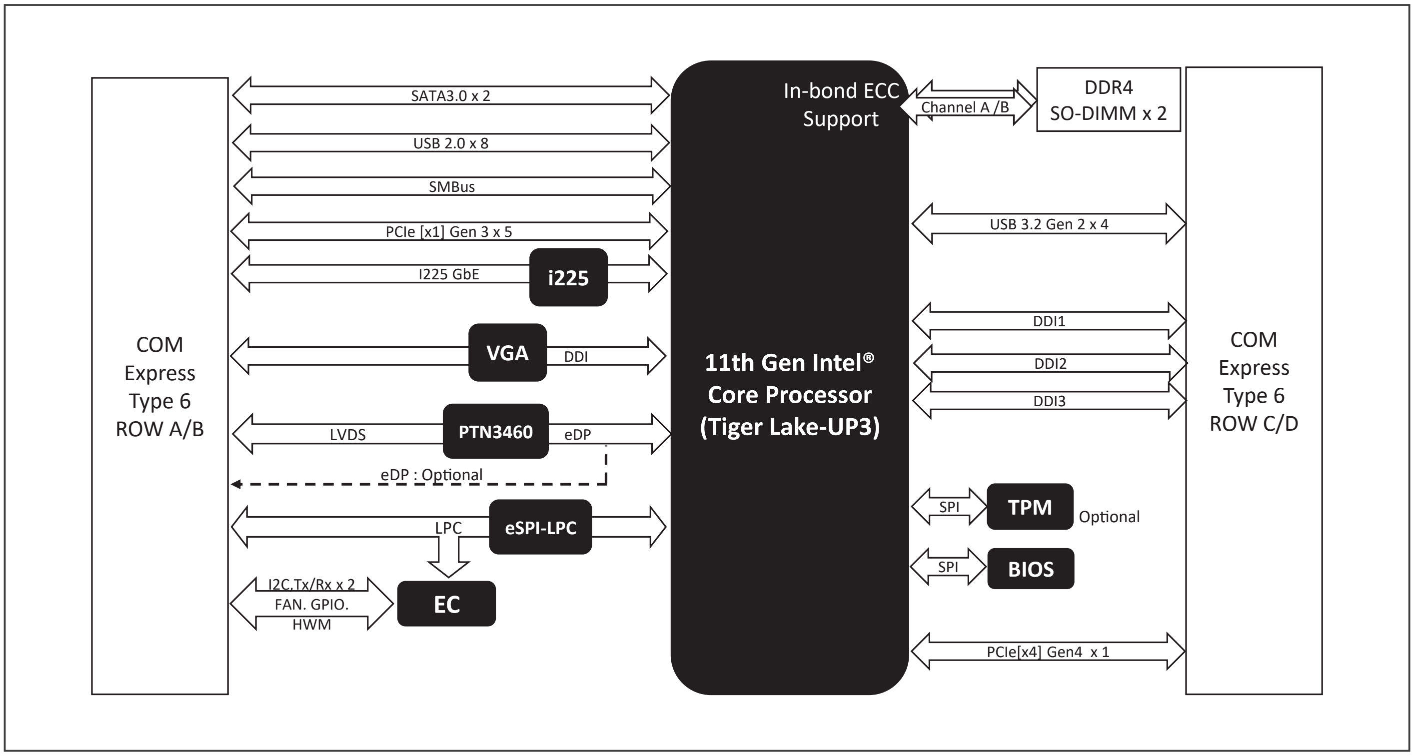
CPU Support Chart

CPU	Core / Thread	Base Frequency / Turbo	TDP	Graphic	In-band ECC	Operating Temp.
i7-1185G7E	4/8	1.8 GHz / 4.4 GHz	15W (Up to 28W)	Intel® Iris® Xe Graphics	No	Commercial Temp.
i5-1145G7E	4/8	1.5 GHz / 4.1 GHz		Intel® Iris® Xe Graphics	No	Commercial Temp.
i3-1115G4E	2/4	2.2 GHz / 3.9 GHz		Intel® UHD Graphics	No	Commercial Temp.
i7-1185GRE	4/8	1.8 GHz / 4.4 GHz		Intel® Iris® Xe Graphics	Yes	Embedded/Industrial Extended Temp.
i5-1145GRE	4/8	1.5 GHz / 4.1 GHz		Intel® Iris® Xe Graphics	Yes	Embedded/Industrial Extended Temp.
i3-1115GRE	2/4	2.2 GHz / 3.9 GHz		Intel® UHD Graphics	Yes	Embedded/Industrial Extended Temp.
Celeron 6305E	2/2	1.8 GHz / ---	15W	Intel® UHD Graphics	No	Commercial Temp.

Note: All specifications are subject to change without notice.

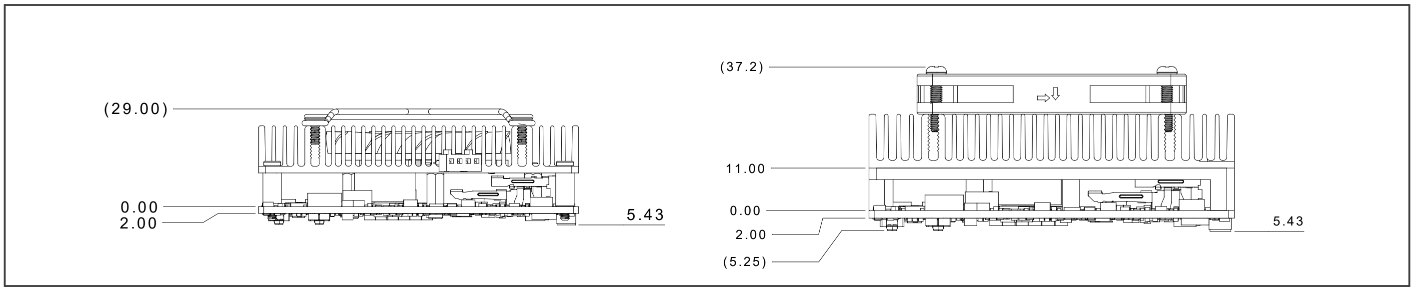
Block Diagram

Unit: mm



Dimension

Unit: mm

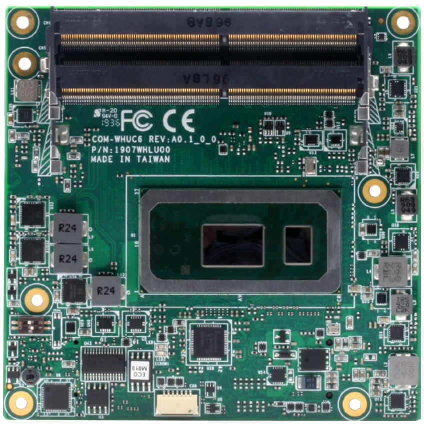


Ordering Information

PART NUMBER	COM EXPRESS TYPE	CPU	MEMORY	DISPLAY	LVDS	STORAGE	LAN	USB	UART	EXPANSION	POWER	TEMPERATURE	OTHERS
COM-TGUC6-A10-0001	Type 6 (COM.0 Rev. 3.0)	i7-1185G7E	DDR4 SO-DIMM x 2	LVDS, DDI x 3, VGA x 1	18/24bits 2CH LVDS	SATA3 x 2	2.5 GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 5 PEG [x4] x 1	12V	0°C - 60°C	LPC, SMBus, I2C
COM-TGUC6-A10-0002	Type 6 (COM.0 Rev. 3.0)	i5-1145G7E	DDR4 SO-DIMM x 2	LVDS, DDI x 3, VGA x 1	18/24bits 2CH LVDS	SATA3 x 2	2.5 GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 5 PEG [x4] x 1	12V	0°C - 60°C	LPC, SMBus, I2C
COM-TGUC6-A10-0005	Type 6 (COM.0 Rev. 3.0)	i7-1185GRE	DDR4 SO-DIMM x 2	LVDS, DDI x 3, VGA x 1	18/24bits 2CH LVDS	SATA3 x 2	2.5 GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 5 PEG [x4] x 1	12V	0°C - 60°C	LPC, SMBus, I2C
COM-TGUC6-A10-0006	Type 6 (COM.0 Rev. 3.0)	i5-1145GRE	DDR4 SO-DIMM x 2	LVDS, DDI x 3, VGA x 1	18/24bits 2CH LVDS	SATA3 x 2	2.5 GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 5 PEG [x4] x 1	12V	0°C - 60°C	LPC, SMBus, I2C

COM-WHUC6

COM Express Compact Type 6 with 8th Gen Intel® Core™ ULT SoC



Features

- 8th Generation Intel® Core™/Celeron™ ULT Processor
- DDR4 socket x 2, non-ECC Support
- Gigabit Ethernet x 1
- VGA, 18/24b 2ch LVDS LCDs or eDP, DDIx2 (DDI2 share with VGA)
- High Definition Audio Interface
- SATA3 x 2, eMMC onboard (up to 64GB)
- USB2.0 x 8, USB 3.2 Gen 2 x 4
- PCI-Express [x1] x 8 lanes available, 5 Devices max.
- GPIO x8, SMbus, I2C, LPC
- COM Express Type 6, Compact size, 95mm x 95mm

Specifications

System	
Form Factor	COM Express Compact size, Type 6
CPU	8th Generation Intel® Core™ ULT Series Processor
CPU Frequency	—
Chipset	8th Generation Intel® Core™ SoC
Memory Type	DDR4, SO-DIMM x 2
Max. Memory Capacity	64GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12 V and +5 VSB for ATX, +12V for AT
Power Supply Type	AT/ ATX
Power Consumption (Typical)	2.61A@12V, full load, i7-8665UE
Dimension (L x W)	3.75" x 3.75" (95mm x 95mm)
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
Certification	CE/FCC Class A
Display	
Graphic Controller	Intel® UHD Graphics 620 / 610
Video Output	3 Simutaneous Display : Single/Dual Channel LVDS (18/24bit) or eDP, DDI x 2 (Up to 2x DDI shared with VGA)
I/O	
Ethernet	Intel® i219 GbE x 1
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8, USB 3.2 Gen 2 x 4
Serial Port	2-Wire UART (Tx/Rx) x 2
HDD Interface	SATA 3 x 2
Expansion Slot	PCIe[x1] x 4 PCIe[x4] x 1 (default) LPC SMBus I2C
GPIO	8-bit
Onboard Storage	eMMC up to 64GB (Optional)
TPM	TPM 2.0

Packing List

- COM-WHUC6

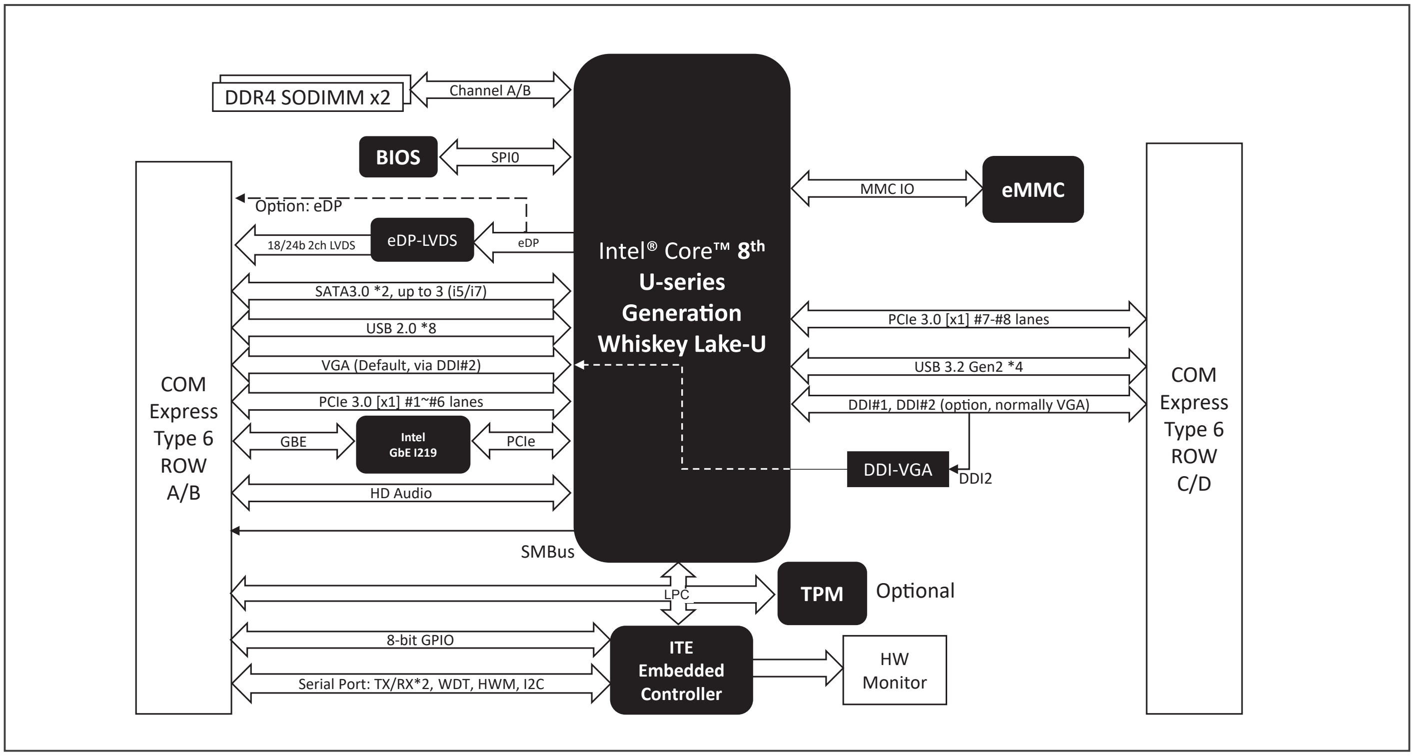
Optional Accessories

- **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-WHUC6-HSP01**
  Heat Spreader, 95 x 95 x 11mm, Black, COM-WHUC6
- **COM-WHUC6-FAN01**
  CPU Cooler, 95 x 95 x 36mm, Silver, FAN + Heat Sink for COM-WHUC6
- **COM-FAN02**
  CPU Cooler, 95 x 95 x 26.5mm, Silver, use w/HSP

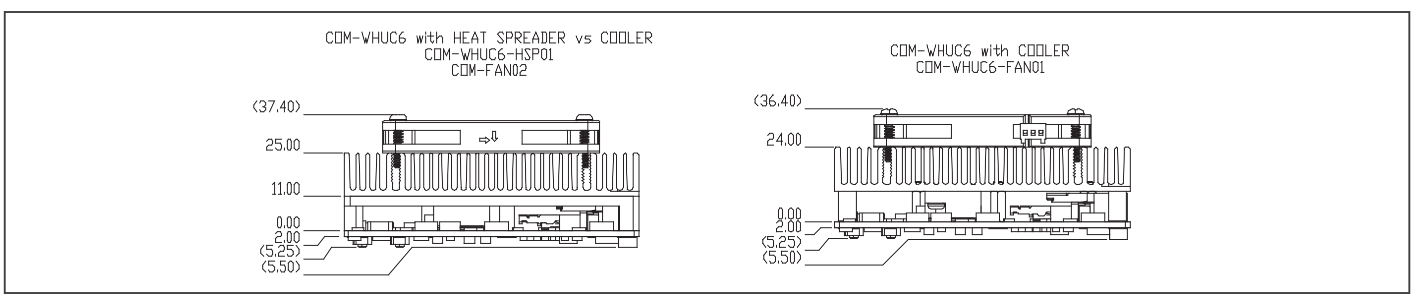
CPU Support Chart

CPU	Core / Thread	Base Frequency	Max Turbo Frequency	Graphic
i7-8665UE	4c / 8t	1.7 GHz	4.4 GHz	Intel® UHD Graphics 620
i5-8365UE	4c / 8t	1.6 GHz	4.1 GHz	Intel® UHD Graphics 620
i3-8145UE	2c / 4t	2.20 GHz	3.90 GHz	Intel® UHD Graphics 620
Celeron 4305UE	2c / 2t	2.00 GHz	2.00 GHz	Intel® UHD Graphics 610

Block Diagram Unit: mm



Dimension Unit: mm

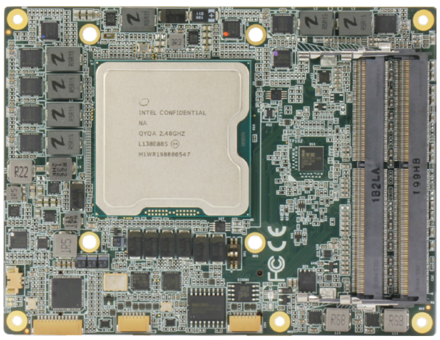


Ordering Information

Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion	Power	Temperature	Other
COM-WHUC6-A10-0001	Type 6	i7-8665UE	DDR4 SO-DIMM x 2	VGA, DDI x2, LVDS or eDP	18/24b 2ch LVDS or eDP	SATA 3 x 2 eMMC x 1 (64 GB)	GbE x 1	USB 2.0 x 8 USB 3.2 Gen 2 x 4	2-Wire (Tx/Rx) x 2	PCIe[x1] x 4 + PCIe[x4] x 1 (default), I2C x1, LPC x 1, SMBUS x 1	+12V	0°C ~ 60°C	—
COM-WHUC6-A10-0003	Type 6	i3-8145UE	DDR4 SO-DIMM x 2	VGA, DDI x2, LVDS or eDP	18/24b 2ch LVDS or eDP	SATA 3 x 2 eMMC x 1 (64 GB)	GbE x 1	USB 2.0 x 8 USB 3.2 Gen 2 x 4	2-Wire (Tx/Rx) x 2	PCIe[x1] x 4 + PCIe[x4] x 1 (default), I2C x1, LPC x 1, SMBUS x 1	+12V	0°C ~ 60°C	—

COM-ICDB7

COM Express Type 7 with Intel® 3rd Gen XEON D Processor



Features

- Intel® Idaville Platform Ice Lake-D (XEON-D) LCC series, max TDP 69W
- 2x SODIMM DDR4 Sockets, up to 64GB (ECC Support)
- Intel i210IT Gigabit Ethernet x 1
- 10GbE x 4 (via x557-AT4 on carrier board)
- SATA3.0 x 2
- USB3.2/2.0 x 4
- PCIe[x16], PCIe [x4] x 4
- 12V DC input
- COM Express Type 7, Basic size, 125mm x 95mm

Giga LAN DDR 4 USB 2.0 USB 3.2 Gen 2 PCI Express

Specifications

System	
Form Factor	PICMG COM Express R3.0, Type 7
CPU	Intel® Idaville Platform XEON-D1700 LCC Processor
CPU Frequency	Up to D-1746TER (2.0 GHz)
Chipset	SoC
Memory Type	DDR4 SODIMM Socket x2
Max. Memory Capacity	Up to 64 GB (ECC Support by sku)
BIOS	AMI BIOS (UEFI)
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12 V and +5 VSB for ATX, +12V for AT
Power Supply Type	AT (default) / ATX
Power Consumption (Typical)	7.75A @12V, D-1746TER
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 ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE / FCC Class A (Pre-test with Class B standard)
Display	
Graphic Controller	—
Video Output	—
I/O	
Ethernet	1GbE: Intel® i210IT GbE 10GbE: 4x10G Base-KR to carrier
Audio	—
USB Port	USB2.0 x 4, USB3.2 Gen1
Serial Port	2-Wire UART(Tx/Rx) x2
HDD Interface	SATA 3 x 2
Expansion Slot	PCIe [x16] x1, 4x PCIe [x4] I2C (Windows 10 Ready.) LPC SMBus
GPIO	8-bit
Onboard Storage	—
TPM	TPM 2.0

Packing List

- COM-ICDB7 x 1

Optional Accessories

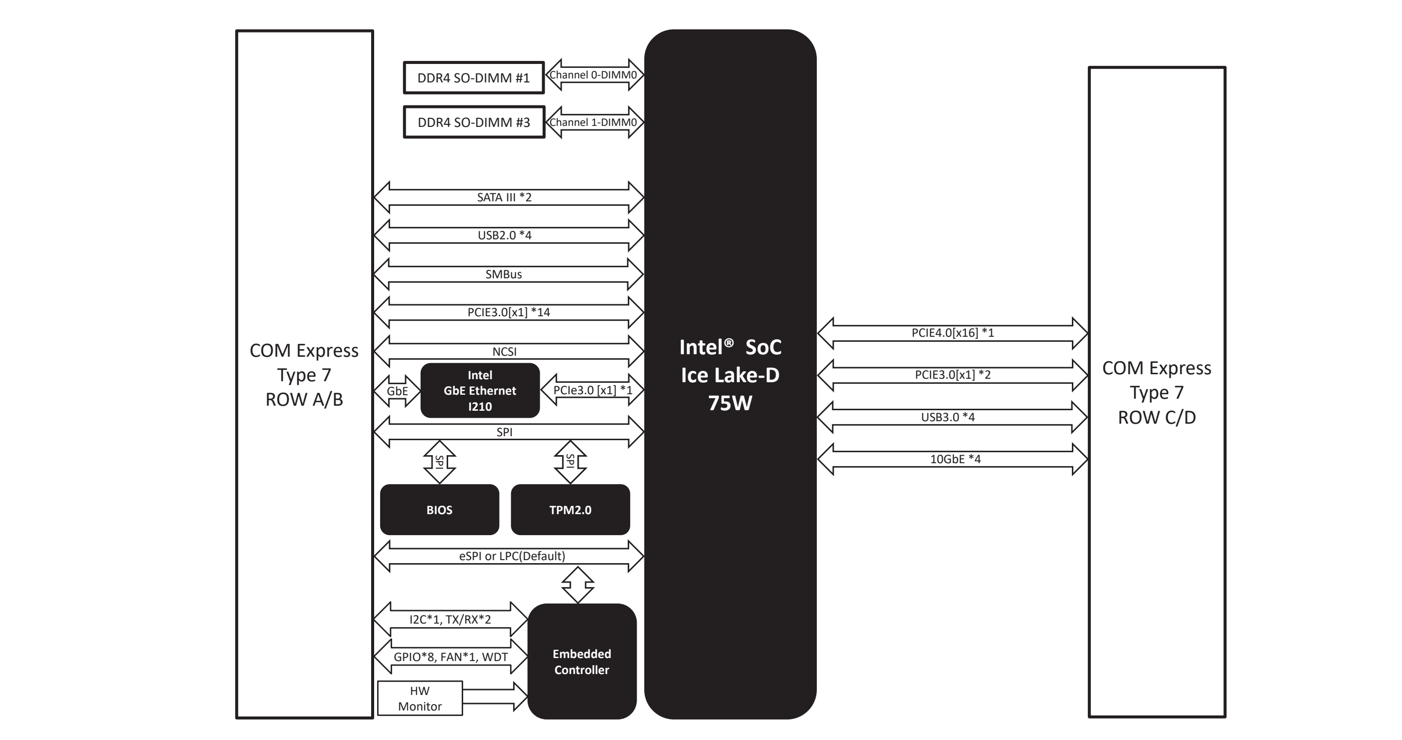
- **ECB-927A-A10-0001**
  COMe T7.Carrier Board. 4x10G via x557. 4USB3.PEG+PCIe.2COM.2SATA.AT/ATX.Rev A1.0
- **COM-ICDB7-FAN01**
  CPU Cooler.FAN+HeatSink.125*95*50mm.12V.for COM-ICDB7
- **COM-ICDB7-HSP01**
  Heat Spreader.125*95*11mm.Black.COM-ICDB7

CPU Support Chart

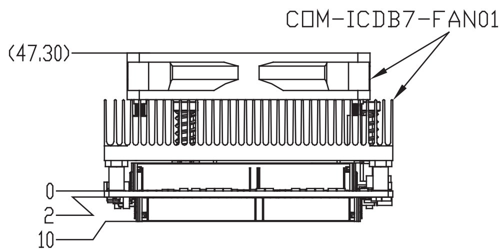
CPU	Core / Thread	Base Frequency	Max Turbo Frequency	Graphic
D-1746TER	10c/10t	2.0	3.1	—
D-1735TR	8c/8t	2.2	3.4	—
D-1732TE	8c/8t	1.9	3.0	—
D-1715TER	4c/4t	2.4	3.5	—
D-1712TR	4c/4t	2.0	3.1	—

Note: All specifications are subject to change without notice.

Block Diagram Unit: mm



Dimension Unit: mm

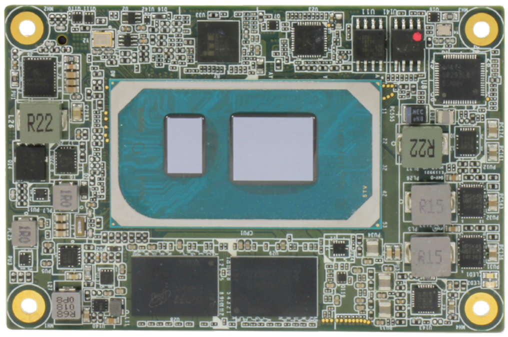


Ordering Information

Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion	Power	Temperature	Other
COM-ICDB7-A10-0001	COM Express R3.0, Type 7	D-1746TER,10c	DDR4 SODIMM x 2	—	—	SATA 3 x 2	1GbE: Intel® i210IT GbE 10GbE: 4x 10G Base-KR	USB2.0 x 4, USB3.2 Gen1	2-Wire UART(Tx/Rx) x2	PCIe [x16] x1, 4x PCIe [x4]	+12V	0°C ~ 60°C	LPC, SMBus, I2C, GPIO 8bit
COM-ICDB7-A10-0002	COM Express R3.0, Type 7	D-1735TR,8c	DDR4 SODIMM x 2	—	—	SATA 3 x 2	1GbE: Intel® i210IT GbE 10GbE: 4x 10G Base-KR	USB2.0 x 4, USB3.2 Gen1	2-Wire UART(Tx/Rx) x2	PCIe [x16] x1, 4x PCIe [x4]	+12V	0°C ~ 60°C	LPC, SMBus, I2C, GPIO 8bit
COM-ICDB7-A10-0003	COM Express R3.0, Type 7	D-1732TE,8c	DDR4 SODIMM x 2	—	—	SATA 3 x 2	1GbE: Intel® i210IT GbE 10GbE: 4x 10G Base-KR	USB2.0 x 4, USB3.2 Gen1	2-Wire UART(Tx/Rx) x2	PCIe [x16] x1, 4x PCIe [x4]	+12V	0°C ~ 60°C	LPC, SMBus, I2C, GPIO 8bit
COM-ICDB7-A10-0004	COM Express R3.0, Type 7	D-1715TER,4c	DDR4 SODIMM x 2	—	—	SATA 3 x 2	1GbE: Intel® i210IT GbE 10GbE: 4x 10G Base-KR	USB2.0 x 4, USB3.2 Gen1	2-Wire UART(Tx/Rx) x2	PCIe [x16] x1, 4x PCIe [x4]	+12V	0°C ~ 60°C	LPC, SMBus, I2C, GPIO 8bit
COM-ICDB7-A10-0005	COM Express R3.0, Type 7	D-1712TR,4c	DDR4 SODIMM x 2	—	—	SATA 3 x 2	1GbE: Intel® i210IT GbE 10GbE: 4x 10G Base-KR	USB2.0 x 4, USB3.2 Gen1	2-Wire UART(Tx/Rx) x2	PCIe [x16] x1, 4x PCIe [x4]	+12V	0°C ~ 60°C	LPC, SMBus, I2C, GPIO 8bit

NanoCOM-TGU

COM Express Type 10 with 11th Generation Intel® Core™ Processor



Features

- 11th Generation Intel® Core™ Processor
- Onboard Memory LPDDR4x, up to 16GB
- Intel i225LM 2.5GbE x 1
- eDP x 1, DDI x 1
- SATA3 x 2 , onboard PCIe SSD x 1
- USB 2.0 x 8, USB 3.2 10Gbps x 2
- PCIe [x1] x 4
- COM Express Type 10, Mini Size, 84 mm x 55 mm

Specifications

System	
Form Factor	COM Express Mini size, Type 10
CPU	11th Generation IntelCore™ Processor
CPU Frequency	Up to i7-1185G7E, 1.8GHz
Chipset	11th Generation Intel® Core™ SoC
Memory Type	Onboard LPDDR4x
Max. Memory Capacity	16 GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12 V and +5 VSB for ATX, +12V for AT
Power Supply Type	AT/ATX
Power Consumption (Typical)	2.75A@12V, full load, i7-1185GRE
Dimension (L x W)	3.31" x 2.17" (84mm x 55mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) Option
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC
Display	
Graphic Controller	—
Video Output	Dual Display: eDP, DDI x 1
I/O	
Ethernet	Intel i225LM 2.5GbE x 1
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8, USB 3.2 10Gbps x 2
Serial Port	2-Wire UART (Tx/Rx) x 2
HDD Interface	SATA 3 x 2
Expansion Slot	PCIe [x1] x 4 LPC x 1 SMBus x 1 I2C x 1
GPIO	8-bit
Onboard Storage	NVMe, up to 256GB
TPM	fTPM

Packing List

- NanoCOM-TGU

Optional Accessories

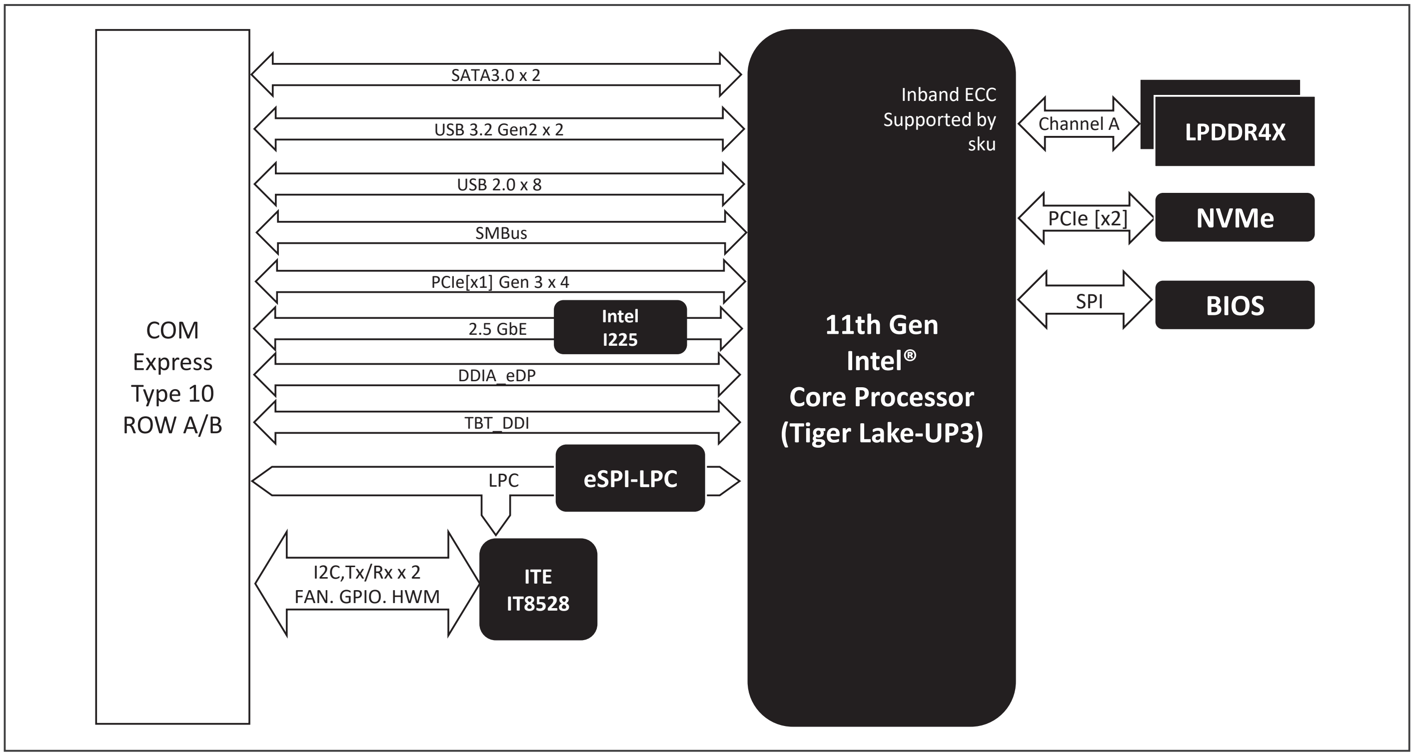
- **NanoCOM-TGU-FAN01**
  CPU cooler.84*55*18 mm.Black.NanoCOM-TGU
- **NanoCOM-TGU-HSP01**
  Heat Spreader.84x55x11mm.Black.for NanoCOM-TGU
- **ECB-920A-A11-0001**
  COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB, 2COM.4SATA.PCIe.AT/ATX.Rev. A1.1

CPU Support Chart

CPU	Core / Thread	Base Frequency / Turbo	TDP	In-band ECC	Operating Temp.
i7-1185G7E	4/8	1.8 GHz / 4.4 GHz	15W (Up to 28W)	No	Commercial Temp.
i5-1145G7E	4/8	1.5 GHz / 4.1 GHz		No	Commercial Temp.
i3-1115G4E	2/4	2.2 GHz / 3.9 GHz		No	Commercial Temp.
i7-1185GRE	4/8	1.8 GHz / 4.4 GHz		Yes	Embedded/Industrial Extended Temp.
i5-1145GRE	4/8	1.5 GHz / 4.1 GHz		Yes	Embedded/Industrial Extended Temp.
i3-1115GRE	2/4	2.2 GHz / 3.9 GHz		Yes	Embedded/Industrial Extended Temp.
Celeron 6305E	2/2	1.8 GHz / ---	15W	No	Commercial Temp.

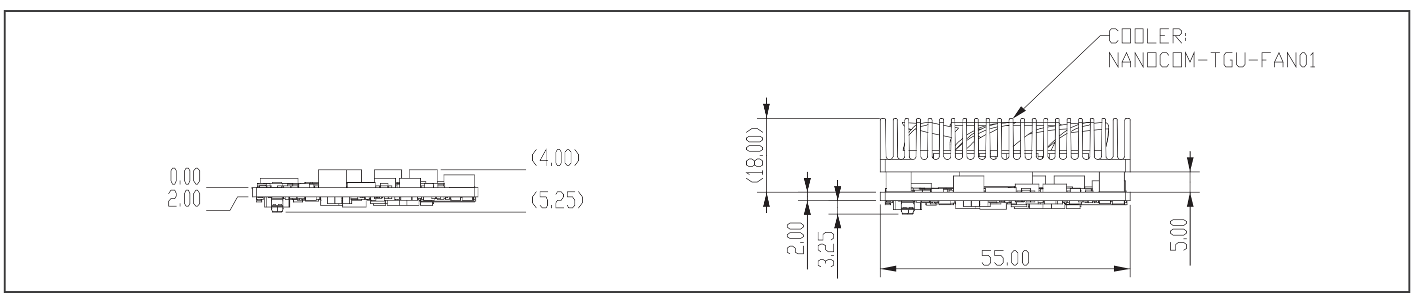
Block Diagram

Unit: mm



Dimension

Unit: mm



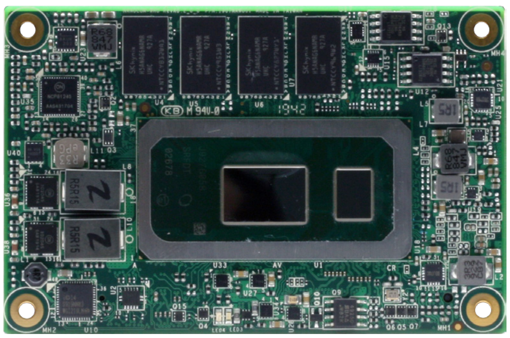
Ordering Information

Part number	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
NANOCOM-TGU-A10-0001	i7-1187G7E	16GB	eDP x 1, DDI x 1	—	SATA3 x 2, 64GB NVMe	2.5GbE x 1	USB 3.2 10Gbps x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	—
NANOCOM-TGU-A10-0002	i5-1145G7E	16GB	eDP x 1, DDI x 1	—	SATA3 x 2, 64GB NVMe	2.5GbE x 1	USB 3.2 10Gbps x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	—
NANOCOM-TGU-A10-0003	i3-1115G4E	8GB	eDP x 1, DDI x 1	—	SATA3 x 2, 64GB NVMe	2.5GbE x 1	USB 3.2 10Gbps x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	—
NANOCOM-TGU-A10-0005	i7-1185GRE	16GB	eDP x 1, DDI x 1	—	SATA3 x 2, 64GB NVMe	2.5GbE x 1	USB 3.2 10Gbps x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	—

Temperature * : For SATA only, no include onboard PCIe NVMe. Please contact technical team if any question.

NanoCOM-WHU

COM Express Type 10 with 8th Generation Intel® Core™ U Series Processor



Features

- 8th Generation Intel® Core™/Celeron™ U Series Processor (formerly Whiskey Lake)
- Onboard Memory DDR4 2400, up to 8GB
- Intel i219LM Gigabit Ethernet x 1
- eDP x 1 , DDI x 1
- High Definition Audio Interface
- SATA3 x 2
- USB2.0 x 8, USB 3.2 Gen 2 x 2
- PCIe [x1] x 4
- COM Express Mini Size, Type 10, COM.0 R3.0

1000 Giga LAN HD Audio DDR 4 USB 2.0 USB 3.2 Gen 2 PCIe PCI Express CE FC

Specifications

System	
Form Factor	COM Express Mini size, Type 10
CPU	8th Generation Intel® Core™/Celeron™ U Series Processor
CPU Frequency	Up to i5-8365UE, 1.60GHz
Chipset	8th Generation Intel® Core™/Celeron™ U Series SoC
Memory Type	Onboard DDR4
Max. Memory Capacity	8GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12 V and +5 VSB for ATX, +12V for AT
Power Supply Type	AT/ATX
Power Consumption (Typical)	2.23A@12V, full load, i5-8365UE
Dimension (L x W)	3.31" x 2.17" (84 mm x 55 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) Option
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A
Display	
Graphic Controller	Intel® UHD Graphics 620 / 610
Video Output	Dual Display: eDP, DDI x1
I/O	
Ethernet	Intel® i219LM GbE x 1
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8, USB 3.2 Gen 2 x 2
Serial Port	2-Wire UART (Tx/Rx) x 2
HDD Interface	SATA 3 x 2
Expansion Slot	PCIe[x1] x 4 LPC SMBus I2C
GPIO	8-bit
Onboard Storage	eMMC up to 64GB (Optional)
TPM	fTPM

Packing List

- NanoCOM-WHU x 1

Optional Accessories

- **ECB-920A-A11-0001**
  COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX.Rev. A1.1
- **NanoCOM-WHU-HSP01**
  Heat Spreader, 84 x 55 x 11 mm, Black, NanoCOM-WHU
- **NanoCOM-WHU-FAN01**
  CPU Cooler, 84 x 55 x 18 mm, Black, NanoCOM-WHU

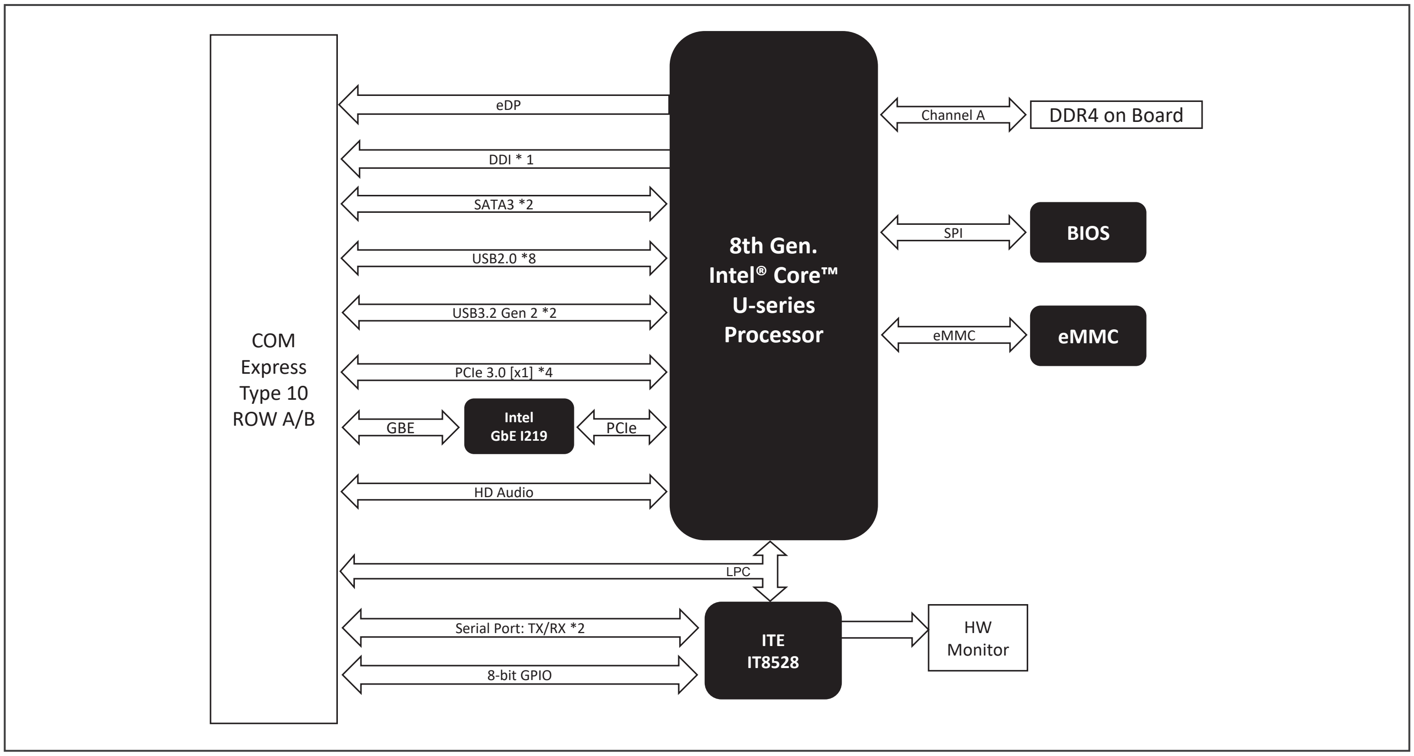
CPU Support Chart

CPU	Core/Thread	Base Frequency/ Turbo	TDP	Graphic
i5-8365UE	4C/8T	1.60GHz / 4.10GHz	15W	Intel® UHD Graphics 620
i3-8145UE	2C/4T	2.20GHz / 3.90GHz	15W	Intel® UHD Graphics 620
Celeron 4305UE	2C/2T	2.00GHz	15W	Intel® UHD Graphics 610

Note: All specifications are subject to change without notice.

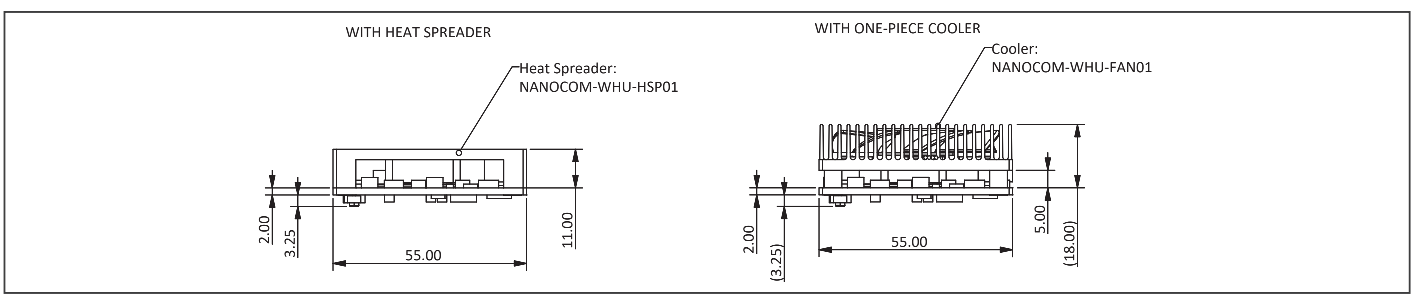
Block Diagram

Unit: mm



Dimension

Unit: mm

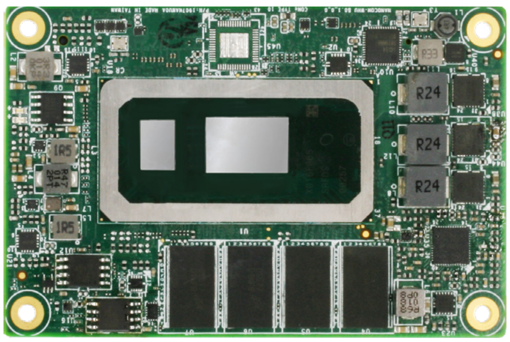


Ordering Information

PART NUMBER	COM EXPRESS TYPE	CPU	MEMORY	DISPLAY	LVDS	STORAGE	LAN	USB	UART	EXPANSION	POW-ER	TEMPERA-TURE	OTHERS
NANOCOM-WHU-A10-0002	Type 10 (COM.0 Rev. 3.0)	i5-8365UE	Onboard DDR4 8GB	eDP, DDI x 1	—	SATA3 x 2 , eMMC 64GB	GbE x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	LPC, SMBus, I2C
NANOCOM-WHU-A10-0003	Type 10 (COM.0 Rev. 3.0)	i3-8145UE	Onboard DDR4 8GB	eDP, DDI x 1	—	SATA3 x 2 , eMMC 64GB	GbE x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	LPC, SMBus, I2C
NANOCOM-WHU-A10-0004	Type 10 (COM.0 Rev. 3.0)	Celeron 4305UE	Onboard DDR4 4GB	eDP, DDI x 1	—	SATA3 x 2 , eMMC 32GB	GbE x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	LPC, SMBus, I2C

NanoCOM-WHU Rev.B

COM Express Type 10 with 8th Generation Intel® Core™ U Series Processor



Features

- 8th Generation Intel® Core™/Celeron™ U Series Processor (formerly Whiskey Lake)
- Onboard Memory DDR4 2400, up to 8GB
- Intel i219LM Gigabit Ethernet x 1
- 18/24-bit Single-Channel LVDS LCDs/eDP x 1 , DDI x 1
- High Definition Audio Interface
- SATA3 x 2
- USB2.0 x 8, USB 3.2 Gen 2 x 2
- PCIe [x1] x 4
- COM Express Mini Size, Type 10, COM.0 R3.0

Gigo LAN HD Audio DDR 4 USB 2.0 USB 3.2 Gen 2 PCI Express

Specifications

System	
Form Factor	COM Express Mini size, Type 10
CPU	8th Generation Intel® Core™/Celeron™ U Series Processor
CPU Frequency	Up to i7-8665UE, 1.70GHz
Chipset	8th Generation Intel® Core™/Celeron™ U Series SoC
Memory Type	Onboard DDR4
Max. Memory Capacity	8GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12 V and +5 VSB for ATX, +12V for AT
Power Supply Type	AT/ATX
Power Consumption (Typical)	2.10A@12V, full load, i7-8665UE
Dimension (L x W)	3.31" x 2.17" (84 mm x 55 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) Option
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A
Display	
Graphic Controller	Intel® UHD Graphics 620 / 610
Video Output	Dual Display : LVDS LCD/eDP, DDI x 1 Single Channel LVDS (18/24 bit)
I/O	
Ethernet	Intel® i219 GbE x 1
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8, USB 3.2 Gen2 x 2
Serial Port	2-Wire UART (Tx/Rx) x 2
HDD Interface	SATA 3 x 2
Expansion Slot	PCIe[x1] x 4 LPC SMBus I2C
GPIO	8-bit
Onboard Storage	—
TPM	fTPM

Packing List

- NanoCOM-WHU Rev.B x 1

Optional Accessories

- **ECB-920A-A11-0001**
  COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX.Rev. A1.1
- **NanoCOM-WHU-HSP01**
  Heat Spreader, 84 x 55 x 11 mm, Black, NanoCOM-WHU
- **NanoCOM-WHU-FAN01**
  CPU Cooler, 84 x 55 x 18 mm, Black, NanoCOM-WHU

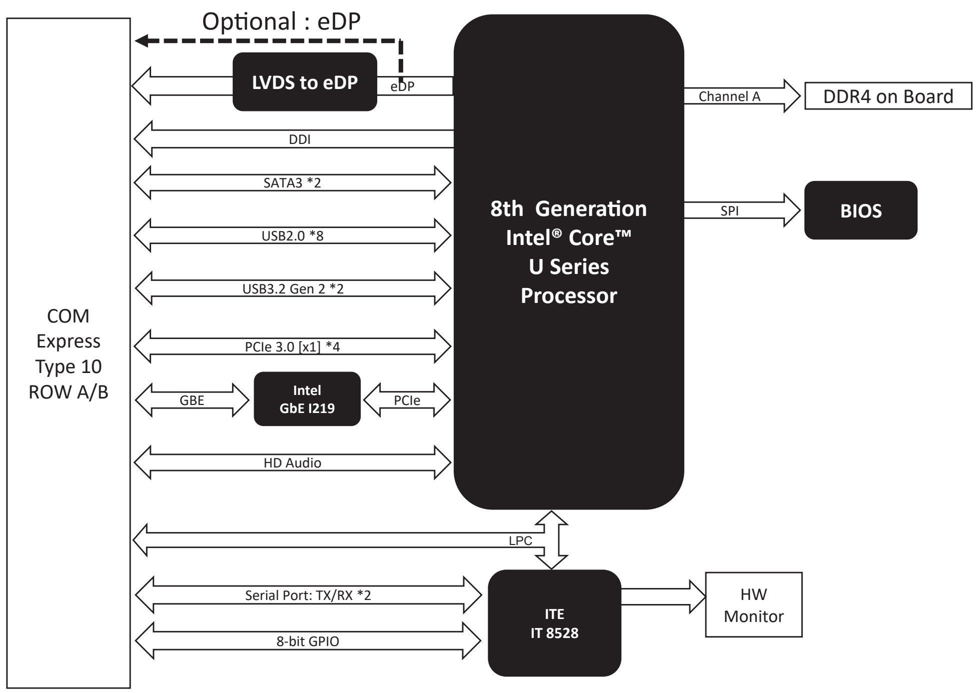
CPU Support Chart

CPU	Core/Thread	Base Frequency/ Turbo	TDP	Graphic
i7-8655UE	4C/8T	1.70GHz / 4.40GHz	15W	Intel® UHD Graphics 620
i5-8365UE	4C/8T	1.60GHz / 4.10GHz	15W	Intel® UHD Graphics 620
i3-8145UE	2C/4T	2.20GHz / 3.90GHz	15W	Intel® UHD Graphics 620
Celeron 4305UE	2C/2T	2.00GHz	15W	Intel® UHD Graphics 610

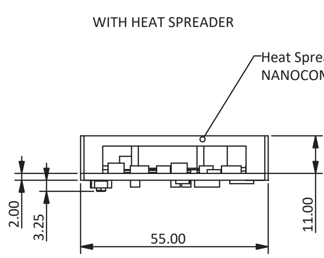
Note: All specifications are subject to change without notice.

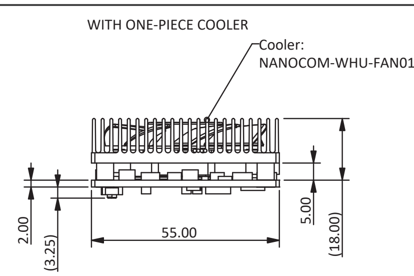
NanoCOM-WHU Rev.B

Block Diagram Unit: mm



Dimension Unit: mm



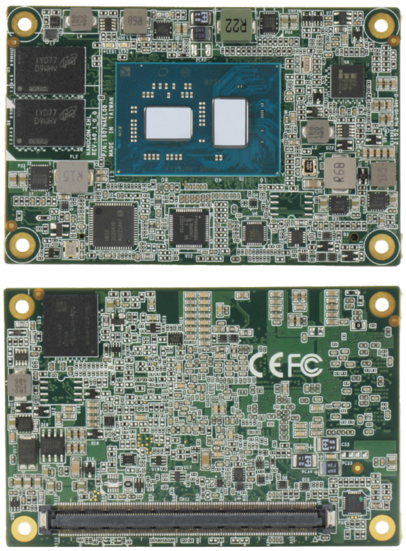


Ordering Information

PART NUMBER	COM EXPRESS TYPE	CPU	MEMORY	DISPLAY	LVDS	STORAGE	LAN	USB	UART	EXPANSION	POWER	TEMPERATURE	OTHERS
NANOCOM-WHU-B10-0001	Type 10 (COM.0 Rev. 3.0)	i7-8665UE	Onboard DDR4 8GB	LVDS, DDI x 1	18/24bits 1CH LVDS	SATA3 x 2	GbE x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	LPC, SMBus, I2C

NanoCOM-EHL

COM Express Type 10 CPU Module with Onboard Intel® Atom®/Celeron®/Pentium®Processor



Features

- Intel Atom® x6000E,Pentium®, Celeron® series Processor
- Onboard Memory LPDDR4, up to 16GB
- Intel i226IT 2.5GbE x 1
- 18/24-bit Single Channel LVDS/eDP, DDI x 1
- SATA3 x 2 , Onboard eMMC up to 64GB (Optional)
- USB 2.0 x 8, USB 3.2 10Gbps x 2
- PCIe [x1] x 4
- COM Express Mini Size, Type 10, COM.0 R2.1

Giga LAN LVDS DDR 4 USB 2.0 USB 3.2 Gen 1 HD Audio PCI Express

Specifications

System	
Form Factor	COM Express Mini size, Type 10
CPU	Intel Atom® x6000E, Pentium® and Celeron® series Processor
CPU Frequency	Up to x6425E, 2.0GHz
Chipset	SoC
Memory Type	Onboard LPDDR4
Max. Memory Capacity	16 GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12 V and +5 VSB for ATX, +12V for AT
Power Supply Type	AT/ATX
Power Consumption (Typical)	1.44A@12V, full load, x6425E
Dimension (L x W)	3.31" x 2.17" (84mm x 55mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A
Display	
Graphic Controller	Intel® UHD Graphics for 10th Gen Intel® Processors
Video Output	Dual Display : LVDS LCD/eDP, DDI x 1 Single Channel LVDS (18/24 bit)
I/O	
Ethernet	Intel i226IT 2.5GbE x 1
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8, USB 3.2 10Gbps x 2
Serial Port	2-Wire UART (Tx/Rx) x 2
HDD Interface	SATA 3 x 2
Expansion Slot	PCIe [x1] x 4 LPC SMBus I2C
GPIO	8-bit
Onboard Storage	eMMC up to 64GB (Optional)
TPM	fTPM

Packing List

- NanoCOM-EHL x 1

Optional Accessories

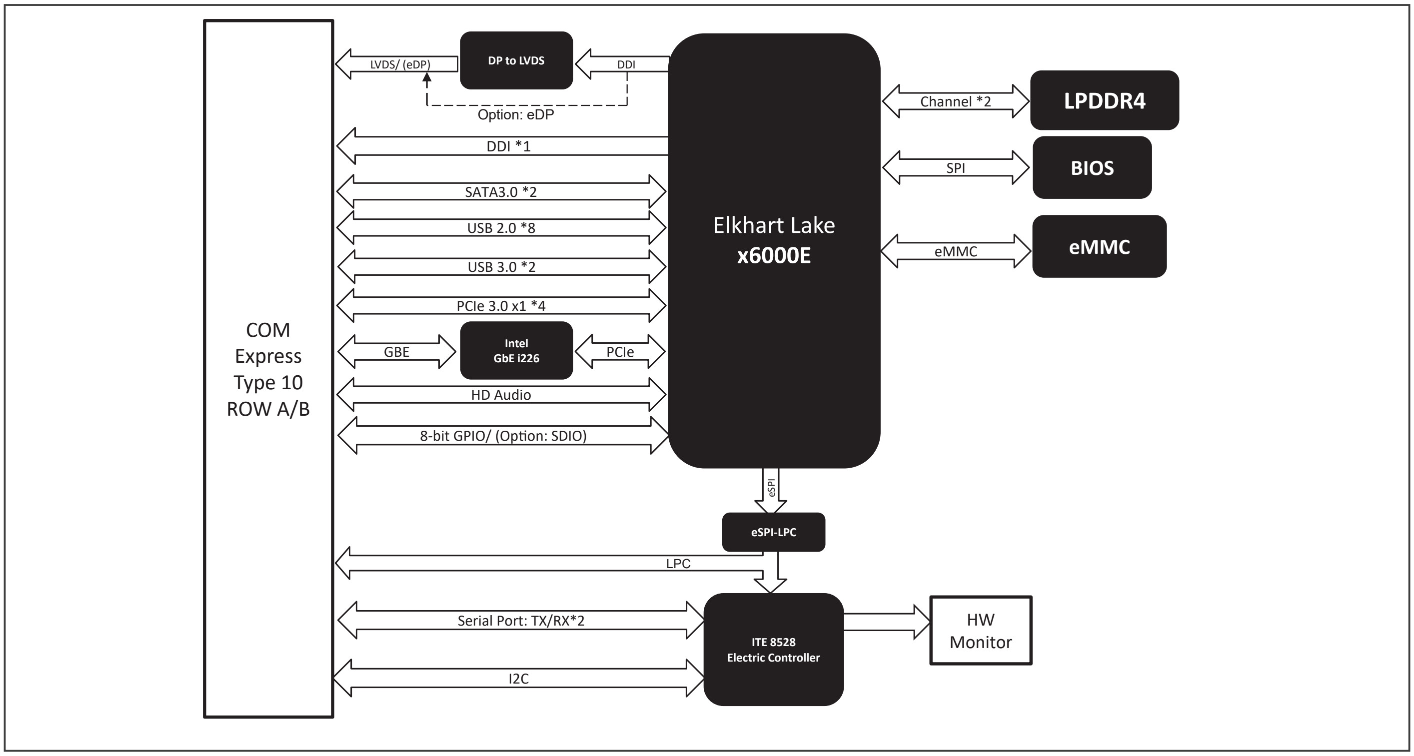
- **ECB-920A-A11-0001**
  COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX.Rev. A1.1
- **NanoCOM-EHL-FAN01**
  CPU cooler.84 x 55 x 18 mm.Black, NanoCOM-EHL for x6000E series
- **NanoCOM-EHL-FAN02**
  CPU cooler.84 x 55 x 18 mm.Black, NanoCOM-EHL for N, J series

CPU Support Chart

CPU	Core/Thread	Base Frequency/ Turbo	TDP	Graphic	Extend Temp.
N6211	2C/2T	1.2 / 3.0 GHz	6.5W	Intel® UHD Graphics, 16 EU	0°C to 70°C
J6412	4C/4T	2.0 / 2.6 GHz	10W	Intel® UHD Graphics, 16 EU	0°C to 70°C
J6426	4C/4T	2.0 / 3.0 GHz	10W	Intel® UHD Graphics, 32 EU	0°C to 70°C
x6211E	2C/2T	1.3 / 3.0 GHz	6W	Intel® UHD Graphics ,16 EU	0°C to 70°C
x6413E	4C/4T	1.5 / 3.0 GHz	9W	Intel® UHD Graphics ,16 EU	-40°C to 85°C
x6425E	4C/4T	2.0 / 3.0 GHz	12W	Intel® UHD Graphics ,32 EU	-40°C to 85°C
x6212RE	2C/2T	1.2 GHz	6W	Intel® UHD Graphics ,16 EU	-40°C to 85°C
x6425RE	4C/4T	1.90 GHz	12W	Intel® UHD Graphics ,32 EU	-40°C to 85°C

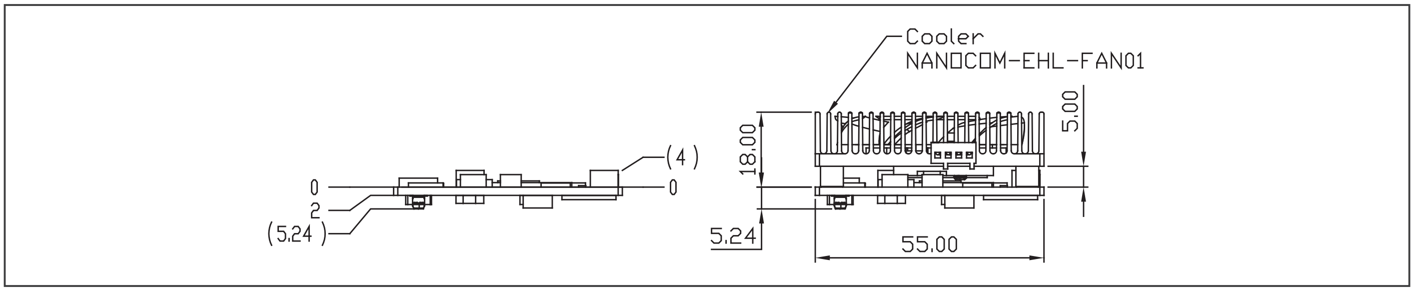
Block Diagram

Unit: mm



Dimension

Unit: mm

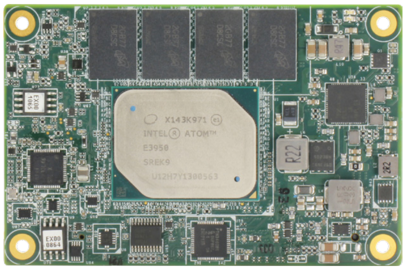


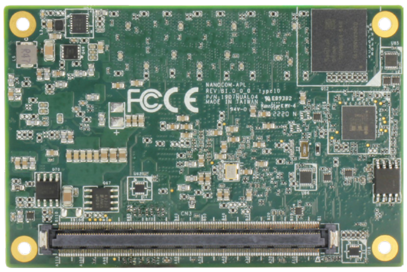
Ordering Information

Part number	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
NANOCOM-EHL-A11-0002	J6412	8GB	LVDS x 1, DDI x 1	18/24bits 1CH LVDS	SATA3 x 2, 32GB	2.5GbE x 1	USB 3.2 10Gbps x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	LPC, SMBus, I2C
NANOCOM-EHL-A11-0003	J6426	16GB	LVDS x 1, DDI x 1	18/24bits 1CH LVDS	SATA3 x 2, 64GB	2.5GbE x 1	USB 3.2 10Gbps x 2USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	LPC, SMBus, I2C
NANOCOM-EHL-A11-0004	x6211E	16GB	LVDS x 1, DDI x 1	18/24bits 1CH LVDS	SATA3 x 2, 32GB	2.5GbE x 1	USB 3.2 10Gbps x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	LPC, SMBus, I2C
NANOCOM-EHL-A11-0005	x6413E	8GB	LVDS x 1, DDI x 1	18/24bits 1CH LVDS	SATA3 x 2, 64GB	2.5GbE x 1	USB 3.2 10Gbps x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	LPC, SMBus, I2C
NANOCOM-EHL-A11-0006	X6425E	8GB	LVDS x 1, DDI x 1	18/24bits 1CH LVDS	SATA3 x 2, 64GB	2.5GbE x 1	USB 3.2 10Gbps x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	LPC, SMBus, I2C

NanoCOM-APL-B10

COM Express Type 10 CPU Module with Onboard Intel® Atom®/Celeron®/Pentium®Processor





Features

- Intel® Atom®/Celeron®/Pentium® Processor
- Onboard Memory LPDDR4 up to 8GB
- Intel i226IT 2.5GbE x 1
- 18/24-bit Single Channel LVDS/eDP, DDI x 1
- SATA3 x 2 , Onboard eMMC up to 64GB (Optional)
- USB 2.0 x 8 , USB 3.2 Gen 1 x 2
- PCIe [x1] x 4
- COM Express Mini Size, Type 10, COM.0 R2.1

1000 Giga LAN | LVDS | DDR 4 | USB 2.0 | USB 3.2 Gen 1 | HD Audio | PCI Express

Specifications

System	
Form Factor	COM Express, Mini size, Type 10
CPU	Intel® Atom®/Celeron®/Pentium® Processor
CPU Frequency	Up to N4200, 2.00GHz
Chipset	Intel® Atom™/Celeron®/Pentium® SoC
Memory Type	Onboard LPDDR4
Max. Memory Capacity	8GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12 V and +5 VSB for ATX, +12V for AT
Power Supply Type	AT/ATX
Power Consumption (Typical)	0.6A@12V, full load, N4200
Dimension (L x W)	3.31" x 2.17" (84mm x 55mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) Option
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A
Display	
Graphic Controller	Intel® HD Graphic 505/500
Video Output	Dual Display : LVDS LCD/eDP, DDI x 1 Single Channel LVDS (18/24 bit)
I/O	
Ethernet	Intel® i226IT 2.5GbE x 1
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8, USB 3.2 Gen 1 x 2
Serial Port	2-Wire UART (Tx/Rx) x 2
HDD Interface	SATA3 x 2
Expansion Slot	PCIe [x1] x 4 (up to 3 devices) LPC SMBus I2C
GPIO	8-bit from PCH
Onboard Storage	eMMC up to 64GB (Optional)
TPM	fTPM

Packing List

- **NanoCOM-APL-B10**

Optional Accessories

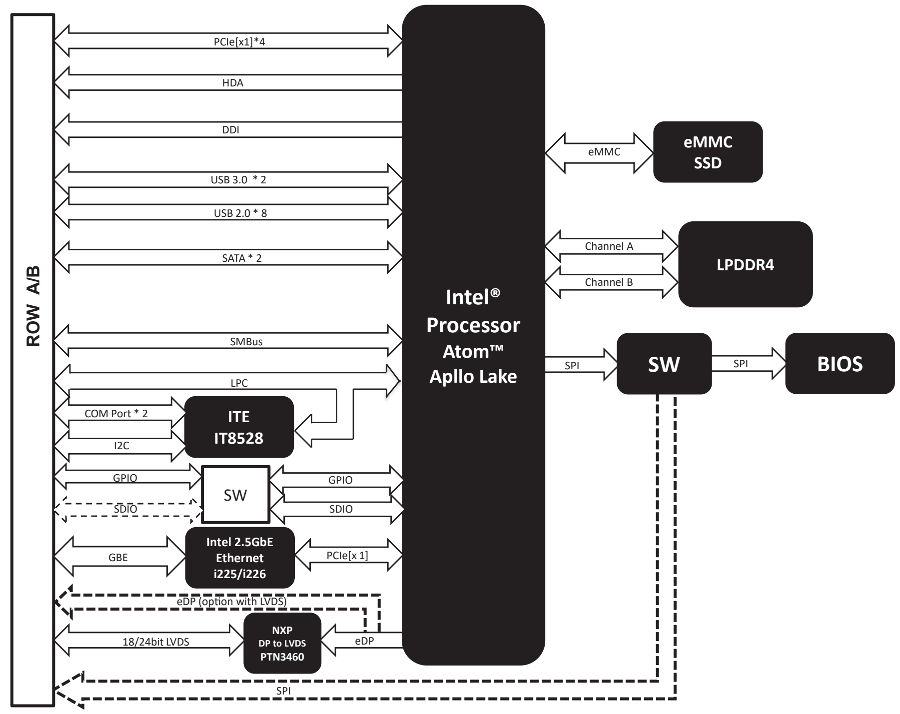
- **ECB-920A-A11-0001**
  COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX.Rev. A1.1
- **NanoCOM-APL-E-HSP01**
  Heat Spreader 84 x 55 x 11 mm, Black, NanoCOM-APL For E39xx CPU only
- **NanoCOM-APL-N-HSP01**
  Heat Spreader 84 x 55 x 11 mm, Black, NanoCOM-APL For Nxxx CPU only
- **NANOCOM-APL-E-FAN01**
  CPU Cooler.12V.4P.84 x 55 x 18mm.Black

CPU Support Chart

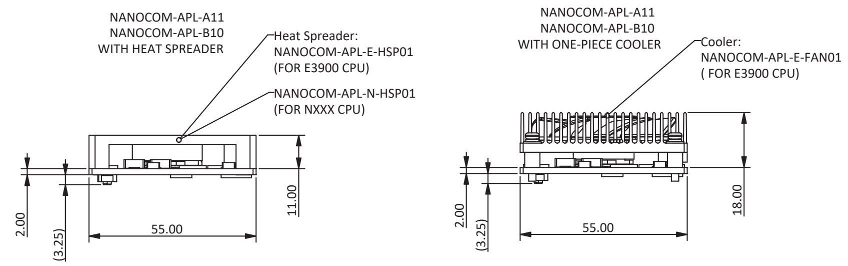
CPU	Core/Thread	Base Frequency/Turbo	TDP	Graphic
N4200	4C/4T	1.10GHz / 2.50GHz	6W	Intel® HD Graphics 505
N3350	2C/2T	1.10GHz / 2.40GHz	6W	Intel® HD Graphics 500
E3950	4C/4T	1.60GHz / 2.00GHz	12W	Intel® HD Graphics 505
E3940	4C/4T	1.60GHz / 1.80GHz	9.5W	Intel® HD Graphics 500
E3930	2C/2T	1.20GHz / 1.80GHz	6.5W	Intel® HD Graphics 500

Note: All specifications are subject to change without notice.

Block Diagram Unit: mm



Dimension Unit: mm

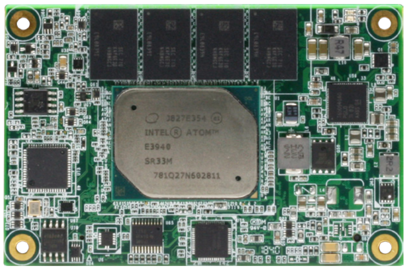


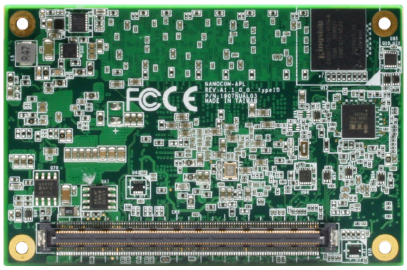
Ordering Information

Part number	COM EXPRESS TYPE	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	EXPANSION	Power	TEMPERATURE	Others
NANOCOM-APL-B10-0001	Type 10(COM.0 Rev 2.1)	N4200	Onboard LPDDR4 8GB	LVDS, DDI x 1	18/24bits 1CH LVDS	SATA3 x 2, 64GB eMMC	2.5GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	LPC, SMBus, I2C
NANOCOM-APL-B10-0002	Type 10(COM.0 Rev 2.1)	N3350	Onboard LPDDR4 4GB	LVDS, DDI x 1	18/24bits 1CH LVDS	SATA3 x 2, 64GB eMMC	2.5GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	LPC, SMBus, I2C
NANOCOM-APL-B10-0003	Type 10(COM.0 Rev 2.1)	E3950	Onboard LPDDR4 8GB	LVDS, DDI x 1	18/24bits 1CH LVDS	SATA3 x 2, 64GB eMMC	2.5GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	LPC, SMBus, I2C
NANOCOM-APL-B10-0004	Type 10(COM.0 Rev 2.1)	E3940	Onboard LPDDR4 4GB	LVDS, DDI x 1	18/24bits 1CH LVDS	SATA3 x 2, 32GB eMMC	2.5GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	LPC, SMBus, I2C
NANOCOM-APL-B10-0005	Type 10(COM.0 Rev 2.1)	E3930	Onboard LPDDR4 4GB	LVDS, DDI x 1	18/24bits 1CH LVDS	SATA3 x 2, 16GB eMMC	2.5GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x 4	12V	0°C - 60°C	LPC, SMBus, I2C

NanoCOM-APL

COM Express Type 10 CPU Module with Onboard Intel® Atom®/Celeron®/Pentium®Processor





Features

- Intel® Atom®/Celeron®/Pentium® Processor
- Onboard Memory LPDDR4 up to 8GB
- Intel i210 Gigabit Ethernet x 1
- 18/24-bit Single Channel LVDS/eDP, DDI x 1
- SATA3 x 2 , Onboard eMMC up to 64GB (Optional)
- USB 2.0 x 8 , USB 3.2 Gen 1 x 2
- PCIe [x1] x 4
- COM Express Mini Size, Type 10, COM.0 R2.1

1000 Giga LAN | LVDS | DDR 4 | USB 2.0 | USB 3.2 Gen 1 | HD Audio | PCI Express

Specifications

System	
Form Factor	COM Express, Mini size, Type 10
CPU	Intel® Atom™/Celeron®/Pentium® Processor
CPU Frequency	Up to J1900, 2.00GHz
Chipset	Intel® Atom™/Celeron®/Pentium® SoC
Memory Type	Onboard LPDDR4
Max. Memory Capacity	8GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12 V and +5 VSB for ATX, +12V for AT
Power Supply Type	AT/ATX
Power Consumption (Typical)	0.82A@12V, full load, E3950
Dimension (L x W)	3.31" x 2.17" (84mm x 55mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) Option
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A
Display	
Graphic Controller	Intel® HD Graphic 505/500
Video Output	Dual Display : LVDS LCD/eDP, DDI x 1 Single Channel LVDS (18/24 bit)
I/O	
Ethernet	Intel® i210AT GbE x 1
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8, USB 3.2 Gen 1 x 2
Serial Port	2-Wire UART (Tx/Rx) x 2
HDD Interface	SATA 3 x 2
Expansion Slot	PCIe [x1] x 4 (up to 3 devices) LPC SMBus I2C
GPIO	8-bit
Onboard Storage	eMMC up to 64GB (Optional)
TPM	—

Packing List

- NanoCOM-APL

Optional Accessories

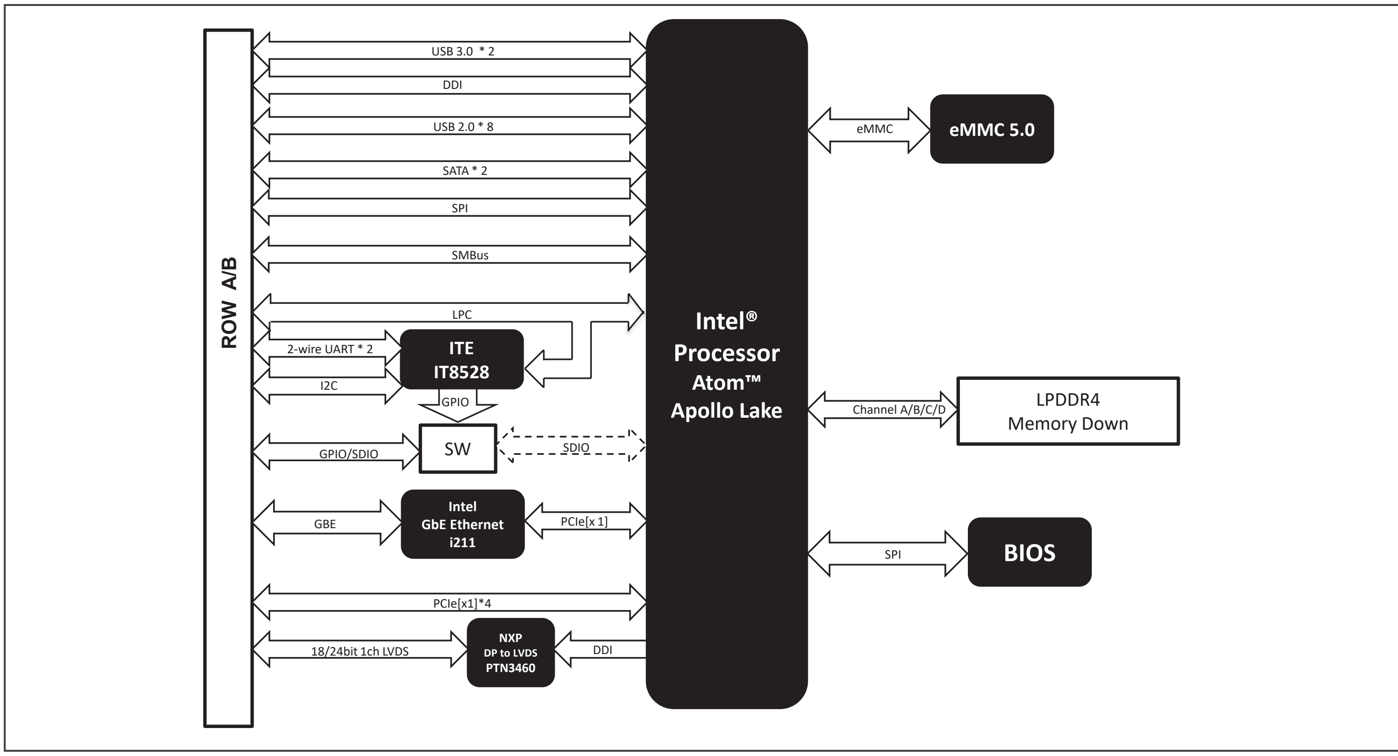
- **ECB-920A-A11-0001**
  COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX.Rev. A1.1
- **NanoCOM-APL-E-HSP01**
  Heat Spreader 84 x 55 x 11 mm, Black, NanoCOM-APL For E39xx CPU only
- **NanoCOM-APL-N-HSP01**
  Heat Spreader 84 x 55 x 11 mm, Black, NanoCOM-APL For Nxxx CPU only
- **NANOCOM-APL-E-FAN01**
  CPU Cooler.12V.4P.84*55*18mm.for NANOCOM-APL E39XX Series

CPU Support Chart

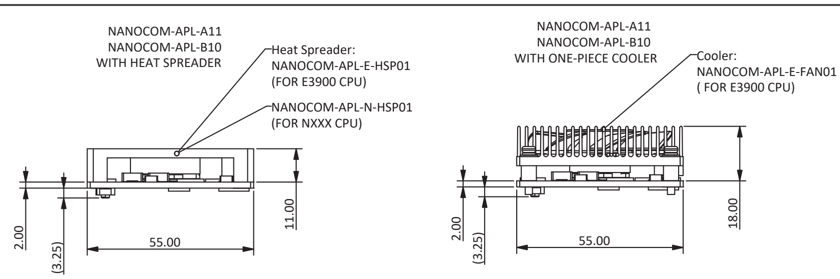
CPU	Core/Thread	Base Frequency/Turbo	TDP	Graphic
N4200	4C/4T	1.10GHz / 2.50GHz	6W	Intel® HD Graphics 505
N3350	2C/2T	1.10GHz / 2.40GHz	6W	Intel® HD Graphics 500
E3950	4C/4T	1.60GHz / 2.00GHz	12W	Intel® HD Graphics 505
E3940	4C/4T	1.60GHz / 1.80GHz	9.5W	Intel® HD Graphics 500
E3930	2C/2T	1.20GHz / 1.80GHz	6.5W	Intel® HD Graphics 500
J3455	4C/4T	1.50GHz / 2.30GHz	10W	Intel® HD Graphics 500
J3355	2C/2T	2.00GHz / 2.50GHz	10W	Intel® HD Graphics 500

Note: All specifications are subject to change without notice.

Block Diagram Unit: mm



Dimension Unit: mm

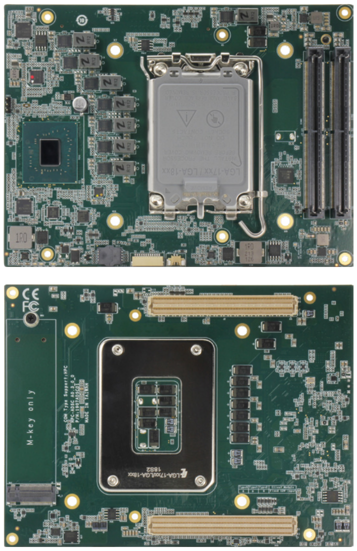


Ordering Information

PART NUMBER	COM EXPRESS TYPE	CPU	MEMORY	DISPLAY	LVDS	STORAGE	LAN	USB	UART	EXPANSION	POWER	TEMPERATURE	OTHERS
NANOCOM-APL-A11-F001	Type 10 (COM.0 Rev. 2.1)	N4200	Onboard LPDDR4 4GB	LVDS, DDIx1	18/24bits 1CH LVDS	SATA3 x 2, 32GB eMMC	GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x4	12V	0°C - 60°C	LPC, SMBus, I2C
NANOCOM-APL-A11-F002	Type 10 (COM.0 Rev. 2.1)	N3350	Onboard LPDDR4 4GB	LVDS, DDIx1	18/24bits 1CH LVDS	SATA3 x 2, 32GB eMMC	GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x4	12V	0°C - 60°C	LPC, SMBus, I2C
NANOCOM-APL-A11-F003	Type 10 (COM.0 Rev. 2.1)	E3950	Onboard LPDDR4 8GB	LVDS, DDIx1	18/24bits 1CH LVDS	SATA3 x 2, 64GB eMMC	GbE x 1	USB 3.2 Gen 1 x 2 USB 2.0 x 8	2 (Tx/Rx)	PCIe [x1] x4	12V	0°C - 60°C	LPC, SMBus, I2C

HPC-ADSC / HPC-RPSC PRELIMINARY

COM HPC Client Size C with 12th/13th Generation Intel® Core™ Platform



Features

- 12th/13th Gen Intel® Core™ Series Processor (Formerly Alder Lake-S & Raptor Lake-S)
- Intel 600 Series Chipset (R680E)
- 2x SODIMM w/ECC DDR5 4800MHz Memory, up to 64GB
- 2.5 Gigabit Ethernet x 2
- M.2 2280 x1
- SATA3.0 x 2
- 1x PCIe[x16] Gen5, 3x PCIe[x4] Gen4, 8x PCIe [x1] Gen3
- USB2.0 x 8, USB3.2 Gen2 x4
- GPIO x12, SMbus, I2Cx2, eSPI
- COM HPC Client type, size C, 160mm x 120mm

Specifications

System	
Form Factor	COM-HPC R1.0 Client size C
CPU	12th/13th Gen Intel® Core™ Series Processor (Formerly Alder Lake-S & Raptor Lake-S)
CPU Frequency	TBD
Chipset	Intel® R680E
Memory Type	SODIMM DDR5 4800MHz Socket x 2
Max. Memory Capacity	Up to 64GB (ECC)
BIOS	AMI BIOS (UEFI)
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12 V and +5 VSB for ATX,+12V for AT
Power Supply Type	AT / ATX
Power Consumption (Typical)	TBD
Dimension (L x W)	6.30" x 4.72" (160mm x 120mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE / FCC Class A
Display	
Graphic Controller	Intel®UHD Graphics 770
Video Output	eDP x 1, DDI x 3
I/O	
Ethernet	2.5GbE: Intel® I226LM x2
Audio	Soundwire
USB Port	USB 2.0 x 8, USB 3.2 x 4 (Up to Gen2 support)
Serial Port	4-Wire UART (Tx/Rx) x2
HDD Interface	SATA3 x2
Expansion Slot	PEG[x16] x1 PCIe [x4] x3 PCIe [x1] x8 eSPI SPI I2C SMBus
GPIO	12-bit
Onboard Storage	M.2 2280M (NVMex4)
TPM	TPM 2.0

Packing List

- **HPC-ADSC-A10-0001**
  COM HPC Client Size C.FCLGA1700 CPU skt.R680E.2xDDR5.3xDDI.eDP.2xi226.TPM2.0 for ADS.A1.0
- **HPC-RPSC-A10-0001**
  COM HPC Client Size C.FCLGA1700 CPU skt.R680E.2xDDR5.3xDDI.eDP.2xi226.TPM2.0.for RPS.A1.0

Optional Accessories

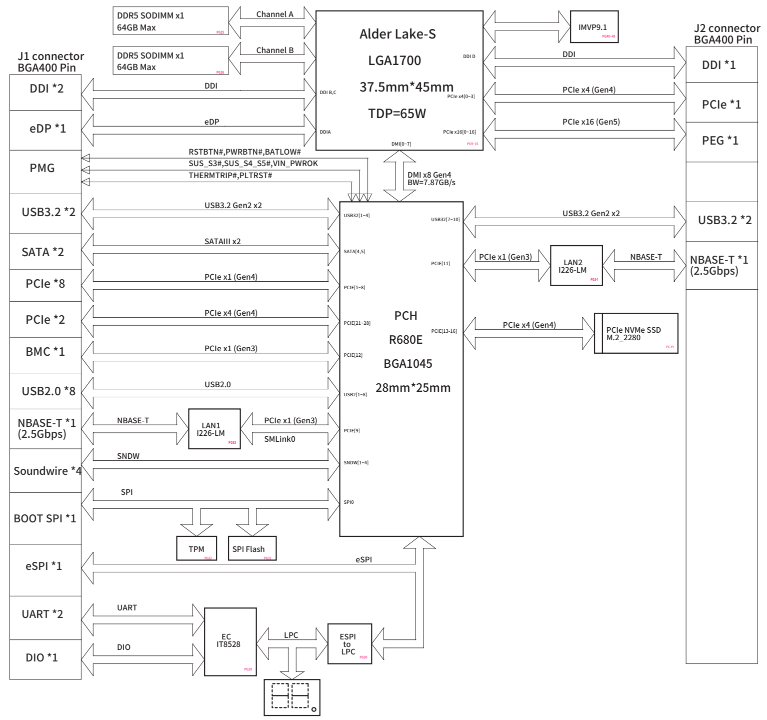
- **ECB-980A-A10-0001**
  COM HPC Client Carrier Board.2USBC.4USB3.2SATA.2GbE.PCIe.AT/ATX.Rev A1.0
- **HPC-RPSC-FAN01**
  CPU Cooler.FAN+HeatSink.90*90*50mm.12V.for HPC-RPSC

CPU Support Chart

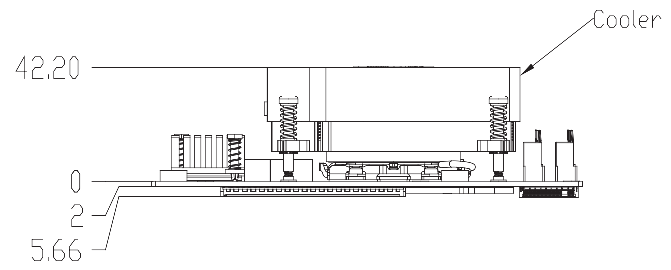
CPU	Core / Thread	Base Frequency/Turbo	TDP	Graphic	In-band ECC
i9-12900TE	16c / 24t	1.1 / 4.8	35W	Intel® UHD Graphics 770	Yes
i7-12700E	12c/20t	2.1 / 4.8	65W	Intel® UHD Graphics 770	Yes
i5-12500TE	6c/12t	1.9 / 4.3	35W	Intel® UHD Graphics 770	Yes
i3-12100TE	4c/8t	2.1 / 4.0	35W	Intel® UHD Graphics 730	Yes

HPC-ADSC / HPC-RPSC

Block Diagram Unit: mm



Dimension Unit: mm

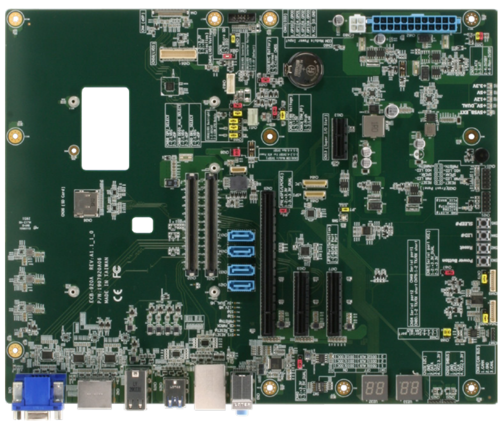


Ordering Information

Part Number	COM Express Type	CPU	Memory	Display	LVDS	Storage	LAN	USB	UART	Expansion	Power	Temperature	Other
HPC-ADSC-A10-0001	COM-HPC	Alder Lake-S	DDR5x2	eDP,DDIx3	—	Onboard PCIe Gen3 [x2] NVMe SSD	i226-LMx2	USB 2.0 x 8, USB 3.2 x 4 (Up to Gen2 support)	4-Wire UART (Tx/Rx) x2	PEG[x16] x1 , PCIe [x4] x3, PCIe [x1] x8,	12V	0°C - 60°C	eSPI, SPI, I2C, SMBus,
HPC-RPSC-A10-0001	COM-HPC	Raptor Lake-S	DDR5x2	eDP,DDIx3	—	Onboard PCIe Gen3 [x2] NVMe SSD	i226-LMx2	USB 2.0 x 8, USB 3.2 x 4 (Up to Gen2 support)	4-Wire UART (Tx/Rx) x2	PEG[x16] x1 , PCIe [x4] x3, PCIe [x1] x8,	12V	0°C - 60°C	eSPI, SPI, I2C, SMBus,

ECB-920A-A11

COM EXPRESS® Evalutaion Carrier Board (Type 6 / Type 10)



Features

- ATX Form Factor (305 × 244 mm)
- Support COM Express® Rev3.0, Pin out type 6, type 10
- PCIe[x4] slot x 2, PCIe[x16] slot x 1
- VGA port x1, LVDS, eDP, Display Port x 3
- USB2.0 port x 4, USB3.2/2.0 port x 4
- SATAIII port x 4
- Gigabit Ethernet (RJ45) x1, support up to 2.5 GbE
- High Definition Audio
- LPC/eSPI Slot, GPIO/SDIO, SMBus Connector x 1, I2C Connector x 1
- COM Port (2-Wire UART Tx/Rx) x 2, GPIO 8 bits

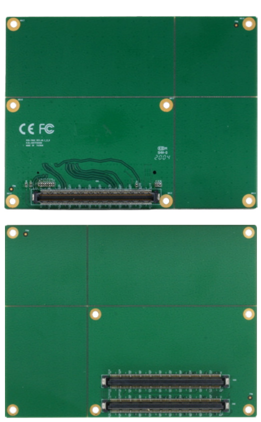
Giga LAN HD Audio DDR 4 USB 2.0 USB 3.2 Gen 2 PCI Express

Specifications

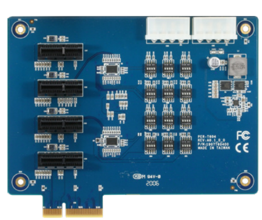
System	
Form Factor	ATX
COM Express Connector	x 2 (Row A,B & Row C,D)
I/O Chipset	—
Front Panel Control	10-pin (5x2) header
Ethernet	10/100/1000/2500 Base-TX, RJ45 x 1 (From CPU Module)
Expansion Interface	PCIe[x4] slot x 2 PCIe[x16] slot x 1
Power Supply Type	ATX
CMOS Battery	RTC battery socket x 1
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)	—
Display	
DVT/CRT/VGA	D-SUB15 connector x 1
LVDS / eDP	LVDS : 40pin (20x2) Dual Channel LVDS connector eDP : 30pin board wire connector
SDVO	—
DDI	Display Port x 3 (Dual x1, Single x 1)
I/O	
Storage	SATA3 x 4
Serial Port	COM Port (2-Wire UART Tx/Rx) x 2
USB	Type A connector x 8 (USB2.0 x 4 , USB 3.2/2.0 x 4)
Audio	Audio Jack, supports Line-in, Line-out, Microphone
PS/2 Port	—
GPIO	8-bit Programmable
Switch/Button	Power Button x 1 / Reset Button x 1
Debug LED	80 PORT
I2C	1
Expansion Interface	LPC, I2C, SMBus, eSPI, CAN Bus, 4 pin fan connector, Micro SD Card Slot x 1

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

PER-T603



PER-604

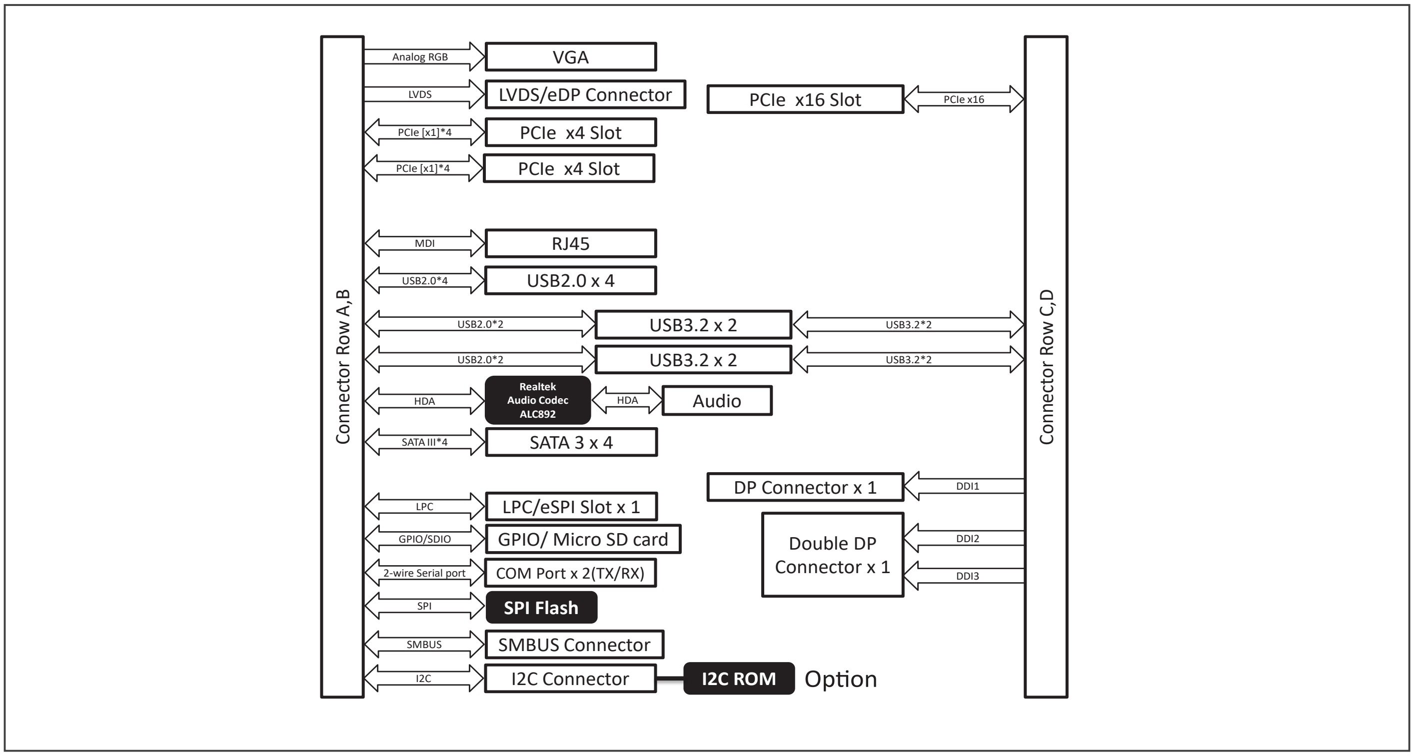


Optional Accessories

- **ECB-920A-A11-BRKT01**
  ECB-920A-A11.IO Bracket

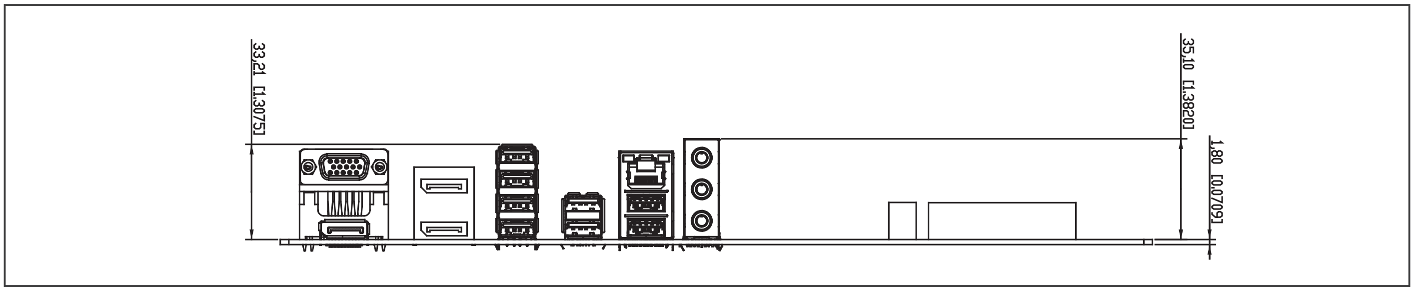
Block Diagram

Unit: mm



Dimension

Unit: mm



Packing List

- PER-T603 (COM Express Type Converter Board) x 1
- PER-T604 (PCI-E[x4] to PCI-E[x1] x 4 Card) x 1
- Cable Kit x1 (Including SATA Cable x 2, COM Port Cable x 2)
- ECB-920A-A11 x 1

Ordering Information

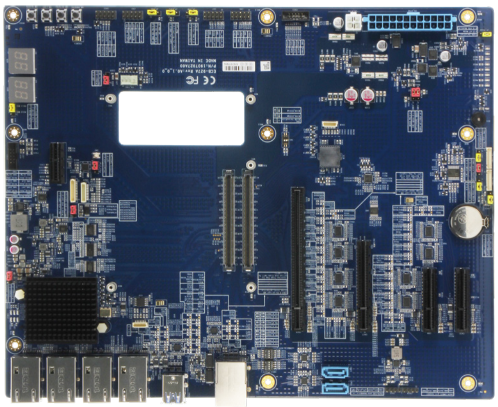
- **ECB-920A-A11-0001**
  COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX.Rev. A1.1

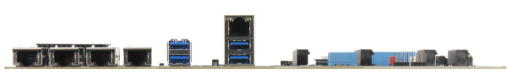
Type 6/10 Function Table

COM Type	Type 6	Type 10
PCI-E [x16]	1	—
PCI-E[x4]	1 (Lane 0 – Lane 3)	1 (Lane 0 – Lane 3)
PCI-E[x1]	1 (Lane 4 – Lane 7)	—
VGA	1	—
DDI	3 (DDI1 – DDI3)	1
LVDS	1	1
LAN	1	1
SATA3	4 (Lane 0 – Lane 3)	2 (Lane 0 – Lane 1)
Serial Port (Tx/Rx)		
USB3.2	4 (Lane 0 – Lane 3)	2 (Lane 0 – Lane 1)
USB2.0	8 (Lane 0 – Lane 7)	8 (Lane 0 – Lane 7)
GPIO / SDIO	1 (GPIO 8 bits)	1 (GPIO 8 bits)

ECB-927A PRELIMINARY

COM EXPRESS® Evalutaion Carrier Board (Type 7)





Features

- ATX Form Factor
- Support COM Express Type 7 Basic Size
- PEG + PCIe[x8] + PCIe[x4] x 2
- Display via Console or 3rd party graphic solution
- USB3.2 Gen2 x 4
- SATA III x 2
- 4x 10GbE Port via intel x557AT4

CE FC

Specifications

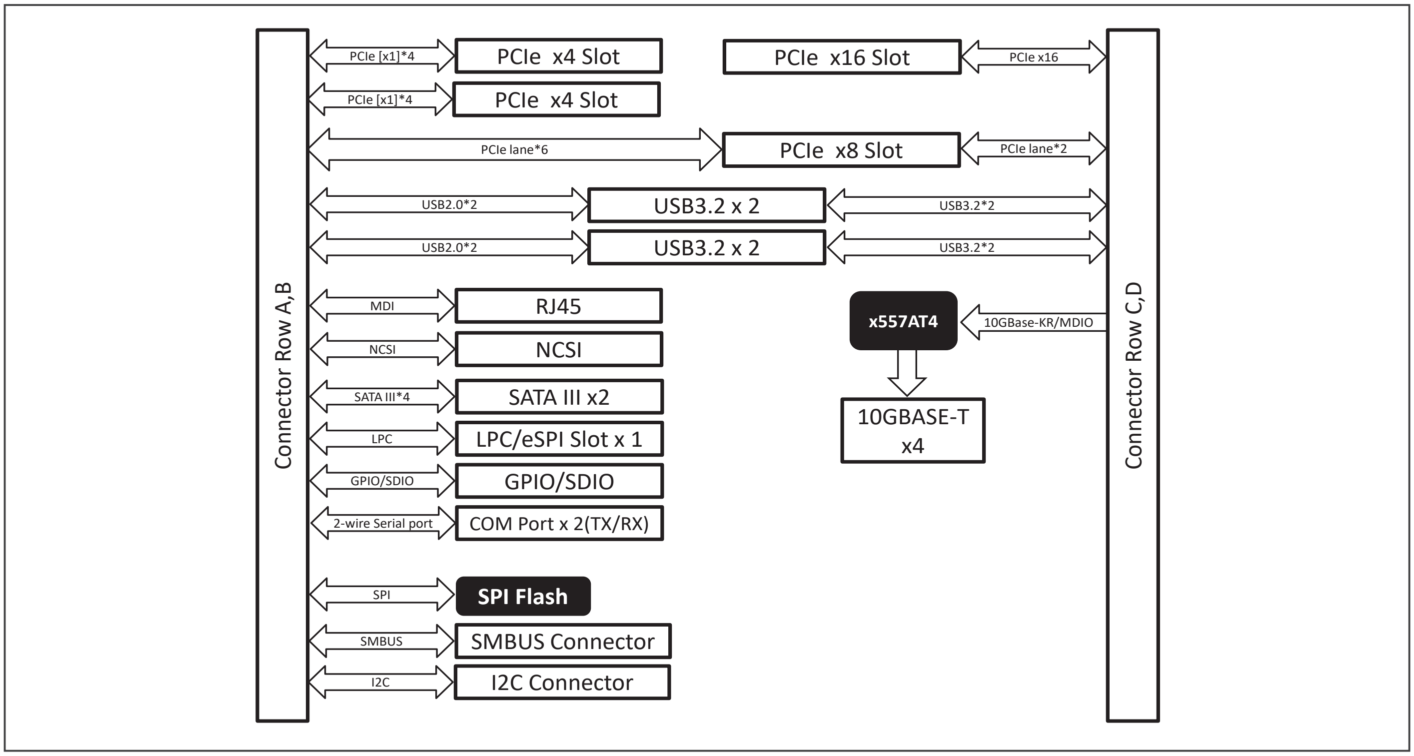
System	
Form Factor	COM Express Basic size Type 7 Carrier board in ATX form factor
COM Express Connector	X 2 (Row AB and Row CD, Type 7 pin out)
I/O Chipset	—
Front Panel Control	10-pin (5x2) header
Ethernet	Intel x557AT4: 4x 10G Base T 1x GbE (source from module)
Expansion Interface	PCIe [x4] x 2 PCIe[x8] PCIe[x16] (PEG port)
Power Supply Type	Standard 24pin ATX + 4pin 12V
CMOS Battery	CR2032 Holder x 1
BIOS	—
Board Size	305mm x 244mm
Gross Weight	0.7 kg
Operating Temperature	0°C ~ 60°C
Storage Temperature	-40°C ~ 80°C
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	—
Display	
DVT/CRT/VGA	N/A. via PCIe Graphic card
LVDS / eDP	N/A. via PCIe Graphic card
SDVO	N/A. via PCIe Graphic card
DDI	N/A. via PCIe Graphic card
I/O	
Storage	SATA x2
Serial Port	2-wire UART x 2 (TX/RX)
USB	USB3.2 x 4
Audio	N/A
PS/2 Port	—
GPIO	8-bit
Switch/Button	Power Button x 1 / Reset Button x 1
Debug LED	7-SEG LED X2 80 PORT POST CODE INDICATOR
I2C	1
Expansion Interface	I2C, SMBus, LPC/eSPI slot

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

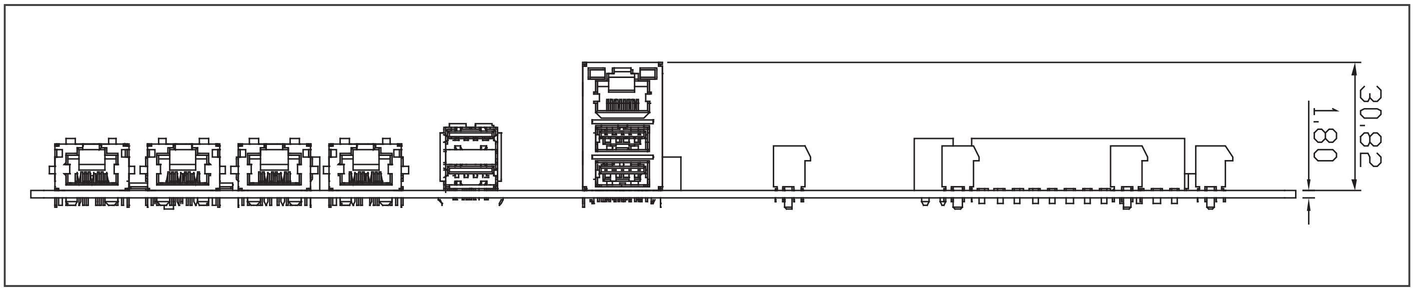
Optional Accessories

- TBD

Block Diagram Unit: mm



Dimension Unit: mm



Packing List

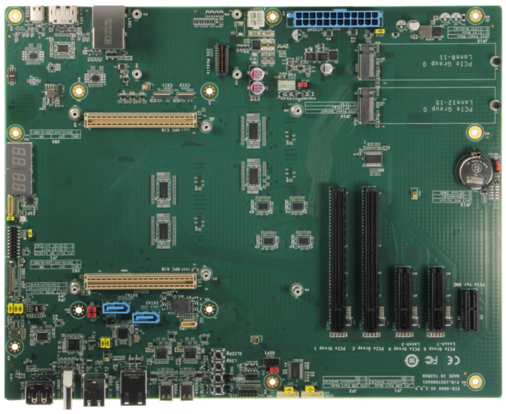
- COM port Cable x 2
- ECB-927A-A10 x 1

Ordering Information

- **ECB-927A-A10-0001**
  COMe Type7.Carrier Board.4x10GbE.4USB.2COM.2SATA.PCIe.ATX.A1.0

ECB-980A PRELIMINARY

COM HPC Client Carrier board for Size A/B/C



Features

- ATX Form Factor
- Support COM HPC Client Size A/B/C, J1 and J2
- PEG x2, PCIe[x4] x2 + 2x M.2 NVMe[x4]
- DPx2, HDMI x1, eDP x1
- USB Type C x2, USB3.2 Gen2 Type A x2
- RJ45 x2, SATA III x2

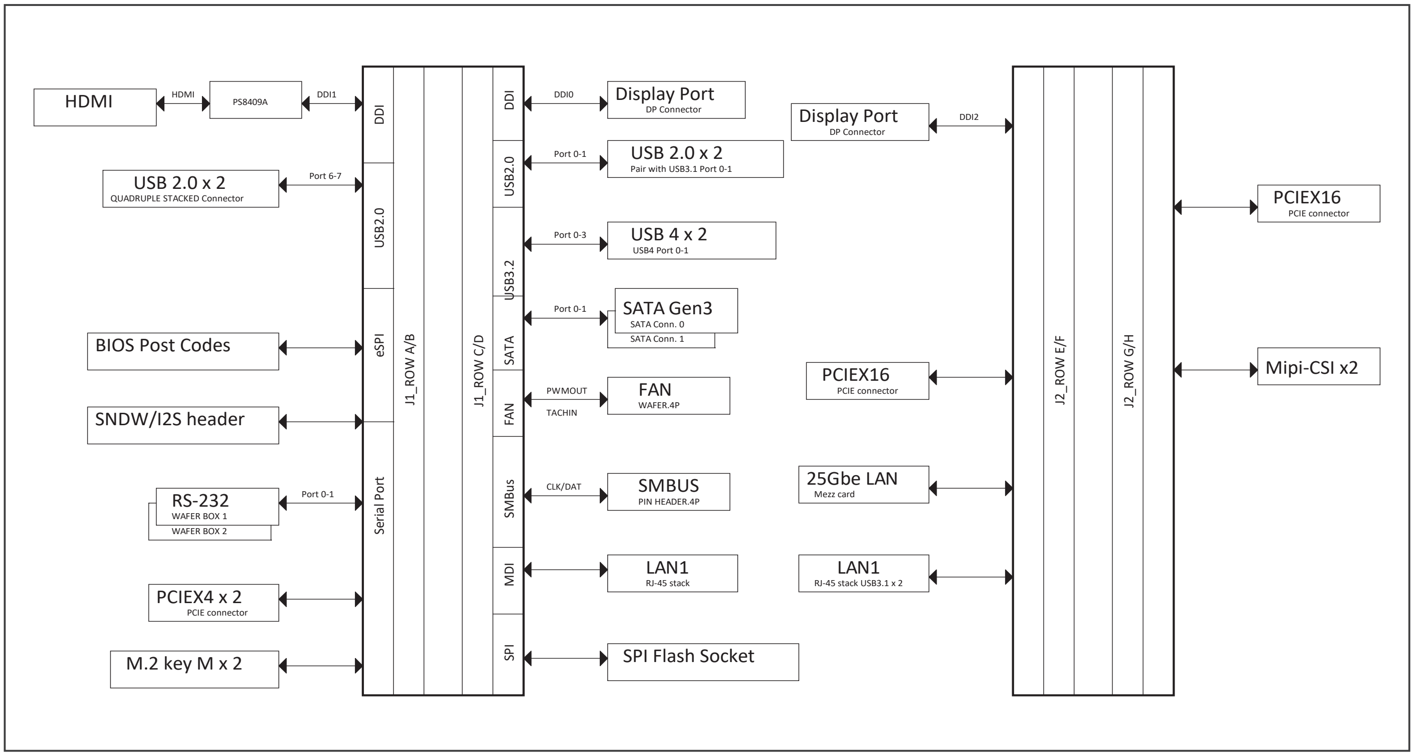
CE FC

Specifications

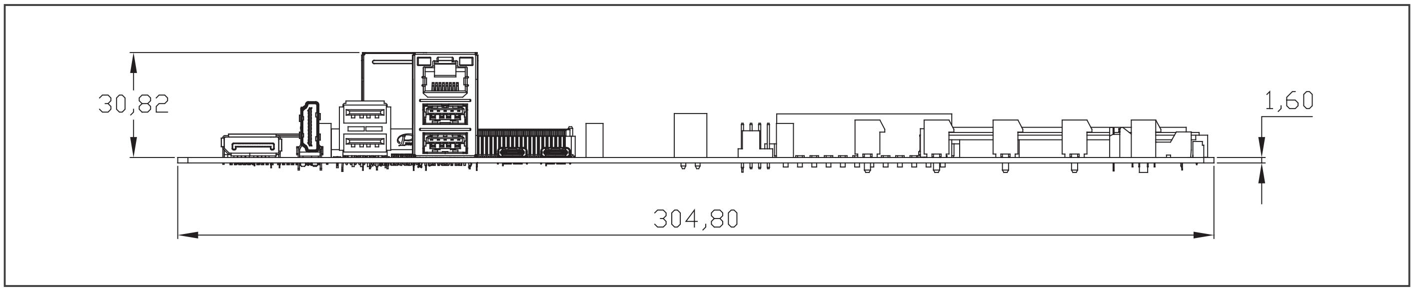
System	
Form Factor	COM HPC Client sizeA/B/C
COM Express Connector	X 2 (J1 and J2)
I/O Chipset	—
Front Panel Control	10-pin (5x2) header
Ethernet	2x 1G~2.5G 1x for 25G expansion
Expansion Interface	PCIe [x1] x1 (for BMC) PCIe [x4] x2 (group 0 lane 0~7) PCIe [x16] x2 (group 1 and group 2)
Power Supply Type	Standard 24pin ATX + 4pin 12V
CMOS Battery	CR2032 Holder x1
BIOS	—
Board Size	305mm x244mm
Gross Weight	0.7 kg
Operating Temperature	0°C ~ 60°C
Storage Temperature	-40°C ~ 80°C
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	CE/FCC CLASS A
Display	
DVT/CRT/VGA	HDMI x1, DP x2
LVDS / eDP	eDP x1
SDVO	—
DDI	—
I/O	
Storage	SATA x2 M.2 NVMe[x4] x2
Serial Port	4-wire UART x2
USB	USB3.2 Gen2x2 Type C x2 USB3.2 Gen2 Type A x2
Audio	Board to board connector reserved
PS/2 Port	—
GPIO	12-bit
Switch/Button	Power Button x 1 / Reset Button x 1
Debug LED	7-SEG LED X2 80 PORT POST CODE INDICATOR
I2C	1
Expansion Interface	I2C, SMBus, LPC/eSPI slot.

Note: All specifications are subject to change without notice.

Block Diagram Unit: mm



Dimension Unit: mm



Packing List

- COM port Cable x 2
- ECB-980A-A10 x 1

Optional Accessories

- TBD

Ordering Information

- **ECB-980A-A10-0001**
  COM HPC Client Carrier Board. 2USBC, 4USB3, 2SATA, 2GbE, PCIe. AT/ATX Rev A1.0

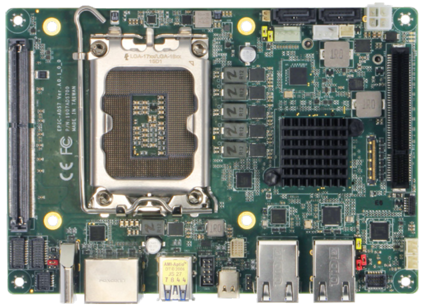
05

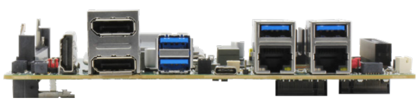
05

EPIC Boards

EPIC-ADS7 PRELIMINARY

EPIC Board with 12th Generation Intel® Core™ i-S series Processor (Socket type)





Features

- 12th Gen. Intel® Core™ Series Processor
- DDR5 SODIMM x 2 (up to 64GB, 4800 MT/s)
- HDMI 2.0b x 1 , DP++ 1.4a x 2 , LVDS (dual Channel) or eDP x 1
- SATA3 x 2
- RJ45 (2.5GbE) x 1, RJ45 (GbE) x 1
- USB3.2 Gen2x2 (Type C) x 1, USB3.2 Gen2 x 4, USB2.0 x 4
- M.2 3052 B key x 1 , M.2 2280 M key x 1, M.2 2230 E key x 1
- PCIe Gen5 [x8] slot x 1, PCIe Gen3 [x4] FPC slot x 1
- COM Port x 4 , DIO 8 bit x 1, DC+12V in

Specifications

System	
Form Factor	4" EPIC Board
CPU	12th Generation Intel® Core™ Series Processor (TDP : 35W/65W)
CPU Frequency	12C/20T (Up to 4.8 GHz)
Chipset	Intel® 600 Series Desktop Chipsets
Memory Type	DDR5 SODIMM x 2 , up to 4800MT/s
Max. Memory Capacity	Up to 64GB
BIOS	AMI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	TBD
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)	TBD
Certification	CE/FCC ClassA
Display	
VGA/LCD Controller	Intel® UHD Graphics 770 / Intel® UHD Graphics 730 (by CPU sku)
Video Output	4 Display Simutaneously : Dual Channel (24/48bit) LVDS or eDP x 1 DP++ 1.4a x 2 HDMI 2.0b x 1
Backlight Inverter Supply	12V
I/O	
Ethernet	Intel® i225, 10/100/1000/2500Base, RJ-45 x 1 Intel® i219, 10/100/1000Base, RJ-45 x 1
Audio	Line in / Line Out / Mic (Pin header)
USB Port	USB3.2 Gen2x2 (Type C) x 1 USB3.2 Gen2 (Type A) x 4 USB 2.0 (Pin Header) x 4
Serial Port	COM RS232/422/485 (Pin Header) x 4
Parallel Port	—
HDD Interface	SATA III x 2 , +5V SATA Power Connector x 2
SSD	The same as HDD Interface
Expansion Slot	M.2 3052 B-key x 1 M.2 2280 M-key x 1 M.2 2230 E-key x 1 PCIe [x4] Gen3 FPC Connector x 1 PCIe [x8] Gen5 Slot x 1
DIO	8 bit (Pin Header)
TPM	TPM2.0 (Optional)
Touch	—
SIM	Nano SIM (optional)
Others	SMBUS x 1, LPC

Packing List

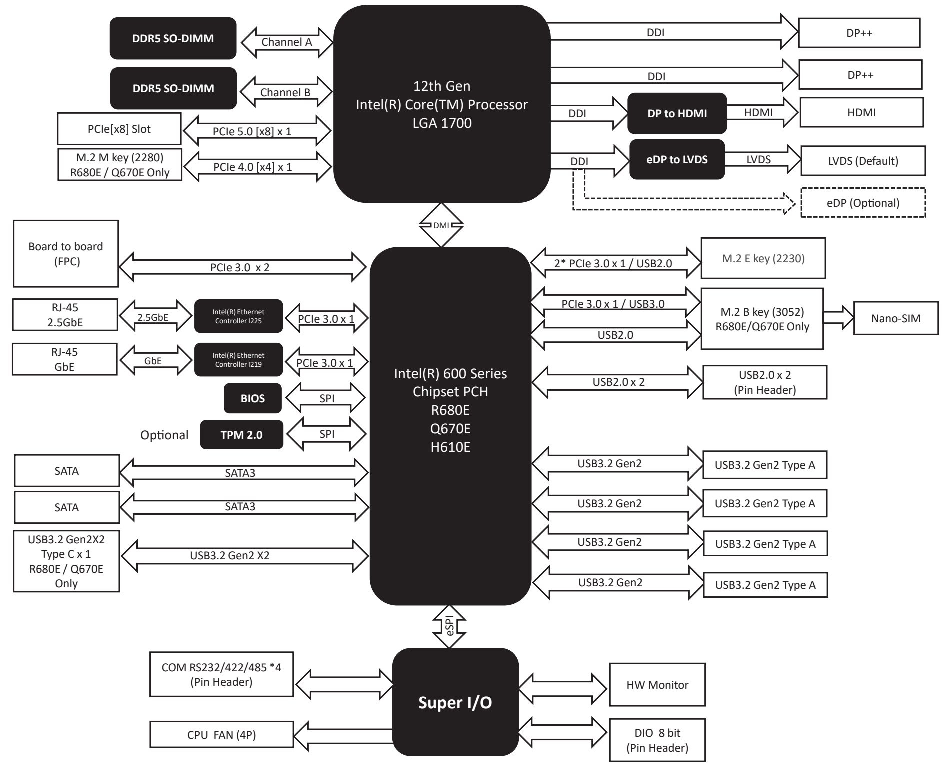
- EPIC-ADS7x 1

Optional Accessories

Part Number	Description	QTY
1255X00063	AC/DC Adapter.100-240V.150W.DC JACK	1
1702031803	Power cord for EU	1
1702031802	Power cord for US	1
170203180J	Power cord for UK	1
170203180E	Power cord for Japan	1
170203180B	Power cord for China	1
1702031811	Power cord for Taiwan	1

Note: All specifications are subject to change without notice.

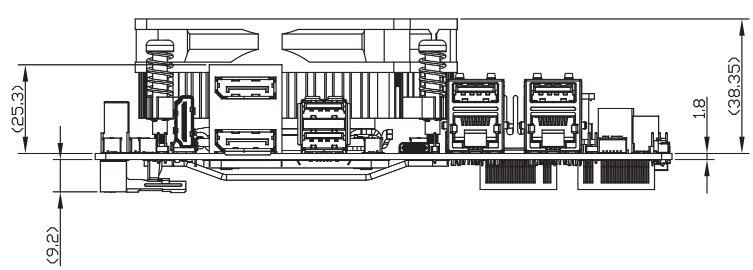
Block Diagram



* Please note that the exact function may be different according to PCH sku.

Dimension

Unit: mm



Ordering Information

Part Number	CPU	Chipset	Display	LAN	USB	Rs-232/422/485	Storage	Expansion Slot	TPM	Power	Operating Temp	Others
EPIC-ADS7-A10-TBD (sku1)	Socket Type	R680E	Dual Channel (24/48bit) LVDS x 1 DP++ 1.4a x 2 HDMI 2.0b x 1	2.5GbE RJ-45 x 1 GbE RJ-45 x 1	USB3.2 Gen2x2 (Type C) x 1 USB3.2 Gen2 (Type A) x 4 USB 2.0 (Pin Header) x 4	4 (Pin Header)	SATA 3 x 2	M.2 3052 B-key x 1 M.2 2280 M-key x 1 M.2 2230 E-key x 1 PCIe [x4] Gen3 FPC Connector x 1 PCIe [x8] Gen5 Slot x 1	Optional	12V	0°C ~ 60°C	DIO 8 bit , NanoSIM Slot x 1
EPIC-ADS7-A10-TBD (sku2)	Socket Type	Q670E	Dual Channel (24/48bit) LVDS x 1 DP++ 1.4a x 2 HDMI 2.0b x 1	2.5GbE RJ-45 x 1 GbE RJ-45 x 1	USB3.2 Gen2x2 (Type C) x 1 USB3.2 Gen2 (Type A) x 4 USB 2.0 (Pin Header) x 4	4 (Pin Header)	SATA 3 x 2	M.2 3052 B-key x 1 M.2 2280 M-key x 1 M.2 2230 E-key x 1 PCIe [x4] Gen3 FPC Connector x 1 PCIe [x8] Gen5 Slot x 1	Optional	12V	0°C ~ 60°C	DIO 8 bit , NanoSIM Slot x 1
EPIC-ADS7-A10-TBD (sku3)	Socket Type	H610E	Dual Channel (24/48bit) LVDS x 1 DP++ 1.4a x 2 HDMI 2.0b x 1	2.5GbE RJ-45 x 1 GbE RJ-45 x 1	USB3.2 Gen2 (Type A) x 4 USB 2.0 (Pin Header) x 4	4 (Pin Header)	SATA 3 x 2	M.2 2280 M-key x 1 M.2 2230 E-key x 1 PCIe [x4] Gen3 FPC Connector x 1 PCIe [x8] Gen5 Slot x 1	Optional	12V	0°C ~ 60°C	DIO 8 bit

EPIC-ADS7-PUC PRELIMINARY

EPIC System with 12th Generation Intel® Core™ Processor

Front View

Rear View

Features

- 12th Generation Intel® Core™ Processor
- DDR5 SODIMM x 2 (up to 64GB, 4800 MT/s)
- HDMI 2.0b x 1 , DP++ 1.4a x 2
- SATA3 x 2 (2.5"SSD x2 containable)
- RJ45 (2.5GbE) x 1, RJ45 (GbE) x 3
- USB3.2 Gen2x2(Type C) x 1, USB3.2 Gen2 x 4, USB2.0 x 2
- M.2 3052 B key x 1 , M.2 2280 M key x 1, M.2 2230 E key x 1
- COM Port x 2 , DIO 8 bit x 1
- DC Jack 12V in

Display	
VGA/LCD Controller	Intel® UHD Graphics 770 / Intel® UHD Graphics 730 (by CPU sku)
Video Output	DP++ 1.4b x 2 , HDMI 2.0a x 1 3 Simultaneous Displays
Backlight Inverter Supply	—
I/O	
Ethernet	Intel® I211AT, 10/100/1000Base, RJ45 x2 Intel® I219LM, 10/100/1000Base, RJ45 x1 Intel® I225LM, 10/100/2500Base, RJ45 x1
Audio	
USB Port	USB3.2 Gen 2x 2 (Type C) x 1 USB3.2 Gen 2 (Type A) x 2 USB2.0 (Type A) x 2
Serial Port	COM RS232/422/485 x 2
Parallel Port (printer port)	—
HDD Interface	—
SSD	SATA3 x 2 with +5V SATA power connector onboard
Expansion Slot	M.2 3052 B key x 1 (PCIe + USB3.0/USB2.0) M.2 2280 M key x 1 (PCIe Gen4 [x4] x 1) M.2 2230 E key x 1 (PCIe + USB2.0) 3pin TCC/TSN x 1 (Optional)
DIO	DIO 8 bit x 1 (Front Panel),
TPM	TPM 2.0
Touch	—
SIM	Nano SIM Slot x 1

Specifications

System	
Form Factor	4" EPIC System
CPU	12th Generation Intel® Core™ Series Processor
CPU Frequency	—
Chipset	Intel® 600 Series Desktop Chipsets
Memory Type	DDR5 SODIMM x 2 (up to 4800MT/s)
Max. Memory Capacity	up to 64GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V
Power Supply Type	AT/ATX
Power Consumption (Typical)	TBD
Dimension (L x W)	10.2" x 6.3" x 2.1" (260mm x 160mm x 55mm)
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C) with 0.5 m/s airflow
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

Optional Accessories

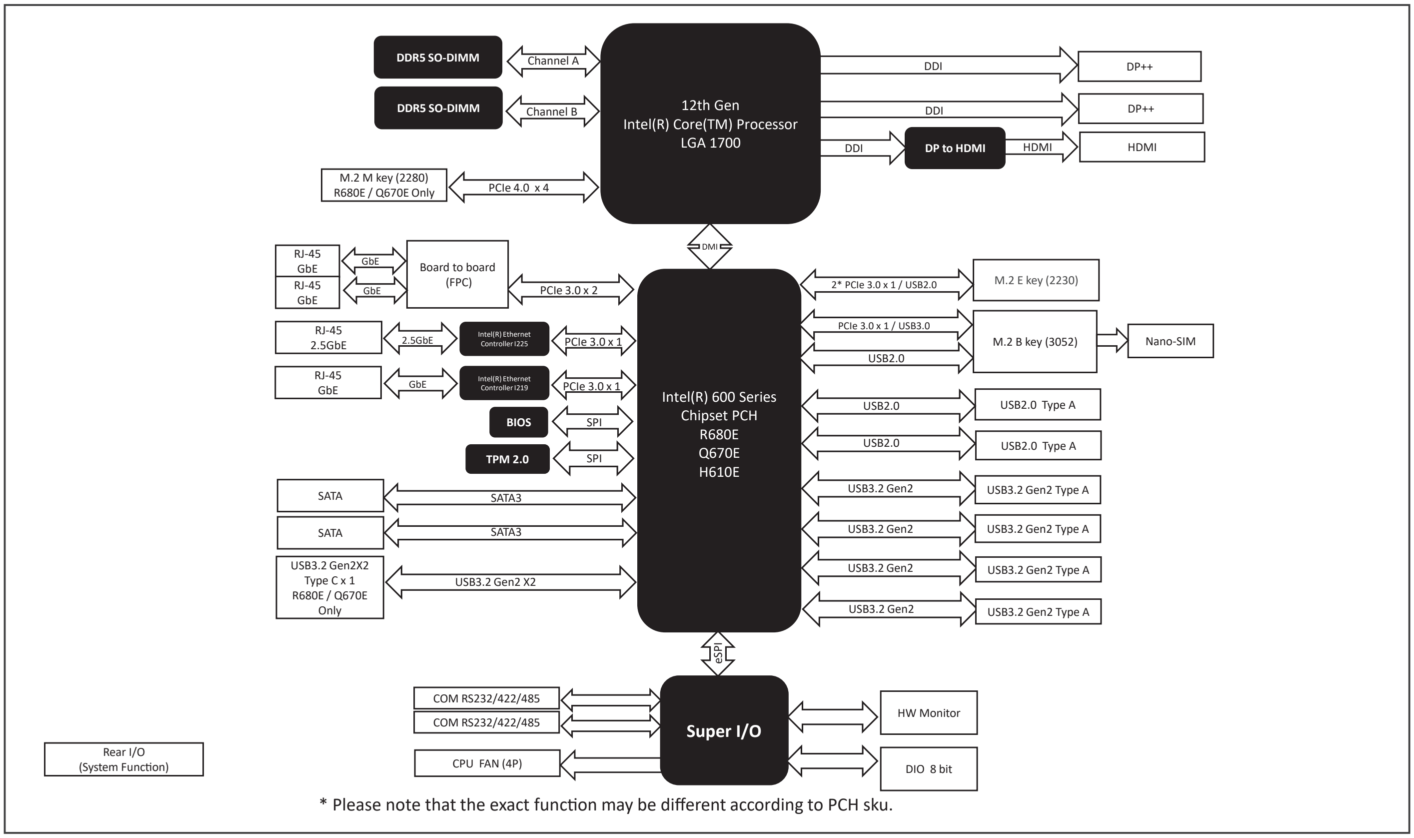
Part Number	Description	QTY
1255X00063	AC/DC Adapter.100-240V.150W.DC JACK	1
1702031803	Power cord for EU	1
1702031802	Power cord for US	1
170203180J	Power cord for UK	1
170203180E	Power cord for Japan	1
170203180B	Power cord for China	1
1702031811	Power cord for Taiwan	1

Packing List

- **EPIC-ADS7-PUC x 1**

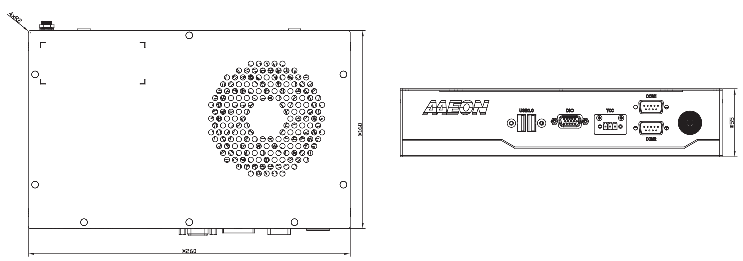
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



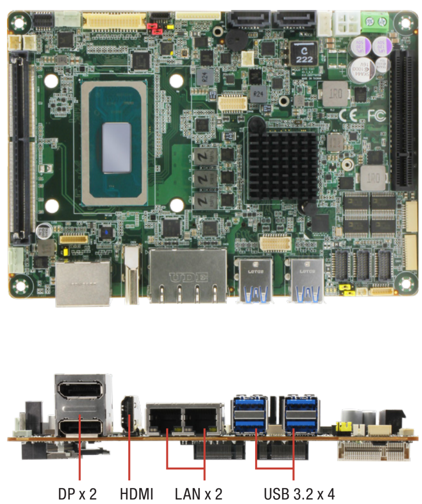
Ordering Information

Part Number	CPU	Chipset	Fan/ Fanless	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
EPIC-ADS7-PUC-A10 (Sku1-TBD)	i7-12700E (TDP : 65W)	R680E Chipset	4 Pin FAN	DP++ 1.4a x 2 HDMI 2.0b x 1	SATA 3 x 2	2.5GbE (RJ45) x 1 , GbE (RJ45) x 3	USB3.2 Gen2x2 (Type C) x 1, USB3.2 Gen2x1 (Type A) x 4, USB2.0 (Type A) x 2	—	2	M.2 3052 B key x 1 (with Nano Sim Slot) M.2 2280 M key x 1 (with PCIe NVMe 256GB SSD) M.2 2230 E key x 1	+12V DC in	32°F ~ 122°F (0°C ~ 50°C)	DIO 8 bit x 1 TCC/TSN (3 pin) x 1 150W Power Adaptor x 1 Power Cord x 2 (US x 1, EU x 1)
EPIC-ADS7-PUC-A10 (Sku2-TBD)	i3-12100TE (TDP : 35W)	H610E Chipset	4 Pin FAN	DP++ 1.4a x 2 HDMI 2.0b x 1	SATA 3 x 2 (with 2.5" 128GB SSD x 1)	2.5GbE (RJ45) x 1 , GbE (RJ45) x 3	USB3.2 Gen2x1 (Type A) x 4, USB2.0 (Type A) x 2	—	2	M.2 2230 E key x 1 M.2 3052 B key x 1 (with Nano Sim Slot)	+12V DC in	32°F ~ 122°F (0°C ~ 50°C)	DIO 8 bit x 1 150W Power Adaptor x 1 Power Cord x 2 (US x 1, EU x 1)
EPIC-ADS7-PUC-A10 (Barebone sku1, TBD)	Socket Type	R680E Chipset	4 Pin FAN	DP++ 1.4a x 2 HDMI 2.0b x 1	SATA 3 x 2	2.5GbE (RJ45) x 1 , GbE (RJ45) x 3	USB3.2 Gen2x2 (Type C) x 1, USB3.2 Gen2x1 (Type A) x 4, USB2.0 (Type A) x 2	—	2	M.2 3052 B key x 1 (with Nano Sim Slot) M.2 2280 M key x 1 (with PCIe NVMe 256GB SSD) M.2 2230 E key x 1	+12V DC in	32°F ~ 122°F (0°C ~ 50°C)	DIO 8 bit x 1 TCC/TSN (3 pin) x 1
EPIC-ADS7-PUC-A10 (Barebone sku2, TBD)	Socket Type	H610E Chipset	4 Pin FAN	DP++ 1.4a x 2 HDMI 2.0b x 1	SATA 3 x 2	2.5GbE (RJ45) x 1 , GbE (RJ45) x 3	USB3.2 Gen2x1 (Type A) x 4, USB2.0 (Type A) x 2	—	2	M.2 2230 E key x 1 M.2 3052 B key x 1 (with Nano Sim Slot)	+12V DC in	32°F ~ 122°F (0°C ~ 50°C)	DIO 8 bit x 1

*Please note that the M.2 3052 B key slot only provides PCIe + USB2.0 interface on H610E PCH sku.
*For detailed information, please contact AAEON Sales representative.

EPIC-TGH7

EPIC Board with 11th Generation Intel® Xeon™ / Core™ Processor



Features

- 11th Gen. Intel Xeon / Core Processor
- DDR4 3200 SODIMM x 2 ,up to 64GB
- HDMI 2.0b x 1 , DP++ 1.2a x 2 , LVDS (dual Channel) or eDP x 1 , VGA x 1
- SATA3 x 2
- RJ45 (2.5GbE) x 1, RJ45 (GbE) x 1
- USB3.2 Gen2 x 4, USB2.0 x 4
- M.2 3052 B key x 1 , M.2 2280 M key x 1, MiniCard x 1
- PCIe Gen4 [x8] slot x 1, PCIe [x4] by FPC slot x 1
- COM Port x 6 , DIO 16 bit x 1
- Support +9V to +24Vin (Wide Voltage Input)

Specifications

System	
Form Factor	4" EPIC Board
CPU	11th Generation Intel® 11th Xeon™ / Core™ Processor
CPU Frequency	Xeon W-11865MRE (8C/16T, 2.60GHz, up to 4.70GHz) i7-11850HE (8C/16T, 2.60GHz, up to 4.70GHz) i5-11500HE (6C/12T, 2.60GHz, up to 4.50GHz) i3-11100HE (4C/8T, 2.40GHz, up to 4.40GHz) Celeron 6600HE (2C/2T, 2.60GHz)
Chipset	Intel® 500 Series Mobile Chipset (RM590E / HM570E)
Memory Type	DDR4 3200 SODIMM x 2 (ECC supported by Xeon only)
Max. Memory Capacity	Up to 64GB
BIOS	AMI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+9-24V
Power Supply Type	AT/ ATX
Power Consumption (Typical)	12V@8.32A with Xeon W-11865MRE, with 100% full loading steady status.
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 ClassA
Display	
VGA/LCD Controller	Intel® UHD Graphics for 11th Gen Intel® Processors
Video Output	Dual Channel 24/48bit LVDS (Default) or eDP x 1 HDMI2.0b x 1 , DP 1.2a (DP++) x 2 , VGA x 1
Backlight Inverter Supply	12V/5V (Default : 5V)
I/O	
Ethernet	Intel® i225, 10/100/1000/2500Base, RJ-45 x 1 Intel® i219, 10/100/1000Base, RJ-45 x 1
Audio	Realtek ALC269 (2W Amplifier)
USB Port	USB3.2 Gen 2 x 4 USB2.0 x 4
Serial Port	RS-232 x 4 RS-232/422/485 x 2
Parallel Port	—
HDD Interface	SATA III x 2 +5V SATA Power Connector x 1
SSD	Half size mSATA/mPCIe x 1 (Default mPCIe, select by BIOS)
Expansion Slot	M.2 B key 3052 x 1 (Default PCIe[x1]+USB3.0+USB2.0 , PCIe[x2]+ USB2.0 by BOM change) M.2 M key 2280 x 1 (PCIe 4.0[x4]) PCIe 4.0[x8] slot x 1 (Supply maximum 25W to the PCIe peripheral) Board to board FPC connector (PCIe[x4] x 1)
DIO	16-bit
TPM	TPM2.0 (Optional)
Touch	Optional
SIM	Nano SIM
Others	SMBus / I2C (Supported by BOM Change)

Packing List

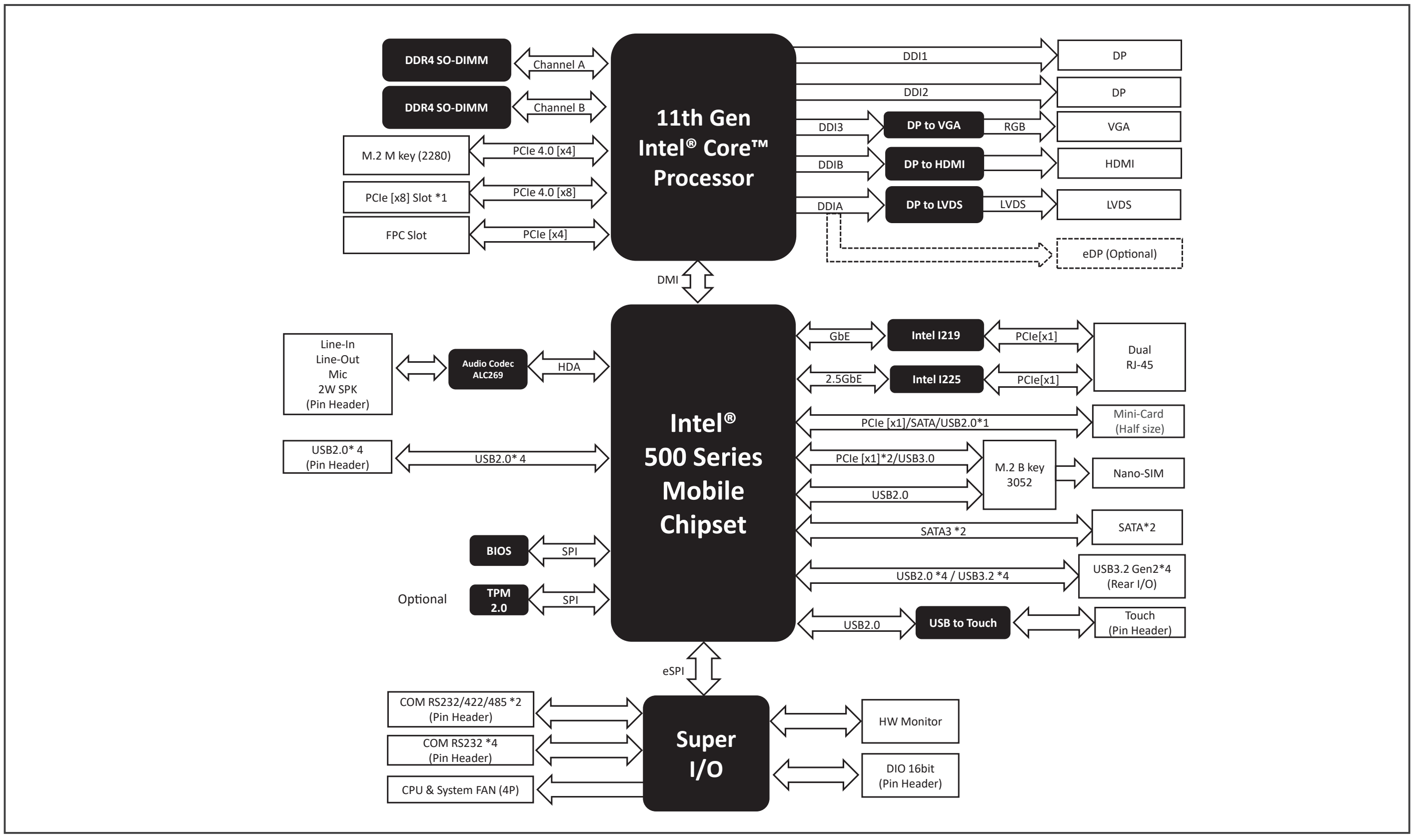
Part Number	Description	QTY
EPIC-TGH7	EPIC-TGH7 Board	1
9767ECD001	Screw kit	1

Optional Accessories

Part Number	Description	QTY
1709150151	VGA cable 15cm	1
1702150155	SATA power cable 15cm	2
1709070150	SATA cable 15cm	2
170X000231	Dual COM cable 30cm	3
170204010R	Double 4P power cable 10cm	1
170X000287	Front panel cable 10cm	1
170X000156	Audio cable 25cm	1
170X000525	USB2.0*4 Cable, 25cm	1
EPIC-TGH7-FAN01	CPU cooler.60*60*31.6mm.with Backplane. for EPIC-TGH7 Use	1

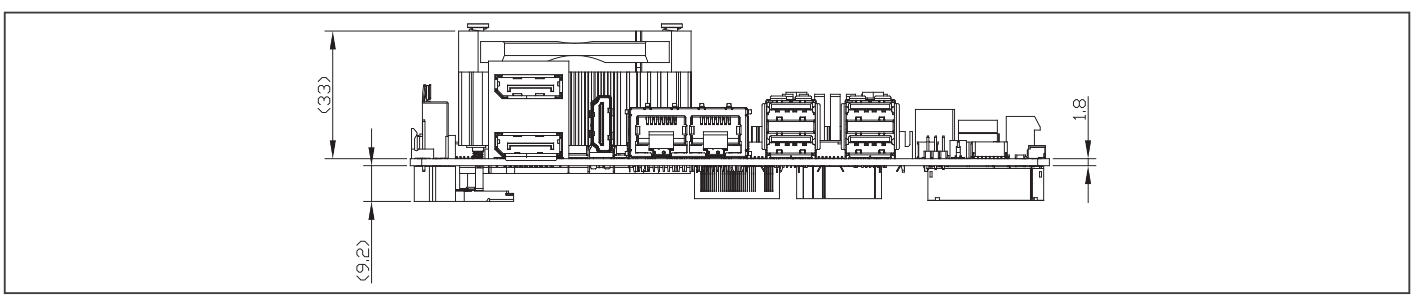
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Operating Temp	Others
EPIC-TGH7-A10-0001	W-11865MRE (with RM590E PCH)	DDR4 SODIMM x 2	Fan	LVDS x 1, DP x 2, HDMI x 1, VGA x 1	SATA3 x 2	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 4	4	2	M.2 B key 3052 x 1, M.2 M key 2280 x 1, Mini Card (Half Size) x 1	+9V to +24V	0°C ~ 60°C	Audio, DIO x 16 NanoSIM x 1 Touch
EPIC-TGH7-A10-0002	i7-11850HE (with HM570E PCH)	DDR4 SODIMM x 2	Fan	LVDS x 1, DP x 2, HDMI x 1, VGA x 1	SATA3 x 2	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 4	4	2	M.2 B key 3052 x 1, M.2 M key 2280 x 1, Mini Card (Half Size) x 1	+9V to +24V	0°C ~ 60°C	Audio, DIO x 16 NanoSIM x 1 Touch
EPIC-TGH7-A10-0003	i5-11500HE (with HM570E PCH)	DDR4 SODIMM x 2	Fan	LVDS x 1, DP x 2, HDMI x 1, VGA x 1	SATA3 x 2	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 4	4	2	M.2 B key 3052 x 1, M.2 M key 2280 x 1, Mini Card (Half Size) x 1	+9V to +24V	0°C ~ 60°C	Audio, DIO x 16 NanoSIM x 1 Touch
EPIC-TGH7-A10-0004	i3-11100HE (with HM570E PCH)	DDR4 SODIMM x 2	Fan	LVDS x 1, DP x 2, HDMI x 1, VGA x 1	SATA3 x 2	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 4	4	2	M.2 B key 3052 x 1, M.2 M key 2280 x 1, Mini Card (Half Size) x 1	+9V to +24V	0°C ~ 60°C	Audio, DIO x 16 NanoSIM x 1 Touch

EPIC-TGH7-PUC PRELIMINARY

EPIC System with 11th Generation Intel® Xeon/Core™ Processor

Front View

Rear View

Features

- Onboard 11th Gen. Intel® Xeon / Core™ Processor
- DDR4 3200 SODIMM x 2 (up to 64GB)
- HDMI 2.0b x 1 , DP++ 1.2a x 2, VGA x 1
- SATA3 x 2 (up to 2.5”SSD x2 containable)
- RJ45 (2.5GbE) x 1, RJ45 (GbE) x 3
- USB3.2 Gen2 x 4, USB2.0 x 2
- M.2 3052 B key x 1 , M.2 2280 M key x 1, Mini Card (Half size) x 1
- COM Port x 2 , DIO 16 bit x 1
- DC Jack 9V to 24V in

Specifications

System	
Form Factor	4" EPIC System
CPU	11th Generation Intel® Xeon / Core™ Processor Xeon W-11865MRE (8C/16T, 2.60GHz, up to 4.70GHz) i7-11850HE (8C/16T, 2.60GHz, up to 4.70GHz) i5-11500HE (6C/12T, 2.60GHz, up to 4.50GHz) i3-11100HE (4C/8T, 2.40GHz, up to 4.40GHz)
CPU Frequency	Up to 4.70 GHz
Chipset	Intel® 500 Series Chipsets
Memory Type	DDR4 3200 SODIMM x 2
Max. Memory Capacity	up to 64GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+9V to +24V
Power Supply Type	AT/ATX, DC Jack Connector
Power Consumption (Typical)	TBD
Dimension (L x W)	260 x 160 x 50 mm
Operating Temperature	32°F ~ 122°F (-20°C ~ 55°C), with 0.5 m/sec air flow
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	Intel® UHD Graphics for 11th Gen. Intel Processor
Video Output	DP++ 1.2a x 2, HDMI 2.0b x 1, VGA x 1 4 Simultaneous Displays
Backlight Inverter Supply	—
I/O	
Ethernet	Intel® I211AT, 10/100/1000Base, RJ45 x2 Intel® I219LM, 10/100/1000Base, RJ45 x1 Intel® I225LM, 10/100/2500Base, RJ45 x1
Audio	—
USB Port	USB3.2 Gen 2 (Type A) x 4, USB2.0 (Type A) x 2
Serial Port	COM RS232/422/485 x 2
Parallel Port (printer port)	—
HDD Interface	—
SSD	SATA III x 2 (2.5"" SSD x 2 containable) +5V SATA Power Connector x 1 (Total up to +5V@2A limitation for 2 SATA SSD use)
Expansion Slot	M.2 3052 B key x 1 M.2 2280 M key x 1 Mini Card (Half Size) x 1
DIO	16 bits
TPM	TPM 2.0
Touch	—
SIM	NanoSIM x 1

Optional Accessories

Part Number	Description	QTY
1255X00063	AC/DC Adapter.100-240V.150W.DC JACK	1
1702031803	Power cord for EU	1
1702031802	Power cord for US	1
170203180J	Power cord for UK	1
170203180E	Power cord for Japan	1
170203180B	Power cord for China	1
1702031811	Power cord for Taiwan	1

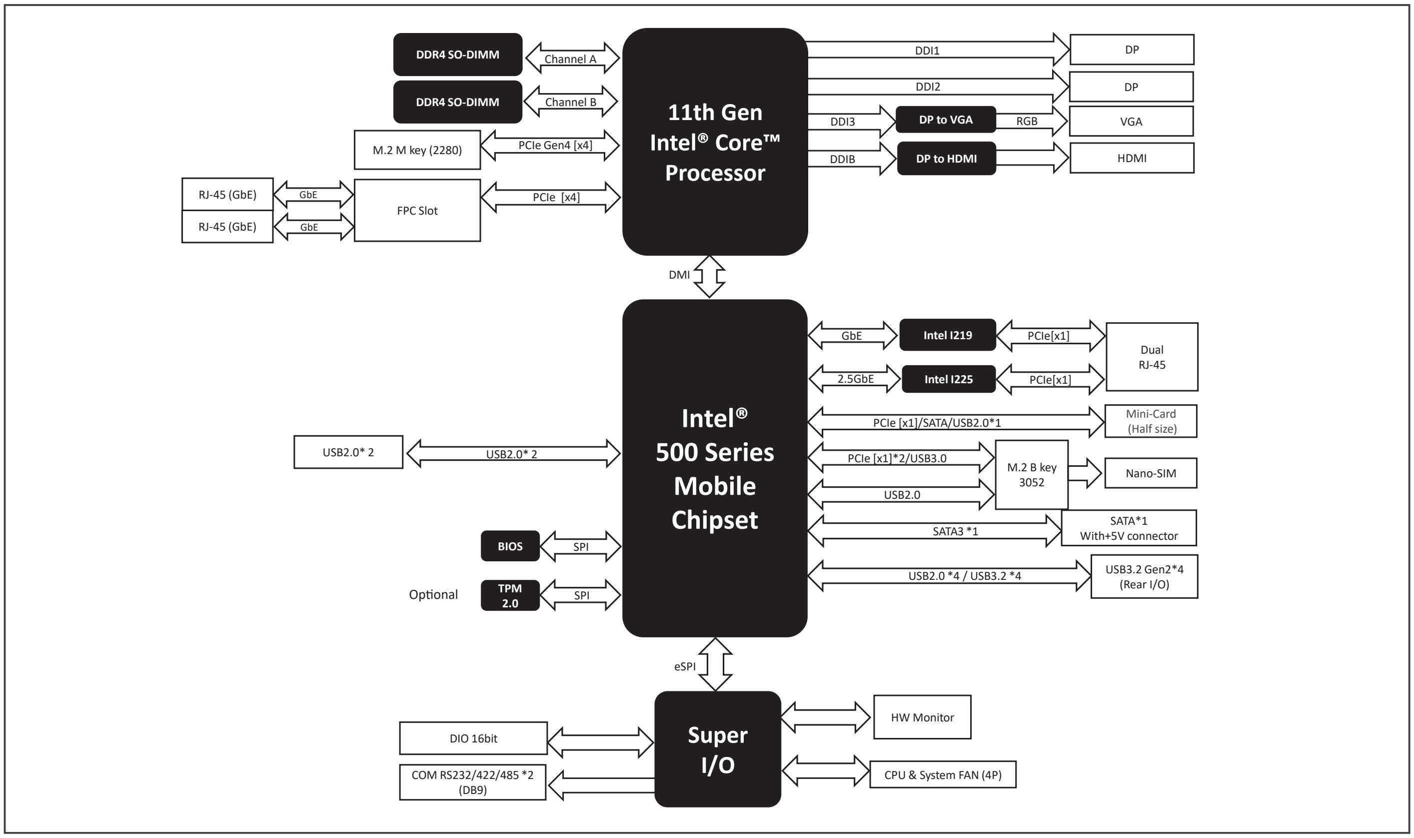
Packing List

- EPIC-TGH7-PUC x 1

Note: All specifications are subject to change without notice.

EPIC-TGH7-PUC

Block Diagram



Dimension

Unit: mm

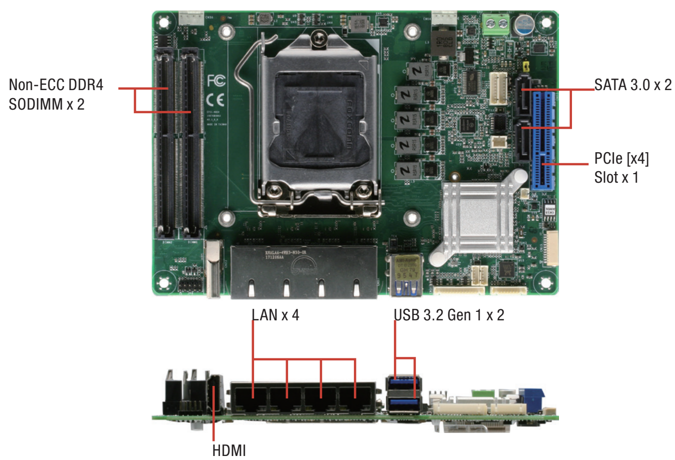
TBD

Ordering Information

- **TBD**

EPIC-KBS9

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



Features

- 6th/7th Generation Intel® Core™ i-S series Processor (Socket Type)
- DDR4 (Non-ECC) SODIMM x 2, 2133MHz, up to 32G
- VGA (Internal)/HDMI Display
- USB 3.2 Gen 1 x 2 (Rear IO), USB 2.0 x 2 (Internal)
- mSATA/Mini-PCIe Full Size x 1 (Default: mSATA, Optional for Mini-PCIe by BOM Change)
- Audio Codec with Amp, SATA 6.0 Gb/s x 2, GPIO x 8, RS-232/422/485 x 2 (Internal)
- 12V Only

Specifications

System	
Form Factor	4" EPIC Board
CPU	CPU Socket Type
CPU Frequency	6th/7th Generation Intel® Core™ i3/i5/i7/Celeron® (Support up to 65W SKU)
Chipset	H110/Q170 (6W)
Memory Type	DDR4 (Non-ECC) SODIMM x 2, 2133MHz, up to 32GB
Max. Memory Capacity	Up to 32GB
BIOS	AMI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V, AT/ATX
Power Supply Type	AT/ ATX
Power Consumption (Typical)	Power consumption : 12V@7.2A, total 86W (with i7-7700U, during 100% loading)
Dimension (L x W)	4.53" x 6.50" (115 mm x 165 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	135,399 Hours
Certification	CE/FCC
Display	
VGA/LCD Controller	6th/7th Generation Intel® Core™ i3/i5/i7/Celeron®
Video Output	HDMI (Rear), VGA (Internal Only)
Backlight Inverter Supply	—
I/O	
Ethernet	Intel® i211 Gigabit Ethernet x 4
Audio	ALC269 (With Amp)
USB Port	USB 3.2 Gen 1 x 2 (Real IO) USB2.0 x 2 (Internal)
Serial Port	COM x 2 (All Internal), RS-232/422/485
Parallel Port (printer port)	—
HDD Interface	SATA 3.0 x 2
SSD	mSATA x 1 (Full size)
Expansion Slot	Mini-card x 1 (Full Size) (No SIM) PCIe[x4] Slot x 1
DIO	8-bit
TPM	—
Touch	—
SIM	—

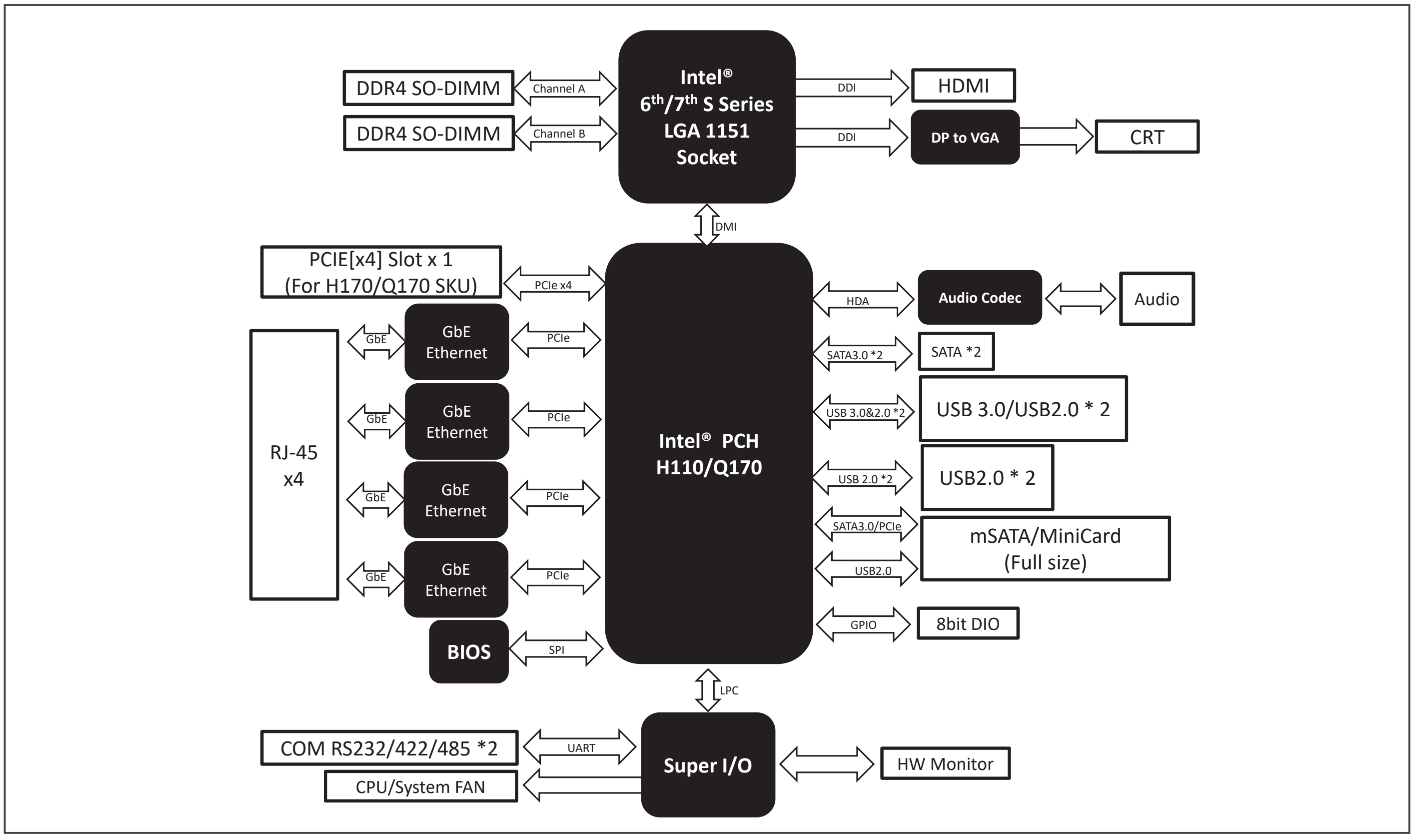
Packing List

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

Optional Accessories

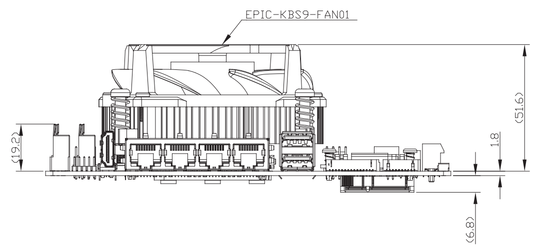
Part Number	Description	QTY
1702002010	Power Cable (2pin), Length 10cm	1
1709100254	Audio Cable (3pin), Length 25cm	1
1700050207	USB Cable (5pin), Length 20cm	2
1701090150	COM Cable (9pin), Length 15cm	2
1704150153	Internal VGA Cable	1
EPIC-KBS9-FAN01	CPU Cooler, for LGA115X, 12V/4P PWM, AL, for EPIC-KBS9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

Block Diagram



Dimension

Unit: mm

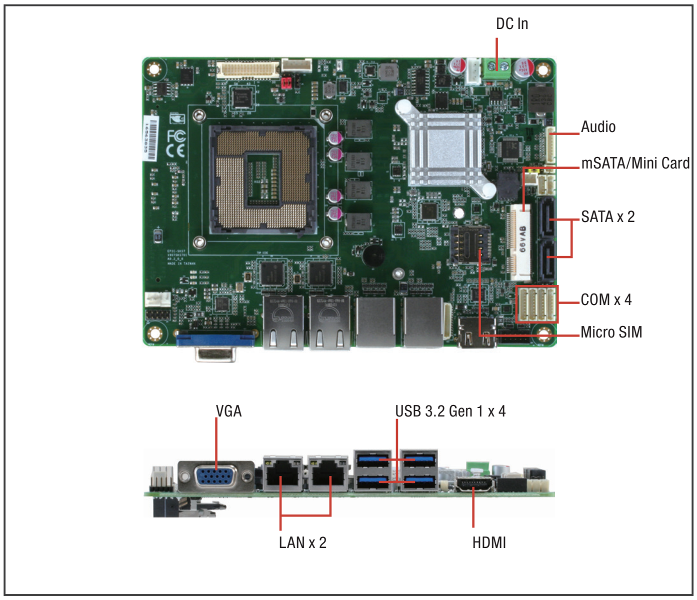


Ordering Information

Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Operating Temp	Others
EPIC-KBS9-A10-0001 (H110)	LGA1151 (Socket Type)	DDR4 x2 (Max 32G)	FAN	HDMI (Rear) x 1 VGA (Internal) x1	SATAIII x 2	GbE x 4	USB 3.2 Gen 1 x 2 (Rear) USB2.0 x 2 (Internal)	—	2	mSATA/MiniCard x 1 (Full) (by BOM change for mPCIe)	+12V	0°C ~ 60°C	Audio, DIO x 8
EPIC-KBS9-A10-0003 (Q170)	LGA1151 (Socket Type)	DDR4 x2 (Max 32G)	FAN	HDMI (Rear) x 1 VGA (Internal) x1	SATAIII x 2	GbE x 4	USB 3.2 Gen 1 x 2 (Rear) USB2.0 x 2 (Internal)	—	2	PCIe[x4] x1 mSATA/MiniCard x 1 (Full) (by BIOS change for mPCIe)	+12V	0°C ~ 60°C	Audio, DIO x 8

EPIC-KBS7

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



Features

- 6th/7th Generation Intel® Core™ i-S series Processor (Socket Type)
- 12V, 9-24V Wide Voltage, Non-ECC DDR4 SODIMM x 1 (Up to 16 GB)
- Basic VGA/HDMI/LVDS Display
- USB 3.2 Gen 1 x 4, USB 2.0 x 2, Good for Machine Vision
- mSATA/Mini-PCIe Full Size x 1 (Default: mSATA, BOM change for H110)
  mSATA/Mini-PCIe Full Size x 1 (Default: mSATA, BIOS Selection for Q170)
- HDA, SATA x 2, GPIO x 8, COM x 4

1000 Giga LAN · DDR 4 · LVDS · DVI Digital · USB 2.0 · Audio · CE · FC

Specifications

System	
Form Factor	4" EPIC Board
CPU	6th/7th Generation CPU (Socket Type, TDP 35W, 54W Only)
CPU Frequency	6th/7th Generation Intel® Core™ i3/i5/i7/Celeron®
Chipset	H110, Q170 (6W)
Memory Type	DDR4 (Non-ECC), 2133MHz
Max. Memory Capacity	Up to 16GB
BIOS	AMI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	12V or 9-24V (Default)
Power Supply Type	AT/ ATX
Power Consumption (Typical)	50W@Full loading
Dimension (L x W)	4.53" x 6.50" (115mm x 165mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	110,000
Certification	CE/FCC
Display	
VGA/LCD Controller	6th/7th Generation Intel® Core™ i3/i5/i7/Celeron®
Video Output	CRT/LVDS/HDMI
Backlight Inverter Supply	Max. 12V
I/O	
Ethernet	LAN x 2 (Real IO) (i211 x 2)
Audio	ALC892, no Amp
USB Port	USB 3.2 Gen 1 x 4 (Real IO) USB2.0 x 2 (Internal)
Serial Port	COM x 4 (COM2: RS-232/422/485)
Parallel Port	—
HDD Interface	SATA 3.0 x 2, SATA Power (5V)
SSD	mSATA x 1 (optional for mini-Card)
Expansion Slot	Mini-card x 1, Micro SIM x 1 (Optional)
DIO	8-bit
TPM	—
Touch	—
SIM	—

Packing List

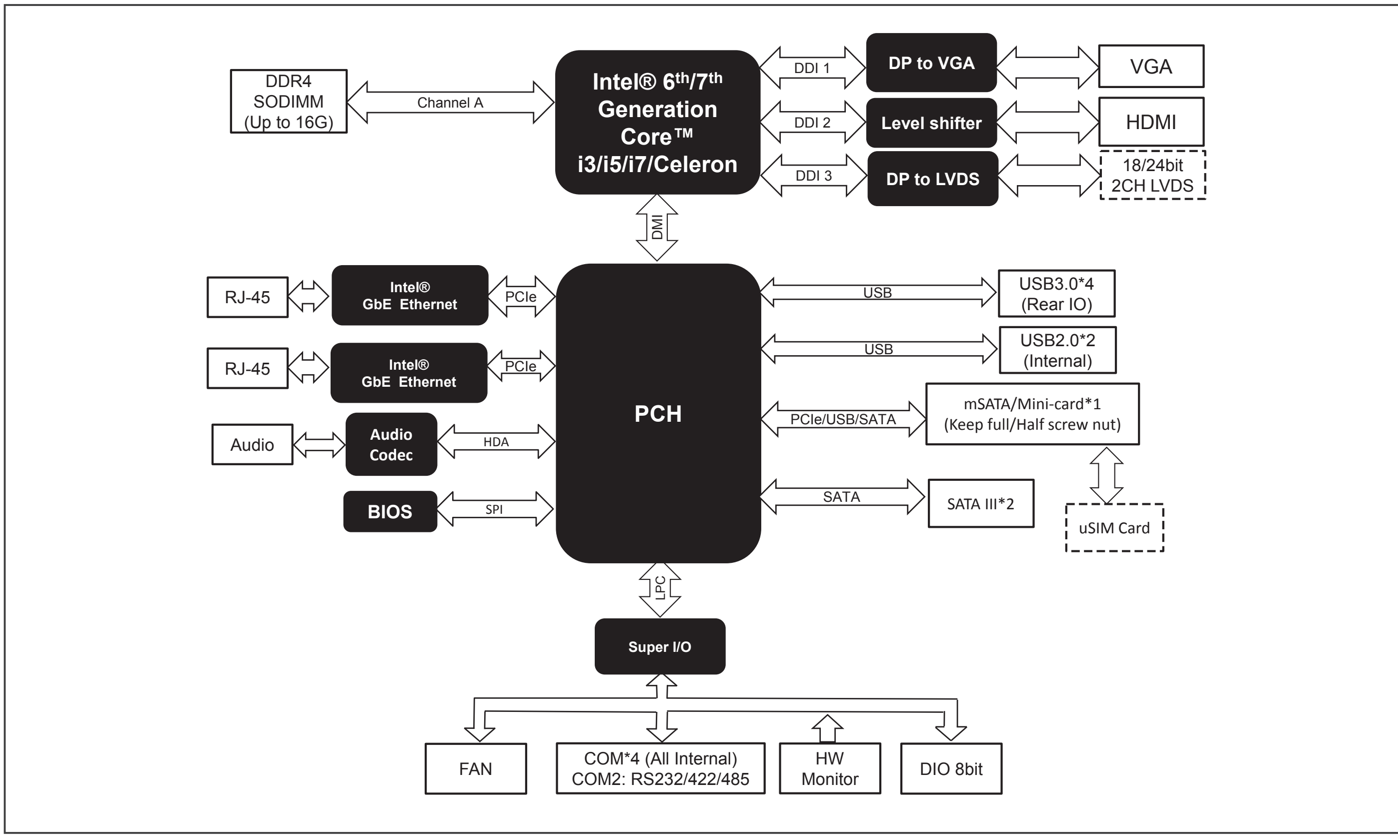
- SATA Cable, Length 50cm (1709070500)
- SATA Power Cable, Length 15cm (1702150155)
- Jumper Cap (9657666600)
- EPIC-KBS7

Optional Accessories

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

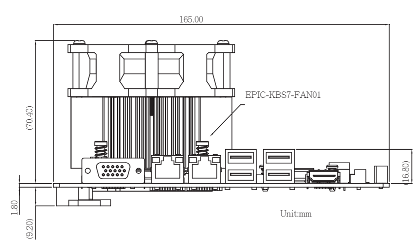
Note: All specifications are subject to change without notice.

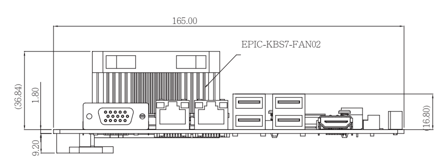
Block Diagram



Dimension

Unit: mm





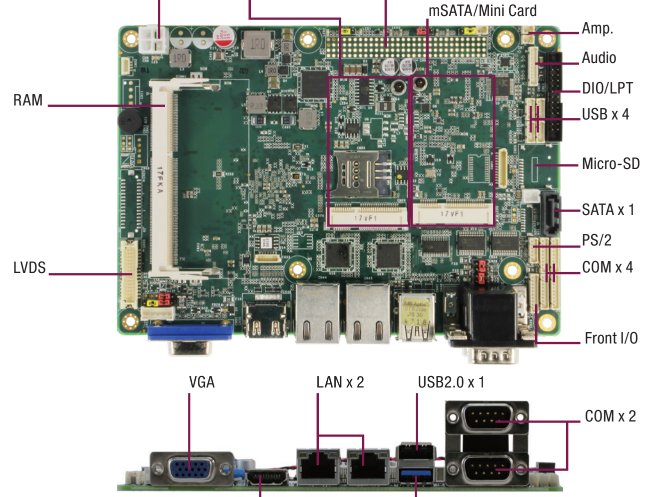
Ordering Information

Part Number	CPU	Memory	Thermal	Display	LVDS	Storage	LAN	USB	RS-232	RS-232 /422/485	Expansion Slot	Power	Operating Temp	Others
EPIC-KBS7-A10-0001 (Standard, H110)	LGA1151 (Socket Type)	DDR4 (Max 16G)	FAN	VGA + HDMI	—	SATA x 2	GbE x 2	USB 3.2 Gen 1 x 4 USB2.0 x 2	3	1	mSATA x 1 (Mini-PCIe by BOM Change)	9-24V	0°C ~ 60°C	DIO x 8
EPIC-KBS7-A10-0002 (Advanced, Q170)	LGA1151 (Socket Type)	DDR4 (Max 16G)	FAN	VGA + LVDS + HDMI	24bit, 2CH	SATA x 2	GbE x 2	USB 3.2 Gen 1 x 4 USB2.0 x 2	3	1	mSATA/miniCard x 1	9~24V	0°C ~ 60°C	Micro-SIM, DIO x 8

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

EPIC-BT07

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



Features

- Onboard Intel® Atom™ E3845/ Celeron® J1900, N2807 Processor
- DDR3L 1333MHz SODIMM x 1, Up to 8GB
- 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 3.2 Gen 1 x 1, USB2.0 x 5, RS-232 x 4, RS-232/422/485 x 2 (COM2, COM3)
- Mini-Card x 1, SIM x 1, PCI-104 (Optional)
- 16-bit Digital IO/LPT, SMBus x 1, I2C (Optional)
- Audio 2CH, 2W Audio Amp., TPM (Optional), Touch Controller (Optional)
- 9 ~ 24VDC Wide Range or 12VDC Power Input
- SoC Processor on Solder Side Design

Specifications

System	
Form Factor	4" EPIC Board
CPU	Intel® Atom® E3845/Celeron® 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 8GB
BIOS	AMI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	4 Pin Connector (Default) 2 Pin Phoenix Connector (Option)
Power Supply Type	AT/ ATX
Power Consumption (Typical)	12W
Dimension (L x W)	4.53" x 6.50" (115mm x 165mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) or WiTAS 2 (E3845 sku , -40°C ~ 85°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	358,806 hrs
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	USB 2.0 x 5 USB 3.2 Gen 1 x 1
Serial Port	COM1, 4, 5, 6 : RS-232 x 4 COM2, 3 : RS-232/422/485 x 1 (Ring/ +5V/ +12V)
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	SATA 2.0 x 1
SSD	mSATA x 1 (Share with full-size Mini-Card by BOM)
Expansion Slot	Full-size mPCIe x 1 Full size mSATA/mPCIe x 1 (Default mSATA, select by BOM Change) Micro-SD x 1 (Optional, only E3800 series) PCI-104 x 1 (Optional, only E3800 series) 16-bit DIO or LPT SMbus x 1, I2C x 1 (optional), PS/2 x 1
DIO	16-bit
TPM	Optional
Touch	Optional
SIM	SIM

Packing List

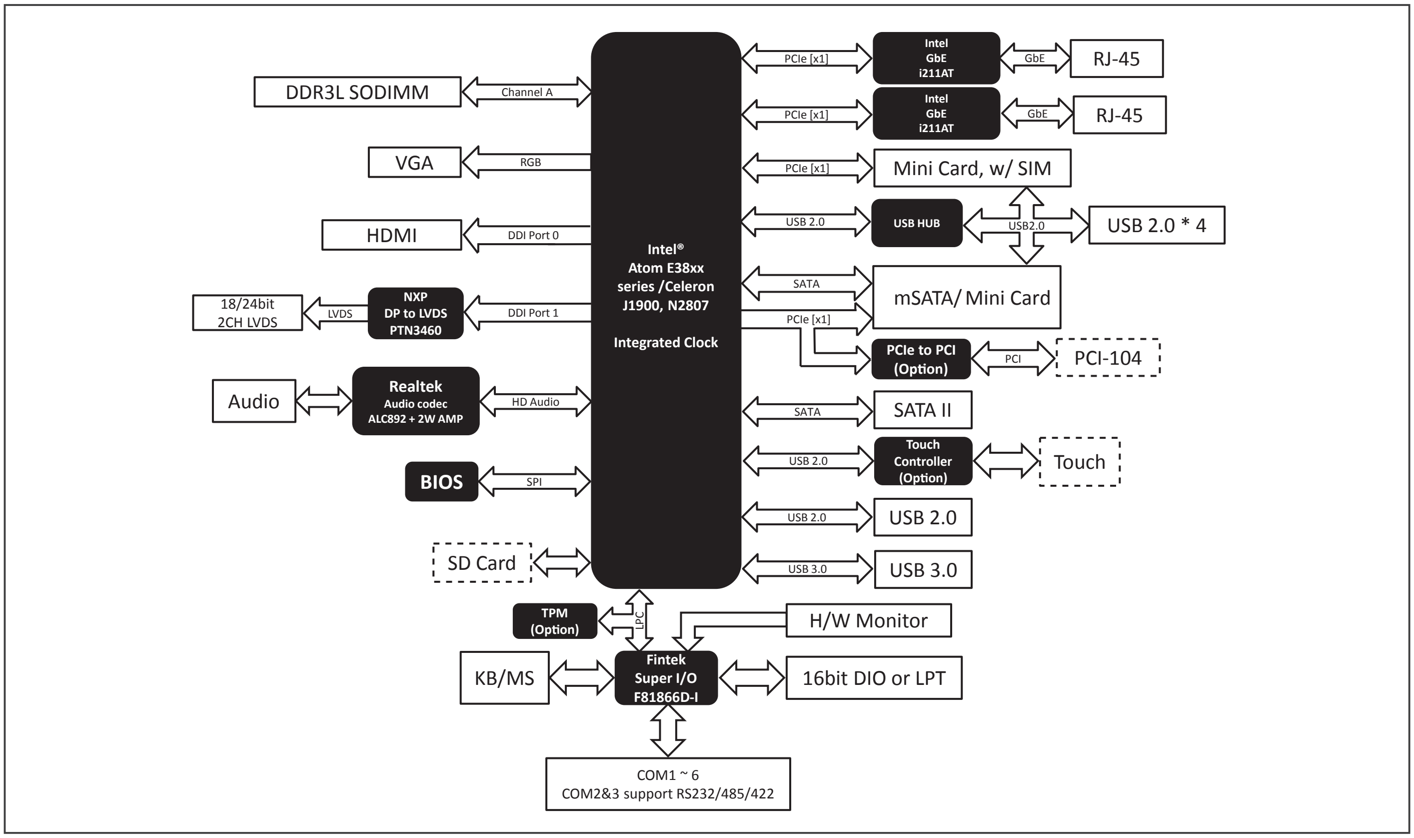
- **1709070500**
  SATA Cable
- **1702150155**
  SATA Power Cable
- **M10BT07010**
  Heat-Spreader
- **EPIC-BT07**

Optional Accessories

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

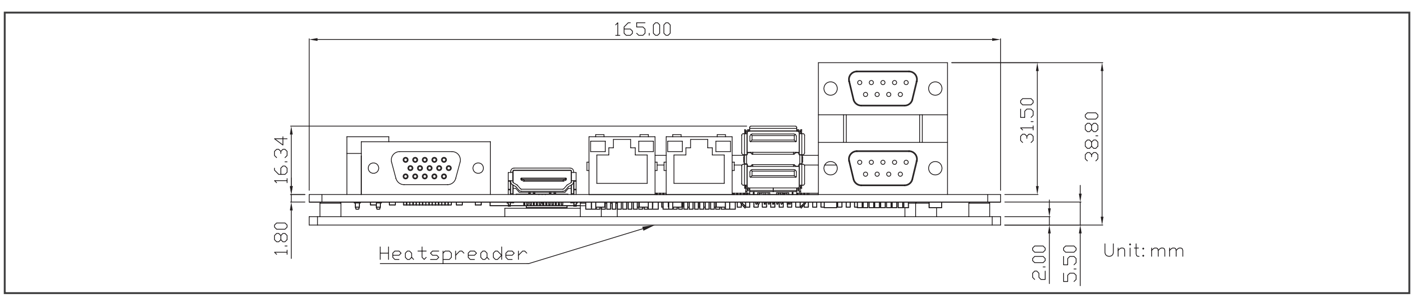
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

PART NUMBER	CPU	Memory	Thermal	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion slot	Power	Power temp	Others
EPIC-BT07-A13-0001	Atom™ E3845 (10W)	DDR3L (Max. 8GB)	Heat-Spreader (Heat-sink option)	VGA+LVDS/ VGA+HDMI/ LVDS+HDMI	18/24bits, 2CH	SATAII x1 mSATA x 1	GbE x2	USB3.2 Gen1 x1 USB2.0 x5	4	2	Mini-Card x 1 SIM x 1 PCI-104 x 1 Micro-SD x 1	DC 9-24V 4 Pin Connector	0~60˚C	16bit DIO or LPT, Audio 2CH (2W Amp) PS/2, SMbus, I2C (Optional), TPM (Optional),Touch Controller (Optional),PCI104
EPIC-BT07-A13-0002	Celeron® J1900 (10W)	DDR3L (Max. 8GB)	Heat-Spreader (Heat-sink option)	VGA+LVDS/ VGA+HDMI/ LVDS+HDMI	18/24bits, 2CH	SATAII x1 mSATA x 1	GbE x2	USB3.2 Gen1 x1 USB2.0 x5	4	2	Mini-Card x 1 SIM x 1	DC 9-24V 4 Pin Connector	0~60˚C	16bit DIO or LPT, Audio 2CH (2W Amp), PS/2 SMbus, I2C (Optional), TPM (Optional),, Touch Controller (Optional)
EPIC-BT07-A13-0003	Celeron® N2807 (4.3W)	DDR3L (Max. 8GB)	Heat-Spreader (Heat-sink option)	VGA+LVDS/ VGA+HDMI/ LVDS+HDMI	18/24bits, 2CH	SATAII x1 mSATA x 1	GbE x2	USB3.2 Gen1 x1 USB2.0 x5	4	2	Mini-Card x 1 SIM x 1	DC 9-24V 4 Pin Connector	0~60˚C	16bit DIO or LPT, Audio 2CH (2W Amp), PS/2 SMbus, I2C (Optional), TPM (Optional),, Touch Controller (Optional)
EPIC-BT07W2-A13-0002	Atom™ E3845(10W)	DDR3L (Max. 8GB)	Heat-Spreader (Heat-sink option)	VGA+LVDS/ VGA+HDMI/ LVDS+HDMI	18/24bits, 2CH	SATAII x1 mSATA x 1	GbE x2	USB3.2 Gen1 x1 USB2.0 x5	4	2	Mini-Card x 1 SIM x 1 PCI-104 x 1 Micro-SD x 1	DC 9-24V 4 Pin Connector	-40~85˚C	16bit DIO or LPT, Audio 2CH (2W Amp) PS/2, SMbus, I2C (Optional), TPM (Optional),Touch Controller (Optional),PCI104
EPIC-BT07-A13-0005	Atom™ E3845 (10W)	DDR3L (Max. 8GB)	Heat-Spreader (Heat-sink option)	VGA+LVDS/ VGA+HDMI/ LVDS+HDMI	18/24bits, 2CH	SATAII x1 mSATA x 1	GbE x2	USB3.2 Gen1 x1 USB2.0 x5	4	2	Mini-Card x 1 SIM x 1 PCI-104 x 1 Micro-SD x 1	DC 9-24V 2 Pin Connector	0~60˚C	16bit DIO or LPT, Audio 2CH (2W Amp) PS/2, SMbus, I2C (Optional), TPM (Optional),Touch Controller (Optional),PCI104
EPIC-BT07-A13-0006	Celeron® J1900 (10W)	DDR3L (Max. 8GB)	Heat-Spreader (Heat-sink option)	VGA+LVDS/ VGA+HDMI/ LVDS+HDMI	18/24bits, 2CH	SATAII x1 mSATA x 1	GbE x2	USB3.2 Gen1 x1 USB2.0 x5	4	2	Mini-Card x 1 SIM x 1	DC 9-24V 2 Pin Connector	0~60˚C	16bit DIO or LPT, Audio 2CH (2W Amp), PS/2 SMbus, I2C (Optional), TPM (Optional),, Touch Controller (Optional)
EPIC-BT07-A13-0007	Celeron® N2807 (4.3W)	DDR3L (Max. 8GB)	Heat-Spreader (Heat-sink option)	VGA+LVDS/ VGA+HDMI/ LVDS+HDMI	18/24bits, 2CH	SATAII x1 mSATA x 1	GbE x2	USB3.2 Gen1 x1 USB2.0 x5	4	2	Mini-Card x 1 SIM x 1	DC 9-24V 2 Pin Connector	0~60˚C	16bit DIO or LPT, Audio 2CH (2W Amp), PS/2 SMbus, I2C (Optional), TPM (Optional),, Touch Controller (Optional)

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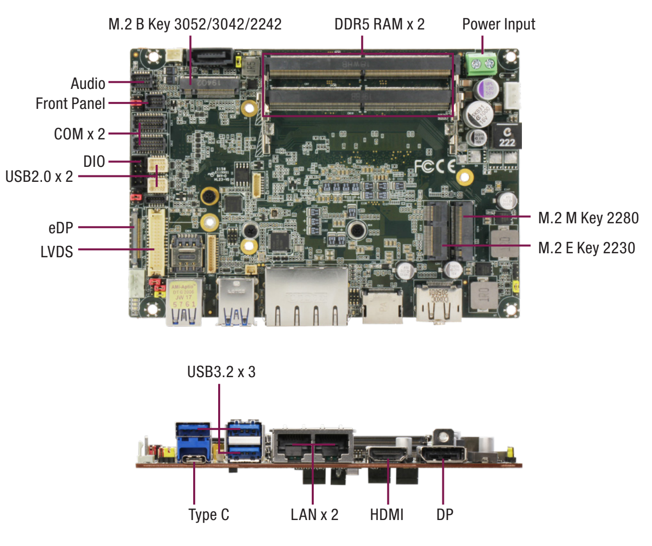
SubCompact Boards

GENE-ADP6

3.5” SubCompact Board with 12th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC



Features

- Intel® Core i7/i5/i3/Celeron SoC
- DDR5 4800 MHz, Dual Channel SODIMM x 2, up to 64GB
- LVDS Dual Channel 18/24 bit x 1, eDP 1.4b, DP1.4a x 1, HDMI 2.1 x 1
- 2.5GbE x 1, GbE x 1, SATA III x 1, DIO x 8bit
- USB 3.2 Gen2 x 3 (Rear I/O), USB2.0 x 4(Pin header), USB Type C x 1
- RS-232/422/485 x 4
- M.2 M-key 2280 x 1 (PCIe x4 Gen4)
- M.2 E-Key 2230 x 1 (PCIe, USB2.0)
- M.2 B-Key 3052/3042/2242 x 1 (PCIe x2, USB3.2+SATA, USB2.0), default: USB3.2+SATA
- Wide DC Input 9-36V (Optional: 12V Only)

2.5Giga LAN DDR 5 Audio LVDS USB 3.2 Gen 2

Specifications

SYSTEM	
FORM FACTOR	3.5” SubCompact Board
CPU	Intel® 12th Generation Core™/Celeron CPU i7-1270PE (12C/16T, 3.30GHz, up to 4.50GHz, 28W, TDP-up 64W) i7-1265UE (10C/12T, 3.50GHz, up to 4.70GHz, 15W, TDP-up 55W) i5-1250PE (12C/16T, 3.20GHz, up to 4.40GHz, 28W, TDP-up 64W) i3-1220PE (8C/12T, 3.10GHz, up to 4.20GHz, 28W, TDP-up 64W) Celeron® 7305E (5C/5T, 1.00GHz, 15W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR5 4800 MHz, Dual Channel SODIMM x 2,up to 64GB
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0 (NPCT750AABYX)
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75” x 4” (146mm x 101.7mm)
OS SUPPORT	Windows 10/11 (64bit) Linux Ubuntu 22.04/Kernel 5.15
POWER	
POWER REQUIREMENT	+9-36V or +12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector
POWER CONSUMPTION	Intel® Core™ i7-1270 PE, DDR5 32GB x 2, 5.72A@ +12V(TYPICAL) Intel® Core™ i7-1270 PE, DDR5 32GB x 2, 7.95A@ +12V(MAX)
DISPLAY	
CONTROLLER	Intel® Iris® Xe Graphics Intel® UHD Graphics
LVDS/eDP	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080 eDP1.4b HBR3, up to 3840 x 2160
DISPLAY INTERFACE	HDMI 2.1 x 1, up to 8K x 4K@60Hz or 4K2K 120Hz DP1.4a x 1, up to 7680 x 4320 60Hz 30bpp
MULTIPLE DISPLAY	Up to 4 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	—
EXTERNAL I/O	
ETHERNET	Intel® i219, 10/100/1000Base Intel® i226, 10/100/1000/2500Base
USB	USB3.2 Gen 2 x 3 USB Type C x 1 (DP1.4a, PD 5V/3A)
SERIAL PORT	—
VIDEO	HDMI 2.1 x 1, DP1.4a x 1

INTERNAL I/O	
USB	USB2.0 x 4
SERIAL PORT	COM1,COM2 (RS232/422/485,supports 5V/12V/RI) COM3,COM4 (RS232/422/485)
VIDEO	LVDS/eDP x 1 Inverter x 1 (12V/2A)
SATA	SATA3.0 x 1 +5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	8-Bit
SMBus/I2C	SMBus/I2C x1 (Default: SMBus)
TOUCH	—
FAN	Smart Fan x 1
SIM	Nano SIM x 1
FRONT PANEL	PWR LED, HDD LED, PWR button, HW Reset
OTHERS	—
EXPANSION	
Mini PCI-E/mSATA	—
M.2	M-Key 2280 x 1 (PCIe x4 Gen4) B-Key 3052/3042/2242 x 1 (PCIe x2, USB3.2+SATA, USB2.0, default: USB3.2+SATA) E-Key 2230 x 1 (PCIe, USB2.0)
OTHERS	FPC x1 (PCIe x4 Gen4, Only support Graphic or NVME)
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP.	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	344,735
EMC	CE/FCC Class A

Optional Accessories

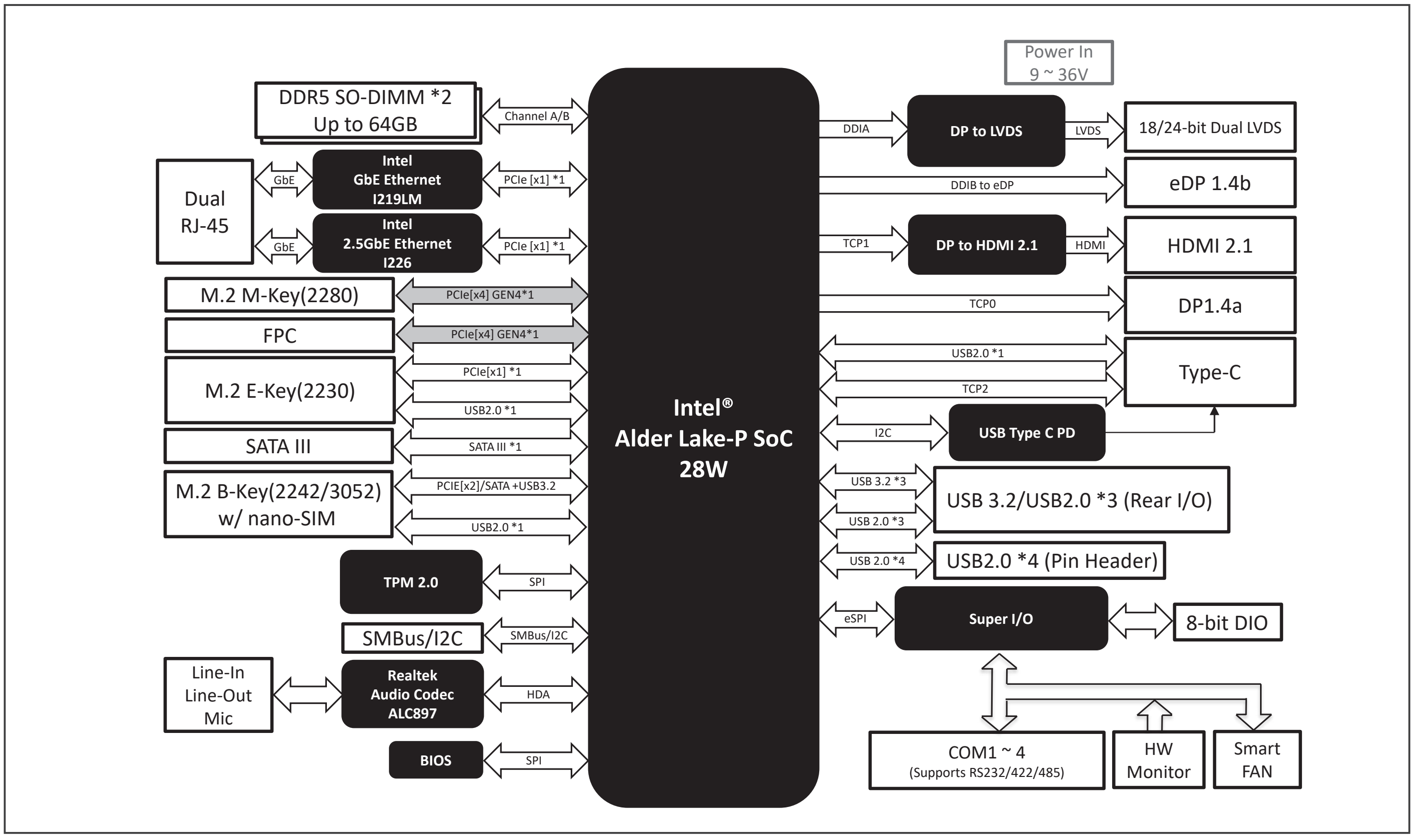
Part Number	Description	QTY
1702150155	SATA HDD Power, Cable 15cm	1
170204010R	Power Cable,10cm	1
170X000156	Audio Cable, 25cm	1
1709100108	FRONT PANEL Cable.10cm	1
170X000231	COM Port Cable, 30cm	2
170010010D	USB 2.0 Cable, 10cm	2
GENE-ADP6-FAN01	CPU Cooler.12V.4800RPM.Smart FAN	1
GENE-ADP6-HSP01	Heatspreader.146*80*11mm	1

Packing List

Description	QTY
GENE-ADP6 MB	1

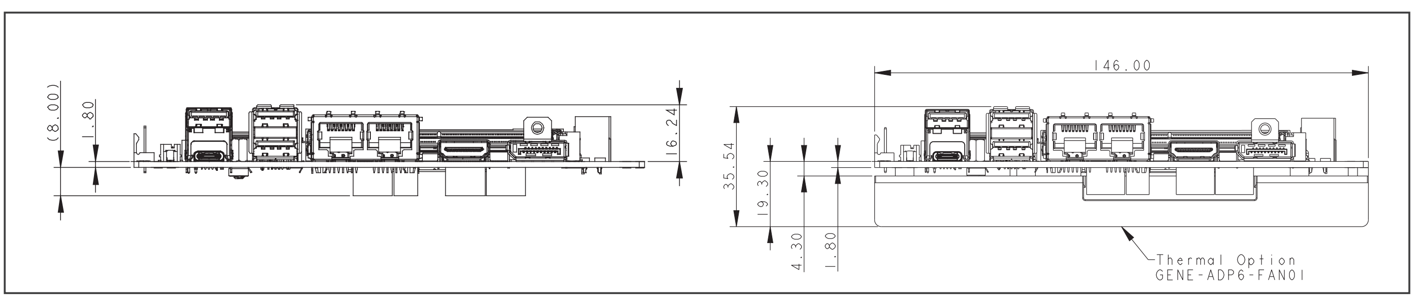
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

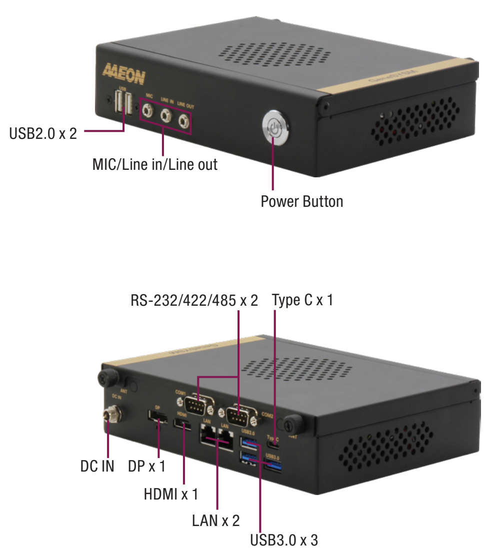


Ordering Information

Part Number	CPU	Display	LAN	USB	COM	Storage	Expansion Slot	TPM	Power	Temp	Others
GENE-ADP6-A10-0001	i7-1270PE	HDMI x1 DP x1 LVDS x1 eDP x1 Type-c DP x1	GbE x 1 2.5GbE x 1	USB 3.2 Gen 2 x 3 USB Type C x 1 USB 2.0 x 4	4	SATA x 1	M-Key 2280 x 1 B-Key 3052 x 1 E-Key 2230 x 1	2.0	9~36V	0°C ~ 60°C	Audio, Nano SIM, DIO x 8, SMBUS
GENE-ADP6-A10-0002	i7-1265UE	HDMIx1 DP x1 LVDS x1 Type-c DP x1	GbE x 1 2.5GbE x 1	USB 3.2 Gen 2 x 3 USB Type C x 1 USB 2.0 x 4	4	SATA x 1	M-Key 2280 x 1 B-Key 3052 x 1 E-Key 2230 x 1	—	12V	0°C ~ 60°C	Audio, Nano SIM, DIO x 8, SMBUS
GENE-ADP6-A10-0003	i5-1250PE	HDMI x1 DP x1 LVDS x1 eDP x1 Type-c DP x1	GbE x 1 2.5GbE x 1	USB 3.2 Gen 2 x 3 USB Type C x 1 USB 2.0 x 4	4	SATA x 1	M-Key 2280 x 1 B-Key 3052 x 1 E-Key 2230 x 1	2.0	9~36V	0°C ~ 60°C	Audio, Nano SIM, DIO x 8, SMBUS
GENE-ADP6-A10-0004	i3-1220PE	HDMI x1 DP x1 LVDS x1 eDP x1 Type-c DP x1	GbE x 1 2.5GbE x 1	USB 3.2 Gen 2 x 3 USB Type C x 1 USB 2.0 x 4	4	SATA x 1	M-Key 2280 x 1 B-Key 3052 x 1 E-Key 2230 x 1	2.0	9~36V	0°C ~ 60°C	Audio, Nano SIM, DIO x 8, SMBUS
GENE-ADP6-A10-0005	Celeron-7305E	HDMIx1 DP x1 LVDS x1 Type-c DP x1	GbE x 1 2.5GbE x 1	USB 3.2 Gen 2 x 3 USB Type C x 1 USB 2.0 x 4	4	SATA x 1	M-Key 2280 x 1 B-Key 3052 x 1 E-Key 2230 x 1	—	12V	0°C ~ 60°C	Audio, Nano SIM, DIO x 8, SMBUS

GENESYSM-ADP6 PRELIMINARY

3.5" SubCompact Board System with 12th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC



Features

- 12th Gen Intel® Core™ i7/i5/i3/Celeron Processor
- DDR5 4800MHz SODIMM x 2, up to 64GB
- DP 1.4 x 1, HDMI 2.0 x 1, Type C DP x 1
- 2.5GbE x 1, GbE x 1, SATA III x 1, DIO x 8bit
- USB 3.2 Gen2 x 3, USB 2.0 x 2, USB Type C x 1
- M.2 2280 M key x 1, M.2 2230 E key x 1, M.2 3052 x 1
- Wide DC Input 9-36V

1000 Giga LAN USB 2.0 USB 3.2 Gen 1 SATA 3

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board System
CPU	Intel® 12th Generation Core™/Celeron CPU i7-1270PE (12C/16T, 3.30GHz, up to 4.50GHz, TDP 28W, up to 64W) i5-1250PE (12C/16T, 3.20GHz, up to 4.40GHz, TDP 28W, up to 64W) i3-1220PE (8C/12T, 3.10GHz, up to 4.20GHz, TDP 28W, up to 64W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR5 4800 MHz, Dual Channel SODIMM x 2, up to 64GB
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0 (NPCT750AABYX)
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)
OS SUPPORT	Windows 10/11 (64bit) Linux Ubuntu 20.04/Kernel 5.15
POWER	
POWER REQUIREMENT	+9-36V
POWER SUPPLY TYPE	ATX
CONNECTOR	DC Jack Connector
POWER CONSUMPTION	Intel® Core™ i7-1270 PE, DDR5 32GB x 2, 5.72A@ +12V(TYPICAL) Intel® Core™ i7-1270 PE, DDR5 32GB x 2, 7.95A@ +12V(MAX)
DISPLAY	
CONTROLLER	Intel® Iris® Xe Graphics Intel® UHD Graphics
LVDS/eDP	—
DISPLAY INTERFACE	HDMI 2.1 x 1, up to 8K x 4K@60Hz or 4K2K 120Hz DP1.4a (Support DP++) x 1, up to 7680 x 4320 60Hz 30bpp Type C DP1.4a
MULTIPLE DISPLAY	Up to 3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	—
EXTERNAL I/O	
ETHERNET	Intel® i219, 10/100/1000Base Intel® i226, 10/100/2500Base
USB	USB3.2 Gen 2 x 3 USB Type C x 1 (USB4.0, DP1.4a, PD 5V/3A) USB2.0 x 2
SERIAL PORT	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)
VIDEO	HDMI 2.1 x 1 DP1.4a x 1
INTERNAL I/O	
USB	—
SERIAL PORT	—
VIDEO	—
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	8 Bits
SMBus/I2C	SMBus/I2C x1 (Default: SMBus)
TOUCH	—
FAN	4pins Smart Fan x 1
SIM	Nano SIM x 1
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	—
EXPANSION	
Mini PCI-E/mSATA	—
M.2	M-Key 2280 x 1 (PCIe x4 Gen4) B-Key 3052/3042/2242 x 1 (PCIe x2, USB3.2+SATA, USB2.0, default: USB3.2+SATA) E-Key 2230 x 1 (PCIe, USB2.0)
OTHERS	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 122°F (0°C ~ 50°C) 0.5 m/s air flow
STORAGE TEMP.	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	344,735
EMC	CE/FCC Class A

Optional Accessories

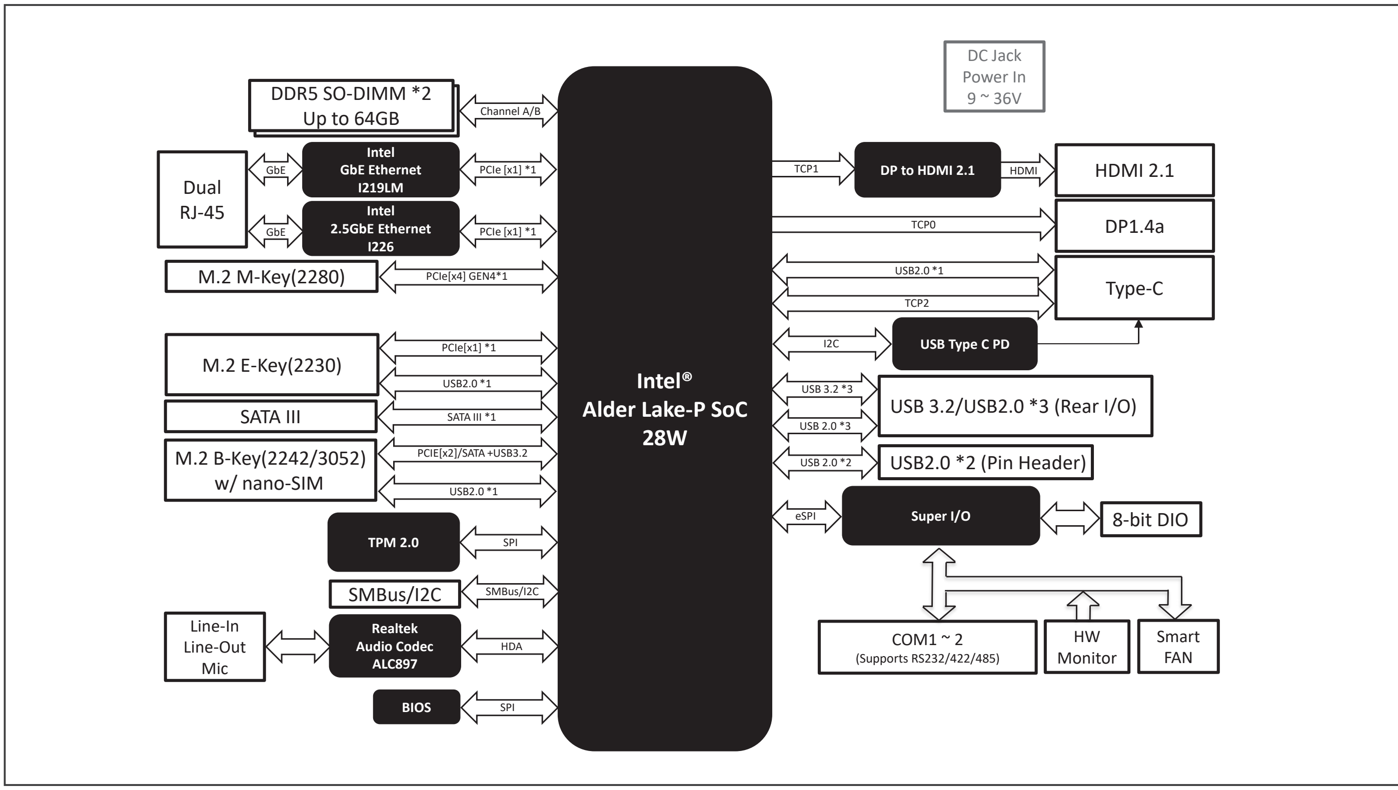
Part Number	Description	QTY per Board
1702031802	Power Cord (US Type)	1
1702031803	Power Cord (Europe Type)	1
170203180E	Power Cord (Japan)	1
1255X00063	Power Adapter 12V/12.5A 150W w/Lock 180D.DELTA.DPS-150AB-15 J	1
GENESYSM-ADP6-HDD1	HDD Kit. For GENESYSM-ADP6	1
GENESYSM-ADP6-VESA1	VESA Mount Kit. For GENESYSM-ADP6	1
GENESYSM-ADP6-WMT1	Wall Mount Kit. For GENESYSM-ADP6	1

Packing List

Description	QTY
GENESYSM-ADP6	1

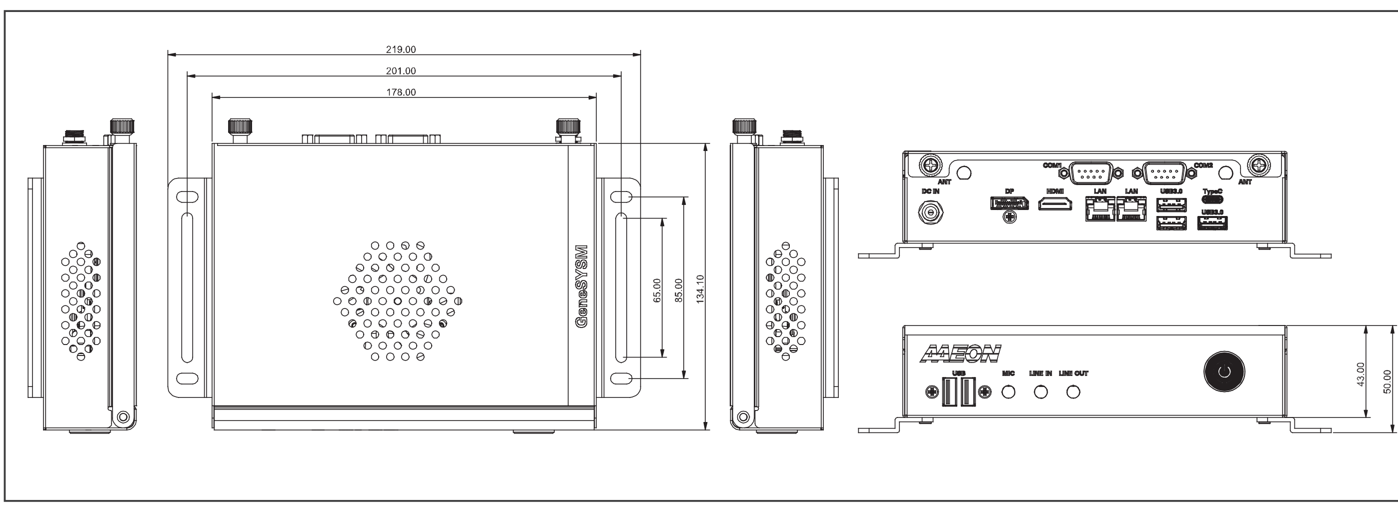
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

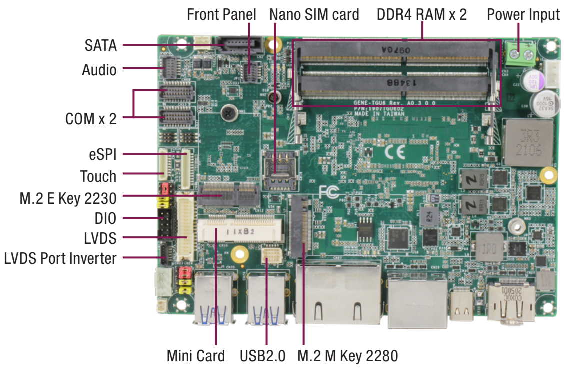


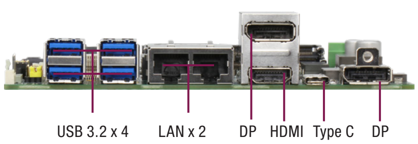
Ordering Information

Part Number	CPU	Fan/Fanless	Display	Storage	LAN	USB	RS-232/422/485	Expansion slot	TPM	Power	Operating Temp	Others
GENESYSM-ADP6-A10-0001	i7-1270PE	Cooler	HDMI x 1 DP x 1 Type C DP x 1	SATA x 1	GbE x 1 2.5GbE x 1	USB 3.2 Gen 2 x 3 USB Type C x 1 USB 2.0 x 2	2	B-Key 3052 x 1 M-Key 2280 x 1 E-Key 2230 x 1	2.0	9~36V	0~50˚C	Nano SIM, DIO, SMBUS, Audio
GENESYSM-ADP6-A10-0002	i5-1250PE	Cooler	HDMI x 1 DP x 1 Type C DP x 1	SATA x 1	GbE x 1 2.5GbE x 1	USB 3.2 Gen 2 x 4 USB 3.2 Gen2 TypeC x1 USB 2.0 x 2	2	B-Key 3052 x 1 M-Key 2280 x 1 E-Key 2230 x 1	2.0	9~36V	0~50˚C	Nano SIM, DIO, SMBUS, Audio
GENESYSM-ADP6-A10-0003	i3-1220PE	Cooler	HDMI x 1 DP x 1 Type C DP x 1	SATA x 1	GbE x 1 2.5GbE x 1	USB 3.2 Gen 2 x 4 USB 3.2 Gen2 TypeC x1 USB 2.0 x 2	2	B-Key 3052 x 1 M-Key 2280 x 1 E-Key 2230 x 1	2.0	9~36V	0~50˚C	Nano SIM, DIO, SMBUS, Audio

GENE-TGU6

3.5” SubCompact Board with 11th Generation Intel® Core™ i7/i5/i3/Celeron CPU





Features

- DDR4 SODIMM Slot x 2, up to 64GB, support IBECC
- HDMI 2.0b x 1, DP1.4 x 2, Type C DP x 1, LVDS/eDP x 1
- 2.5GbE x 1, GbE x 1
- USB 3.2 Gen2 x 4, USB2.0 x2, USB Type C x 1
- M.2 2280 M key x 1, M.2 2230 E key x 1
- Wide DC Input 9-36V (Optional: 12V Only)

Specifications

FORM FACTOR	
FORM FACTOR	3.5" SubCompact Board
CPU	Intel® 11th Generation Core™/Celeron CPU: i7-1185G7E (4C, 1.8GHz, up to 4.4GHz, TDP-up 28W) i5-1145G7E (4C, 1.5GHz, up to 4.1GHz, TDP-up 28W) i3-1115G4E (2C, 2.2GHz, up to 3.9GHz, TDP-up 28W) Celeron® 6305E (2C, 1.8GHz,TDP 15W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR4 3200MHz, Dual Channel SODIMM x 2,up to 64GB,Support IBECC (select SKUs)
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows 10 (64bit) Linux Ubuntu 20.04.2/Kernel 5.8
POWER	
POWER REQUIREMENT	+9-36V (Optional: +12V)
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector
POWER CONSUMPTION	Intel® i7-1185G7E, DDR4 3200MHz 32GB x2, 4.96A@ +12V(TYPICAL) Intel® i7-1185G7E, DDR4 3200MHz 32GB x2, 7.32A@ +12V(MAX)
DISPLAY	
CONTROLLER	Intel® Iris® Xe Graphics Intel® UHD Graphics
LVDS/eDP	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080 (Option: eDP1.4b up to 3840 x 2160)
DISPLAY INTERFACE	HDMI 2.0b x 1, up to 4K x 2K 60Hz DP1.4 x 2, up to 4K x 2K 60Hz Type C DP1.4a x 1, up to 4K x 2K 60Hz
MULTIPLE DISPLAY	Up to 4 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897/892
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	—
EXTERNAL I/O	
ETHERNET	Intel® i219LM, 10/100/1000Base, RJ-45 x1 Intel® i225LM, 10/100/2500Base, RJ-45 x1
USB	USB3.2 Gen 2 x 4 USB3.2 Gen 2 Type C x 1 (PD 5V/3A)
SERIAL PORT	—
VIDEO	HDMI 2.0b x 1, DP1.4 x 2, Type C DP1.4a x 1

INTERNAL I/O	
USB	USB2.0 x 2
SERIAL PORT	COM1, COM3, COM4 (RS232/422/485) COM2 (RS232/422/485,supports 5V/12V/RI)
VIDEO	LVDS/eDP x 1 (Default: LVDS) eDP: up to 1080P@60Hz
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	8-Bit
SMBus/I2C	SMBus/I2C x 1(Default: SMBus)
TOUCH	4/5/8-wire Touch Controller x 1 (optional)
FAN	Smart Fan x 1
SIM	Nano SIM x 1
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	—
EXPANSION	
Mini PCI-E/mSATA	Full-Sized mSATA/mPCIe x 1 (default: mSATA, select with BIOS)
M.2	M-Key 2280 x 1 (PCIex4) E-Key 2230 x 1 (PCIe, USB2.0)
OTHERS	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C), WiTAS1 -4°F ~ 158 °F (-20°C ~70°C), WiTAS2 -40°F ~ 185°F (-40°C ~ 85°C)
STORAGE TEMP.	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	329,884
EMC	CE/FCC Class A

Optional Accessories

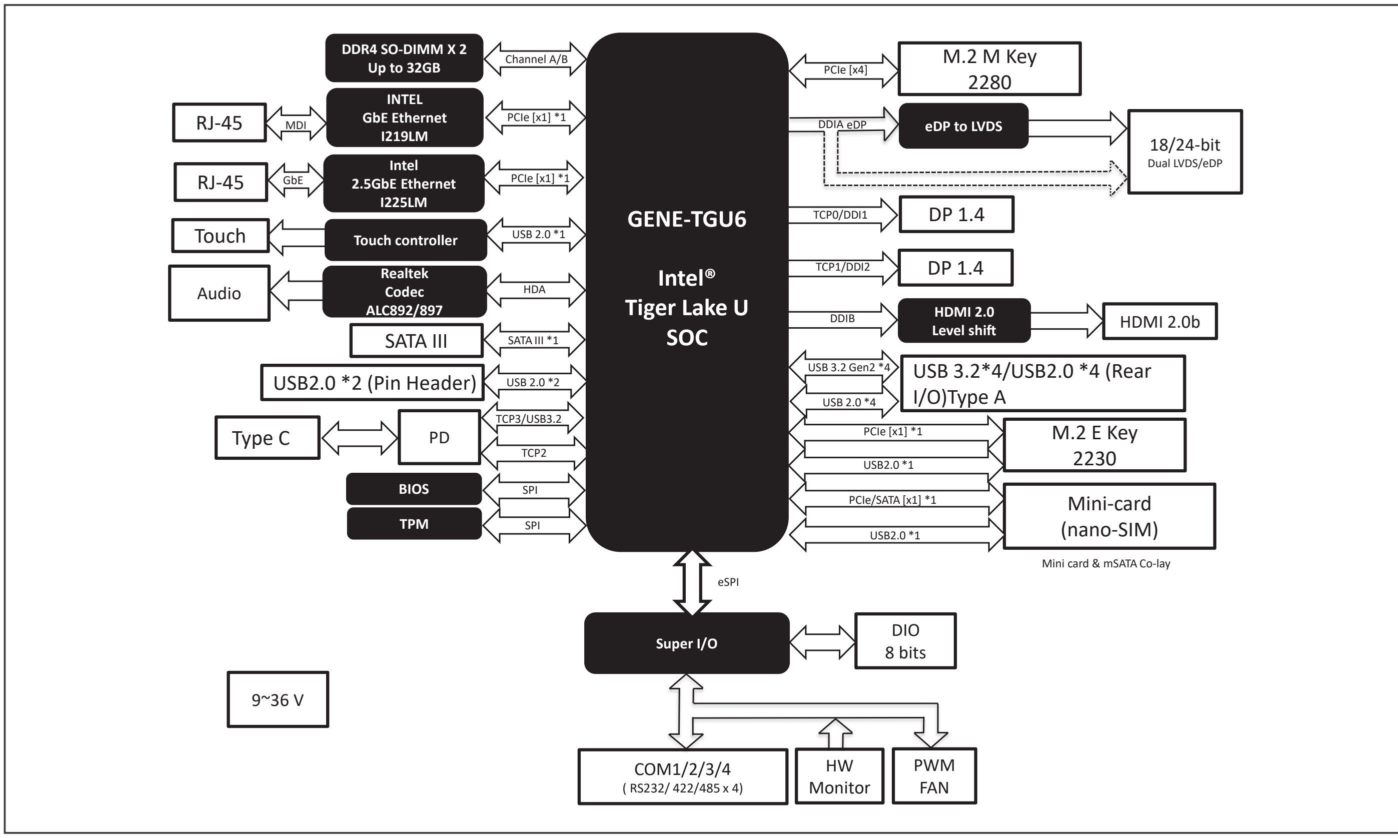
Part Number	Description	QTY per Board
1702150155	SATA HDD Power, Cable 15cm	1
170204010R	Power Cable,10cm	1
170X000156	Audio Cable, 25cm	1
170X000231	COM Port Cable, 30cm	2
170010010D	USB 2.0 Cable, 10cm	1
GENE-TGU6-FAN01	CPU Cooler.3600RPM.Smart FAN	1
GENE-TGU6-HSK01	Heatsink	1
GENE-TGU6-HSP01	HeatSpreader	1

Packing List

Part Number	Description	QTY
GENE-TGU6	GENE-TGU6 MB	1

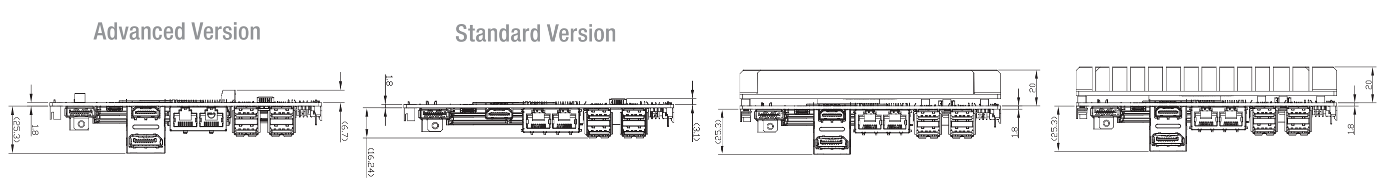
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

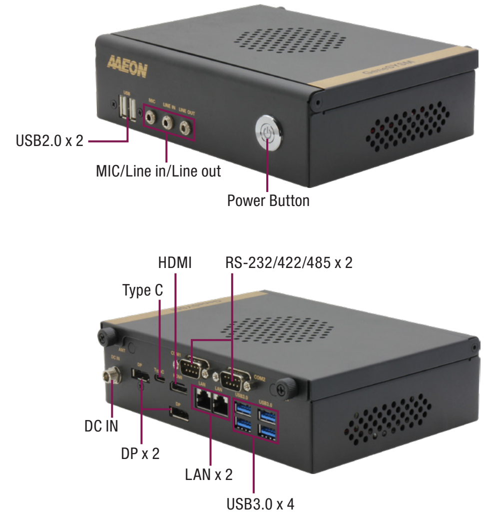


Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232	RS-232/422/485	Storage	Expansion Slot	TPM	Power	Operating Temp	Others
GENE-TGU6-A10-0011	i7-1185G7E	DP x2, TypeC DP x1 HDMI x1, LVDS x1	GbE x 1 2.5GbE x1	USB 3.2 Gen 2 x 4 USB 3.2 Gen2 TypeC x1 USB 2.0 x 2	—	4	SATA x 1 mSATA (Full size)x 1	M.2 M Key 2280 x 1 M.2 E Key 2230 x 1	2.0	9~36V	0°C ~ 60°C	DIO x 8, nano SIM, Touch Controller
GENE-TGU6-A10-0012	i7-1185G7E	DP x1, TypeC DP x1 HDMI x1, LVDS x1	GbE x 1 2.5GbE x1	USB 3.2 Gen 2 x 4 USB 3.2 Gen2 TypeC x1 USB 2.0 x 2	—	4	SATA x 1 mSATA (Full size)x 1	M.2 M Key 2280 x 1 M.2 E Key 2230 x 1	—	12V	0°C ~ 60°C	DIO x 8, nano SIM
GENE-TGU6-A10-0013	i5-1145G7E	DP x2, TypeC DP x1 HDMI x1, LVDS x1	GbE x 1 2.5GbE x1	USB 3.2 Gen 2 x 4 USB 3.2 Gen2 TypeC x1 USB 2.0 x 2	—	4	SATA x 1 mSATA (Full size)x 1	M.2 M Key 2280 x 1 M.2 E Key 2230 x 1	2.0	9~36V	0°C ~ 60°C	DIO x 8, nano SIM, Touch Controller,
GENE-TGU6-A10-0014	i5-1145G7E	DP x1, TypeC DP x1 HDMI x1, LVDS x1	GbE x 1 2.5GbE x1	USB 3.2 Gen 2 x 4 USB 3.2 Gen2 TypeC x1 USB 2.0 x 2	—	4	SATA x 1 mSATA (Full size)x 1	M.2 M Key 2280 x 1 M.2 E Key 2230 x 1	—	12V	0°C ~ 60°C	DIO x 8, nano SIM
GENE-TGU6-A10-0015	i3-1115G4E	DP x2, TypeC DP x1 HDMI x1, LVDS x1	GbE x 1 2.5GbE x1	USB 3.2 Gen 2 x 4 USB 3.2 Gen2 TypeC x1 USB 2.0 x 2	—	4	SATA x 1 mSATA (Full size)x 1	M.2 M Key 2280 x 1 M.2 E Key 2230 x 1	2.0	9~36V	0°C ~ 60°C	DIO x 8, nano SIM, Touch Controller
GENE-TGU6-A10-0016	i3-1115G4E	DP x1, TypeC DP x1 HDMI x1, LVDS x1	GbE x 1 2.5GbE x1	USB 3.2 Gen 2 x 4 USB 3.2 Gen2 TypeC x1 USB 2.0 x 2	—	4	SATA x 1 mSATA (Full size)x 1	M.2 M Key 2280 x 1 M.2 E Key 2230 x 1	—	12V	0°C ~ 60°C	DIO x 8, nano SIM
GENE-TGU6-A10-0017	Celeron 6305E	DP x2, TypeC DP x1 HDMI x1, LVDS x1	GbE x 1 2.5GbE x1	USB 3.2 Gen 2 x 4 USB 3.2 Gen2 TypeC x1 USB 2.0 x 2	—	4	SATA x 1 mSATA (Full size)x 1	M.2 M Key 2280 x 1 M.2 E Key 2230 x 1	2.0	9~36V	0°C ~ 60°C	DIO x 8, nano SIM, Touch Controller
GENE-TGU6W1-A10-0012	i7-1185G7E	DP x2, TypeC DP x1 HDMI x1, LVDS x1	GbE x 1 2.5GbE x1	USB 3.2 Gen 2 x 4 USB 3.2 Gen2 TypeC x1 USB 2.0 x 2	—	4	SATA x 1 mSATA (Full size)x 1	M.2 M Key 2280 x 1 M.2 E Key 2230 x 1	—	12V	W1(-20°C ~70°C)	DIO x 8, nano SIM
GENE-TGU6W2-A10-0018	i7-1185GRE	DP x2, TypeC DP x1 HDMI x1, LVDS x1	GbE x 1 2.5GbE x1	USB 3.2 Gen 2 x 4 USB 3.2 Gen2 TypeC x1 USB 2.0 x 2	—	4	SATA x 1 mSATA (Full size)x 1	M.2 M Key 2280 x 1 M.2 E Key 2230 x 1	—	12V	W2(-40°C ~85°C)	DIO x 8, nano SIM

GENESYSM-TGU6

3.5” SubCompact Board System with 11th Generation Intel® Core™ i7/i5/i3/Celeron CPU



Features

- 11th Gen Intel® Core™ i7/i5/i3/Celeron Processor
- DDR4 SODIMM x 2, up to 64GB
- DP 1.4a x 2, HDMI 2.0b x 1, Type C DP x 1
- 2.5GbE x 1, GbE x 1, SATA III x 1, DIO x 8bit
- USB 3.2 Gen2 x 4, USB 2.0 x 2, USB Type C x 1
- M.2 2280 M key x 1, M.2 2230 E key x 1, Full size mSATA/mPCIe x 1
- Wide DC Input 9-36V
- Line-in/Line-out/MIC (Optional)

1000 Giga LAN · DDR 4 · USB 2.0 · USB 3.2 Gen 1 · SATA 3

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board System
CPU	Intel® 11th Generation Core™/Celeron CPU i7-1185G7E (4C/8T, 1.80GHz, up to 4.40GHz, TDP-up 28W) i5-1145G7E (4C/8T, 1.50GHz, up to 4.10GHz, TDP-up 28W) i3-1115G4E (2C/4T, 2.20GHz, up to 3.90GHz, TDP-up 28W) Celeron® 6305E (2C/2T, 1.80GHz, TDP 15W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR4 up to 3200MHz, Dual Channel SODIMM x 2,up to 64GB,Support IBECC(select SKUs)
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	7.00" x 5.28" x 1.97" (178.0mm x 134.1mm x 50.0mm)
OS Support	Windows 10 (64bit) Linux Ubuntu 20.04.3(IOT)/Kernel 5.13
POWER	
POWER REQUIREMENT	+9-36V (Optional: +12V)
POWER SUPPLY TYPE	ATX
CONNECTOR	DC Jack Connector
POWER CONSUMPTION	Intel® i7-1185G7E, DDR4 3200MHz 32GB x 2, 4.96A@ +12V(TYPICAL) Intel® i7-1185G7E, DDR4 3200MHz 32GB x 2, 7.32A@ +12V(MAX)
DISPLAY	
CONTROLLER	Intel® Iris® Xe Graphics Intel® UHD Graphics
LVDS/eDP	—
Display Interface	HDMI 2.0b x 1 DP1.4 x 2 Type-C DP1.4 x 1
Multiple Display	Up to 4 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897/892
AUDIO INTERFACE	Line-in/Line-out/MIC (Optional)
Speaker	—
EXTERNAL I/O	
ETHERNET	Intel® i219, 10/100/1000Base,RJ-45 x 1 Intel® i225/i226, 10/100/2500Base,RJ-45 x 1
USB	USB3.2 Gen 2 x 4 USB3.2 Gen 2 Type C x 1 (PD 5V/3A) USB2.0 x 2
SERIAL PORT	COM1 (RS232/422/485) COM2 (RS232/422/485,supports 5V/12V/RI)
VIDEO	HDMI 2.0b x 1,DP1.4 x 2,Type-C DP1.4 x 1
INTERNAL I/O	
USB	—
SERIAL PORT	—
VIDEO	—
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	—
SMBus/I2C	SMBus/I2C x1(Default: SMBus)
Touch	—
FAN	4pins Smart Fan x 1
SIM	Nano SIM x 1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	Full-Sized mSATA/mPCIe x 1 (default: mSATA, select with BIOS)
M.2	M-Key 2280 x 1 (PCIex4) E-Key 2230 x 1 (PCIe, USB2.0)
Others	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 122°F (0°C ~ 50°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	329,884
EMC	CE/FCC Class A

Packing List

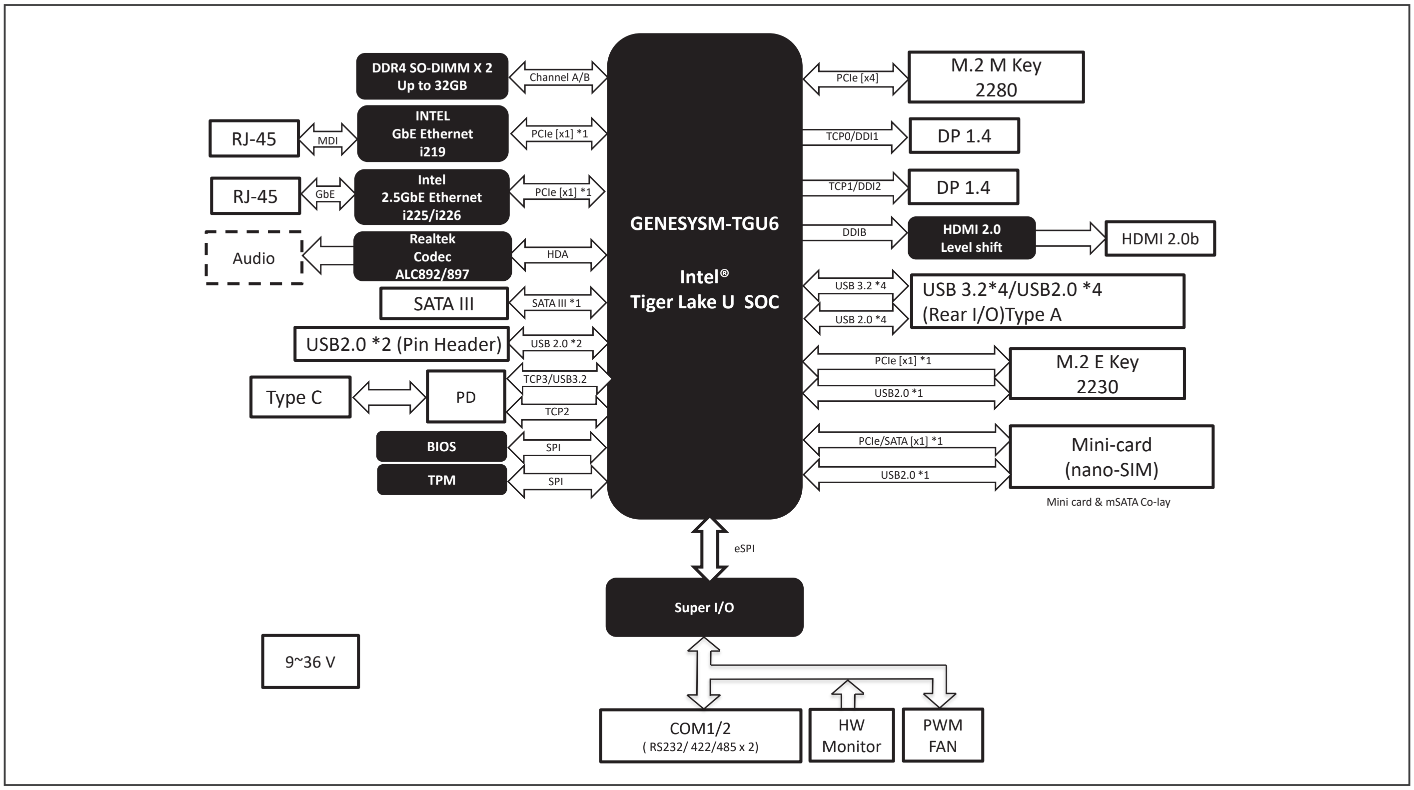
- GENESYSM-TGU6 x 1

Optional Accessories

Part Number	Description	QTY
1702031802	Power Cord (US Type)	1
1702031803	Power Cord (Europe Type)	1
170203180E	Power Cord (Japan)	1
170X000517	Audio cable	1
1255201200	Power Adapter 12V/10A 120W FSP120-AHAN3/9NA1206701	1
GENESYSM-TGU6-HDD1	HDD Kit. For GENESYSM-TGU6	1
GENESYSM-TGU6-VESA1	VESA Mount Kit. For GENESYSM-TGU6	1
GENESYSM-TGU6-WMT1	Wall Mount Kit. For GENESYSM-TGU6	1

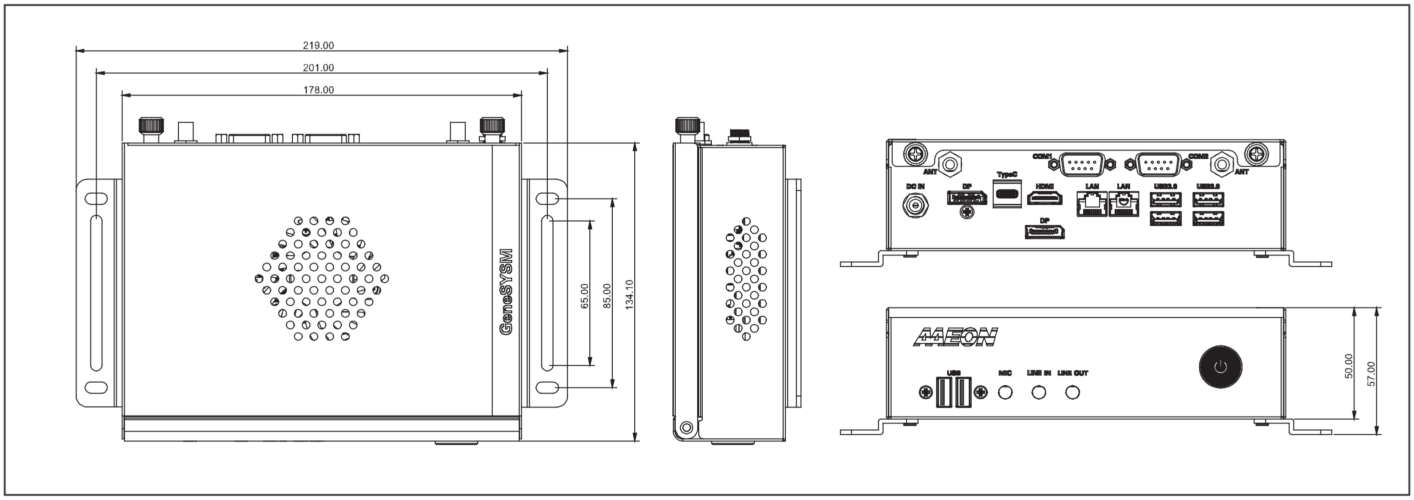
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

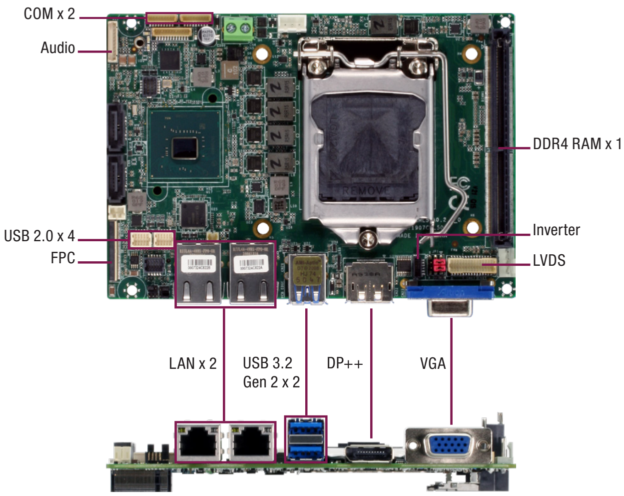


Ordering Information

Part number	CPU	Fan/Fanless	Display	LAN	USB	RS-232/422/485	Storage	Expansion slot	TPM	Power	Operating Temp	Others
GENESYSM-TGU6-A10-0001	i7-1185G7E	Cooler	DP x 2, TypeC DP x 1 HDMI x 1	GbE x 1 2.5GbE x 1	USB 3.2 Gen 2 x 4 USB 3.2 Gen2 TypeC x 1 USB 2.0 x 2	2	SATA x 1 mSATA (Full size)x 1	M.2 M Key 2280 x 1 M.2 E Key 2230 x 1	2.0	9~36V	0~50˚C	nano SIM
GENESYSM-TGU6-A10-0002	i5-1145G7E	Cooler	DP x 2, TypeC DP x 1 HDMI x 1	GbE x 1 2.5GbE x 1	USB 3.2 Gen 2 x 4 USB 3.2 Gen2 TypeC x 1 USB 2.0 x 2	2	SATA x 1 mSATA (Full size)x 1	M.2 M Key 2280 x 1 M.2 E Key 2230 x 1	2.0	9~36V	0~50˚C	nano SIM
GENESYSM-TGU6-A10-0003	i3-1115G4E	Cooler	DP x 2, TypeC DP x1 HDMI x 1	GbE x 1 2.5GbE x 1	USB 3.2 Gen 2 x 4 USB 3.2 Gen2 TypeC x 1 USB 2.0 x 2	2	SATA x 1 mSATA (Full size)x 1	M.2 M Key 2280 x 1 M.2 E Key 2230 x 1	2.0	9~36V	0~50˚C	nano SIM
GENESYSM-TGU6-A10-0004	Celeron® 6305E	Cooler	DP x2, TypeC DP x 1 HDMI x 1	GbE x 1 2.5GbE x 1	USB 3.2 Gen 2 x 4 USB 3.2 Gen2 TypeC x 1 USB 2.0 x 2	2	SATA x 1 mSATA (Full size)x 1	M.2 M Key 2280 x 1 M.2 E Key 2230 x 1	2.0	9~36V	0~50˚C	nano SIM

GENE-CML5

3.5" SubCompact Board with 10th Generation Intel® Core™ i7/i5/i3/Pentium®/Celeron® Processor



Features

- Intel® Core™ i7/i5/i3/Pentium®/Celeron® Processor
- Non-ECC DDR4 SODIMM Slot x 2, up to 64GB
- DP++ x 1, VGA x 1, LVDS x 1
- GbE x 2, SATA III x 2, DIO x 8bit
- USB 3.2 Gen 2 x 2 (Rear I/O), USB 2.0 x 4 (Pin header)
- RS-232/422/485 x 2
- M.2 M Key 2280 PCIe[x4]/SATA[x1] x 1
- PCIe[x4] x 1 (through Flexible Printed Circuit interface, Q470/Q470E only)

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board
CPU	Intel® 10th Generation Core™/Pentium/Celeron processor: i7-10700TE (8C/16T, 2.00 GHz, up to 4.40 GHz, TDP-up 35W) i5-10500TE (6C/12T, 2.30 GHz, up to 3.70 GHz, TDP-up 35W) i3-10100TE (4C/8T, 2.30 GHz, up to 3.60 GHz, TDP-up 35W) G6400TE (2C/4T, 3.20 GHz, TDP-up 35W) G5900TE (2C/2T, 3.00 GHz, TDP-up 35W)
CHIPSET	Intel® Q470E / H420E / Q470
MEMORY TYPE	DDR4 up to 2933MHz Dual Channel,SODIMM x 2,up to 64GB,Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0
RTC BATTERY	Lithium Battery 3V/240mAH
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows 10 (64bit) Linux Ubuntu 20.04.1/Kernel 5.4
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector
POWER CONSUMPTION	Intel® i7-10700TE, DDR4 3200Mhz 32GB x2, 5.64A @ +12V(Typical) Intel® i7-10700TE, DDR4 3200Mhz 32GB x2, 10.63A @ +12V(Max)
DISPLAY	
CONTROLLER	Intel® HD Graphics 610/630
LVDS/eDP	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080
DISPLAY INTERFACE	DP++ x 1, up to 4K x 2K VGA x 1, up to 1920 x 1200
MULTIPLE DISPLAY	3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897/892
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	—
EXTERNAL I/O	
ETHERNET	Intel® i210/i211,10/100/1000Base, RJ45 x1 Intel® i219,10/100/1000Base, RJ45 x1 (Support Vpro only with i5/i7 + Q470/Q470E variant)
USB	USB3.2 Gen 2 x 2 (Gen 2 for Q470/Q470E only)
SERIAL PORT	—
VIDEO	DP++ x 1,VGA x 1
INTERNAL I/O	
USB	USB2.0 x 4
SERIAL PORT	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)
VIDEO	LVDS x 1
SATA	SATA III x 2 +5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	8-bit
SMBus/I2C	I2C/SMbus x 1 (Default: I2C)
TOUCH	—
FAN	4pins Smart Fan x1
SIM	—
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	FPC x 1 (For Q470/Q 470E only)
EXPANSION	
Mini PCI-E/mSATA	—
M.2	M-Key 2280 x 1 (PCIe x4,SATA)
OTHERS	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP.	-40°F ~ 176°F (-40°C ~ 80°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	380,571
EMC	CE/FCC Class A

Optional Accessories

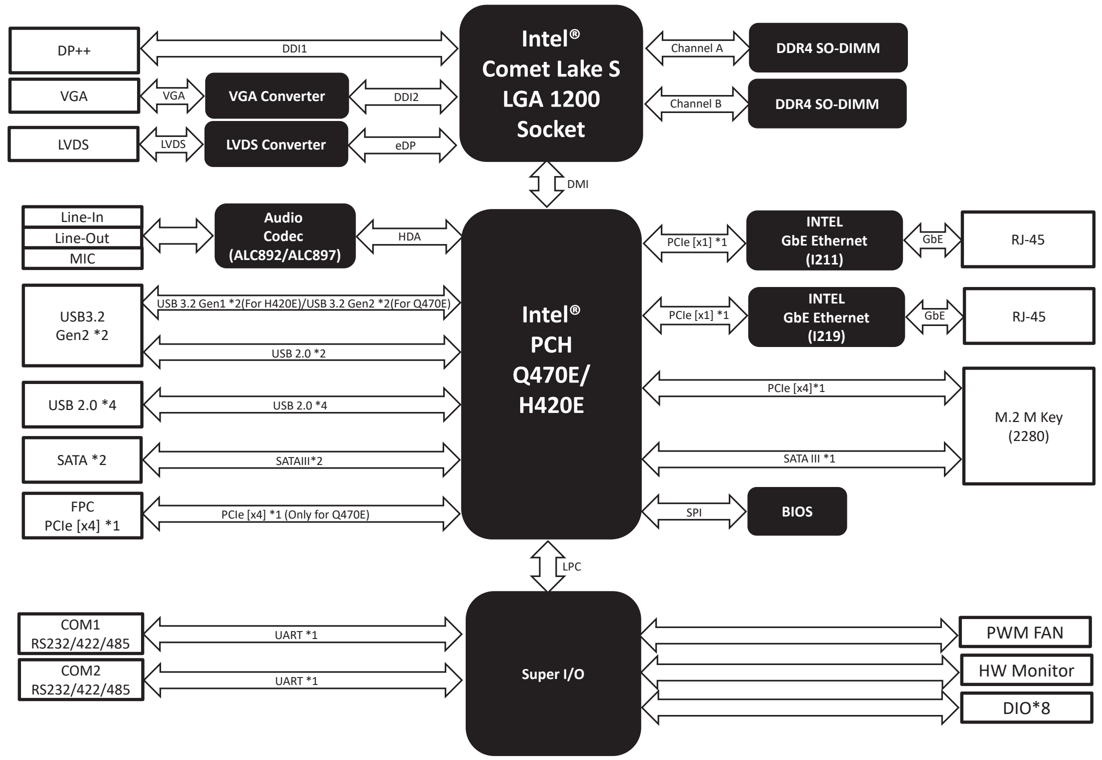
Part Number	Description	QTY per Board
1709070460	SATA Cable, W/LOCK,46cm	2
1702150155	Power Cable, 15cm	1
170010010D	USB Cable, 10cm	2
1701090122	COM Cable, 12cm	2
1709100254	Audio Jack Cable, 25cm	1

Packing List

Part Number	Description	QTY
GENE-CML5	GENE-CML5 MB	1
TH1CML5010	CPU Cooler	1
TH6CML5010	CPU Cooler Backplate	2

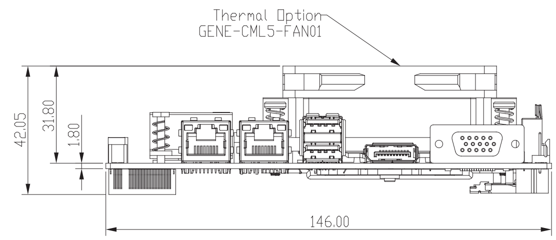
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	PCH	Display	LAN	USB	RS-232/422/485	Storage	Expansion slot	TPM	Power	Operating Temp
GENE-CML5-A10-0011	FCLGA1200 (Socket Type,TPD up to 35W)	Q470E	DP++ x1 VGA x 1	GbE x 2	USB3.2 Gen2 x 2 USB2.0 x 4	2	SATA x 2	M.2 2280 M Key x 1 PCIe[x4] x 1 (FPC)	TPM2.0	12V	0°C ~60°C
GENE-CML5-A10-0012	FCLGA1200 (Socket Type,TPD up to 35W)	H420E	DP++ x1 VGA x 1	GbE x 2	USB3.2 Gen2 x 2 USB2.0 x 4	2	SATA x 2	M.2 2280 M Key x 1	TPM2.0	12V	0°C ~60°C

GENESYS-CML5

3.5” SubCompact Board System with 10th Generation Intel® Core™ i7/i5/i3/Pentium®/Celeron® Processor SoC

Features

- Non-ECC DDR4 SODIMM Slot x 2, up to 64GB
- GbE x 2, SATA III x 2
- USB 3.2 Gen 2 x 2 (Rear I/O), USB 2.0 x 4 (Optional)
- RS-232/422/485 x 2 (Optional)
- M.2 M Key 2280 PCIe[x4]/SATA[x1] x 1
- PCIe[x4] x 1 (Q470E only)

1000 Giga LAN · DDR 4 · USB 2.0 · USB 3.2 Gen 2 · SATA 3 · CE · FC

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board System
CPU	Intel® 10th Generation Core™/Pentium/Celeron SoC i7-10700TE (8C/16T, 2.00 GHz, up to 4.40 GHz, TDP 35W) i5-10500TE (6C/12T, 2.30 GHz, up to 3.70 GHz, TDP 35W) i3-10100TE (4C/8T, 2.30 GHz, up to 3.60 GHz, TDP 35W) G6400TE (2C/4T, 3.20 GHz, TDP 35W) G5900TE (2C/2T, 3.00 GHz, TDP 35W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR4 up to 2933MHz Dual Channel,SODIMM x 2,up to 64GB,Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0
RTC Battery	Lithium Battery 3V/240mAH
DIMENSION	8.27" x 5.28" x 3.23" (210mm x 134mm x 82mm)
OS Support	Windows 10 (64bit) Linux Ubuntu 20.04.1/Kernel 5.4
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	ATX
CONNECTOR	DC Jack Connector
POWER CONSUMPTION	Intel® i7-10700TE, DDR4 3200Mhz 32GB x2, 5.64A @ +12V(Typical) Intel® i7-10700TE, DDR4 3200Mhz 32GB x2, 10.63A @ +12V(Max)
DISPLAY	
CONTROLLER	Intel® HD Graphics 610/630
LVDS/eDP	—
Display Interface	DP++ x 1 VGA x 1
Multiple Display	2 Simultaneous Displays
AUDIO	
CODEC	—
AUDIO INTERFACE	—
Speaker	—
EXTERNAL I/O	
ETHERNET	Intel® i210,10/100/1000Base, RJ45 x1 Intel® i219,10/100/1000Base, RJ45 x1 (support vPro on i5/i7 processors with Q470E)
USB	USB3.2 Gen 2 x 2 (Q470E) USB3.2 Gen1 x 2 (H420E)
SERIAL PORT	COM RS232/422/485 x 2 (Optional)
VIDEO	DP++ x 1,VGA x 1
INTERNAL I/O	
USB	USB2.0 x 4 (Optional)
SERIAL PORT	—
VIDEO	—
SATA	SATA III x 2 +5V SATA Power Connector x 1
AUDIO	—
DIO/GPIO	—
SMBus/I2C	I2C/SMbus x 1 (Optional)
Touch	—
FAN	4pins Smart Fan x1
SIM	—
Front Panel	PWR LED, Power Button
Others	FPC x 1 (Q470E only)
EXPANSION	
Mini PCI-E/mSATA	—
M.2	M-Key 2280 x 1 (PCIe x4,SATA)
Others	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 122°F (0°C ~ 50°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	380,571
EMC	CE/FCC Class A

Optional Accessories

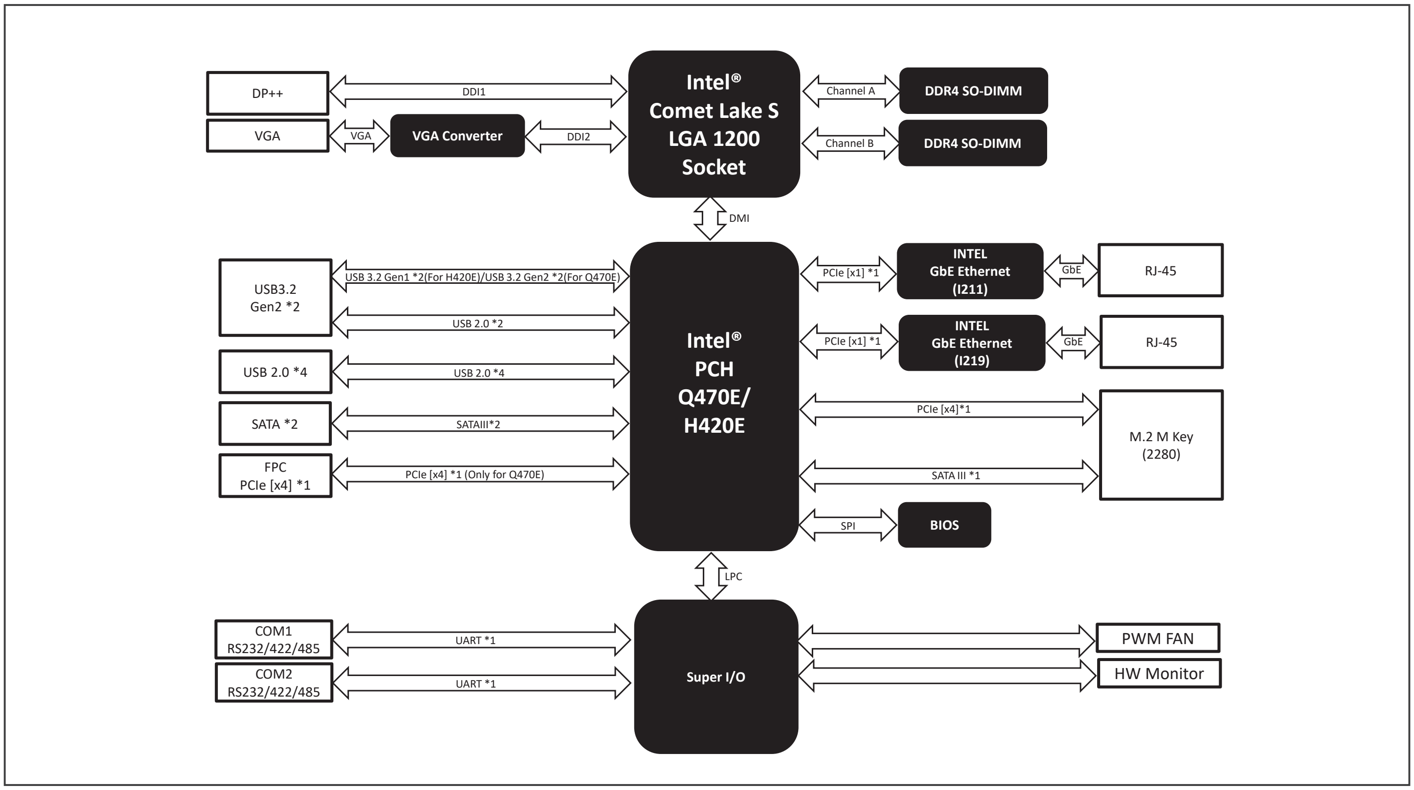
Part Number	Description	QTY
968C128G3N	2.5 SSD.SATA.128GB	1
968D4008GL	8GB.DDR4 2400Mhz.SODIMM	2
1255201200	Power Adapter. 12V.10A.120W	1
1702031802	Power Cord (US)	1
1702031803	Power Cord (Europe)	1
170203180E	Power Cord (Japan)	1
GENESYS-CML5-COM1	COM Port Kit (Single Port)	1
GENESYS-CML5-USB1	USB2.0 Kit (Dual Port)	1
GENESYS-CML5-HDD1	HDD Kit (cable only)	1
GENESYS-CML5-WMT1	Wall Mount Kit.	1
GENESYS-CML5-VESA1	VESA Mount Kit	1

Packing List

- **GENESYS-CML5**

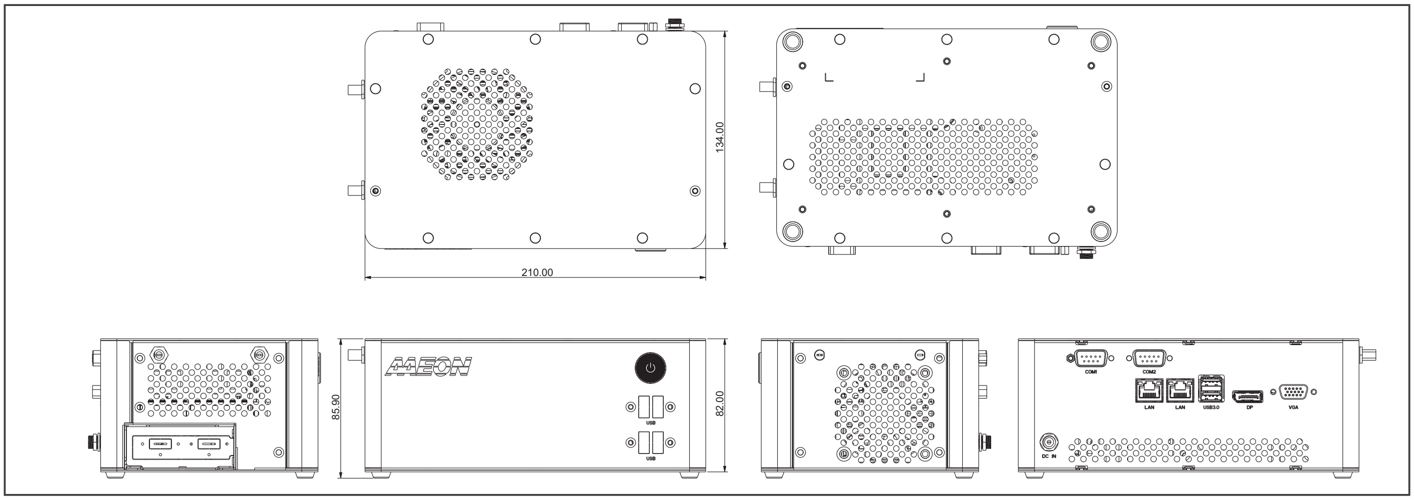
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

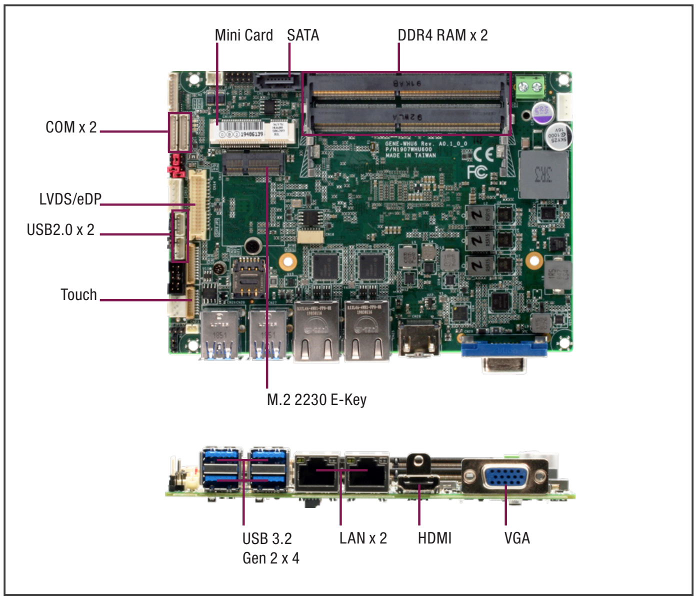


Ordering Information

Part Number	CPU	PCH	Memory	Display	Storage	LAN	USB	RS-232/422/485	Expansion slot	TPM	Power	Operating Temp
GENESYS-CML5-A10-0001	FCLGA1200 (Socket Type,TPD up to 35W)	Q470E	Memory Slot x 2	DP++ x1 VGA x 1	SATA x 1	GbE x 2	USB3.2 Gen2 x 2	0	M.2 2280 M Key x 1 PCIe[x4] x 1 (FPC)	TPM2.0	12V	0°C ~ 50°C
GENESYS-CML5-A10-0002	FCLGA1200 (Socket Type,TPD up to 35W)	H420E	Memory Slot x 2	DP++ x1 VGA x 1	SATA x 1	GbE x 2	USB3.2 Gen2 x 2	0	M.2 2280 M Key x 1	TPM2.0	12V	0°C ~ 50°C
GENESYS-CML5-A10-AI03	FCLGA1200 (Socket Type,TPD up to 35W)	Q470E	DDR4 x 2	DP++ x1 VGA x 1	128GB SSD x 1	GbE x 2	USB3.2 Gen2 x 2 USB2.0 x 4	2	Movidius2280 x 1	TPM2.0	12V	0°C ~ 50°C

GENE-WHU6

3.5" SubCompact Board with 8th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC



Features

- LVDS/eDP x 1 (Default: LVDS), VGA x 1, HDMI 2.0 x 1
- GbE x 2, SATA III x 1, DIO x 8bit
- USB 3.2 Gen 2 x 4 (Up to Gen 2), RS-232/422/485 x 2
- Full size mSATA/mPCIe Slot x 1 (With Nano-SIM)
- M.2 2280 B key x 1, M.2 2230 E key x 1
- Wide DC Input 9-36V (Optional: 12V Only)

1000 Giga LAN · DDR 4 · Audio · LVDS · USB 2.0 · USB 3.2 Gen 2 · SATA 3 · CE · FC

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board
CPU	Intel® 8th Generation Core™ /Celeron Processor: Core i7-8665UE (4C/8T, 1.7GHz, up to 4.40GHz, TDP-up 25W) Core i5-8365UE (4C/8T, 1.6GHz, up to 4.10GHz, TDP-up 25W) Core i3-8145UE (2C/4T, 2.2GHz, up to 3.90GHz, TDP-up 25W) Celeron 4305UE (2C/2T, 2.00GHz, TDP-up 15W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR4 up to 2400MHz Dual Channel,SODIMM x 2,up to 64GB,Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10
POWER	
POWER REQUIREMENT	+9-36V (Optional: +12V)
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector
POWER CONSUMPTION	Intel® i7-8665UE, DDR4 2400MHz 16GB x2, 4.83A@ +12V(TYPICAL) Intel® i7-8665UE, DDR4 2400MHz 16GB x2, 7.3A@ +12V(MAX)
DISPLAY	
CONTROLLER	Intel® UHD Graphics 610/620
LVDS/eDP	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080 (Optional: eDP1.4, , up to 1920X1200)
DISPLAY INTERFACE	HDMI2.0a x 1, up to 3840 x 2160 VGA x 1, up to 1920 x 1200
MULTIPLE DISPLAY	Up to 3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897/892
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	—
EXTERNAL I/O	
ETHERNET	Intel® i210/i211 & i219, 10/100/1000Base, RJ-45 x2
USB	USB 3.2 Gen2 x4
SERIAL PORT	—
VIDEO	HDMI2.0a x 1,VGA x 1
INTERNAL I/O	
USB	USB 2.0 x 2
SERIAL PORT	COM1(RS232/422/485, supports RI) COM2 (RS232/422/485, supports 5V/12V/RI)
VIDEO	LVDS/eDP x 1 (Default: LVDS)
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	8-bit
SMBus/I2C	I2C/ SMbus x 1 (Default: I2C)
TOUCH	4/5/8-wire Touch Controller x 1 (optional)
FAN	DC Fan x 1 (optional: Smart Fan)
SIM	Nano SIM x 1
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	—
EXPANSION	
Mini PCI-E/mSATA	Full-size mSATA/mPCIe x 1 (Default mSATA, select by BIOS)
M.2	B-Key 2280 x1 (PCIe x 2, SATA, USB2.0, selected by BIOS) E-Key 2230 x 1 (PCIe, USB2.0)
OTHERS	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C), WiTAS2 -40°F ~ 185°F (-40°C ~85°C)
STORAGE TEMP.	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	354,194
EMC	CE/FCC Class A

Optional Accessories

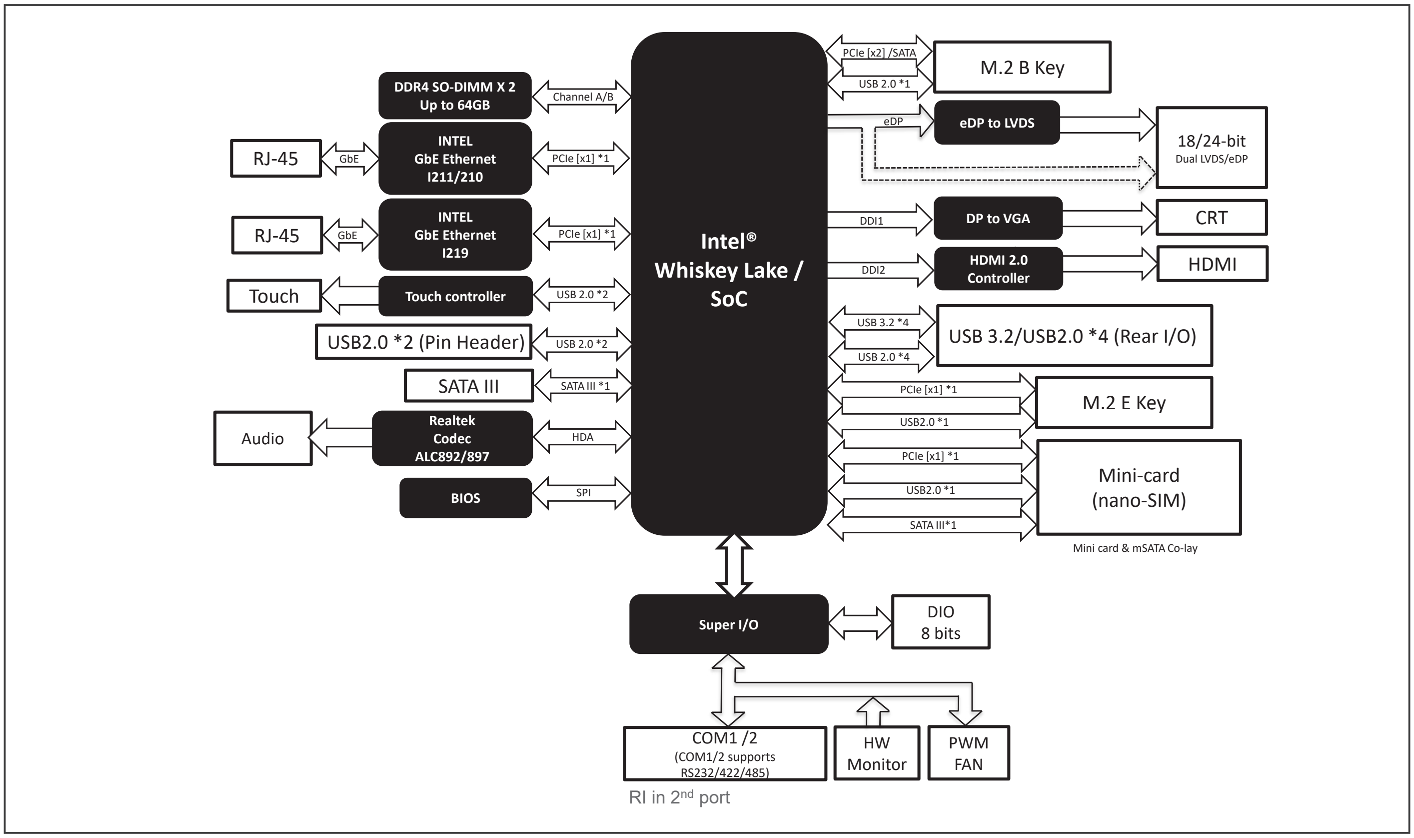
Part Number	Description	QTY per Board
1702150155	SATA Power Cable, 15cm	1
1709070500	SATA CABLE, 50cm	1
170204010R	Power Cable, 10cm	1
1709100254	Audio JACK Cable, 25cm	1
170220020B	ATX Power Cable, 20cm	1
1701090150	COM Cable, 15cm	2
1700050207	USB CABLE, 20cm	2
GENE-WHU6-FAN01	CPU Cooler.146x78.6x23.5mm.3P.3600RPM	1
GENE-WHU6-FAN02	CPU Cooler.146x75.54x17.5mm.3P.4800RPM	1
GENE-WHU6-HSK01	Heatsink.146x101.6x32.5mm.Silver.for i3 & Celeron	1
GENE-WHU6-HSK02	Heat Sink.72x28x10mm.SODIMM DDR4	1
GENE-WHU6-HSK03	Heat sink.146x101.6x45.5mm	1

Packing List

Part Number	Description	QTY
GENE-WHU6	GENE-WHU6 MB	1
M10WHU6000	Heat spreader	1

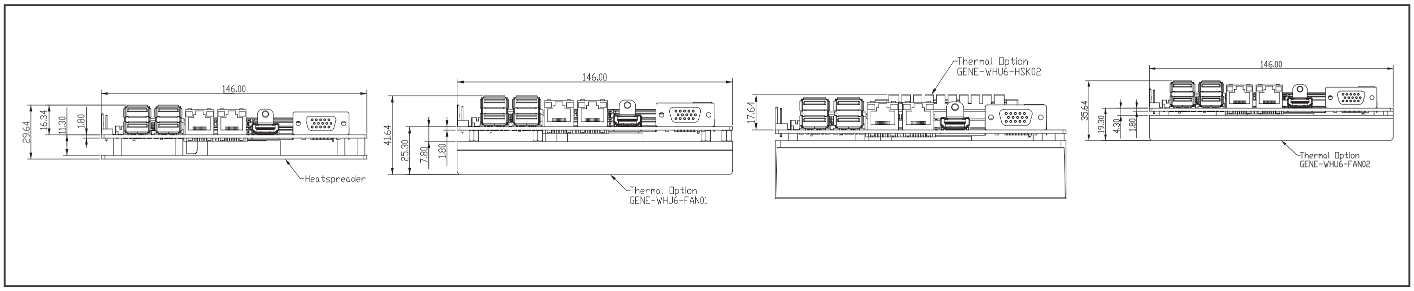
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

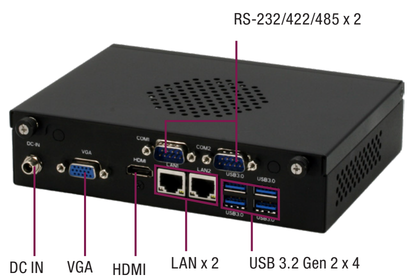


Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232/422/485	Storage	Expansion Slot	Power	Operating Temp	Others
GENE-WHU6-A11-0001	Intel® i7-8665UE	VGA+HDMI+LVDS	GbE x 2	USB 3.2 Gen 2 x 4	2	SATA x 1 mSATA (Full size)x 1	M.2 2280 B Key x1 M.2 2230 E Key x1	9~36V	0°C ~ 60°C	DIO x 8, nano SIM, Touch Controller
GENE-WHU6-A11-0002	Intel® i5-8365UE	VGA+HDMI+LVDS	GbE x 2	USB 3.2 Gen 2 x 4	2	SATA x 1 mSATA (Full size)x 1	M.2 2280 B Key x1 M.2 2230 E Key x1	9~36V	0°C ~ 60°C	DIO x 8, nano SIM, Touch Controller
GENE-WHU6-A11-0003	Intel® i3-8145UE	VGA+HDMI+LVDS	GbE x 2	USB 3.2 Gen 2 x 4	2	SATA x 1 mSATA (Full size)x 1	M.2 2280 B Key x1 M.2 2230 E Key x1	9~36V	0°C ~ 60°C	DIO x 8, nano SIM, Touch Controller
GENE-WHU6-A11-0004	Intel® Celeron 4305UE	VGA+HDMI+LVDS	GbE x 2	USB 3.2 Gen 2 x 4	2	SATA x 1 mSATA (Full size)x 1	M.2 2280 B Key x1 M.2 2230 E Key x1	9~36V	0°C ~ 60°C	DIO x 8, nano SIM, Touch Controller
GENE-WHU6W2-A11-0001	Intel® i7-8665UE	VGA+HDMI+LVDS	GbE x 2	USB 3.2 Gen 2 x 4	2	SATA x 1 mSATA (Full size)x 1	M.2 2280 B Key x1 M.2 2230 E Key x1	12V	WiTAS2 (-40~85°C)	DIO x 8, nano SIM, Touch Controller

GENESYS-WHU6

3.5" SubCompact Board System with 8th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC



Features

- Intel® Core™ i7/i5/i3/Celeron Processor SoC
- Non-ECC DDR4 SODIMM Slot x 2, up to 64GB
- VGA x 1, HDMI 2.0 x 1
- GbE x 2, SATA III x 1
- USB 3.2 Gen 2 x 4 (Up to Gen 2), RS-232/422/485 x 2
- Full size mSATA/mPCIe Slot x 1 (With Nano-SIM)
- M.2 B Key 2280 x 1, M.2 E Key 2230 x 1
- Wide DC Input 9-36V (Optional: 12V Only)

1000 Giga LAN · DDR 4 · Audio · USB 2.0 · USB 3.2 Gen 2 · SATA 3

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board System
CPU	Intel® 8th Generation Core™ i7/i5/i3/Celeron SoC i7-8665UE (4C/8T, 1.7GHz, up to 4.4GHz, TDP 15W) i5-8365UE (4C/8T, 1.6GHz, up to 4.1GHz, TDP 15W) i3-8145UE (2C/4T, 2.2GHz, up to 3.9GHz, TDP 15W) Celeron® 4305UE (2C/2T, 2GHz, TDP 15W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR4 up to 2400MHz Dual Channel,SODIMM x 2,up to 64GB,Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)
OS Support	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.1
POWER	
POWER REQUIREMENT	+9-36V (Optional: +12V)
POWER SUPPLY TYPE	ATX
CONNECTOR	DC Jack Connector
POWER CONSUMPTION	Intel® i7-8665UE, DDR4 2400 MHz 16GB, 2.8A@ +12V(Typical)
DISPLAY	
CONTROLLER	Intel® UHD Graphics 610/620
LVDS/eDP	—
Display Interface	HDMI2.0a x 1 VGA x 1
Multiple Display	Up to 2 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897/892
AUDIO INTERFACE	Line-in/Line-out/MIC(Optional)
Speaker	—
EXTERNAL I/O	
ETHERNET	Intel® i210/i211 & i219, 10/100/1000Base, RJ-45 x2
USB	USB 3.2 Gen2 x4
SERIAL PORT	—
VIDEO	HDMI2.0a x 1,VGA x 1

INTERNAL I/O	
USB	USB 2.0 x 2
SERIAL PORT	COM1(RS232/422/485, supports RI) COM2 (RS232/422/485, supports 5V/12V/RI)
VIDEO	—
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	Audio Header x 1 (optional)
DIO/GPIO	—
SMBus/I2C	I2C/ SMbus x 1 (Default: I2C)
Touch	—
FAN	DC Fan x 1 (optional: Smart Fan)
SIM	Nano SIM x 1
Front Panel	PWR LED, Power Button
Others	—
EXPANSION	
Mini PCI-E/mSATA	Full-size mSATA/mPCIe x 1 (Default mSATA, select by BIOS)
M.2	B-Key 2280 x1 (PCIe x 2, SATA, USB2.0, selected by BIOS) E-Key 2230 x 1 (PCIe, USB2.0)
Others	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 122°F (0°C ~ 50°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	354,194
EMC	CE/FCC Class A

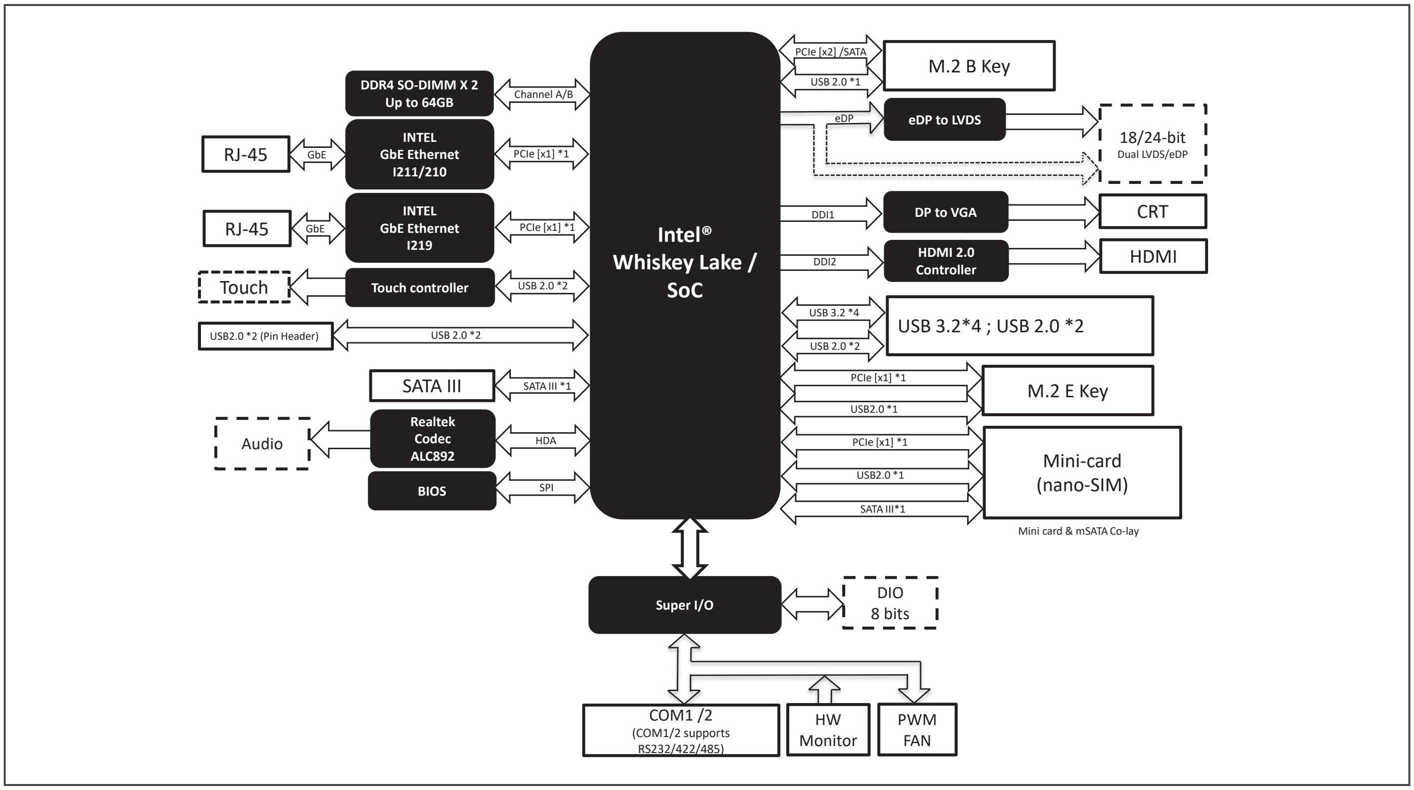
Packing List

- GENESYS-WHU6

Optional Accessories

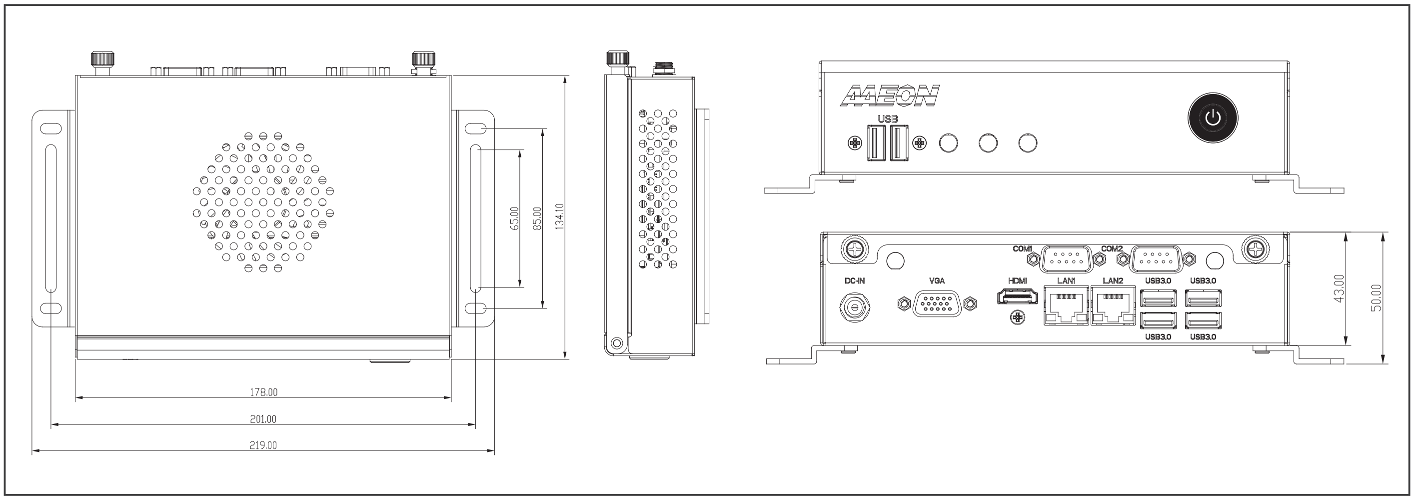
Part Number	Description	QTY
968D4004GN	(TF)DDR4.4GB.DDR4 SODIMM.2666MT/s.512Mx8.SAMSUNG. K4A4G085WX.260P.INNODISK.M4S0-4GSSNCIK-26	1
968D4008GW	(TF)DDR4.8GB.SODIMM.2666MT/s.260Pin.512Mx8 Samsung K4A4G085WX.InnoDisk.M4S0-8GSSOCIK-26	1
968C256G22	2.5" SATA3 SSD.256GB,MLC.-10~80C.Transcend.TS256GSSD420K-AA	1
968C512G06	2.5" SATA3 SSD.512GB,MLC.-10~80C.Transcend.TS512GSSD420K-AA	1
125530060Z	Power Adapter. 12V.5A.60W. FSP060-DHAN3	1
1255300960	Power Adapter. 12V.5A.96W. FSP096-DHAN3	1
1702031802	Power Cord (US)	1
1702031803	Power Cord (Europe)	1
170203180E	Power Cord (Japan)	1
GENESYS-WHU6-HDD1	HDD Kit. For GENESYS-WHU6	1
GENESYS-WHU6-WMT1	Wall Mount Kit. For GENESYS-WHU6	1
GENESYS-WHU6-VESA1	VESA Mount Kit. For GENESYS-WHU6	1

Block Diagram



Dimension

Unit: mm



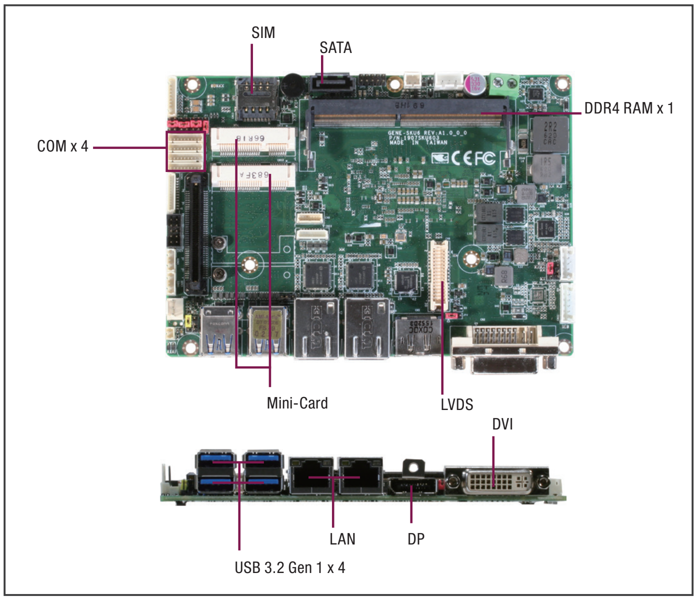
Ordering Information

Part Number	CPU	Fan/Fanless	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENESYS-WHU6-A11-0001	i3-8145UE	Cooler	VGA x 1 HDMI x 1	mSATA/mPCIe x 1 (Full size) M.2 B key 2280 x 1	GbE x 2	USB 3.2 Gen 2 x 4 USB 2.0 x 2	—	2	M.2 E key 2230 x 1	9 ~ 36V	0°C ~ 50°C	Nano SIM
GENESYS-WHU6-A11-0002	i5-8365UE	Cooler	VGA x 1 HDMI x 1	mSATA/mPCIe x 1 (Full size) M.2 B key 2280 x 1	GbE x 2	USB 3.2 Gen 2 x 4 USB 2.0 x 2	—	2	M.2 E key 2230 x 1	9 ~ 36V	0°C ~ 50°C	Nano SIM
GENESYS-WHU6-A11-0003	i7-8665UE	Cooler	VGA x 1 HDMI x 1	mSATA/mPCIe x 1 (Full size) M.2 B key 2280 x 1	GbE x 2	USB 3.2 Gen 2 x 4 USB 2.0 x 2	—	2	M.2 E key 2230 x 1	9 ~ 36V	0°C ~ 50°C	Nano SIM
GENESYS-WHU6-A11-0004	4305UE	Cooler	VGA x 1 HDMI x 1	mSATA/mPCIe x 1 (Full size) M.2 B key 2280 x 1	GbE x 2	USB 3.2 Gen 2 x 4 USB 2.0 x 2	—	2	M.2 E key 2230 x 1	9 ~ 36V	0°C ~ 50°C	Nano SIM

Note: All specifications are subject to change without notice.

GENE-KBU6

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



Features

- DVI, 18/24-bit Dual-Channel LVDS
- SATA 6.0 Gb/s x 1 & mSATA (Share with Half-size Mini-Card and Selective by BIOS)
- Supports 8-bit Digital I/O, USB 2.0 x 2 , USB 3.2 Gen 1 x 4
- Mini-Card Slot x 1 (Full size), TPM, SIM
- Wide DC Support 9~36V, +12V Only (Optional)
- BIO Connector for Daughter Board
- Solder Design for System Assembly and Thermal

Giga LAN · DDR 4 · Audio · LVDS · USB 2.0 · USB 3.2 Gen 1 · SATA 3

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board
CPU	Intel® 7th Generation Core™ /Celeron Processor: Intel® i7-7600U (2C/4T, 2.80GHz, up to 3.90GHz, TDP-up 25W) Intel® i5-7300U (2C/4T, 2.60GHz, up to 3.50GHz, TDP-up 25W) Intel® i3-7100U (2C/4T, 2.40GHz, TDP-up 25W) Intel® Celeron 3965U (2C/2T, 2.20GHz, TDP-up 15W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR4 up to 2133MHz, SODIMM x 1, up to 16GB, Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM 2.0 (Optional)
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10
POWER	
POWER REQUIREMENT	+9-36V (Optional: +12V)
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector
POWER CONSUMPTION	Intel® i7-7600U, DDR4 2666MHz 32GB, 3.26A@ +12V(TYPICAL) Intel® i7-7600U, DDR4 2666MHz 32GB, 4.22A@ +12V(MAX)
DISPLAY	
CONTROLLER	Intel® HD Graphics 610/620
LVDS/eDP	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080
DISPLAY INTERFACE	Default: DP1.2 x 1(up to 3840 x 2160) + DVI-D x 1 Optional: DVI-I x 1(with VGA signal)
MULTIPLE DISPLAY	Up to 3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897/892
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	—
EXTERNAL I/O	
ETHERNET	Intel® i210/i211, 10/100/1000Base-TX, RJ-45 x 2
USB	USB 3.2 Gen 1 x 4
SERIAL PORT	—
VIDEO	DP1.2 x 1,DVI-D x 1
INTERNAL I/O	
USB	USB 2.0 x 2
SERIAL PORT	COM1(RS232), COM2, COM3, COM4(RS232/422/485, support 5V/12V/RI)
VIDEO	LVDS x 1
SATA	SATA III x 1, +5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	8-bit
SMBus/I2C	SMBus x 1
TOUCH	4/5/8-wire Touch Controller x 1 (optional)
FAN	DC Fan x 1 (optional: Smart Fan)
SIM	Micro SIM x 1 (Optional)
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	—
EXPANSION	
Mini PCI-E/mSATA	Full-size mPCIe x 1 Half size mSATA/mPCIe x 1(Default mSATA, select by BIOS)
M.2	—
OTHERS	BIO x 1
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP.	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	375,577
EMC	CE/FCC Class A

Optional Accessories

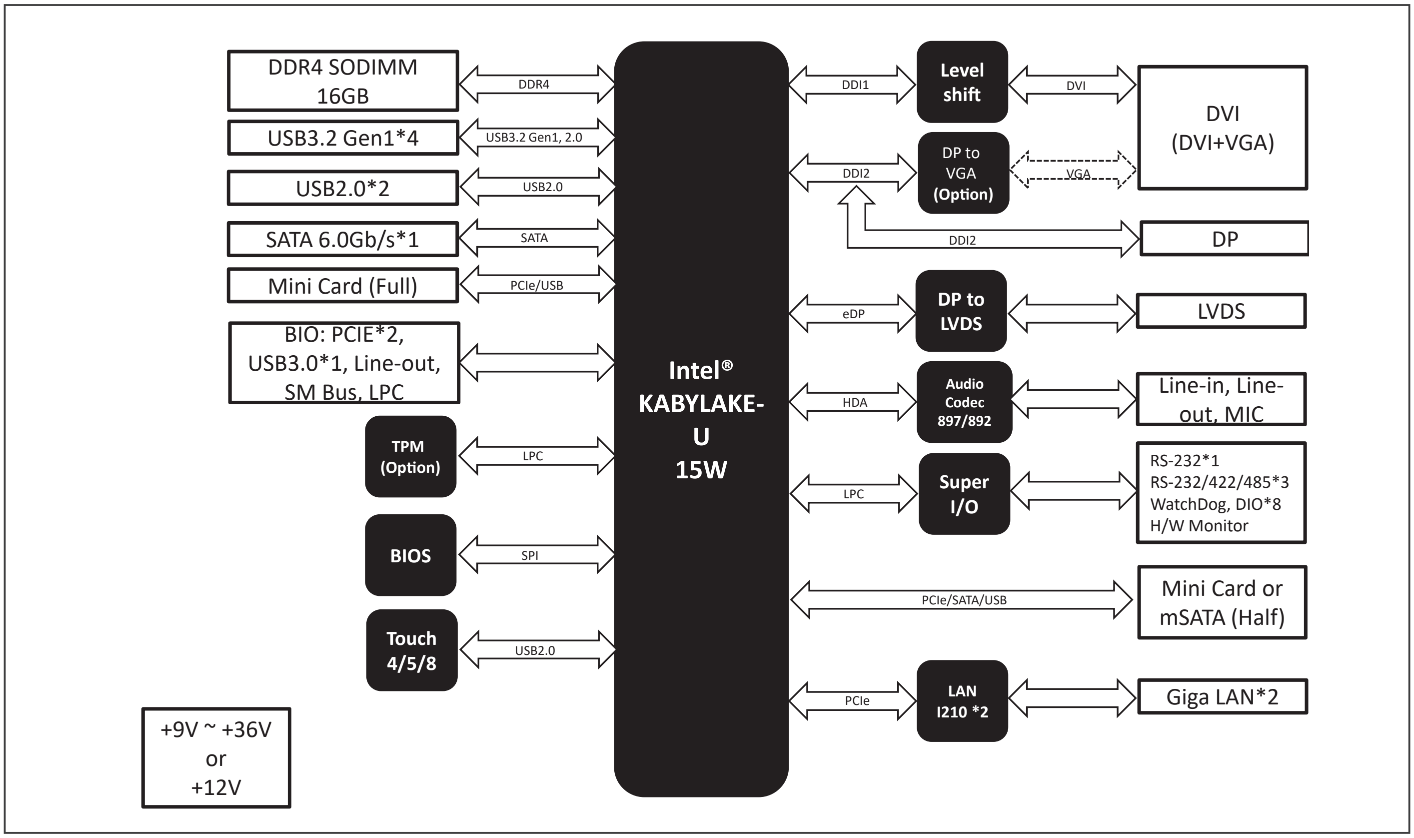
Part Number	Description	QTY per Board
1700050207	USB Cable, 20cm	2
1701090150	Com Cable, 15cm	4
1709100254	PHONE JACK Cable, 25cm	1
1702150155	SATA Power Cable, 15cm	1
170220020B	ATX Power Cable, 20cm	1
170204010R	Power Cable, 10cm	1
GENE-KBU6-FAN01	CPU Cooler, 3P, 5000RPM	1
GENE-KBU6-HSK02	Heatsink, 146 x 101.6 x 29mm	1
GENE-KBU6-HSK03	Heatsink for DDR4 SO-DIMM.72 x 28 x 10mm.	1

Packing List

Part Number	Description	QTY
GENE-KBU6	GENE-KBU6 MB	1
M10SKU6000	Heat Spreader	1

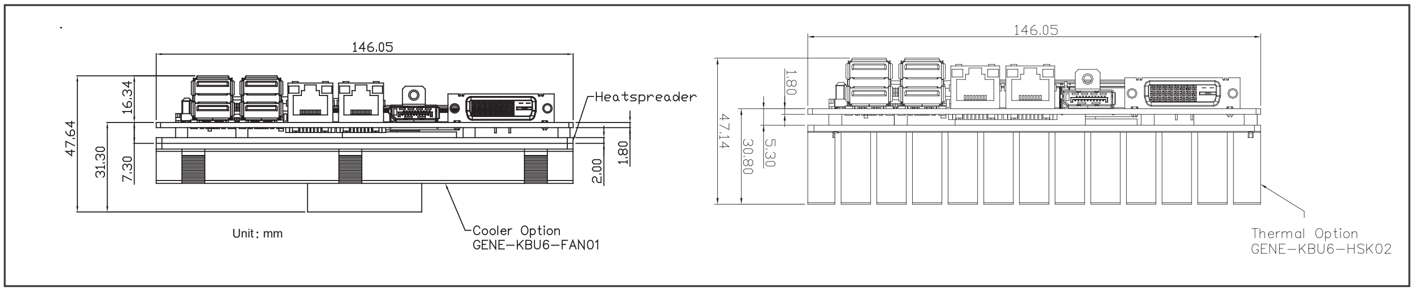
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

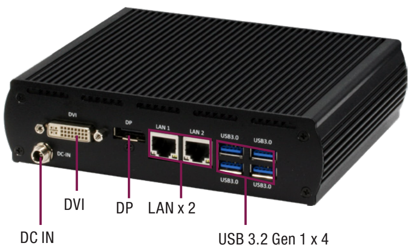


Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232	RS-232/422/485	Storage	Expansion Slot	TPM	Power	Operating Temp	Others
GENE-KBU6-A11-0001	Intel® Core™ i7-7600U	DP+LVDS+DVI-D	GbE x 2	USB3.0(Gen1) x 4 USB 2.0 x 2	1	3	SATA x 1 mSATA x 1 (half size)	MiniCard x 1 (Full)	2.0	9~36V	0°C ~ 60°C	Touch Controller, SIM, DIO x 8,SMBUS
GENE-KBU6-A11-0002	Intel® Core™ i5-7300U	DP+LVDS+DVI-D	GbE x 2	USB3.0(Gen1) x 4 USB 2.0 x 2	1	3	SATA x 1 mSATA x 1 (half size)	MiniCard x 1 (Full)	2.0	9~36V	0°C ~ 60°C	Touch Controller, SIM, DIO x 8,SMBUS
GENE-KBU6-A11-0003	Intel® Core™ i3-7100U	DP+LVDS+DVI-D	GbE x 2	USB3.0(Gen1) x 4 USB 2.0 x 2	1	3	SATA x 1 mSATA x 1 (half size)	MiniCard x 1 (Full)	2.0	9~36V	0°C ~ 60°C	Touch Controller, SIM, DIO x 8,SMBUS

GENESYS-KBU6

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



Features

- **7th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC**
- **DDR4 1866/2133, SODIMM x 1**
- **DVI x 1, DP x 1**
- **SATA 6.0 Gb/s x 1 & mSATA**
- **USB 2.0 x 2 , USB 3.2 Gen 1 x 4**
- **COM x 2 (RS-232 x 1, RS-232/422/485 x 1)**
- **Mini-Card Slot x 2, TPM, SIM**
- **Wide DC Support 9~36V, +12V Only (Optional)**
- **Solder Design for System Assembly and Thermal**

Giga LAN   DDR 4   USB 2.0   USB 3.2 Gen 1   SATA 3

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board System
CPU	Intel® 7th Generation Core™ /Celeron Processor: Intel® i7-7600U (2C/4T, 2.80GHz, up to 3.90GHz, TDP-up 25W) Intel® i5-7300U (2C/4T, 2.60GHz, up to 3.50GHz, TDP-up 25W) Intel® i3-7100U (2C/4T, 2.40GHz, TDP-up 25W) Intel® Celeron 3965U (2C/2T, 2.20GHz, TDP-up 15W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR4 up to 2133MHz, SODIMM x 1,up to 16GB,Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	6.69" x 5.39" x 1.91" (170mm x 137mm x 48.5mm)
OS Support	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10
POWER	
POWER REQUIREMENT	+9-36V (Optional: +12V)
POWER SUPPLY TYPE	ATX
CONNECTOR	DC Jack Connector
POWER CONSUMPTION	Intel® i7-7600U, DDR4 2400MHz 16GB, 1.85A@ +12V(Typical)
DISPLAY	
CONTROLLER	Intel® HD Graphics 610/620
LVDS/eDP	—
Display Interface	DP1.2 x 1 + DVI-D x 1
Multiple Display	Up to 2 Simultaneous Displays
AUDIO	
CODEC	—
AUDIO INTERFACE	—
Speaker	—
EXTERNAL I/O	
ETHERNET	Intel® i210/i211, 10/100/1000Base-TX, RJ-45 x 2
USB	USB 3.2 Gen 1 x 4
SERIAL PORT	—
VIDEO	DP1.2 x 1 DVI-D x 1

INTERNAL I/O	
USB	USB 2.0 x 2
SERIAL PORT	COM1(RS232) COM2,(RS232/422/485, support 5V/12V/RI)
VIDEO	—
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	—
DIO/GPIO	—
SMBus/I2C	SMBus x1
Touch	—
FAN	Fanless
SIM	Micro SIM x 1 (Optional)
Front Panel	HDD LED, PWR LED, Power Button
Others	—
EXPANSION	
Mini PCI-E/mSATA	Full-size mPCIe x 1 Half size mSATA/mPCIe x 1(Default mSATA, select by BIOS)
M.2	—
Others	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 122°F (0°C ~ 50°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	123,000
EMC	CE/FCC Class A

Packing List

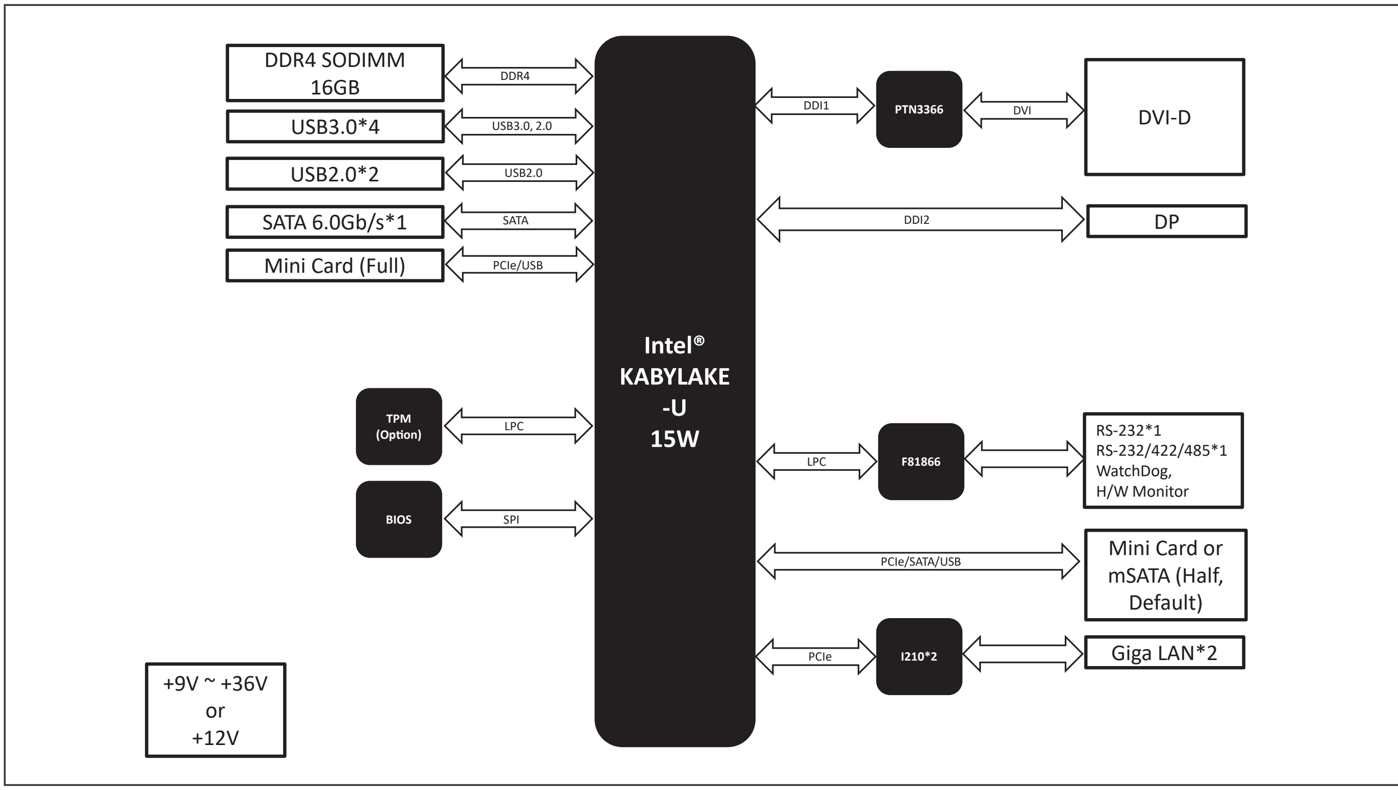
- **GENESYS-KBU6**

Optional Accessories

Part Number	Description	QTY
968D4008GB	(TF)8GB.DDR4 2133Mhz.SODIMM 260Pin 512M*8.0~85C Non ECC. Transcend.TS9AASESD00AA	1
968D4004G0	(TF)4GB.DDR4 2133.SODIMM 260Pin.512M*8,Samsung K4A4G085WX.0~85 deg C.Transcend.TS8AASESD00AA	1
968C032G3P	(TF)Half size mSATA.32GB MLC.3ME3 15nm.0~70 deg C.InnoDisk. DEMSM-32GD09BC1DC-26	1
968C064G3D	(TF)Half size mSATA.64GB MLC.3ME3.15nm.0~70 deg C.InnoDisk. DEMSM-64GD09BC1DC-26	1
968C128G1Q	(TF)Half size mSATA.128GB.MLC.-40 ~ 85 C.Transcend.TS128GMSM360I	1
968C256G22	2.5" SATA3 SSD.256GB,MLC.-10~80C.Transcend.TS256GSSD420K-AA	1
968C512G06	2.5" SATA3 SSD.512GB,MLC.-10~80C.Transcend.TS512GSSD420K-AA	1
125530060Z	Power Adapter. 12V.5A.60W. FSP060-DHAN3	1
1255300960	Power Adapter. 12V.5A.96W. FSP096-DHAN3	1
1702031802	Power Cord (US)	1
1702031803	Power Cord (Europe)	1
170203180E	Power Cord (Japan)	1
GENESYS-KBU6-HDD1	HDD Kit. For GENESYS-KBU6	1
GENESYS-KBU6-WMT1	Wall Mount Kit. For GENESYS-KBU6	1
GENESYS-KBU6-VESA1	VESA Mount Kit. For GENESYS-KBU6	1

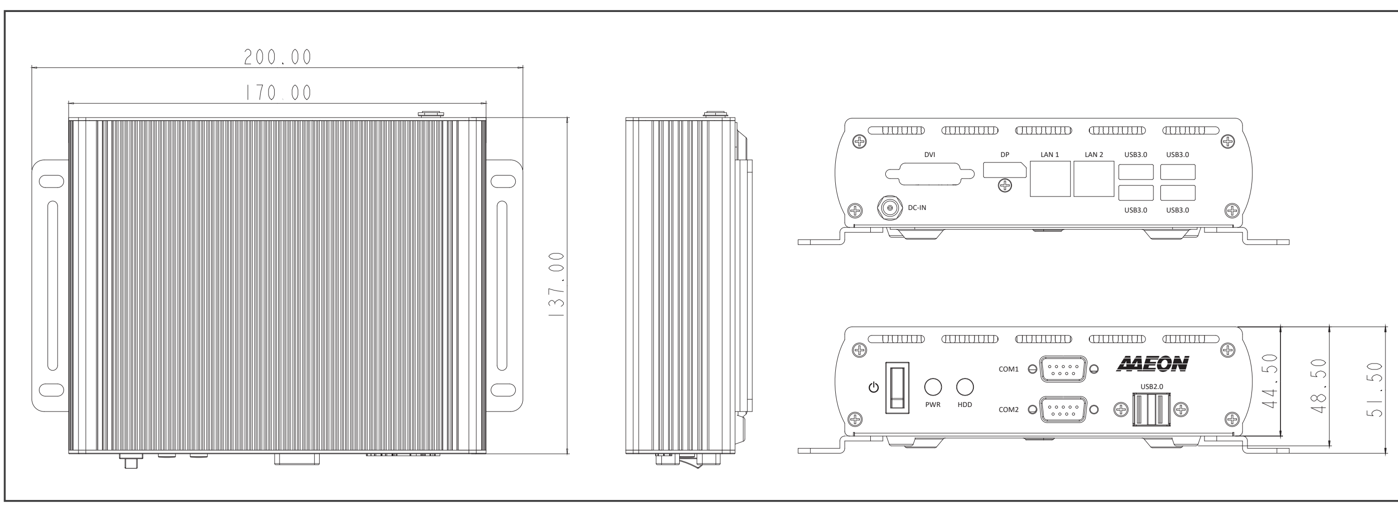
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

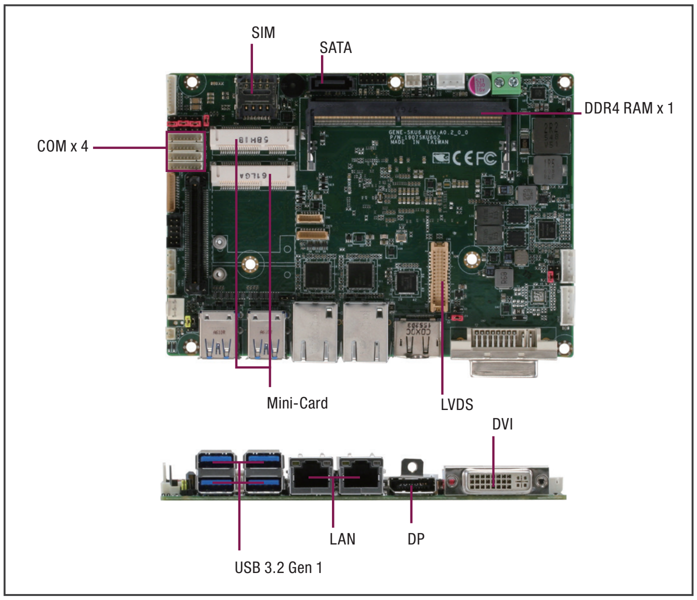


Ordering Information

Part Number	CPU	Fan/Fanless	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENESYS-KBU6-A10-0001	i7-7600U	Fanless	DP x 1 DVI x 1	SATA x 1 mSATA x 1 (Half-size)	GbE x 2	USB 3.2 Gen 1 x 4, USB 2.0 x 2	1	1	MiniCard x 1 (Full)	9~36V	0°C ~ 50°C	—
GENESYS-KBU6-A10-0002	i5-7300U	Fanless	DP x 1 DVI x 1	SATA x 1 mSATA x 1 (Half-size)	GbE x 2	USB 3.2 Gen 1 x 4, USB 2.0 x 2	1	1	MiniCard x 1 (Full)	9~36V	0°C ~ 50°C	—
GENESYS-KBU6-A10-0003	i3-7100U	Fanless	DP x 1 DVI x 1	SATA x 1 mSATA x 1 (Half-size)	GbE x 2	USB 3.2 Gen 1 x 4, USB 2.0 x 2	1	1	MiniCard x 1 (Full)	9~36V	0°C ~ 50°C	—

GENE-SKU6

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



Features

- DVI, 18/24-bit Dual-Channel LVDS
- SATA 6.0 Gb/s x 1 & mSATA (Share with Half-size Mini-Card and Selective by BIOS)
- Supports 8-bit Digital I/O, USB 2.0 x 2, USB 3.2 Gen 1 x 4
- Mini-Card Slot x 1 (Full size), TPM, SIM
- Wide DC Support 9~36V, +12V Only (Optional)
- BIO Connector for Daughter Board
- Solder Design for System Assembly and Thermal

1000 Giga LAN · DDR 4 · Audio · LVDS · USB 2.0 · USB 3.2 Gen 1 · SATA 3

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board
CPU	Intel® 6th Generation Core™ /Celeron Processor: Intel® i7-6600U (2C/4T, 2.6GHz, up to 3.4GHz, TDP-up 25W) Intel® i5-6300U (2C/4T, 2.4GHz, up to 3.0GHz, TDP-up 25W) Intel® i3-6100U (2C/4T, 2.3GHz, TDP-up 25W) Intel® Celeron 3955U (2C/2T, 2.20GHz, TDP-up 15W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR4 up to 2133MHz, SODIMM x 1, up to 16GB, Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM 2.0 (Optional)
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows 7/10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10
POWER	
POWER REQUIREMENT	+9-36V (Optional: +12V)
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector
POWER CONSUMPTION	Intel® i7-6600U, DDR4 2666MHz 32GB, 3.42A@ +12V(TYPICAL) Intel® i7-6600U, DDR4 2666MHz 32GB, 4.24A@ +12V(MAX)
DISPLAY	
CONTROLLER	Intel® HD Graphics 510/520
LVDS/eDP	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080
DISPLAY INTERFACE	Default: DP1.2 x 1 (up to 3840 x 2160)+ DVI-D x 1 Optional: DVI-I x 1(with VGA signal)
MULTIPLE DISPLAY	Up to 3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897/892
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	—
EXTERNAL I/O	
ETHERNET	Intel® i210/i211, 10/100/1000Base-TX, RJ-45 x 2
USB	USB 3.2 Gen 1 x 4
SERIAL PORT	—
VIDEO	DP1.2 x 1, DVI-D x 1
INTERNAL I/O	
USB	USB 2.0 x 2
SERIAL PORT	COM1(RS232), COM2, COM3, COM4(RS232/422/485, support 5V/12V/RI)
VIDEO	LVDS x 1
SATA	SATA III x 1, +5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	8-bit
SMBus/I2C	SMBus x 1
TOUCH	4/5/8-wire Touch Controller x 1 (optional)
FAN	DC Fan x 1 (optional: Smart Fan)Micro SIM x 1 (Optional)
SIM	Micro SIM x 1 (Optional)
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	—
EXPANSION	
Mini PCI-E/mSATA	Full-size mPCIe x 1 Half size mSATA/mPCIe x 1(Default mSATA, select by BIOS)
M.2	—
OTHERS	BIO x 1
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C), WiTAS1 -4°F ~ 158°F (-20°C ~70°C)
STORAGE TEMP.	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	375,577
EMC	CE/FCC Class A

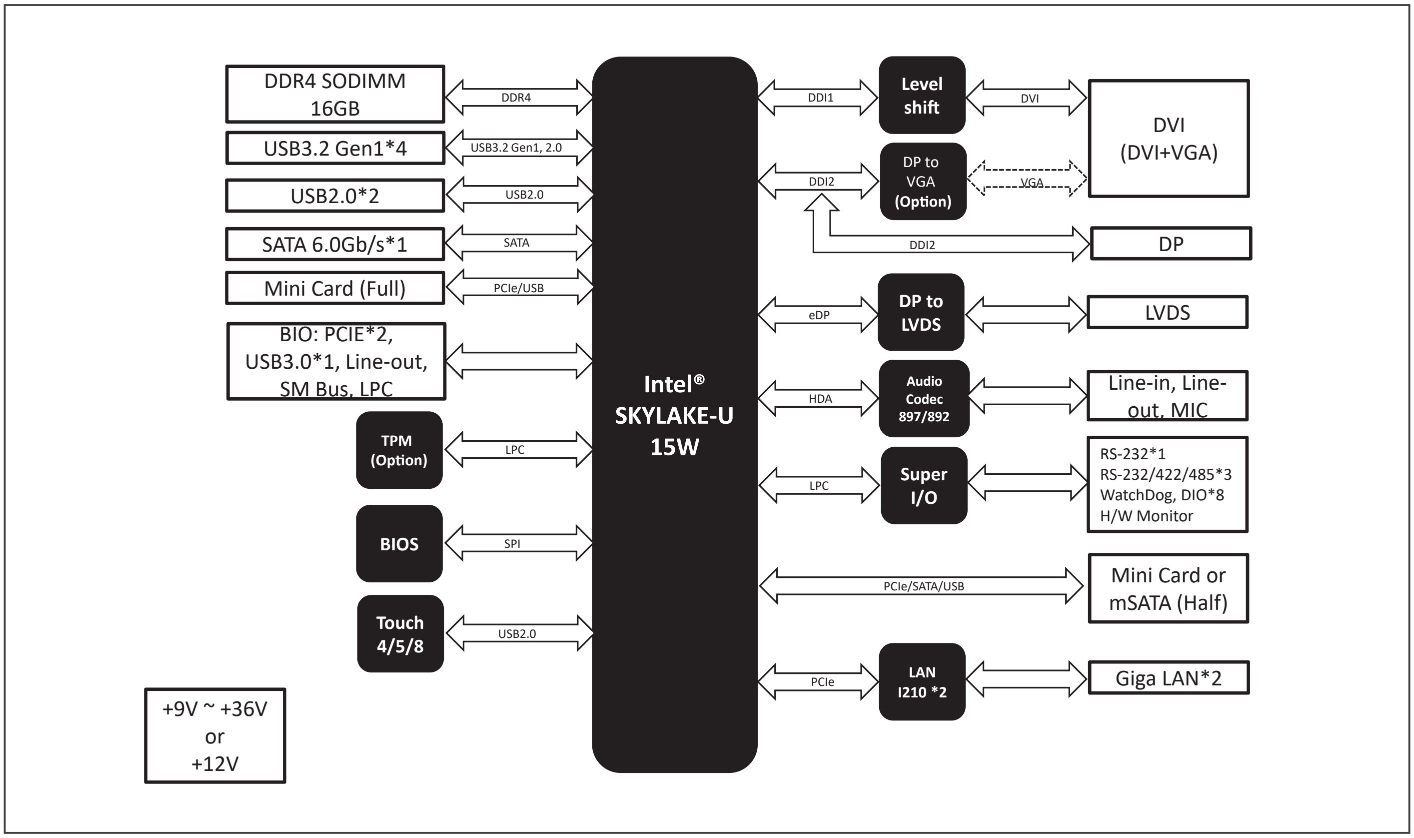
Optional Accessories

Part Number	Description	QTY per Board
1700050207	USB Cable, 20cm	2
1701090150	Com Cable, 15cm	4
1709100254	PHONE JACK Cable, 25cm	1
1702150155	SATA Power Cable, 15cm	1
170220020B	ATX Power Cable, 20cm	1
170204010R	Power Cable, 10cm	1
GENE-SKU6-FAN01	CPU Cooler, 3P, 5000RPM	1
GENE-SKU6-HSK01	Heatsink, 146 x 80 x 14mm	1
GENE-SKU6-HSK02	Heatsink, 146 x 101.6 x 29mm	1
GENE-SKU6-HSK03	Heatsink for DDR4 SO-DIMM, 72 x 28 x 10mm	1

Packing List

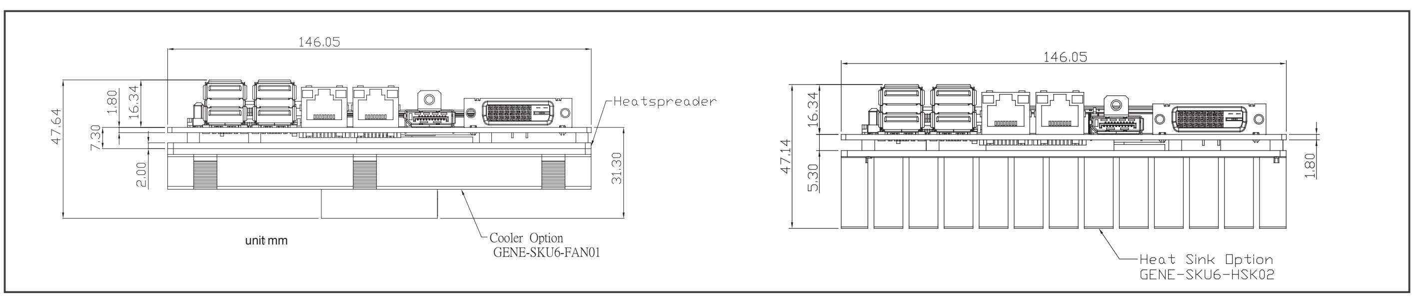
Part Number	Description	QTY
GENE-SKU6	GENE-SKU6 MB	1
M10SKU6000	Heat Spreader	1

Block Diagram



Dimension

Unit: mm

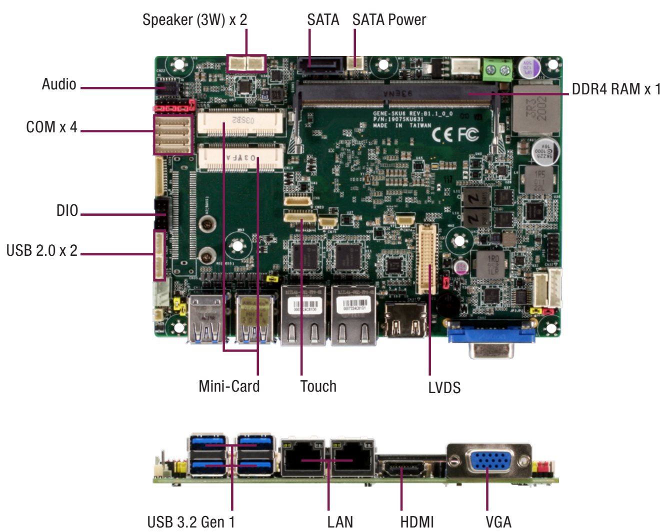


Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232	RS-232/422/485	Storage	Expansion Slot	TPM	Power	Operating Temp	Others
GENE-SKU6-A11-0001	Intel® Core™ i7-6600U	DP+LVDS+DVI-D	GbE x 2	USB3.0(Gen1) x 4 USB 2.0 x 2	1	3	SATA x 1 mSATA x 1 (half size)	MiniCard x 1 (Full)	2.0	9~36V	0°C ~ 60°C	Touch Controller, SIM, DIO x 8,SMBUS
GENE-SKU6-A11-0002	Intel® Core™ i5-6300U	DP+LVDS+DVI-D	GbE x 2	USB3.0(Gen1) x 4 USB 2.0 x 2	1	3	SATA x 1 mSATA x 1 (half size)	MiniCard x 1 (Full)	2.0	9~36V	0°C ~ 60°C	Touch Controller, SIM, DIO x 8,SMBUS
GENE-SKU6-A11-0003	Intel® Core™ i3-6100U	DP+LVDS+DVI-D	GbE x 2	USB3.0(Gen1) x 4 USB 2.0 x 2	1	3	SATA x 1 mSATA x 1 (half size)	MiniCard x 1 (Full)	2.0	9~36V	0°C ~ 60°C	Touch Controller, SIM, DIO x 8,SMBUS
GENE-SKU6W1-A11-0001	Intel® Core™ i7-6600U	DP+LVDS+DVI-D	GbE x 2	USB3.0(Gen1) x 4 USB 2.0 x 2	1	3	SATA x 1 mSATA x 1 (half size)	MiniCard x 1 (Full)	2.0	12V	-20°C ~ 70°C	Touch Controller, SIM, DIO x 8,SMBUS

GENE-SKU6 Rev. B

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
- VGA, HDMI, 18/24-bit Dual Channel LVDS
- 2 CH Audio, 3W Speaker
- SATA 6.0 Gb/s x 1 & mSATA (Shared with Half-size Mini-Card and Selected by BIOS)
- Supports 8-bit Digital I/O, USB 2.0 x 2 , USB 3.2 Gen 1 x 4
- COM x 4 (RS-232 x 1, RS-232/422/485 x 3)
- Mini-Card Slot x 1 (Shared with full-size mATA and Selected by BIOS), TPM
- Wide DC Support 9~36V, +12V Only (Optional)
- 4/5/8-wire Resistive Touch Screen Controller
- BIO Connector for Daughter Board (Optional)
- Solder Design for System Assembly and Thermal

Giga LAN DDR 4 Audio LVDS USB 2.0 USB 3.2 Gen 1 SATA 3

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board
CPU	Intel® 6th Generation Core™ /Celeron Processor: Intel® i7-6600U (2C/4T, 2.6GHz, up to 3.4GHz, TDP-up 25W) Intel® i5-6300U (2C/4T, 2.4GHz, up to 3.0GHz, TDP-up 25W) Intel® i3-6100U (2C/4T, 2.3GHz, TDP-up 25W) Intel® Celeron 3955U (2C/2T, 2.20GHz, TDP-up 15W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR4 up to 2133MHz, SODIMM x 1, up to 16GB, Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM 2.0 (Optional)
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows 7/10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10
POWER	
POWER REQUIREMENT	+9-36V (Optional: +12V)
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector
POWER CONSUMPTION	Intel® i7-6600U, 6600U, DDR4 2400MHz 16GB, 0.73A at +36V
DISPLAY	
CONTROLLER	Intel® HD Graphics 510/520
LVDS/eDP	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080
DISPLAY INTERFACE	VGA x1, Up to 1920 x 1200 HDMI1.4 x1, up to 4096 x 2304
MULTIPLE DISPLAY	Up to 3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC892/897
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	3W Amplifier (Optional)
EXTERNAL I/O	
ETHERNET	Intel® i210, 10/100/1000Base-TX, RJ-45 x 2
USB	USB 3.2 Gen 1 x 4
SERIAL PORT	—
VIDEO	HDMI 1.4 x 1 VGA x 1
INTERNAL I/O	
USB	USB 2.0 x 2
SERIAL PORT	COM1 (RS232) COM2, COM3, COM4 (RS232/422/485, support 5V/12V/RI)
VIDEO	LVDS x 1
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	8-bit
SMBus/I2C	I2C/SMBus x 1 (Default: SMBus)
TOUCH	4/5/8-wire Touch Controller x 1 (optional)
FAN	DC Fan x 1 (optional: Smart Fan)
SIM	—
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	—
EXPANSION	
Mini PCI-E/mSATA	Full-size mSATA/mPCIe x 1 (Default mPCIe, select by BIOS) Half size mSATA/mPCIe x 1 (Default mSATA, select by BIOS)
M.2	—
OTHERS	BIO x 1 (optional)
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP.	-40°F ~ 176°F (-40°C ~ 80°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	371,039
EMC	CE/FCC Class A

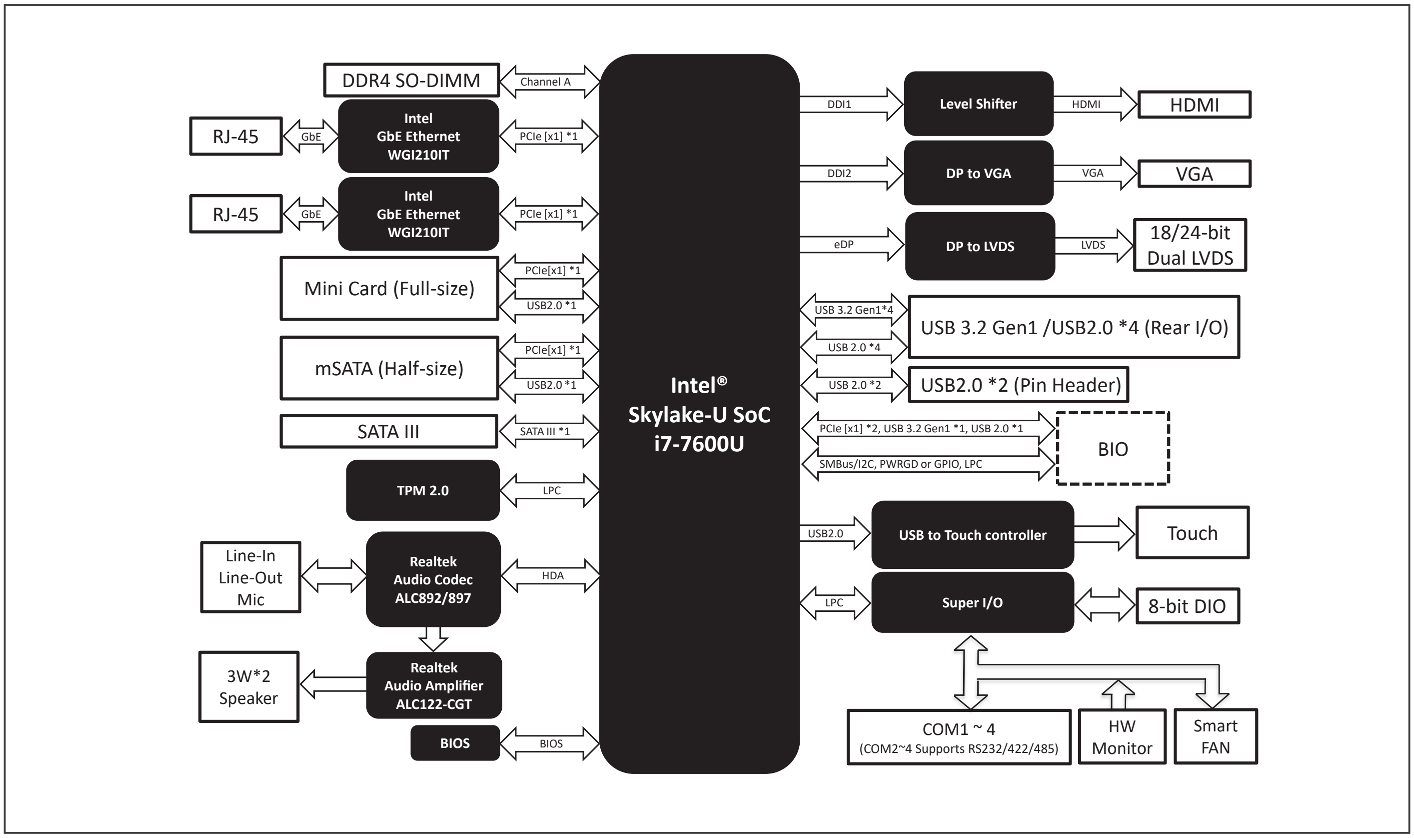
Packing List

- **GENE-SKU6 with Heatspreader**

Optional Accessories

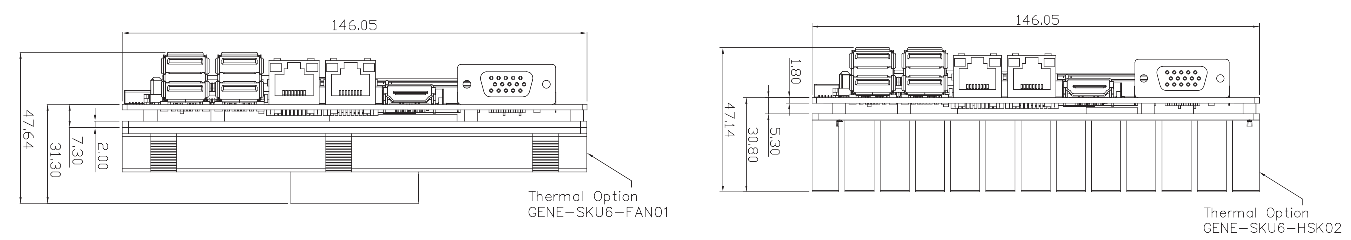
Part Number	Description	QTY
1700050207	(TF)USB CABLE.1*5P Pitch=1.25mm Housinh.20cm.for PFM-945C	2
1701090150	(TF)Flat Cable.D-Sub 9(M).9P Housing.9P 1.25mm pitch Housing.15cm	4
170X000156	(TF)Cable.12P.Pitch=1.0mm.250mm.FLYINGWAY.FWAA-1345.Audio cable	1
1702150155	(TF)Power Cable.15P SATA(F).2P 2.0mm 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-HSK02	Heatsink, 146 x 101.6 x 29mm, Silver, for GENE-SKU6	1
GENE-SKU6-HSK03	Heat Sink.72*28*10mm.GENE-SKU6.SODIMM DDR4	1

Block Diagram



Dimension

Unit: mm

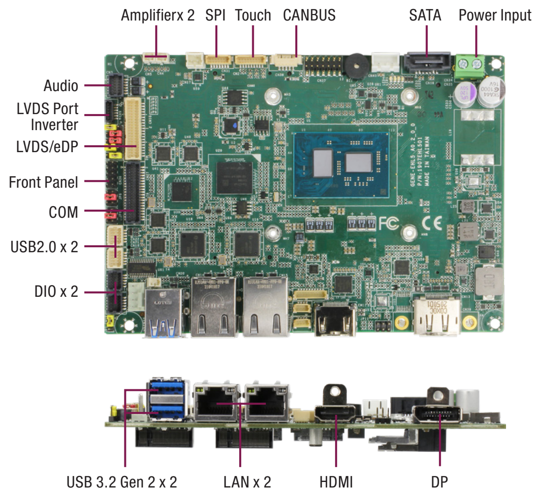


Ordering Information

Part number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/285	Expansion slot	Power	Operating Temp	Others
GENE-SKU6-B12-0001	Intel® i7-6600U	Fanless	VGA+HDMI+LVDS	18/24-bit, 2CH	SATA x 1 mSATA x 1	GbE x 2	USB 3.2 Gen 1 x 4 USB 2.0 x 2	1	3	miniCard x 1 (Full-size)	9~36V	0°C ~ 60°C	DIO x 8, Touch Controller, TPM
GENE-SKU6-B12-0002	Intel® i5-6300U	Fanless	VGA+HDMI+LVDS	18/24-bit, 2CH	SATA x 1 mSATA x 1	GbE x 2	USB 3.2 Gen 1 x 4 USB 2.0 x 2	1	3	miniCard x 1 (Full-size)	9~36V	0°C ~ 60°C	DIO x 8, Touch Controller, TPM
GENE-SKU6-B12-0003	Intel® i3-6100U	Fanless	VGA+HDMI+LVDS	18/24-bit, 2CH	SATA x 1 mSATA x 1	GbE x 2	USB 3.2 Gen 1 x 4 USB 2.0 x 2	1	3	miniCard x 1 (Full-size)	9~36V	0°C ~ 60°C	DIO x 8, Touch Controller, TPM

GENE-EHL5

SubCompact Board with Intel® Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series Processors



Features

- DDR4 SODIMM Slot x 1, up to 32GB, support IBECC
- LVDS/eDP x 1 (Default: LVDS), DP1.4 x 1 (Optional VGA x 1), HDMI 2.0b x 1
- SATA III x 1, eMMC x 1
- USB 3.2 Gen2 x 2 (Rear I/O), USB2.0 x 4 (Pin header)
- M.2 B Key 2280 PCIe x 1, M.2 B-Key 2242 PCIe x 1, M.2 E Key 2230 x 1, M.2 B Key 3052 x 1
- Wide DC Input 9-36V (Optional: 12V Only)

1000 Giga LAN DDR 3L Audio LVDS USB 2.0

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board
CPU	Intel® Atom® x6000E series, Intel® Pentium®, and Celeron® N and J series processors: Intel® Atom® x6425RE (4C, 1.9GHz, TDP-up 12W) Intel® Atom® x6425E (4C, 2.0GHz, up to 3GHz, TDP-up 12W) Intel® Atom® x6211E (2C, 1.2GHz, up to 3GHz, TDP-up 6W) Intel® Pentium® J6426 (4C, 2.0GHz, up to 3GHz, TDP-up 10W) Intel® Celeron® J6412 (4C, 2.0GHz, up to 3GHz, TDP-up 10W) Intel® Celeron® N6210 (2C, 1.2GHz, up to 3GHz, TDP-up 6.5W) (Intel® Atom® x6414RE/x6413E/x6427FE/x6200FE/N6415 by customer's request)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR4 3200 MHz, SODIMM x 1, Up to 32GB, Support IBECC (select SKUs)
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM 2.0
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows 10 (64bit) Linux Ubuntu 20.04.3(IOT)/Kernel 5.13
POWER	
POWER REQUIREMENT	+9-36V (Optional: +12V)
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoeix 2-pin Connector
POWER CONSUMPTION	Intel® AtomTM x6425E, DDR4 32GB, 3.26A@ +12V(balance), 3.26A@ +12V(TYPICAL) Intel® AtomTM x6425E, DDR4 32GB, 3.26A@ +12V(balance), 3.42A@ +12V(Max)
DISPLAY	
CONTROLLER	Intel® UHD Graphics for 10th Gen Intel® Processors
LVDS/eDP	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080 (Optional eDP 1.3, up to 1920X1200)
DISPLAY INTERFACE	HDMI2.0b x 1, up to 4K 60Hz DP1.4 x 1, up to 4K x 2K 60Hz (Optional: VGA x 1)
MULTIPLE DISPLAY	3 Simultaneous Displays
AUDIO	
CODEC	REALTEK ALC269
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	2W Speaker
EXTERNAL I/O	
ETHERNET	Intel® i210, 10/100/1000Base x 2
USB	USB3.2 Gen 2 x 2
SERIAL PORT	—
VIDEO	HDMI 2.0b x 1, DP1.4 x 1 (Optional VGA x 1)
INTERNAL I/O	
USB	USB2.0 x 4
SERIAL PORT	RS-232/422/485 x 4
VIDEO	LVDS/eDP x 1
SATA	SATA3.0 x 1, +5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	16 Bits (8 In/8 Out)
SMBus/I2C	SMBus/I2C x 1 (Default: SMBus)
TOUCH	4/5/8-wire Touch Controller x 1 (optional)
FAN	4 wire Smart Fan x 1
SIM	Nano SIM x 1
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	eMMC5.1 32GB CANBUS x 2, TX/RX (Celeron J6412 and Celeron N6210 don't support CANBUS)
EXPANSION	
Mini PCI-E/mSATA	—
M.2	E-Key 2230 x 1 (PCIe, USB2.0) B-Key 2242 x 1 (PCIe x 2/PCIe/SATA x 1, USB2.0) Default: PCIe x 2, PCIe x 1 select by BIOS, SATA select by BOM B-Key 2280 x 1 (PCIe x 1/PCIe x 2, USB2.0) Default: PCIe x 1, PCIe x 2 select by BIOS B-Key 3052 x 1 (USB3.2 Gen2)
OTHERS	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C), WiTAS2 -40°F ~ 185°F (-40°C ~ 85°C)
STORAGE TEMP.	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	335,427
EMC	CE/FCC Class A

Optional Accessories

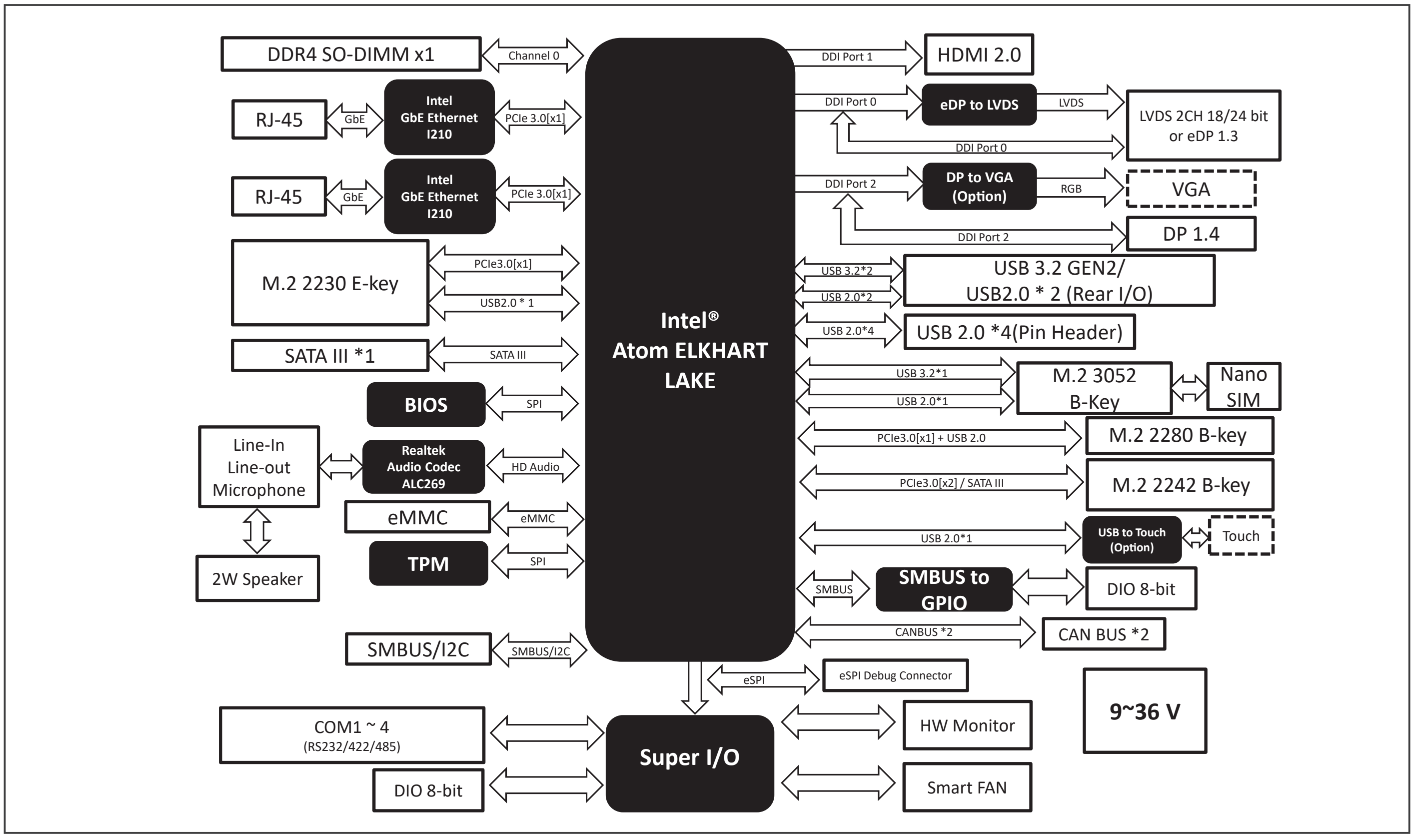
Part Number	Description	QTY per Board
170X000156	Audio Cable, 25cm	1
1709070500	SATA Cable, 50cm	1
1702150155	SATA HDD Power, Cable 15cm	1
170010010D	USB 2.0 Cable, 10cm	2
170204010R	Power Cable, 10cm	1
170X000317	COM cable, 15cm	1
170220020B	ATX Power Cable, 20cm	1

Packing List

Part Number	Description	QTY
GENE-EHL5	GENE-EHL5 MB	1
M16BT07020	Heat Sink	1

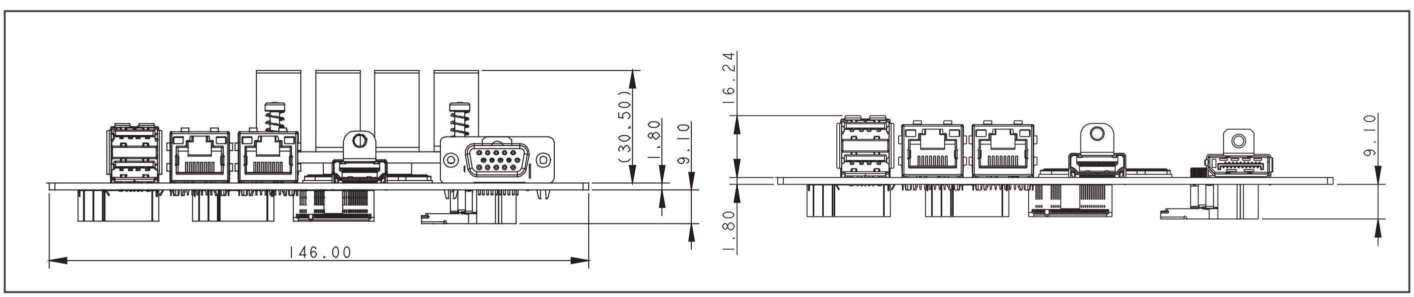
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



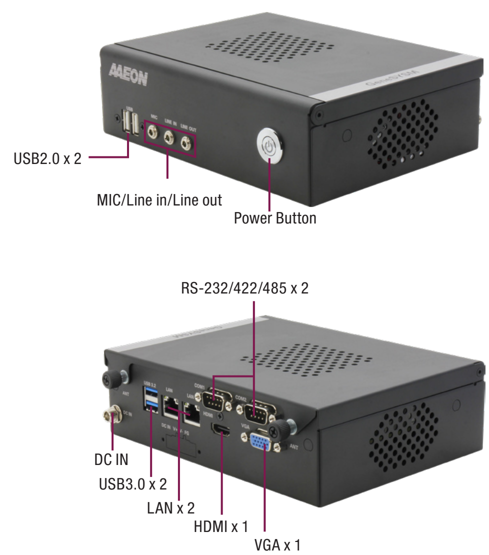
Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232/422/485	Storage	Expansion Slot	TPM	Power	Temp	Others
GENE-EHL5-A10-0001	Celeron N6210	DP++ x 1, HDMI x 1 LVDS x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	4	SATA x 1	M.2 B-Key 2280 x 1, M.2 B-Key 2242 x 1 M.2 E-Key 2230 x 1, M.2 B-Key 3052 x 1	2.0	9~36V	0°C ~ 60°C	DIO x 16, nano SIM, Touch Controller, SMBUS
GENE-EHL5-A10-0002	Celeron N6210	VGA x 1, LVDS x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	4	SATA x 1	M.2 B-Key 2280 x 1, M.2 B-Key 2242 x 1 M.2 E-Key 2230 x 1, M.2 B-Key 3052 x 1	NA	12V	0°C ~ 60°C	DIO x 16, nano SIM, SMBUS
GENE-EHL5-A10-0003	Celeron J6412	DP++ x 1, HDMI x 1 LVDS x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	4	SATA x 1 eMMC 32GB	M.2 B-Key 2280 x 1, M.2 B-Key 2242 x 1 M.2 E-Key 2230 x 1, M.2 B-Key 3052 x 1	2.0	9~36V	0°C ~ 60°C	DIO x 16, nano SIM, Touch Controller, SMBUS
GENE-EHL5-A10-0004	Celeron J6412	VGA x 1, LVDS x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	4	SATA x 1	M.2 B-Key 2280 x 1, M.2 B-Key 2242 x 1 M.2 E-Key 2230 x 1, M.2 B-Key 3052 x 1	NA	12V	0°C ~ 60°C	DIO x 16, nano SIM, SMBUS
GENE-EHL5-A10-0005	Pentium J6426	DP++ x 1, HDMI x 1 LVDS x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	4	SATA x 1	M.2 B-Key 2280 x 1, M.2 B-Key 2242 x 1 M.2 E-Key 2230 x 1, M.2 B-Key 3052 x 1	2.0	9~36V	0°C ~ 60°C	DIO x 16, nano SIM, Touch Controller, SMBUS, CANBUS x 2
GENE-EHL5-A10-0006	Atom x6211E	DP++ x 1, HDMI x 1 LVDS x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	4	SATA x 1	M.2 B-Key 2280 x 1, M.2 B-Key 2242 x 1 M.2 E-Key 2230 x 1, M.2 B-Key 3052 x 1	NA	12V	0°C ~ 60°C	DIO x 16, nano SIM, SMBUS
GENE-EHL5-A10-0007	Atom x6425E	DP++ x 1, HDMI x 1 LVDS x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	4	SATA x 1 eMMC 32GB	M.2 B-Key 2280 x 1, M.2 B-Key 2242 x 1 M.2 E-Key 2230 x 1, M.2 B-Key 3052 x 1	2.0	9~36V	0°C ~ 60°C	DIO x 16, nano SIM, Touch Controller, SMBUS, CANBUS x 2
GENE-EHL5-A10-0008	Atom x6425E	VGA x 1, LVDS x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	4	SATA x 1	M.2 B-Key 2280 x 1, M.2 B-Key 2242 x 1 M.2 E-Key 2230 x 1, M.2 B-Key 3052 x 1	NA	12V	0°C ~ 60°C	DIO x 16, nano SIM, SMBUS
GENE-EHL5W2-A10-0008	Atom X6425E	VGA x 1, LVDS x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	4	SATA x 1	M.2 B Key 2280 x 1, M.2 B-Key 2242 x 1 M.2 E Key 2230 x1, M.2 B Key 3052 x1	NA	12V	-40°C ~ 85°C	DIO x 16, nano SIM, SMBUS
GENE-EHL5-A10-0009	Atom x6425RE	DP++ x 1, HDMI x 1 LVDS x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	4	SATA x 1	M.2 B-Key 2280 x 1, M.2 B-Key 2242 x 1 M.2 E-Key 2230 x 1, M.2 B-Key 3052 x 1	2.0	9~36V	0°C ~ 60°C	DIO x 16, nano SIM, Touch Controller, SMBUS, CANBUS x 2

Note: All specifications are subject to change without notice.

GENESYSM-EHL5 PRELIMINARY

3.5" SubCompact Board System with Intel® Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series Processors



Features

- **DDR4 SODIMM Slot x 1, up to 32GB, support IBECC**
- **HDMI 2.0b x 1, VGA x 1**
- **SATA III x 1, eMMC 32GB x 1**
- **USB 3.2 Gen2 x 2, USB2.0 x 2**
- **M.2 B Key 2280 PCIe x 1, M.2 B-Key 2242 PCIe x 1, M.2 E Key 2230 x 1, M.2 B Key 3052 x 1**
- **Wide DC Input 9-36V**

Giga LAN | USB 2.0 | USB 3.2 Gen 2 | SATA 3

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board System
CPU	Intel® Atom® x6000E series, Intel® Pentium®, and Celeron® N and J series processors: Intel® Atom® x6425E (4C, 2.0GHz, up to 3GHz, TDP-up 12W) Intel® Celeron® J6412 (4C, 2.0GHz, up to 3GHz, TDP-up 10W) Intel® Celeron® N6210 (2C, 1.2GHz, up to 3GHz, TDP-up 6.5W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR4 up to 3200 Hz, SODIMM x 1,up to 32GB, in band ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM2.0
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	7.00" x 5.28" x 2.08" (178mm x 134.1mm x 53mm)
OS SUPPORT	Windows 10 (64bit) Linux Ubuntu 20.04.3(IOT)/Kernel 5.13
POWER	
POWER REQUIREMENT	+12V/+9-36V
POWER SUPPLY TYPE	ATX
CONNECTOR	DC Jack Connector
POWER CONSUMPTION	Intel® AtomTM x6425E, DDR4 32GB, 3.26A@ +12V(balance), 3.26A@+12V(TYPICAL) Intel® AtomTM x6425E, DDR4 32GB, 3.26A@ +12V(balance), 3.42A@+12V(Max)
DISPLAY	
CONTROLLER	Intel® UHD Graphics for 10th Gen Intel® Processors
LVDS/eDP	—
DISPLAY INTERFACE	HDMI2.0b x 1, up to 4K 60Hz VGA x 1
MULTIPLE DISPLAY	Up to 2 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	2W Speaker
EXTERNAL I/O	
ETHERNET	Intel® i210, 10/100/1000Base x 2
USB	USB3.2 Gen 2 x 2 USB2.0 x 2
SERIAL PORT	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)
VIDEO	HDMI 2.0b x 1 VGA x 1
INTERNAL I/O	
USB	—
SERIAL PORT	—
VIDEO	—
SATA	SATA III x 1 +5V SATA Power Connector x 1 eMMC5.1 32GB
AUDIO	Audio Header x 1
DIO/GPIO	16 Bits (Optional: with E-Base)
SMBus/I2C	SMBus/I2C x 1 (Default: SMBus)
TOUCH	—
FAN	4pins Smart Fan x1
SIM	Nano SIM x 1
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	—
EXPANSION	
Mini PCI-E/mSATA	—
M.2	E-Key 2230 x 1 (PCIe, USB2.0) B-Key 2242 x 1 (PCIe x2/PCIe/SATA x 1, USB2.0) Default: PCIe x2, PCIe x 1 select by BIOS, SATA select by BOM B-Key 2280 x 1 (PCIe x1/PCIe x 2, USB2.0) Default: PCIe x1, PCIe x 2 select by BIOS B-Key 3052 x 1 (USB3.2 Gen2)
OTHERS	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 122°F (0°C ~ 50°C) with 0.5 m/s air flow
STORAGE TEMP.	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	335,427
EMC	CE/FCC Class A

Optional Accessories

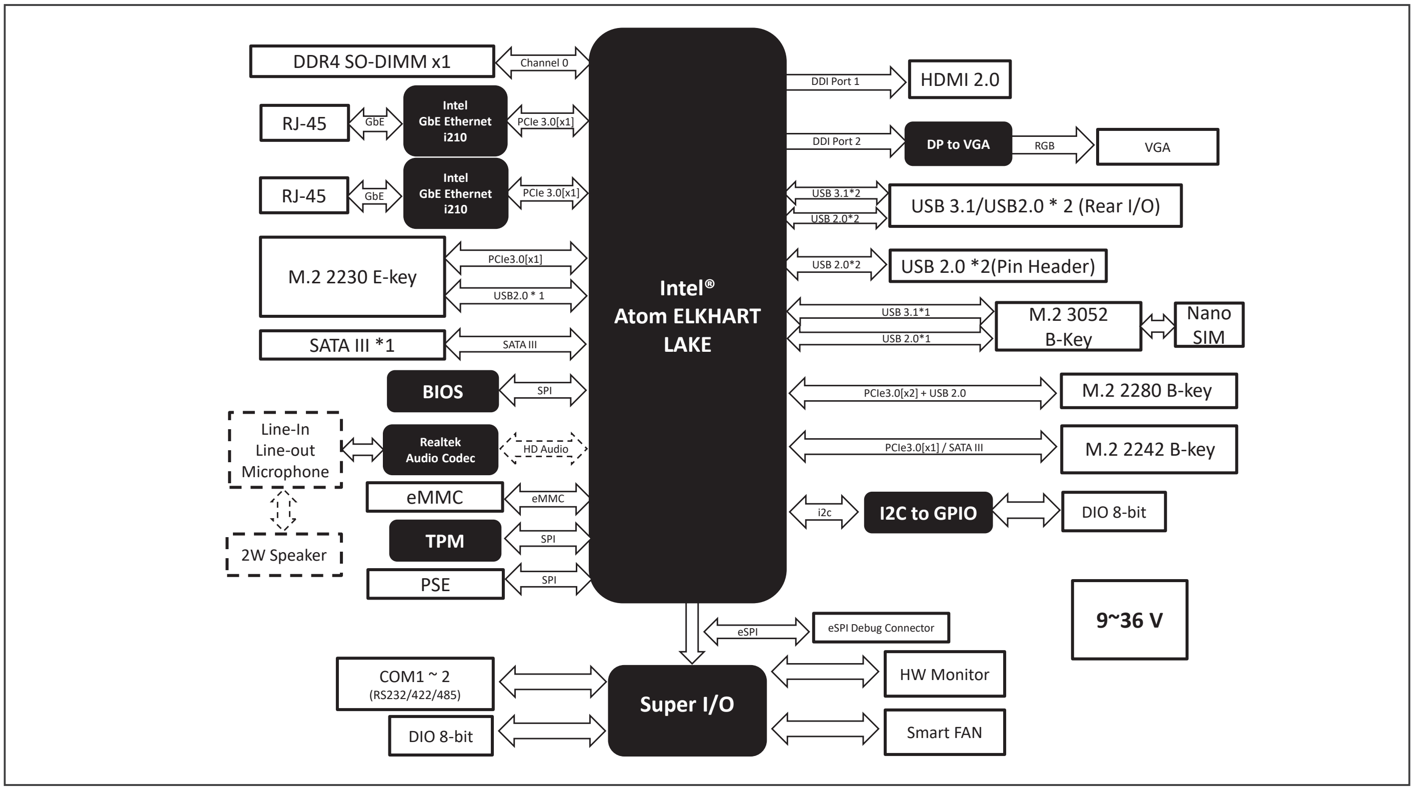
- **TBD**

Packing List

- **GENESYSM-EHL5**

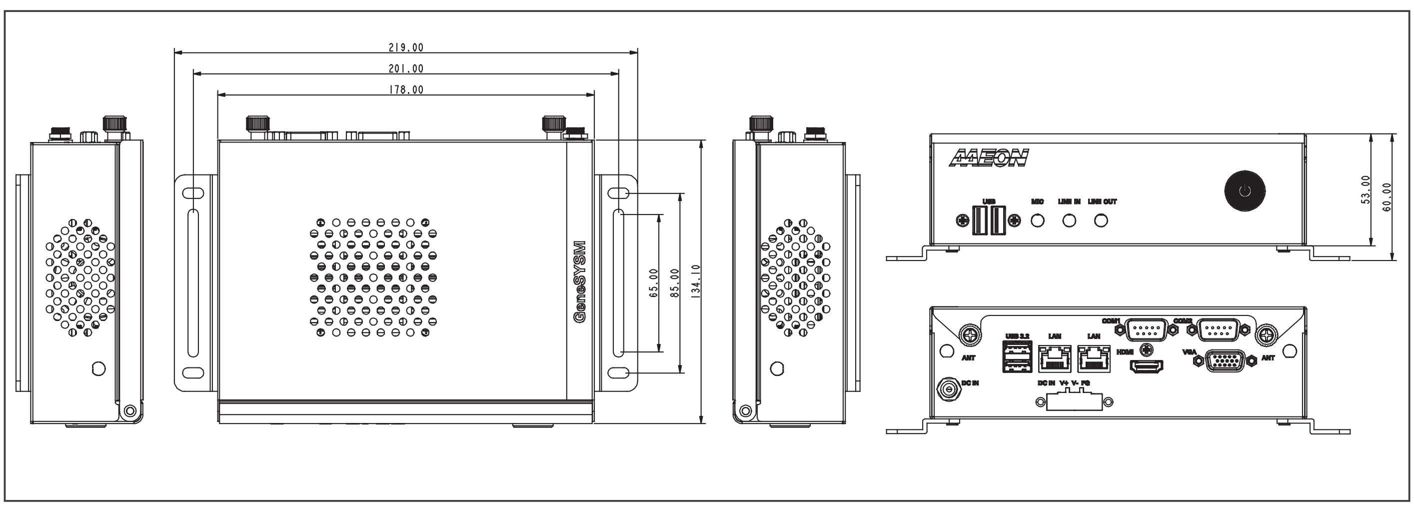
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



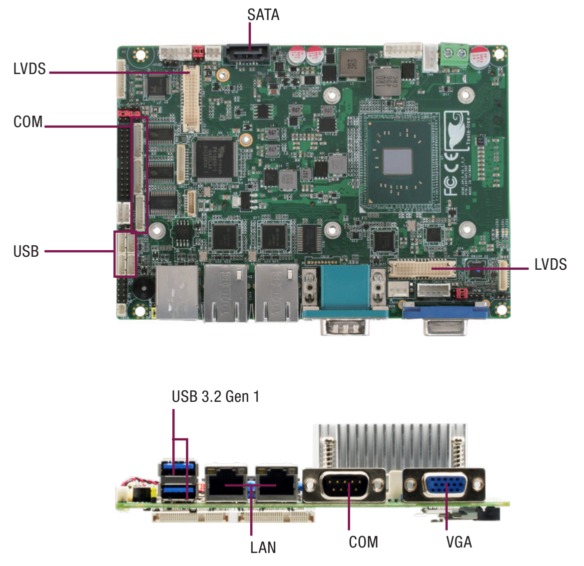
Ordering Information

Part Number	CPU	Fan/Fanless	Display	Storage	LAN	USB	RS-232/422/485	Expansion slot	TPM	Power	Operating Temp	Others
GENESYSM-EHL5-A10-0001	N6210	Heatsink	HDMI x 1 VGA x 1	SATA x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 2	2	M.2 E-Key 2230 x 1 M.2 B-Key 2242 x 1 M.2 B-Key 2280 x 1 M.2 B-Key 3052 x 1	2.0	12V	0~50˚C	Nano SIM, DIO, SMBUS, Audio
GENESYSM-EHL5-A10-0002	J6412	Heatsink	HDMI x 1 VGA x 1	SATA x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 2	2	M.2 E-Key 2230 x 1 M.2 B-Key 2242 x 1 M.2 B-Key 2280 x 1 M.2 B-Key 3052 x 1	2.0	9~36V	0~50˚C	Nano SIM, DIO, SMBUS, Audio
GENESYSM-EHL5-A10-0003	x6425E	Heatsink	HDMI x 1 VGA x 1	SATA x 1 eMMC 32GB	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 2	2	M.2 E-Key 2230 x 1 M.2 B-Key 2242 x 1 M.2 B-Key 2280 x 1 M.2 B-Key 3052 x 1	2.0	9~36V	0~50˚C	Nano SIM, DIO, SMBUS, Audio

Note: All specifications are subject to change without notice.

GENE-APL5

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



Features

- Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
- DDR3L 1866 MHz SODIMM x 1, up to 8 GB
- VGA/LVDS/LVDS2 (HDMI Co-layout with LVDS2 Optional)
- 2 CH Audio, SATA 6.0 Gb/s x 1
- Supports 8-bit Digital I/O , USB 2.0 x 4 , USB 3.2 Gen 1 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)

1000 Giga LAN | DDR 3L | Audio | LVDS | USB 2.0 | USB 3.2 Gen 1 | SATA 3

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board
CPU	Intel® Atom®/Celeron®/Pentium® Processor: Pentium N4200 (4C/4T,1.10GHz,up to 2.50GHz, 6W) Celeron N3350 (2C/2T,1.10GHz,up to 2.40GHz, 6W) Atom E3950 (4C/4T,1.6GHz,up to 2.00GHz, 9.5W) Atom E3940 (4C/4T,1.60GHz,up to 1.80GHz, 9.5W) Atom E3930 (2C/2T,1.30GHz,up to 1.80GHz, 6.5W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR3L up to 1866MHz, SODIMM x 1,up to 8GB,Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM 2.0 (Optional)
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10
POWER	
POWER REQUIREMENT	+12V (Optional: +9-19V)
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector
POWER CONSUMPTION	Intel® E3950,DDR3L 1866MHz 8GB,2.03A @+12V(TYPICAL) Intel® E3950,DDR3L 1866MHz 8GB,2.45A @+12V(MAX)
DISPLAY	
CONTROLLER	Intel® HD Graphics 500/505
LVDS/eDP	LVDS1 Dual Channel 18/24bit x 1, up to 1920 x 1080 LVDS2 Dual Channel 18/24bit x 1 (Optional: HDMI1.4b, up to 3840 x 2160)
DISPLAY INTERFACE	VGA x 1, up to 1920 x 1200
MULTIPLE DISPLAY	Up to 3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897/892
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	—
EXTERNAL I/O	
ETHERNET	Intel® i210/i211, 10/100/1000Base, RJ-45 x 2
USB	USB3.2 Gen 1 x 2
SERIAL PORT	COM1 (RS232, supports RI)
VIDEO	VGA x 1
INTERNAL I/O	
USB	USB2.0 x 4
SERIAL PORT	COM2, COM3 (RS232/422/485, supports 5V/12V/RI),COM4 (RS232, supports RI)
VIDEO	LVDS1 x 1,LVDS2/HDMI x 1(Default: LVDS2)
SATA	SATA III x 1,+5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	8-bit
SMBus/I2C	I2C x1,SMBus x 1
TOUCH	4/5/8-wire Touch Controller x 1 (optional)
FAN	DC Fan x 1 (optional: Smart Fan)
SIM	Micro SIM x 1 (Optional)
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	Parallel Port(SPP/EPP/ECP) x 1 (optional, select by BIOS)
EXPANSION	
Mini PCI-E/mSATA	mSATA x 1 (Full-Size),Mini Card x 1 (Half-Size)
M.2	—
OTHERS	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C), WiTAS2 -40°F ~ 185°F (-40°C ~ 85°C)
STORAGE TEMP.	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	365,976
EMC	CE/FCC Class A

Optional Accessories

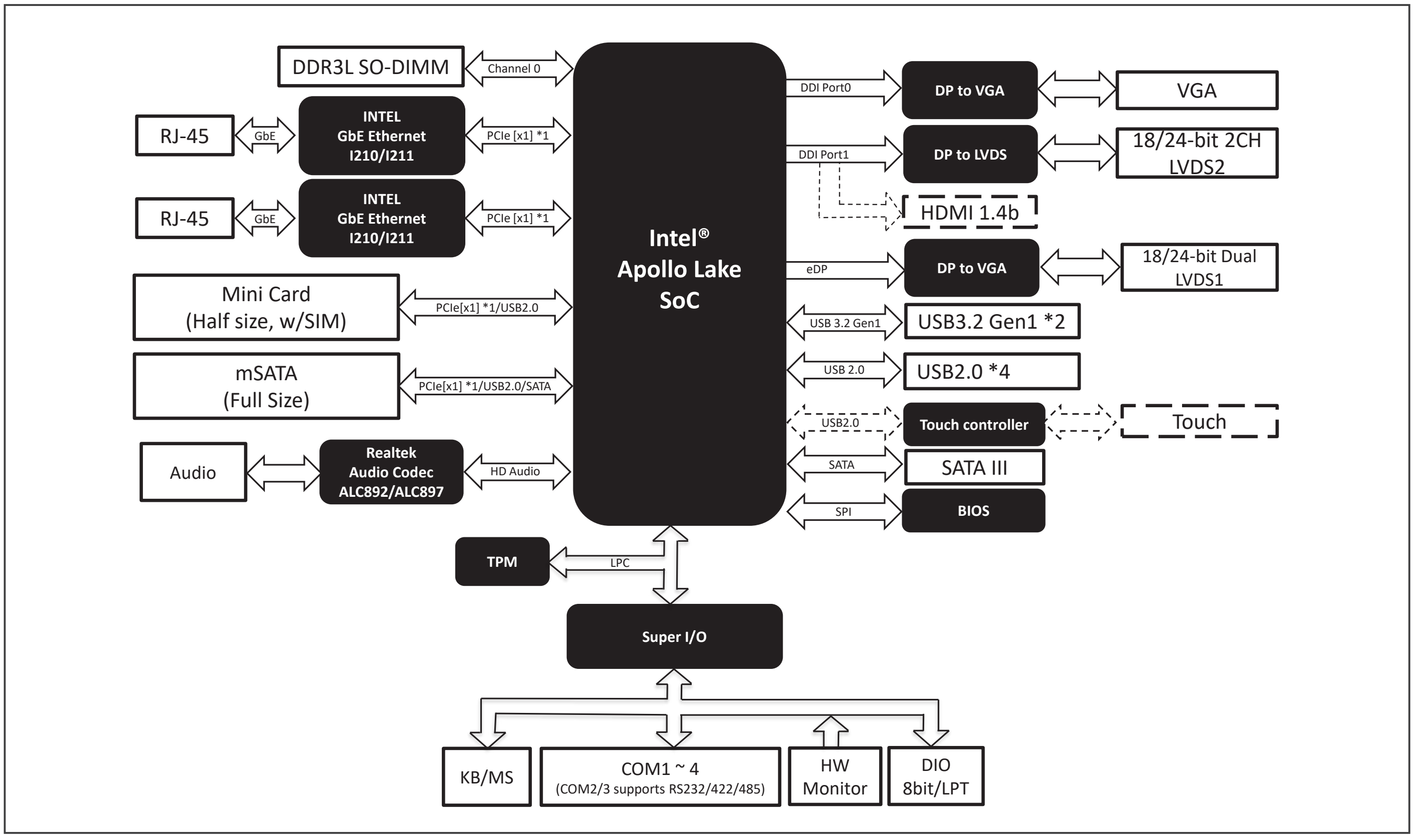
Part Number	Description	QTY per Board
1700050207	USB Cable, 20cm	2
1701090150	COM Cable, 15cm	3
1709100254	Audio Jack Cable, 25cm	1
1709070500	SATA CABLE, 50cm	1
170204010R	Power Cable, 10cm	1
1702150155	SATA Power Cable, 15cm	1
170220020B	ATX Power Cable, 20cm	1

Packing List

Part Number	Description	QTY
GENE-APL5	GENE-APL5 MB	1
M16BT07020	Heatsink	1

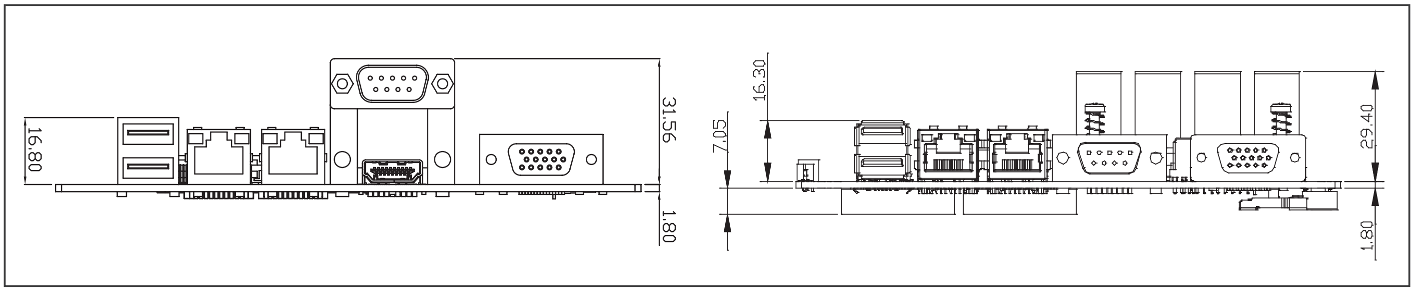
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

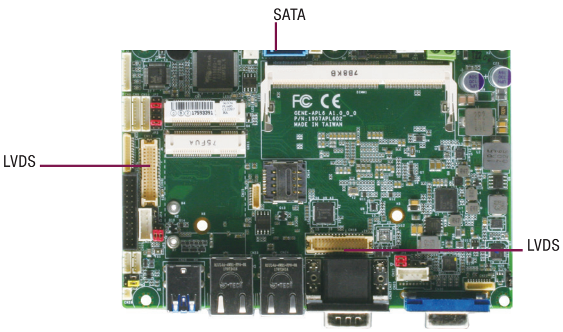


Ordering Information

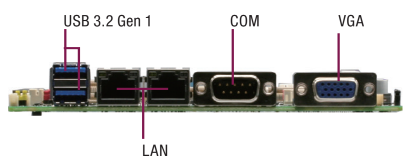
Part Number	CPU	Display	LAN	USB	RS-232	RS-232/422/485	Storage	Expansion Slot	TPM	Power	Operating Temp	Others
GENE-APL5-A12-F001	N3350	VGA/LVDS	GbE x 2	USB 3.2 Gen 1 x 2, USB 2.0 x 4	2	2	SATA x 1, mSATA x 1(Full-size)	MiniCard x 1 (Half-size)	—	12V	0°C ~ 60°C	DIO x 8
GENE-APL5-A12-F002	N3350	VGA/LVDS/LVDS2	GbE x 2	USB 3.2 Gen 1 x 2, USB 2.0 x 4	2	2	SATA x 1, mSATA x 1(Full-size)	MiniCard x 1 (Half-size)	2.0	9~19V	0°C ~ 60°C	Touch Controller, SIM,DIO x 8
GENE-APL5-A12-F003	N4200	VGA/LVDS/LVDS2	GbE x 2	USB 3.2 Gen 1 x 2, USB 2.0 x 4	2	2	SATA x 1, mSATA x 1(Full-size)	MiniCard x 1 (Half-size)	2.0	9~19V	0°C ~ 60°C	Touch Controller, SIM,DIO x 8
GENE-APL5W2-A12-F004	E3950	VGA/LVDS/LVDS2	GbE x 2	USB 3.2 Gen 1 x 2, USB 2.0 x 4	2	2	SATA x 1, mSATA x 1(Full-size)	MiniCard x 1 (Half-size)	2.0	12V	-40°C ~ 85°C	Touch Controller, SIM,DIO x 8

GENE-APL6

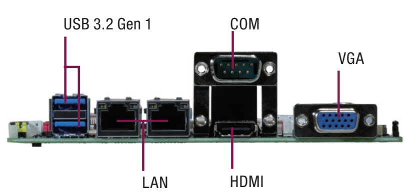
3.5" SubCompact Board with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC



Standard



With HDMI, Optional



Features

- DDR3L 1866 MHz SODIMM x 1, up to 8 GB
- VGA/LVDS/LVDS2 (HDMI Co-layout with LVDS2 Optional)
- 2 CH Audio, SATA 6.0 Gb/s x 1, eMMC up to 64G (Optional)
- Supports 8-bit Digital I/O, USB 2.0 x 2, USB 3.2 Gen 1 x 2, COM x 4
- Mini Card x 1 (Full-size), mSATA x 1 (Half-size)
- 9~36V wide DC input or +12V only (Optional), AT/ATX Mode
- Supports TPM (Optional)

Giga LAN · DDR 3L · Audio · LVDS · USB 2.0 · USB 3.2 Gen 1 · SATA 3

Specifications

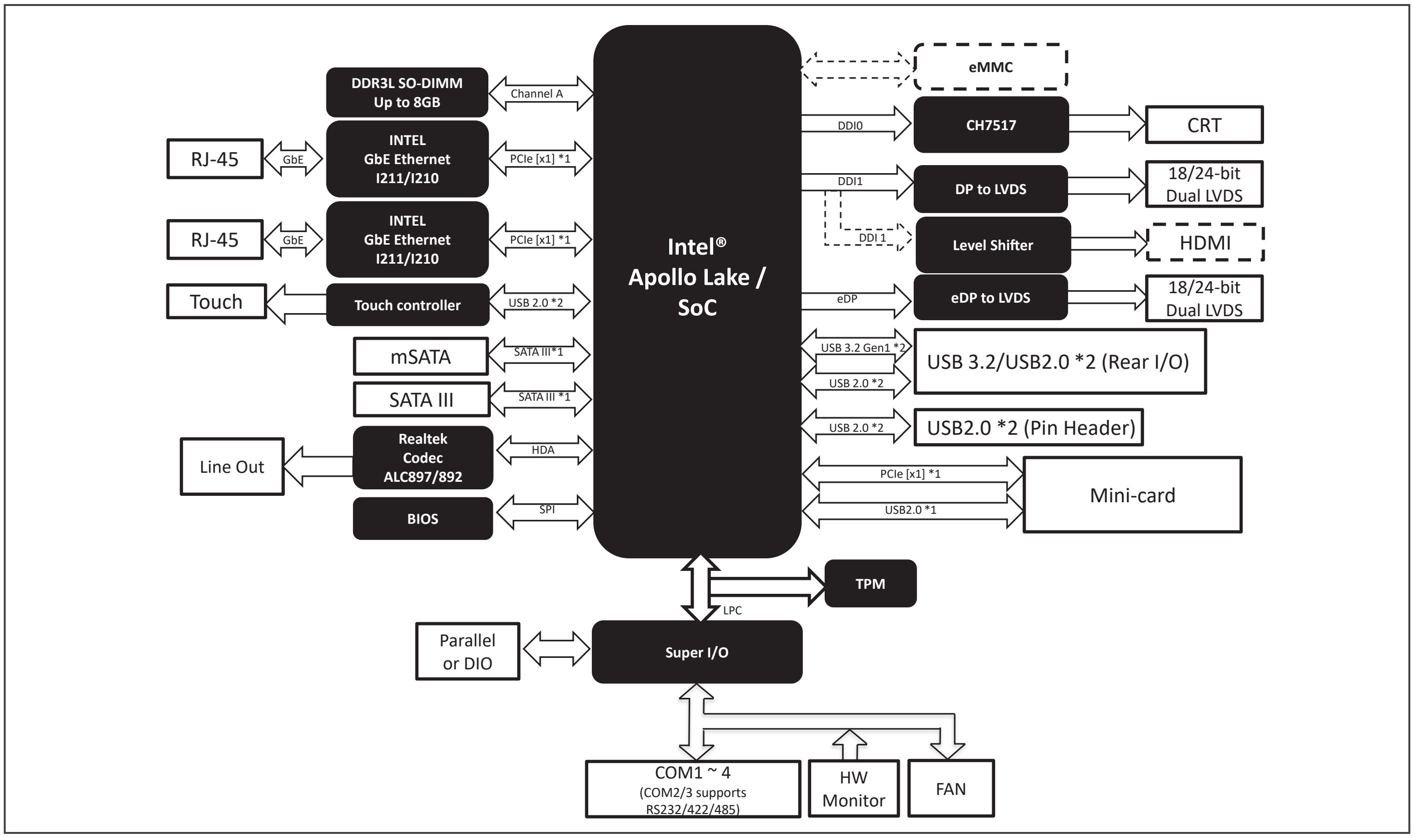
SYSTEM	
FORM FACTOR	3.5" SubCompact Board
CPU	Intel® Atom®/Celeron®/Pentium® Processor: Pentium N4200 (4C/4T,1.10GHz,up to 2.50GHz, 6W) Celeron N3350 (2C/2T,1.10GHz,up to 2.40GHz, 6W) Atom E3950 (4C/4T,1.60GHz, up to 2.00GHz, 9.5W) Atom E3940 (4C/4T,1.60GHz,up to 1.80GHz, 9.5W) Atom E3930 (2C/2T,1.30GHz,up to 1.80GHz, 6.5W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR3L 1600MHz (max.8GB)/1866MHz (max.4GB), SODIMM x 1, Non-ECC *1866MHz is limited to the verified DDR module in AAEON's Approved Vendor List
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM 2.0 (Optional)
RTC BATTERY	Lithium Battery 3V/240mAH
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10
POWER	
POWER REQUIREMENT	+9-36V (Optional: +12V)
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector
POWER CONSUMPTION	Intel® E3950, DDR3L 1866MHz 8G, 2.36A @+12V(TYPICAL) Intel® E3950, DDR3L 1866MHz 8G, 2.41A @+12V(MAX)
DISPLAY	
CONTROLLER	Intel® HD Graphics 500/505
LVDS/eDP	LVDS1 Dual Channel 18/24bit x 1, up to 1920 x 1080 LVDS2 Dual Channel 18/24bit x 1 (Optional: HDMI1.4b, up to 3840 x 2160)
DISPLAY INTERFACE	VGA x 1, up to 1920 x 1200
MULTIPLE DISPLAY	Up to 3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897/892
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	—
EXTERNAL I/O	
ETHERNET	Intel® i210/i211, 10/100/1000Base, RJ-45 x 2
USB	USB3.2 Gen 1 x 2
SERIAL PORT	COM1 (RS232)
VIDEO	VGA x 1
INTERNAL I/O	
USB	USB 2.0 x 2
SERIAL PORT	COM2, COM3 (RS232/422/485, support 5V/12V/RI) COM4 (RS232)
VIDEO	LVDS1 x 1 LVDS2/HDMI x 1(Default: LVDS2)
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	8-bit
SMBus/I2C	I2C/SMBus x 1 (Default: I2C)
TOUCH	4/5/8-wire Touch Controller x 1 (optional)
FAN	DC Fan x 1 (optional: Smart Fan)
SIM	Micro SIM x 1 (Optional)
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	eMMC 16G/32G/64G (optional) Parallel Port(SPP/EPP/ECP) x 1 (optional, select by BIOS)
EXPANSION	
Mini PCI-E/mSATA	Full-size mPCIe x 1 Half-size mSATA x 1
M.2	—
OTHERS	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C), WiTAS2 -40°F ~ 185°F (-40°C ~ 85°C)
STORAGE TEMP.	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	374,567
EMC	CE/FCC Class A

Optional Accessories

Part Number	Description	QTY per Board
1700050207	USB Cable, 20cm	2
1701090150	COM Cable, 15cm	3
1709100254	Audio Jack Cable, 25cm	1
1709070500	SATA Cable, 50cm	1
1702150155	SATA Power Cable, 15cm	1
170220020B	ATX Power Cable, 20cm	1
170204010R	Power Cable, 10cm	1
GENE-APL6-HSK01	HeatSink.146X80X14mm.GENE-APL6.(used with heat spreader)	1

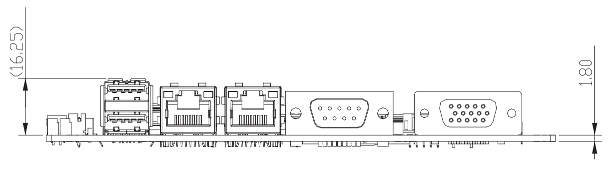
Note: All specifications are subject to change without notice.

Block Diagram

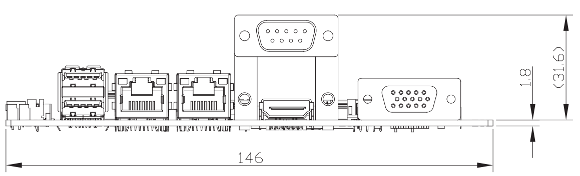


Dimension

Unit: mm



Standard



With HDMI, Optional

Packing List

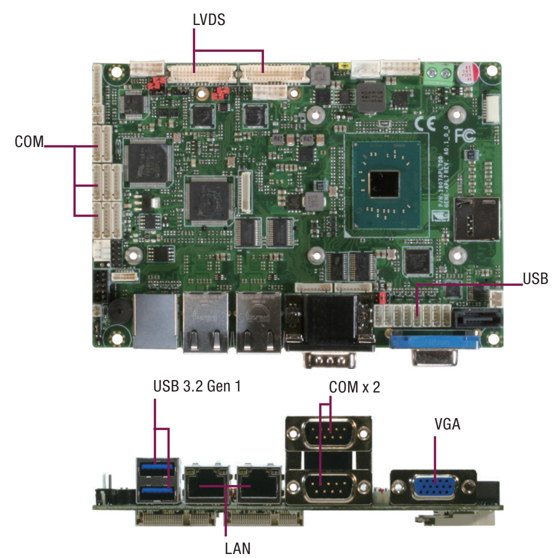
Part Number	Description	QTY
GENE-APL6	GENE-APL6 MB	1
TH3APL6010	Heat spreader for CPU N Series	1
M16APL6001	Heat spreader for CPU E Series	1

Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232	RS-232/422/485	Storage	Expansion Slot	TPM	Power	Operating Temp	Others
GENE-APL6-A11-F001	N3350	VGA, LVDS, LVDS2	GbE x 2	USB 3.2 Gen1 x 2 USB 2.0 x 2	2	2	SATA x 1 mSATA x 1	MiniCard x 1 (Full)	—	9~36V	0°C ~ 60°C	DIO x 8
GENE-APL6-A11-F002	N3350	VGA, LVDS, LVDS2	GbE x 2	USB 3.2 Gen1 x 2 USB 2.0 x 2	2	2	SATA x 1 32GB eMMC	MiniCard x 1 (Full)	2.0	9~36V	0°C ~ 60°C	Touch Controller, SIM, DIO x 8
GENE-APL6-A11-F003	N4200	VGA, LVDS, LVDS2	GbE x 2	USB 3.2 Gen1 x 2 USB 2.0 x 2	2	2	SATA x 1 mSATA x 1	MiniCard x 1 (Full)	—	9~36V	0°C ~ 60°C	DIO x 8
GENE-APL6-A11-F004	N4200	VGA, LVDS, LVDS2	GbE x 2	USB 3.2 Gen1 x 2 USB 2.0 x 2	2	2	SATA x 1 32GB eMMC	MiniCard x 1 (Full)	2.0	9~36V	0°C ~ 60°C	Touch Controller, SIM, DIO x 8
GENE-APL6W2-A11-F005	E3950	VGA, LVDS, HDMI	GbE x 2	USB 3.2 Gen1 x 2 USB 2.0 x 2	2	2	SATA x 1 mSATA x 1	MiniCard x 1 (Full)	2.0	12V	WiTAS2 (-40~85°C)	SIM, DIO x 8

GENE-APL7

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



Features

- Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
- DDR3L 1866 MHz SODIMM x 1, up to 8 GB
- VGA/LVDS1/LVDS2 (LVDS1 Co-design with eDP)
- SATA 6.0 Gb/s x 1, GPIO x 8
- USB 3.2 Gen 1 x 2, USB 2.0 x 8, COM x 12
- mSATA x 1 (Full size), Mini Card x 1 (Full size) with uSIM
- DC 12V Only, AT/ATX Mode

1000 Giga LAN · DDR 3L · Audio · LVDS · USB 2.0 · USB 3.2 Gen 1 · SATA 3

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board
CPU	Intel® Atom®/Celeron®/Pentium® Processor: Pentium N4200 (4C/4T,1.10GHz,up to 2.50GHz, 6W) Celeron N3350 (2C/2T,1.10GHz,up to 2.40GHz, 6W) Atom E3950 (4C/4T,1.6GGHz,up to 2.00GHz, 9.5W) Atom E3940 (4C/4T,1.60GHz,up to 1.80GHz, 9.5W) Atom E3930 (2C/2T,1.30GHz,up to 1.80GHz, 6.5W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR3L 1600MHz (max.8GB)/1866MHz (max.4GB), SODIMM x 1, Non-ECC *1866MHz is limited to the verified DDR module in AAEON's Approved Vendor List
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10
POWER	
POWER REQUIREMENT	12V Only
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector
POWER CONSUMPTION	Intel® E3950,DDR3L 1866MHz 8GB,4.15A @+12V(TYPICAL) Intel® E3950,DDR3L 1866MHz 8GB,4.29A @+12V(MAX)
DISPLAY	
CONTROLLER	Intel® HD Graphics 500/505
LVDS/eDP	LVDS1 Dual Channel 18/24bit x 1(Optional: eDP1.3, up to 3840 x 2160) LVDS2 Dual Channel 18/24bit x 1, up to 1920 x 1080
DISPLAY INTERFACE	VGA x 1, up to 1920 x 1200
MULTIPLE DISPLAY	Up to 3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897/892
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	2W Amplifier(Optional)
EXTERNAL I/O	
ETHERNET	Realtek RTL8119-CG,10/100/1000Base, RJ-45 x 2
USB	USB 3.2 Gen1 x 2
SERIAL PORT	COM1 (RS232) COM2 (RS232/422/485, support 5V/12V/RI)
VIDEO	VGA x 1

INTERNAL I/O	
USB	USB2.0 x 8
SERIAL PORT	COM3~COM6 (RS232, COM3~COM5 support 5V/12V/RI) Optional: COM3~COM12
VIDEO	LVDS1/eDP (Default: LVDS1) LVDS2
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	Audio Header x 1 Speaker Header x 2 (optional)
DIO/GPIO	8-bit
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)
TOUCH	—
FAN	DC Fan x 1 (optional: Smart Fan)
SIM	Micro SIM x 1 (Optional)
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	—
EXPANSION	
Mini PCI-E/mSATA	Full-size mPCIe x 1 Full-Size mSATA/mPCIe x 1 (Default mSATA, BOM Option: mPCIe)
M.2	—
OTHERS	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP.	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	409,108
EMC	CE/FCC Class A

Optional Accessories

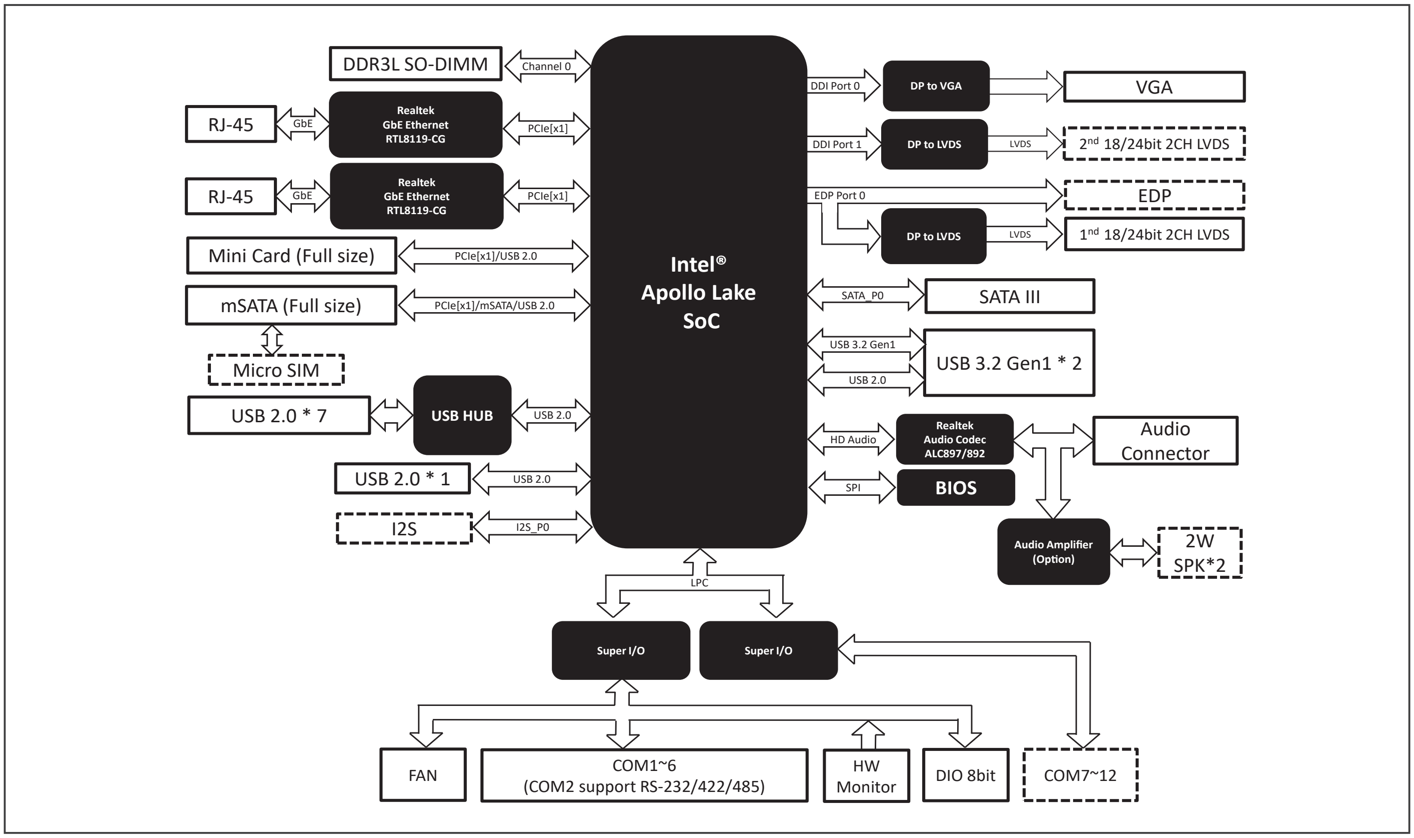
Part Number	Description	QTY
1700050207	USB Cable, 20cm	8
1701090150	COM Cable, 15cm	10
1709100254	Audio Jack Cable, 25cm	1
1702150155	SATA Power Cable, 15cm	1
170204010R	Power Cable, 10cm	1
1709150151	CRT Cable, 15cm (VGA D-SUB connector co-layout with internal pin header by option)	1
GENE-APL7-HSK01	Heatsink	1

Packing List

Part Number	Description	QTY
GENE-APL7	GENE-APL7 MB	1

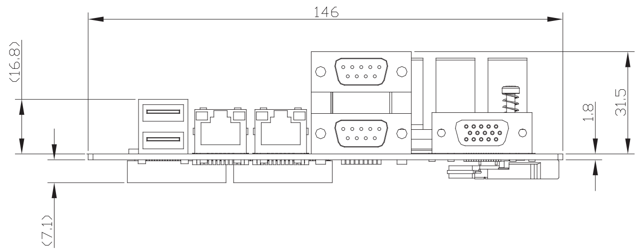
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232	RS-232/422/485	Storage	Expansion Slot	Power	Operating Temp	Others
GENE-APL7-A11-F001	N3350	VGA/LVDS	GbE x 2	USB 3.2 Gen 1 x 2 USB 2.0 x 8	5	1	SATA x 1 mSATA x 1 (full size)	MiniCard x 1 (Full)	12V	0°C ~ 60°C	Audio, DIO x 8
GENE-APL7-A11-F002	N3350	VGA/LVDS/LVDS2	GbE x 2	USB 3.2 Gen 1 x 2 USB 2.0 x 8	11	1	SATA x 1 mSATA x 1 (full size)	MiniCard x 1 (Full)	12V	0°C ~ 60°C	Micro SIM, DIO x 8, Audio, 2W AMP
GENE-APL7-A11-F003	N4200	VGA/LVDS/eDP	GbE x 2	USB 3.2 Gen 1 x 2 USB 2.0 x 8	11	1	SATA x 1 mSATA x 1 (full size)	MiniCard x 1 (Full)	12V	0°C ~ 60°C	Micro SIM, DIO x 8, Audio, 2W AMP

GENESYS-APL7

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

Features

- Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
- DDR3L 1866 MHz SODIMM x 1, up to 8 GB
- VGA
- SATA 6.0 Gb/s x 1
- USB 3.2 Gen 1 x 2, USB 2.0 x 1, COM x 7
- mSATA x 1 (Full size), Mini Card x 1 (Full size)
- DC 12V Only, ATX Mode

1000 Giga LAN | DDR 3L | USB 2.0 | USB 3.2 Gen 1 | SATA 3 | CE | FC

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board System
CPU	Intel ® Atom®/Celeron®/Pentium® Processor: Pentium N4200 (4C/4T, 1.10GHz, up to 2.50GHz, TDP 6W) Celeron N3350 (2C/2T,1.10GHz,up to 2.40GHz, TDP 6W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR3L up to 1866MHz, SODIMM x 1,up to 8GB,Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)
OS Support	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10
POWER	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	ATX
CONNECTOR	DC Jack Connector
POWER CONSUMPTION	Intel® N4200,DDR3L 1600MHz 8GB,1.61A@+12V(Typical)
DISPLAY	
CONTROLLER	Intel® HD Graphics 500/505
LVDS/eDP	—
Display Interface	VGA x 1
Multiple Display	—
AUDIO	
CODEC	—
AUDIO INTERFACE	—
Speaker	—
EXTERNAL I/O	
ETHERNET	Realtek RTL8119-CG,10/100/1000Base, RJ-45 x 2
USB	USB 3.2 Gen1 x 2
SERIAL PORT	COM1 (RS232)
VIDEO	VGA x 1
INTERNAL I/O	
USB	USB2.0 x 2
SERIAL PORT	Optional: COM3,COM4(RS232, COM3~COM5 support 5V/12V/RI) Optional: COM9~COM12
VIDEO	—
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	—
DIO/GPIO	—
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)
Touch	—
FAN	DC Fan x 1 (optional: Smart Fan)
SIM	Micro SIM x 1 (Optional)
Front Panel	PWR LED, Power Button
Others	—
EXPANSION	
Mini PCI-E/mSATA	Full-size mPCIe x 1 Full-Size mSATA/mPCIe x 1 (Default mSATA, BOM Option: mPCIe)
M.2	—
Others	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 122°F (0°C ~ 50°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	126,000
EMC	CE/FCC Class A

Packing List

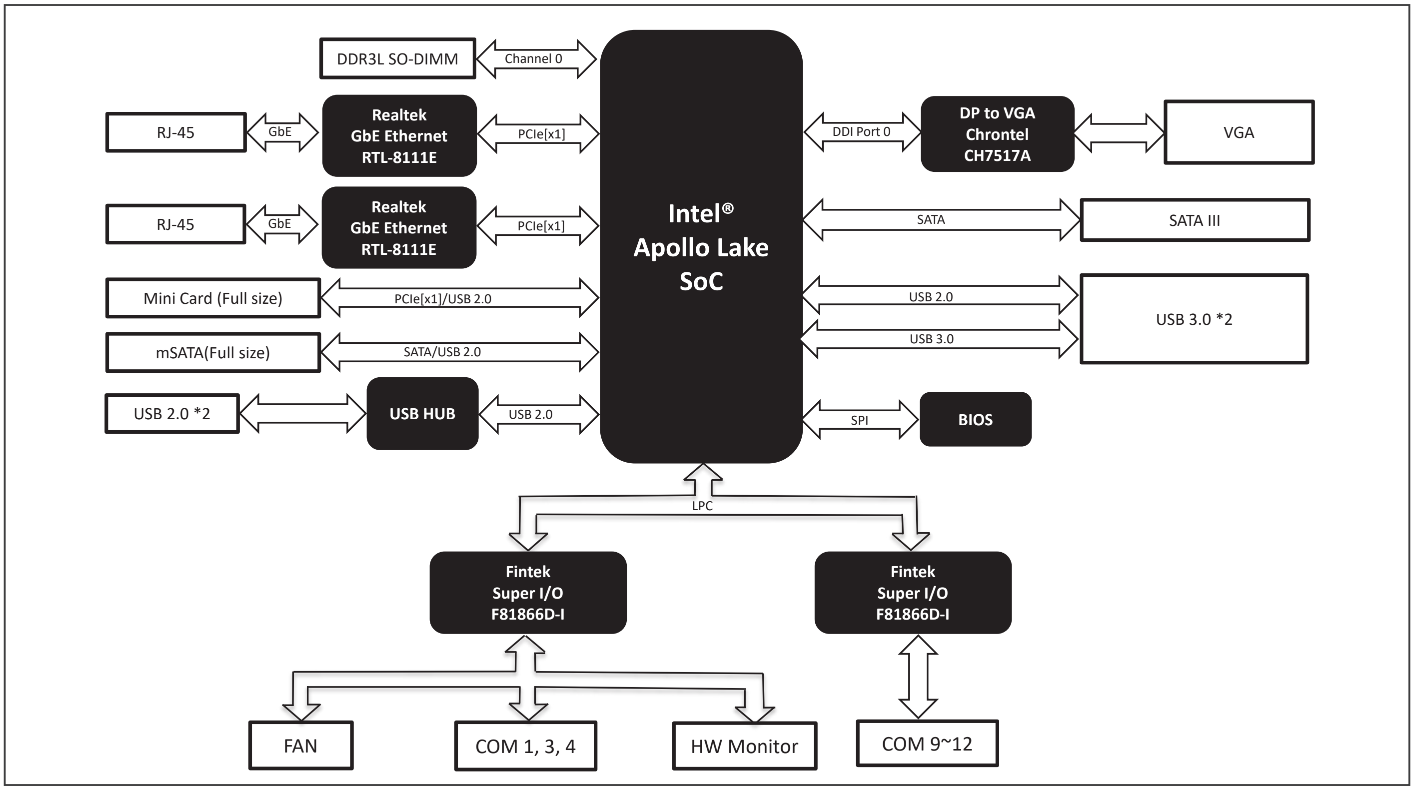
- GENESYS-APL7

Optional Accessories

Part Number	Description	QTY
968D3004G6	4GB.DDR3L.204Pin SODIMM.1600.Transcend.TS512MSK64W6H	1
968D3008G7	8GB.DDR3L-1600.204Pin SO-DIMM.1.35V.512Mx8.Samsung. K4B4G0846X.Transcend.TS1GSK64W6H	1
968C032G32	Full-size mSATA.32GB.Transcend.TS32GMSA370	1
968C064G2K	Full-size.64GB.mSATA.MLC.Transcend.TS64GMSA370	1
968C256G22	2.5" SATA3 SSD.256GB,MLC.-10~80C.Transcend.TS256GSSD420K-AA	1
968C512G06	2.5" SATA3 SSD.512GB,MLC.-10~80C.Transcend.TS512GSSD420K-AA	1
125530060Z	Power Adapter. 12V.5A.60W. FSP060-DHAN3	1
1255300960	Power Adapter. 12V.5A.96W. FSP096-DHAN3	1
1702031802	Power Cord (US)	1
1702031803	Power Cord (Europe)	1
170203180E	Power Cord (Japan)	1
GENESYS-APL7-WMT1	Wall Mount Kit. For GENESYS-APL7	1
GENESYS-APL7-VESA1	VESA Mount Kit. For GENESYS-APL7	1
GENESYS-APL7-HDD1	HDD Kit. For GENESYS-APL7	1
GENESYS-APL7-COM1	COM Extension Kit. w/ 1 Cable. For GENESYS-APL7	1

Note: All specifications are subject to change without notice.

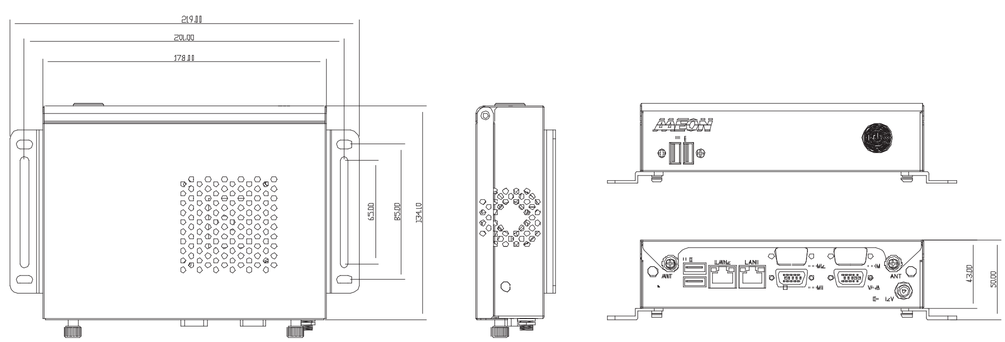
Block Diagram



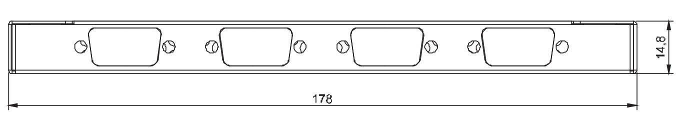
Dimension

Unit: mm

Standard Version



Advanced Version



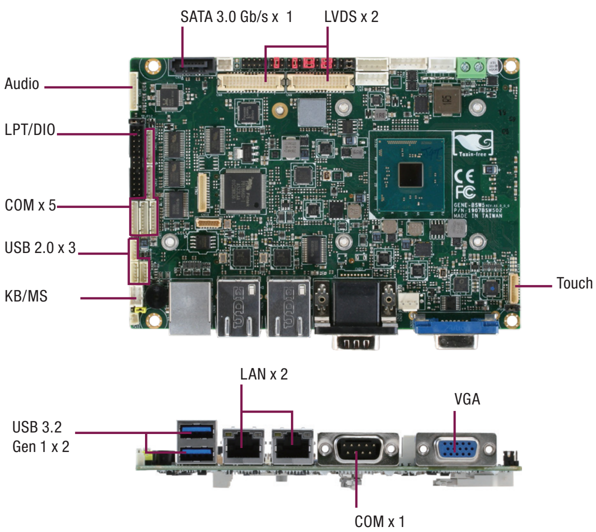
Ordering Information

Part Number	CPU	Fan/Fanless	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENESYS-APL7-A10-FS01	N3350	w/HS, Fan	VGA	SATA x 1, mSATA x 1 (full size)	GbE x 2	USB 3.2 Gen 1 x 2, USB 2.0 x 2	1	—	MiniCard x 1 (Full)	12V	0°C ~ 50°C	—
GENESYS-APL7-A10-FS02	N4200	w/HS, Fan	VGA	SATA x 1, mSATA x 1 (full size)	GbE x 2	USB 3.2 Gen 1 x 2, USB 2.0 x 2	1	—	MiniCard x 1 (Full)	12V	0°C ~ 50°C	—

Note: All specifications are subject to change without notice.

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
- VGA, LVDS1, LVDS2/HDMI (Co-design)
- 2CH HD Audio
- Mini-Card x 1 (Full-Size)
- mSATA x 1 (Shared with Mini-Card, Half-size)
- USB 3.2 Gen 1 x 2, USB2.0 x 3, COM x 6, Digital I/O 8-bit
- +12V DC, AT/ATX

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board
CPU	Intel® Celeron® N Processor: Intel® Celeron® N3160 (4C/4T,1.60GHz,up to 2.24GHz)
CHIPSET	Integrated with Intel ® SoC
MEMORY TYPE	DDR3L up to1600MHz, SODIMM x 1, up to 8GB, Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows 7/10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10
POWER	
POWER REQUIREMENT	+12V Only
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector
POWER CONSUMPTION	Intel®N3160,DDR3L 1600MHz 8GB,1.63A @+12V(TYPICAL) Intel®N3160,DDR3L 1600MHz 8GB,1.95A @+12V(MAX)
DISPLAY	
CONTROLLER	Intel® HD Graphics for Intel® Celeron® Processor N3000 Series
LVDS/eDP	LVDS1 Dual Channel 18/24bit x 1, up to 1920 x 1080 LVDS2 Dual Channel 18/24bit x 1(Optional: HDMI1.4b)
DISPLAY INTERFACE	VGA x 1, up to 1920 x 1200
MULTIPLE DISPLAY	Up to 3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897/892
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	—
EXTERNAL I/O	
ETHERNET	Realtek RTL8119-CG, 10/100/1000Base-TX, RJ-45 x2
USB	USB 3.2 Gen1 x 2
SERIAL PORT	COM1 (RS232)
VIDEO	VGA x 1 HDMI x1(optional)
INTERNAL I/O	
USB	USB2.0 x 3
SERIAL PORT	COM2,COM3 (RS232/422/485, supports 5V/12V/RI) COM4,COM5,COM6 (RS232)
VIDEO	LVDS1 x 1 LVDS2/HDMI x 1(Default: LVDS2)
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	8-bit
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)
TOUCH	4/5/8-wire Touch Controller x 1 (optional)
FAN	DC Fan x 1 (optional: Smart Fan)
SIM	—
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	—
EXPANSION	
Mini PCI-E/mSATA	Full-size mPCIe x 1 Half size mPCIe/mSATA x 1(Default mSATA, BOM Option: mPCIe)
M.2	—
OTHERS	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP.	-40°F ~ 176°F (-40°C ~ 80°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	325,391
EMC	CE/FCC Class A

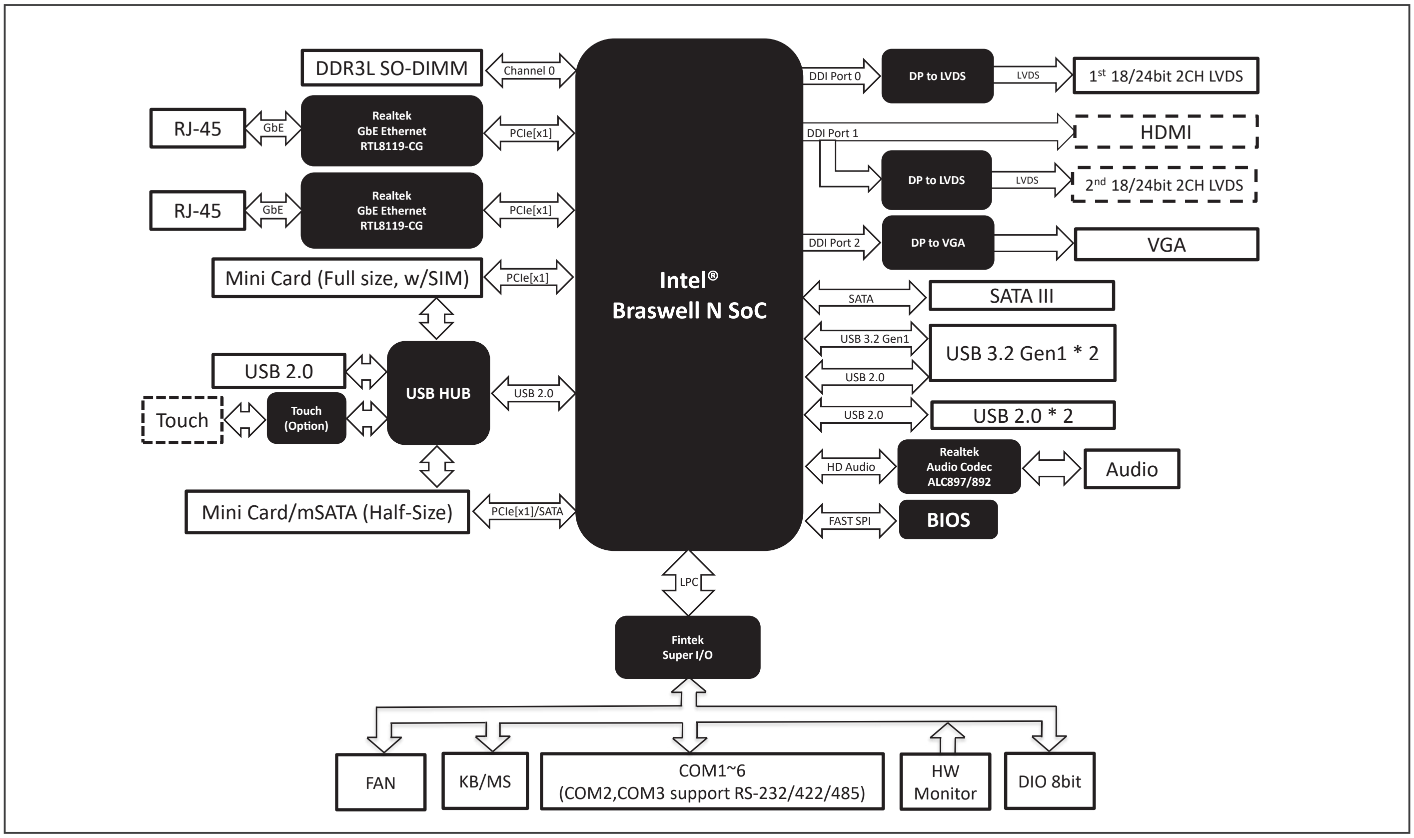
Optional Accessories

Part Number	Description	QTY per Board
1702150155	SATA Power Cable, 15cm	1
170220020B	ATX Power Cable, 20cm	1
1709070500	SATA CABLE, 50cm	1
170204010R	Power Cable, 10cm	1
1709100254	Audio JACK Cable, 25cm	1
1701090150	COM Cable, 15cm	5
1700050207	USB CABLE, 20cm	3
1700060152	PS/2 KB/MS Cable, 15cm	1
175011901M	BATTERY.3V.w/Wire 110mm.MITSUBISHI.Longtrump.CR2032-HAT00(MLF)	1

Packing List

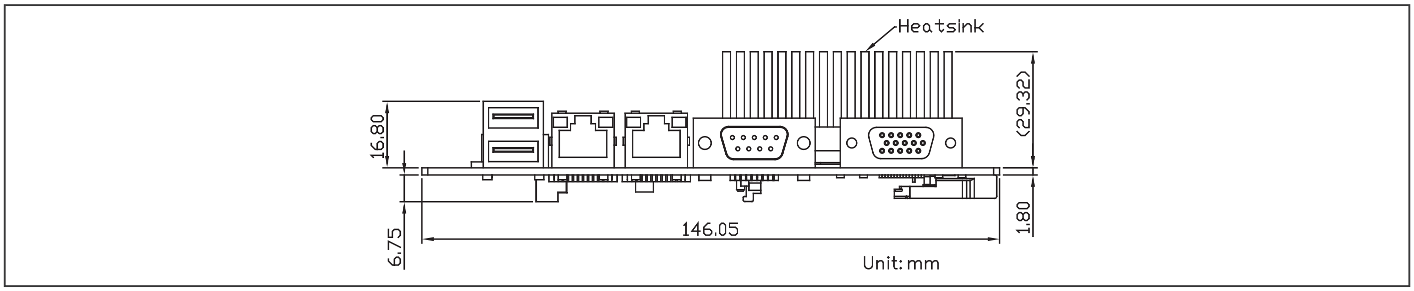
Part Number	Description	QTY
GENE-BSW5	GENE-BSW5 MB	1
M16BT05000	Heatsink	1

Block Diagram



Dimension

Unit: mm

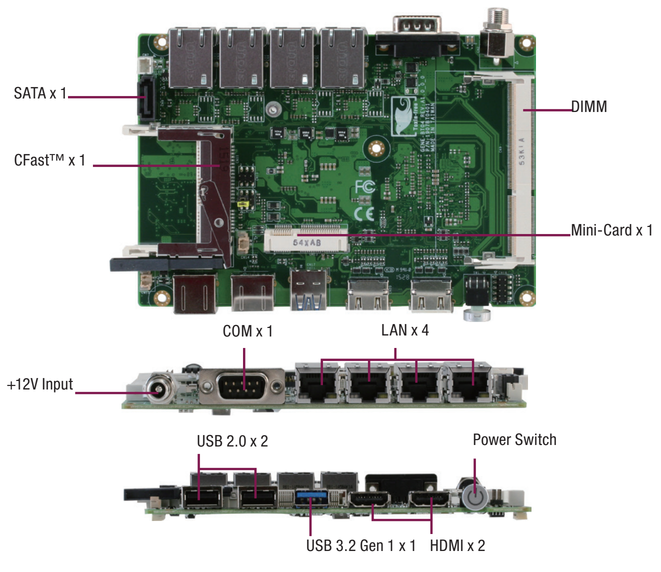


Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232	RS-232/422/485	Storage	Expansion Slot	Power	Operating Temp	Others
GENE-BSW5-A12-0001	N3160	VGA+LVDS	Gbe x 2	USB 3.2 Gen 1 x 2 UBS 2.0 x 3	2	2	SATA x 1 mSATA x 1 (half-size)	Mini Card x 1(Full-Size)	+12V	0°C ~ 60°C	DIO x 8
GENE-BSW5-A12-0002	N3160	VGA+LVDS x 2	Gbe x 2	USB 3.2 Gen 1 x 2 UBS 2.0 x 3	4	2	SATA x 1 mSATA x 1 (half-size)	Mini Card x 1(Full-Size)	+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 SoC
- DDR3L 1333 SODIMM slot x1, Max. up to 8GB
- HDMI x 2: HDMI 1 (w/ Audio), HDMI 2 (w/o Audio)
- USB 2.0 x 2, USB 3.2 Gen 1 x 1, COM x 1
- Mini-Card x 1 (Full-size)
- SATA 2.0 x 1
- DC 12V ATX Mode
- 12 ~ 24V DC Input, ATX Mode

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board
CPU	Intel® Atom®/ Celeron® Processor: Celeron® J1900 (4C/4T, 2.00GHz, up to 2.42GHz, 10W) Celeron® N2807 (2C/2T, 1.58GHz, up to 2.16GHz, 4.3W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	DDR3L up to 1333MHz, SODIMM x 1,up to 8GB,Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows 7/10 (64bit) Linux Ubuntu 20.04.3/Kernel 5.11
POWER	
POWER REQUIREMENT	+12~24V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	DC Jack Connector
POWER CONSUMPTION	Intel® N2807, DDR3L 1600MHz 4G, 0.65A@ +12V(TYPICAL)
DISPLAY	
CONTROLLER	Intel® HD Graphics for Intel Atom® Processor Z3700 Series
LVDS/eDP	—
DISPLAY INTERFACE	HDMI x 2: HDMI 1(w/Audio), HDMI 2(w/o Audio)
MULTIPLE DISPLAY	Up to 2 Simultaneous Displays
AUDIO	
CODEC	—
AUDIO INTERFACE	—
SPEAKER	—
EXTERNAL I/O	
ETHERNET	Intel® i210, 10/100/1000Base, RJ-45 x 4
USB	USB 2.0 x 2, USB 3.2 Gen 1 x 1
SERIAL PORT	COM1 (RS232)
VIDEO	HDMI x2
INTERNAL I/O	
USB	—
SERIAL PORT	—
VIDEO	—
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	—
DIO/GPIO	4-bit
SMBus/I2C	—
TOUCH	—
FAN	—
SIM	SIM X1
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	CFast™ x 1
EXPANSION	
Mini PCI-E/mSATA	Mini-Card x 1 (for USB only)
M.2	—
OTHERS	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP.	-40°F ~ 176°F (-40°C ~ 80°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	155,000
EMC	CE/FCC Class A

Packing List

Description	QTY
GENE-BT04 MB	1
M10BT04010 (Heat spreader)	1
Power cable	1

Optional Accessories

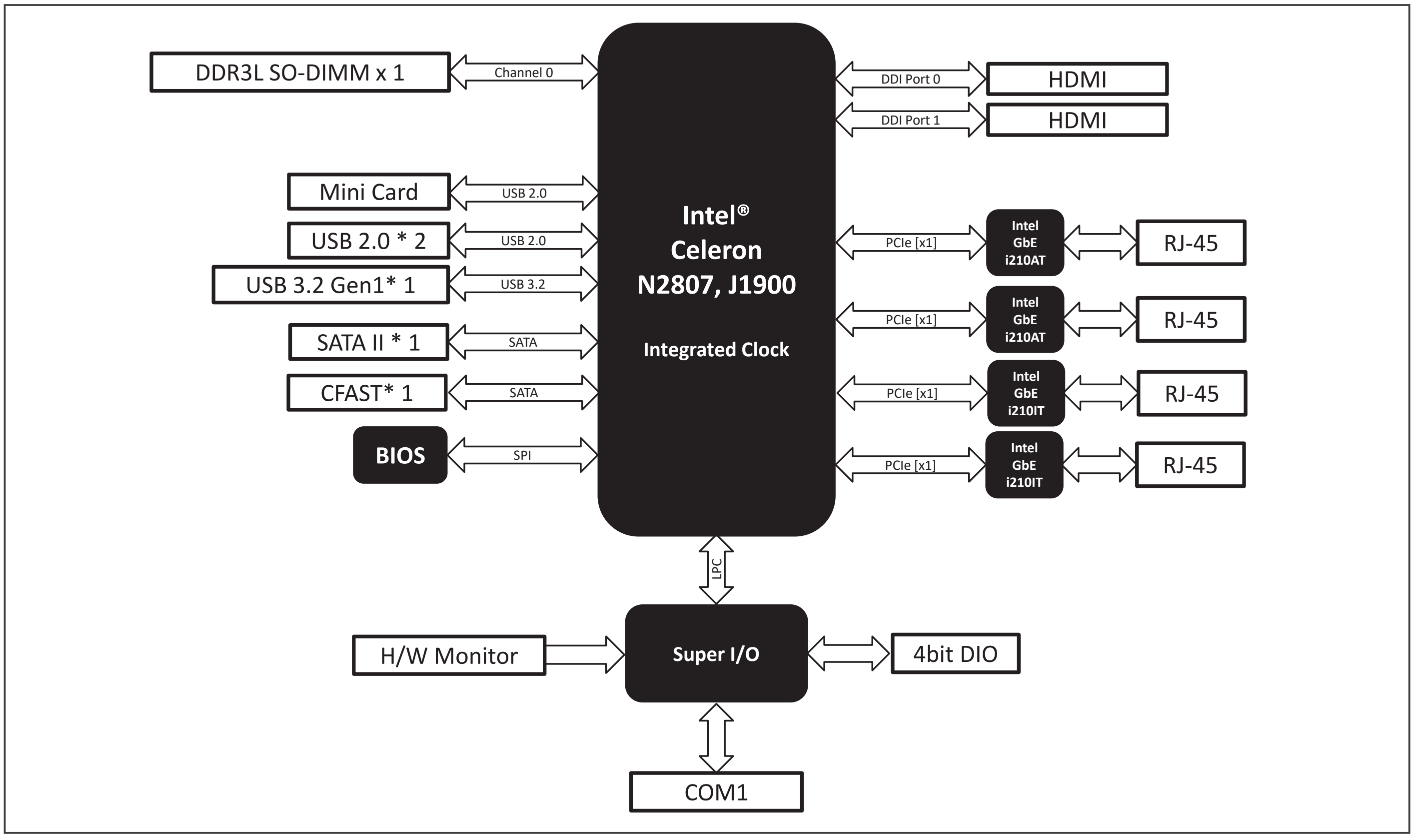
Part Number	Description	QTY
1709070500	SATA Cable, 50cm	1
1702150155	SATA HDD Power Cable, 15cm	1

OS Support

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

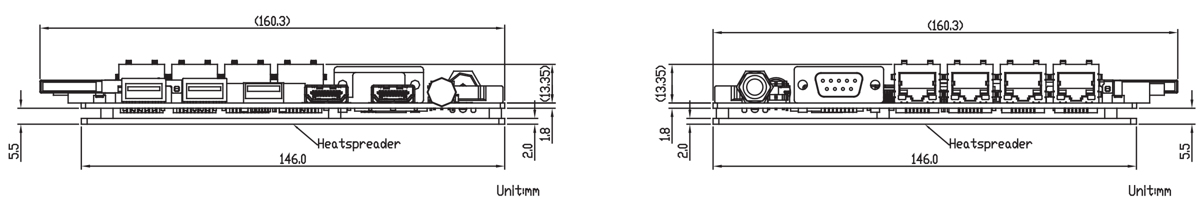
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

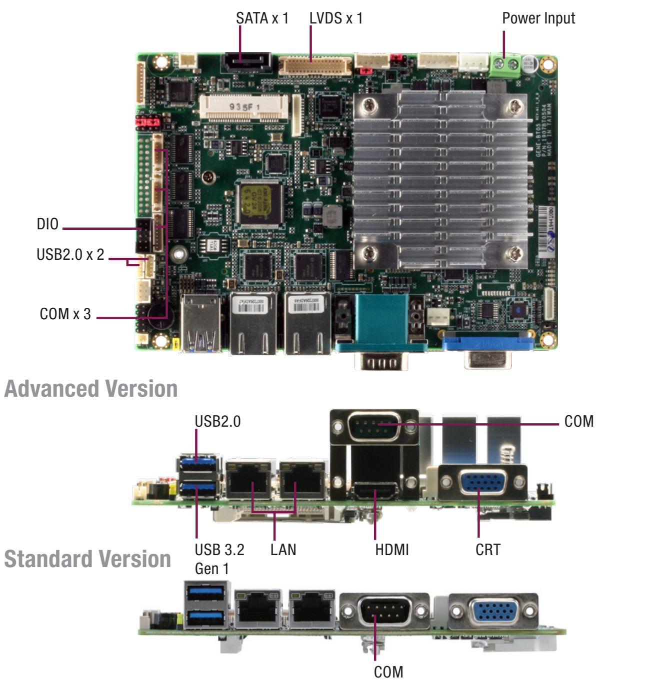


Ordering Information

Part Number	CPU	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-BT04-A12-0001	Intel® Celeron® N2807	Fanless	HDMI x 2	—	SATA x 1	GbE x 4	USB 3.2 Gen 1 x 1 USB 2.0 x 2	1	—	Mini-Card x 1 (Full)	12V ~ 24V	0°C ~ 60°C	DIO x 4
GENE-BT04-A12-0002	Intel® Celeron® J1900	Fanless	HDMI x 2	—	SATA x 1	GbE x 4	USB 3.2 Gen 1 x 1 USB 2.0 x 2	1	—	Mini-Card x 1 (Full)	12V ~ 24V	0°C ~ 60°C	DIO x 4

GENE-BT05

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



Features

- Onboard Intel® Atom® and Celeron® Processor SoC
- DDR3L 1066/1333 MHz SODIMM x 1, Up to 8 GB
- Gigabit Ethernet x 2, RJ-45 x 2
- CRT, 18/24-bit Dual-Channel LVDS LCD, HDMI
- 2CH HD Audio
- SATA 3.0 Gb/s x 1, CFast™ x 1
- USB 3.2 Gen 1 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)

1000 Giga LAN · DDR 3L · Audio · LVDS · USB 2.0 · USB 3.2 Gen 1

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board
CPU	Intel® Atom®/ Celeron® Processor: Celeron® J1900 (4C/4T, 2.00GHz, up to 2.42GHz, 10W) Celeron® N2930 (4C/4T, 1.83GHz, up to 2.16GHz, 7.5W) Celeron® N2807 (2C/2T, 1.58GHz, up to 2.16GHz, 4.3W) Atom® E3845 (4C/4T, 1.91 GHz, 10W) Atom® E3825 (2C/2T, 1.33 GHz, 6W)
CHIPSET	Integrated with Intel ® SoC
MEMORY TYPE	DDR3L up to 1333MHz, SODIMM x 1,up to 8GB,Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM 1.2(Optional)
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows 7/10 (64bit) Linux Ubuntu 20.04.3/Kernel 5.11
POWER	
POWER REQUIREMENT	+12V Only
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector
POWER CONSUMPTION	Intel® J1900, DDR3L 1600MHz 8GB,1.73A @ +12V(TYPICAL) Intel® J1900, DDR3L 1600MHz 8GB,1.88A @ +12V(MAX)
DISPLAY	
CONTROLLER	Intel® HD Graphics for Intel Atom® Processor Z3700 Series
LVDS/eDP	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080
DISPLAY INTERFACE	HDMI 1.4a x 1, up to 3840 x 2160 VGA x 1, up to 1920 x 1200
MULTIPLE DISPLAY	Up to 3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897/892
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	—
EXTERNAL I/O	
ETHERNET	Intel® i210/i211, 10/100/1000Base, RJ-45 x 2
USB	USB 3.2 Gen 1 x 1,USB 2.0 x 1
SERIAL PORT	COM1 (RS232)
VIDEO	VGA x 1,HDMI 1.4a x 1

INTERNAL I/O	
USB	USB2.0 x 2
SERIAL PORT	COM2, COM3 (RS232/422/485, supports 5V/12V/RI),COM4 (RS232)
VIDEO	LVDS x 1
SATA	SATA III x 1,+5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	8-bit
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)
TOUCH	4/5/8-wire Touch Controller x 1 (optional)
FAN	DC Fan x 1 (optional: Smart Fan)
SIM	SIM X1
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	CFast™ (option with mSATA by BOM, occupies one Mini Card location)
EXPANSION	
Mini PCI-E/mSATA	Full-Size mPCIe/ USB2.0 x 1 Half-Size mSATA/ mPCIe x 1 (BOM optional)
M.2	—
OTHERS	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C) or WiTAS 2 (E3825)
STORAGE TEMP.	-40°F ~ 176°F (-40°C ~ 80°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	344,859
EMC	CE/FCC Class A

Optional Accessories

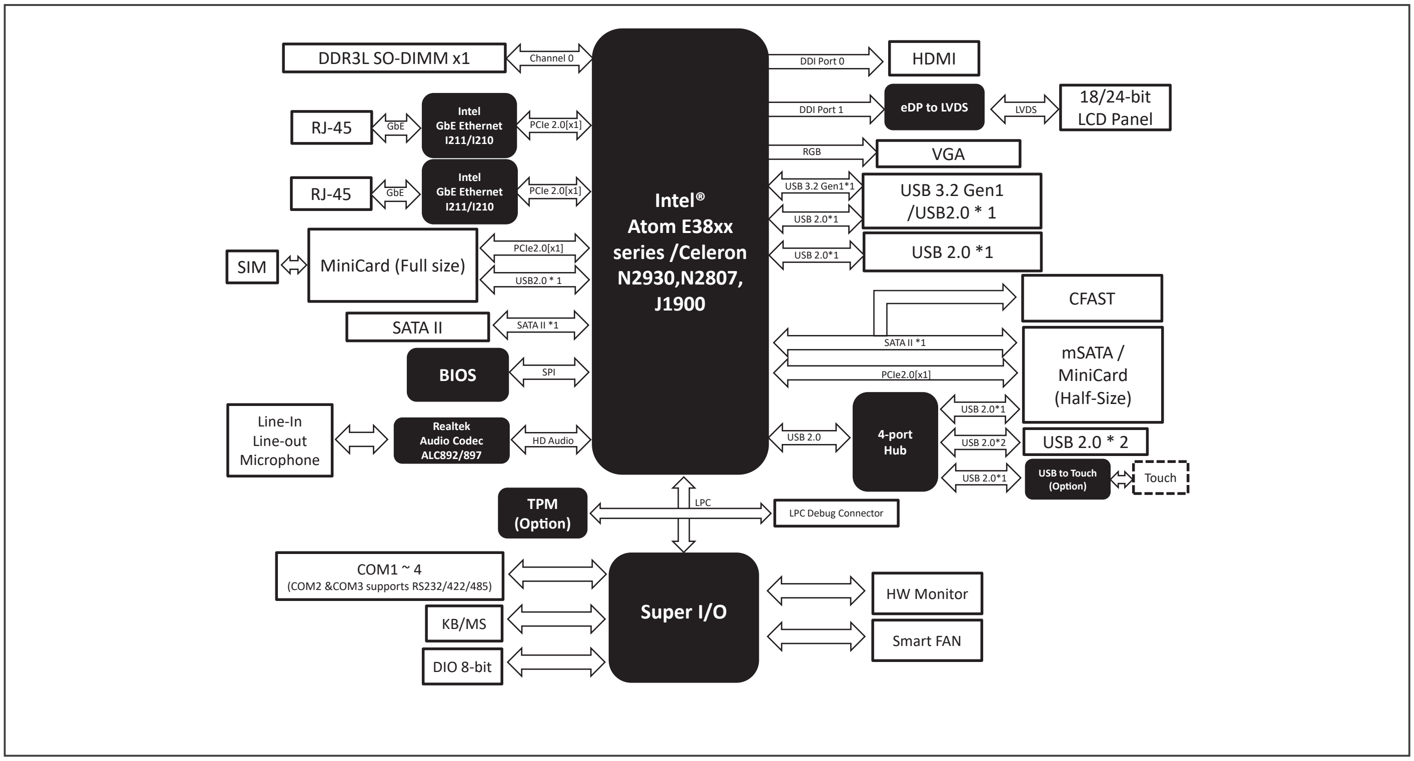
Part Number	Description	QTY per Board
1700050207	USB Cable, 20cm	2
1701090150	COM Cable, 15cm	3
1709100254	Audio Jack Cable, 25cm	1
1709070500	SATA CABLE, 50cm	1
170204010R	Power Cable, 10cm	1
1702150155	SATA Power Cable, 15cm	1
170220020B	ATX Power Cable, 20cm	1

Packing List

Part Number	Description	QTY
GENE-BT05	GENE-BT05 MB	1
M16BT07020	Heatsink	1

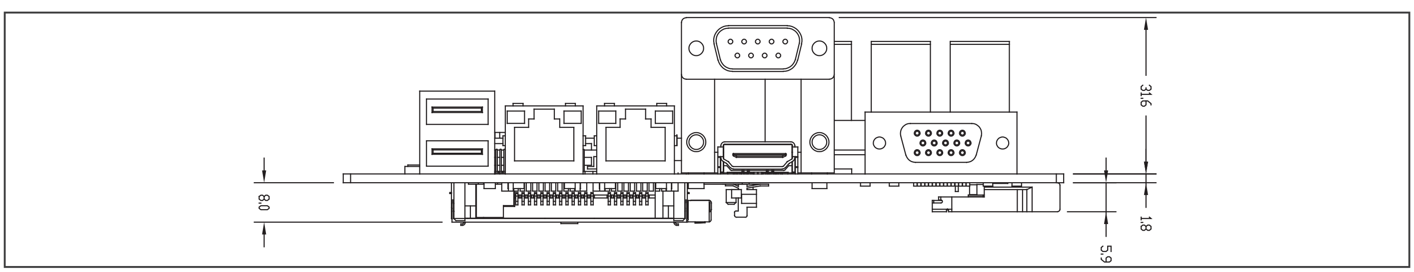
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

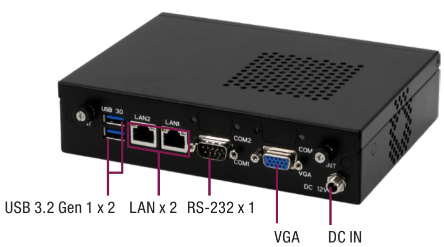


Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232	RS-232/422/485	Storage	Expansion Slot	TPM	Power	Operating Temp	Others
GENE-BT05-A12-0001	Intel®Celeron® N2930	CRT + LVDS LVDS + HDMI HDMI + CRT	Gbe x 2	USB3.0 x 1 UBS2.0 x 3	2	2	SATA x 1 CFast x 1	Mini Card x 2 (Full-Size x 1, Half-Size x 1)	1.2	+12V, AT/ATX	0°C ~ 60°C	Touch, SIM, DIO x 8
GENE-BT05-A12-0002	Intel®Celeron® N2930	CRT + LVDS	Gbe x 2	USB3.0 x 1 UBS2.0 x 3	2	2	SATA x 1 mSATA x 1 (Half Size)	Mini Card x 1 (Full-Size)	—	+12V, AT/ATX	0°C ~ 60°C	DIO x 8
GENE-BT05-A12-0003	Intel®Celeron® N2807	CRT + LVDS LVDS + HDMI HDMI + CRT	Gbe x 2	USB3.0 x 1 UBS2.0 x 3	2	2	SATA x 1 CFast x 1	Mini Card x 2 (Full-Size x 1, Half-Size x 1)	1.2	+12V, AT/ATX	0°C ~ 60°C	Touch, SIM, DIO x 8
GENE-BT05-A12-0004	Intel®Celeron® N2807	CRT + LVDS	Gbe x 2	USB3.0 x 1 UBS2.0 x 3	2	2	SATA x 1 mSATA x 1 (Half Size)	Mini Card x 1 (Full-Size)	—	+12V, AT/ATX	0°C ~ 60°C	DIO x 8
GENE-BT05-A12-0005	Intel® Atom™ E3845	CRT + LVDS LVDS + HDMI HDMI + CRT	Gbe x 2	USB3.0 x 1 UBS2.0 x 3	2	2	SATA x 1 CFast x 1	Mini Card x 2 (Full-Size x 1, Half-Size x 1)	1.2	+12V, AT/ATX	0°C ~ 60°C	Touch, SIM, DIO x 8
GENE-BT05-A12-0006	Intel® Atom™ E3845	CRT + LVDS	Gbe x 2	USB3.0 x 1 UBS2.0 x 3	2	2	SATA x 1 mSATA x 1 (Half Size)	Mini Card x 1 (Full-Size)	—	+12V, AT/ATX	0°C ~ 60°C	DIO x 8
GENE-BT05-A12-0007	Intel® Atom™ E3825	CRT + LVDS LVDS + HDMI HDMI + CRT	Gbe x 2	USB3.0 x 1 UBS2.0 x 3	2	2	SATA x 1 CFast x 1	Mini Card x 2 (Full-Size x 1, Half-Size x 1)	1.2	+12V, AT/ATX	0°C ~ 60°C	Touch, SIM, DIO x 8
GENE-BT05-A12-0008	Intel® Atom™ E3825	CRT + LVDS	Gbe x 2	USB3.0 x 1 UBS2.0 x 3	2	2	SATA x 1 mSATA x 1 (Half Size)	Mini Card x 1 (Full-Size)	—	+12V, AT/ATX	0°C ~ 60°C	DIO x 8
GENE-BT05-A12-0009	Intel®Celeron® J1900	CRT + LVDS LVDS + HDMI HDMI + CRT	Gbe x 2	USB3.0 x 1 UBS2.0 x 3	2	2	SATA x 1 CFast x 1	Mini Card x 2 (Full-Size x 1, Half-Size x 1)	1.2	+12V, AT/ATX	0°C ~ 60°C	Touch, SIM, DIO x 8
GENE-BT05-A12-0010	Intel®Celeron® J1900	CRT + LVDS	Gbe x 2	USB3.0 x 1 UBS2.0 x 3	2	2	SATA x 1 mSATA x 1 (Half Size)	Mini Card x 1 (Full-Size)	—	+12V, AT/ATX	0°C ~ 60°C	DIO x 8
GENE-BT05W2-A12-0006	Intel® Atom™ E3845	CRT + LVDS	Gbe x 2	USB3.0 x 1 UBS2.0 x 3	2	2	SATA x 1 mSATA x 1 (Half Size)	Mini Card x 1 (Full-Size)	—	+12V, AT/ATX	WTAS 2(-40°C~85°C)	DIO x 8
GENE-BT05W2-A12-0008	Intel® Atom™ E3825	CRT + LVDS	Gbe x 2	USB3.0 x 1 UBS2.0 x 3	2	2	SATA x 1 mSATA x 1 (Half Size)	Mini Card x 1 (Full-Size)	—	+12V, AT/ATX	WTAS 2(-40°C~85°C)	DIO x 8

GENESYS-BT05

3.5" SubCompact Board System with Intel® Atom® and Celeron® Processor SoC



Features

- Onboard Intel® Atom® and Celeron® Processor SoC
- DDR3L up to 1333 MHz SODIMM x 1, Up to 8 GB
- Gigabit Ethernet x 2, RJ-45 x 2
- CRT, HDMI
- Mini-Card x 2, SATA III x 1, CFast™ x 1 (Optional)
- USB 3.2 Gen 1 x 1, USB2.0 x 3, COM x 3
- Onboard Trusted Platform Module (Optional)
- DC 12V, ATX Mode

1000 Giga LAN · DDR 3L · USB 2.0 · USB 3.2 Gen 1 · SATA 3 · CE · FC

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board System
CPU	Intel® Atom®/ Celeron® Processor: Celeron® J1900 (4C/4T, 2.00GHz, up to 2.42GHz, TDP 10W) Celeron® N2930 (4C/4T, 1.83GHz, up to 2.16GHz, TDP 7.5W) Celeron® N2807 (2C/2T, 1.58GHz, up to 2.16GHz, TDP 4.3W) Atom® E3845 (4C/4T, 1.91 GHz, TDP 10W) Atom® E3825 (2C/2T, 1.33 GHz, TDP 6W)
CHIPSET	Integrated with Intel ® SoC
MEMORY TYPE	DDR3L up to 1333MHz, SODIMM x 1,up to 8GB,Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM 1.2(Optional)
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)
OS Support	Windows 7/10 (64bit) Linux Ubuntu 20.04.3/Kernel 5.11
POWER	
POWER REQUIREMENT	+12V Only
POWER SUPPLY TYPE	ATX
CONNECTOR	DC Jack Connector
POWER CONSUMPTION	Intel® J1900, DDR3L 1600MHz 8GB,1.73A @ +12V(TYPICAL) Intel® J1900, DDR3L 1600MHz 8GB,1.88A @ +12V(MAX)
DISPLAY	
CONTROLLER	Intel® HD Graphics for Intel Atom® Processor Z3700 Series
LVDS/eDP	—
Display Interface	HDMI 1.4a x 1 VGA x 1
Multiple Display	Up to 2 Simultaneous Displays
AUDIO	
CODEC	—
AUDIO INTERFACE	—
Speaker	—
EXTERNAL I/O	
ETHERNET	Intel® i210, 10/100/1000Base, RJ-45 x 2
USB	USB 3.2 Gen 1 x 1 USB 2.0 x 1

SERIAL PORT	COM1 (RS232)
VIDEO	VGA x 1 HDMI 1.4a x 1
INTERNAL I/O	
USB	USB2.0 x 2
SERIAL PORT	COM2, COM3 (RS232/422/485, supports 5V/12V/RI)(Optional)
VIDEO	—
SATA	SATA III x 1 +5V SATA Power Connector x 1
AUDIO	—
DIO/GPIO	—
SMBus/I2C	I2C/SMBus x1 (Optional)
Touch	—
FAN	Heatsink x 1 (Optional: DC Fan)
SIM	SIM X1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	Full-Size mPCIe x 1 Half-Size mSATA/ mPCIe x 1
M.2	—
Others	CFast™(Optional)
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 122°F (0°C ~ 50°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	344,859
EMC	CE/FCC Class A

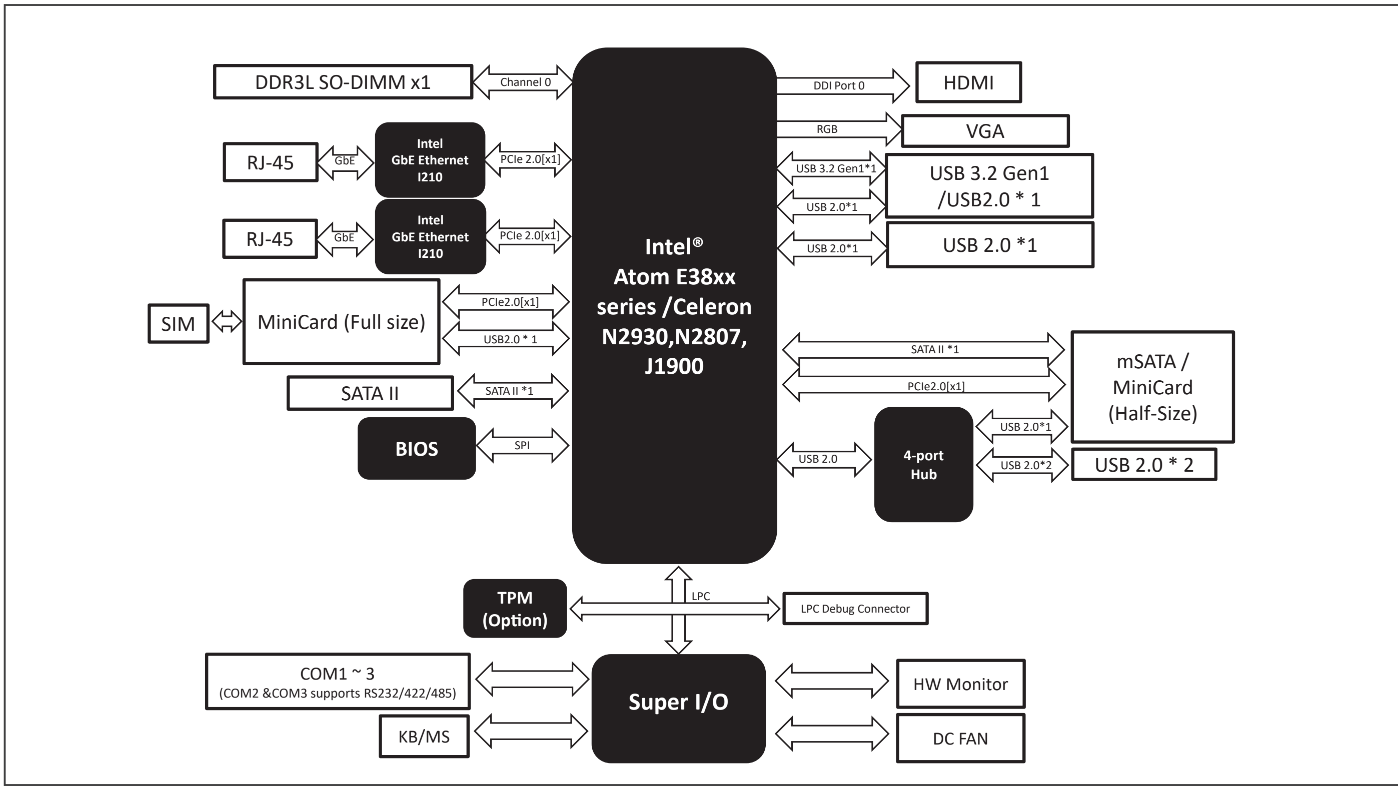
Packing List

Description	QTY
GENESYS-BT05	1

Optional Accessories

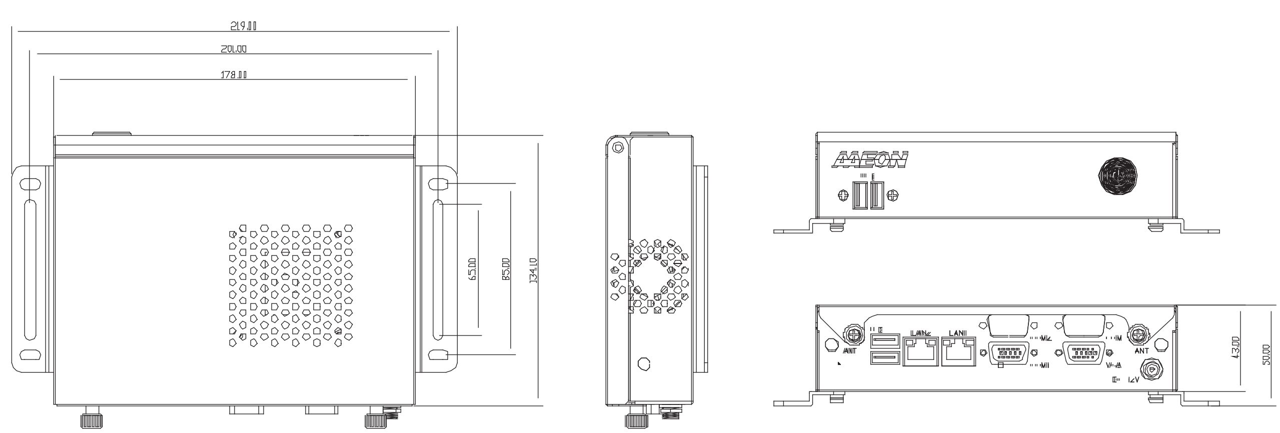
Part Number	Description	QTY
125530060Z	Power Adapter. 12V.5A.60W. FSP060-DHAN3	1
1255300960	Power Adapter. 12V.5A.96W. FSP096-DHAN3	1
1702031802	Power Cord (US)	1
1702031803	Power Cord (Europe)	1
170203180E	Power Cord (Japan)	1
GENESYS-BT05-WMT1	Wall Mount Kit. For GENESYS-BT05	1
GENESYS-BT05-VESA1	VESA Mount Kit. For GENESYS-BT05	1
GENESYS-BT05-HDD1	HDD Kit. For GENESYS-BT05	1
GENESYS-BT05-COM1	COM Extension Kit. w/ 1 Cable. For GENESYS-BT05	1

Block Diagram



Dimension

Unit: mm

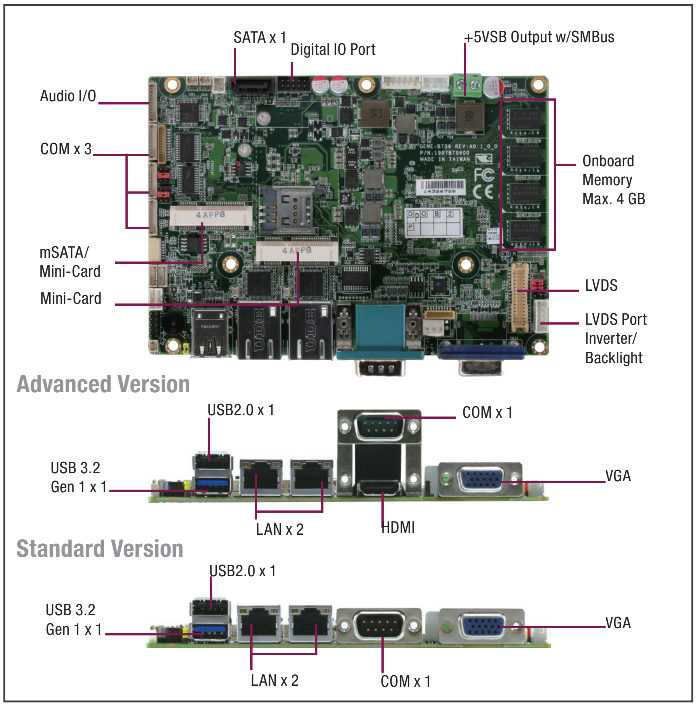


Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232	Storage	Expansion Slot	Power	Operating Temp	Others
GENESYS-BT05-A12-0002	N2807	VGA	Gbe x 2	USB3.2 x 1 UBS2.0 x 1	1	SATA x 1 mSATA x 1 (Half Size)	Mini Card x 1 (Full-Size)	+12V, ATX	0°C ~ 50°C	—
GENESYS-BT05-A12-0004	J1900	VGA	Gbe x 2	USB3.2 x 1 UBS2.0 x 1	1	SATA x 1 mSATA x 1 (Half Size)	Mini Card x 1 (Full-Size)	+12V, ATX	0°C ~ 50°C	—

GENE-BT06

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



Features

- Onboard DDR3L Memory Max. 4 GB
- CRT, 18/24-bit Dual-Channel LVDS LCD, HDMI (DP Sharded with HDMI/CRT, Optional)
- Mini-Card Slot x 2 (Full-size x 1, Half-size x 1)
- Wide DC Support 9~24V
- Supports TPM (Optional)
- Solder Design For System Assembly and Thermal

Giga LAN DDR 3L Audio LVDS USB 2.0 USB 3.2 Gen 1

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board
CPU	Intel® Atom®/ Celeron® Processor: Celeron® J1900 (4C/4T, 2.00GHz, up to 2.42GHz, 10W) Celeron® N2930 (4C/4T, 1.83GHz, up to 2.16GHz, 7.5W) Celeron® N2807 (2C/2T, 1.58GHz, up to 2.16GHz, 4.3W) Atom® E3845 (4C/4T, 1.91 GHz, 10W) Atom® E3825 (2C/2T, 1.33 GHz, 6W)
CHIPSET	Integrated with Intel ® SoC
MEMORY TYPE	On Board DDR3L 1066/1333MHz,up to 4GB,Non-ECC
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	TPM 2.0 (BOM optional)
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows 7/10 (64bit) Linux Ubuntu 20.04.0/Kernel 5.11
POWER	
POWER REQUIREMENT	+9~24V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Phoenix 2-pin Connector
POWER CONSUMPTION	Intel® E3845,DDR3L on board RAM 4GB,2.10A @ +12V(TYPICAL) Intel® E3845,DDR3L on board RAM 4GB,2.26A @ +12V(MAX)
DISPLAY	
CONTROLLER	Intel® HD Graphics for Intel Atom® Processor Z3700 Series
LVDS/eDP	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080
DISPLAY INTERFACE	HDMI 1.4a, up to 3840 x 2160 (Opctional: DP1.1a) VGA x 1, up to 1920 x 1200
MULTIPLE DISPLAY	Up to 3 Simultaneous Displays
AUDIO	
CODEC	Realtek ALC897/892
AUDIO INTERFACE	Line-in/Line-out/MIC
SPEAKER	2W Amplifier(Optional)
EXTERNAL I/O	
ETHERNET	Intel® i210, 10/100/1000Base, RJ-45 x 2
USB	USB 3.2 Gen1 x 1,USB2.0 x 1
SERIAL PORT	COM1(RS232)
VIDEO	VGA x 1,HDMI 1.4a x 1(Optional)
INTERNAL I/O	
USB	USB2.0 x 2
SERIAL PORT	COM2, COM3 (RS232/422/485, supports 5V/12V/RI),COM4 (RS232)
VIDEO	LVDS x1
SATA	SATA II x 1,+5V SATA Power Connector x 1
AUDIO	Audio Header x 1
DIO/GPIO	8-bit
SMBus/I2C	SMBus x 1
TOUCH	4/5/8 wire Touch Controller x 1 (Optional)
FAN	DC Fan x 1 (optional: Smart Fan)
SIM	SIM x 1
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	—
EXPANSION	
Mini PCI-E/mSATA	Full-size mPCIe/USB2.0 x 1 Half-size mSATA/mPCIe x 1(BOM optional)
M.2	—
OTHERS	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C) or WiTAS 2 -40°F ~ 185°F (-40°C ~ 85°C)
STORAGE TEMP.	-40°F ~ 176°F (-40°C ~ 80°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	403,079
EMC	CE/FCC Class A

Optional Accessories

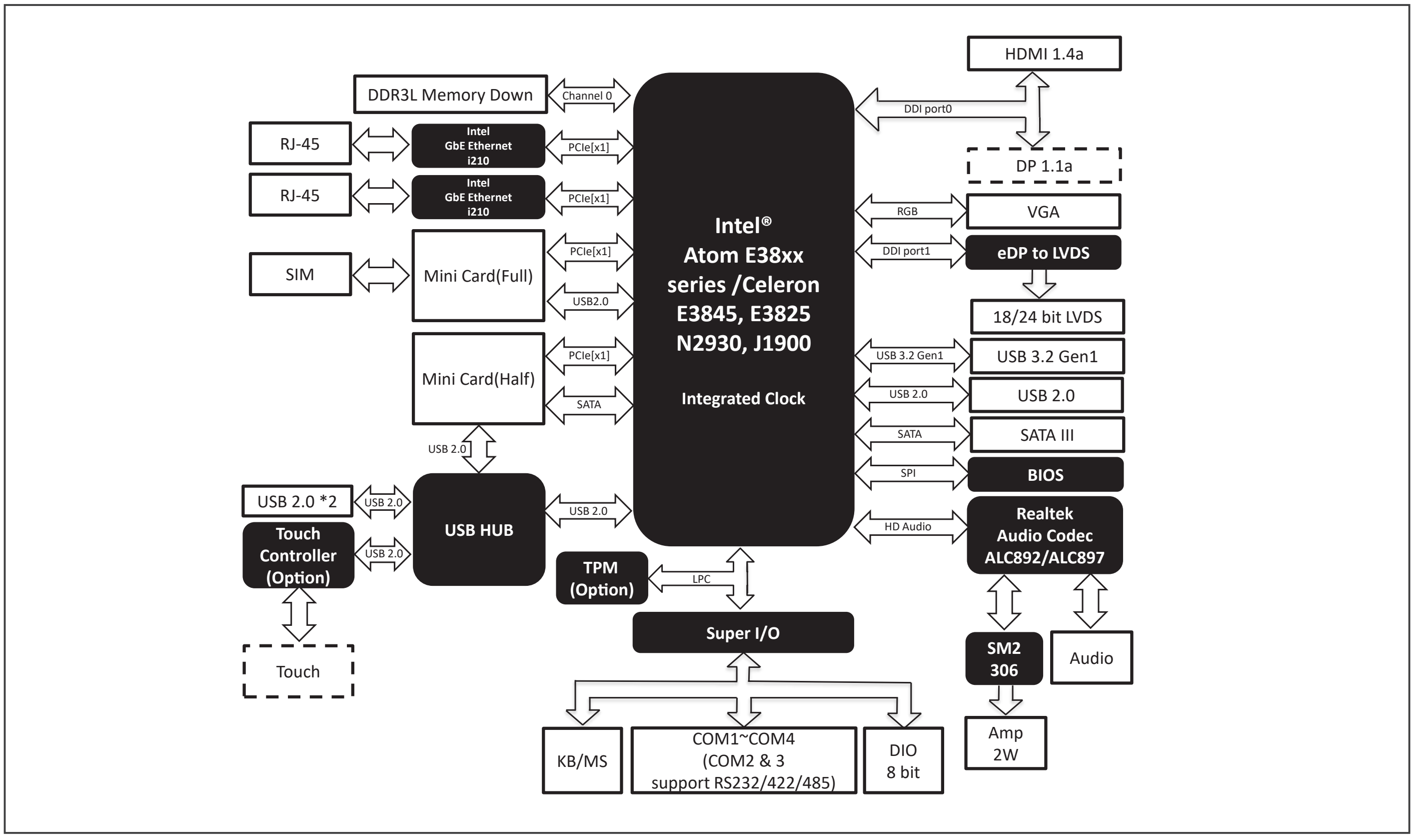
Part Number	Description	QTY per Board
1700050207	USB CABLE,20cm	2
1701090150	COM Cable, 15cm	3
1709100254	Audio Jack Cable, 25cm	1
1702150155	SATA Power Cable, 15cm	1
170220020B	ATX Power Cable, 20cm	1
170204010R	Power Cable, 10cm	1

Packing List

Part Number	Description	QTY
GENE-BT06	GENE-BT06 MB	1
M10BT06010	Heat spreader	1

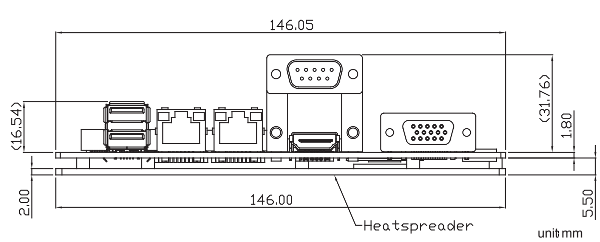
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

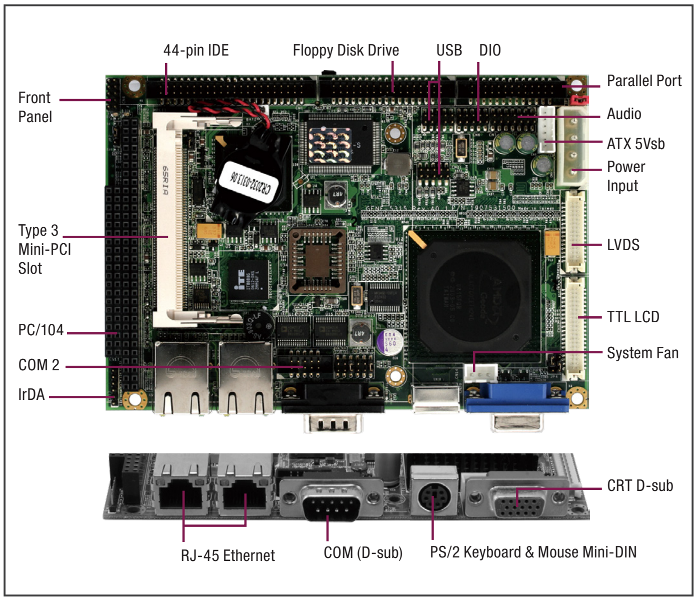


Ordering Information

Part Number	CPU	Memory	Display	LAN	USB	RS-232	RS-232/422/485	Storage	Expansion Slot	TPM	Power	Operating Temp	Others
GENE-BT06-A12-0001	Intel® Celeron® N2930	Onboard 4GB	VGA, LVDS, HDMI	GbE x 2	USB3.0 x 1 USB 2.0 x 3	2	2	SATA x 1 mSATA x 1 (half size)	MiniCard x 1 (Full)	2.0	9~24V	0°C ~ 60°C	Touch Controller, SIM, DIO x 8
GENE-BT06-A12-0002	Intel® Celeron® J1900	Onboard 4GB	VGA, LVDS, HDMI	GbE x 2	USB3.0 x 1 USB 2.0 x 3	2	2	SATA x 1 mSATA x 1 (half size)	MiniCard x 1 (Full)	2.0	9~24V	0°C ~ 60°C	Touch Controller, SIM, DIO x 8
GENE-BT06-A12-0003	Intel® Atom™ E3825	Onboard 2GB	VGA + LVDS	GbE x 2	USB3.0 x 1 USB 2.0 x 3	2	2	SATA x 1 mSATA x 1 (half size)	MiniCard x 1 (Full)	—	9~24V	0°C ~ 60°C	DIO x 8
GENE-BT06-A12-0004	Intel® Atom™ E3825	Onboard 4GB	VGA, LVDS, HDMI	GbE x 2	USB3.0 x 1 USB 2.0 x 3	2	2	SATA x 1 mSATA x 1 (half size)	MiniCard x 1 (Full)	2.0	9~24V	0°C ~ 60°C	Touch Controller, SIM, DIO x 8
GENE-BT06-A12-0005	Intel® Atom™ E3845	Onboard 2GB	VGA + LVDS	GbE x 2	USB3.0 x 1 USB 2.0 x 3	2	2	SATA x 1 mSATA x 1 (half size)	MiniCard x 1 (Full)	—	9~24V	0°C ~ 60°C	DIO x 8
GENE-BT06-A12-0006	Intel® Atom™ E3845	Onboard 4GB	VGA, LVDS, HDMI	GbE x 2	USB3.0 x 1 USB 2.0 x 3	2	2	SATA x 1 mSATA x 1 (half size)	MiniCard x 1 (Full)	2.0	9~24V	0°C ~ 60°C	Touch Controller, SIM, DIO x 8
GENE-BT06W2-A12-0003	Intel® Atom™ E3825	Onboard 2GB	VGA + LVDS	GbE x 2	USB3.0 x 1 USB 2.0 x 3	2	2	SATA x 1 mSATA x 1 (half size)	MiniCard x 1 (Full)	—	12V	WTAS 2 (-40°C~85°C)	DIO x 8
GENE-BT06W2-A12-0006	Intel® Atom™ E3845	Onboard 4GB	VGA, LVDS, HDMI	GbE x 2	USB3.0 x 1 USB 2.0 x 3	2	2	SATA x 1 mSATA x 1 (half size)	MiniCard x 1 (Full)	2.0	12V	WTAS 2 (-40°C~85°C)	Touch Controller, SIM, 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

DDR 100 LAN LVDS LCD USB 2.0 Audio CE FC

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board
CPU	AMD Geode™ LX800 Processor AMD Geode™ LX 800(500MHz, 3.6W)
CHIPSET	CS5536
MEMORY TYPE	DDR333 SODIMM x 1 (DDR400 optional),up to 1GB
BIOS	Award 1MB
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows XP 32-bit
POWER	
POWER REQUIREMENT	+5V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	4Pin Connector
POWER CONSUMPTION	LX 800 500 MHz, DDR400 1 GB, 1.17A@+5V(Typical)
DISPLAY	
CONTROLLER	AMD Geode™
LVDS/eDP	Up to 24-bit Single Channel LVDS/ TTL LCD
DISPLAY INTERFACE	VGA x1, up to 1920 x 1200
MULTIPLE DISPLAY	Up to 2 Simultaneous Displays
AUDIO	
CODEC	High Definition Audio Interface
AUDIO INTERFACE	Line-in/Line-out/MIC/CD-in
SPEAKER	—
EXTERNAL I/O	
ETHERNET	10/100Base-TX x 2, Realtek RTL 8139DL
USB	—
SERIAL PORT	COM1(RS-232)
VIDEO	VGA x1
INTERNAL I/O	
USB	USB2.0 x 4
SERIAL PORT	COM2(RS-232/422/485)
VIDEO	TTL LCD x1 LVDS LCD x1
SATA	—
AUDIO	Audio Header x 1
DIO/GPIO	8-bit
SMBus/I2C	—
TOUCH	—
FAN	System Fan x1
SIM	—
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	SPP/EPP/ECP x 1,CompactFlash™ x1,UDMA33 x 1
EXPANSION	
Mini PCI-E/mSATA	—
M.2	—
OTHERS	Mini-PCI x1,PC/104 x1,Floppy Disk Drive x 1
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP.	-40°F ~ 176°F (-40°C ~ 80°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	90,000
EMC	CE/FCC Class A

Packing List

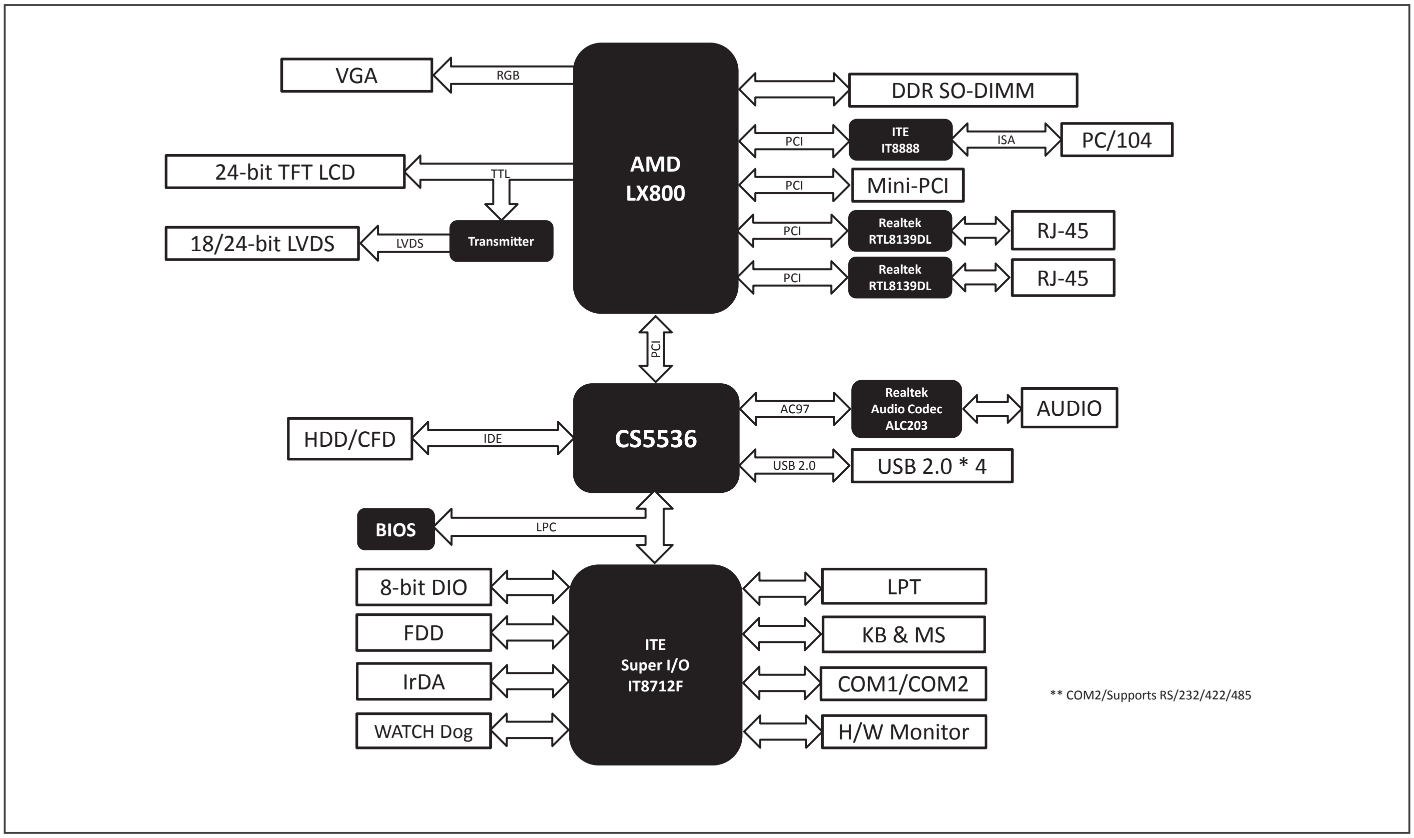
- **9681531501**
  Cable Kit for GENE-5315
  - 1700060192 Keyboard & Mouse Cable
  - 1709100201 USB Cable
  - 1701440500 IDE Cable
- **9657666600**
  Jumper Cap
- **GENE-5315 Rev. A**

Optional Accessories

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

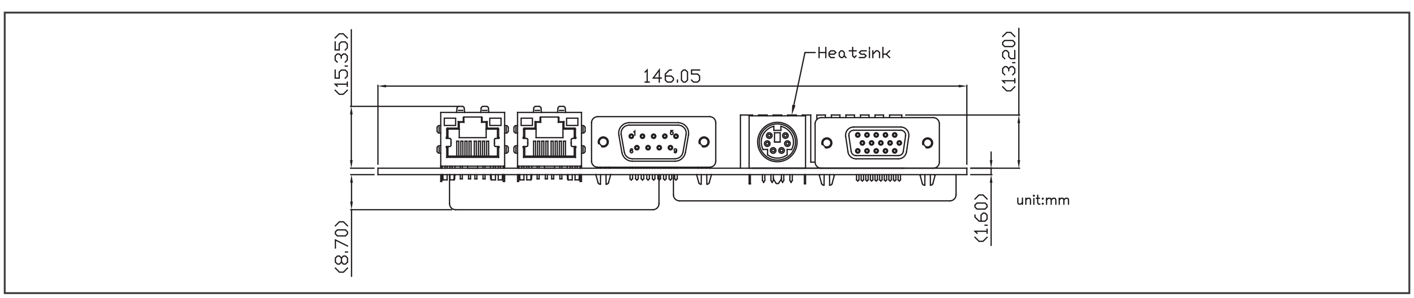
GENE-5315 Rev. A

Block Diagram



Dimension

Unit: mm

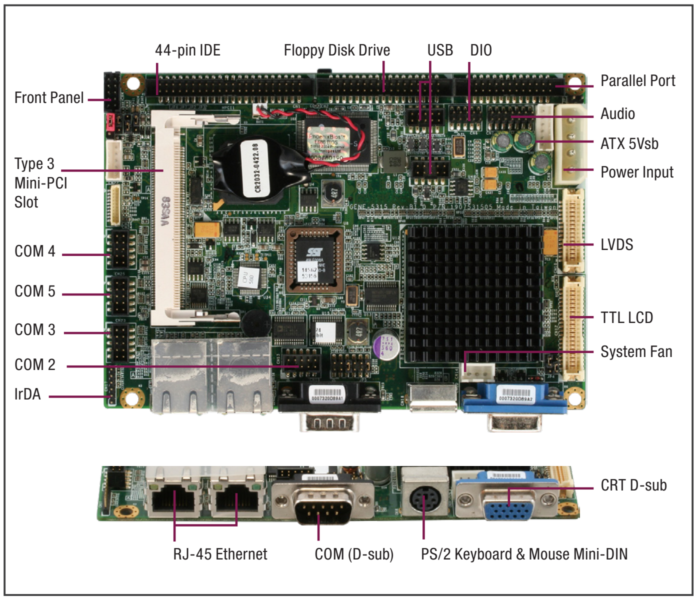


Ordering Information

Part Number	CPU	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Power Temp	Others
GENE-5315-A13	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
GENE-5315-A13-01	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

DDR LAN USB 2.0 Audio

Specifications

SYSTEM	
FORM FACTOR	3.5" SubCompact Board
CPU	AMD Geode™ LX800 Processor AMD Geode™ LX 800(500MHz, 3.6W)
CHIPSET	CS5536
MEMORY TYPE	DDR333 SODIMM x 1 (DDR400 optional), up to 1GB
BIOS	Award 1MB
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows XP 32-bit
POWER	
POWER REQUIREMENT	+5V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	4Pin Connector
POWER CONSUMPTION	LX 800 500 MHz, DDR400 1 GB, 1.17A@+5V(Typical)
DISPLAY	
CONTROLLER	AMD Geode™
LVDS/eDP	Up to 24-bit Single Channel LVDS/ TTL LCD
DISPLAY INTERFACE	VGA x1, up to 1920 x 1200
MULTIPLE DISPLAY	Up to 2 Simultaneous Displays
AUDIO	
CODEC	High Definition Audio Interface
AUDIO INTERFACE	Line-in/Line-out/MIC/CD-in
SPEAKER	—
EXTERNAL I/O	
ETHERNET	10/100Base-TX x 2, Realtek RTL 8139DL
USB	—
SERIAL PORT	COM1(RS-232)
VIDEO	VGA x 1
INTERNAL I/O	
USB	USB2.0 x 4
SERIAL PORT	COM2, COM3, COM4(RS-232/422/485)
VIDEO	TTL LCD x 1 LVDS LCD x 1
SATA	—
AUDIO	Audio Header x 1
DIO/GPIO	8-bit
SMBus/I2C	—
TOUCH	—
FAN	System Fan x 1
SIM	—
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	SPP/EPP/ECP x 1, CompactFlash. x 1, UDMA33 x 1
EXPANSION	
Mini PCI-E/mSATA	—
M.2	—
OTHERS	Mini-PCI x 1, Floppy Disk Drive x 1
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP.	32°F ~ 140°F (0°C ~ 60°C), WiTAS1 -4°F ~ 158°F (-20°C ~ 70°C)
STORAGE TEMP.	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	90,000
EMC	CE/FCC Class A

Optional Accessories

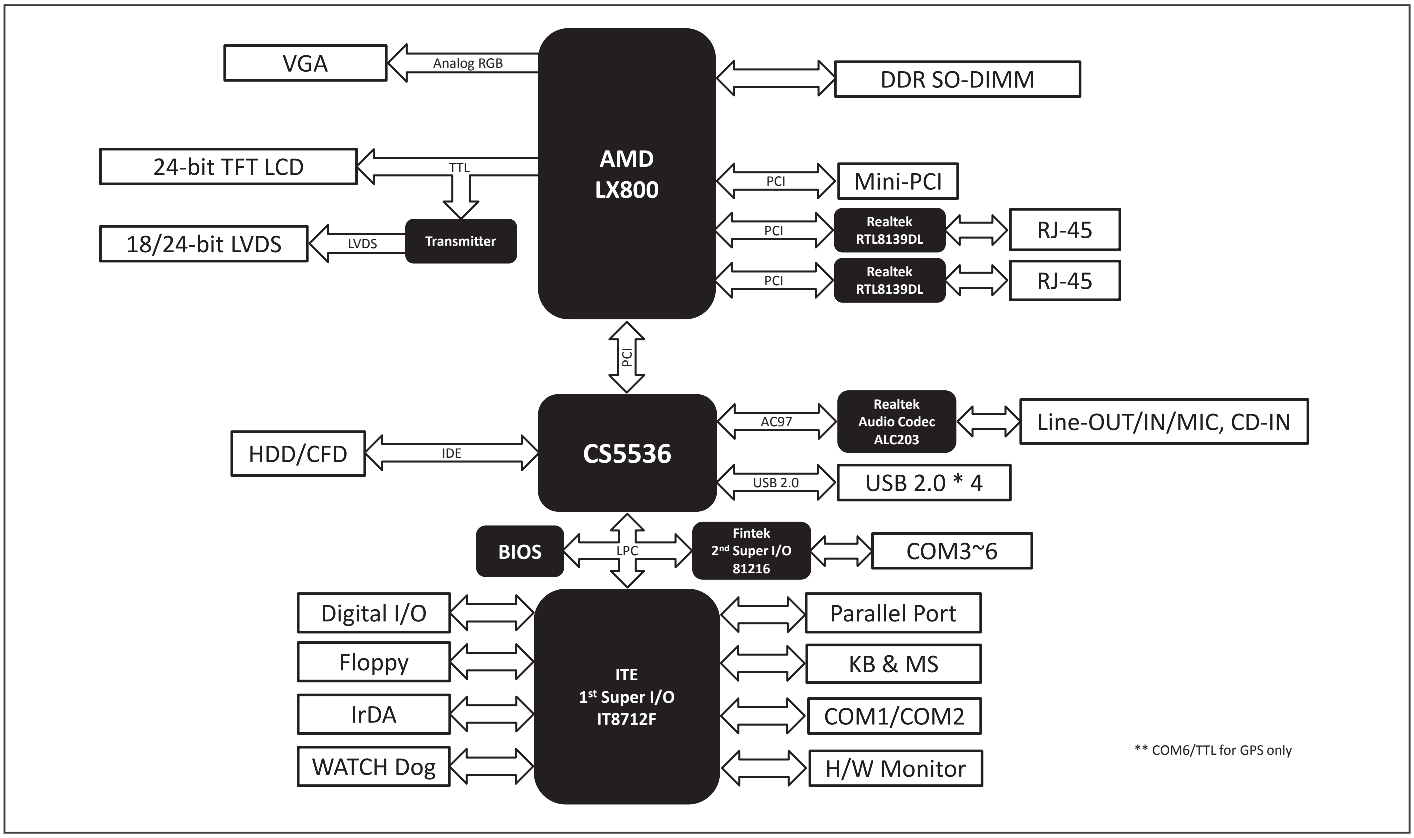
Part Number	Description	QTY
1702200205	Conversion Cable for ATX Power Supply, Length 20cm	1
1709140181	Audio Cable, Length 18cm	1
1709100208	USB Cable, Length 20cm	1
1701100206	COM Port Cable, 9P DB Male, Length 20cm	1
1701260201	Parallel Port Cable, Length 20 cm	1
1701340600	Floppy Cable, Length 60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

Packing List

Part Number	Description	QTY per Board
GENE-5315	GENE-5315 Rev. B MB	1
9681531501	Cable Kit for GENE-5315(Keyboard & Mouse Cable, USB Cable, IDE Cable)	1
9657666600	Jumper Cap	1

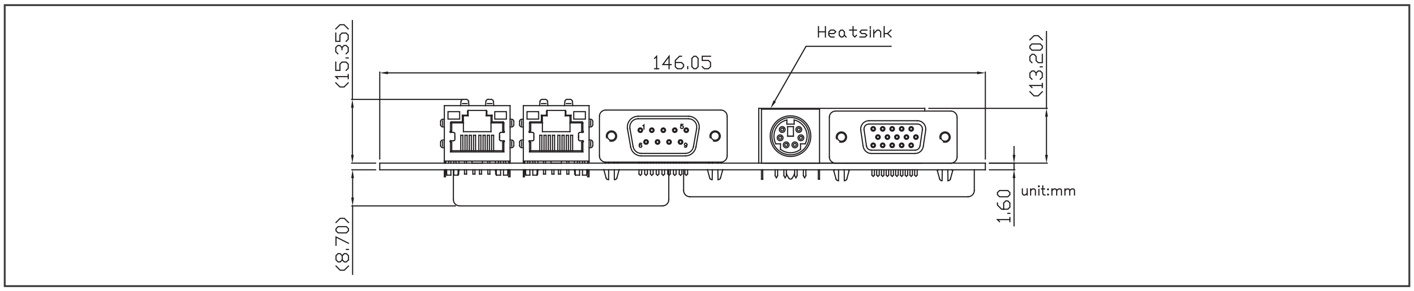
Note: All specifications are subject to change without notice.

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-5315-B13	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
GENE-5315-B13-01	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
GENE-5315W1-B13	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
GENE-5315W1-B13-01	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

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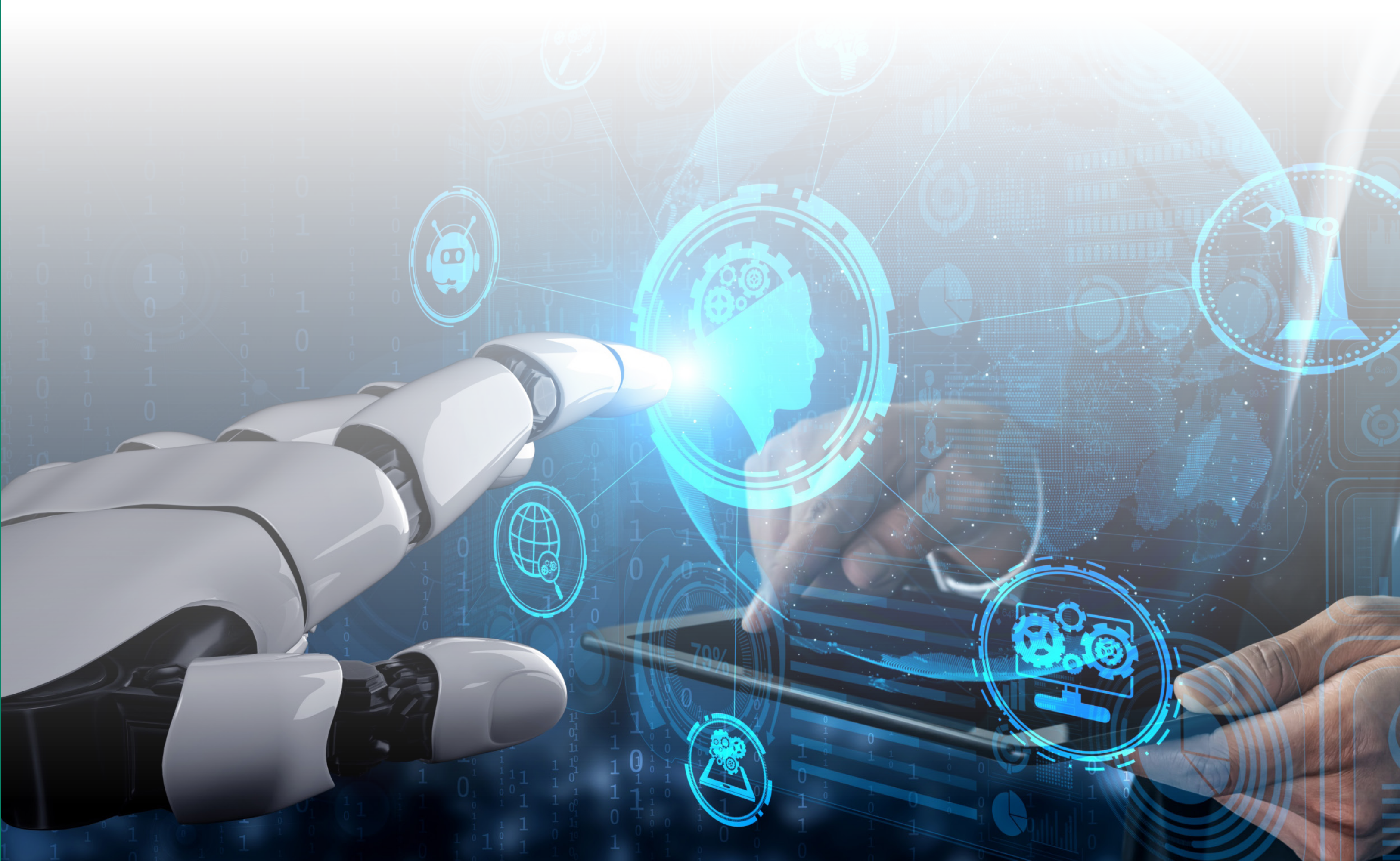
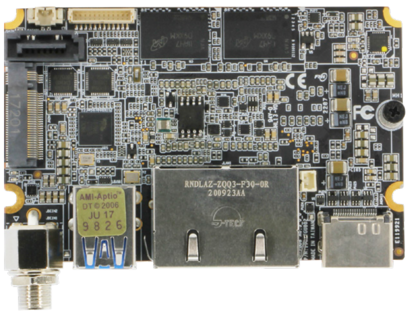
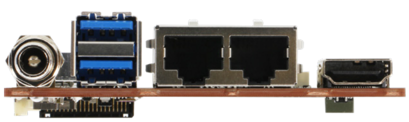
de next



de next-TGU8

86 x 55mm Single Board with 11th Generation Intel® Core™ i7/i5/i3 Processor





Specifications

SYSTEM	
FORM FACTOR	86mm x 55mm, Single board computer
CPU	Onboard 11th Gen. Intel® Core™ Processor i7-1185G7E (4C/8T, 1.80GHz, up to 4.40GHz) i5-1145G7E (4C/8T, 1.50GHz, up to 4.10GHz) i3-1115G4E (2C/4T, 2.20GHz, up to 3.90GHz)
CPU TDP	15W, (TDP up to 28W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	Onboard LPDDR4x, 3733, up to 16GB
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	fTPM
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION (L X W)	3.38" x 2.17" (86 mm x 55 mm)
POWER	
POWER REQUIREMENT	DC in +12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	DC Jack (Optional: 2 Pin Phoenix Connector)
POWER CONSUMPTION	With i7-1185G7E + LPDDR4x 16GB : 12V@7A, 84W (Peak during full loading) With i7-1185G7E + LPDDR4x 16GB : 12V@4.58A, 55W (steady state during full loading)
DISPLAY	
CONTROLLER	Intel® UHD Graphics for 11th Gen Intel® Processors
LVDS/eDP	eDP only, up to 3840 X 2160 Resolution
Display Interface	eDP x 1 HDMI 1.4b x 1
Multiple Display	Up to 2 Simultaneous Displays
AUDIO	
CODEC	—
AUDIO INTERFACE	—
Speaker	—
EXTERNAL I/O	
ETHERNET	Intel® i219LM, 10/100/1000Base,RJ-45 x1 Intel® i225LM, 10/100/2500Base,RJ-45 x1
USB	USB3.2 Gen 2 x 2 (Type A)
SERIAL PORT	—
VIDEO	HDMI 1.4b x 1

Features

- Onboard 11th Gen. Intel Core Series Processor (Formerly Tiger Lake-UP3)
- Onboard LPDDR4x 3733 up to 16GB
- HDMI 1.4b x 1. eDP x 1
- 2.5 GbE RJ45 x 1 , 1 GbE RJ45 x 1
- USB 3.2 Gen2 x 2 , USB 2.0 x 4
- M.2 M key 2280 (PCIe[x2] x 1 , PCIe[x4] Gen3 x 1 (by FPC)
- SATA 3 x 1
- DC Jack. 12V in

INTERNAL I/O	
USB	USB2.0 x 4 (pin header) Note : USB2.0 x 2 shared with adapter card
SERIAL PORT	COM Port (RS232/422/485) x 2 (pin header)
VIDEO	eDP x 1
SATA	SATA3 x 1 +5V SATA Power Connector x 1
AUDIO	—
DIO/GPIO	8-Bit (pin header)
SMBus/I2C	Optional
Touch	—
FAN	Smart Fan x1
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	—
M.2	M-Key 2280 x 1 (PCIe[x2])
Others	PCIe[x4] Gen3 x 1 (by FPC Connector)
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP	-40°F ~ 176°F (-40°C ~ 80°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	594,420
EMC	CE/FCC Class A

Optional Accessories

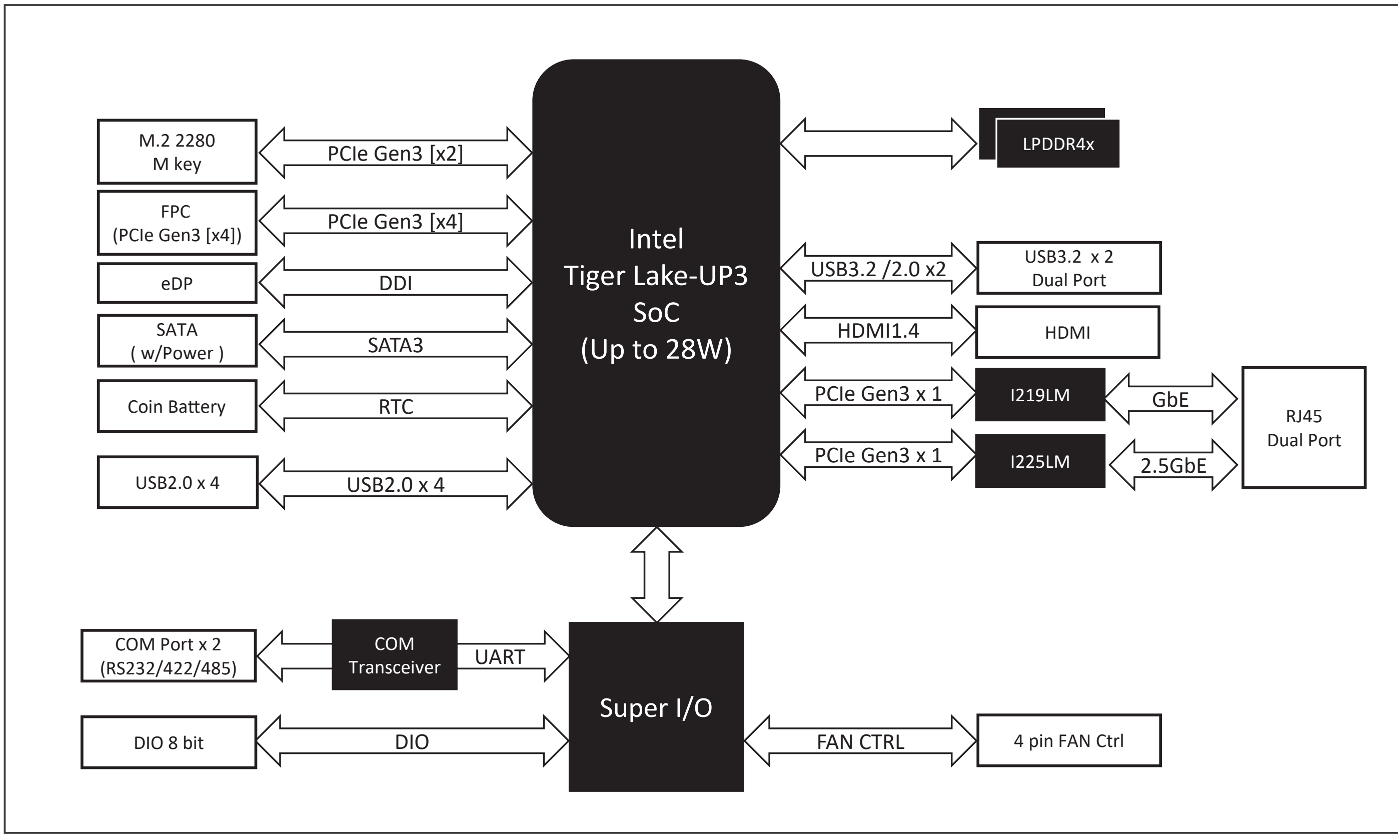
- **PER-T642-A03-0001**
  M.2 M 2280 adapter card.to M.2 B key 2242 & M.2 E key 2230
- **PER-T643-A01-0001**
  M.2 M 2280 adapter card.to M.2 B key 2242 & M.2 B key 3052
- **170X000512**
  de next 40 pin cable for USB2.0 x 4, COM Port x 2, DIO 8 bit
- **170X000577**
  de next cable for USB 2.0 x 2, COM Port x 2, DIO 8 bit, adapter card connector
- **170X000603**
  Front Panel Cable for de next use
- **de next-FAN01**
  CPU cooler for de next

Packing List

- **de next-TGU8 x 1**
- **Copper stud.M2.5mm.19mm x 4**

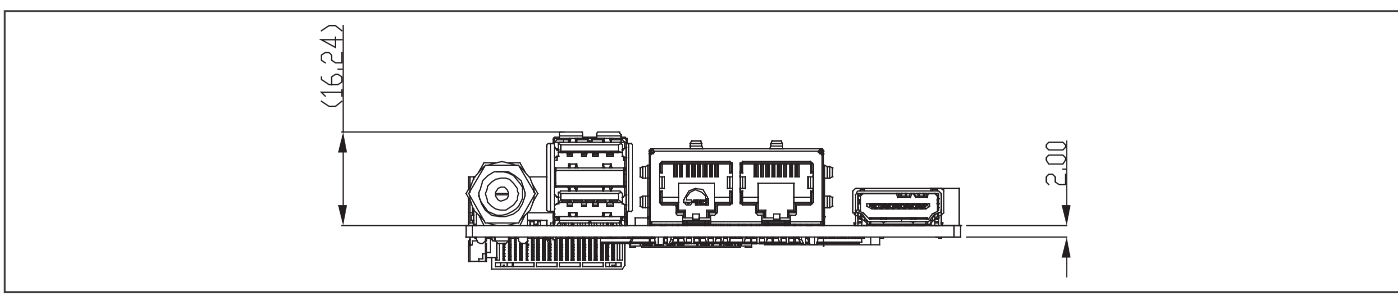
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

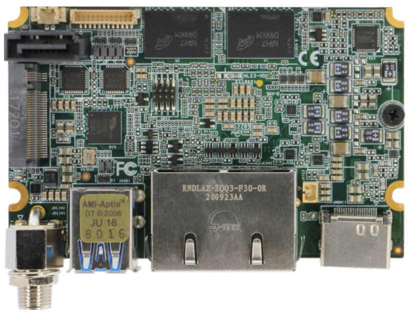


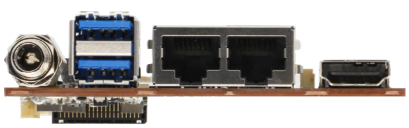
Ordering Information

PART NUMBER	CPU	MEMORY	THERMAL	DISPLAY	STORAGE	LAN	USB	RS-232	RS-232/422/485	EXPANSION SLOT	POWER	OPERATING TEMP	OTHERS
DENEXT-TGU8-A10-0001	i7-1185G7E	Onboard LPDDR4x 16GB	Fan	eDP x 1, HDMI x 1	SATA3 x 1	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 2, USB 2.0 x 4	—	2	M.2 M key 2280 x 1 FPC Connector x 1	+12V in (DC Jack)	0°C ~ 60°C	DIO 8 bit
DENEXT-TGU8-A10-0002	i5-1145G7E	Onboard LPDDR4x 16GB	Fan	eDP x 1, HDMI x 1	SATA3 x 1	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 2, USB 2.0 x 4	—	2	M.2 M key 2280 x 1 FPC Connector x 1	+12V in (DC Jack)	0°C ~ 60°C	DIO 8 bit
DENEXT-TGU8-A10-0003	i3-1115G4E	Onboard LPDDR4x 16GB	Fan	eDP x 1, HDMI x 1	SATA3 x 1	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 2, USB 2.0 x 4	—	2	M.2 M key 2280 x 1 FPC Connector x 1	+12V in (DC Jack)	0°C ~ 60°C	DIO 8 bit

de next-V2K8

86 x 55mm Single Board with AMD Ryzen™ Embedded V2000 Series Processor





Features

- Onboard AMD Ryzen™ Embedded V2000 Processor
- Onboard LPDDR4x 3200 up to 16GB
- HDMI 1.4b x 1. eDP x 1
- 2.5 GbE RJ45 x 1 , GbE RJ45 x 1
- USB 3.2 Gen2 x 2 , USB 2.0 x 4
- M.2 M key 2280 (PCIe[x2]) x 1 ,PCIe[x4] Gen3 x 1 (by FPC)
- COM Port x 2 , DIO 8 bit , SATA 3 x 1
- DC Jack. 12V in

Specifications

SYSTEM	
FORM FACTOR	86mm x 55mm, Single board computer
CPU	AMD Ryzen™ Embedded V2718 with Radeon™ Graphics , AMD Ryzen™ Embedded V2516 with Radeon™ Graphics
CPU TDP	10W, TDP-up to 25W : V2718 / V2516
CHIPSET	Integrated with AMD Ryzen™Embedded SoC
MEMORY TYPE	Onboard LPDDR4x 3200, up to 16GB
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	fTPM
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION (L X W)	3.38” x 2.17” (86 mm x 55 mm)
POWER	
POWER REQUIREMENT	DC in +12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	DC Jack (Optional : 2pin Phoenix Connector)
POWER CONSUMPTION	AMD Ryzen™V2718 Processor, LPDDR4 3200MHz16GB, 3.92A@12V, 47.04W during full loading test (Peak) AMD Ryzen™V2718 Processor, LPDDR4 3200MHz16GB, 3.07A@12V, 36.84W during full loading test (Steady)
DISPLAY	
CONTROLLER	AMD Radeon™ Graphics
LVDS/eDP	eDP only, up to 3840 X 2160 Resolution
Display Interface	eDP x 1 HDMI 1.4b x 1
Multiple Display	Up to 2 Simultaneous Displays
AUDIO	
CODEC	—
AUDIO INTERFACE	—
Speaker	—
EXTERNAL I/O	
ETHERNET	REALTEK RTL8111H, 10/100/1000Base,RJ-45 x1 , Intel® i225LM, 10/100/2500Base,RJ-45 x1
USB	USB3.2 Gen 2 x 2 (Type A)
SERIAL PORT	—
VIDEO	HDMI 1.4b x 1
INTERNAL I/O	
USB	USB2.0 x 4 (pin header)
SERIAL PORT	COM Port (RS232/422/485) x 2 (pin header)
VIDEO	eDP x 1
SATA	SATA3 x 1 +5V SATA Power Connector x 1
AUDIO	—
DIO/GPIO	8-Bit (pin header)
SMBus/I2C	Optional
Touch	—
FAN	Smart Fan x1
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
EXPANSION	
Mini PCI-E/mSATA	—
M.2	M-Key 2280 x 1 (PCIe[x2])
Others	—
ENVIRONMENT & CERTIFICATION	
OPERATING TEMP	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP	-40°F ~ 176°F (-40°C ~ 80°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	609,263
EMC	CE/FCC Class A

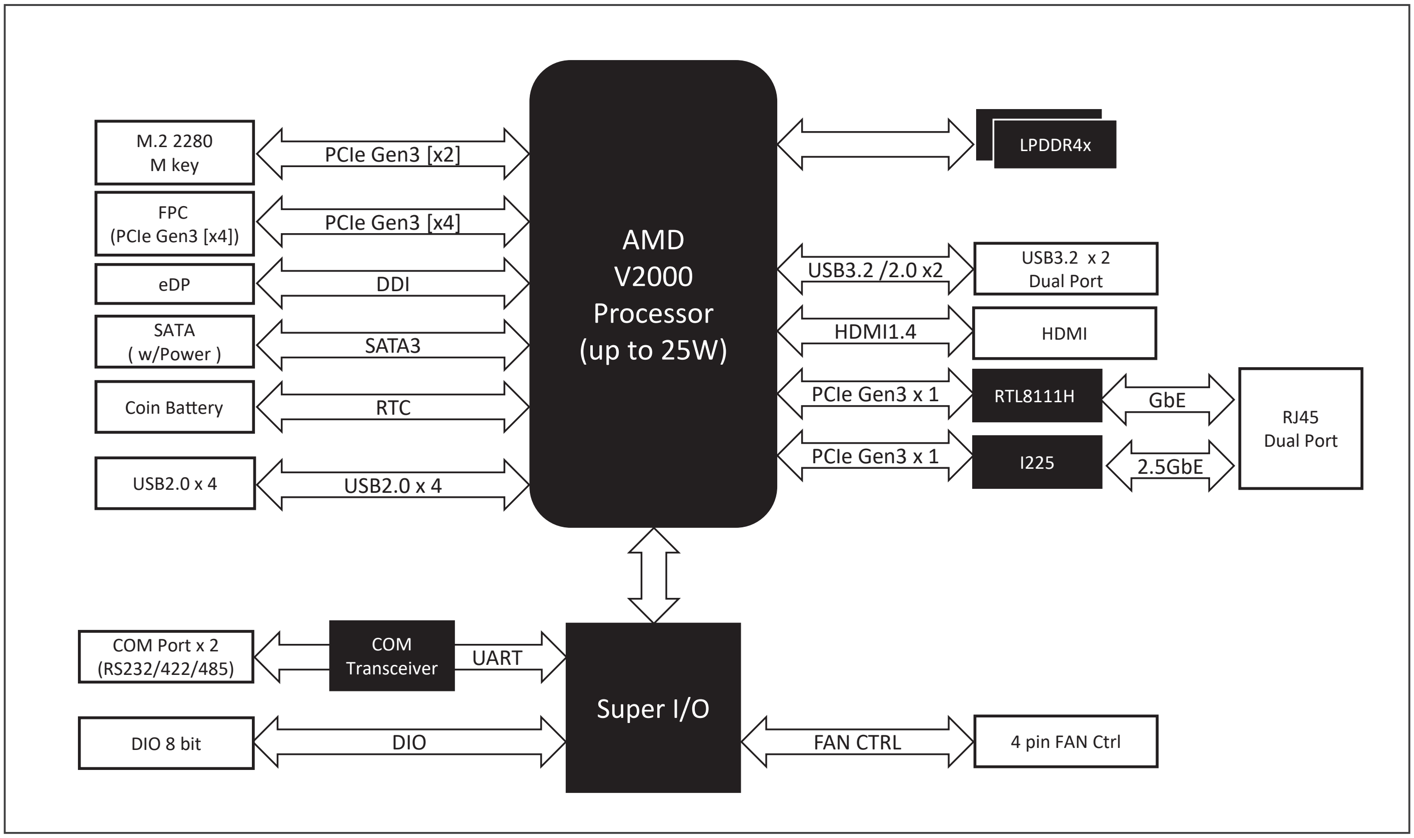
Optional Accessories

- **170X000512**
  de next 40 pin cable for USB2.0 x 4, COM Port x 2, DIO 8 bit
- **170X000603**
  Front Panel Cable for de next use.Length 10 cm
- **1709070200**
  SATA Cable,180D.Length 20cm
- **170X000322**
  SATA Power Cable.Length 6cm
- **DENEXT-FAN01**
  CPU cooler for de next-TGU8 / de next-V2K8

Packing List

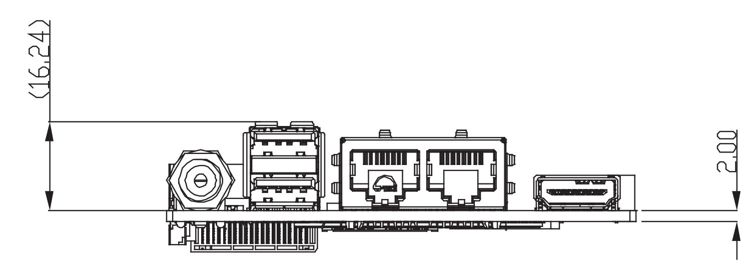
- **de next-V2K8 x 1**
- **Copper Stud.M2.5 x 4**

Block Diagram



Dimension

Unit: mm



Ordering Information

PART NUMBER	CPU	MEMORY	THERMAL	DISPLAY	STORAGE	LAN	USB	RS-232	RS-232/422/485	EXPANSION SLOT	POWER	OPERATING TEMP	OTHERS
DENEXT-V2K8-A10-0001	V2718	Onboard LPDDR4x 16GB	Fan	eDP x 1, HDMI x 1	SATA3 x 1	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 2, USB 2.0 x 4	—	2	M.2 M key 2280 x 1	+12V in (DC Jack)	0°C ~ 60°C	DIO 8 bit
DENEXT-V2K8-A10-0002	V2516	Onboard LPDDR4x 16GB	Fan	eDP x 1, HDMI x 1	SATA3 x 1	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 2, USB 2.0 x 4	—	2	M.2 M key 2280 x 1	+12V in (DC Jack)	0°C ~ 60°C	DIO 8 bit

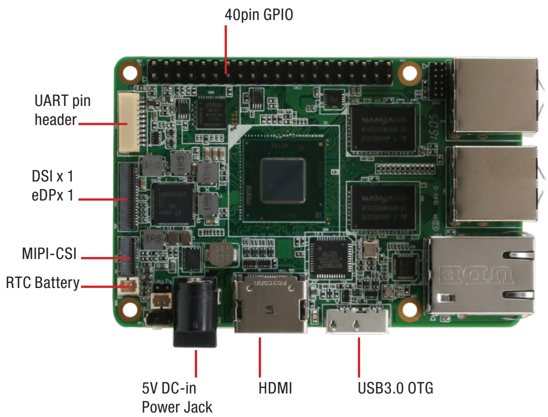
08

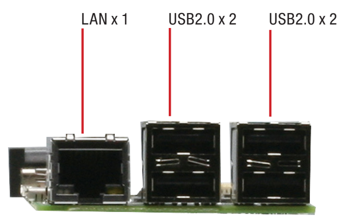
08

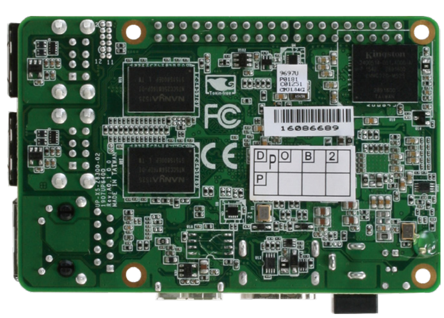
UP Boards

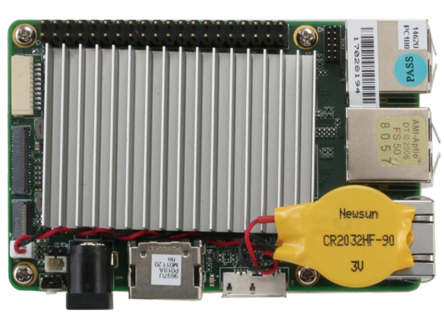
UP Board

UP Developer Board with Intel® Atom® x5-Z8350 Processor SoC









Features

- Intel® Atom® x5-Z8350 SoC
- Onboard DDR3L Memory up to 4GB
- Onboard eMMC Storage up to 64GB
- Gigabit LAN x 1, USB 2.0 x 4, USB 3.0 x 1, HDMI x 1
- 5V DC-in
- 40 pin GPIO x 1
- DSI/eDP x 1
- MIPI-CSI x 1

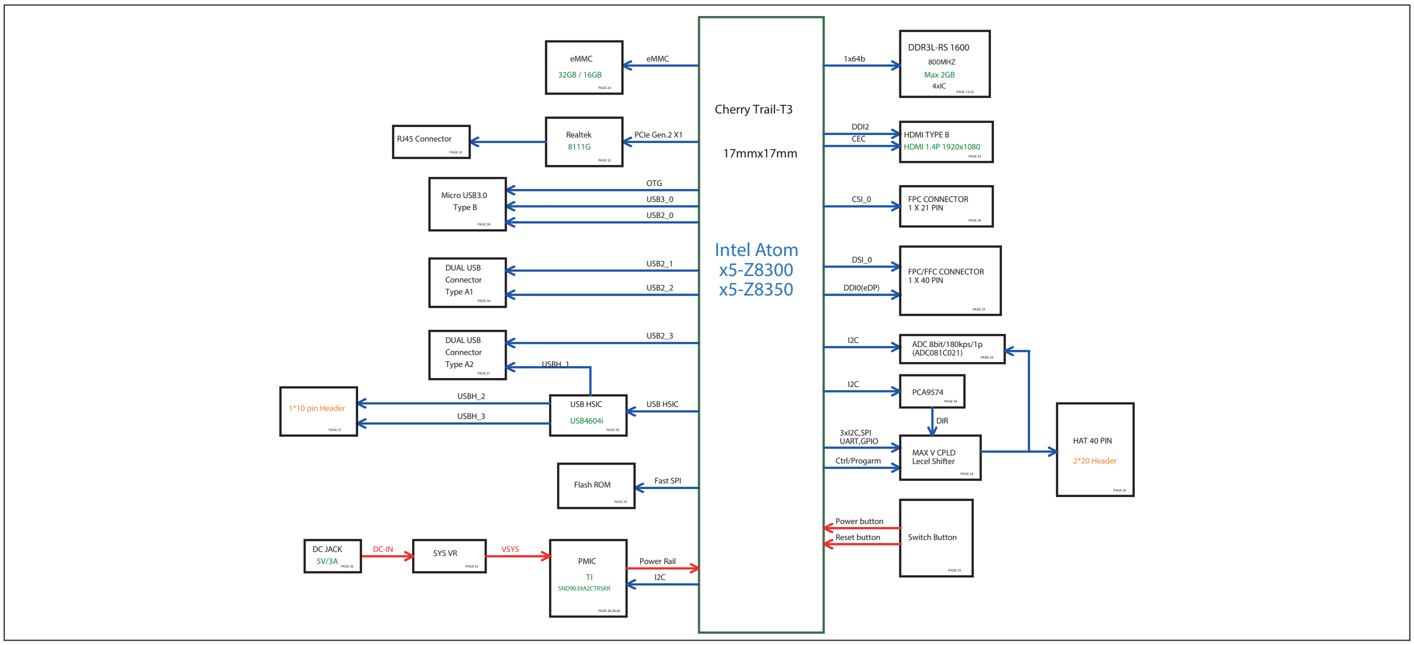
DDR 3L USB 2.0 CE FC

Specifications

System	
Processor	Intel® Atom® x5-Z8350 Processor SoC
Graphics	Intel® HD 400 Graphics, 12 EU GEN 8, up to 500MHz Support DX*11.1/12, Open GL*42, Open CL* 1.2 OGL ES3.0, H.264, HEVC(decode), VP8
I/O	HDMI x 1 I2S Audio port x 1
Camera	MIPI-CSI (4 MEGA pixel)
USB	USB 2.0 x4 USB 2.0 pin header (10 pins in total) x 2 USB3.0 OTG x 1
Expansion	40 pin General Purpose bus, supported by Altera Max V. ADC 8-bit@188ksos
RTC	Yes
Power	5V DC-in @ 4A 5.5/2.1mm jack
Dimension	3.34" x 2.20" (85mm x 56mm)
Memory	1GB/ 2GB/ 4GB DDR3L-1600
Storage	eMMC 16GB / 32GB/ 64GB
Display Interface	DSI/eDP
Ethernet	Gb Ethernet (full speed) RJ-45 x 1
OS Support	Win 10 Linux (ubilinux, Ubuntu, Yocto)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Operation Humidity	10% ~ 80% relative humidity, non-condensing
Certification	CE/FCC Class A, RoHS Compliant

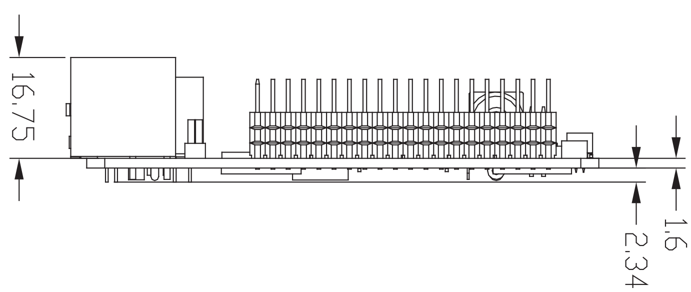
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

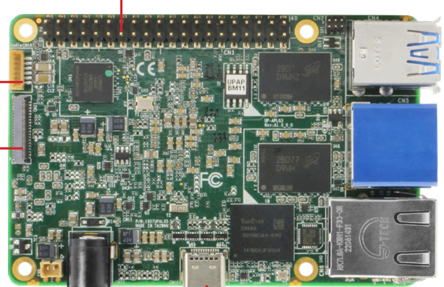
Part number	Description
UP-CHT01-A20-0116-A11	UP board with z8350 CPU, 1GB RAM+16GB eMMC, passive heatsink
UP-CHT01-A20-0216-A11	UP board with z8350 CPU, 2GB RAM+16GB eMMC, passive heatsink
UP-CHT01-A20-0232-A11	UP board with z8350 CPU, 2GB RAM+32GB eMMC, passive heatsink
UP-CHT01-A20-0432-A11	UP board with z8350 CPU,4GB RAM+32GB eMMC, passive heatsink
UP-CHT01-A20-0464-A11	UP board with z8350 CPU, 4GB RAM+64GB eMMC, passive heatsink

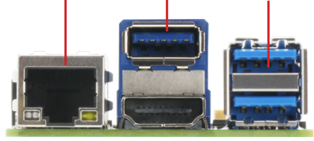
Packing List

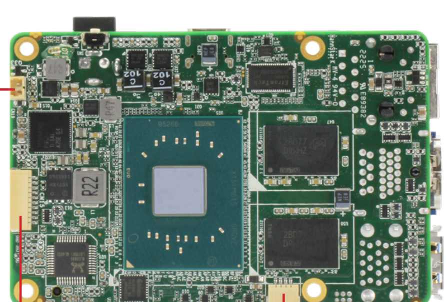
- **UP-CHT01 with Heatsink**

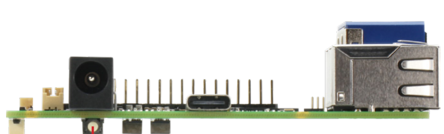
UP 4000

UP Developer Board with Intel® Celeron® N3350/ Intel® Pentium® N4200/ Intel Atom® x7-E3950 Processor SoC









Features

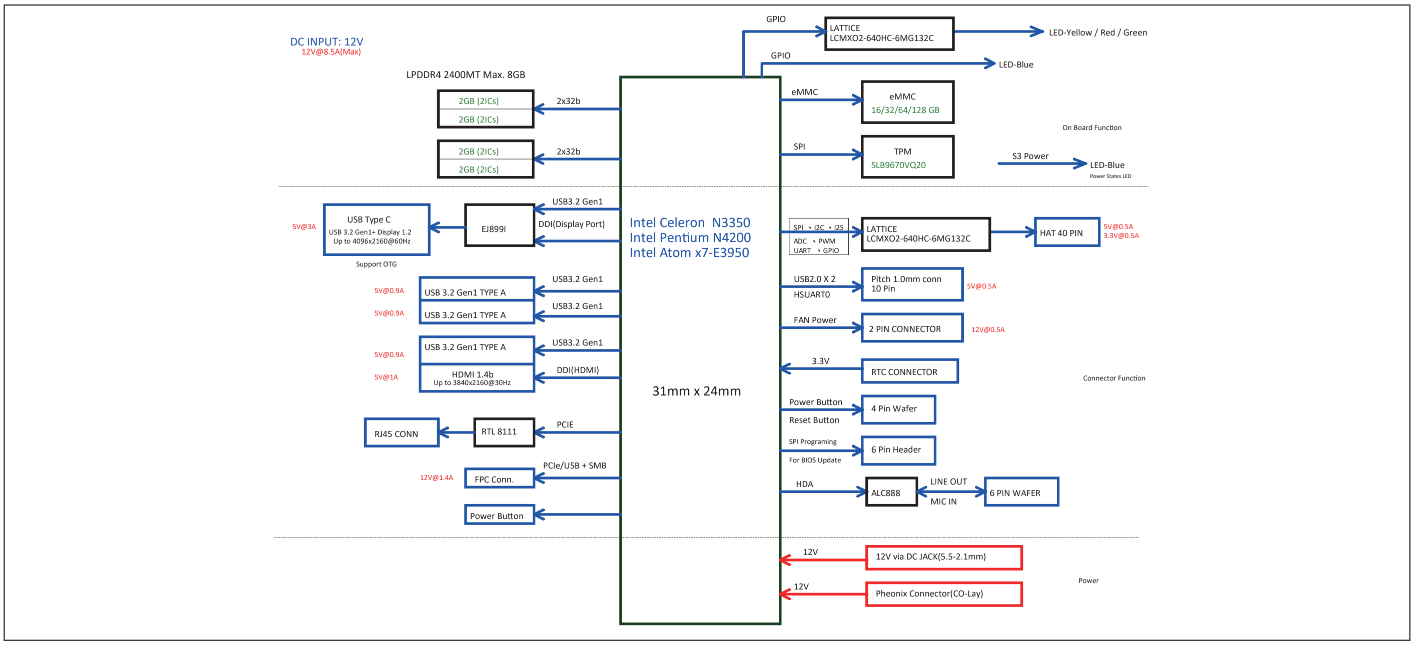
- **Onboard LPDDR4 Memory up to 8GB**
- **Onboard eMMC Storage up to 64GB**
- **Dual displays up to 4K at 60Hz**
- **Support M.2 2230 E-Key / M.2 2280 M-Key / M.2 3052 B-Key (via carrier board)**
- **40 pin GPIO x 1**
- **6 pin wafer for Audio x 1**
- **TPM 2.0**

Specifications

System	
Processor	Intel® Celeron® N3350/ Intel® Pentium® N4200/ Intel Atom® x7-E3950 Processor SoC
Graphics	Intel® Gen 9 HD, supporting 4K Codec Decode and Encode for HEVC4, H.264,VP8
I/O	2 pin wafer for Fan (12V) x 1 2 pin wafer for RTC Battery x 1 6 pin wafer for Audio (Line out + MIC in) x 1 10 pin wafer (2 USB2.0 + 1 HSUART) x 1 HAT 40 pin header x 1 4pin wafer power button for front panel x 1 41 pin FPC connector for high speed expend x 1 power button x 1
Camera	—
USB	USB 3.2 Gen 1 (Type A) x 3 USB 2.0 pin header (10 pins in total) x 2 USB 3.2 Gen 1 OTG via USB Type-C x 1
Expansion	40 pin GPIO x 1 via carrier board: M.2 2230/2242/2280 x 1 M.2 3052 x 1
RTC	Yes
Power	12V DC-in @5A (phoenix Terminal co-lay)
Dimension	3.34" x 2.20" (85mm x 56mm)
Memory	onboard LPDDR4 max to 8GB
Storage	16GB/ 32GB/ 64GB eMMC
Display Interface	HDMI 1.4bx 1 DP 1.2 via USB TYPE C Connector
Ethernet	1 Gb Ethernet (full speed) RJ-45 x 1
OS Support	Microsoft Windows 10 (full), Windows IOT Core Yocto project 3.1 Kernel 5.4 Ubuntu 18.04
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
Operation Humidity	10% ~ 80% relative humidity, non-condensing
Certification	CE/FCC Class A, RoHS Compliant

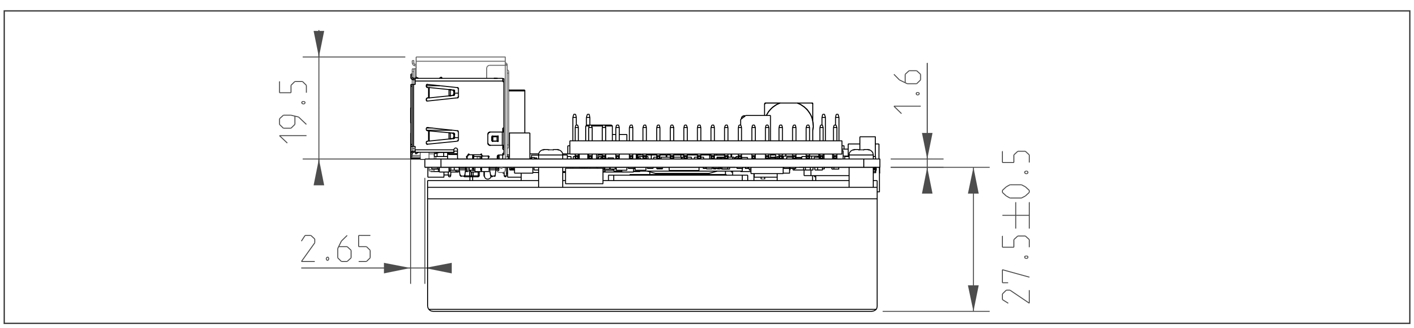
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part number	CPU	Memory	Storage	TPM 2.0	Gbe LAN	Audio wafer
UP-APL03C2F-A10-0216	Apollo Lake N3350(F1)	2GB	16GB	yes	Realtek RTL8111H	yes
UP-APL03C2F-A10-0232	Apollo Lake N3350(F1)	2GB	32GB	yes	Realtek RTL8111H	yes
UP-APL03C2F-A10-0432	Apollo Lake N3350(F1)	4GB	32GB	yes	Realtek RTL8111H	yes
UP-APL03P4F-A10-0432	Apollo Lake N4200(F1)	4GB	32GB	yes	Realtek RTL8111H	yes
UP-APL03P4F-A10-0864	Apollo Lake N4200(F1)	8GB	64GB	yes	Realtek RTL8111H	yes
UP-APL03X7F-A10-0464	Apollo Lake E3950(F1)	4GB	64GB	yes	Realtek RTL8111H	yes

Optional Accessories

Part Number	Description
125530060L	(TF)PowerAdapter.DC.100/240V.12V.5A.60W.Powertron.PS1065-120IB500.For UPC-PLUS
9741364A00 (via carrier board)	Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT4.0,2T2R,with 2 sets of cable & antenna (Enli,QCNFA364A)
9651926001 (via carrier board)	(TF).M.2 2230 WiFi Kit.802.11ac.2.4G/5G,W/BT Intel.9260.NGWG.NV,958867 w/2 cable & antenna
170X000382	(TF)Cable.6P.Pitch=1.0mm.150mm.FLYINGWAY.FWAA-1473.Audio Jack Cable
UP-APL03CB-A10-0001	UP-APL03 carrier board. M.2 Key-B+E.w/ FPC cable
UP-APL03CB-A10-0002	UP-APL03 carrier board. M.2 Key-M.w/ FPC cable

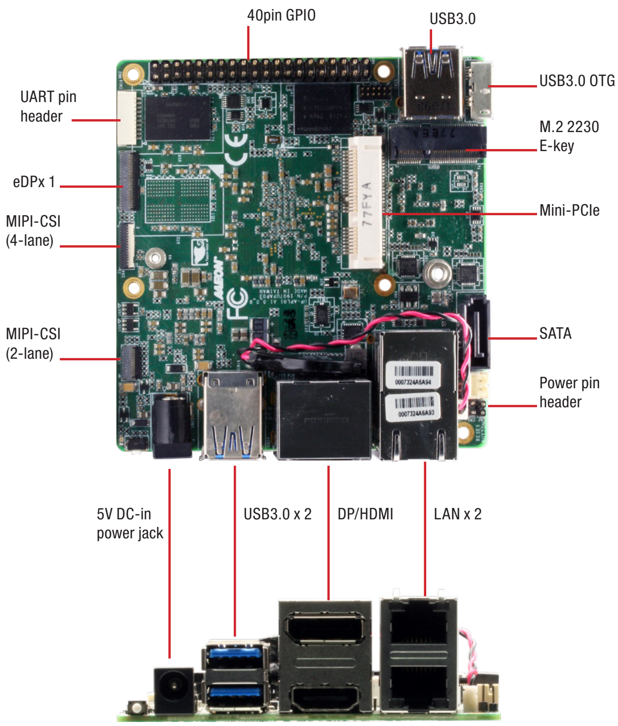
Packing List

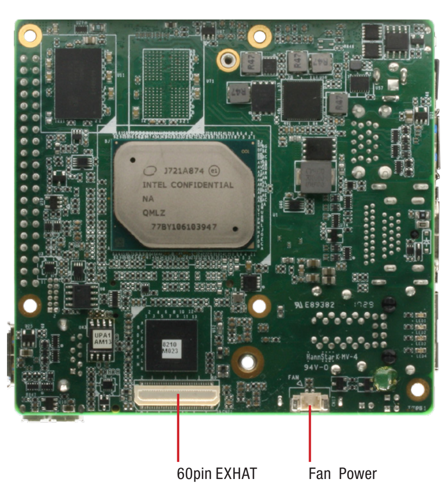
- UP 4000 with Heatsink

Note: All specifications are subject to change without notice.

UP Squared

UP Squared Developer Board with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC





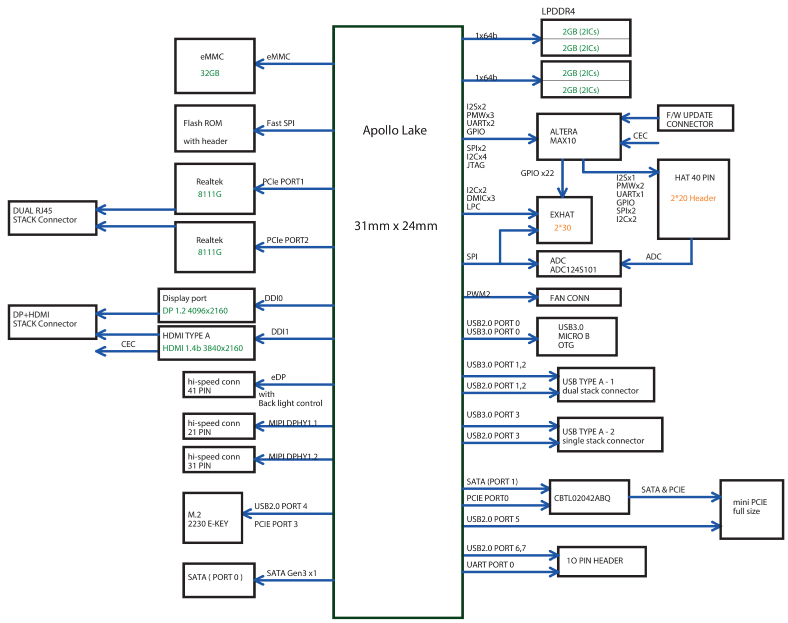
Features

- Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
- Onboard LPDDR4 Memory up to 8GB
- Onboard eMMC Storage up to 128GB
- Gigabit LAN x 2, USB 2.0 x 2, USB 3.0 (Type A) x 3
- 5V DC-in, 4-6A
- 40 pin GPIO x 1
- DP/eDP/HDMI x 1
- MIPI-CSI (4-Lane & 2-Lane) x 1
- Mini-PCIe /M.2 2230 x 1
- SATA3 x 1
- 60pin EXHAT

Specifications

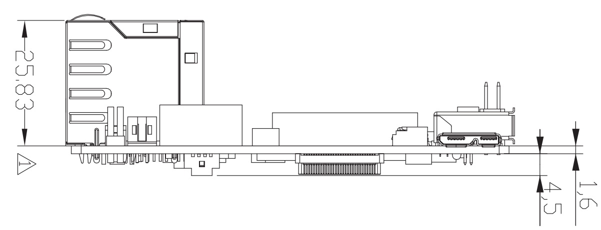
System	
Processor	Intel® Pentium® N4200/ Celeron® N3350/ Atom™ E3940/ E3950 Processor SoC
Graphics	Intel® Gen 9 HD, supporting 4K Codec Decode and Encode for HEVC4, H.264, VP8
I/O	HDMI x 1 DP x 1 I2S Audio Port
Camera	CSI 2-Lane + CSI 4-Lane
USB	USB 2.0 x 2 USB3.0 OTG x 1 USB3.0 (Type A) x 3
Expansion	40 pin GPIO x 1 Full-sized Mini-PCIe x 1 (PCIe & SATA + USB2.0) M.2 2230 x 1 SATA3 x 1 60 pin EXHAT x 1
RTC	Yes
Power	5V DC-in @ 4A-6A
Dimension	3.37" x 3.54" (85.6 mm × 90 mm)
Memory	2GB (single channel) LPDDR4 4GB/8GB (dual channel) LPDDR4)
Storage	eMMC 32 GB / 64 GB / 128 GB
Display Interface	eDP
Ethernet	Gb Ethernet (full speed) RJ-45 x 2
OS Support	Microsoft Windows 10 (full), Windows IOT Core, Linux (ubilinux, Ubuntu, Yocto), Android Nougat
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Operation Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A, RoHS Compliant, REACH

Block Diagram



Dimension

Unit: mm



Ordering Information

Part number	Description
UPS-APLC2F-A20-0232	UP² (UP Squared) board with Intel® Celeron® Dual Core N3350(F1) up to 2.4GHz, on board 2GB DDR4, 32GB eMMC
UPS-APLC2F-A20-0432	UP² (UP Squared) board with Intel® Celeron® Dual Core N3350(F1) up to 2.4GHz, on board 4GB DDR4, 32GB eMMC
UPS-APLP4F-A20-0432	UP² (UP Squared) board with Intel® Pentium® N4200(F1) Quad Core up to 2.5 GHz, on board 4GB DDR4, 32GB eMMC
UPS-APLP4F-A20-0864	UP² (UP Squared) board with Intel® Pentium® N4200(F1) Quad Core up to 2.5 GHz, on board 8GB DDR4, 64GB eMMC
UPS-APLP4F-A20-08128	UP² (UP Squared) board with Intel® Pentium® N4200(F1) Quad Core up to 2.5 GHz, on board 8GB DDR4, 128GB eMMC
UPS-APLX5F-A20-0432	UP² (UP Squared) board with Intel® Atom™ E3940(F1).4G memory 32G eMMC.Rev.1.0
UPS-APLX7F-A20-0464	UP² (UP Squared) board with Intel® Atom™ E3950(F1).4G memory 64G eMMC.Rev.1.0
UPS-APLX7F-A20-0864	UP² (UP Squared) board with Intel® Atom™ E3950(F1).8G memory 64G eMMC.Rev.1.0

Packing List

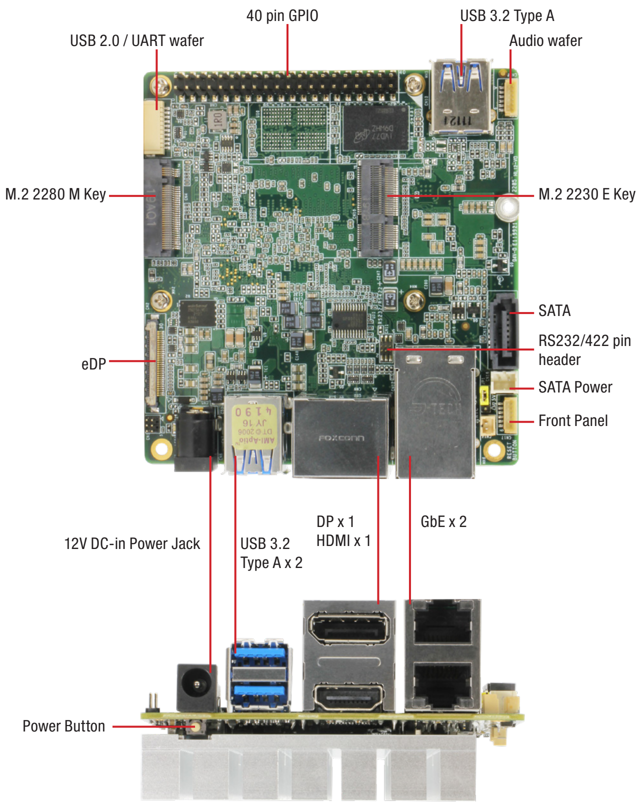
- **UPS-APL with Heatsink**

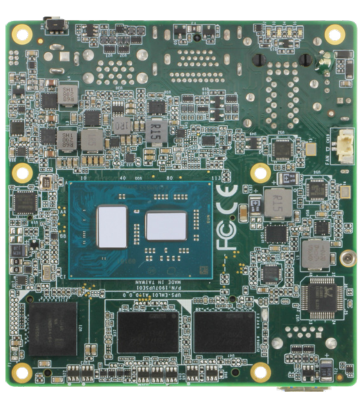
Optional Accessories

- **1702020910**
  Power cord for EU
- **1702020911**
  Power cord for US
- **1255300362**
  30W.5VDC/6A power adapter
- **PER-TAICX-A10-001**
  AI Core X mPCIe card.with 30 mm heat sink
- **PER-TAICX-A10-002**
  AI Core X mPCIe card.with 15 mm heat sink with FAN

UP Squared V2

UP Squared V2 Developer Board with Intel® Pentium® Celeron® Processor SoC





Features

- Intel® Pentium® Celeron® Processor SoC
- Onboard LPDDR4 Memory up to 16GB
- Onboard eMMC Storage up to 64GB
- Gb Ethernet (full speed) RJ-45 x 2
- USB 3.2 Type A x 3
- 40 pin GPIO x 1
- DP 1.2 / HDMI 1.4b / eDP 1.3
- RS232/422 pin header x 1
- M.2 2230 E-Key x 1
- M.2 2280 M-Key x 1
- SATA3 x 1
- TPM 2.0
- 12V DC-in, 5A

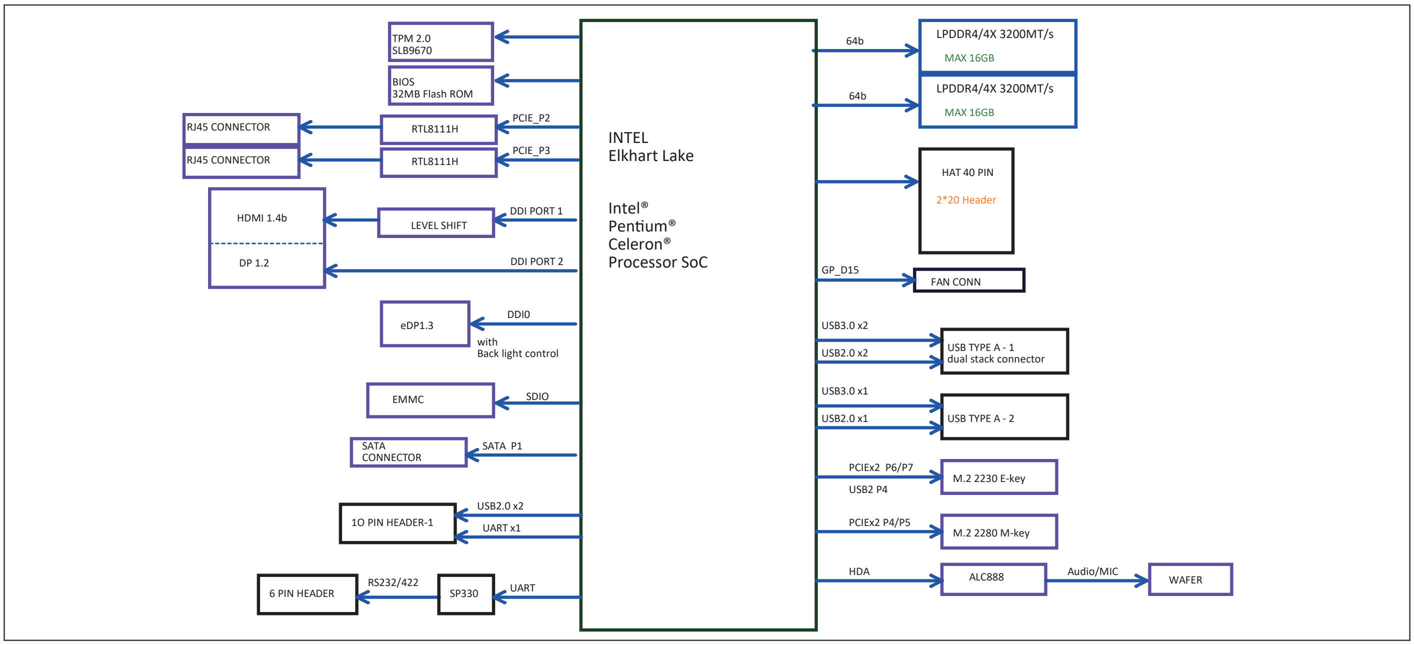
HDMI | LPDDR4 | USB 3.2 Gen 2 | Audio | CE | FC

Specifications

System	
Processor	Intel® Celeron® N6210 Pentium® J6426 Processor SoC
Graphics	Intel® UHD Graphics
Memory	Up to 16GB LPDDR4
Storage	Up to 64GB eMMC
I/O	HDMI 1.4b x 1 DP 1.2 x 1 eDP 1.3 x 1 Audio 6 pin wafer (Line out + MIC in) x 1 RS-232/422 6 pin header x 1
Camera	—
USB	USB 2.0 x 2 (from 10 pin wafer x 1) USB 3.2 Gen 2 Type A x 3
Expansion	40 pin GPIO x 1 M.2 2230 E-Key x 1 (PCIe x2, USB2.0 x1) M.2 2280 M-key x 1 (PCIe x2) SATA3 x 1
Display Interface	HDMI 1.4b x 1 DP 1.2 x 1 eDP 1.3 x 1
Ethernet	Gb Ethernet (full speed) RJ-45 x 2
Security	Onboard TPM 2.0
RTC	Yes
OS Support	Microsoft Windows 10 (full) Windows IOT Core Ubuntu 20.04 LTS Yocto 3.1
Power Requirement	
Power	12V DC-in, 5A
POWER SUPPLY TYPE	AT/ATX
POWER CONSUMPTION (TYPICAL)	30~38W
Mechanical	
Dimension	3.37" x 3.54" (85.6 mm × 90 mm)
Net Weight	0.52 lbs (0.24kg)
Gross Weight	0.66 lbs (0.3kg)
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°) / 0.5 airflow
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	465,586
Certification	CE/FCC Class A, RoHS Compliant, REACH

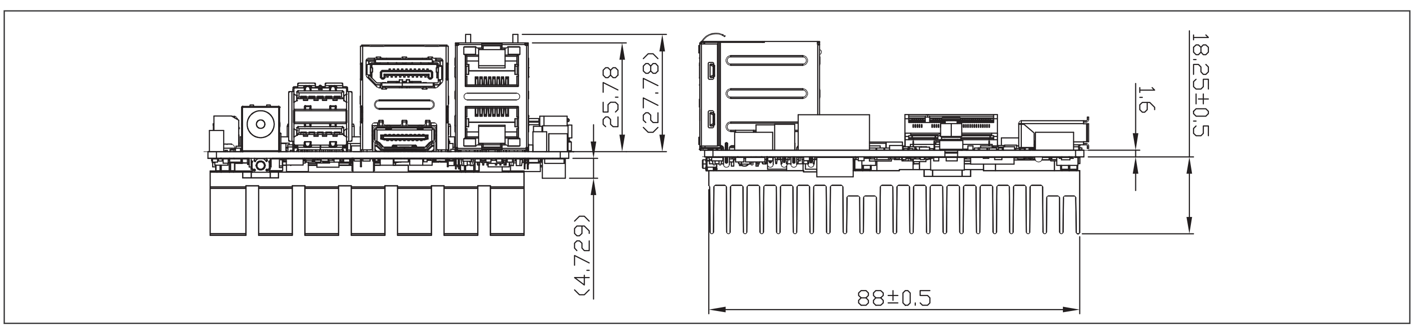
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part number	CPU	Memory	Storage
UPS-EHLCN2-A10-0232	N6210	2GB	32GB
UPS-EHLCN2-A10-0432	N6210	4GB	32GB
UPS-EHLPJ4-A10-0432	J6426	4GB	32GB
UPS-EHLPJ4-A10-0864	J6426	8GB	64GB
UPS-EHLPJ4-A10-1664	J6426	16GB	64GB

Optional Accessories

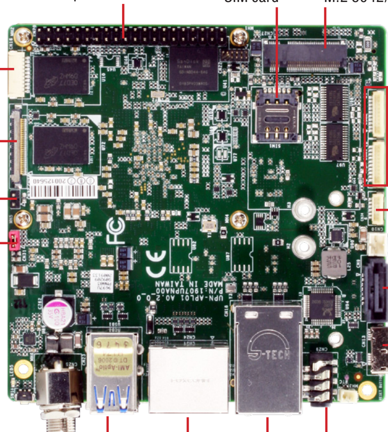
Part Number	Description
125530060L	12V.5A.60W Power Adapter w/ multi-country plugs
1709070500	SATA cable
1702150155	SATA power cable(15cm)
1702150306	SATA power cable(30cm)
170010015G	UART to USB cable
9651926001	M.2 2230 WiFi Kit.802.11ac.2.4G/5G,W/BT w/2 cable & antenna
9741364A00	Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT4.0,2T2R,with 2 sets of cable & antenna
170X000382	Audio cable for audio wafer
170X000556	COM cable for RS232 wafer

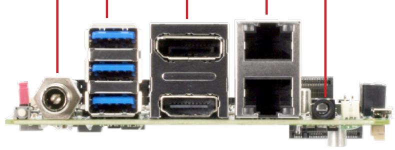
Packing List

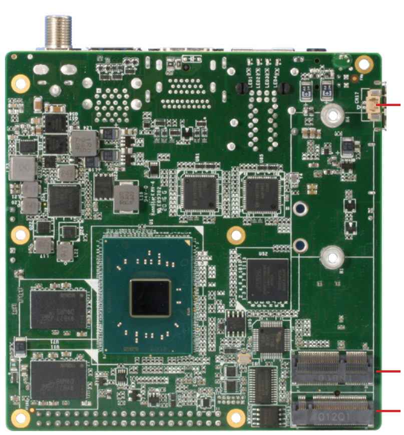
- UP Squared V2 with heatsink

UP Squared Pro

Developer Board with Intel® Pentium® N4200/ Celeron® N3350/ Atom® E3950 Processor SoC







Features

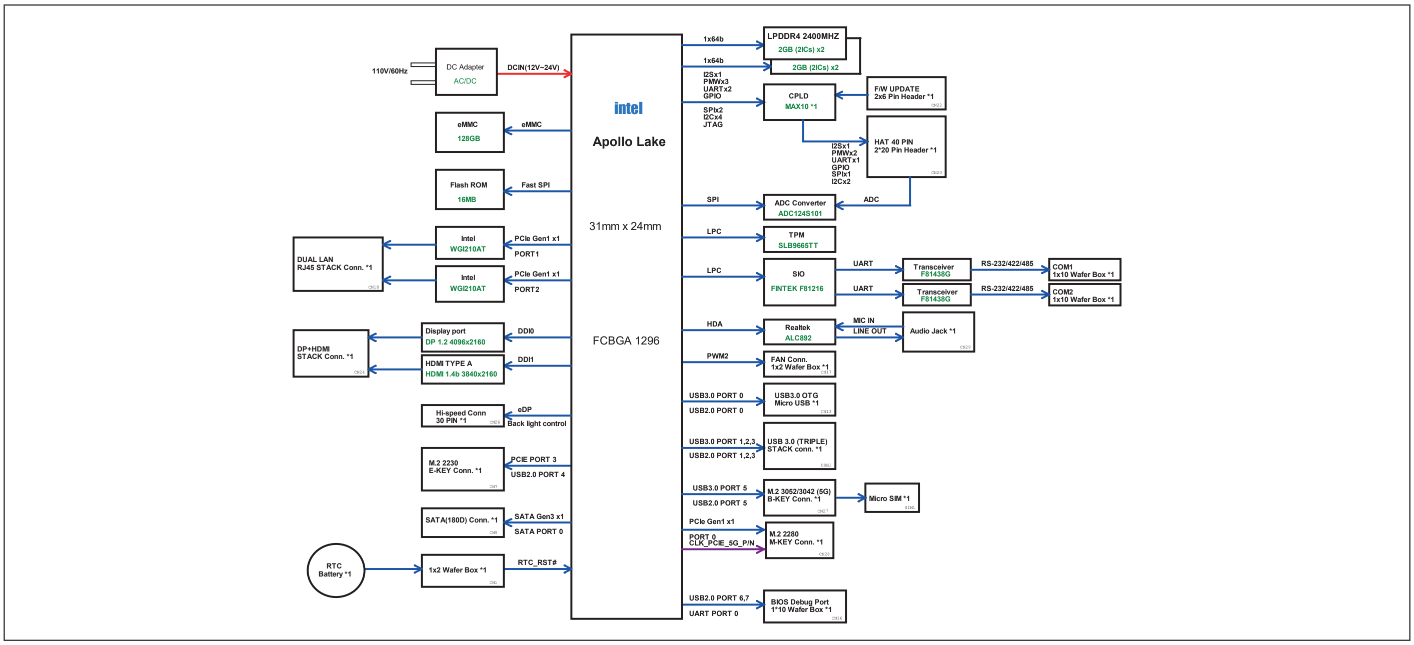
- Intel® Pentium® N4200/ Celeron® N3350/ Atom® E3950 Processor SoC
- Onboard LPDDR4 Memory up to 8GB
- Onboard eMMC Storage up to 64GB
- Gigabit LAN x 2, USB 2.0 x 2, USB 3.2 Gen 1 (Type A) x 3
- 12-24VDC-in ,6A
- 40 pin GPIO x 1
- DP/eDP/HDMI x 1
- M.2 2230 E-key x 1
- M.2 2280 M-key x 1
- SATA3 x 1
- M.2 3042/3052 B-key x 1

Specifications

System	
Processor	Intel® Pentium® N4200/ Celeron® N3350/ Atom® E3950 Processor SoC
Graphics	Intel® Gen 9 HD, supporting 4K Codec Decode and Encode for HEVC4, H.264, VP8
I/O	HDMI x 1 DP x 1 COM port (RS422/RS232/RS485) x 2 Audio Jack x 1
Camera	—
USB	USB 2.0 x 2 USB 3.2 Gen 1 OTG x 1 USB 3.2 Gen 1 (Type A) x 3
Expansion	40 pin GPIO x 1 M.2 2230 E-key x 1 M.2 2280 M-key x 1 SATA3 x 1 M.2 3042/3052 B-key x 1
RTC	Yes
Power	12V-24V DC-in (Lockable plug)/ Phoenix connector (optional)
Dimension	10.16cm x 10.16cm
Memory	2GB (single channel) LPDDR4 4GB/8GB (dual channel) LPDDR4
Storage	eMMC 32 GB / 64 GB
Display Interface	HDMI1.4 x 1 DP1.2 x 1 eDP x 1
Ethernet	Gb Ethernet (full speed) RJ-45 x 2
OS Support	Microsoft Windows 10 (full), Windows IOT Core Linux: Ubuntu 18.04.5, Ubuntu 20.04.1, Yocto 3.1
Operating Temperature	with Fan: 32°F ~ 140°F (0°C ~ 60°C, with airflow 0.5m/s) with Heatsink: 32°F ~ 122°F (0°C ~ 50°C, with airflow 0.5m/s)
Operation Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A, RoHS Compliant, REACH

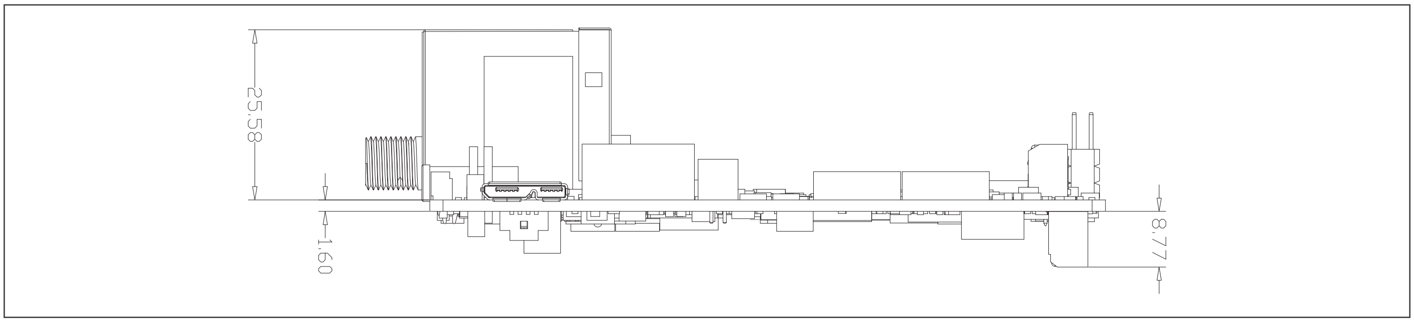
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part number	Description
UPN-APLC2F-A10-0232	UPN-APL01.CPU N3350(F1).Memory 2GB.eMMC 32GB.REV.A1.0
UPN-APLC2F-A10-0432	UPN-APL01.CPU N3350(F1).Memory 4GB.eMMC 32GB.REV.A1.0
UPN-APLP4F-A10-0432	UPN-APL01.CPU N4200(F1).Memory 4GB.eMMC 32GB.REV.A1.0
UPN-APLP4F-A10-0864	UPN-APL01.CPU N4200(F1).Memory 8GB.eMMC 64GB.REV.A1.0
UPN-APLX7F-A10-0464	UPN-APL01.CPU E3950(F1).Memory 4GB.eMMC 64GB.REV.A1.0

Optional Accessories

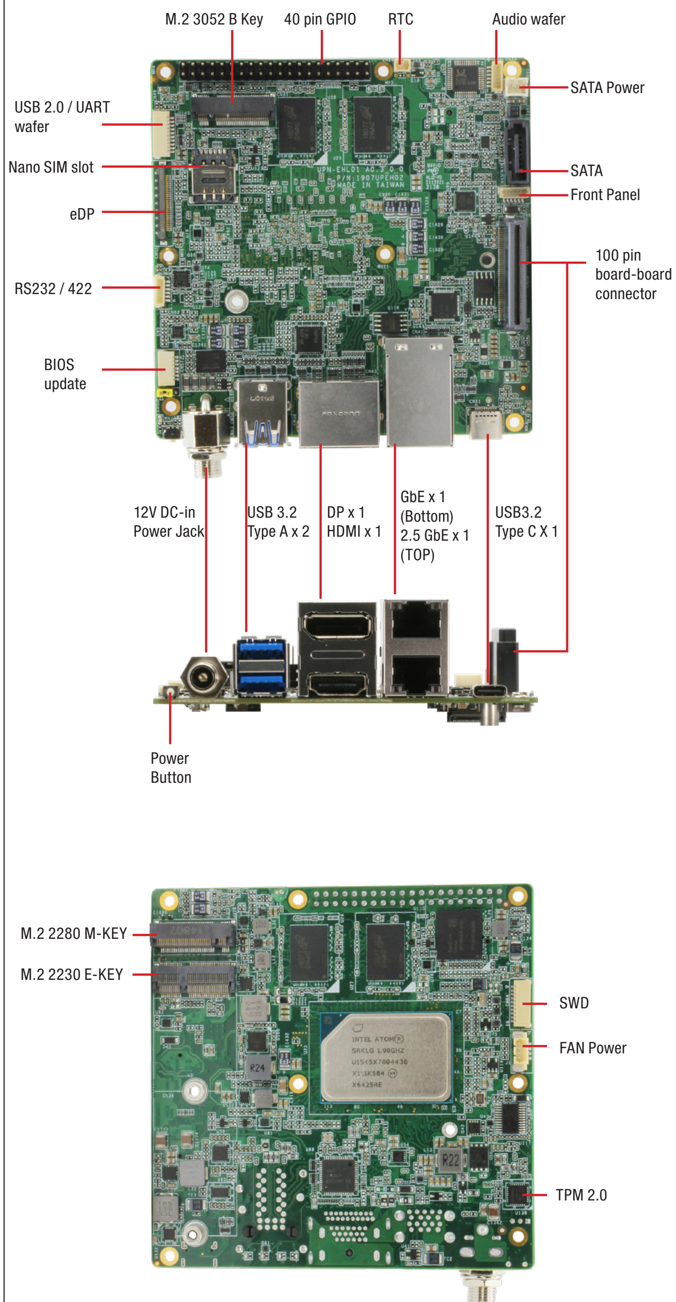
Part Number	Description
1255X00032	12VDC/6A Adapter
1702031803	Power cord for EU
1702031802	Power cord for US
PER-TAIX2-A10-2280	AI Core XM M.2 2280 B+M key card 15mm heatsink with fan
9651926001	M.2 2230 WiFi Kit.802.11ac.2.4G/5G,W/BT w/2 cable & antenna
9741364A00	Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT4.0,2T2R,with 2 sets of cable & antenna

Packing List

- **UPN-APL01 with heatsink**

UP Squared 6000

UP Squared 6000 Developer Board with Intel® Atom® x6000E Pentium® Celeron® Processor SoC



Features

- Intel® Atom® x6000E Pentium® Celeron® Processor SoC
- Onboard LPDDR4 Memory up to 8GB
- Onboard eMMC Storage up to 64GB
- GbE x 1, 2.5GbE x 1 (Intel® i210, i225)
- USB 3.2 x 3 (Type A x 2, Type C x 1)
- 40 pin GPIO x 1
- DP 1.2 / HDMI 2.0b / eDP x 1
- RS232 / 422 wafer x 1
- M.2 2230 E-Key / M.2 2280 M-Key / M.2 3052 B-Key x 1
- SATA3 x 1
- TPM 2.0
- 12V DC-in, 6A

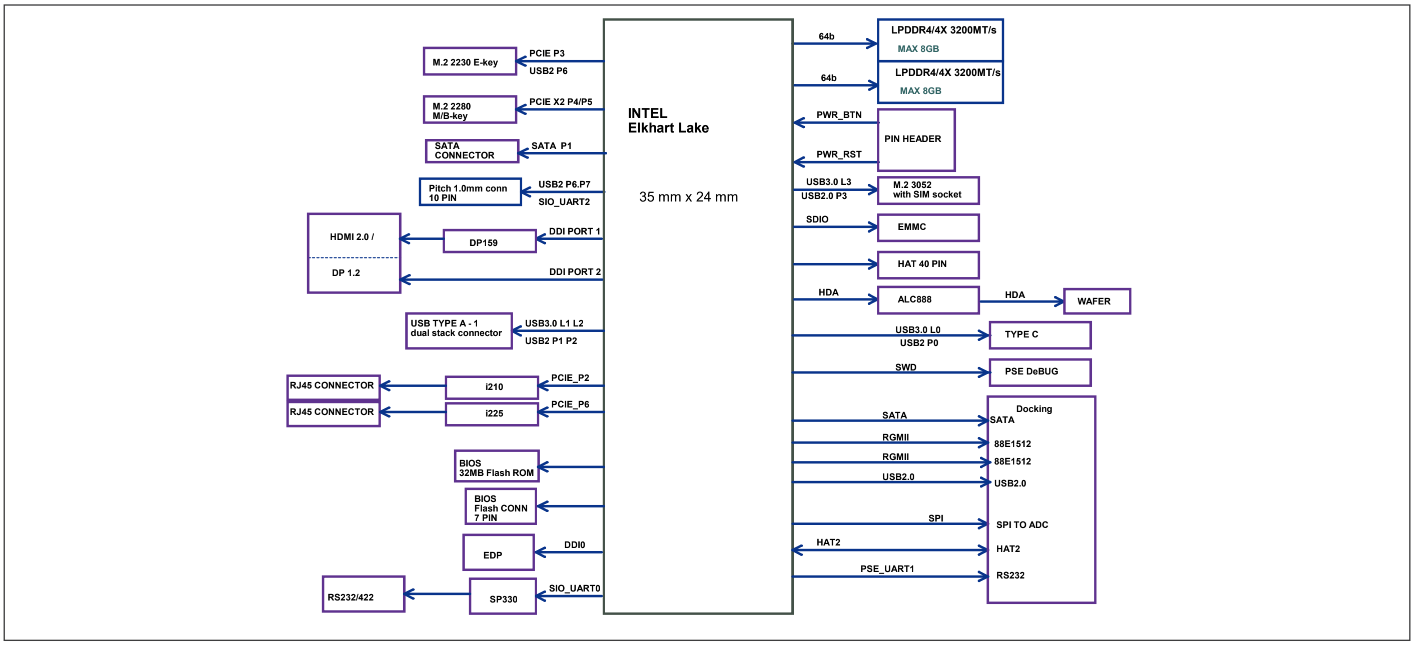
HDMI LPDDR4 USB 3.2 Gen 2 Audio

Specifications

System	
Processor	Intel® Atom® X6413E / X6425RE, Celeron® N6210 (no PSE), Pentium® J6426 Processor SoC
Graphics	Intel® UHD Graphics
I/O	HDMI 2.0b x 1 DP 1.2 x 1 eDP x 1 (Limited to Atom series) Audio wafer x 1 RS-232/422 x 1 (Limited to Atom series)
Camera	—
USB	USB 2.0 x 2 (from wafer x 1) USB 3.2 Gen 2 Type A x 2 USB 3.2 Gen 2 Type C (support OTG) x 1 (Limited to Atom series)
Expansion	40 pin GPIO x 1 M.2 2230 E-key x 1 M.2 2280 PCIe Gen3.0x2 M-key x 1 SATA3 x 1 M.2 3052 B-key x 1 Nano SIM slot x 1 100 pin high speed board-board connector x 1 (Limited to Atom series) TPM 2.0 (Limited to Atom series)
RTC	Yes
Power	12V DC-in (Lockable plug)
Dimension	4" x 4" (101.6mm x 101.6mm)
Memory	Up to 8GB DDR4
Storage	UP to 64GB eMMC
Display Interface	HDMI 2.0b x 1 DP 1.2 x 1 eDP x 1 (Limited to Atom series)
Ethernet	GbE x 1, 2.5GbE x 1 Atom: Intel® i210-IT, i225-IT PC Client: Intel® i211-AT, i225-V
OS Support	Microsoft Windows 10 (full), Windows IOT Core Linux: Ubuntu 20.04 LTS, Yocto 3.1
Operating Temperature	With Heatsink: 32°F ~ 140°F (0°C ~ 60°) / 0.5 airflow
Operation Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A, RoHS Compliant, REACH

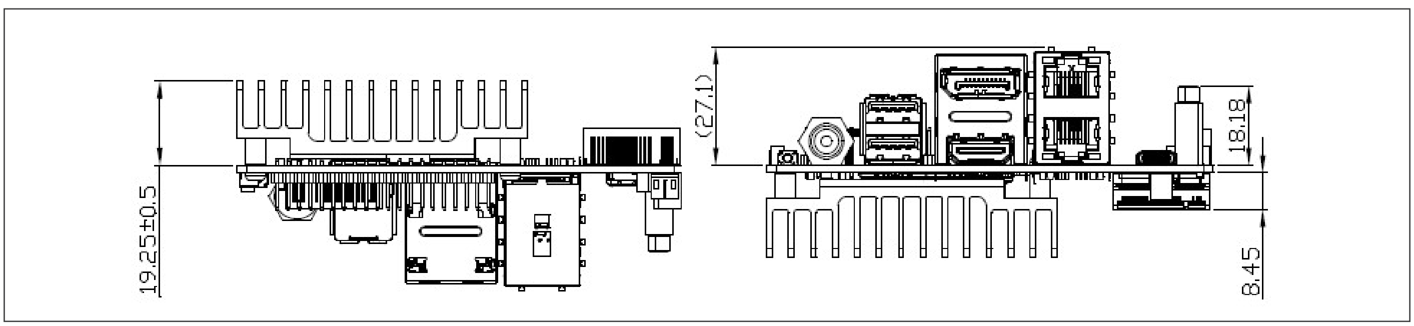
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part number	CPU	Memory	Storage	USB 3.2 Type C	RS232 / 422 wafer	eDP	TPM 2.0	LAN	100 pin board-board connector
UPN-EHLCN2-A10-0232	PC Client: N6210 (No PSE)	2GB	32GB	No	No	No	No	i211-AT / i225-V	No
UPN-EHLPJ4-A10-0432	PC Client: J6426	4GB	32GB	No	No	No	No	i211-AT / i225-V	No
UPN-EHLX4E-A10-0432	Embedded: X6413E	4GB	32GB	Yes	Yes	Yes	Yes	i210-IT / i225-IT	Yes
UPN-EHLX4RE-A10-0864	Industrial: X6425RE	8GB	64GB	Yes	Yes	Yes	Yes	i210-IT / i225-IT	Yes

Packing List

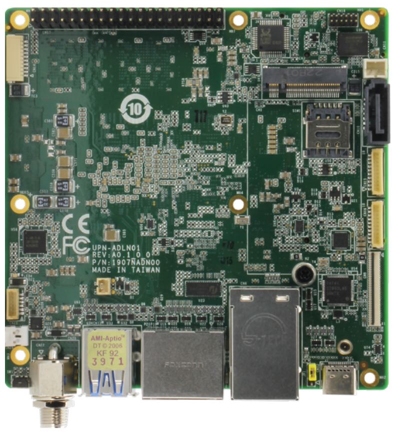
- UP Squared 6000 with heatsink

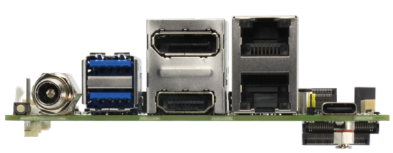
Optional Accessories

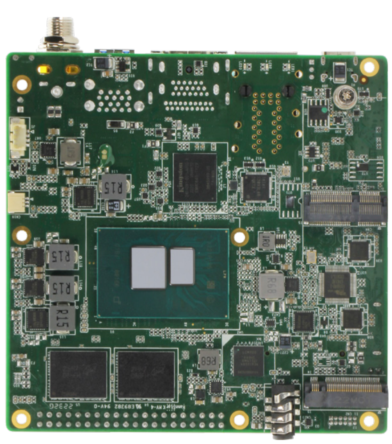
Part Number	Description
1255X00032	12VDC/6A Adapter
1702031803	Power cord for EU
1702031802	Power cord for US
170203180J	Power cord for UK
170203180E	Power cord for Japlan
170203180B	Power cord for China
1702031811	Power cord for Taiwan
1709070500	SATA cable
1702150155	SATA power cable(15cm)
1702150306	SATA power cable(30cm)
170010015G	UART to USB cable
PER-TAIX2-A10-2280	AI Core XM M.2 2280 B+M key card 15mm heatsink with fan
9651926001	M.2 2230 WiFi Kit.802.11ac.2.4G/5G,W/BT w/2 cable & antenna
9741364A00	Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT4.0,2T2R,with 2 sets of cable & antenna

UP Squared Pro 7000 PRELIMINARY

UP Squared Pro 7000 Developer Board with Intel® Atom® Processor SoC (Alder Lake N)







Features

- Intel® Atom® Processor SoC (Alder Lake N)
- Onboard LPDDR5 Memory up to 16GB
- Onboard eMMC Storage up to 64GB
- 2.5GbE x 2 (Intel® i225/i226)
- USB 3.2 x 3 (Type A x 2, Type C x 1)
- 40 pin GPIO x 1
- DP 1.2 x 2 / HDMI 2.0b
- RS232 / 422 /485 wafer x 2
- M.2 2230 E-Key / M.2 2280 M-Key / M.2 3052 B-Key x 1
- SATA3 x 1
- TPM 2.0
- 12V DC-in, 6A

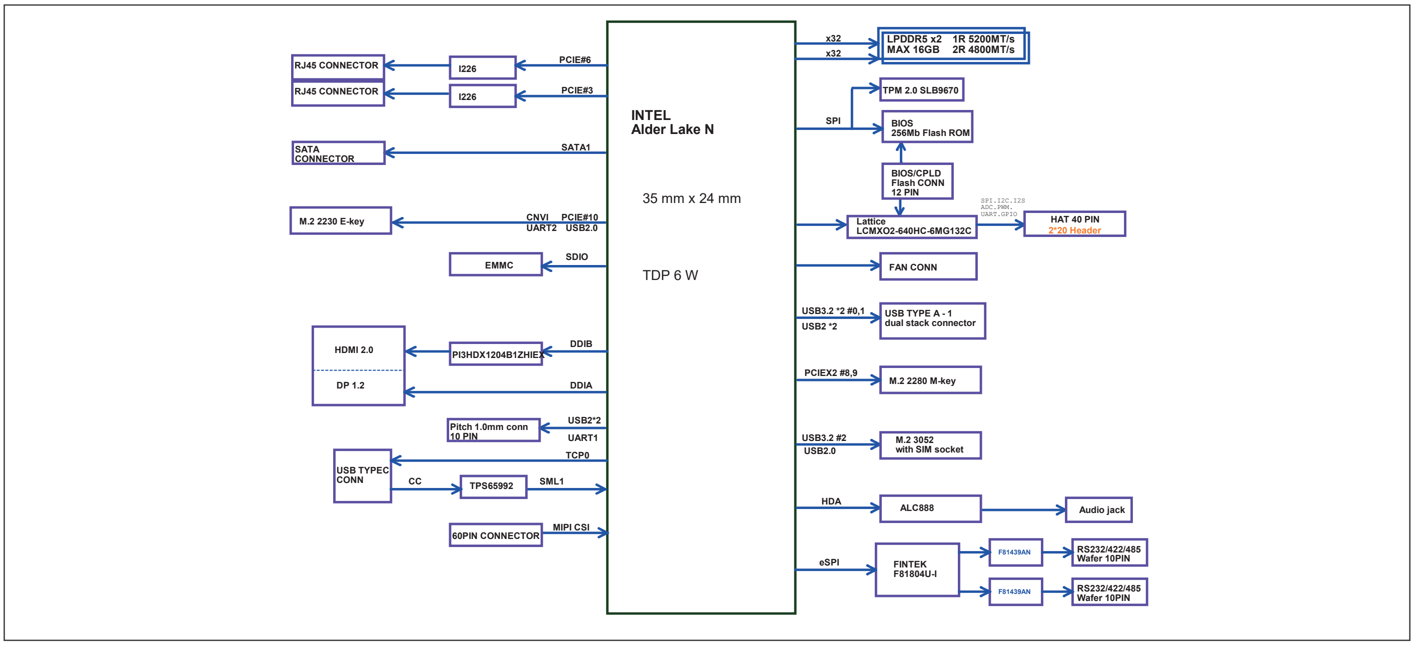
HDMI DDR 4 USB 3.2 Gen 2 Audio

Specifications

System	
Processor	Intel® Atom® Processor SoC (Alder Lake N)
Graphics	Intel® Gen 12 UHD Graphics
Memory	Up to 16GB LPDDR5
Storage	Up to 64GB eMMC
I/O	HDMI 2.0b x 1 DP 1.2 x 1 DP 1.2 via USB Type C Audio Jack x 1 (Mic-in+Line-out) RS-232/422/485 from 6 pin header x 1
Camera	—
USB	USB 2.0 x 2 (from 10 pin header x 1) USB 3.2 Gen 2 Type A x 2 USB 3.2 Gen 2 Type C x 1
Expansion	40 pin GPIO x 1 M.2 2230 E-key x 1 (CNVI , PCIE X1, USB2.0) M.2 2280 M-key x 1 (PCIE X2, USB2.0) M.2 3052 B-key x 1 (USB3.0 only) SATA3 x 1
Display Interface	HDMI 2.0b x 1 DP 1.2 x 1 DP 1.2 via USB Type C
Ethernet	2.5GbE x 2 (Intel® i225/i226)
Security	Onboard TPM 2.0
RTC	Yes
OS Support	Windows 10 IoT Enterprise Windows IoT Core Ubuntu 22.04 LTS Yocto 4
Power Requirement	
Power	12V DC-in, 6A
POWER SUPPLY TYPE	AT/ATX
POWER CONSUMPTION (TYPICAL)	TBD
Mechanical	
Dimension	4" x 4" (101.6 mm × 101.6 mm)
Net Weight	TBD
Gross Weight	TBD
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°) / 0.5 airflow
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	TBD
Certification	CE/FCC Class A, RoHS Compliant, REACH

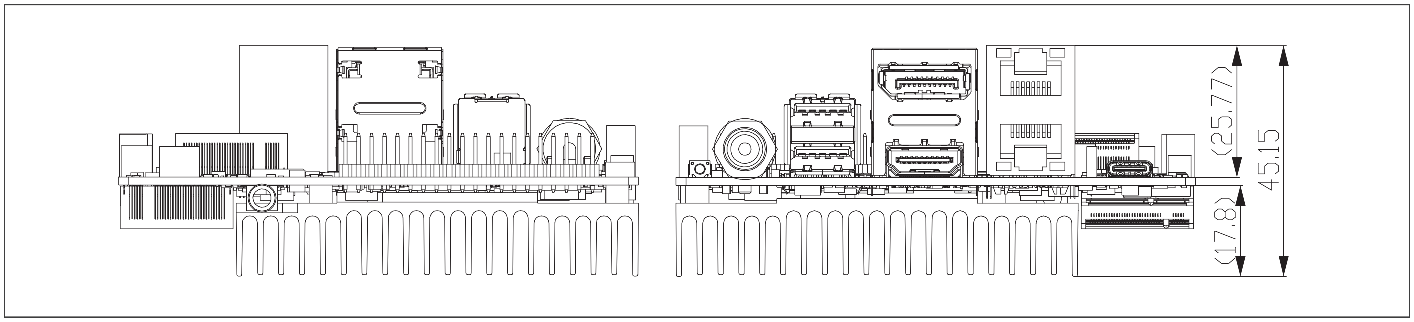
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

- TBD

Optional Accessories

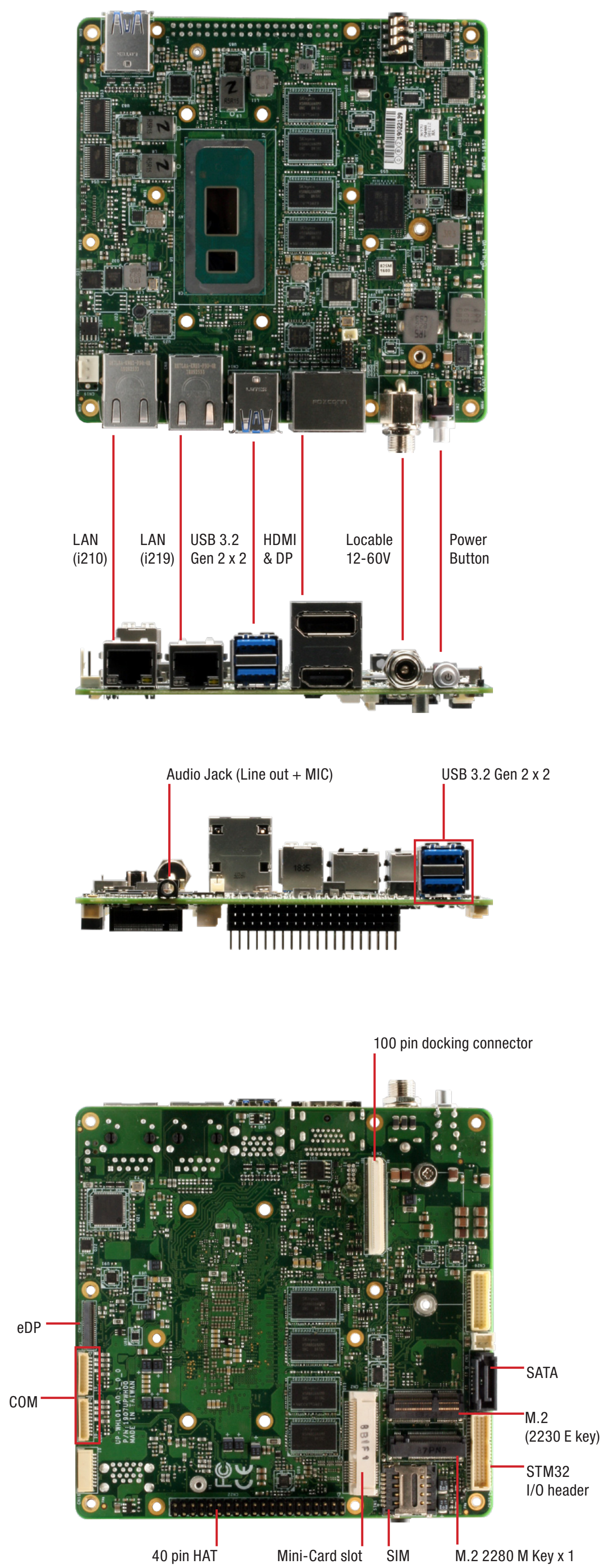
- TBD

Packing List

- UP Squared Pro 7000 with heatsink

UP Xtreme

UP Xtreme developer board with Intel® WHL-U Core™ i7/i5/i3/Celeron® Processor SoC



Features

- Intel® WHL-U Core i7/i5/i3/Celeron® Processor SoC
- Onboard DDR4 memory, Max 16GB
- eMMC 64GB
- 40Pin HAT Connector
- 100pin docking connector
- SATA 6.0Gb/s x 3
- Mini-card slot x 1
- M.2 2280 M Key x 1
- M.2 2230 E key x 1
- Audio Jack x 1 (line out + Mic)
- Lockable DC connector

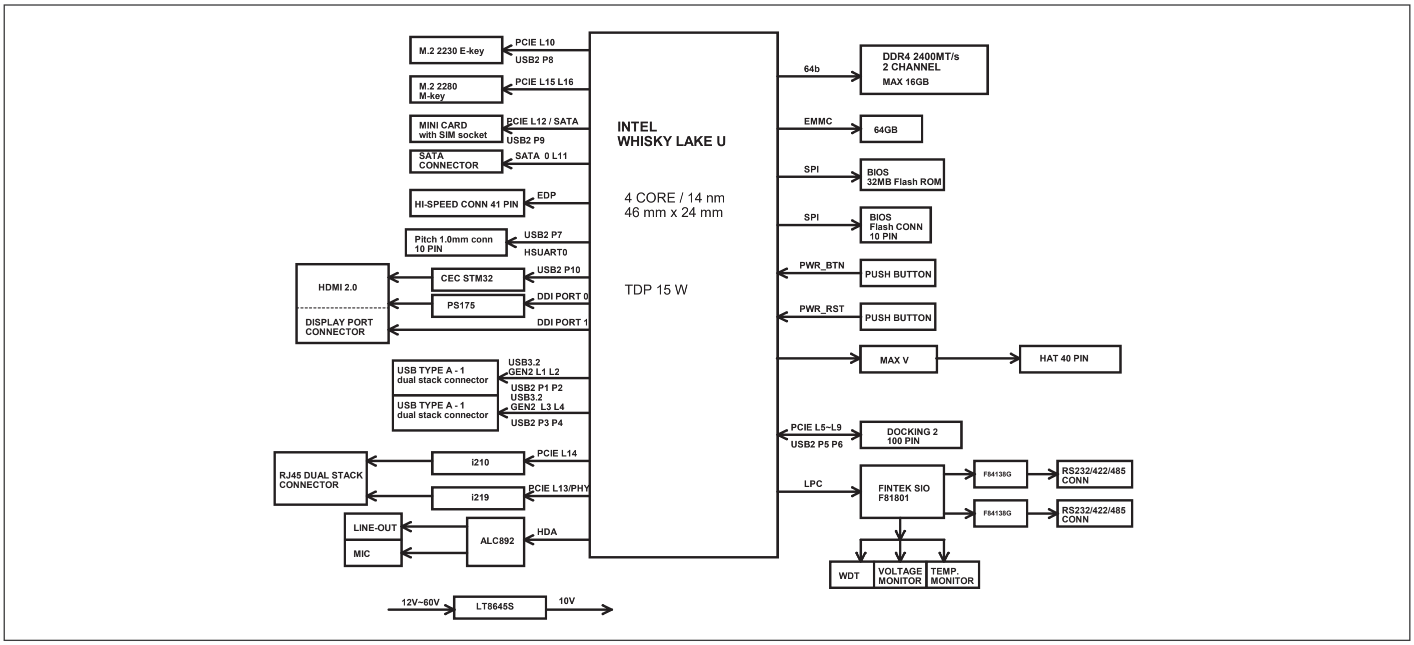
HDMI DDR4 USB 3.2 Gen 2 PCI Express Audio

Specifications

System	
Processor	8th generation Intel® Core i7/i5/i3/Celeron® Processor SoC
Graphics	Intel® Graphics , GEN 9
I/O	RJ45 Ethernet Connector x 2 HDMI/DP STACK Connector x 1 Power Button / LED x 1 Audio Jack (Line out + MIC) x 1 DC connector (Lockable) x 1 STM32 connector x 1 eDP with Backlight control Header x 1 10 pin 1xUSB2.0 x 1 / HSUART (TTL) x 1 SATA Connector with power connector (5V, GND) x 1 4 pin Fan connector x1 Power Button header x 1 Reset Pin header x 1 M.2 2230 E Key x 1 M.2 2280 M Key x 1 40 pin HAT connector x 1 mPCIe slot x 1 10 pin RS232/422/485 pin header x 2 100pin connector x 1
Camera	—
USB	USB 3.2 Gen 2 STACK Connector for 2 ports (Front) x 1 USB 3.2 Gen 2 STACK Connector for 2 ports (Rear) x 1
Expansion	M.2 2230 E Key x 1 M.2 2280 M key x 1 mPCIe slot x 1 100pin connector x 1 40pin HAT
RTC	RTC battery, CR2032 x 1
Power	12V - 60VDC
Dimension	122 x 120 mm
Memory	Onboard DDR4 memory, Max 16GB Single Channel: 4GB Dual Channel: 8GB, 16GB
Storage	SATA3 (6Gb/s) x 3: a.SATA connector x 1 b. M.2 2280 SATA option (auto detect) x 1 c. minicard mSATA option (auto detect) x 1
Display Interface	HDMI2.0 x 1 DP1.2 x 1 eDP x 1 CEC support with STM32 on HDMI x 1
Ethernet	i7/i5 SKU LAN (i210 AT) x 1, LAN (i219 LM) x 1 i3/Celeron® LAN (i210 AT) x 1, LAN (i219 V) x 1
OS Support	Win 10 Linux Ubuntu 18.04 with Kernel 5.0 Linux Yocto 2.7 with Kernel 4.19
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Operation Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC class A, RoHS Compliant, REACH

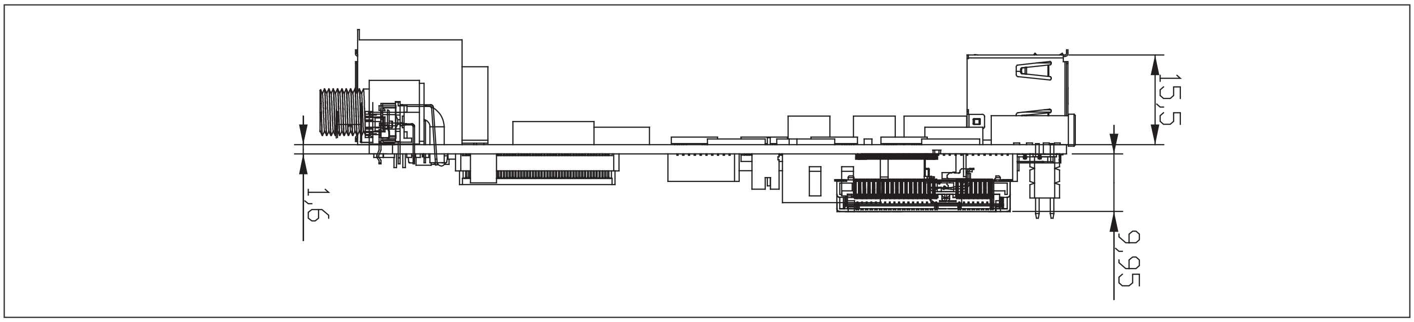
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part number	CPU	RAM	Storage	LAN	USB	RS-232/422/485	Expansion Slot	Power	Operation Temp.
UPX-WHLI7-A20-16064	Core I7-8665UE	16GB	64GB	GbE x 2	USB 3.2 Gen 2 x 4, USB 2.0 x 1	2	Mini card x 1, M.2 2280 B + M key x 1, M.2 2230 E key x 1	12-60V	32°F ~140°F (0°C ~ 60°C)
UPX-WHLI5-A20-08064	Core I5-8365UE	8GB	64GB	GbE x 2	USB 3.2 Gen 2 x 4, USB 2.0 x 1	2	Mini card x 1, M.2 2280 B + M key x 1, M.2 2230 E key x 1	12-60V	32°F ~140°F (0°C ~ 60°C)
UPX-WHLI3-A20-08064	Core I3-8145UE	8GB	64GB	GbE x 2	USB 3.2 Gen 2 x 4, USB 2.0 x 1	2	Mini card x 1, M.2 2280 B + M key x 1, M.2 2230 E key x 1	12-60V	32°F ~140°F (0°C ~ 60°C)
UPX-WHLCR-A20-04064	Celeron 4305UE	4GB	64GB	GbE x 2	USB 3.2 Gen 2 x 4, USB 2.0 x 1	2	Mini card x 1, M.2 2280 B + M key x 1, M.2 2230 E key x 1	12-60V	32°F ~140°F (0°C ~ 60°C)
UPX-WHLI7C1-A20-16064	Core I7-8565U	16GB	64GB	GbE x 2	USB 3.2 Gen 2 x 4, USB 2.0 x 1	2	Mini card x 1, M.2 2280 B + M key x 1, M.2 2230 E key x 1	12-60V	32°F ~140°F (0°C ~ 60°C)

Packing List

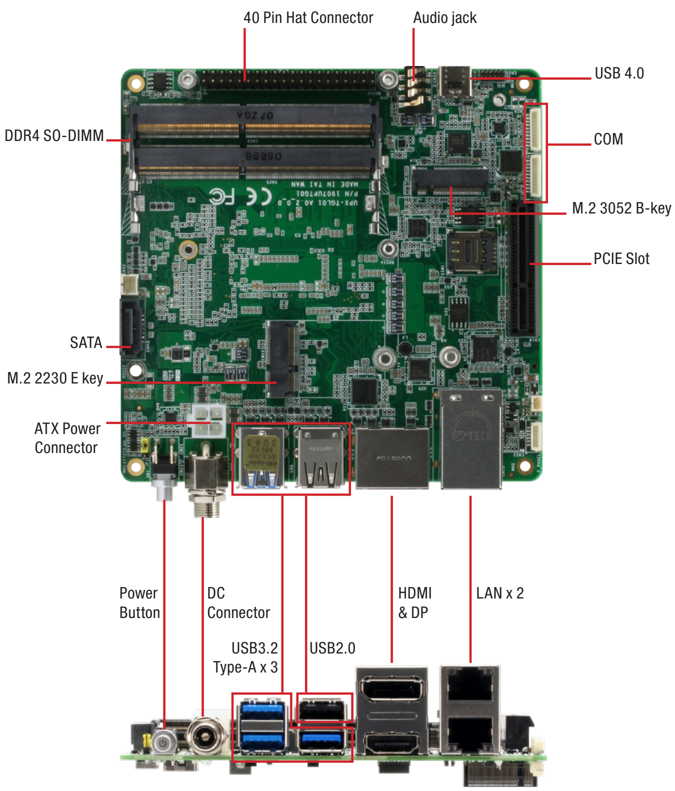
- **UPX-WHL01 with Heatsink + cooler**

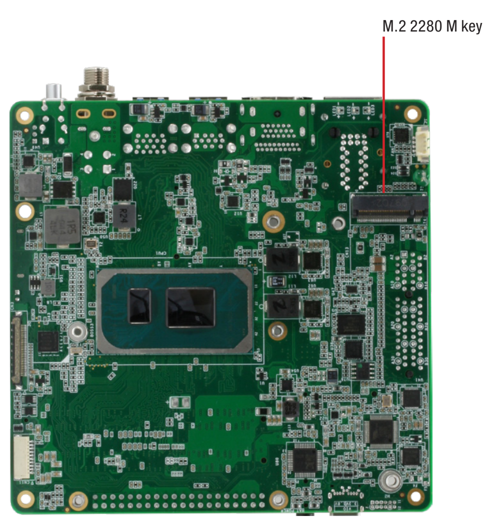
Optional Accessories

Part Number	Description
125530065A	19Vdc/3.42A.65W power adapter
1702031830	Power cord for USA
9741364A00	Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT4.0,2T2R,with 2 sets of cable & antenna (Enli,QCNFA364A)
9741159H00	(TF)Wireless LAN kit.IEEE 802.11.b/g/n.w/BT 4.0/3.0.(AzureWave.AW-NB159H).w/cable.&antenna (mini card)
PER-TAIX2-A10-2280	AI Core XM 2280.M.2 2280 B+M key card.with Dual Myriad X.15 mm heat sink with FAN
UPCP-CR-VPX3-A10-001	Vision Plus X.w/ 3x Myriad X 2485.fan heatsink.REV.A1.0
UPCP-CR-NPL4-A10-002	Net Plus.i210-IT.for UP core Plus.A1.0
UPCR-CPL3-A11-001	Connect Plus.i211-AT.for UP core Plus/UP Xtreme

UP Xtreme i11

UP Xtreme i11 developer board with 11th generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC (formerly Tiger Lake UP3)





Features

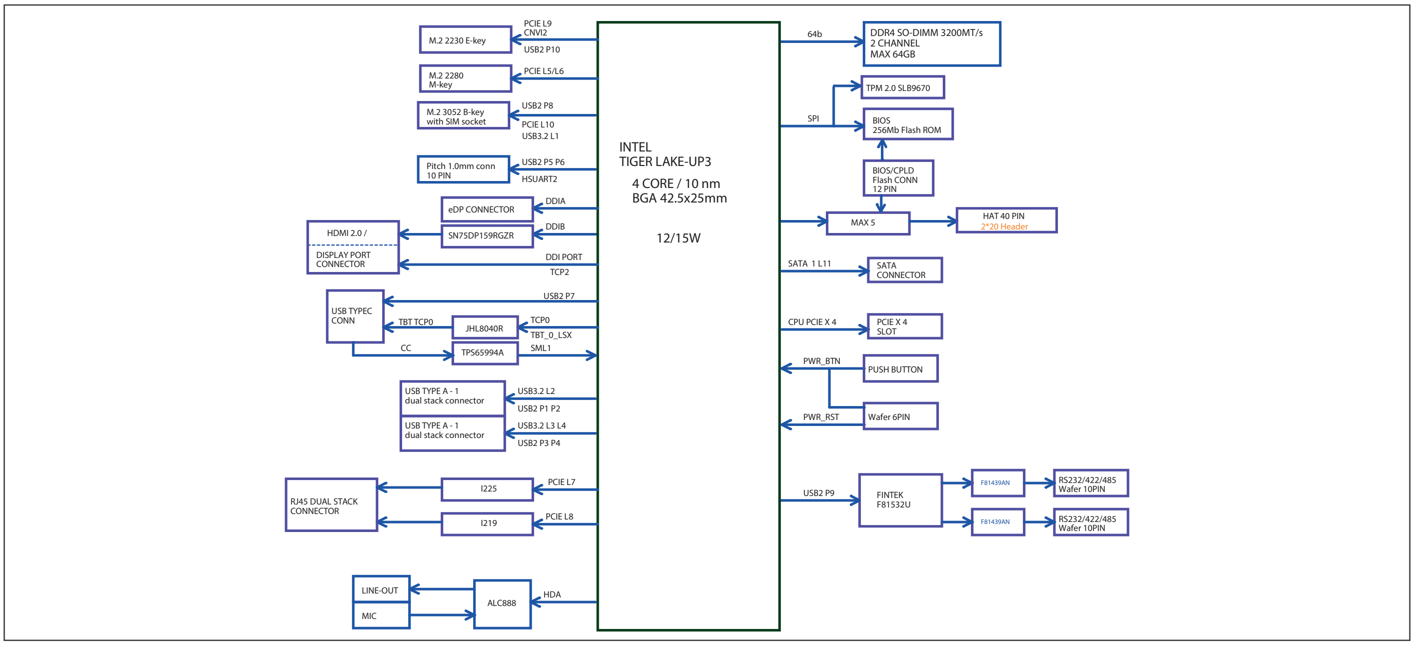
- 11th generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC (formerly Tiger Lake UP3)
- DDR4 SO-DIMM Slot x 2 (up to 64GB)
- 40-pin HAT Connector
- Support 4 independent Displays
- Support 5G module via M.2 3052 B key
- Support AI module via M.2 2280
- Support Intel AX210 WiFi 6 via M.2 2230
- Support USB 4.0
- PCIe x 4 slot

Specifications

System	
Processor	11th Gen Intel® Core™ Processor SoC Core i7-1185G7E Core i7-1185GRE Core i5-1145 G7E Core i5-1145GRE Core i3-1115GRE Celeron® 6305E
Graphics	Intel® Iris® Xe graphics
I/O	RJ45 Ethernet Connector x 2 HDMI/DP Stack Connector x 1 Power Button / LED x 1 DC Connector (Lockable) x 1 10-pin USB 2.0 x 2 / HSUART x 1 SATA Connector with Power Connector (5V, GND) x 1 4pin Fan Connector x1 6pin Front Panel Header M.2 2230 E Key x 1 M.2 2280 M Key x 1 USB 4.0 40-pin HAT Connector x 1 M.2 3052 B Key x 1 with SIM 10-pin RS232/422/485 Pin Header x 2 Alternative 4pin ATX Connector Behind DC Connector
Camera	—
USB	USB 3.2 Gen 2 Type A x 3 USB 2.0 x 1 USB4.0 x 1 Type-C
Expansion	M.2 2230 E Key x 1 M.2 2280 M Key x 1 M.2 3052 B Key x 1 40-pin HAT Connector x 1 PCIe x 4 Slot
RTC	RTC battery, CR2032 x 1
Power	12V
Dimension	120.35 x 122.5 mm
Memory	DDR4 SO-DIMM Slot x 2 (up to 64GB 3200Mhz)
Storage	SATA3 (6Gb/s) x 1: a. SATA Connector x 1 b. M.2 2280 M Key NVMe(PCIe [x2])
Display Interface	HDMI 2.0 x 1 DP 1.4 x 1 + eDP x 1, 4K at 60hz internal panel
Ethernet	Intel® i225IT x 1, Intel® i219 (vPRO) x 1
OS Support	Win 10/IOT Linux Ubuntu 20.04.02 Linux Yocto 3.1
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Operation Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC class A, RoHS Compliant, REACH

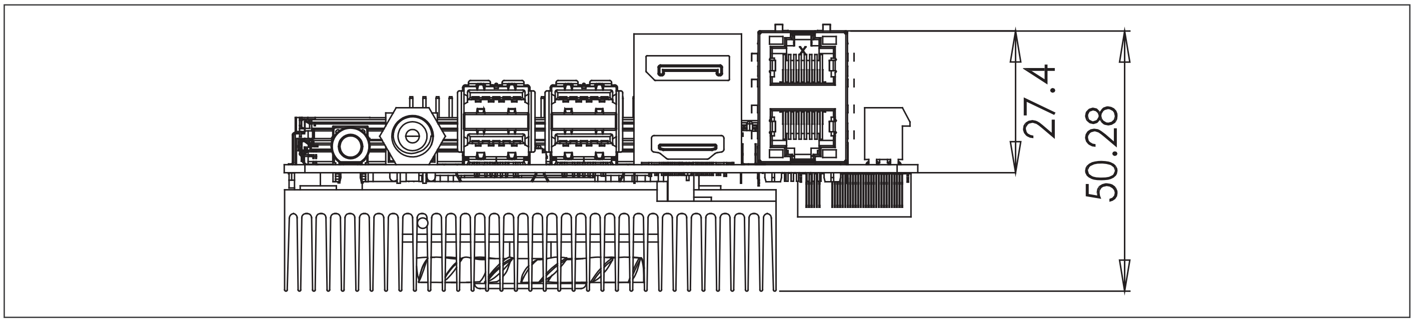
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	Core	LAN	Memory	USB	RS-232/ 422/485	Expansion Slot	Display	Power	Operation Temp
UPX-TGLI7-A10-0000	Intel Core i7-1185GRE	4	GbE x 2 (Intel i225 IT up to 2.5Gbps, Intel i219 up to 1Gbps)	SO-DIMM (Up to 3200Mhz, 64GB)	USB 3.2 Gen 2 x 3 USB 2.0 x 1,USB4.0 x 1	2	M.2 2280 M key x 1, M.2 2230 E key x 1, M.2 3052 B key x 1, 40pin HAT x 1, SATA 3 x 1, PCle 4.0 x 1	HDMI, DP, eDP, DP via USB type C	12V	32°F ~140°F (0°C ~ 60°C)
UPX-TGLI5-A10-0000	Intel Core i5-1145GRE	4	GbE x 2 (Intel i225 IT up to 2.5Gbps, Intel i219 up to 1Gbps)	SO-DIMM (Up to 3200Mhz, 64GB)	USB 3.2 Gen 2 x 3 USB 2.0 x 1, USB4.0 x 1	2	M.2 2280 M key x 1, M.2 2230 E key x 1, M.2 3052 B key x 1, 40pin HAT x 1, SATA 3 x 1, PCle 4.0 x 1	HDMI, DP, eDP, DP via USB type C	12V	32°F ~140°F (0°C ~ 60°C)
UPX-TGLI3-A10-0000	Intel Core i3-1115GRE	2	GbE x 2 (Intel i225 IT up to 2.5Gbps, Intel i219 up to 1Gbps)	SO-DIMM (Up to 3200Mhz, 64GB)	USB 3.2 Gen 2 x 3 USB 2.0 x 1, USB4.0 x 1	2	M.2 2280 M key x 1, M.2 2230 E key x 1, M.2 3052 B key x 1, 40pin HAT x 1, SATA 3 x 1, PCle 4.0 x 1	HDMI, DP, eDP, DP via USB type C	12V	32°F ~140°F (0°C ~ 60°C)
UPX-TGLCR-A10-0000	Intel Celeron® 6305E	2	GbE x 2 (Intel i225 IT up to 2.5Gbps, Intel i219 up to 1Gbps)	SO-DIMM (Up to 3200Mhz, 64GB)	USB 3.2 Gen 2 x 3 USB 2.0 x 1, USB4.0 x 1	2	M.2 2280 M key x 1, M.2 2230 E key x 1, M.2 3052 B key x 1, 40pin HAT x 1, SATA 3 x 1, PCle 4.0 x 1	HDMI, DP, eDP, DP via USB type C	12V	32°F ~140°F (0°C ~ 60°C)
UPX-TGLI7G7E-A10-0000	Intel Core I7-1185G7E	4	GbE x 2 (Intel i225 IT up to 2.5Gbps, Intel i219 up to 1Gbps)	SO-DIMM (Up to 3200Mhz, 64GB)	USB 3.2 Gen 2 x 3 USB 2.0 x 1, USB4.0 x 1	2	M.2 2280 M key x 1, M.2 2230 E key x 1, M.2 3052 B key x 1, 40pin HAT x 1, SATA 3 x 1, PCle 4.0 x 1	HDMI, DP, eDP, DP via USB type C	12V	32°F ~140°F (0°C ~ 60°C)
UPX-TGLI5G7E-A10-0000	Intel Core I5-1145G7E	4	GbE x 2 (Intel i225 IT up to 2.5Gbps, Intel i219 up to 1Gbps)	SO-DIMM (Up to 3200Mhz, 64GB)	USB 3.2 Gen 2 x 3 USB 2.0 x 1, USB4.0 x 1	2	M.2 2280 M key x 1, M.2 2230 E key x 1, M.2 3052 B key x 1, 40pin HAT x 1, SATA 3 x 1, PCle 4.0 x 1	HDMI, DP, eDP, DP via USB type C	12V	32°F ~140°F (0°C ~ 60°C)

Packing List

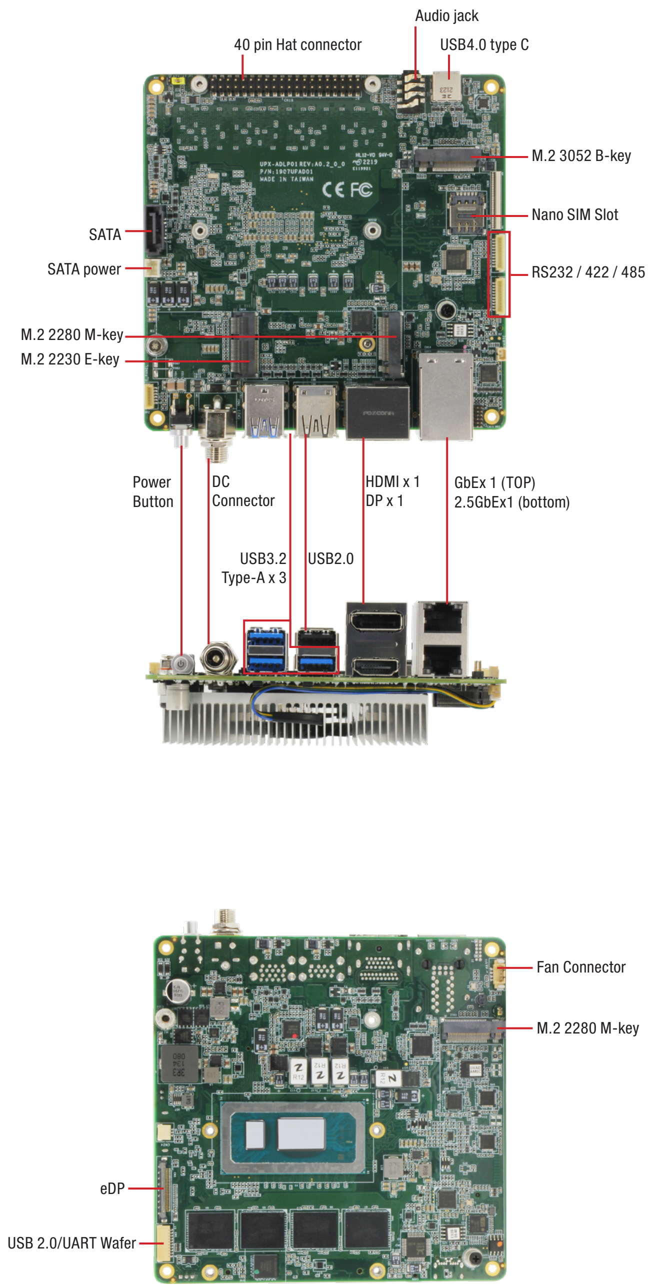
- UP Xtreme i11 with heatsink + cooler

Optional Accessories

Part Number	Description
1255X00032	(TF)AC/DC Adapter.Input AC.100~240V.Output DC.12V.MAX 72W.6.0A.180D.W/ LOCK.EDAC.EA10681U(120)
1255300960	(TF)Power Adapter.100-240VAC~50/60Hz.12V/8A.96W.DC jack W/lock.FSP. FSP096-AHAN3/9NA0961403 *Use this adapter if select AI Core XM
1702031802	(TF)POWER CORD.3P-125V 10A 180D.1.8M.USA.FANJET.YP12/YC-12 (for USA)
1702031803	(TF)POWER CORD.3P-250V 10A 180D.1.8M.VDE.FAN-JET.YP-22/YC-12 (for EU)
170203180E	(TF)Power cord.3P.125V/7A.1.8M.PSE YP12/YC12 Certificat (for Japan)
9741364A00	Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT4.0,2T2R,with 2 sets of cable & antenna (Enli,QCNFA364A)
9651926001	(TF).M.2 2230 WiFi Kit.802.11ac.2.4G/5G,W/BT Intel.9260.NGWG.NV,958867 w/2 cable & antenna
1702150155	Power Cable.15P SATA(F).2P 2.0mm, Housing(PH).15cm
1700070200	SATA CABLE.7P 180D(F) w/lock.to 7P 90D(F) w/o, lock SATA.20cm

UP Xtreme i12

UP Xtreme i12 developer board with 12th generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC (Alder Lake-P)



Features

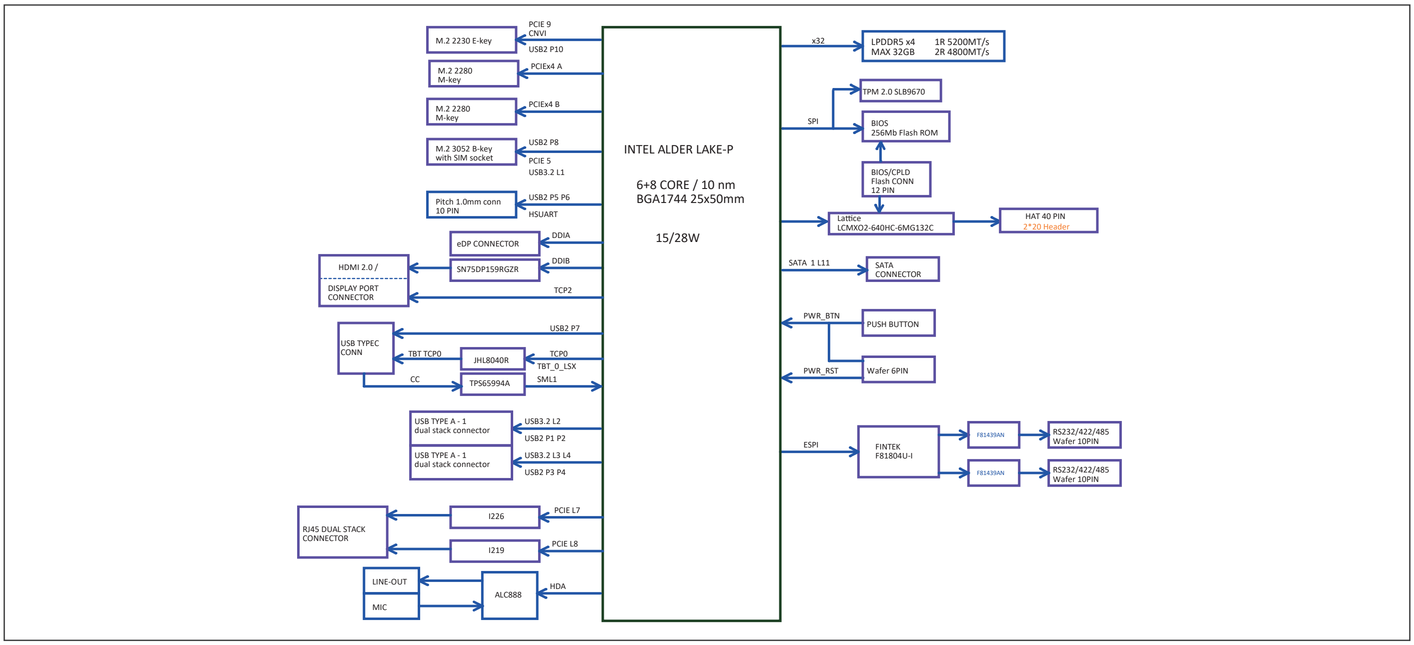
- 12th generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC
- On board Dual Channel LPDDR5 up to 32GB
- Support 4 independent Displays up to 4K at 60Ghz
- Support 2 x M.2 2280 KEY M (PCIE Gen4)
- Support 5G via M.2 3052
- Support Intel AX210 WiFi 6
- TPM2.0
- 40pin HAT connector
- USB4.0 type C
- Up to 2.5Gbps LAN speed

Specifications

System	
Processor	12th Gen Intel® Core™ Processor SoC Core i7-1270PE Core i5-1250PE Core i3-1220PE Celeron® 7305E
Graphics	Intel® Iris® Xe graphics
Memory	Up to 32GB on board LPDDR5 4800MHz (Dual Channel)
Storage	M.2 2280 (PCIe Gen4.0 x 4) M-key x 2 SATA3 x 1
I/O	10-pin USB 2.0 x 2 / HSUART x 1 4pin Fan Connector x1 6pin Front Panel Header x 1 10-pin RS232/422/485 Pin Header x 2 DC Connector x 1 Power Button/LED x 1 Audio Jack x 1 (Mic-in, Line out) RJ45 x 2
Camera	—
USB	USB 2.0 x 2 (from wafer x 1), USB2.0 Type A x 1 USB 3.2 Gen 2 Type A x 3 USB4.0 Type C x 1
Expansion	40 pin GPIO x 1 M.2 2230 E-key x 1 M.2 2280 (PCIe Gen4.0 x 4) M-key x 2 SATA3 x 1 M.2 3052 B-key x 1 Nano SIM slot x 1
Display Interface	HDMI 2.0b x 1 DP 1.4a x 1 DP 1.4b via USB type C x 1 eDP1.4b x 1
Ethernet	Intel® i226IT (TSN) x 1, Intel® i219 (vPRO) x 1
Security	TPM 2.0
RTC	Yes
OS Support	Windows* 10 Enterprise 2021 LTSC Ubuntu 22.04 Yocto (TBD)
Power Requirement	
Power	12-36V DC input (AT/ATX mode)
POWER SUPPLY TYPE	Lockable
POWER CONSUMPTION (TYPICAL)	Intel® Core™ i7-1270PE, LPDDR5 4800MHz 16GB, 5.86A@+ 12V (Typical) Intel® Core™ i7-1270PE, LPDDR5 4800MHz 16GB, 8.05A@+ 12V (Max)
Mechanical	
Dimension	4.74" x 4.82" (120.35 x 122.5 mm)
Net Weight	0.88lb (0.4kg)
Gross Weight	1.32lb (0.6kg)
Environment	
Operating Temperature	With Heatsink: 32°F ~ 140°F (0°C ~ 60°) / 0.5 airflow
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	362,068 Hours
Certification	CE/FCC Class A, RoHS Compliant, REACH

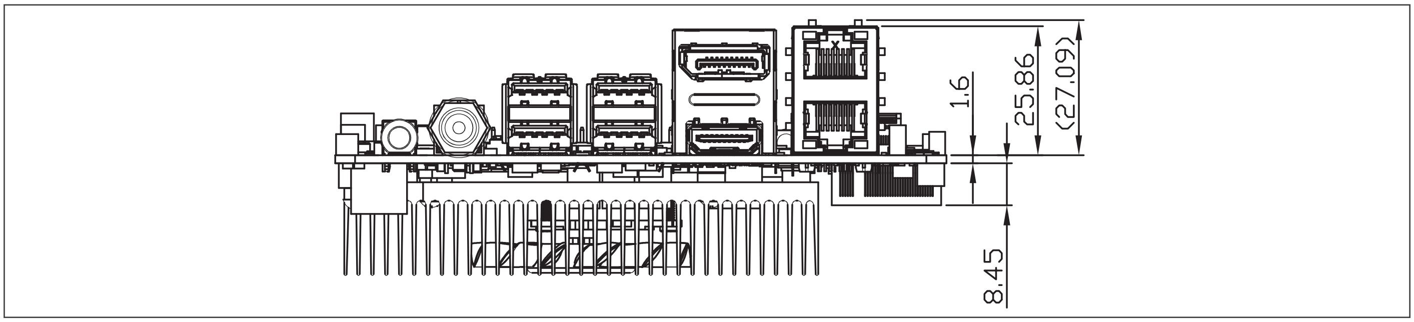
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	Core	LAN	Memory	USB	RS-232/ 422/485	Expansion Slot	Display	Power	Operation Temp
UPX-ADLPI7-A10-1600	Intel Core i7-1270PE	4	GbE x 2 (Intel i226 IT up to 2.5Gbps, Intel i219 up to 1Gbps)	16GB	USB 3.2 Gen 2 Type A x 3 USB 2.0 Type A x 1 USB 2.0 x 2 via wafer USB4.0 Type C x 1	2	M.2 2280 M key x 2, M.2 2230 E key x 1 M.2 3052 B key x 1, 40pin HAT x 1, SATA 3 x 1	HDMI, DP, eDP, DP via USB type C	12-36V	32°F ~140°F (0°C ~ 60°C)
UPX-ADLPI5-A10-1600	Intel Core i5-1250PE	4	GbE x 2 (Intel i226 IT up to 2.5Gbps, Intel i219 up to 1Gbps)	16GB	USB 3.2 Gen 2 Type A x 3 USB 2.0 Type A x 1 USB 2.0 x 2 via wafer USB4.0 Type C x 1	2	M.2 2280 M key x 2, M.2 2230 E key x 1 M.2 3052 B key x 1, 40pin HAT x 1, SATA 3 x 1	HDMI, DP, eDP, DP via USB type C	12-36V	32°F ~140°F (0°C ~ 60°C)
UPX-ADLPI3-A10-0800	Intel Core i3-1220PE	2	GbE x 2 (Intel i226 IT up to 2.5Gbps, Intel i219 up to 1Gbps)	8GB	USB 3.2 Gen 2 Type A x 3 USB 2.0 Type A x 1 USB 2.0 x 2 via wafer USB4.0 Type C x 1	2	M.2 2280 M key x 2, M.2 2230 E key x 1 M.2 3052 B key x 1, 40pin HAT x 1, SATA 3 x 1	HDMI, DP, eDP, DP via USB type C	12-36V	32°F ~140°F (0°C ~ 60°C)
UPX-ADLPCR-A10-0800	Intel Celeron® 7305E	2	GbE x 2 (Intel i226 IT up to 2.5Gbps, Intel i219 up to 1Gbps)	8GB	USB 3.2 Gen 2 Type A x 3 USB 2.0 Type A x 1 USB 2.0 x 2 via wafer USB4.0 Type C x 1	2	M.2 2280 M key x 2, M.2 2230 E key x 1 M.2 3052 B key x 1, 40pin HAT x 1, SATA 3 x 1	HDMI, DP, eDP, DP via USB type C	12-36V	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
9741364A00	Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT4.0,2T2R,with 2 sets of cable & antenna (Enli,QCNFA364A)
9651926001	(TF).M.2 2230 WiFi Kit.802.11ac.2.4G/5G,W/BT Intel.9260.NGWG.NV,958867 w/2 cable & antenna
1702150155	Power Cable.15P SATA(F).2P 2.0mm, Housing(PH).15cm
1700070200	SATA CABLE.7P 180D(F) w/lock.to 7P 90D(F) w/o, lock SATA.20cm
1255X00071	(TF)AC/DC Adapter.Input 100V~240V.output DC 19V.120W.6.32A.DC JACK w/Lock.FSP. FSP120-ABAN3/9NA1208548
1702031802	(TF)POWER CORD.3P-125V 10A 180D.1.8M.USA.FANJET.YP12/YC-12
1702031803	(TF)POWER CORD.3P-250V 10A 180D.1.8M.VDE.FAN-JET.YP-22/YC-12
170203180E	(TF)Power cord.3P.125V/7A.1.8M.PSE YP12/YC12 Certificat
9651210000	Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT5.2,2.4G/5G/6G,with 2 sets of cable & antenna (Intel AX210)

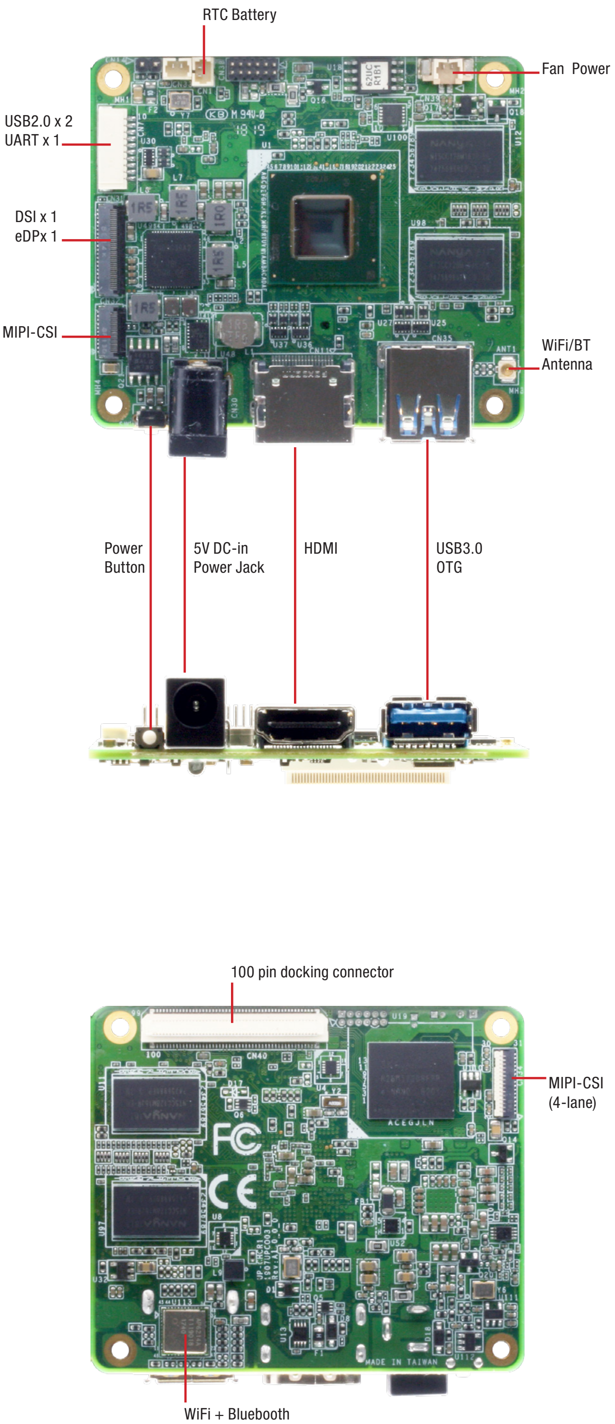
Packing List

- UP Xtreme i12 with active heatsink

Note: All specifications are subject to change without notice.

UP Core

UP Core Developer Board with Intel® Atom® x5-Z8350 Processor SoC



Features

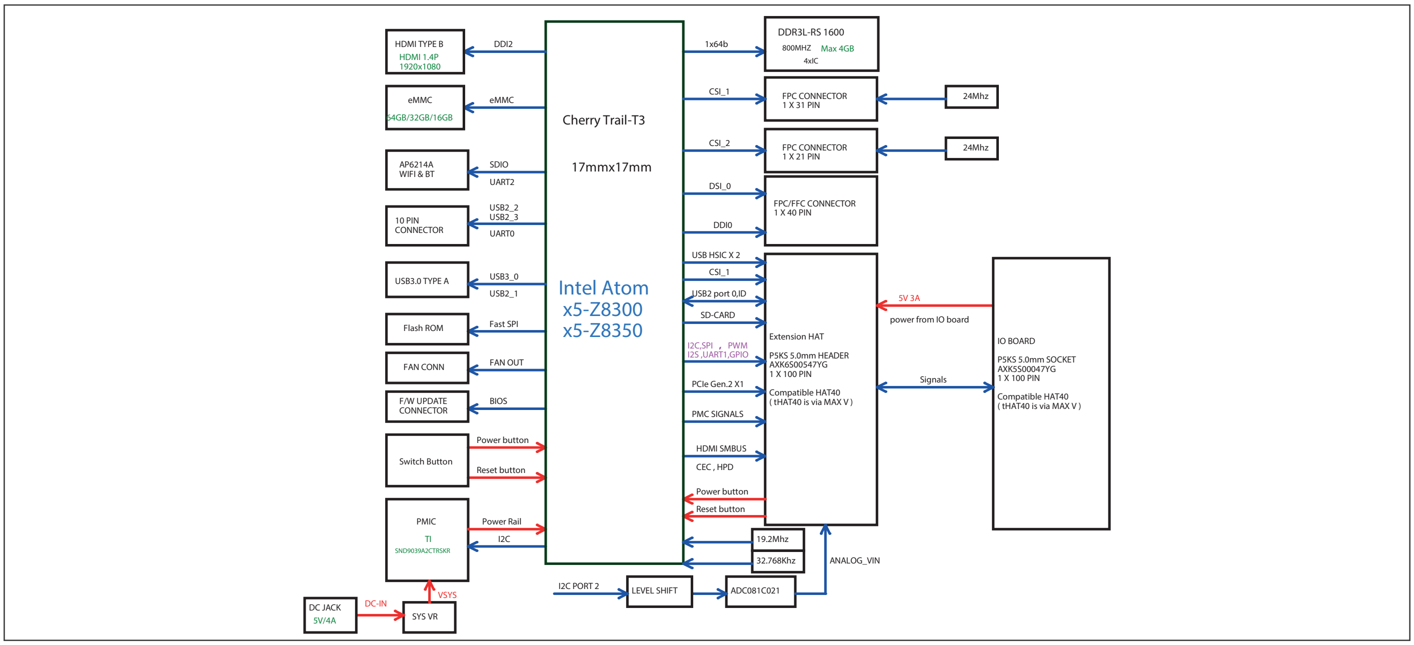
- Intel® Atom® x5-Z8350 SoC
- Onboard DDR3L Memory up to 4GB
- Onboard eMMC Storage up to 64GB
- DSI/eDP x 1, HDMI x 1
- MIPI-CSI x 2
- 100pin docking connector
- WiFi+ Bluetooth
- USB3.0 x 1

Specifications

System	
Processor	Intel® Atom® x5-Z8350 Processor SoC
Graphics	Intel® HD 400 Graphics
I/O	Full eDP x 1 HDMI x 1 Audio via HDMI and I2C (from docking)
Camera	MIPI-CSI (2 Lane) MIPI-CSI (4 Lane)
USB	USB 3.0 Host x 1 USB 2.0 pin header x 2
Expansion	100 pin docking connector
RTC	Yes
Power	5V DC-in @ 4A 5.5/2.1mm jack
Dimension	56.5 mm × 66 mm
Memory	2GB/ 4GB DDR3L-1600
Storage	eMMC 16GB / 32GB/ 64GB
Display Interface	DSI/eDP x 1
Ethernet	—
OS Support	Win 10 Linux (ubilinux, Ubuntu, Yocto) Android Marshmallow
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Operation Humidity	10% ~ 80% relative humidity, non-condensing
Certification	CE/FCC Class A, RoHS Compliant, REACH

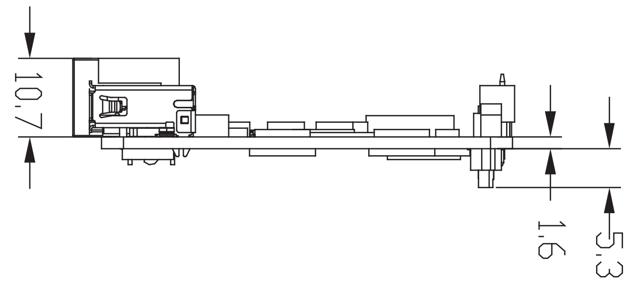
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

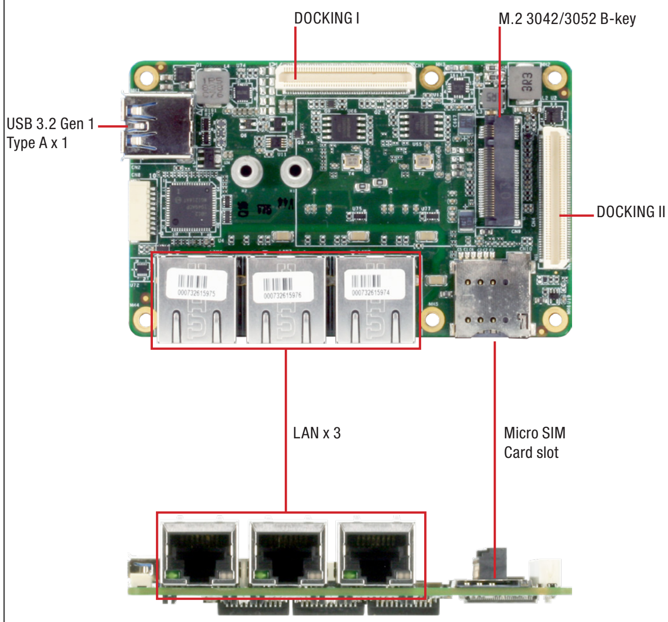
Part number	Description
UPC-CHT01-A20-0116-A11	UP Core with z8350 CPU, 1GB RAM + 16GB eMMC, passive heatsink, WIFI 802.11 b/g/n + Bluetooth 4.2 on board powered by AMPAK AP6214A
UPC-CHT01-A20-0216-A11	UP Core with z8350 CPU, 2GB RAM + 16GB eMMC, passive heatsink, WIFI 802.11 b/g/n + Bluetooth 4.2 on board powered by AMPAK AP6214A
UPC-CHT01-A20-0232-A11	UP Core with z8350 CPU, 2GB RAM + 32GB eMMC, passive heatsink, WIFI 802.11 b/g/n + Bluetooth 4.2 on board powered by AMPAK AP6214A
UPC-CHT01-A20-0432-A11	UP Core with z8350 CPU,4GB RAM + 32GB eMMC, passive heatsink, WIFI 802.11 b/g/n + Bluetooth 4.2 on board powered by AMPAK AP6214A
UPC-CHT01-A20-0464-A11	UP Core with z8350 CPU, 4GB RAM + 64GB eMMC, passive heatsink, WIFI 802.11 b/g/n + Bluetooth 4.2 on board powered by AMPAK AP6214A

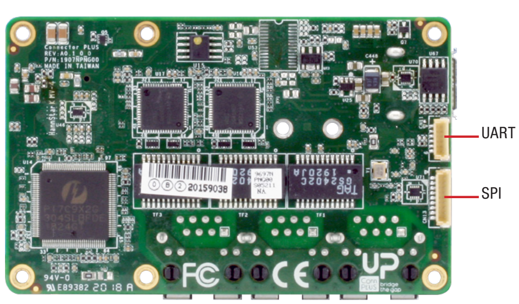
Packing List

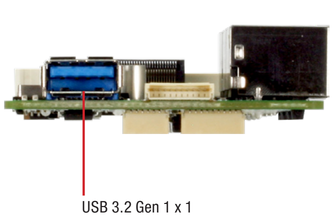
- **UPC-CHT01 with Heatsink**

Connect Plus

Expansion board with 3 x Gigabit LAN powered by Intel® i211-AT/i210-IT for UP Core Plus, Up Xtreme







Features

- Gigabit LAN x 3
- Intel® I211-AT (optional with I210-IT for wide temperature) x 3
- USB 3.2 Gen 1 Type A x 1
- Windows® 10, Linux (ubilinux, Ubuntu, Yocto), Android-IA 9.0
- UART x 1
- SPI x 1
- M.2 3042/3052 B-key x 1

Specifications

System	
VPU	—
Ethernet	Intel I211-AT x 3 (A10-001) Intel I210-IT for wide temperature x 3 (A10-002)
Power Requirement	12V5A
Power Supply Type	12VDC from M/B
Power Consumption (Typical)	Max 13.5W w/o 5G module
Dimensions (L x W)	3.54" x 2.2" (90 mm x 56 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Operation Humidity	10 ~ 80% relative humidity, non-condensing
Certification	CE/FCC Class A
OS Support	Microsoft Windows 10 Linux: ubilinux, Ubuntu, Yocto Android-IA 9.0
I/O	
Ethernet	001: Intel® I211-AT x 3 002: Intel® I210-IT for wide temperature
USB	USB 3.0 Type A x 1
SATA	—
Expansion Slot	M.2 3042/3052 B-key DOCKING I DOCKING II UART x 1 SPI x 1

Packing List

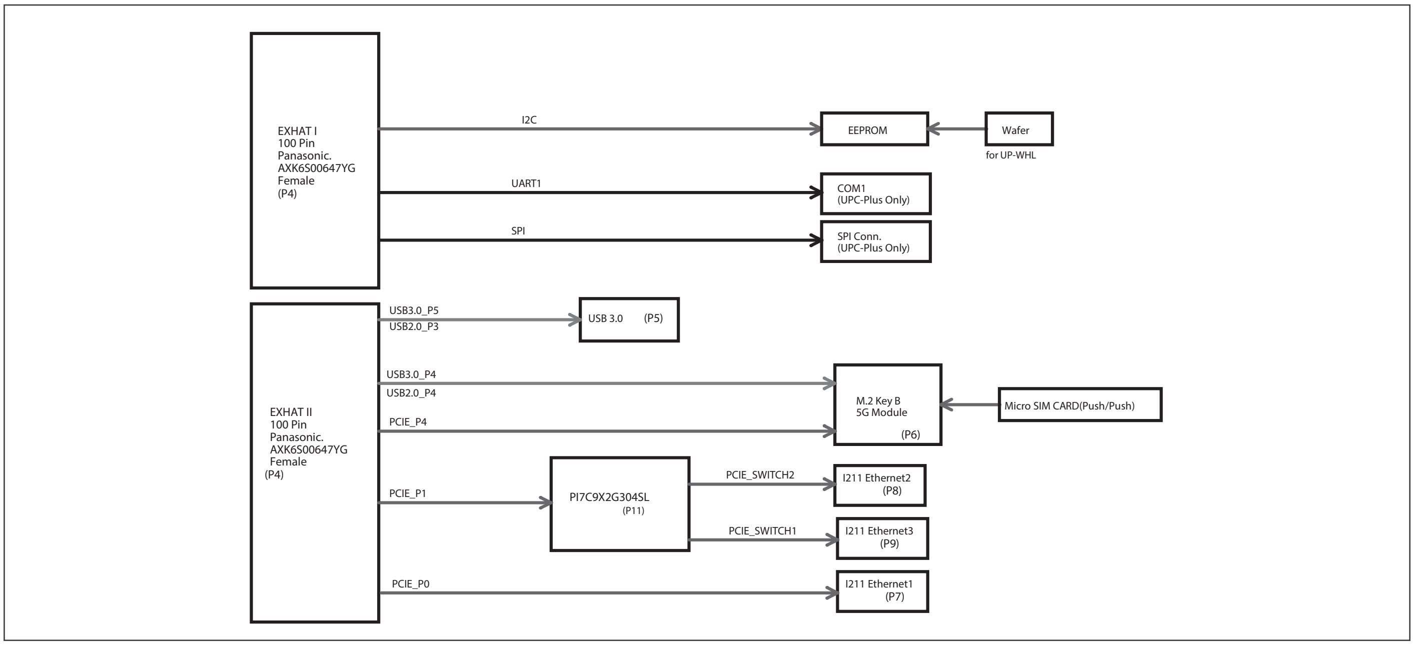
- Adapter Board i x 1
- Adapter Board ii x 1
- Standoff x 12
- UP Connector Plus x 1

Ordering Information

Part Number	Description
UPCR-CPL3-A11-001	Connect Plus.i211-AT.for UP core Plus/UP Xtreme
UPCR-CPL3-A11-002	Connect Plus.i210-IT.for UP core Plus/UP Xtreme, A.1

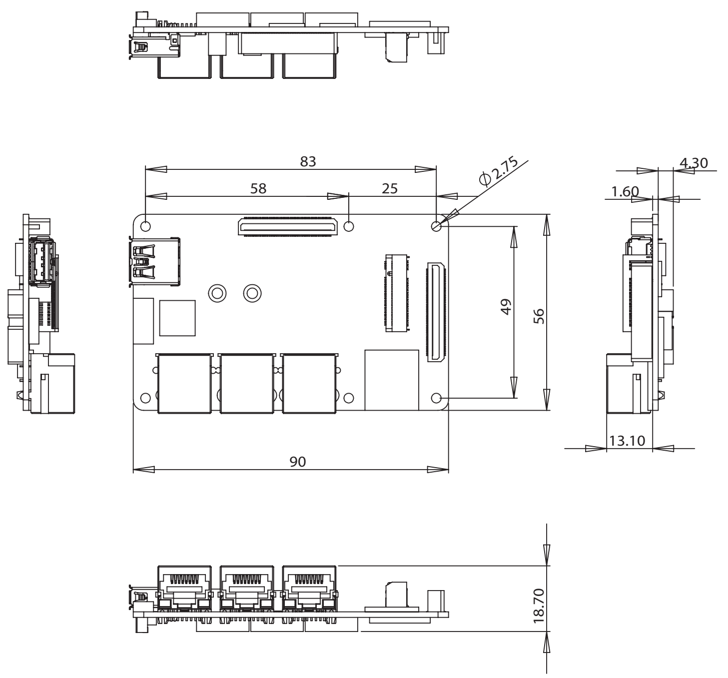
Note: All specifications are subject to change without notice.

Block Diagram



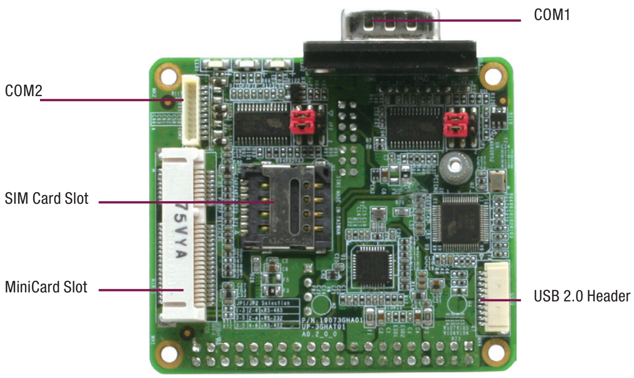
Dimension

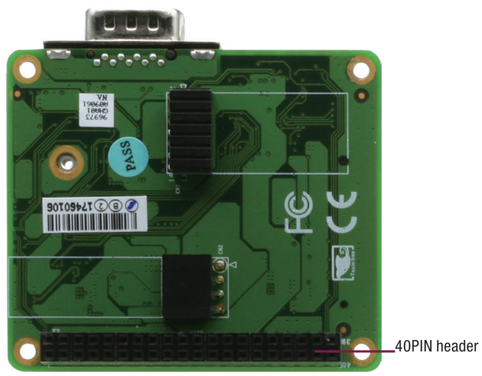
Unit: mm



UP-3G HAT

RS-232/422/485 x 2, Mini Card x 1, uSIM Card Reader x 1





Features

- **RS-232/422/485 x 2**
- **Minicard x 1, uSIM Card Reader x 1**
- **HAT 40-pin Header x 1**
- **WiFi Module Header for x 1**

CE FC

Specifications

System	
IC	2-CH FULL-SPEED USB UART x 1 USB 2.0 Hub x 1 RS-232/RS-485/RS-422 transceiver x 2
I/O Placements	
External Ports	RS-232/422/485 Connector (DB9) x 1
Internal connector	RS-232 wafer (RS-232/422/485) x 1 USB wafer x 1 Minicard x 1 uSIM Card Reader x 1 HAT 40 GPIO male (4x GPIO, 3.3V, 5V, GND) x 1 WIFI LED x 1 3G LED x 1 Power LED x 1
Others	
Form Factor	2.56" x 2.2" (65 mm × 56 mm)
Certification	CE/FCC Class A
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Operating Humidity	10%~80% RH, non-condensing
Optional	
WiFi Module	UP-WIFIMD-A20-7001 (WiFi module: 7M02) UP-WIFIMD-A20-4001 (WiFi module: 4M02)
BT Module	UP-BTMD-A20-0001
3G Module	9741UC20G0 (3G module: UC20-G)

Packing List

- **UP-3G HAT**
- **1700100061**
  USB Y Cable.10P 1.0mm HSG(F).10P 1.0mm HSG(F).6cm

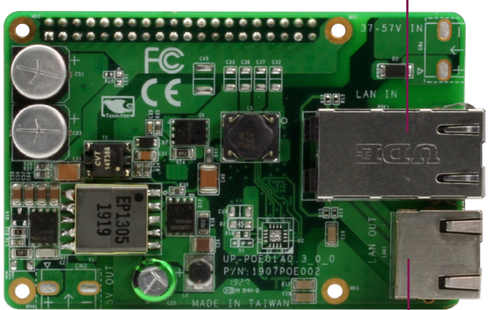
Ordering Information

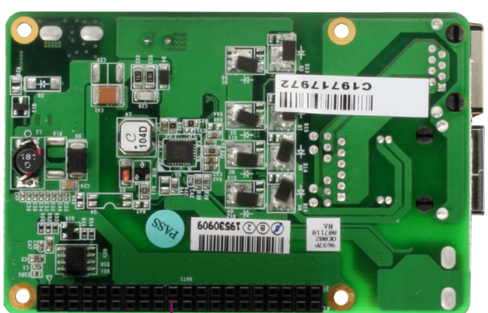
Part Number	**Description**
UP-3GHAT-A20-0001	3G HAT

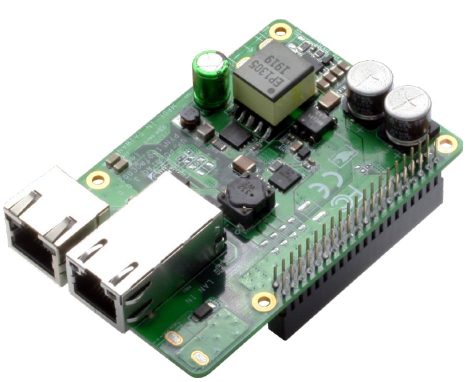
Note: All specifications are subject to change without notice.

UP-POE HAT

PoE Ideal Diode Bridge & PD Forward/Flyback Controller







Features

- IEEE802.3 AT Standard
- Max 25W Power Supply
- 10/100/1000 Mbps LAN
- RJ45 Input x 1
- RJ45 Output x 1

CE FC

Specifications

System	
IC	LT4321I (PoE Ideal Diode Bridge Controller) x 1 LT4276B (PD Forward / Flyback Controller) x 1
I/O Placements	
External Ports	RJ45 input x 1 RJ45 output x 1
Internal connector	HAT 40 GPIO male (5V, GND) x 1
Others	
Form Factor	3.37" x 2.22" x 0.98" (85.6 mm x 56.5 mm x 25 mm)
Certification	CE / FCC Class A
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
OS Support	No OS limitation

Packing List

- LAN cable
- UP-POE HAT

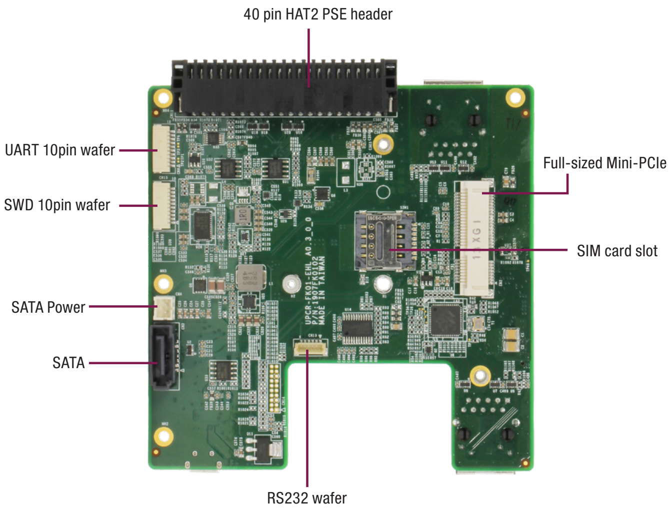
Ordering Information

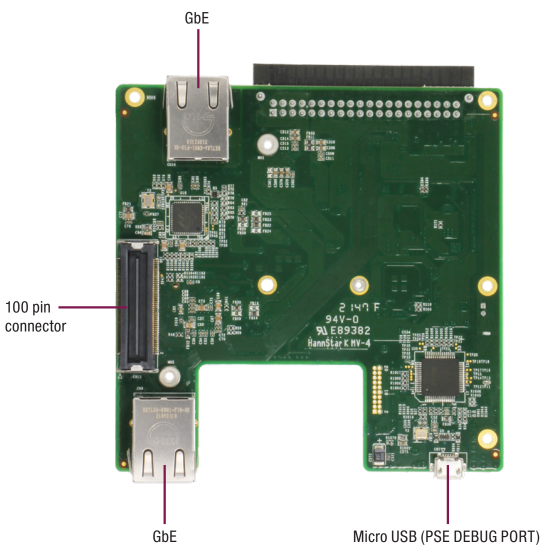
Part Number	Description
UP-POE-A20-0001	POE board

UP Squared 6000 PSE Carrier Board

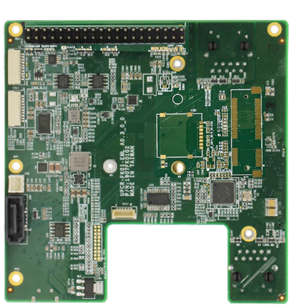
UP Squared 6000 PSE Carrier Board

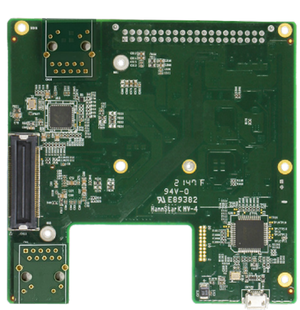
UPN-EHLCB-A10-001





UPN-EHLCB-A10-002
(w/o GbE*2. mPCIe slot & SIM)





Features

- Gbe via Marvell Alaska x 2 (limited in full function sku)
- Micro USB (PSE DEBUG PORT) x 1
- 40 pin HAT2 PSE header x 1
- SATA x 1
- Full-sized Mini-PCIe with SIM card slot x 1 (limited in full function sku)

Specifications

System	
I/O	UPN-EHLCB-A10-001: Gbe via Marvell Alaska x 2 Micro USB (PSE DEBUG PORT) x 1 40pin HAT2 PSE header x 1 (CAN x 2, QEP x 4, I2C x 1, PWM x 4, ADC x 4) SATA with power connector x 1 100pin board-to-board high speed connector x 1 Full-sized Mini-PCIe (via USB2.0) x 1 SIM card slot x 1 SWD 10pin wafer (connect to MB) x 1 UART 10pin wafer (connect to MB) x 1 RS232 wafer x 1 UPN-EHLCB-A10-002: Micro USB (PSE DEBUG PORT) x 1 40pin HAT2 PSE header x 1 (CAN x 2, QEP x 4, I2C x 1, PWM x 4, ADC x 4) SATA with power connector x 1 100pin board-to-board high speed connector x 1 SWD 10pin wafer (connect to MB) x 1 UART 10pin wafer (connect to MB) x 1 RS232 wafer x 1
Dimension	4" x 4" (101.6mm x 101.6mm)
Net Weight	0.08 kg
Gross Weight	0.14 kg
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Operation Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A

Packing List

- UPN-EHLCB x 1
- SWD cable x 1
- UART cable x 1
- Stud x 7
- Nut x 2

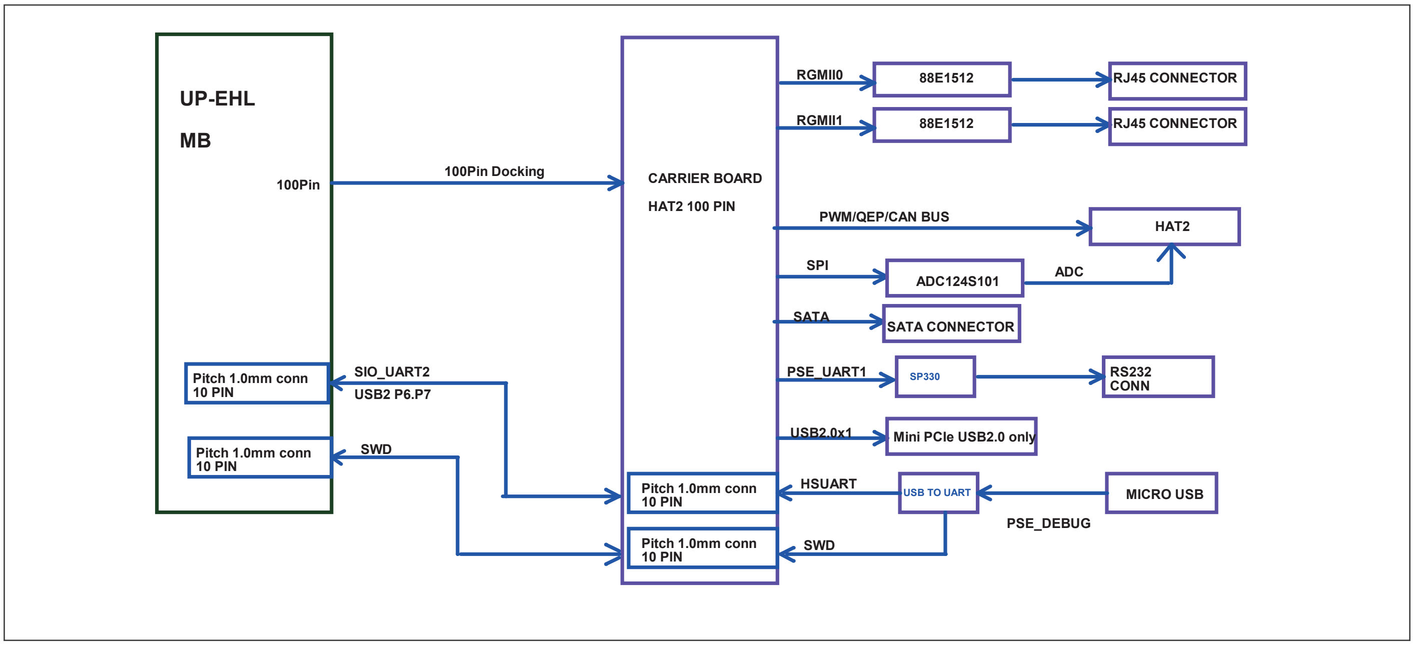
Ordering Information

Part Number	Description
UPN-EHLCB-A10-001	PSE Carrier board for UP Squared 6000. w/ GbE*2. mPCIe slot & SIM (Full function version)
UPN-EHLCB-A10-002	PSE Carrier board for UP Squared 6000. w/o GbE*2. mPCIe slot & SIM (Lite version)

Note: All specifications are subject to change without notice.

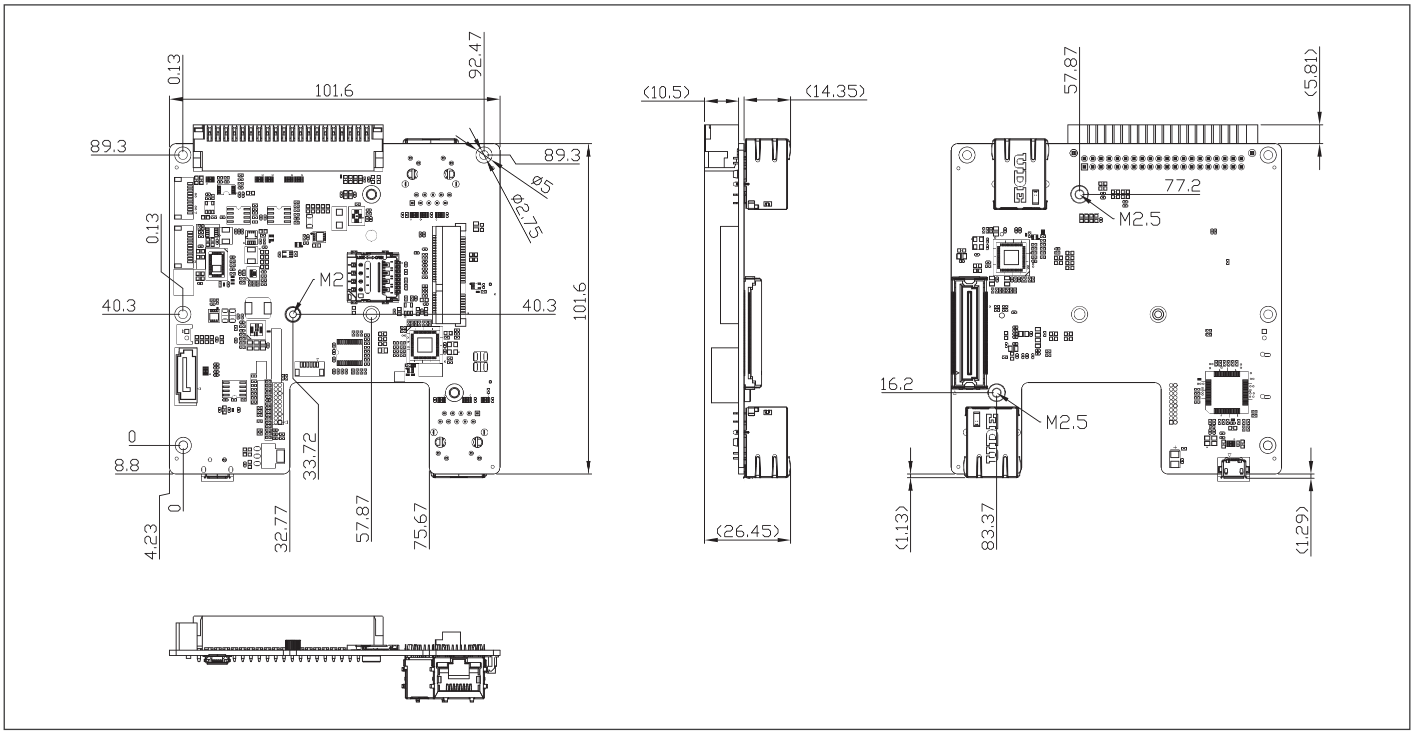
UP Squared 6000 PSE Carrier Board

Block Diagram



Dimension

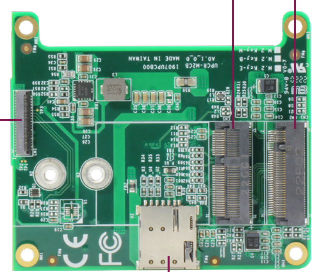
Unit: mm



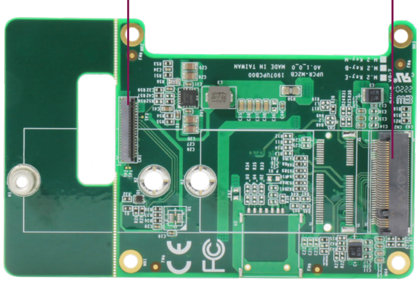
UP 4000 M.2 Plus

UP 4000 Carrier Board for M.2 2230/3042/3052/2280

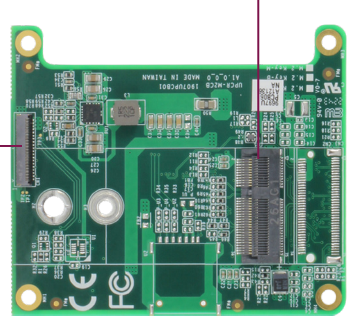
UP-APL03CB-A10-0001



UP-APL03CB-A10-0002



UP-APL03CB-A10-0003



Features

- Support Wi-Fi, BT via M.2 2230
- Support 4G via M.2 3042
- Support 5G via M.2 3052
- Support PCIe storage or AI module via M.2 2280

Specifications

System	
I/O	UP-APL03CB-A10-0001: M.2 3052/3042 B Key x1 (USB3.0) M.2 2230 E Key x1 (PCIe x1) (w/o Bluetooth) Push-push Nano SIM card x1 41pin FPC connector x1 UP-APL03CB-A10-0002: M.2 2280 M Key x1 (PCIe x1) 41pin FPC connector x1 UP-APL03CB-A10-0003: M.2 2230 E Key x1 (PCIe x1, USB 2.0 x1) 41pin FPC connector x1
Dimension	UP-APL03CB-A10-0001: 2" x 2.36" (51mm x 60mm) UP-APL03CB-A10-0002: 2" x 3.5" (51mm x 89 mm) UP-APL03CB-A10-0003: 2" x 2.36" (51mm x 60mm)
Net Weight	UP-APL03CB-A10-0001: 16g UP-APL03CB-A10-0002: 19g UP-APL03CB-A10-0003: 15g
Gross Weight	UP-APL03CB-A10-0001: 55g UP-APL03CB-A10-0002: 58g UP-APL03CB-A10-0003: 54g
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
Operation Humidity	10% ~ 80% relative humidity, non-condensing
Certification	CE/FCC Class A, RoHS Compliant

Packing List

- UP 4000 carrier board
- FPC cable
- Screws pack

Ordering Information

Part Number	Description
UP-APL03CB-A10-0001	UP 4000 carrier board kit for WiFi and 5G module
UP-APL03CB-A10-0002	UP 4000 carrier board kit for M.2 2280
UP-APL03CB-A10-0003	UP 4000 carrier board kit for WiFi and BT module

Optional Accessories

Part Number	Description
9741364A00	Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT4.0,2T2R,with 2 sets of cable & antenna (Enli,QCNFA364A)
9651926001	(TF).M.2 2230 WiFi Kit.802.11ac.2.4G/5G,W/BT Intel.9260.NGWG.NV,958867 w/2 cable & antenna

Note: All specifications are subject to change without notice.

Focus • Agility • Competitiveness

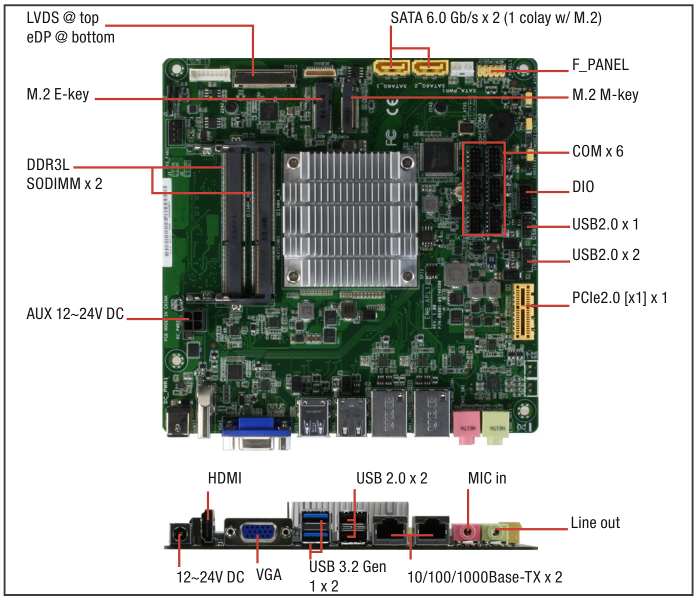
09

09

Industrial Motherboards

EMB-APL1

Mini-ITX Embedded Motherboard with Intel® N3350(DC)/N4200(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 8111H, Gigabit Ethernet x 2
- COM Port x 6 (RS-232 x 5, RS-232/422/485 x 1)
- M.2 Slot(M-key) x 1, M.2 Slot(E-key) x 1, PCIe2.0 [x1] x 1
- 12~24V DC Wide Range Voltage Power Input
- Low Profile

PCI Express Giga LAN DDR 3L LVDS USB 3.2 Gen 1 USB 2.0 HDMI 4K

Specifications

System	
Processor	N4200, (4C @ 2.50GHz CPU [Burst Mode], 750MHz GFX [Turbo], ~6W TDP) N3350, (2C @ 2.40GHz CPU [Burst Mode], 650MHz GFX [Turbo], ~6W TDP)
Chipset	Intergrated into SoC
Memory	DDR3L 1333/1600/1867MHz SODIMM x 2, max. 8GB, non-ECC, un-buffered memory
I/O Chipset	NCT6116D
Ethernet	Realtek PCIe Gb LAN 8111H x 2
Audio	Realtek® ALC897
TPM	Nuvoton NPCT652ABCYX TPM2.0 (default: No)
Expansion Slots	PCIe2.0 [x1] x 1 M.2 M key (22 x 42mm) x 1, for SATA M.2 E Key (22 x 30mm) x 1, for PCIe
BIOS	128Mbit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Chassis Fan (Fanless)
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	Three Independent Display
VGA	Up to 1920 x 1200 @60Hz
DVI	—
HDMI	Up to 3840 x 2160 @ 30Hz
Display Port	—
LVDS	Up to 1920 x 1200 @60Hz, dual-channel 18/24 bit (via PS8625) (colay with eDP)
eDP	Up to 4096 x 2160 @60Hz
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12V~24V wide-range voltage input back panel DC jack x 1; 4-pin ATX Power connector x 1
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operation Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	263,080

Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 (5 Gbps) x 2, USB 2.0 x 2
Display I/O	HDMI x 1, VGA x 1
Audio I/O	Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	—
PS/2 Port	—
Others	DC power jack x 1
Internal I/O Connectors	
Storage	SATA 6.0Gb/s x 2(1 colay with M.2 M-key), M.2 M-key (22 x 42mm) x 1
USB	USB 2.0 headers support additional 3 USB ports (2*5-pin, p=2.00mm) x 2
Display I/O	40-pin LVDS/eDP connector x 1 (default LVDS)
Audio I/O	—
Serial Port	RS-232/422/485 x 1, RS-232 x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit x 1 (In/Out programmable)
FAN	4-pin Chassis Fan x 1
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, AT/ATX mode select jumper (optional) x 1, SATA power connector x 1, M.2 E key (22 x 30mm) for PCIe x 1
OS	
OS Support	WIndows® 10 64bit, Ubuntu16.04.02/Kernel4.8.0

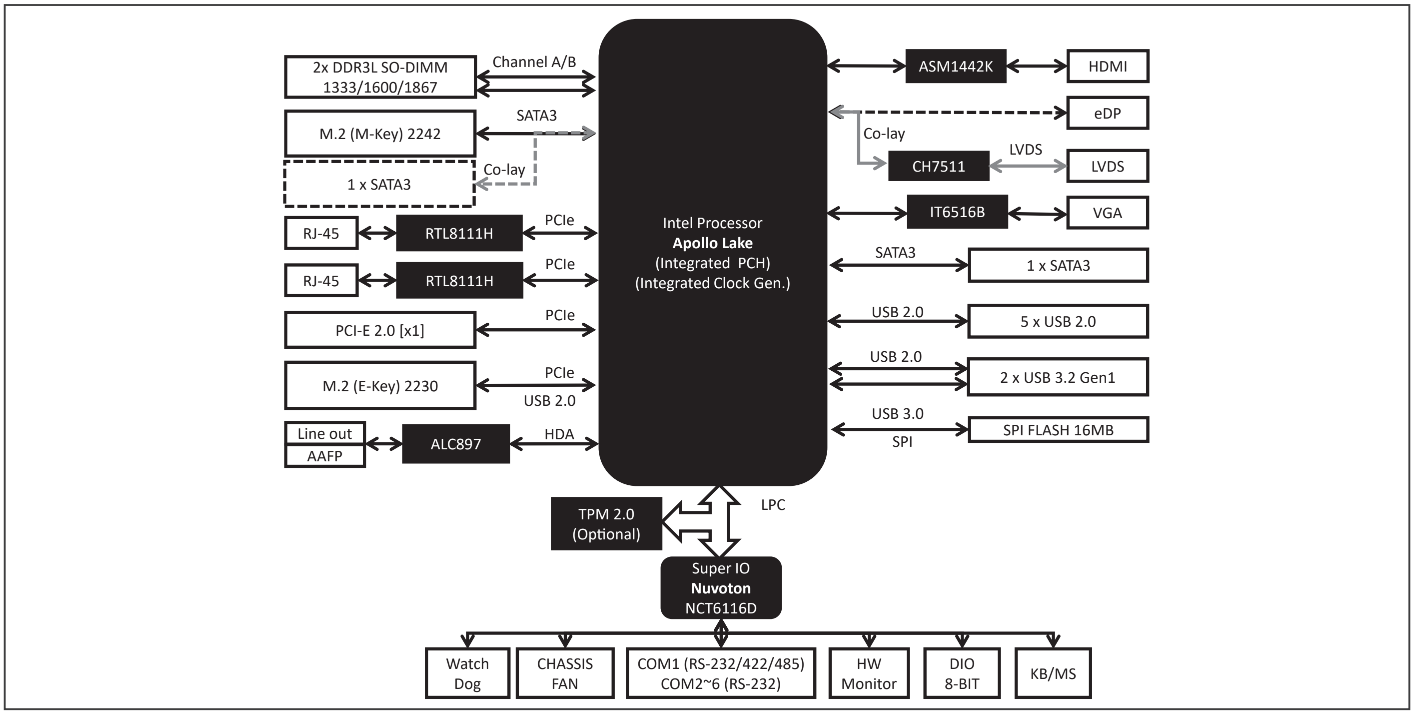
Packing List

- Heatsink
- I/O Shield
- EMB-APL1

Optional Accessories

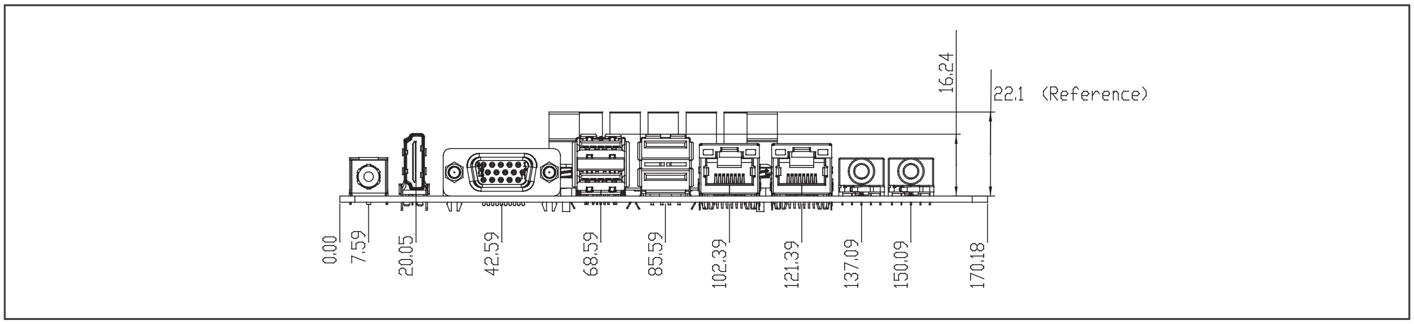
Part Number	Description
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)
1701100206	COM Cable (200MM, p=2.00mm)
1702150300	SATA Power Cable (4P, 300MM p=2.54mm)
125530060Z	Adapter.60W.180D.W/Lock.FSP060-DHAN3

Block Diagram



Dimension

Unit: mm

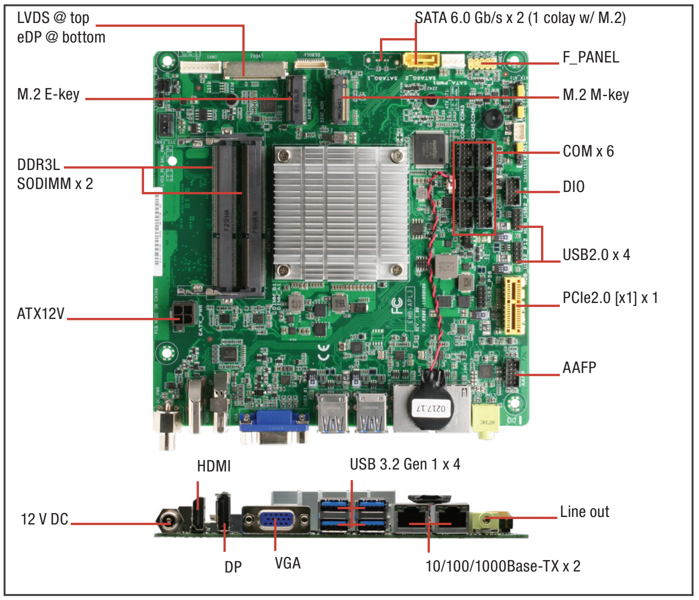


Order Information

Part Number	CPU	RAM	Fan/ Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-APL1-A11-4200-LV	N4200	SODIMM x 2	Fanless	VGA, HDMI, LVDS	SATA3 x 1, M.2(M-key)	Daul Channel 18/24 bit	GbE x 2	USB2.0 x 5, USB 3.2 Gen 1 x 2	5	1	PCIe2.0[x1] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12V-24V DC	—	32°F ~140°F (0°C ~ 60°C)
EMB-APL1-A11-3350-LV	N3350	SODIMM x 2	Fanless	VGA, HDMI, LVDS	SATA3 x 1, M.2(M-key)	Daul Channel 18/24 bit	GbE x 2	USB2.0 x 5, USB 3.2 Gen 1 x 2	5	1	PCIe2.0[x1] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12V-24V DC	—	32°F ~140°F (0°C ~ 60°C)

EMB-APL3

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



Features

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

PCI Express · Giga LAN · DDR 3L · LVDS · USB 3.2 Gen 1 · USB 2.0 · HDMI · 4K · CE · FC

Specifications

System	
Processor	N4200, (4C @ 2.50GHz CPU [Burst Mode] 750MHz GFX [Turbo], ~6W TDP) N3350, (2C @ 2.40GHz CPU [Burst Mode], 650MHz GFX [Turbo], ~6W TDP)
Chipset	Intergrated into SoC
Memory	DDR3L 1333/1600/1867MHz SODIMM x 2, max. 8GB, non-ECC, un-buffered memory
I/O Chipset	NCT6116D
Ethernet	Realtek® PCIe Gb LAN 8111H x 2
Audio	Realtek® ALC897
TPM	Nuvoton NPCT652 TPM2.0 (default: No)
Expansion Slots	PCIe2.0 [x1] x 1 M.2 M key (22 x 42mm) x 1, for SATA M.2 E Key (22 x 30mm) x 1, for PCIe
BIOS	128Mbit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Chassis Fan (Fanless)
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	Three Independent Display
VGA	Up to 1920 x 1200 @ 60 Hz
DVI	—
HDMI	Up to 3840 x 2160 @30 Hz(HDMI 1.4b)
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz (Colay with VGA)
LVDS	Up to 1920 x 1200 @60Hz, dual-channel 18/24 bit (via PS8625) (colay with eDP)
eDP	Up to 4096 x 2160 @60Hz
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12V DC jack (screw type) 4-pin internal power connector
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	230,820

Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 (5 Gbps) x 4
Display I/O	VGA/DP x 1, HDMI x 1
Audio I/O	Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC power jack x 1
Internal I/O Connectors	
Storage	SATA 6.0Gb/s x 2(1 colay with M.2 M-key), M.2 M-key (22 x 42mm) x 1
USB	USB 2.0 headers support additional 6 USB ports (2*5-pin, p=2.00mm) x 3
Display I/O	40-pin LVDS/eDP connector x 1(default LVDS)
Audio I/O	AAFP
Serial Port	RS-232/422/485 x 1, RS-232 x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit x 1 (In/Out programmable)
FAN	4-pin Chassis Fan x 1
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, AT/ATX mode select jumper (optional) x 1, SATA power connector x 1,d M.2 E key (22 x 30mm) for PCIe x 1
OS	
OS Support	WIndows® 10 64bit Ubuntu16.04.02/Kernel4.8.0

Packing List

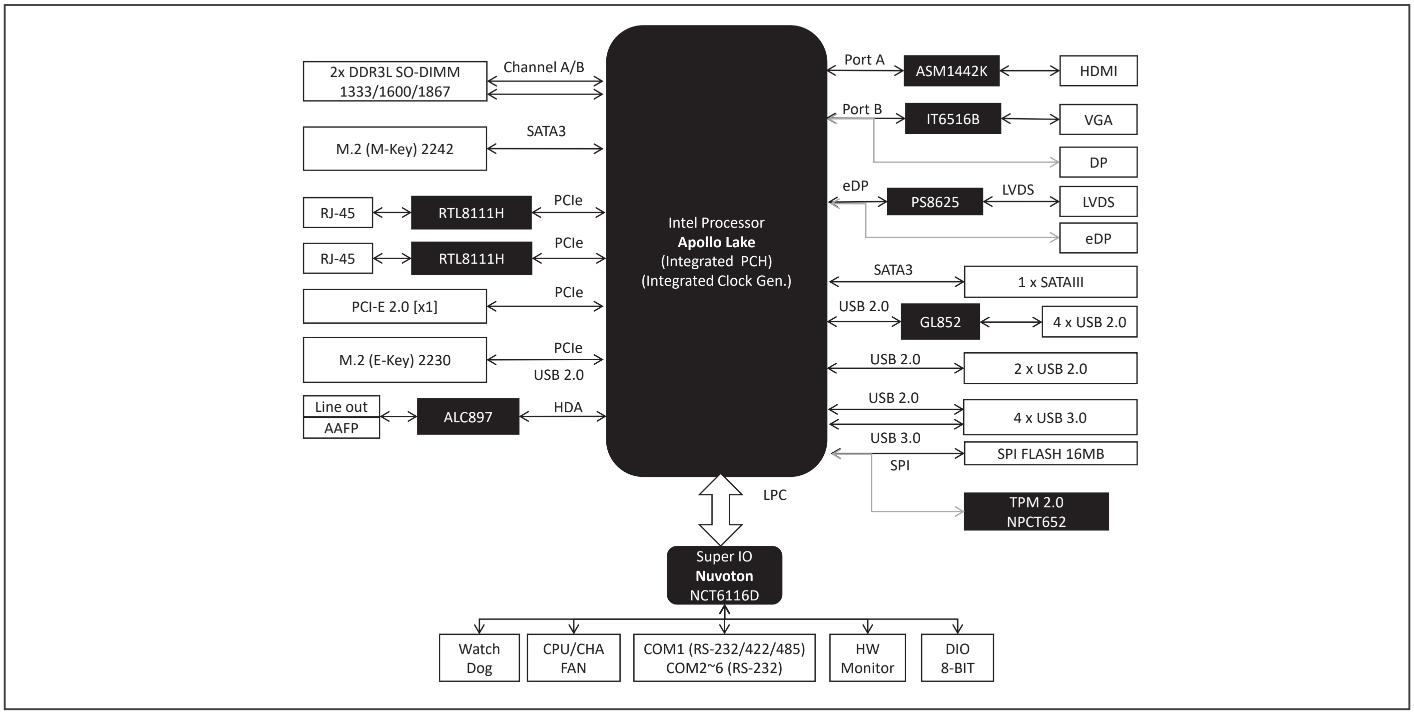
- Heatsink
- I/O Shield
- EMB-APL3

Optional Accessories

Part Number	Description
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)
1701100206	COM Cable (200MM, p=2.00mm)
1702150300	SATA Power Cable (4P, 300MM p=2.54mm)
125530060Z	Adapter.60W.180D.W/Lock.FSP060-DHAN3

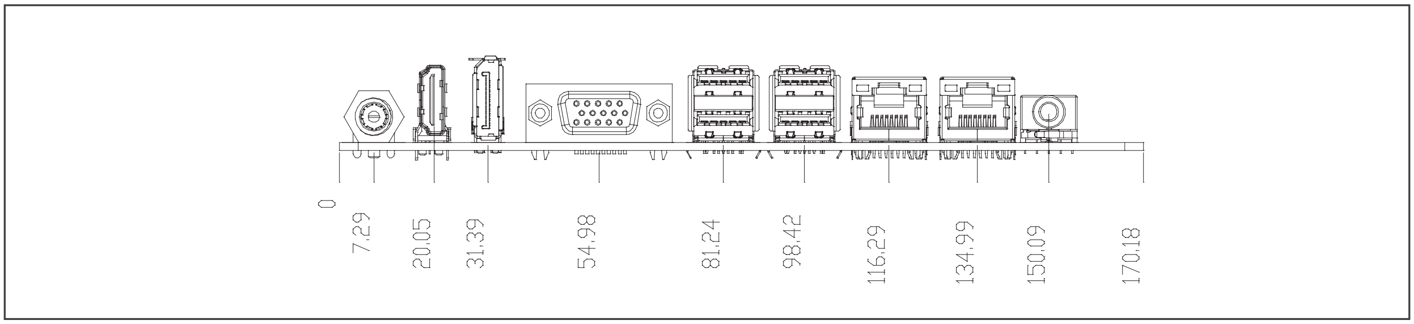
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

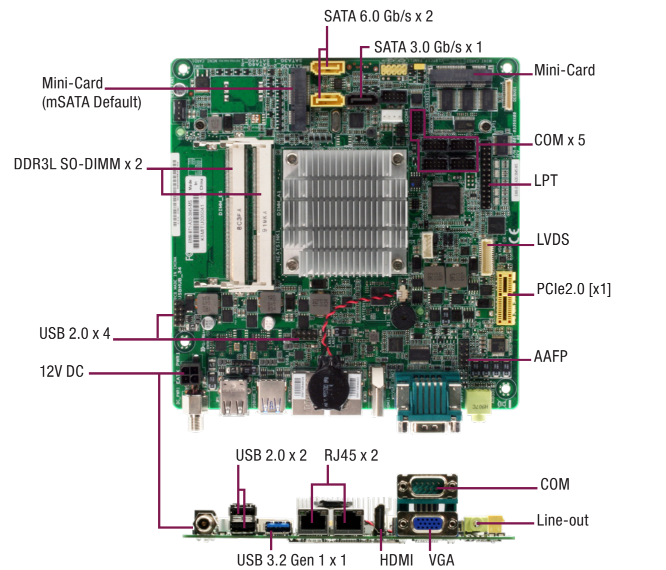


Order Information

Part Number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-APL3-A11-3350-F1-LV	N3350	SODIMM x 2	Fanless	VGA, HDMI, LVDS	Daul Channel 18/24 bit	SATA3 x 1, M.2(M-key)	GbE x 2	USB2.0 x 5, USB 3.2 Gen 1 x 2	5	1	PCIe2.0[x1] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12V DC	—	32°F ~140°F (0°C ~ 60°C)
EMB-APL3-A11-4200-F1-LV	N4200	SODIMM x 2	Fanless	VGA, HDMI, LVDS	Daul Channel 18/24 bit	SATA3 x 1, M.2(M-key)	GbE x 2	USB2.0 x 5, USB 3.2 Gen 1 x 2	5	1	PCIe2.0[x1] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12V DC	—	32°F ~140°F (0°C ~ 60°C)

EMB-BT1

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



Features

- Intel® Celeron® J1900/N2807/ Atom® E3845 Processor
- Dual Displays: VGA x 1, HDMI x 1, LVDS x 1
- Realtek 8111H, Gigabit Ethernet x 2
- SATA 6.0 Gb/s x 2, SATA 3.0 Gb/s x 2 (1 Colay with mSATA)
- USB 3.2 Gen 1 x 1, USB 2.0 x 7
- Full-size Mini-Card with mSATA x 1, Half-size Mini-Card x 1, PCI-E[x1] x 1
- 12V DC Power Input

PCI Express · Giga LAN · DDR 3L · USB 3.2 Gen 1 · USB 2.0 · LVDS · HDMI

Specifications

System	
Processor	Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP), Intel® Celeron® N2807 Processor (2C @ 1.58 GHz CPU, 313/750 MHz GFX, 4.3W TDP), Intel® Atom® E3845 Processor (4C @ 1.91 GHz CPU, 542/792 MHz GFX, 10W TDP)
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), Non-ECC, un-buffered memory, Dual-channel memory architecture flat type
I/O Chipset	Fintech 81866D
Ethernet	Realtek® PCIe Gb LAN 8111H x 2
Audio	Realtek® ALC897
TPM	Infineon SLB9635 TT 1.2 (default : No)
Expansion Slots	Full-size Mini-Card (mSATA default) (PCIe+USB optional) + SIM Card (default: No) x 1, Half-size Mini-Card (PCIe+USB) x 1, PCIe [x1] x 1
BIOS	64 M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Chassis Fan (fanless)
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+LVDS, VGA+HDMI, LVDS+HDMI
VGA	Up to 1920 x 1200 @60 Hz
DVI	—
HDMI	Up to 1920 x 1200 @60 Hz
Display Port	—
LVDS	Up to 1920 x 1080 @60Hz, dual-channel 18/24-bit (via CH7511)
eDP	—
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12VDC
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	111,131

Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 (5 Gbps)/2.0 x 1, USB 2.0 x 2
Display I/O	VGA x 1, HDMI x 1
Audio I/O	Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	COM (RS-232) (optional) x 1
PS/2 Port	—
Others	DC port (12V) Screw type x 1
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) x 2, SATA2 (3.0Gb/s) x 2 (1 colay with mSATA), SATA power connector x 1, Ful Size Mini-Card slot (mSATA) x 1
USB	USB 2.0 (2 x 5-pin, 2.54mm) x 2 ports support additional 4 USB, USB 2.0 (1x 5-pin, 2.0mm) x 1 port supports additional 1 USB
Display I/O	LVDS connector x 1, LVDS 3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight connector (inverter) x 1, LCD backlight 12V /5V jumper x 1
Audio I/O	AAFP x 1
Serial Port	Box header for COM (RS-232) x 4, Box 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

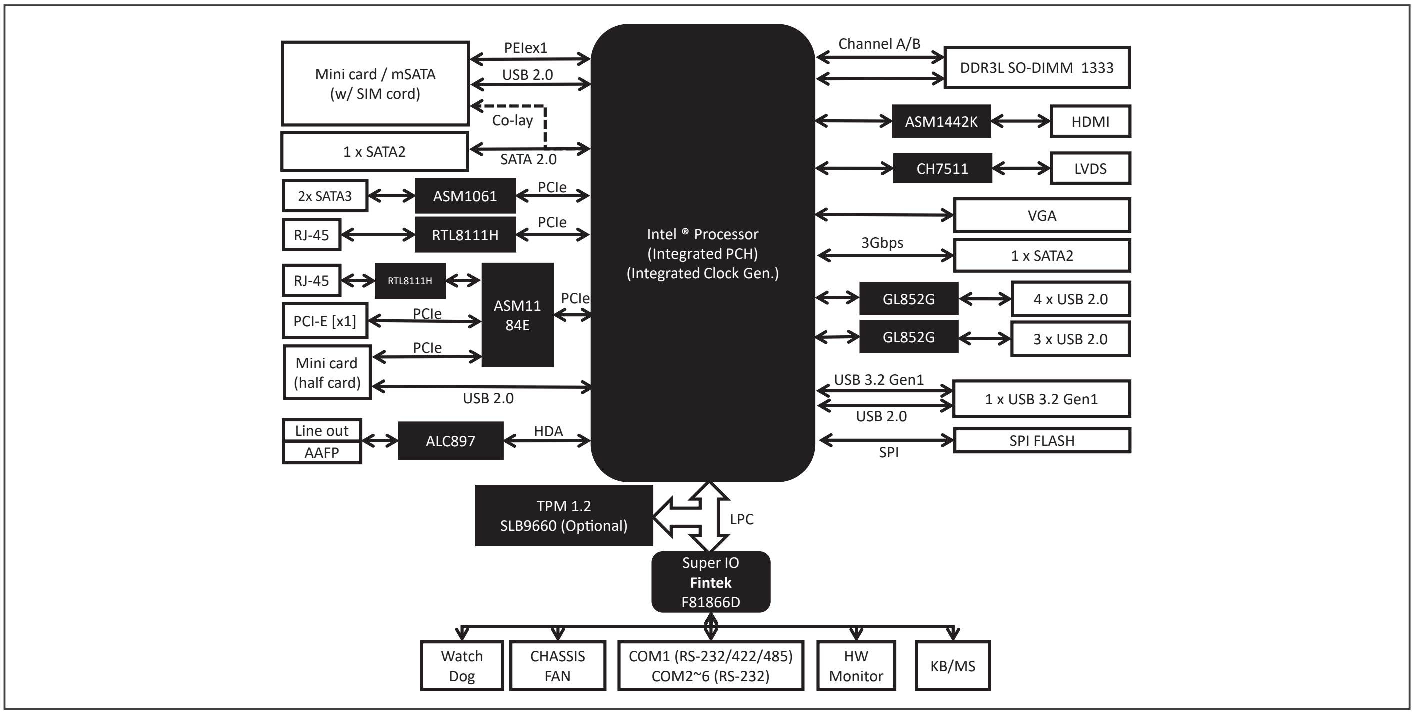
Packing List

- SATA Cable
- SATA Power Cable
- I/O Shield
- Heatsink
- EMB-BT1

Optional Accessories

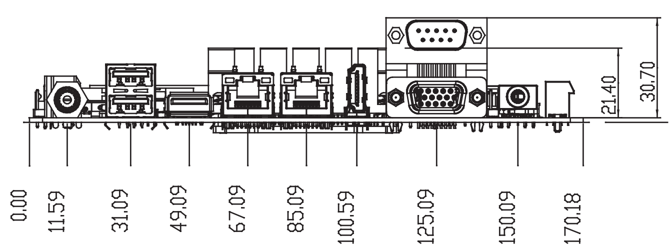
Part Number	Description
1709100330	USB 2.0 Cable (9P, 330MM, p=2.54mm, w/ bracket)
1709050201	USB 2.0 Cable (5P, 220MM, p=2.00mm)
1701260305	LPT Cable (25P, 270MM)
1701100206	COM Port Cable
1700060152	PS/2 Cable (6P, 150mm, p=2.00mm)
170910020K	USB 2.0 Cable (9P, 200MM, p=2.54mm, w/o bracket)
1702150300	SATA Power Cable 4P, 2.54mm
125590084A	Adapter 12V, 84W/N3

Block Diagram



Dimension

Unit: mm

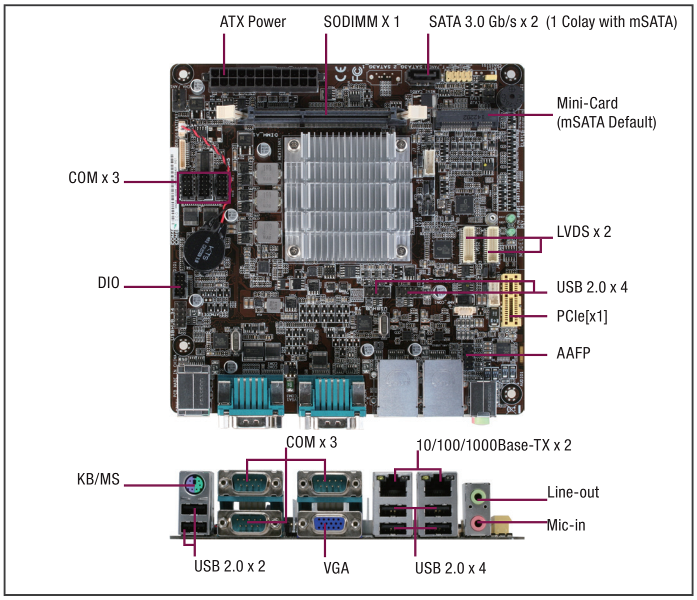


Ordering Information

Part Number	CPU	RAM	Fan/ Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-BT1-A31-1900-MSH	J1900	DDR3L-1333 x 2	Fanless	VGA, LVDS, HDMI	SATA2 x 1, SATA3 x 2, Full size Mini-Card x 1 (mSATA)	Dual Channel 18/24-bit	GbE x 2	USB 3.2 Gen 1 x 1, USB 2.0 x 7	5	1	PCIe [x1] x 1, Half-size Mini-Card x 1 (PCIe [x1] x 1& USB)	12V DC	—	32°F ~ 140°F (0°C ~ 60°C)
EMB-BT1-A31-2807-MSH-1D	N2807	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 3.2 Gen 1 x 1, USB 2.0 x 7	5	1	PCIe [x1] x 1, half size Mini-Card x 1 (PCIe [x1] x 1 & USB)	12V DC	—	32°F ~ 140°F (0°C ~ 60°C)
EMB-BT1-A31-3845-MSH	E3845	DDR3L-1333 x 2	Fanless	VGA, LVDS, HDMI	SATA2 x 1, SATA3 x 2, Full size Mini-Card x 1 (mSATA)	Dual Channel 18/24-bit	GbE x 2	USB 3.2 Gen 1 x 1, USB 2.0 x 7	5	1	PCIe [x1] x 1, half size Mini-Card x 1 (PCIe [x1] x 1 & USB)	12V DC	—	32°F ~ 140°F (0°C ~ 60°C)

EMB-BT2

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



Features

- Intel® Celeron® J1900 Processor
- Realtek 8111H, 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

PCI Express | Giga LAN | DDR 3L | USB 3.2 Gen 1 | USB 2.0 | LVDS | CE | FC

Specifications

System	
Processor	Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP)
Chipset	—
Memory	DDR3L 1333 MHz SODIMM x 1 up to 8 GB, Non-ECC, un-buffered memory
I/O Chipset	Fintech 81866D
Ethernet	Realtek PCIe Gb LAN 8111H x 2
Audio	Realtek® ALC897
TPM	Infineon SLB9635 TT 1.2 (default : No)
Expansion Slots	Full-size Mini-Card (mSATA default PCIe+USB optional) x 1, PCIe [x1] x 1
BIOS	64 M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Chassis Fan (fanless)
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+LVDS, Dual LVDS
VGA	Up to 1920 x 1200 @60 Hz
DVI	—
HDMI	—
Display Port	—
LVDS	Dual LVDS, Up to 1920 x 1080 @60Hz, dual-channel 18/24-bit (via CH7511)
eDP	—
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	ATX
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	290,990
Rear Panel I/O Ports	
USB	USB 2.0 x 6
Display I/O	VGA x 1
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	COM (RS-232/422/485) x 1, COM (RS-232) x 2
PS/2 Port	PS/2 Keyboard Mouse combo x 1
Others	—
Internal I/O Connectors	
Storage	SATA2 (3.0Gb/s) x 2 (1 colay with mSATA), Ful Size Mini-Card slot (mSATA) x 1
USB	USB 2.0 (2 x 5-pin, 2.54mm) x 2 ports support additional 4 USB
Display I/O	LVDS connector x 2, LVDS 3V /5V jumper x 2, LCD DC / PWM mode jumper x 2, LCD backlight connector (inverter) x 2, LCD backlight 12V /5V jumper x 2, LCD push button for backlight control (2PIN) x 2
Audio I/O	AAFP x 1, Speaker x 1
Serial Port	Box 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

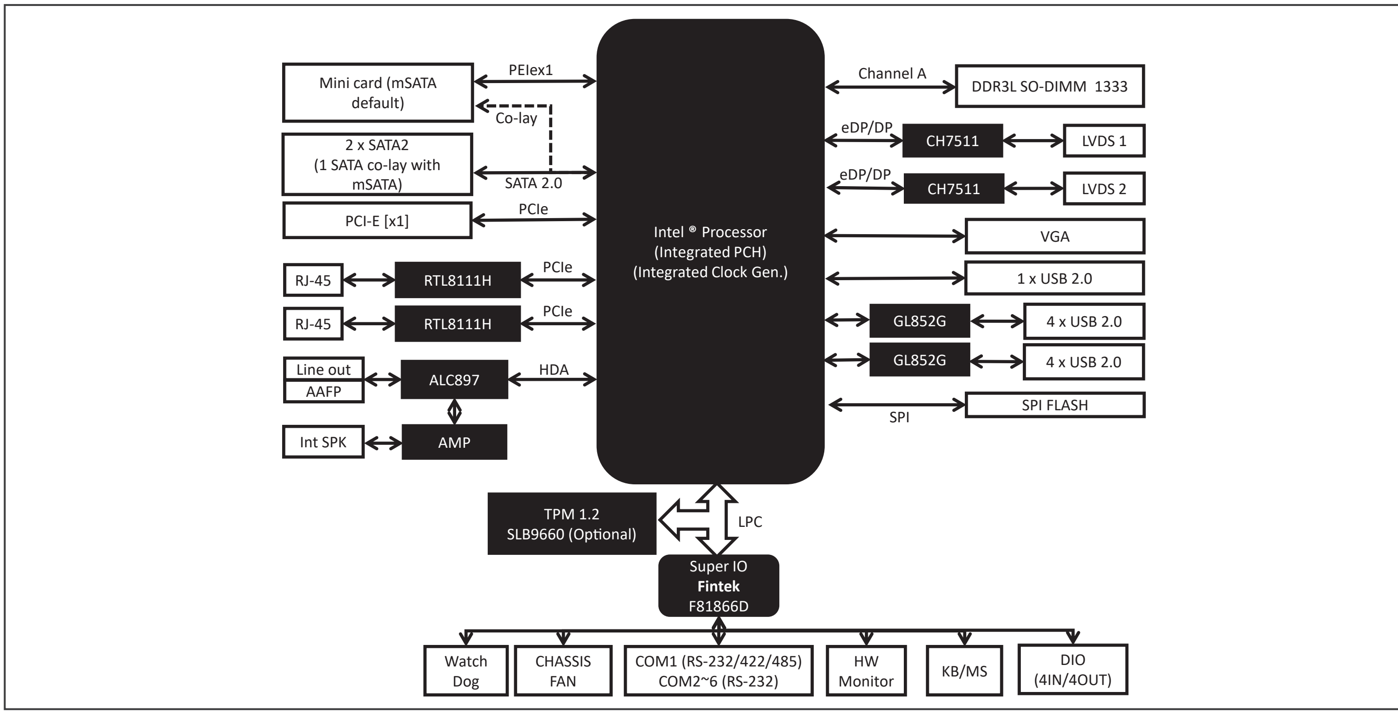
Packing List

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

Optional Accessories

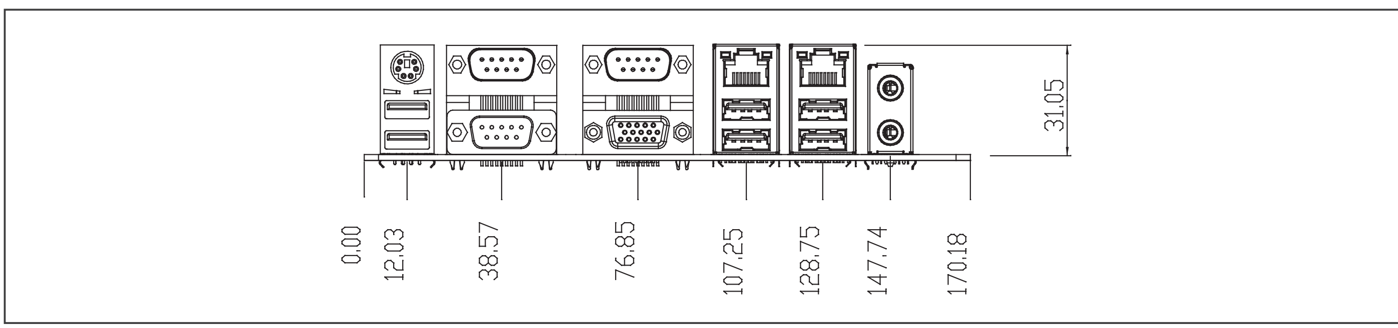
Part Number	Description
1709100330	USB 2.0 Cable (9P, 330MM, p=2.54mm, w/ bracket)
1701100206	COM Port Cable
170910020K	USB 2.0 Cable (9P, 200MM, p=2.54mm, w/o bracket)

Block Diagram



Dimension

Unit: mm

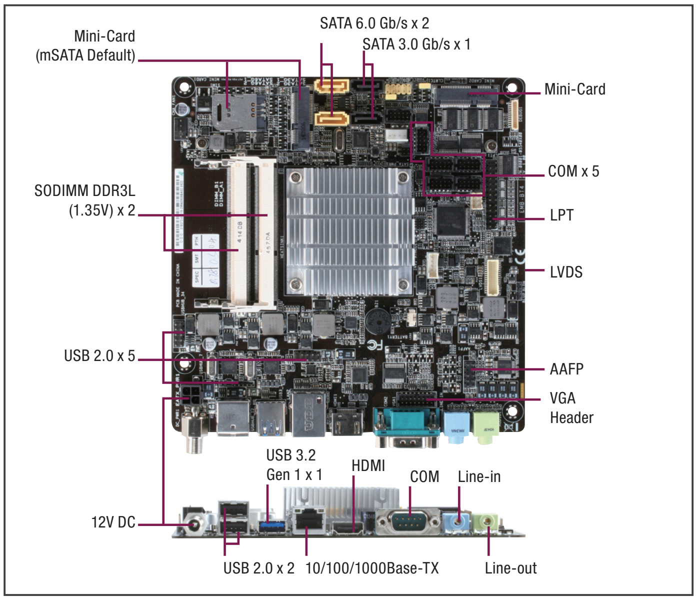


Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-BT2-A14-1900-D1-MSH	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® Celeron® J1900 Processor, SATA 6.0 Gb/s x 2, SATA 3.0 Gb/s x 2, USB x 8



Features

- Intel® Celeron® J1900/N2807 Processor
- DDR3L 1333 MHz SODIMM x 2, Up to 8 GB, (J1900)
- 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 3.2 Gen 1 x 1, USB 2.0 x 7
- Full-size Mini-Card + SIM Card (mSATA Default) x 1, Half-size Mini-Card x 1
- 12V DC Power Input
- Low Profile

Specifications

System	
Processor	Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP)
Chipset	—
Memory	DDR3L 1333 MHz SODIMM x 2 up to 8 GB (for J1900), Non-ECC, un-buffered memory, Dual-channel memory architecture flat type
I/O Chipset	Fintech 81866D
Ethernet	Realtek PCIe Gb LAN 8111Hx 1
Audio	Realtek® ALC897
TPM	Infineon SLB9635 TT 1.2 (default : No)
Expansion Slots	Full-size Mini-Card (mSATA default) (PCIe+USB optional) + SIM Card (default: No) x 1, Half-size Mini-Card (PCIe+USB) x 1
BIOS	64 M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Chassis Fan (fanless)
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+LVDS, VGA+HDMI, LVDS+HDMI
VGA	Up to 1920 x 1200 @60 Hz
DVI	—
HDMI	Up to 1920 x 1200 @60 Hz
Display Port	—
LVDS	Up to 1920 x 1080 @60Hz, dual-channel 18/24-bit (via CH7511)
eDP	—
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12VDC
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	295,750
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1/2.0 x 1, USB 2.0 x 2
Display I/O	HDMI x 1
Audio I/O	Line in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 1
Serial Port	COM (RS-232) x 1
PS/2 Port	—
Others	DC port (12V) Screw type x 1
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) x 2, SATA2 (3.0Gb/s) x 2 (1 colay with mSATA), SATA power connector x 1, Ful Size Mini-Card slot (mSATA) x 1
USB	USB 2.0 (2 x 5-pin, 2.54mm) x 2 ports support additional 4 USB, USB 2.0 (1x 5-pin, 2.0mm) x 1 port supports additional 1 USB
Display I/O	VGA pin header x 1, LVDS connector x 1, LVDS 3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight connector (inverter) x 1, LCD backlight 12V /5V jumper x 1
Audio I/O	AAFP x 1
Serial Port	Box header for COM (RS-232) x 4, Box 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

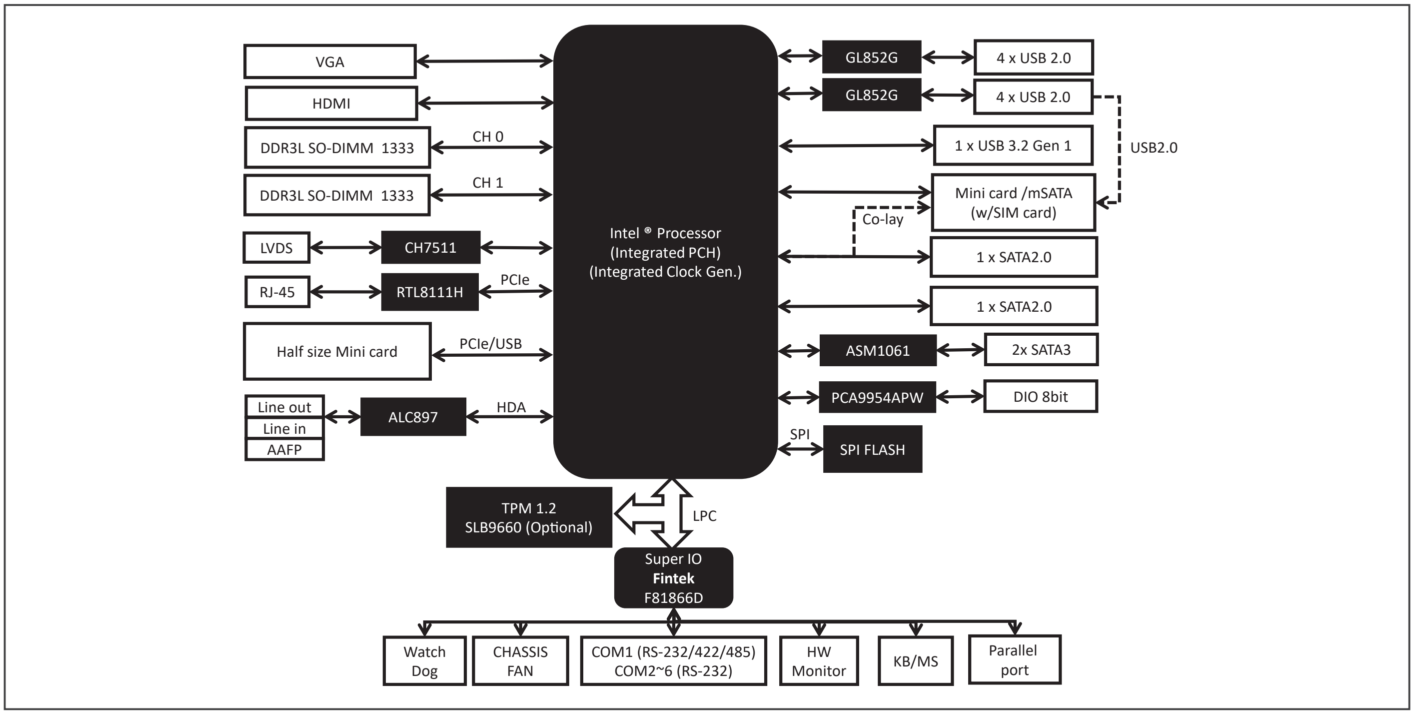
Packing List

- SATA Cable
- SATA Power Cable
- I/O Shield
- Heatsink
- EMB-BT4

Optional Accessories

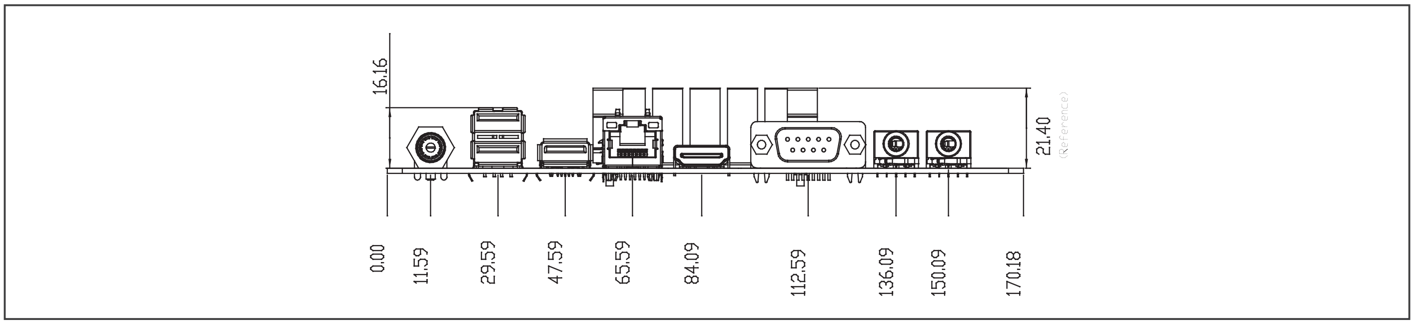
Part Number	Description
1709100330	USB 2.0 Cable (9P, 330MM, p=2.54mm, w/ bracket)
1709050201	USB 2.0 Cable (5P, 220MM, p=2.00mm)
1701260305	LPT Cable (25P, 270MM)
125590084A	Adapter 12V, 84W/N3
1701100206	COM Port Cable
1700060152	PS/2 cable (6P, 150mm, p=2.00mm)
170910020K	USB 2.0 Cable (9P, 200MM, p=2.54mm, w/o bracket)
1702150300	SATA Power Cable 4P, 2.54mm
125530060A	Lockable Adapter 60W, 12V, 5A, 60W
1701160201	VGA Cable

Block Diagram



Dimension

Unit: mm

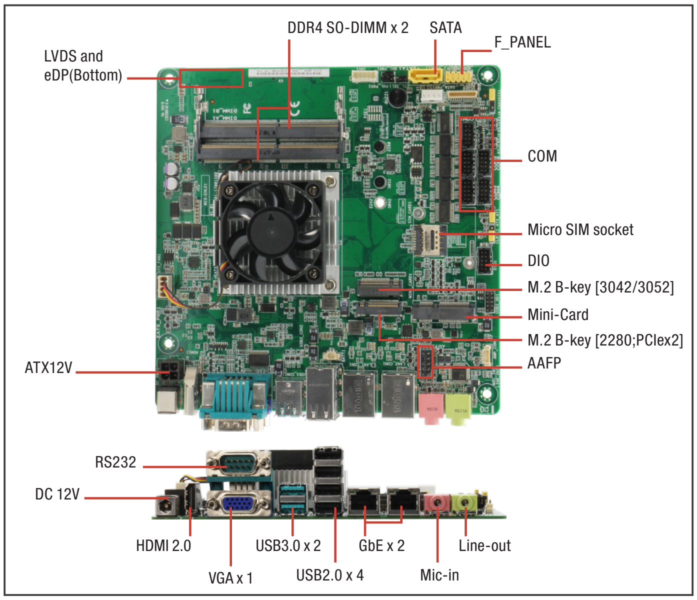


Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-BT4-A13-1900-D1-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 3.2 Gen 1 x 1, USB 2.0 x 7	5	1	Half-size Mini-Card (PCIe + USB) x 1 w/o SIM slot	12V DC	—	32°F ~ 140°F (0°C ~ 60°C)

MIX-EHLD1

Mini-ITX with Intel® Atom x6000E/ Pentium/ Celeron N and J series processors , Max. 12W TDPs, Flexible rear IO, 12V DC input



Features

- Intel Elkhart Lake Processor, J6412/X6413E
- DDR4 SODIMM x 2, Max. 32GB
- M.2 Slot (M key; 2280) x 1, M.2 Slot (B key; 3042/52) x 1, mini card x 1
- USB 3.2 Gen1 Ports x 2, USB 2.0 Ports x 4
- RTL8111H x 2
- HDMI2.0 x 1, VGA x 1, LVDS/eDP x 1
- Flexible rear IO (Full IO or Low profile)
- 12V DC input

1000 Giga LAN · DDR 4 · PCI Express · USB 3.2 Gen 1 · USB 2.0 · Audio

Specifications

System	
Processor	Intel® Elkhart LAKE Processor Max. 12W TDPs
Chipset	—
Memory	SO-DIMM, max. 32GB , DDR4 3200MTS x 2
I/O Chipset	NCT6126D
Ethernet	RTL8111H x 2
Audio	Realtek® ALC897
TPM	Nuvoton NPCT750 TPM2.0 onboard
Expansion Slots	M.2 Slot (B key; 3042/3052) x1 mini-PCIe(Full/Half)) x 1 SIM socket x 1(default for B-key)
BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on Chassis
WatchDog Timer	1~255 step by software program
Smart Fan Control	Chassis Fan
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	3 Independent Display(1xVGA+1x HDMI + 1x LVDS/eDP)
VGA	Up to 1920 x 1200 @60 Hz
DVI	—
HDMI	Up to 4096 x 2160 @ 60Hz
Display Port	—
LVDS	Up to 1920 x 1080 @60Hz, Daul Channel 18/24 bit (via CH7513) co-layout eDP (default LVDS)
eDP	Up to 3840 x 2160 @ 30Hz
Backlight Control	Voltage / PWM, use HW control
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12(+/-5%) DC
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90%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 3.2(Gne1) ports x 2 USB 2.0 ports x 4 (upper 2 ports by BOM Optional)
Display I/O	HDMI x 1, VGA x 1
Audio I/O	Mic-in x 1, Line out x 1
LAN I/O	1GbE x 2
Serial Port	RS232 by BOM Optional
PS/2 Port	—
Others	DC Jack x 1
Internal I/O Connectors	
Storage	M.2 Slot (M key; 2280;PClex2) SATA 6Gb/s x 1 SATA power connector (5V / 12V @1A) x 1
USB	USB2.0 ports x 2
Display I/O	40-pin LVDS / eDP connector x 1
Audio I/O	AAFP follow ASUS pin out x 1
Serial Port	Box header x 5 for COM (COM1: RS-232/422/485 supports 5V/12V/RI; COM2~6: RS-232)
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box header x 1
FAN	4-pin Chassis Fan connector x 1
Power	—
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, Clear CMOS jumper x 1, AT/ATX mode select jumper x 1
OS	
OS Support	Windows® 10 64-bit, Linux Ubuntu 64 bit (20.04.2/Kernel 5.4)

Packing List

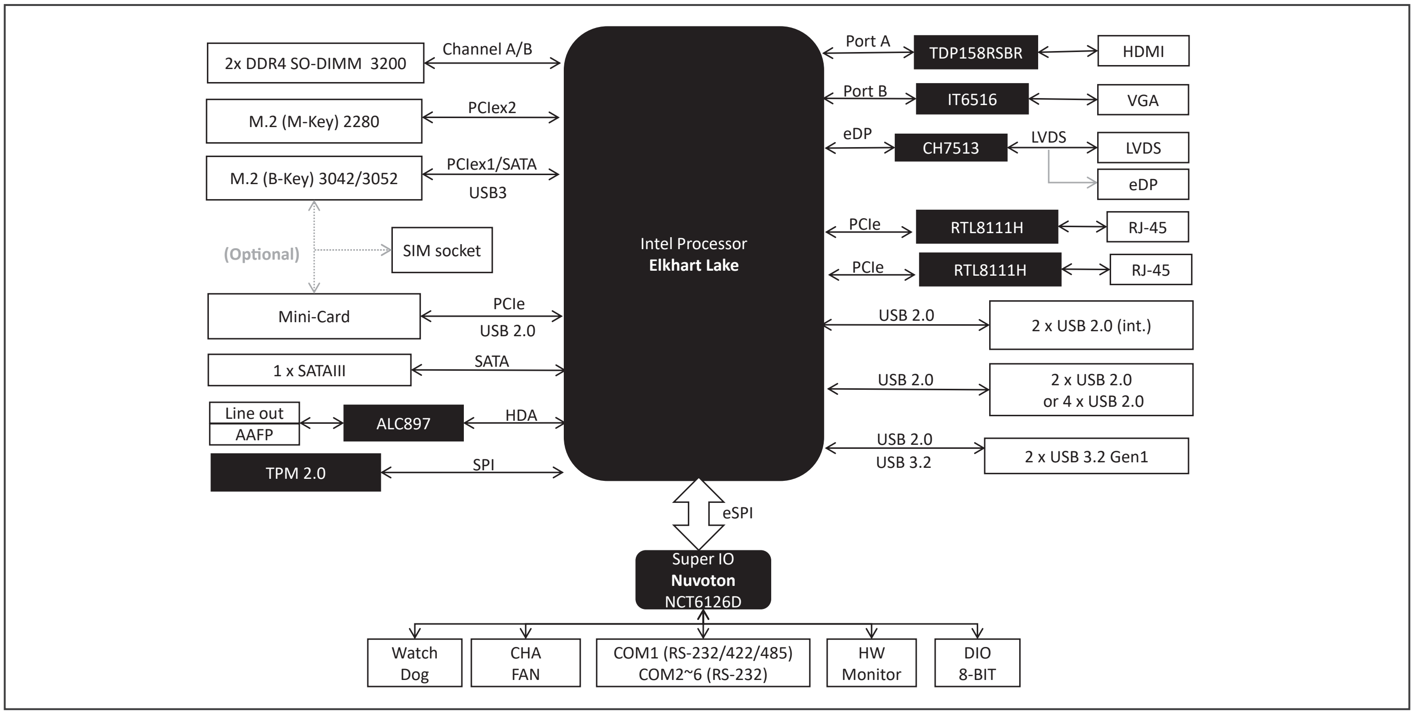
- SATA Cable
- I/O Shield
- MIX-EHLD1

Optional Accessories

Part Number	Description
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1701100206	COM Cable (200MM, p=2.00mm)
125530060Z	Adapter.60W.180D.W/Lock.FSP060-DHAN3

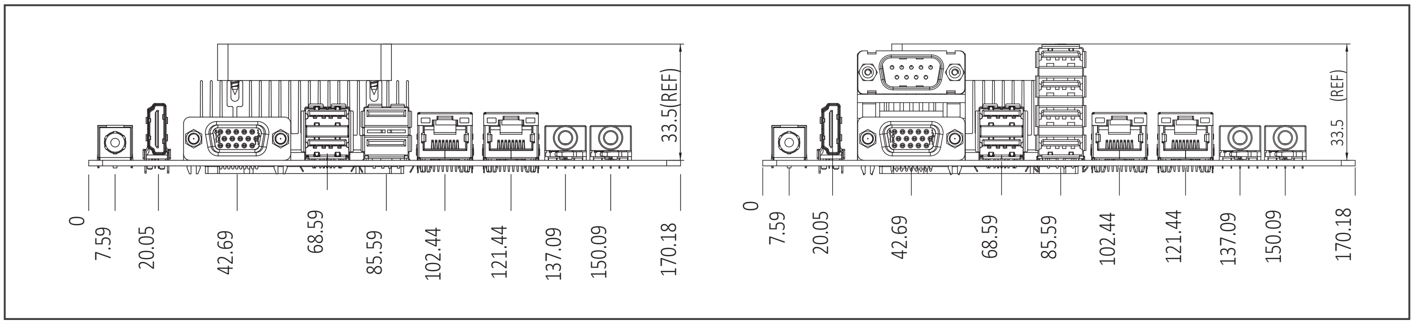
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

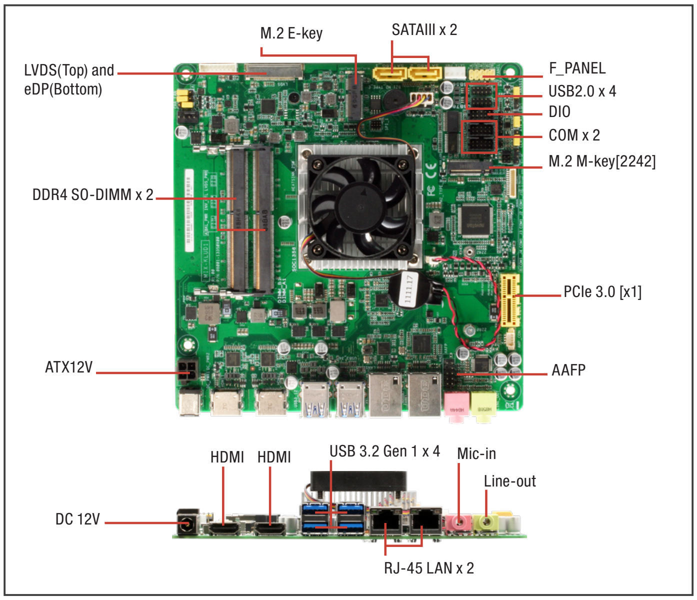


Ordering Information

Part number	CPU	RAM	Fan/Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-EHLD1-A10-J6412	J6412	SODIMM x 2	Fan	VGA, HDMI, LVDS/eDP	Daul Channel 18/24 bit	SATA3 x 1, M.2(M-key)	GbE x 2	USB 2.0 x 6, USB 3.2 Gen 1 x 2	5	1	Mini-Card x 1, M.2(B-Key) x 1	12V DC	2.0	32°F ~140°F (0°C ~ 60°C)
MIX-EHLD1-A10-X6413	X6413E	SODIMM x 2	Fan	VGA, HDMI, LVDS/eDP	Daul Channel 18/24 bit	SATA3 x 1, M.2(M-key)	GbE x 2	USB 2.0 x 6, USB 3.2 Gen 1 x 2	5	1	Mini-Card x 1, M.2(B-Key) x 1	12V DC	2.0	32°F ~140°F (0°C ~ 60°C)

MIX-KLUD1

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



Features

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

Giga LAN DDR 4 PCI Express USB 3.2 Gen 1 USB 2.0 Audio

Specifications

System	
Processor	Core™ i3-7100U, 2C/4C, 2.4GHz, 3M, 300MHz/1.00GHz (Turbo) GFX, ~15W TDP
Chipset	—
Memory	SODIMM x 2, max. 32GB, DDR4-2133 non-ECC, un-buffered memory
I/O Chipset	NCT6793D
Ethernet	Intel® PCIe Gb LAN 219LM (vPro for i7-7600U/i5-7300U) x 1 Intel® PCIe Gb LAN 210AT x 1
Audio	Realtek® ALC897 with Amp.
TPM	NPCT650 TPM2.0 onboard (default: No)
Expansion Slots	PCle 3.0 [x1] x 1 M.2 M key (22 x 80 mm) x 1, SATA & PCle [x4] M.2 E key (22 x 30 mm) x 1 for Wireless-wifi module (PCle+USB)
BIOS	128Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	HDMI x 2, eDP x 1 or LVDS x 1
VGA	—
DVI	—
HDMI	HDMI 1.4 up to 4096 x 2340 @24Hz
Display Port	—
LVDS	Up to 1920 x 1200 @ 60 Hz, Dual Channel 18/24 bit
eDP	UP to 4096 x 2304 @ 60Hz
Backlight Control	Voltage/PWM; Max 1A
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12V DC
Operating Temperature	32°F ~ 131°F (0°C ~ 55°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90%RH, non-condensing
Certificate	CE & FCC (Class A)
Form Factor	Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours):	400,330
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 (5 Gbps) x 4
Display I/O	HMDI x 2
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC Power Jack x 1
Internal I/O Connectors	
Storage	M.2 M key (22 x 80mm) for PCIe [x4]/SATA storage x 1, SATA 6.0Gb/s x 2, 4-pin SATA power x 1
USB	USB 2.0 pin header x 2 support additional 4 USB ports
Display I/O	40-pin LVDS connector x 1, 40-pin eDP connector x 1, LCD backlight connector(inverter) x 1
Audio I/O	Speaker for 2W@4Ω x 1, AAFP follow ASUS pin out x 1
Serial Port	Box header x 2 for COM (COM1: RS-232/422/485 supports 5V/12V/RI)
PS/2 Port	—
Parallel Port	—
DIO	8-bit programmable (4-in/4-out) x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	—
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1
OS	
OS Support	Windows® 10 64-bit

Packing List

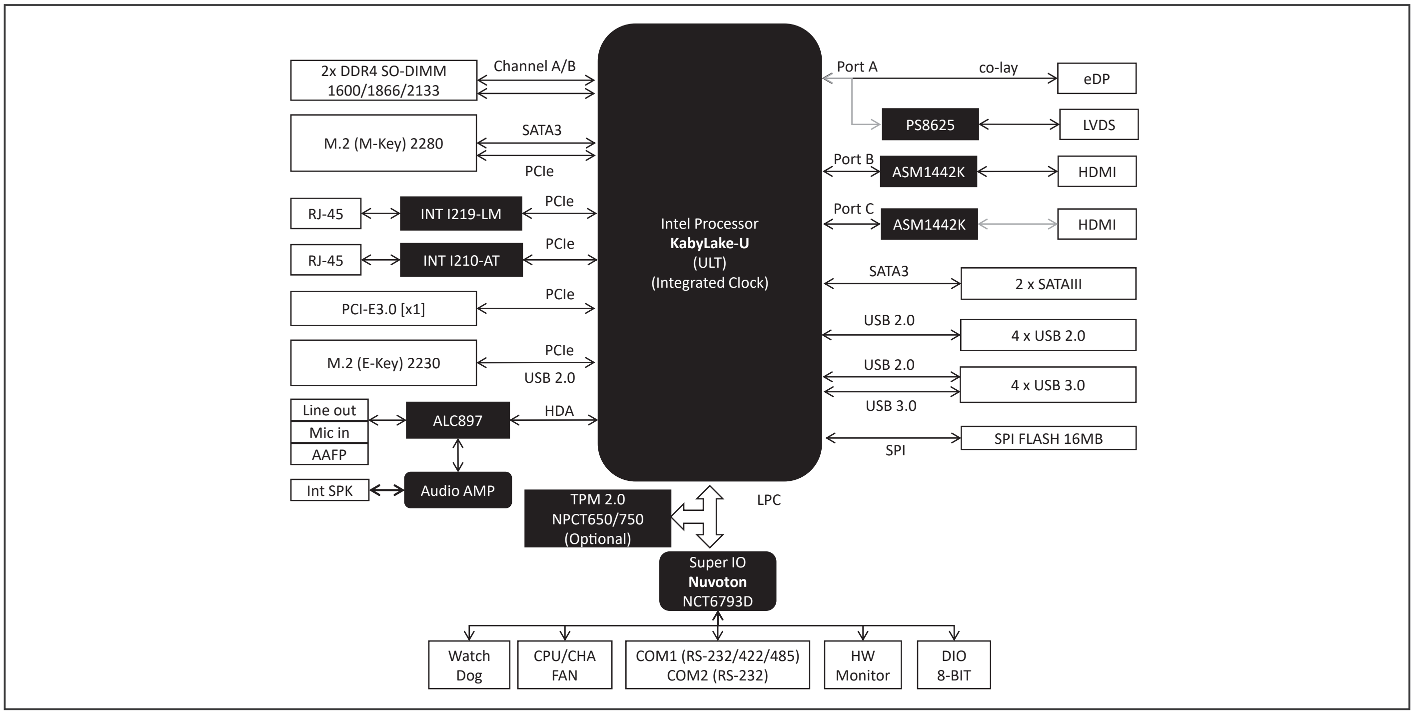
- Heatsink/CPU Fan
- SATA Cable
- SATA Power Cable
- I/O Shield
- MIX-KLUD1

Optional Accessories

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

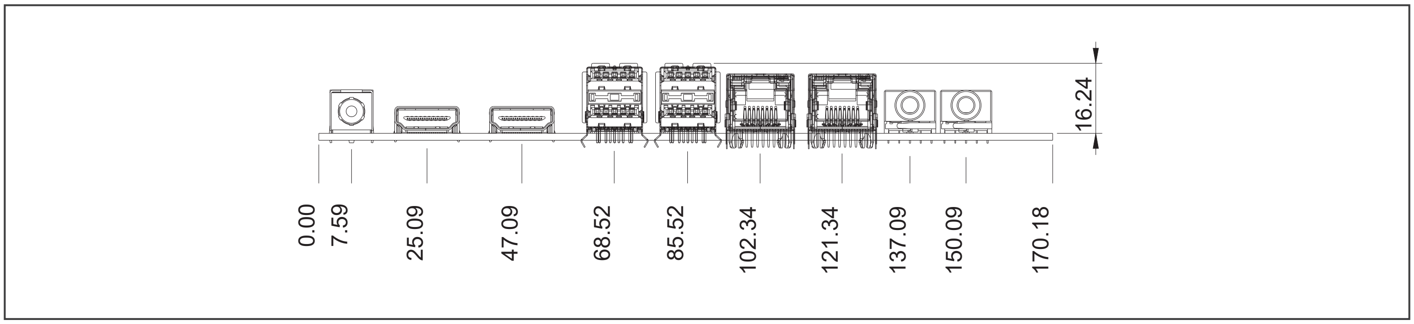
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

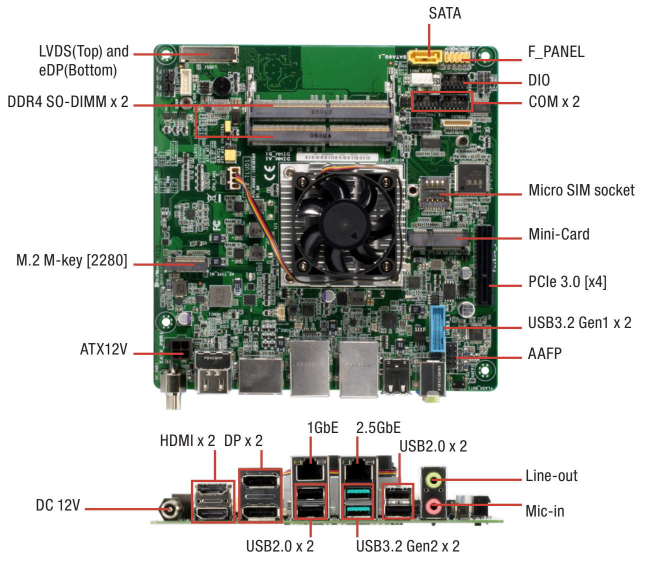


Ordering Information

PART NUMBER	CPU	RAM	FAN/ FANLESS	DISPLAY	STORAGE	LVDS	LAN	USB	RS-232	RS-232/422/485	EXPANSION SLOT	POWER	TPM	TEMP.
MIX-KLUD1-A11-7100-LV-210	i3-7100U	SODIMM x 2	Fanless	HDMI x 2, LVDS	SATA3 x 2, M.2 (M-key)	Dual Channel 18/24 bit	GbE x 2	USB 3.2 Gen 1 x 4, USB2.0 x 4	1	1	PCIe[x1] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12V DC	—	32°F ~ 131°F (0°C ~ 55°C)

MIX-TLUD1

Mini-ITX with Intel® 11thGen Core™ U-Processor, Max. 28W TDPs, 4Display output, 2.5GbEx1 + 1GbEx1



Features

- 11th Gen. Intel® Core™ Processor
- DDR4 SODIMM x 2, Max. 64GB
- M.2 Slot (M key; 2280) x 1, mini card x 1
- USB 3.2 Ports x 4, USB 2.0 Ports x 4
- Intel® LAN 225LM x 1, 219V x 1
- HDMI2.0 x 2, DP1.4 x 2
- LVDS x 1, eDP x 1
- PCI-Express [x4] x 1
- DC 12V

1000 Giga LAN · DDR 4 · PCI Express · USB 3.2 Gen 1 · USB 2.0 · Audio

Specifications

System	
Processor	Intel® 11th Gen (Tiger Lake-UP3) Core™ Processors, up to 28W TDPs - i7-1185G7E, QC, Max Speed up to 4.4GHz - i5-1145G7E, QC, Max Speed up to 4.1GHz - i3-1115G4E, DC, Max Speed up to 3.9GHz - Celeron 6305E, DC, 1.8GHz
Chipset	—
Memory	DDR4 2666/3200 MHz SODIMM x 2, Up to 64GB
I/O Chipset	IT5121E
Ethernet	Intel® PCIe Gb LAN 219LM x 1 Intel® PCIe Gb LAN 225LM x 1
Audio	Realtek® ALC897
TPM	Nuvoton NPCT750 TPM2.0 onboard
Expansion Slots	PCIe 3.0 [x4] x 1, mini-card x 1(PCIe/SATA; BOM Optional)
BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 step by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® Xe(Gen 12) Graphics
Graphics Multi Display	Quad Display
VGA	—
DVI	—
HDMI	HDMI 2.0
Display Port	DP1.4
LVDS	Up to 1920 x 1200 @60Hz, Dual Channel 18/24 bit (via CH7511B)
eDP	eDP1.4b
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12(+/-5%) DC
Operating Temperature	32°F ~122°F (0°C ~ 50°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours):	—

Rear Panel I/O Ports	
USB	USB 3.2 Gen2 x 2, USB2.0 x 4
Display I/O	HDMI x 2, DP++ x 2
Audio I/O	Mic-in x 1, Line out x 1
LAN I/O	1GbE x 1, 2.5GbE x 1
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	M.2 M key (2280) for (NVMe;PCIex4) storage x 1 SATA 6.0Gb/s x 1
USB	USB 3.0 Box header x 1 (support additional USB3.2 Gen1 x 2ports)
Display I/O	40-pin LVDS connector x 1, 40-pin eDP connector x 1
Audio I/O	AAFP follow ASUS pin out x 1
Serial Port	Box header x 2 for COM (COM1/2: RS-232)
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box header x 1
FAN	4-pin CPU Fan connector x 1 4-pin Chassis Fan connector x 1
Power	—
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, Clear CMOS jumper x 1, AT/ATX mode select jumper x 1; SIM socket x 1
OS	
OS Support	Windows® 10 64-bit, 20.04.2/Kernel 5.8

Packing List

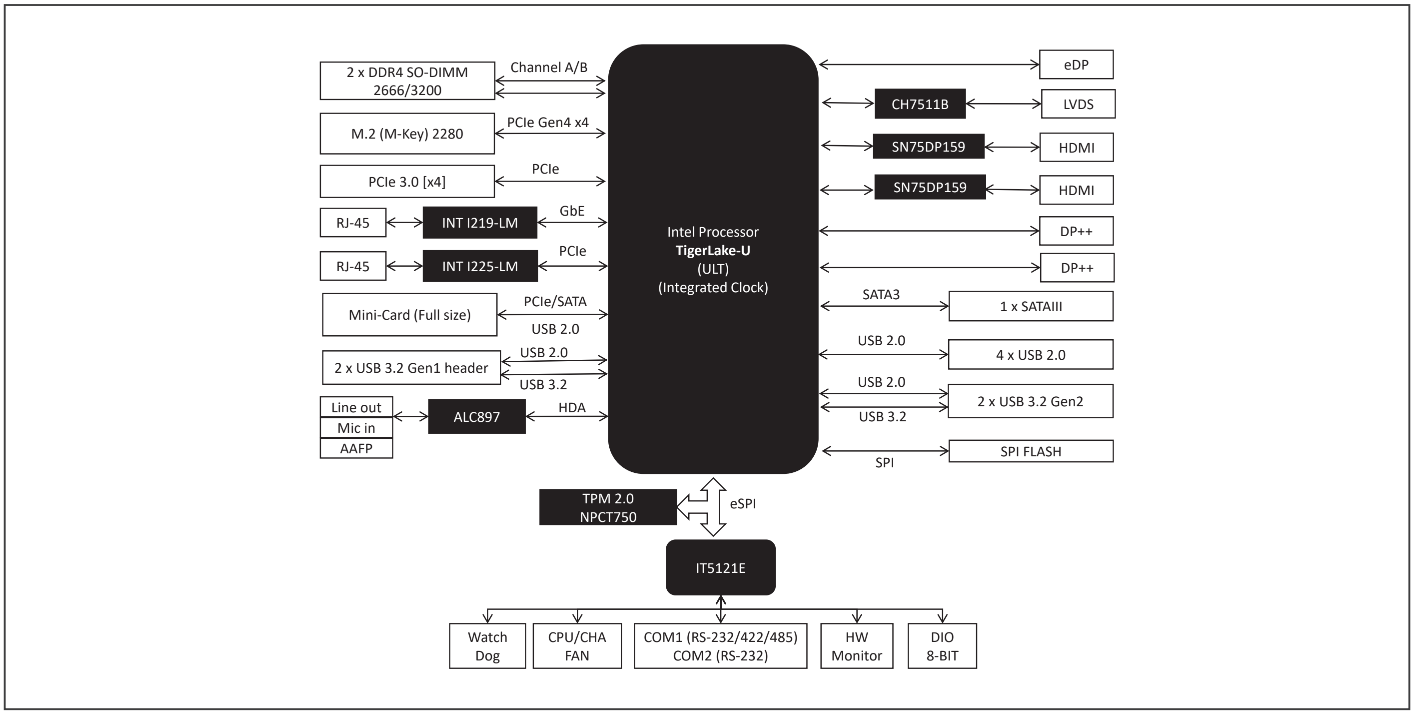
- SATA Cable
- I/O Shield
- MIX-TLUD1

Optional Accessories

Part Number	Description
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)
1701100206	COM Cable (200MM, p=2.00mm)
1702150300	SATA Power Cable (4P, 300MM p=2.54mm)
125590084A	Adapter 12V, 84W/N3

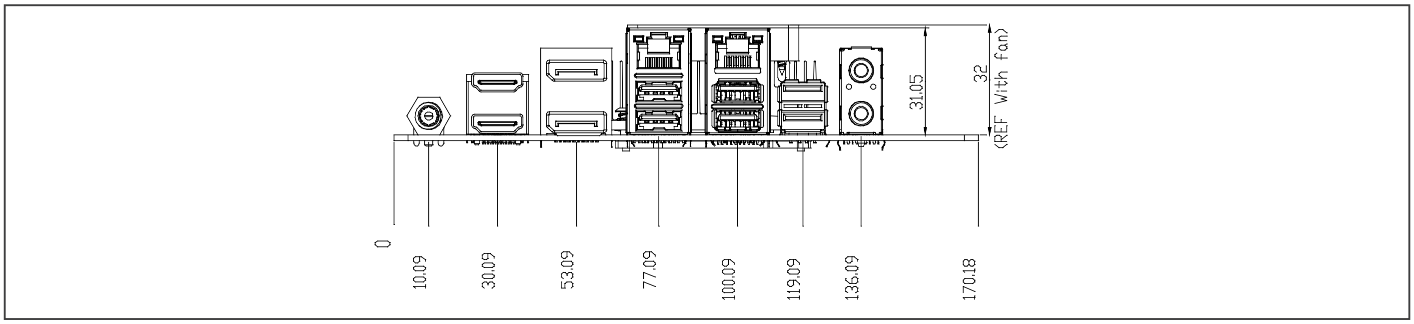
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

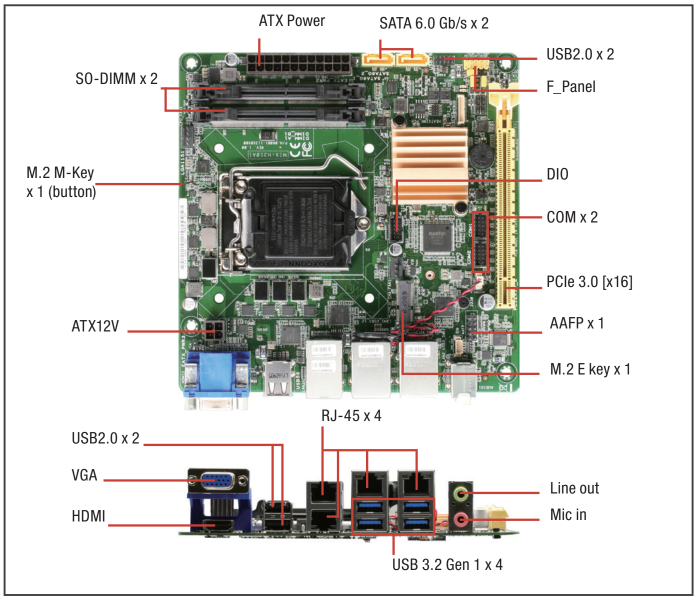


Ordering Information

Part number	CPU	RAM	Fan/Fan-less	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp
MIX-TLUD1-A10-6305E	Celeron 6305E	SODIMM x 2	Fan	HDMIx2,DPx2	Daul Channel 18/24 bit	SATA3 x 1, M.2 (M-key)	2.5GbE x 1, 1GbE x 1	USB 2.0 x 4, USB 3.2 Gen 1 x 4	2	0	Mini-PCIe[x1] x 1,	12V	TPM2.0	32°F ~ 122°F (0°C ~ 50°C)
MIX-TLUD1-A10-1115G4E	i3-1115G4E	SODIMM x 2	Fan	HDMIx2,DPx2	Daul Channel 18/24 bit	SATA3 x 1, M.2 (M-key)	2.5GbE x 1, 1GbE x 1	USB 2.0 x 4, USB 3.2 Gen 1 x 4	2	0	Mini-PCIe[x1] x 1,	12V	TPM2.0	32°F ~ 122°F (0°C ~ 50°C)
MIX-TLUD1-A10-1145G7E	I5-1145G7E	SODIMM x 2	Fan	HDMIx2,DPx2	Daul Channel 18/24 bit	SATA3 x 1, M.2 (M-key)	2.5GbE x 1, 1GbE x 1	USB 2.0 x 4, USB 3.2 Gen 1 x 4	2	0	Mini-PCIe[x1] x 1,	12V	TPM2.0	32°F ~ 122°F (0°C ~ 50°C)

MIX-H310A1

Mini-ITX with 8th/9th Gen Intel® Core™ Processor Family, Max. 65W TDPs, Giga-LAN x 4



Features

- 8th/9th Gen. Intel® Core™ LGA1151 Processor
- DDR4 SODIMM x 2, Up to 32 GB
- M.2 Slot(M Key-SATA), M.2 Slot(E key) x 1
- Two Independent Display : HDMI, VGA
- USB 3.2 Gen 1 Port x 4, USB 2.0 Port x 4
- Intel® LAN 210AT x 3, 219V x 1
- SATA 6.0 Gb/s x 2
- PCI-Express [x16] (Gen3) x 1
- ATX Power

1000 Giga LAN DDR 4 PCI Express USB 3.2 Gen 1 USB 2.0 Audio

Specifications

System	
Processor	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
Chipset	Intel® H310 Express Chipset
Memory	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6793D
Ethernet	Intel® PCIe Gb LAN 219V x 1, Intel® PCIe Gb LAN i210AT x 3
Audio	Realtek® ALC897 with Amp.
TPM	Firmware TPM
Expansion Slots	PCIe3.0 [x16] x 1, M.2 M-key(22x80mm) at bottom side x 1 for SATA, M.2 E-key(22x30mm)
BIOS	128Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	HDMI+VGA
VGA	Up to 1920 x 1200 @ 60 Hz
DVI	—
HDMI	Up to 4096 x 2160 @30Hz(HDMI 1.4)
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	ATX
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	288,900

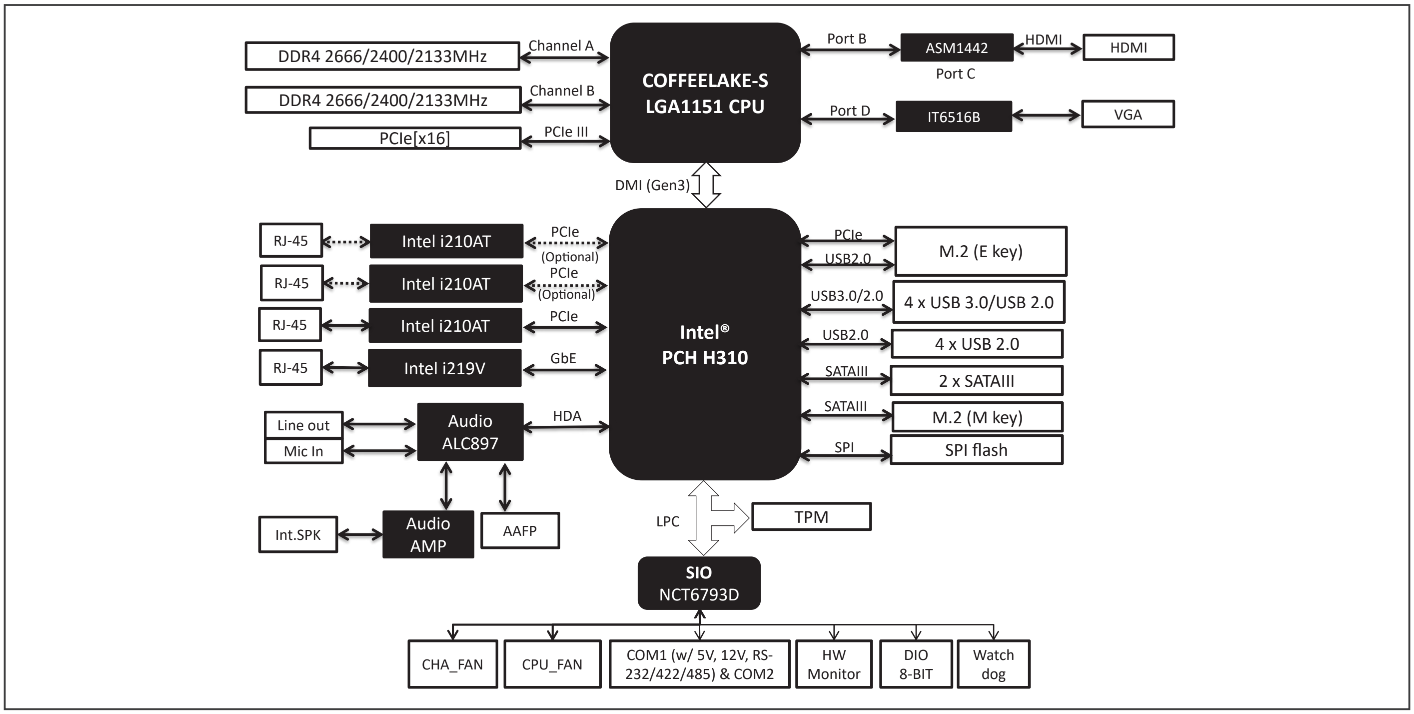
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 (5 Gbps) x 4, USB 2.0 x 2
Display I/O	VGA x 1, HDMI x 1
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 4
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) at bottom side x 1 (SATA only)
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 1 ports support additional 2 USB.
Display I/O	—
Audio I/O	AAFP x 1, Speaker x 1
Serial Port	Box header for COM (RS-232/422/485) x 1, Box header for COM (RS-232) x 1
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box head x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	—
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1
OS	
OS Support	Windows® 10 64-bit, ,Linux Ubuntu 18.04 LTS

Packing List

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

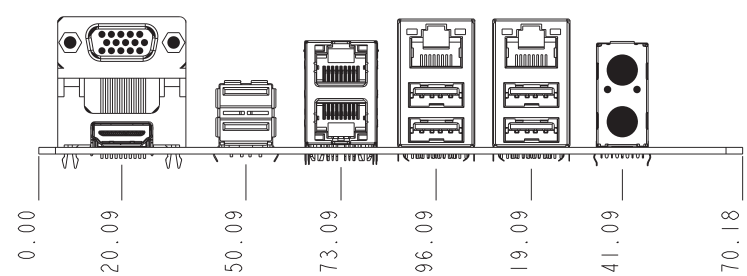
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

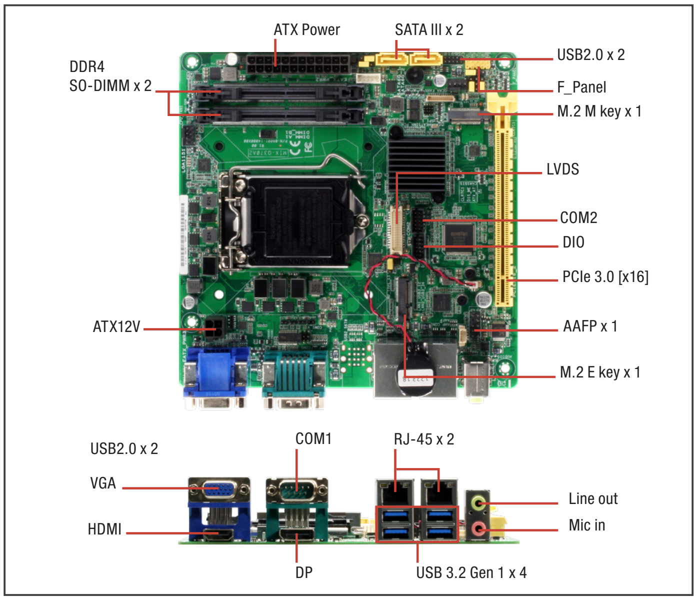
Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-H310A1-A11-2L-210FT	Socket	SODIMM x 2	Fan	VGA, HDMI	SATA3 x2, M.2(M-key)	—	GbE x 2	USB2.0 x 4 USB 3.2 Gen 1 x 4	1	1	PCIe3.0[x16] x 1, M.2(M-key) x1, M.2(E-Key) x 1	ATX	fTPM	0~60˚C
MIX-H310A1-A11-4L-210FT	Socket	SODIMM x 2	Fan	VGA, HDMI	SATA3 x2, M.2(M-key)	—	GbE x 4	USB2.0 x 4 USB 3.2 Gen 1 x 4	1	1	PCIe3.0[x16] x 1, M.2(M-key) x1, M.2(E-Key) x 1	ATX	fTPM	0~60˚C

Optional Accessories

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

MIX-H310A2

Mini-ITX with 8th/9th Generation Intel® Core™ LGA1151 Socket Processor, Max. 65W TDPs, Giga-LAN x 2



Features

- 8th /9th Gen. Intel® Core™ LGA1151 Processor
- DDR4 DRAM Support, 2666MHz, Max. 32GB
- M.2 Slot (M key) x 1, M.2 Slot (E key) x 1
- USB 3.2 Gen 1 Port x 4, USB 2.0 Port x 2
- Intel® Gigabit Ethernet x 2
- SATA 6.0 Gb/s x 2
- PCI-Express [x16] (Gen3) x 1
- ATX Power

Giga LAN DDR 4 PCI Express USB 3.2 Gen 1 USB 2.0 Audio

Specifications

System	
Processor	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
Chipset	Intel® H310 Express Chipset
Memory	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6793D
Ethernet	Intel® PCIe Gb LAN 219V x 1, Intel® PCIe Gb LAN i210AT x 1
Audio	Realtek® ALC897 with Amp.
TPM	Firmware TPM
Expansion Slots	PCIe3.0 [x16] x 1
BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	HDMI+VGA, HDMI+DP, HDMI+LVDS, VGA+DP, VGA+LVDS, DP+LVDS
VGA	Up to 1920 x 1200 @ 60 Hz
DVI	—
HDMI	Up to 3840 x 2160 @30 Hz(HDMI 1.4b)
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz
LVDS	LVDS Up to 1920 x 1200 @60 Hz, Dual Channel 18/24 bit (1 x inverter)
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	ATX
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	333,520

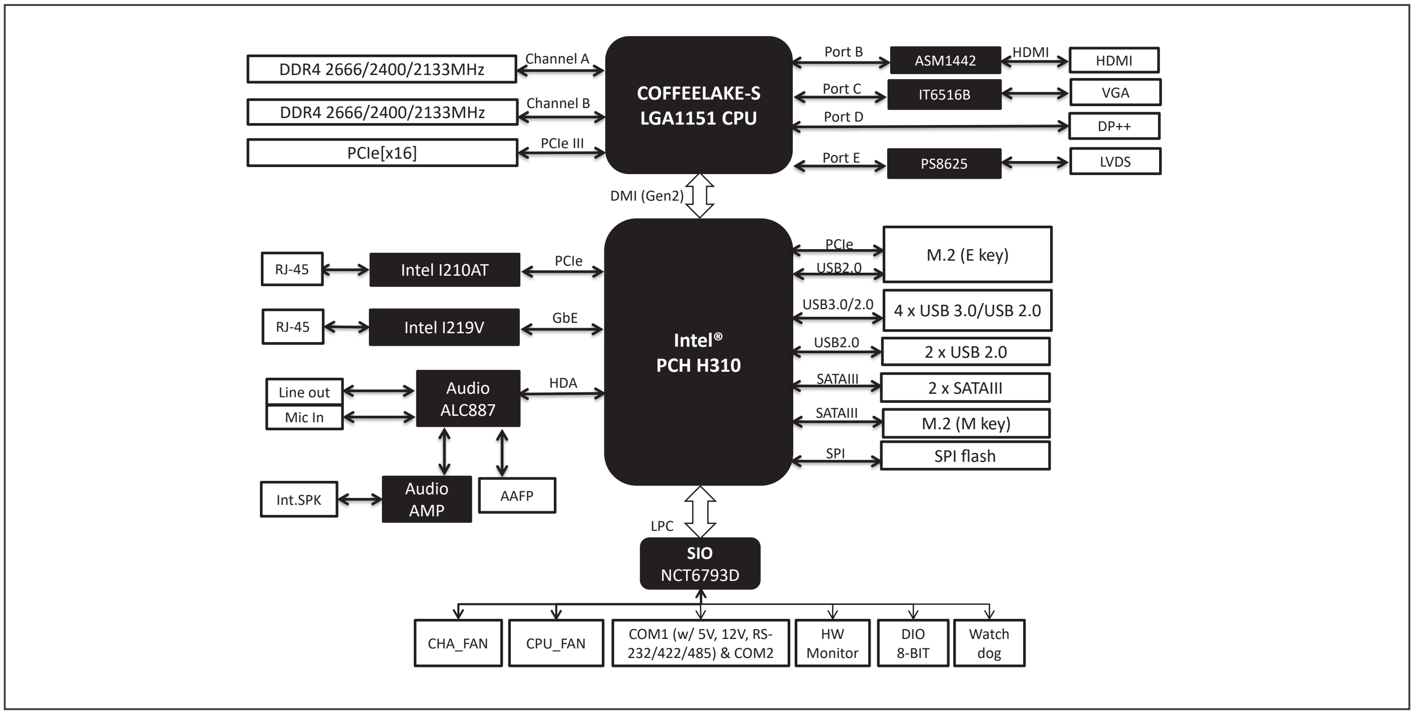
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 (5 Gbps) x 4
Display I/O	VGA x 1, HDMI x 1, DP x 1
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	1x COM(RS485/422/232)
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 1 port support additional 2 USB.
Display I/O	LVDS x 1
Audio I/O	AAFP x 1, Speaker x 1
Serial Port	Box header for COM (RS-232) x 1
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	—
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1
OS	
OS Support	Windows® 10 64-bit, Linux Ubuntu 18.04 LTS

Packing List

- SATA Cable
- I/O Shield
- MIX-H310A2

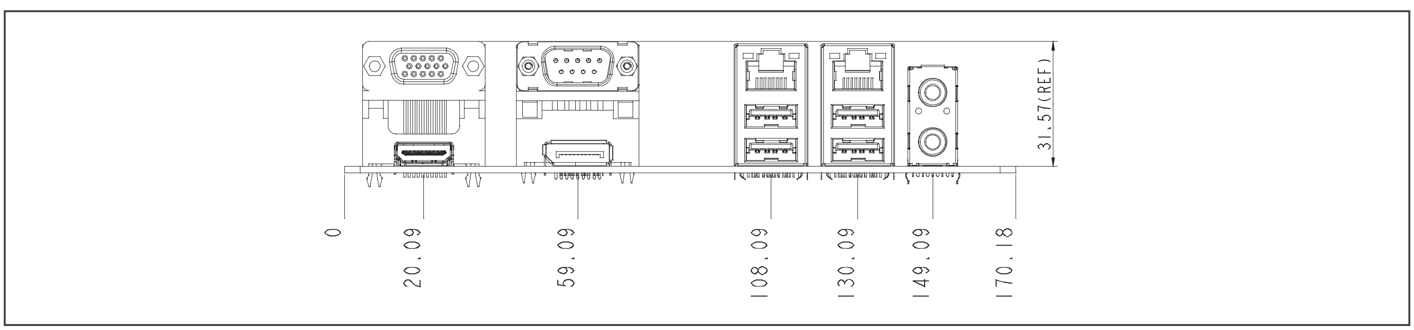
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

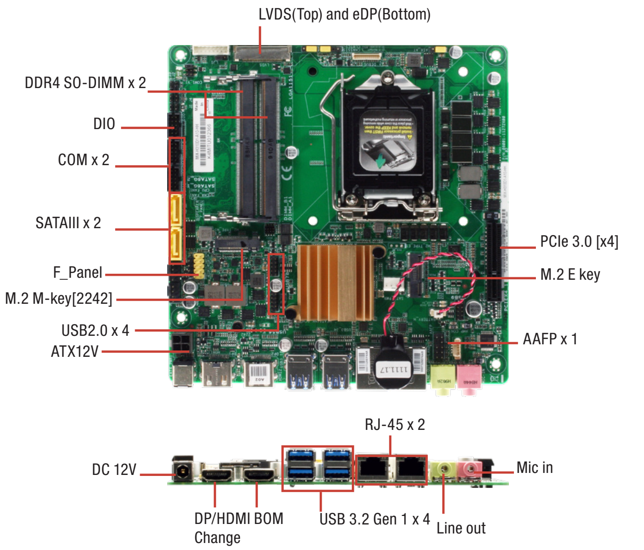
Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-H310A2-A12-210FT	Socket	SODIMM x 2	Fan	VGA, HDMI, LVDS, DP	SATA3 x2, M.2(M-key)	1	GbE x 2	USB2.0 x 2 USB 3.2 Gen 1 x 4	1	1	PCIe3.0[x16] x 1	ATX	fTPM	0~60˚C

Optional Accessories

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

MIX-H310D1

Mini-ITX with 8th/9th Generation Intel® Core™ LGA1151 Socket Processor, Max. 65W TDPs, 12V DC Power input



Features

- 8th/9th Gen. Intel® Core™ LGA1151 Processor
- DDR4 SODIMM x 2, Up to 32 GB
- Two Independent Display: DP, HDMI, eDP, LVDS
- M.2 Slot (M-key, 2242) x 1, M.2 Slot (E-key) x 1
- PCIe [x4] x 1
- Low Profile
- 12V DC Power Input
- USB 3.2 Gen 1 x 4, USB 2.0 x 5

Specifications

System	
Processor	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
Chipset	Intel® H310 Express Chipset
Memory	DDR4 2666 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6793D
Ethernet	Realtek ® PCIe Gb LAN RTL8111H
Audio	Realtek® ALC897
TPM	Firmware TPM
Expansion Slots	PCIe3.0 [x4] x 1 M.2 E-key(22 x 30 mm) x 1 for Wireless-wifi module (PCIe+USB)
BIOS	128Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	HDMI1+HDMI2, HDMI1+DP2, DP1+HDMI2, HDMI1+LVDS, HDMI2+LVDS, HDMI1+eDP, HDMI2+eDP, DP1+DP2, DP1+LVDS, DP2+LVDS, DP1+eDP, DP2+eDP
VGA	—
DVI	—
HDMI	Up to 4096 x 2304@24Hz (HDMI 1.4b)
Display Port	Up to 4096 x 2304@60Hz
LVDS	Up to 1920 x 1200 @ 60 Hz, dual-channel 18/24 bit (via CH 7511)
eDP	UP to 4096 x 2304 @ 60Hz
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12V DC
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)
Weight	1.1 lb (0.5 kg)
MTBF (Hours)	246,210

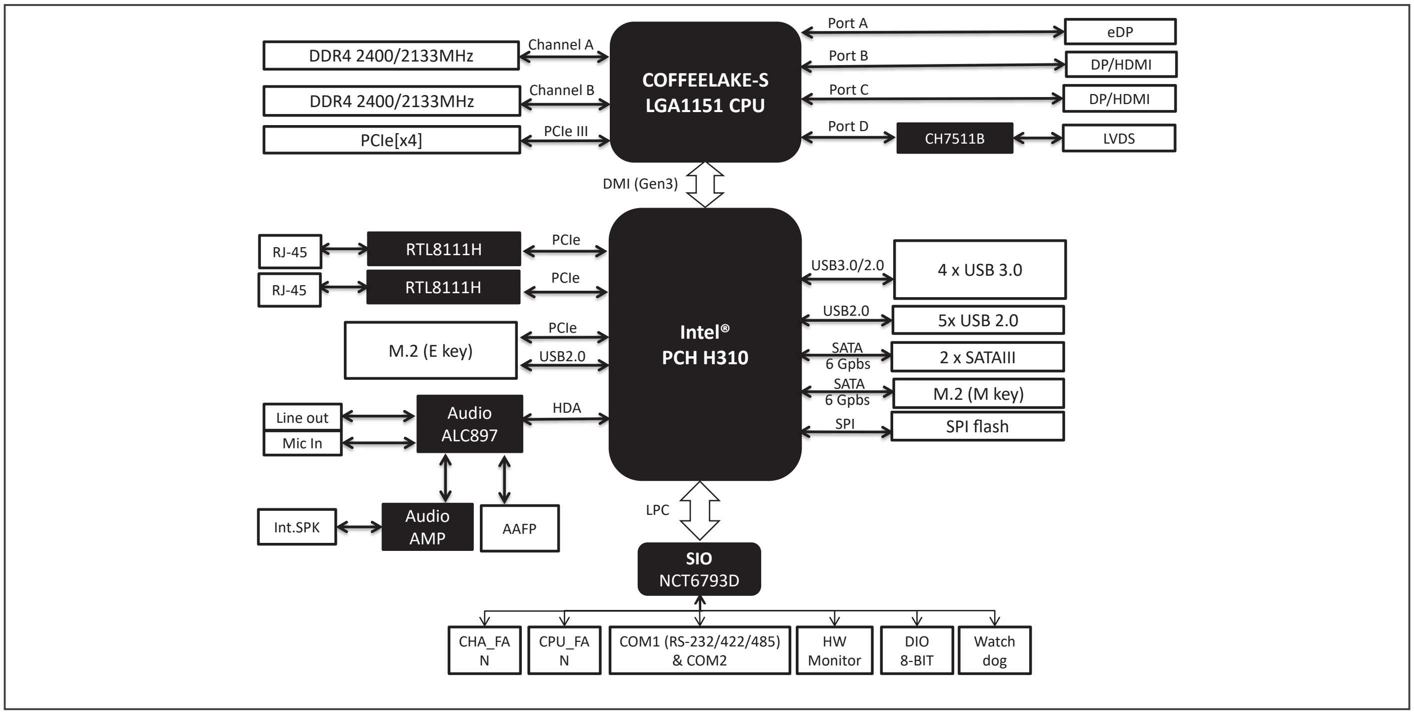
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 (5 Gbps) x 4
Display I/O	HDMI x 2, DP x 1 + HDMI x 1 (Optional), DP x 2 (Optional)
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC Jack
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2 M.2 M-key (SATA) (22 x 42mm) x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 3 ports support additional 5 USB.
Display I/O	—
Audio I/O	AAFP x 1, Speaker header x 1
Serial Port	Box header for COM (RS-232/422/485) x 1 Box header for COM (RS-232) x 1
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	—
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1
OS	
OS Support	Windows® 10 64-bit Linux Ubuntu 18.04 LTS

Packing List

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

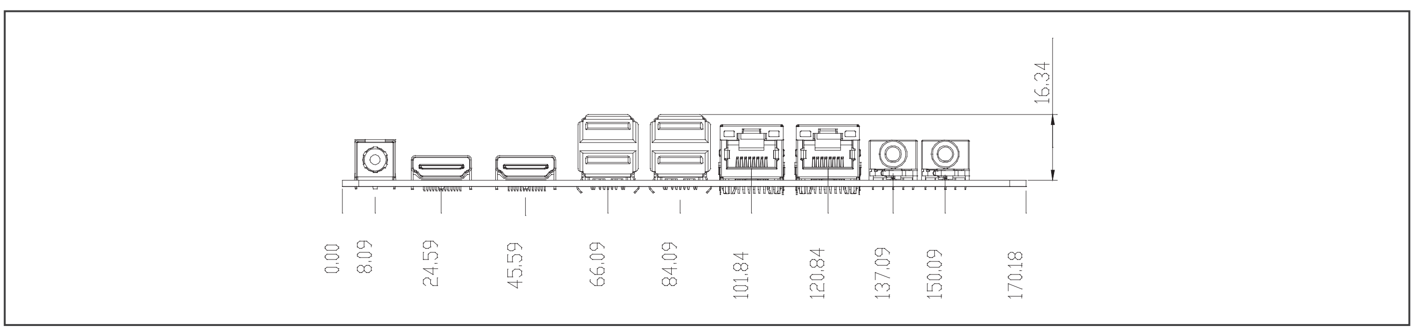
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

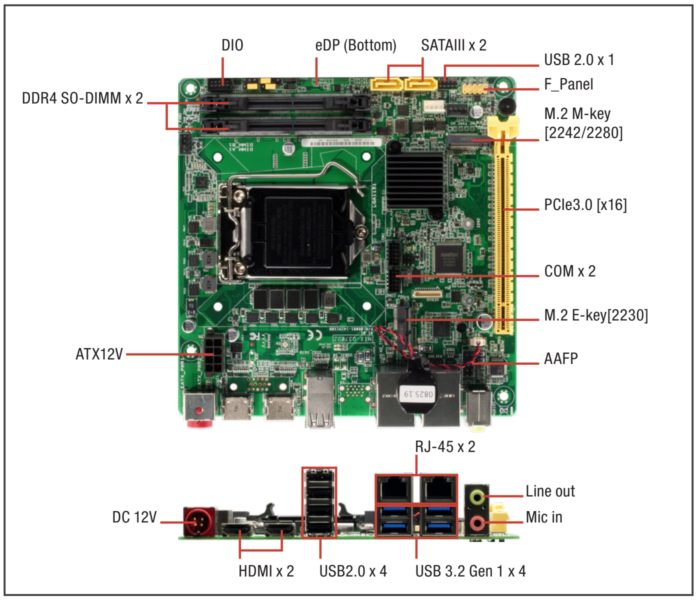
Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-H310D1-A13-HH	Socket	SODIMM x 2	Fan	Daul HDMI, eDP, LVDS	SATA3 x 2, M.2 (M-key; SATA)	Daul Channel 18/24 bit	GbE x 2	USB2.0 x 5 USB 3.2 Gen 1 x 4	1	1	PCIe3.0[x4] x 1, M.2 (E-Key) x 1	12V DC	fTPM	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

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

MIX-H310D2

Mini-ITX with Intel® 8th / 9th Generation Core™ LGA1151 Socket Processor, Max. 65W TDPs, USB 3.2 Gen 1 Port x 4, USB 2.0 Port x 5, 12V DC input



Features

- 8th /9th Gen. Intel® Core™ LGA1151 Processor
- DDR4 DRAM Support, 2666MHz, Max. 64GB
- M.2 Slot (M key; PCIe) x 1, M.2 Slot (E key) x 1
- USB 3.2 Gen 1 Port x 4, USB 2.0 Port x 5
- Intel® Gigabit Ethernet x 2
- SATA 6.0 Gb/s x 2
- PCI-Express [x16] (Gen3) x 1
- 12VDC input

1000 Giga LAN | DDR 4 | PCI Express | USB 3.2 Gen 1 | USB 2.0 | Audio | CE | FC

Specifications

System	
Processor	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S),Max. 65W TDPs
Chipset	Intel® H310 Express Chipset
Memory	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 64GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6793D
Ethernet	Intel® GbE LAN i219V x 1, Intel® GbE LAN i210AT x 1
Audio	Realtek® ALC897
TPM	NPCT750 TPM2.0 (default: No)
Expansion Slots	PCIe3.0 [x16] x 1 M.2 E-key(22 x 30 mm) x1 for Wireless-wifi module (PCIe+USB; CNVi)
BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	HDMI+HDMI, HDMI+eDP, HDMI+VGA, VGA+eDP
VGA	Up to 1920 x 1200 @ 60 Hz (Optional)
DVI	—
HDMI	Up to 3840 x 2160 @30 Hz(HDMI 1.4)
Display Port	—
LVDS	—
eDP	UP to 4096 x 2304 @ 60Hz
Backlight Control	Support eDP
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12V DC
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7” x 6.7” (170 mm x 170 mm)
Weight	1.1 lb (0.5 kg)
MTBF (Hours)	373,720

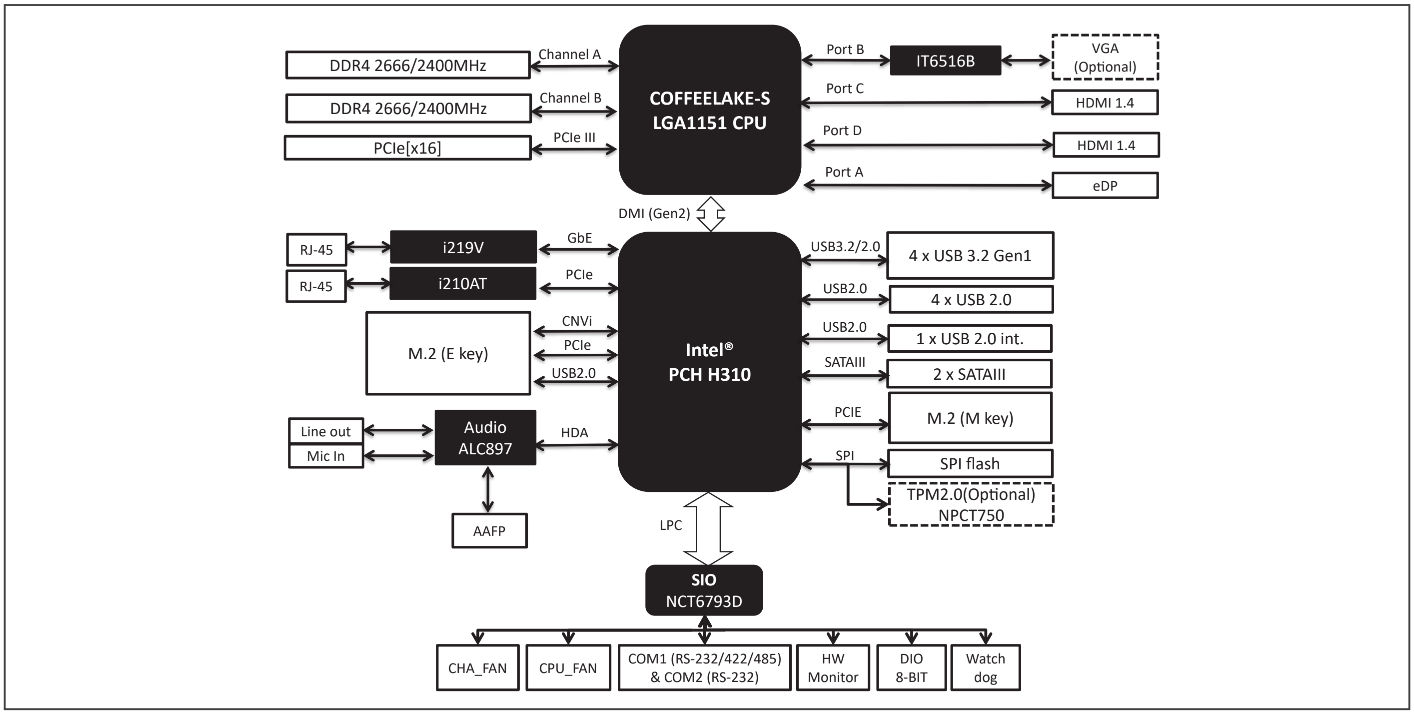
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 x 4, USB 2.0 x 4
Display I/O	HDMI x 2, VGA x 1 (Optional)
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	12V DC Jack (max:192W)
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2 M.2 M-key (22 x 42/80mm; PCIe) x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 1 port support additional 1 USB
Display I/O	eDP x 1
Audio I/O	AAFP x 1
Serial Port	Box header for COM (RS-232) x 1; 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	—
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1, ATX/AT mode select x 1, ME disable x 1, eDP Tcon IC voltage select x 1, eDP panel backlight voltage select x 1, COM RI select jumper x 1, SATA PWR x 1
OS	
OS Support	Windows® 10 64-bit, Linux Ubuntu 18.04.2

Packing List

- SATA Cable
- SATA Power Cable
- I/O Shield
- MIX-H310D2

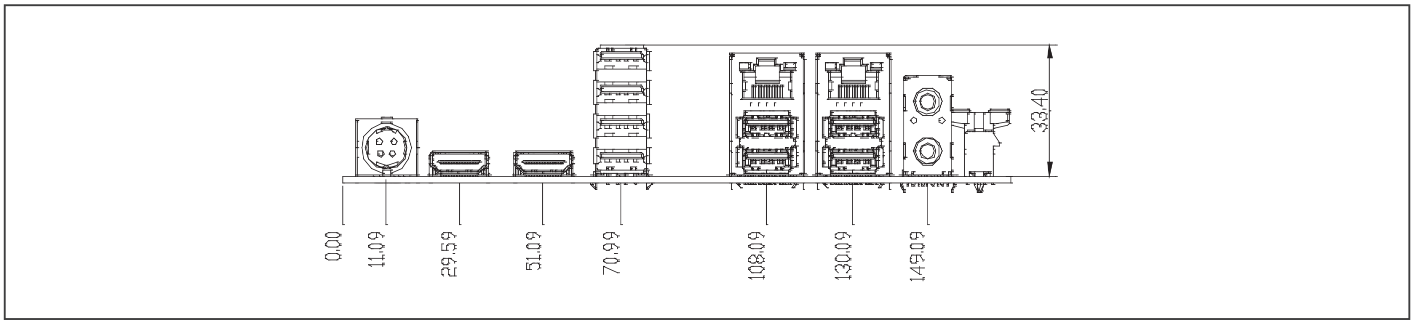
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

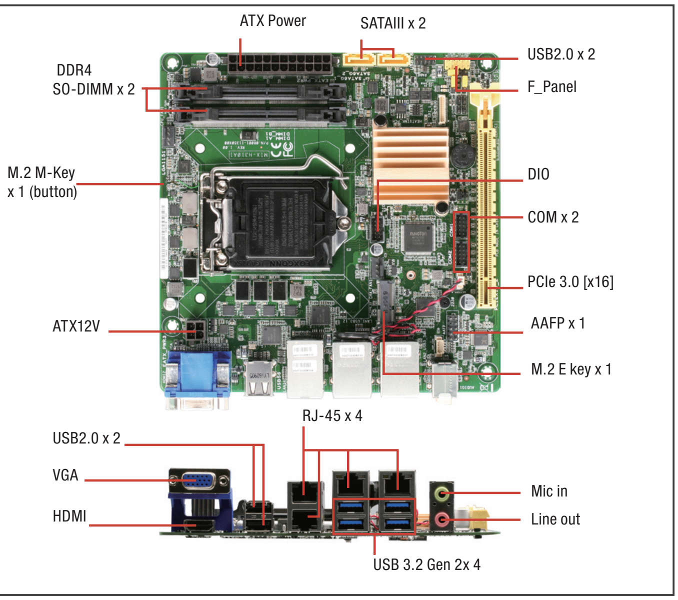
Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-H310D2-A11-210	Socket	SODIMM x 2	Fan	HDMI x 2 eDP	SATA3 x 2 M.2(M-key) x 1	—	GbE x 2	USB2.0 x 5, USB3.2 Gen 1 x 4	1	1	PCIe3.0[x16] x 1, M.2(E-Key) x 1	12V DC	—	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
COOLER-65W-01	CPU Cooler, LGA 1156, 12V, 65W, 4P, Kingcooler, 0571-1463R
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)
1701100206	COM Cable (200MM, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)
1255X00011	(TF)AC/DC Adapter.12V.192W.16A.FSP192-AHAN3.9NA1920100

MIX-Q370A1

Mini-ITX with 8th/9th Gen Intel® Core™ Processor Family, Max. 65W TDPs, Giga-LAN x 4



Features

- 8th/9th Gen. Intel® Core™ LGA1151 Processor
- DDR4 DRAM Support, 2666MHz, Max. 32GB
- M.2 Slot (M key- SATA only) x 1, M.2 Slot (E key) x 1
- USB 3.2 Gen 2 Port x 4, USB 2.0 Port x 4
- Intel® LAN 210AT x 3, 219LM for iAMT 12.0 x 1
- SATA 6.0 Gb/s x 2
- PCI-Express [x16] (Gen3) x 1
- ATX Power

1000 Giga LAN | DDR 4 | PCI Express | USB 3.2 Gen 2 | USB 2.0 | Audio

Specifications

System	
Processor	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
Chipset	Intel® Q370 Express Chipset
Memory	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, dual-channel memory architecture
I/O Chipset	NCT6793D
Ethernet	Intel® PCIe Gb LAN 219LM x 1, Intel® PCIe Gb LAN i210AT x 3
Audio	Realtek® ALC897 with Amp.
TPM	Firmware TPM
Expansion Slots	PCIe3.0 [x16] x 1 M.2 E-key (22 x 30mm; Support CNVi)
BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	HDMI+VGA
VGA	Up to 1920 x 1200 @ 60 Hz
DVI	—
HDMI	Up to 4096 x 2160 @30Hz (HDMI 1.4)
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	ATX
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 kg)
MTBF (Hours)	—

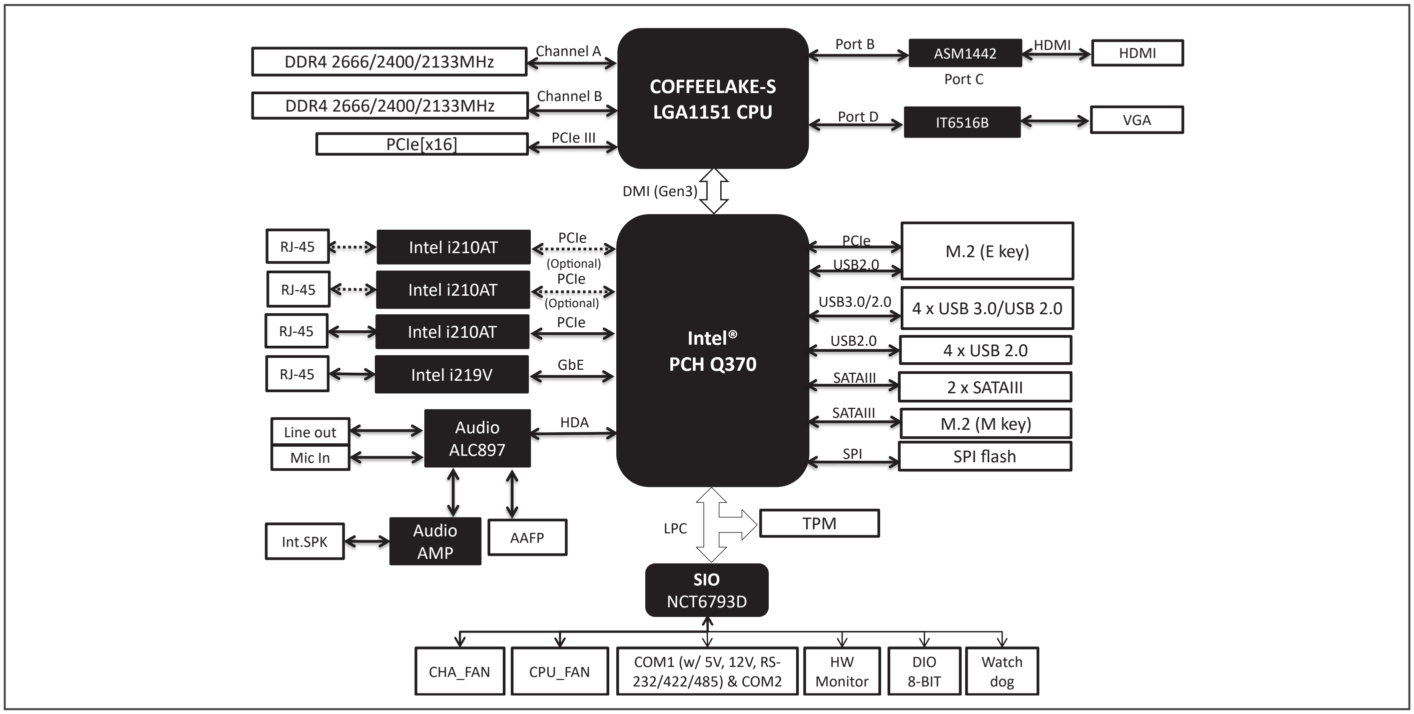
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 (10 Gbps) x 4, USB 2.0 x 2
Display I/O	VGA x 1, HDMI x 1
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 4
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) at bottom side x 1(SATA only)
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 1 ports support additional 2 USB
Display I/O	—
Audio I/O	AAFP x 1, Speaker x 1
Serial Port	Box header for COM (RS-232/422/485) x 1 Box header for COM (RS-232) x 1
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	—
Others	Front Panel connector x 1 Chassis Intrusion x 1 Buzzer onboard x 1 CMOS jumper x 1
OS	
OS Support	Windows® 10 64-bit, Linux Ubuntu 18.04. 64-bit

Packing List

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

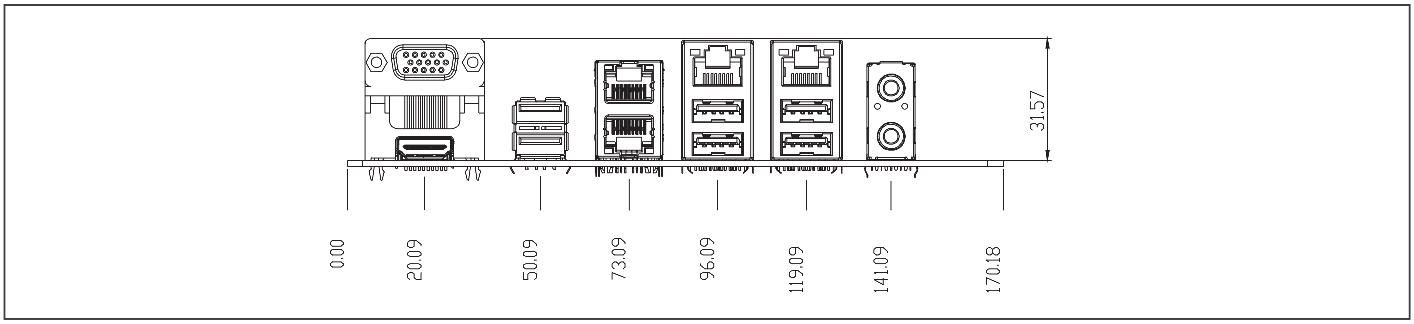
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

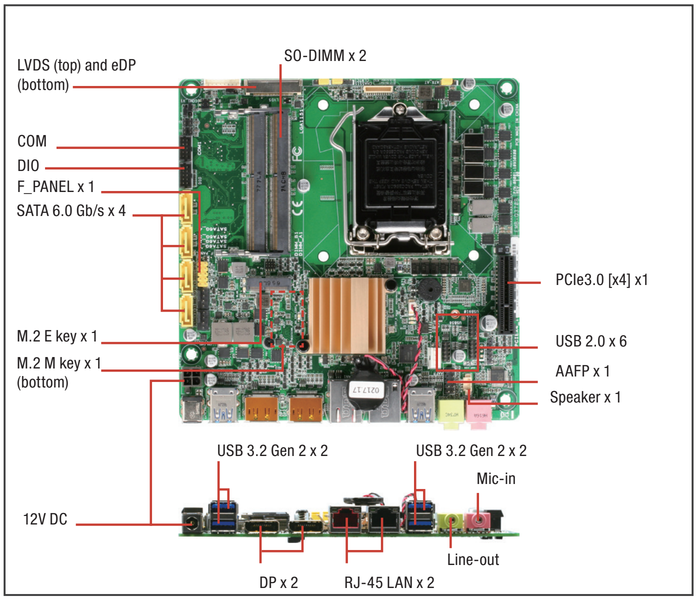
Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-Q370A1-A11-4L-210FT	Socket	SODIMM x 2	Fan	VGA, HDMI	SATA3 x2, M.2(M-key)	—	GbE x 4	USB2.0 x 4 USB 3.2 Gen 2 x 4	1	1	PCIe3.0[x16] x 1, M.2(E-Key) x 1	ATX	fTPM	0~60˚C
MIX-Q370A1-A11-2L-210FT	Socket	SODIMM x 2	Fan	VGA, HDMI	SATA3 x2, M.2(M-key)	—	GbE x 2	USB2.0 x 4 USB 3.2 Gen 2 x 4	1	1	PCIe3.0[x16] x 1, M.2(E-Key) x 1	ATX	fTPM	0~60˚C

Optional Accessories

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

MIX-Q370D1

Mini-ITX with 8th/9th Gen Intel® Core™ Processor Family, DDR4 DRAM, USB x 10, Max. 65W TDPs



Features

- DDR4 SODIMM x 2, Up to 32 GB
- Three Independent Display: DP x 2, eDP x 1, LVDS x 1
- Intel® LAN 210AT x 1, 219LM for iAMT 12.0 x 1
- M.2 Slot (M-key) x 1
- M.2 Slot (E-key) x 1
- USB 3.2 Gen 2 x 4, USB 2.0 x 6
- PCIe [x4] x 1
- Low Profile
- 12V DC Power Input
- Support Intel® NVMe M.2 SSD

Specifications

System	
Processor	8th/9th Generation Intel® Core™ i7/ i5 /i3, Pentium® LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
Chipset	Intel® Q370 Express Chipset
Memory	SODIMM x 2, Max. 32GB, DDR4 2666/2400 MHz, Non-ECC, Un-buffered Memory, Dual channel
I/O Chipset	NCT6793D
Ethernet	Intel® PHY i219LM Giga LAN (support Intel® AMT 12.0) x 1 Intel® i210AT Giga LAN x 1
Audio	Realtek® ALC897
TPM	Nuvoton TPM version 2.0
Expansion Slots	PCIe 3.0 [x4] x 1 M.2 M key (22 x 80 mm) x 1 at Bottom side, SATA & PCIe [x4] M.2 E key (22 x 30 mm) x 1 for Wireless-wifi module (PCIe+USB)
BIOS	256M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	Three Independent Display
VGA	—
DVI	—
HDMI	—
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio, DP++ supported
LVDS	LVDS Up to 1920 x 1200 @ 60 Hz, dual-channel 18/24 bit (via Chrontel 7511)
eDP	eDP UP to 4096 x 2304 @ 60Hz
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12V DC
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC (Class A)
Form Factor	Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	256,310

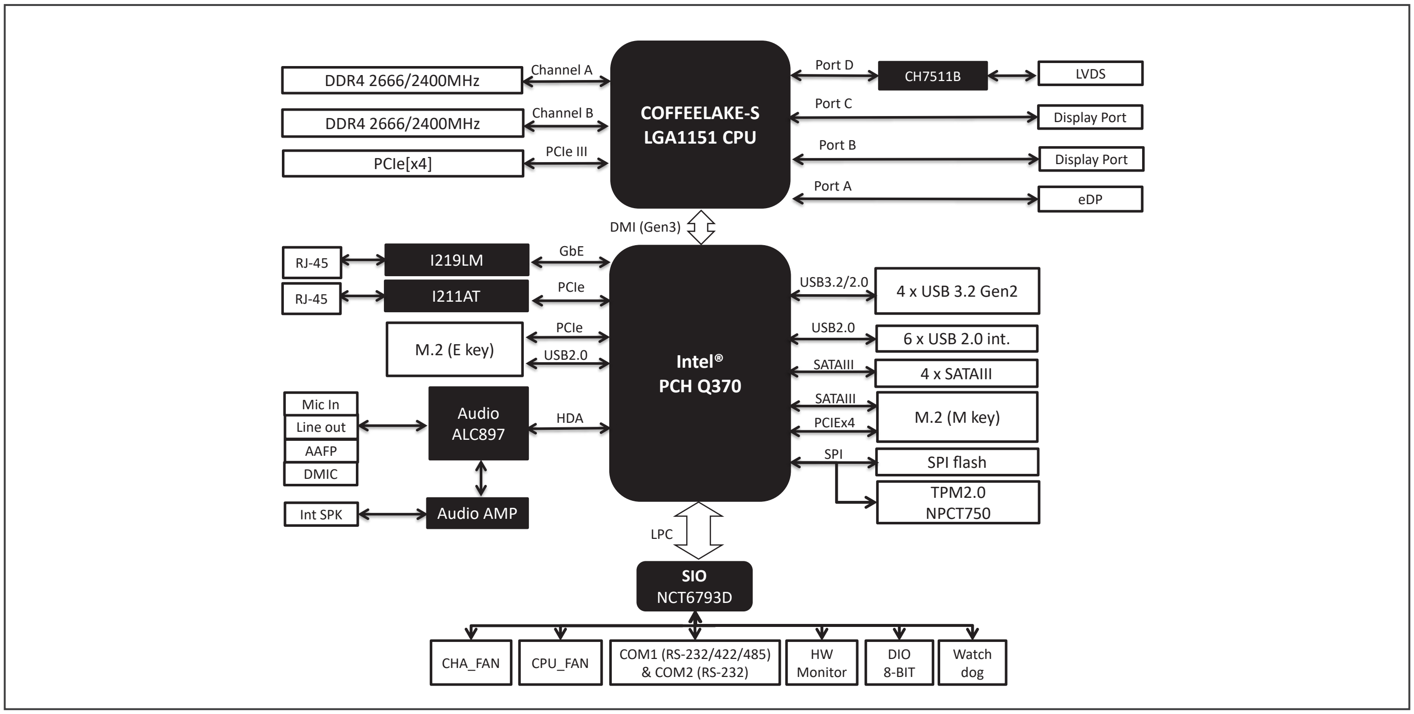
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 (10 Gbps) x 4
Display I/O	DP x 2
Audio I/O	Mic-in x 1, Line out x 1
LAN I/O	LAN (RJ45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC Jack
Internal I/O Connectors	
Storage	SATA 6.0Gb/s x4 M.2 M key (22 x 80 mm) x1 (Support Intel® NVMe M.2 SSD)
USB	3 x USB 2.0 pin header support additional 6 USB ports
Display I/O	40-pin LVDS connector x 1 40-pin eDP connector x 1 LCD backlight connector (inverter) x 1
Audio I/O	Speaker for 2W/4Ω x 1 AAFP follow ASUS pin out x 1
Serial Port	Box header x 1 for COM (COM1: RS-232/422/485 supports 5V/12V/RI)
PS/2 Port	—
Parallel Port	—
DIO	8-bit x 1 (In/Out programmable)
FAN	4-pin Chassis Fan connector x 1 4-pin CPU Fan connector x 1
Power	12V DC Power jack x 1
Others	Front panel header x 1 Clear CMOS jumper x 1 AT/ATX select jumper x 1 Chassis Intrusion x 1 4-pin SATA power x 1
OS	
OS Support	Windows® 10 64 bit, Ubuntu 16.04 LTS

Packing List

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

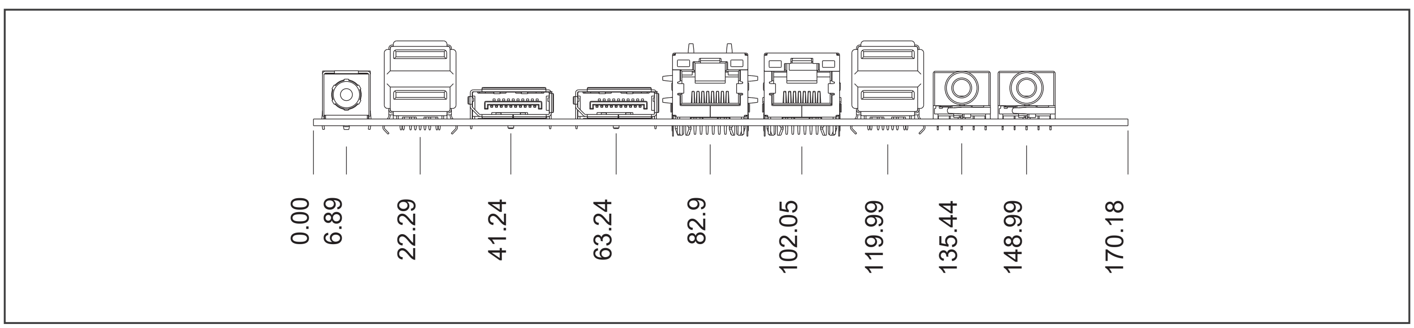
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

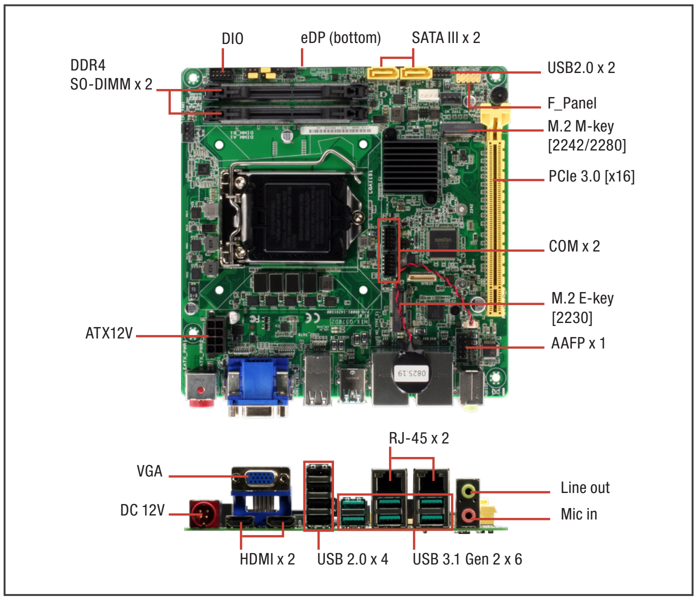
Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-Q370D1-A12	Socket	SODIMM x 2	Fan	DP x 2, LVDS, eDP	SATA3 x 4, M.2(M-key)	Daul Channel 18/24 bit	GbE x 2	USB2.0 x 6, USB 3.2 Gen 2 x 4	—	1	PCIe3.0[x4] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12V DC	2.0	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

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

MIX-Q370D2

Mini-ITX with Intel® 8th / 9th Generation Core™ LGA1151 Socket Processor, Max. 65W TDPs, USB 3.2 Gen 2 Port x 6, USB 2.0 Port x 6, 12V DC input



Features

- 8th/9th Gen. Intel® Core™ LGA1151 Processor
- DDR4 DRAM Support, 2666MHz, Max. 64GB
- M.2 Slot (M key; NVME/SATA) x 1, M.2 Slot (E key) x 1
- USB 3.2 Gen 2 Port x 6, USB 2.0 Port x 6
- Intel® Gigabit Ethernet x 2
- SATA 6.0 Gb/s x 2
- PCI-Express [x16] (Gen3) x 1
- 12VDC input

1000 Giga LAN · DDR 4 · PCI Express · USB 3.2 Gen 2 · USB 2.0 · Audio · CE · FC

Specifications

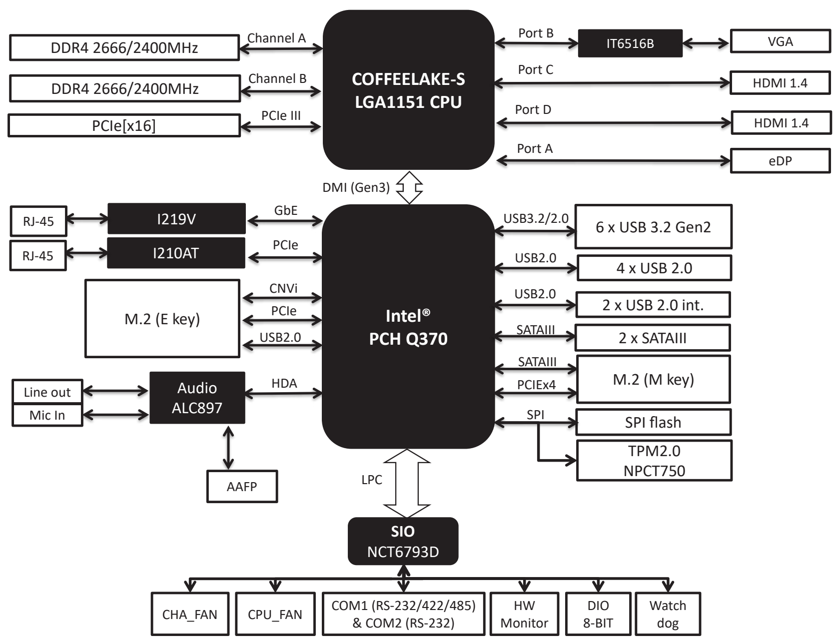
System	
Processor	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
Chipset	Intel® Q370 Express Chipset
Memory	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 64GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6793D
Ethernet	Intel® GbE LAN i219V x 1, Intel® GbE LAN i210AT x 1
Audio	Realtek® ALC897
TPM	NPCT750 TPM2.0
Expansion Slots	PCIe3.0 [x16] x 1 M.2 E-key(22 x 30 mm) x1 for Wireless-wifi module (PCIe+USB; CNVi)
BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	HDMI+VGA+eDP, HDMI+HDMI+VGA,HDMI+HDMI+eDP
VGA	Up to 1920 x 1200 @ 60 Hz
DVI	—
HDMI	Up to 3840 x 2160 @30 Hz(HDMI 1.4b)
Display Port	—
LVDS	—
eDP	eDP UP to 4096 x 2304 @ 60Hz
Backlight Control	Support eDP
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12V DC
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	319,160
Rear Panel I/O Ports	
USB	USB 3.2 Gen2 x 6, USB2.0 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 (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	12V DC Jack (max:192W)
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2 M.2 M-key (22 x 42/80mm; NVME/SATA) x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 1 port support additional 2 USB
Display I/O	eDP x 1
Audio I/O	AAFP x 1
Serial Port	Box header for COM (RS-232) x 1; 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 ATX Power Connector x 1
Others	Front Panel connector x 1 Chassis Intrusion x 1 Buzzer onboard x 1 CMOS jumper x 1 SATA Power connector x 1 SPI ROM programming header x 1 ATX/AT mode jumper x 1 eDP backlight power jumper x 1 eDP T-con IC power jumper x 1
OS	
OS Support	Windows® 10 64-bit, Linux Ubuntu 18.04.2

Packing List

- SATA Cable
- SATA Power Cable
- I/O Shield
- MIX-Q370D2

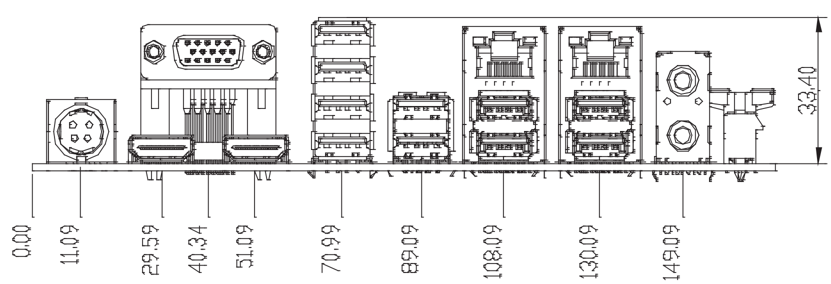
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

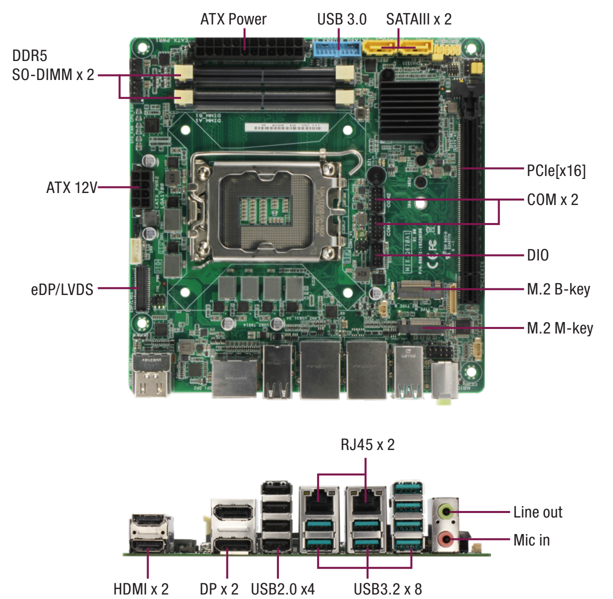
Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-Q370D2-A11-210	Socket	SODIMM x 2	Fan	VGA, HDMI x 2, eDP	SATA3 x2 M.2(M-key) x 1	—	GbE x 2	USB2.0 x 6 USB3.2 Gen 2 x 6	1	1	PCIe3.0[x16] x 1 M.2(E-Key) x 1	12V DC	2.0	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
COOLER-65W-01	CPU Cooler, LGA 1156, 12V, 65W, 4P, Kingcooler, 0571-1463R
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)
1255X00011	(TF)AC/DC Adapter.12V.192W.16A.FSP192-AHAN3.9NA1920100

MIX-Q670A1 PRELIMINARY

Mini-ITX with Intel® 12th Generation Core™ LGA1700 Socket Processor, Max. 65W TDPs, HDMI2.0 x 2 + DP1.2 x 2, Giga-LAN x 2, DDR5x2 Max. 64GB



Features

- 12th Gen. Intel® Core™ LGA1700 Processor
- DDR5 DRAM Support, 4800MHz, Max. 64GB
- HDMI2.0 x 2 + DP1.2 x 2
- M.2 Slot (M key) x 1, M.2 Slot (B key) x 1
- USB 3.2 Port x 8, USB 2.0 Port x 4
- Intel GbE LAN x 2
- SATA 6.0 Gb/s x 2
- PCI-Express [x16] x 1
- ATX Power

PCI Express | Giga LAN | HDMI | DP Port | USB 3.2 Gen 1 | USB 2.0

Specifications

System	
Processor	Intel® Alder lake-S Core™ Processors, 8+8;65W
Chipset	Q670E
Memory	SODIMM x 2, max. 64GB, Dual Channel DDR5 4800 MHz
I/O Chipset	Intel® UHD Graphics
Ethernet	Intel® GbE LAN 219LM x 1 Intel® GbE LAN 210AT x 1
Audio	Realtek® ALC897 with Amp
TPM	TPM2.0 IC on board
Expansion Slots	PCIex16 slot x 1, M.2 B key (3042/3052;PCIex1) x 1
BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 step by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	HDMIx2+DPx2, HDMIx2+DPx1+LVDSx1, HDMIx2+DPx1+eDPx1, HDMIx1+DPx2+LVDSx1, HDMIx1+DPx2+eDPx1
VGA	—
DVI	—
HDMI	Up to 4096 x 2160 @60 Hz(HDMI 2.0)
Display Port	Up to 4096 x 2160 @60 Hz
LVDS	Up to 1920 x 1080 @60Hz, Daul Channel 18/24 bit
eDP	UP to 1920x 1080 @60Hz (via CH7513) co-layout LVDS
Backlight Control	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)

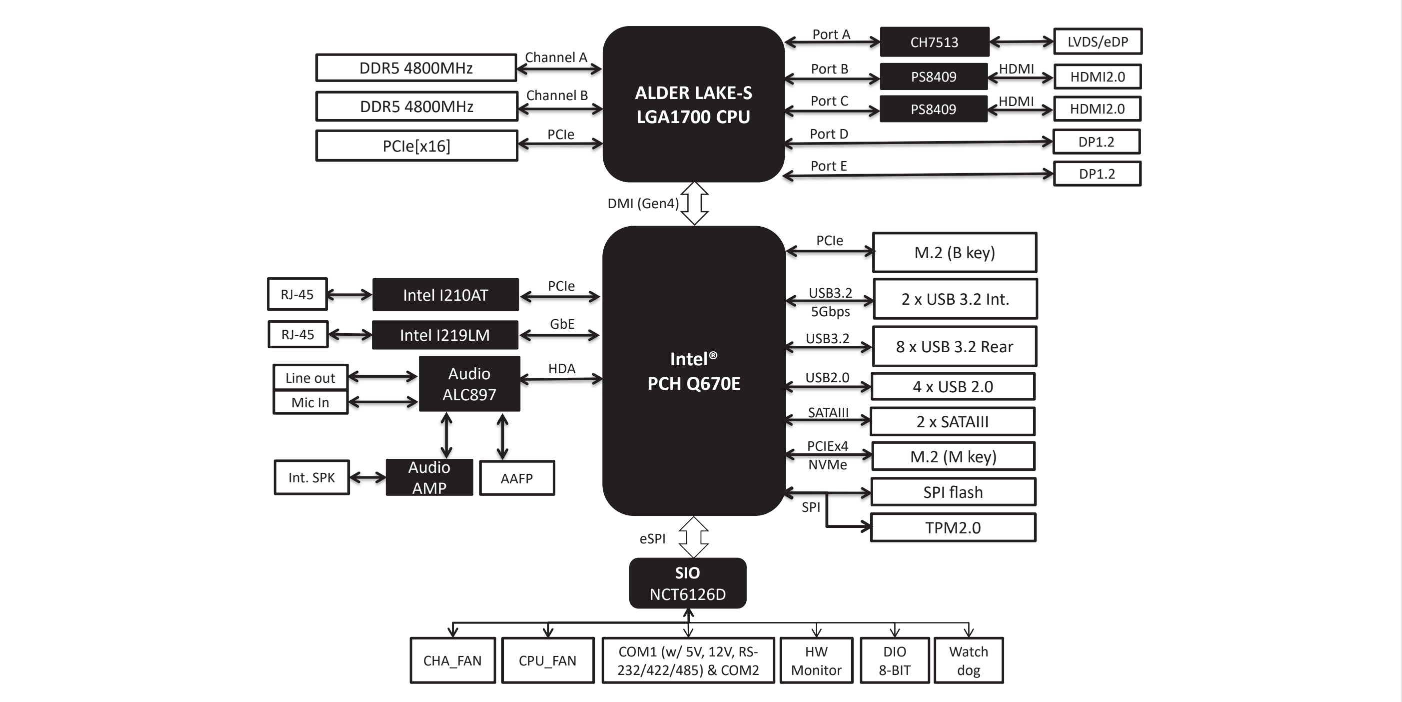
MTBF (Hours)	—
Rear Panel I/O Ports	
USB	USB 3.2 Gen1/2 x 8, USB 2.0 x 4
Display I/O	HDMI x 2, DP x 2
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (2280)
USB	USB 3.0 pin header x 1 (support additional USB3.2 Gen1 x 2ports)
Display I/O	—
Audio I/O	AAFP x 1, Speaker x 1
Serial Port	Box header for COM (RS-232/422/485) x 1, Box header for COM (RS-232) x 1
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	—
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1
OS	
OS Support	Windows® 10 64-bit, Windows® 11 64bit

Packing List

- I/O Shield
- SATA Cable
- MIX-Q670A1

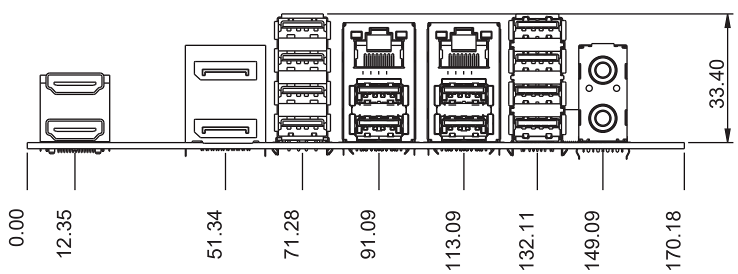
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	LVDS/eDP	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-Q670A1-A10	Socket	SODIMM x 2	Fan	HDMIx2, DPx2 LVDS/eDPx1	1	SATA3 x2, M.2(M-key)	GbE x 2	USB2.0 x 4 USB3.2 x 8	1	1	PCIe slot [x16] x 1, M.2(B-Key) x 1	ATX	2.0	0~60˚C

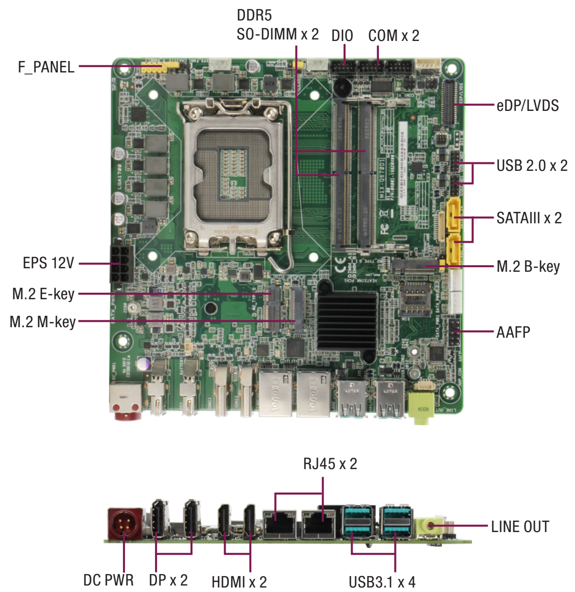
Optional Accessories

Part Number	Description
1701100206	COM Cable (200MM, p=2.00mm)

Note: All specifications are subject to change without notice.

MIX-Q670D1 PRELIMINARY

Mini-ITX with Intel® 12th Generation Core™ LGA1700 Socket Processor, Max. 65W TDPs, HDMI x 2 + DP x 2, Giga-LAN x 2, DDR5x2 Max. 64GB, DC 12V input, Low Profile



Features

- 12th Gen. Intel® Core™ LGA1700 Processor
- DDR5 DRAM Support, 4800MHz, Max. 64GB
- HDMI2.0 x 2 + DP1.2 x 2
- M.2 Slot (M-key; PCIex4; NVMe;2280) x 1, M.2 Slot (E-key;2230) x 1, M.2 Slot (B-key; 3042; 3052) x 1 with SIM slot
- USB 3.2 Port x 4, USB 2.0 Port x 4
- Intel GbE LAN x 2
- SATA 6.0 Gb/s x 2
- DC 12V input

PCI Express | Giga LAN 1000 | HDMI | DP Port | USB 3.2 Gen 1 | USB 2.0 | CE | FC

Specifications

System	
Processor	Intel® Alder lake-S Core™ Processors, 8+8;65W
Chipset	Q670E
Memory	SODIMM x 2, max. 64GB, Dual Channel DDR5 4800 MHz(Non-ECC)
I/O Chipset	Intel® UHD Graphics
Ethernet	Intel® GbE LAN 219LM x 1 Intel® GbE LAN 210AT x 1
Audio	Realtek® ALC897 with Amp.
TPM	TPM2.0 IC on board
Expansion Slots	M.2 B-key (3042/3052; PCIex1; USB3.2 Gen1/USB2.0) x 1 M.2 E-key (2232; PCIex1(Optional: dual PCIex1); USB2.0) x 1
BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ System Fan
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	HDMIx2+DPx2, HDMIx2+DPx1+LVDSx1, HDMIx2+DPx1+eDPx1, HDMIx1+DPx2+LVDSx1, HDMIx1+DPx2+eDPx1
VGA	—
DVI	—
HDMI	Up to 4096 x 2160 @60 Hz(HDMI 2.0)
Display Port	Up to 4096 x 2160 @60 Hz(DP1.2)
LVDS	Up to 1920 x 1080 @60Hz, Daul Channel 18/24 bit (via CH7513) co-layout eDP (default LVDS)
eDP	Up to 1920 x 1080 @ 60Hz
Backlight Control	PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	DC 12V
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)

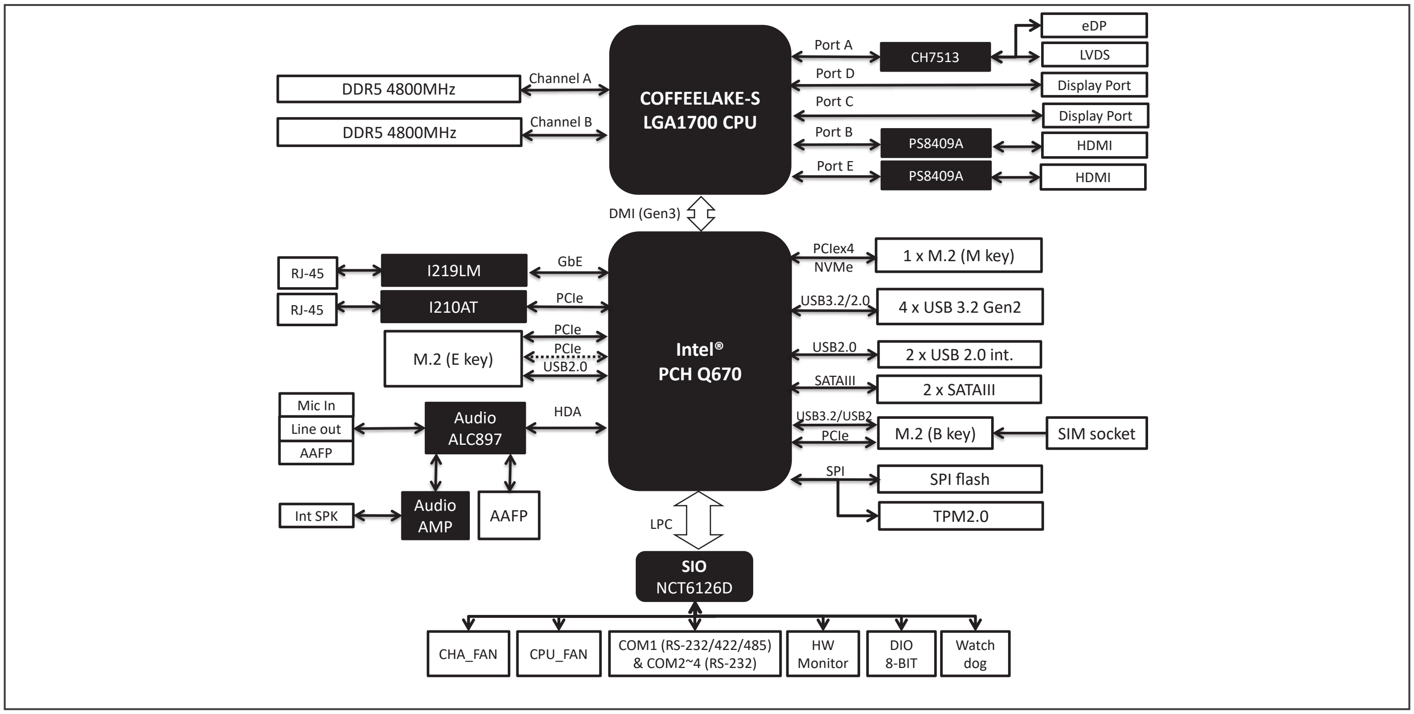
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	—
Rear Panel I/O Ports	
USB	USB 3.2 Gen2 x 4
Display I/O	HDMI x 2, DP x 2
Audio I/O	Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA 6.0Gb/s x 2 with SATA power conn x 2(1A) M.2 M key(2280) x1, [PCIex4/NVMe]
USB	USB2.0 x 4 ports using 2 x 5-pin headers x 2
Display I/O	40-pin LVDs/eDP connector x 1 with Inverter
Audio I/O	HD Audio using AAFP header x 1, Internal Speaker (2W/4Ohm)x 1
Serial Port	Box header for COM (RS-232/422/485) x 1, Box 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 System Fan connector x 1
Power	—
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1
OS	
OS Support	Windows® 10 64-bit, Windows® 11 64bit

Packing List

- I/O Shield
- SATA Cable
- SATA Power Cable
- MIX-Q670D1

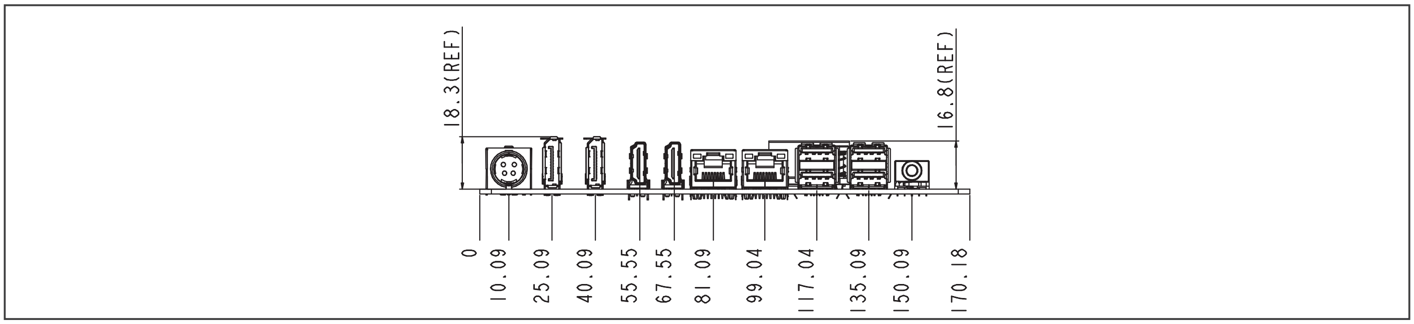
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

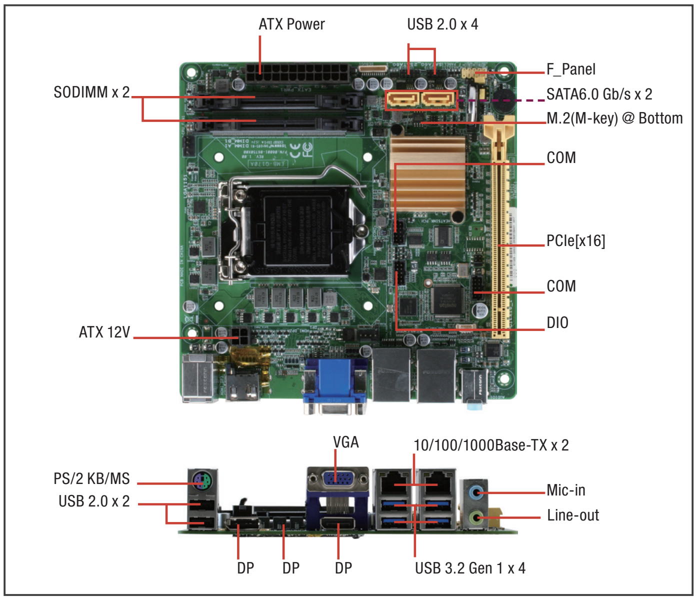
Part Number	CPU	RAM	Fan/Fanless	Display	LVDS/eDP	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-Q670D1-A10	Socket	SODIMM x 2	Fan	HDMI x2, DP x2, LVDS/eDP x1	1	SATA3 x2, M.2(M-key)	GbE x 2	USB2.0 x 4 USB3.2 x 4	1	1	M.2(B-Key) x 1, M.2(E-Key) x 1	DC 12V	2.0	0~60˚C

Optional Accessories

Part Number	Description
1701100206	COM Cable (200MM, p=2.00mm)
1255X00011	(TF)AC/DC Adapter.12V.192W.16A.FSP192-AHAN3.9NA1920100

EMB-Q170A

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



Features

- LGA1151 Socket For 6th/7th Generation Intel® Core™ i Series Processor
- DDR4 SODIMM x 2, Up to 32 GB
- Three Independent Display: DP x 3, VGA x 1
- 4K for Display Port
- Intel® LAN 210AT x 1, LAN 219LM for vPro x 1 (LAN1 Supports iAMT11.0)
- SATA 6.0 Gb/s x 2, M.2 slot (M-key) x 1
- PCI-Express [x16] (Gen3) x 1
- ATX Power

Specifications

System	
Processor	6th/7th Generation Intel® Core™ i7/i5/i3, LGA1151 Socket Processor, Max. 65W TDPs
Chipset	Intel® Q170
Memory	DDR4 2133/1867 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6791D
Ethernet	Intel® PCIe Gb LAN 219LM x 1, Intel® PCIe Gb LAN i210AT x 1
Audio	Realtek® ALC897
TPM	Infineon SLB96XX TT 1.2/2.0 (default: No)
Expansion Slots	PCIe3.0 [x16] x 1, M.2 M-key(22 x 80 mm) at bottom side x 1
BIOS	128M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	DP+DP, DP+VGA, DP+DP+VGA, DP+DP+DP
VGA	Up to 1920 x 1200 @60 Hz
DVI	—
HDMI	—
Display Port	Up to 4096 x 2160 @24 Hz / 3840 x 2160 @60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	ATX
Operating Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	221,850

Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 (5 Gbps) x 4, USB 2.0 x 2
Display I/O	VGA x 1, DP x 3
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	PS/2 for KB/MS x 1
Others	—
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80 mm) at bottom side x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 2 ports support additional 4 USB.
Display I/O	—
Audio I/O	Speaker x 1
Serial Port	Box head for COM (RS-232/422/485) x 1, Box head for COM (RS-232) x 1
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box head x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	ATX Power Connector x 2, AT/ATX mode select jumper (optional) x 1
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 64-bit, Ubuntu16.04.02/Kernel4.8.0

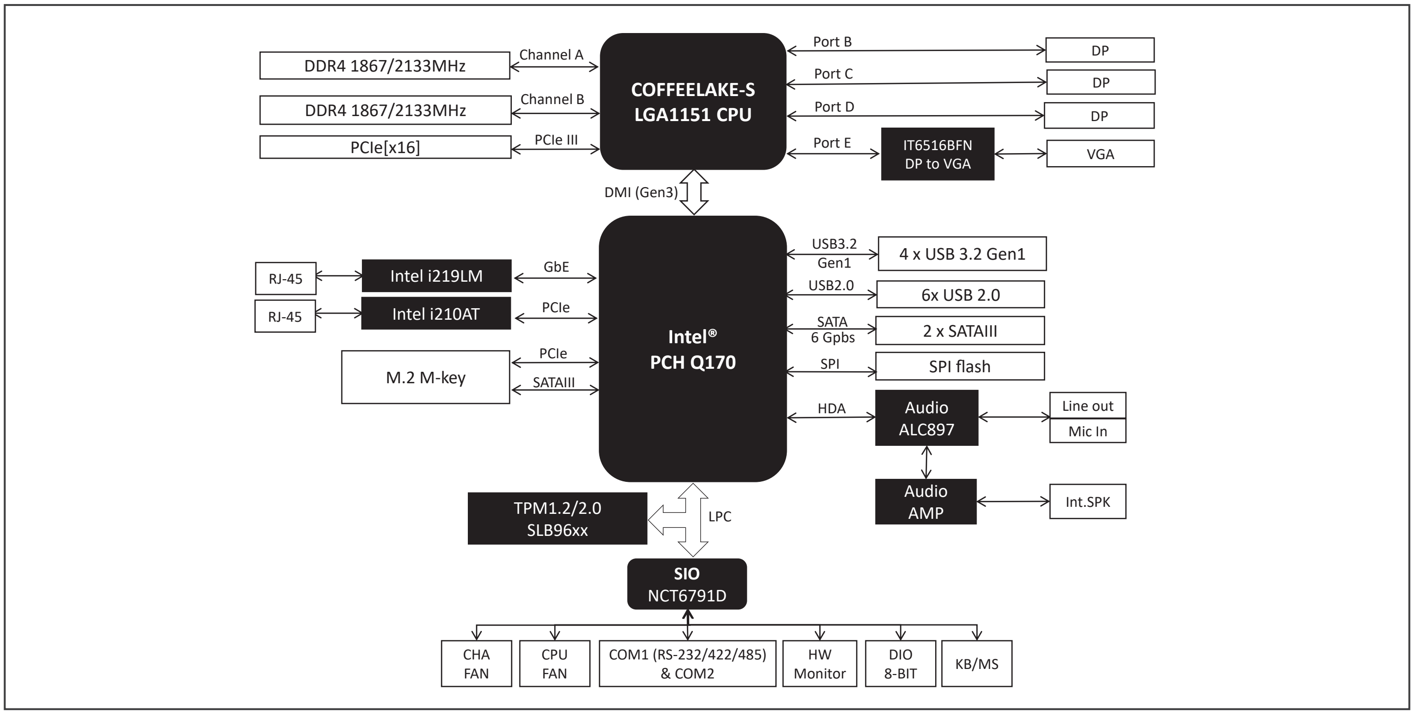
Packing List

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

Optional Accessories

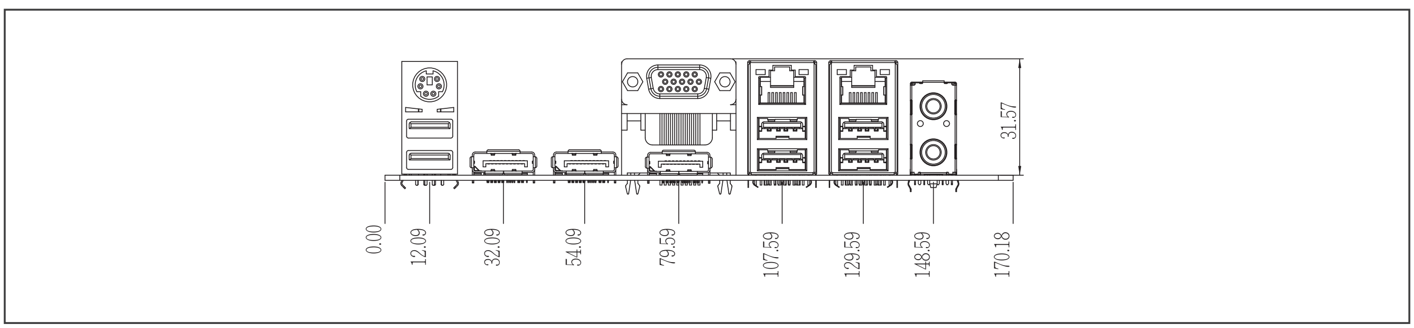
Part Number	Description
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
COOLER -65W-01	CPU Cooler
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/ bracket)
1701100206	COM Cable (200MM, p=2.00mm)
1700100491	USB 2.0 Cable (10P, 490mm, p=2.00mm)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

Block Diagram



Dimension

Unit: mm

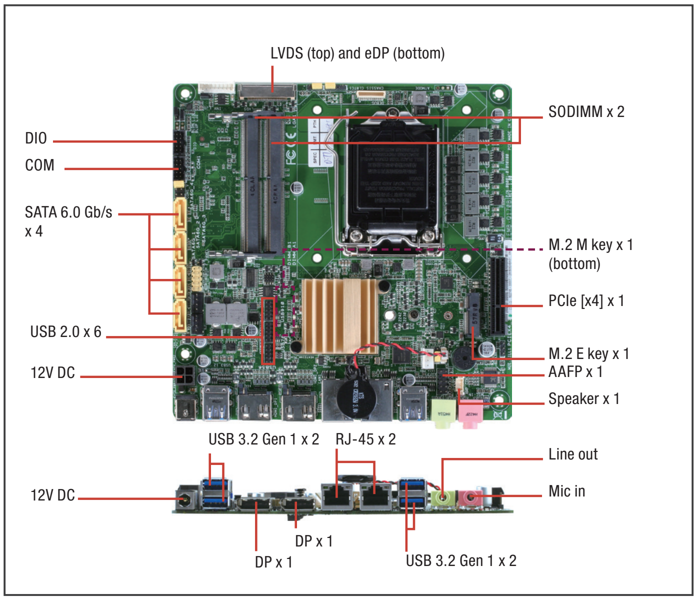


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-Q170A-A11-210	Socket	SODIMM x 2	Fan	VGA, DP	SATA3 x 2, M.2(M-key)	—	GbE x 2	USB 3.2 Gen 1 x 4, USB2.0 x 6	1	1	PCIe3.0[x16] x 1, M.2(M-key) x 1	ATX	—	32°F ~140°F (0°C ~ 60°C)

EMB-Q170B

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



Features

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

Specifications

System	
Processor	6th/7th Generation Intel® Core™ i7/i5/i3, LGA1151 Socket Processor, Max. 65W TDPs
Chipset	Intel® Q170
Memory	DDR4 2133/1867 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6791D
Ethernet	Intel® PCIe Gb LAN 219LM for vPro x 1, Intel® PCIe Gb LAN 210AT x 1
Audio	Realtek® ALC897
TPM	Infineon SLB96XX TT 1.2/2.0 (default: No)
Expansion Slots	PCIe 3.0 [x4] x 1 M.2 M key (22 x 80 mm) at Bottom side x 1 M.2 E key (22 x 30 mm) at Top side x 1
BIOS	128M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on VCore™ 5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	2DP + LVDS, DP + eDP + LVDS, 2DP + eDP
VGA	—
DVI	—
HDMI	—
Display Port	Up to 4096 x 2160 @24 Hz / 3840 x 2160 @60 Hz, with Digital Audio
LVDS	Up to 1920 x 1200 @60 Hz, dual-channel 18/24-bit
eDP	UP to 4096 x 2340 @60Hz
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12VDC
Operating Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	292,450
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 x 4
Display I/O	DP x 2
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC Jack x 1
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) x 4, SATA power connector x 1, M.2 M key (22 x 80mm) at Bottom side x 1, M.2 E key (22 x 30mm) at Top side x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 3 ports support additional 6 USB.
Display I/O	40-pin LVDS connector x 1, 40-pin eDP connector x 1, LVDS 3.3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight connector (inverter) x 1, LCD backlight 12V /5V jumper x 1
Audio I/O	AAFP x 1, Speaker x 1 (pin out refer to manual)
Serial Port	Box header for COM (RS-232/422/485) x 1
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	12V AUX Power Connector x 1, AT/ATX mode select jumper (optional) x 1
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard (pin header) x 1, CMOS jumper x 1
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 64-bit, Ubuntu16.04.02/Kernel4.8.0

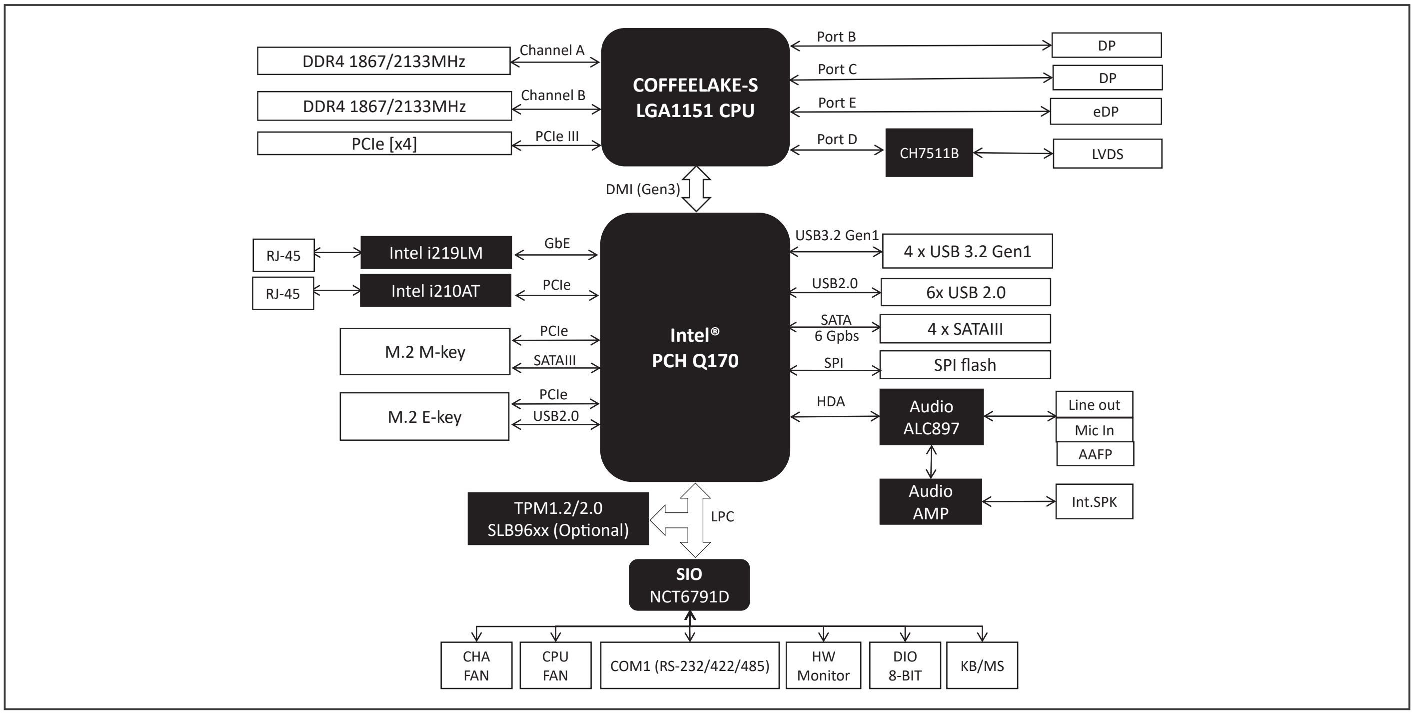
Packing List

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

Optional Accessories

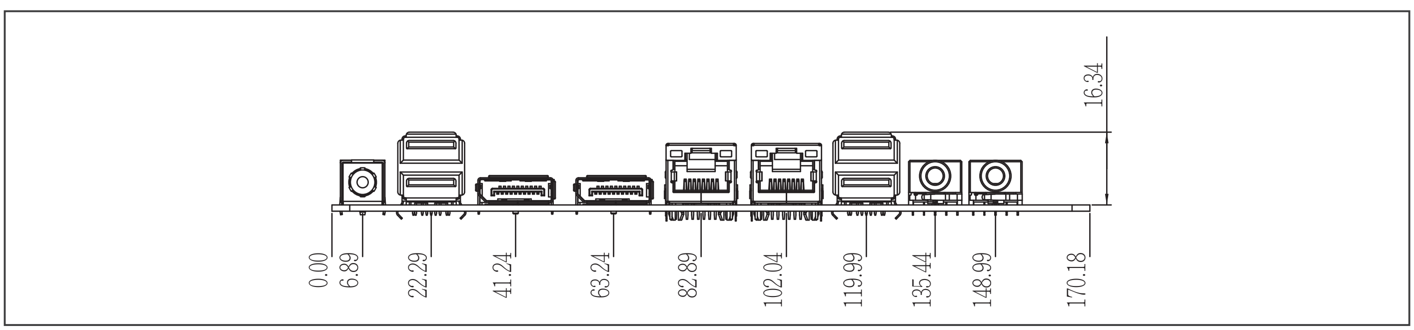
Part Number	Description
1759200172	(TF)CPU Cooler Fan, LGA 1156 socket, 4P, 12V, 2-Ball Bearing, Dynatron, K785 (2U cooler)
175921156B	(TF)CPU Cooler Fan, LGA 1156 socket, 12V, 4P, 2Ball (Tray), Dreamer, DSA-00273
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)
1701100206	COM Cable (200MM, 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)
125590084A	Adapter 12V, 84W/N3
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)

Block Diagram



Dimension

Unit: mm

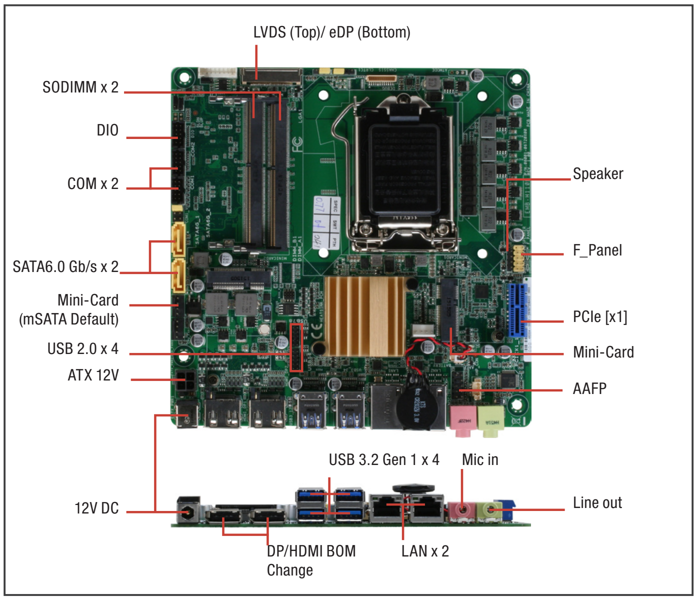


Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-Q170B-A11-210	Socket	SODIMM x 2	Fan	LVDS, eDP, DP	SATA3 x 4, M.2 (M-key)	Daul Channel 18/24 bit	GbE x 2	USB 3.2 Gen 1 x 4, USB2.0 x 6	—	1	PCIe [x4] x 1, M.2(M-key) x 1, M.2(E-Key) x 1	12VDC	—	32°F ~ 140°F (0°C ~ 60°C)

EMB-H110B

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



Features

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

1000 Giga LAN | DDR 4 | PCI Express | LVDS | USB 3.2 Gen 1 | USB 2.0 | Audio | HDMI

Specifications

System	
Processor	6th/7th Generation Intel® Core™ i7/i5/i3, LGA1151 Socket Processor, Max. 65W TDPs
Chipset	Intel® H110
Memory	DDR4 2133/1867 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6791D
Ethernet	Realtek® PCIe Gb LAN 8111H x 2
Audio	Realtek® ALC897
TPM	Infineon SLB96XX TT 1.2/2.0 (default: No)
Expansion Slots	PCIe2.0 [x1] x 1, Full-size Mini-Card (mSATA default) (PCIe+USB optional)x 1, Half-size Mini-Card (PCIe+USB) x 1
BIOS	64 M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	—
Graphics Multi Display	HDMI1+HDMI2, HDMI1+DP2, DP1+HDMI2, HDMI1+LVDS, HDMI2+LVDS, HDMI1+eDP, HDMI2+eDP, DP1+DP2, DP1+LVDS, DP2+LVDS, DP1+eDP, DP2+eDP
VGA	—
DVI	—
HDMI	Up to 4096 x 2160 @24 Hz / 2560 x 1600 @60 Hz, with Digital Audio (HDMI/DP Combo)
Display Port	Up to 1920 x 1200 @60 Hz, with Digital Audio (HDMI/DP Combo)
LVDS	Up to 1920 x 1200 @60 Hz, dual-channel 18/24-bit colay
eDP	UP to 4096 x 2340 @60Hz
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12VDC
Operating Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	315,210

Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 x 4
Display I/O	DP/HDMI (BOM Change) x 2
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC Jack x 1
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) x 2, Full Size Mini-Card (mSATA) x 1, SATA power connector x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 2 ports support additional 4 USB.
Display I/O	40-pin LVDS connector x 1, 40-pin eDP connector x 1, LVDS 3.3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight connector (inverter) x 1, LCD backlight 12V /5V jumper x 1
Audio I/O	AAFP x 1, Speaker x 1
Serial Port	Box header for COM (RS-232/422/485) x 1, Box header for COM (RS-232) x 1
PS/2 Port	—
Parallel Port	—
DIO	Digital I/O box header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	12V AUX Power Connector x 1, AT/ATX mode select jumper (optional) x 1
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard (pin header) x 1, CMOS jumper x 1
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 64-bit, Ubuntu16.04.02/Kernel4.8.0

Packing List

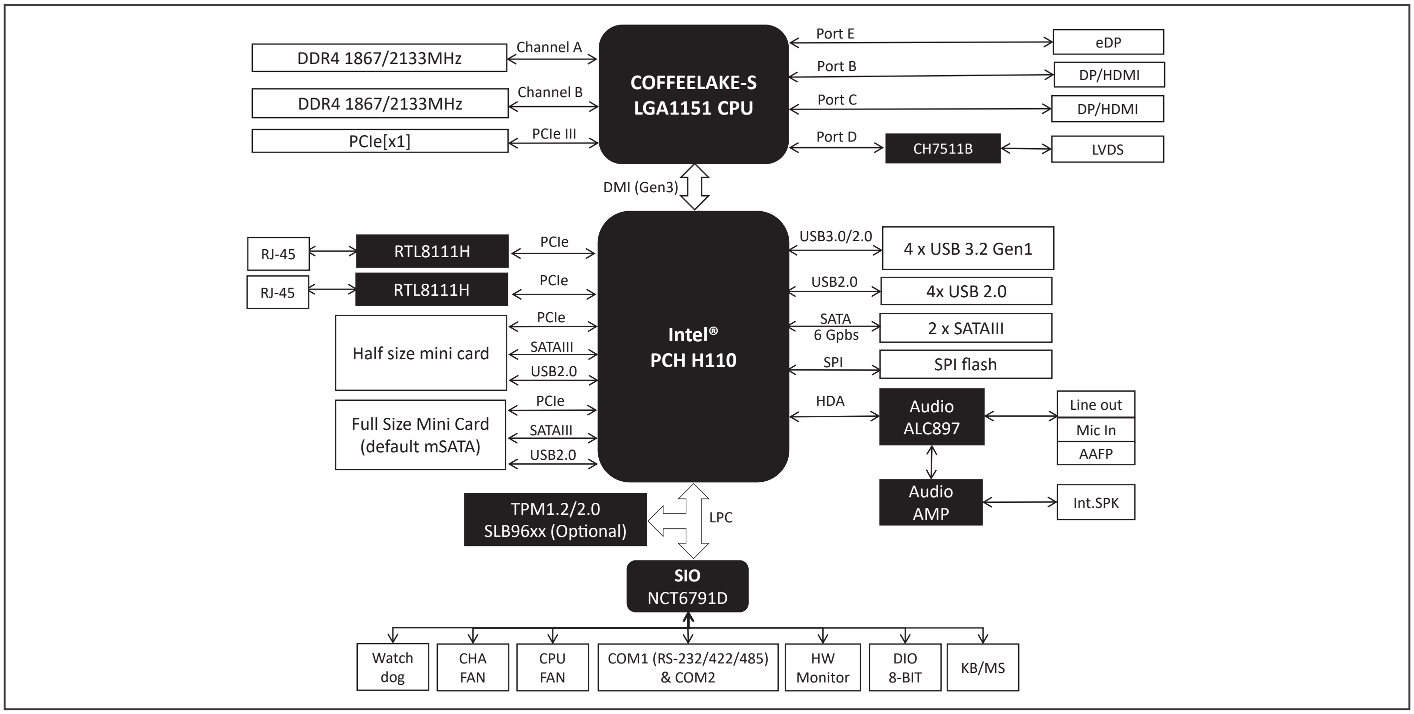
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in1)
- **14001-00230100**
  SATA to Power Cable (4P, 120MM)
- **I/O Shield**
- **EMB-H110B**

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
125590084A	Adapter 12V, 84W/N3
1700100491	USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)

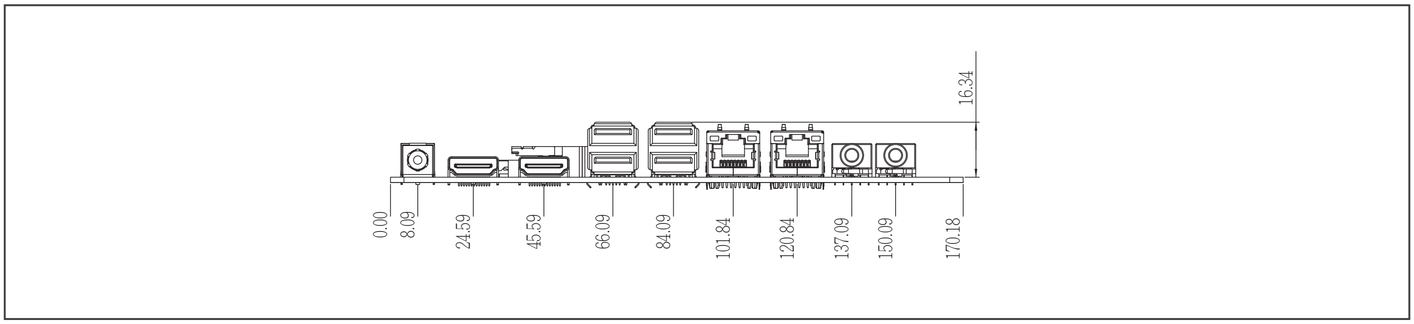
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

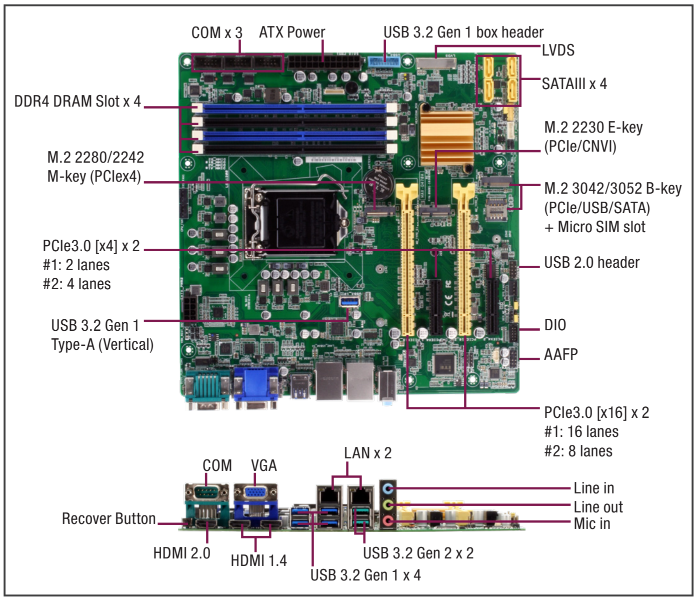


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-H110B-A14-HH-K	Socket	SODIMM x 2	Fan	LVDS, eDP, HDMI x 2	SATA3 x 2, Full size mini card x 1 (mSATA)	Daul Channel 18/24 bit	GbE x 2	USB 3.2 Gen 1 x 4, USB2.0 x 4	1	1	PCIe2.0 [x1] x 1, Half-size Mini Card (PCIe +USB default) x 1	12VDC	—	32°F ~ 140°F (0°C ~ 60°C)

MAX-Q470A

Micro-ATX Industrial Motherboard with 10th Generation Intel® Core™ Processor, DDR4 DRAM, Multiple Display Ports, Supports iAMT 12.0



Features

- 10th Generation Intel® Core™ LGA1200 Processor
- Supports Power 10 Core 80W max.
- DDR4 2933/2666/2400 MHz, max. 128GB
- Three Independent Displays: HDMI x 3 (2.0 x 1, 1.4 x 2), VGA x 1, LVDS x 1
- Dual Intel® Gigabit Ethernet, LAN1 Supports iAMT 12.0
- USB 3.2 Gen2 x 2, USB 3.2 Gen1 x 7, USB 2.0 x 2
- BIOS recovery function, convenient way to flash BIOS if needed
- TPM Onboard

Specifications

System	
Processor	Intel® 10th Generation (Comet Lake-S) Core™ i9 /i7/ i5 /i3, Pentium 14nm LGA 1200 socket Processor, Max. 10 Core 80W
Chipset	Intel® Q470E Express Chipset
Memory	DIMM x 4, DDR4 (2933/2666/2400 MHz, max. 128GB) non-ECC, un-buffered memory Dual channel memory architecture
I/O Chipset	IT5121E + F81216HD
Ethernet	Intel® PHY i219LM Giga LAN (supports Intel® AMT 12.0) x 1 Intel® i210AT Giga LAN x 1, RJ45 x 2
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750AADYX TPM2.0 onboard (optional; default: onboard)
Expansion Slots	PCIe 3.0[x16] Slot (16 lanes) (8 lanes when dual use PCIe[x16]) x 1, PCIe 3.0[x16] (8 lanes) x 1, PCIe 3.0[x4] Slot x 1, PCIe 3.0[x4] Slot (2 lanes) x 1, M.2 2230 E-key (PCIe/CNVI) x 1, M.2 3042/3052/2242 B-key (PCIe/USB/SATA) x 1, Micro SIM card Slot x 1
BIOS	256Mbit 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 x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® Graphics Media Accelerator
Graphics Multi Display	HDMI+HDMI+VGA, HDMI+HDMI+LVDS, HDMI+VGA+LVDS, HDMI+HDMI+HDMI
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 60 / 30 Hz, with Digital Audio
Display Port	—
LVDS	Up to 1920 x 1200 @ 60 Hz, Dual Channel 18/24 bit
eDP	—
Backlight Control	Yes
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A

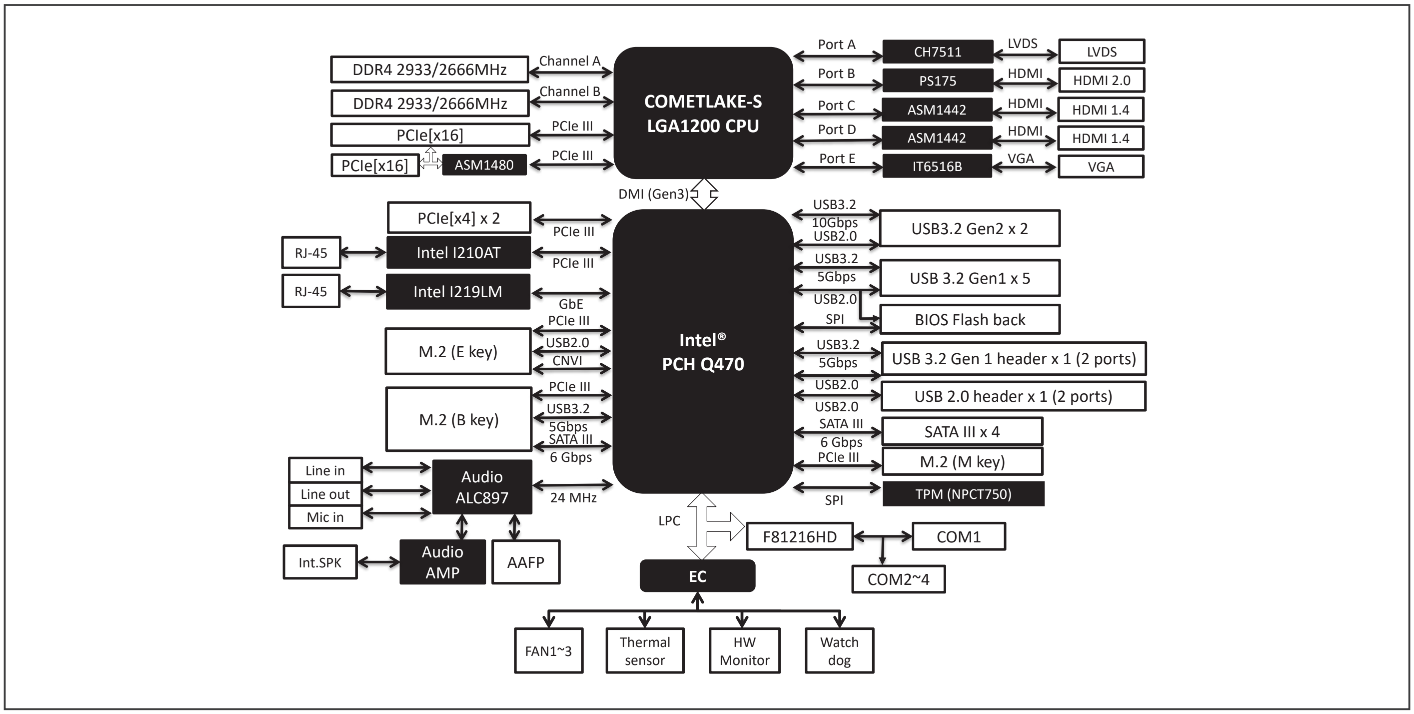
Form Factor	Micro-ATX Form Factor, 9.6"x9.6" (244 mm x 244 mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	259,360 Hrs
Rear Panel I/O Ports	
USB	USB 3.2 Gen2 ports (10 Gbps) x 2, USB 3.2 Gen1 ports (5 Gbps) x 4
Display I/O	VGA x 1, HDMI x 3 (2.0 x 1, 1.4 x 2)
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2
Serial Port	DB-9 COM (supports RS-232/422/485, 5V/12V/RI) x 1
PS/2 Port	—
Others	BIOS recovery button
Internal I/O Connectors	
Storage	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280/2242 M-key (PCIex4) x 1
USB	USB3.2 Gen1 box header support additional 2 USB ports (2x5PIN, p=2.54mm) x 1, USB3.2 Gen1 Type A (vertical) connector x 1, USB 2.0 header support additional 2 USB ports (2x5PIN, p=2.54mm) x 1
Display I/O	40-pin LVDS connector x 1
Audio I/O	speaker header (Line-out) x 1, AAFP x 1
Serial Port	RS-232 headers x 3
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (In/Out programmable) x 1
FAN	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2
Power	24-pin EATX Power header x 1 8-pin EATX 12V Power connector x 1
Others	Chassis Intrusion x 1, AT/ATX mode select jumper x 1, Front panel header x 1, Clear CMOS jumper x 1, 3-pin ME lock header x 1, Buzzer on board x 1
OS	
OS Support	Windows® 10 64bit, Windows® 11 64bit, Linux Ubuntu 64bit (20.04.0/Kernel 5.4)

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
- MAX-Q470A

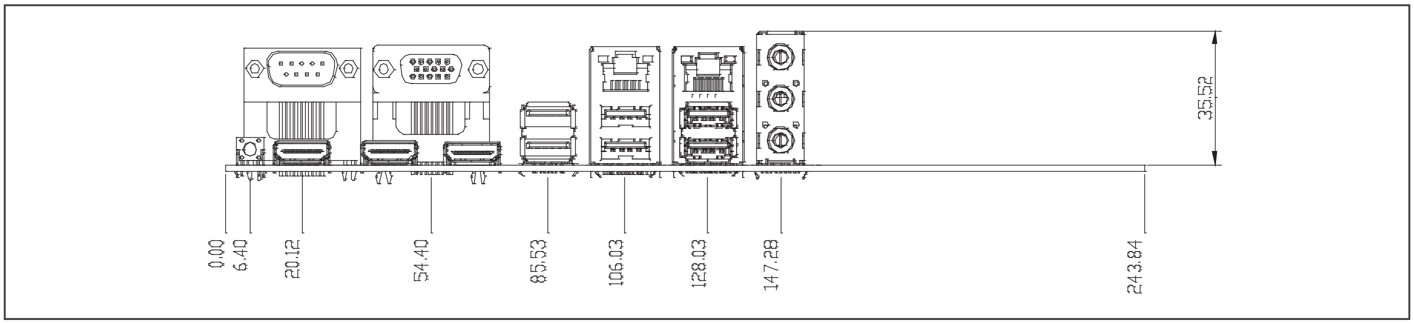
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

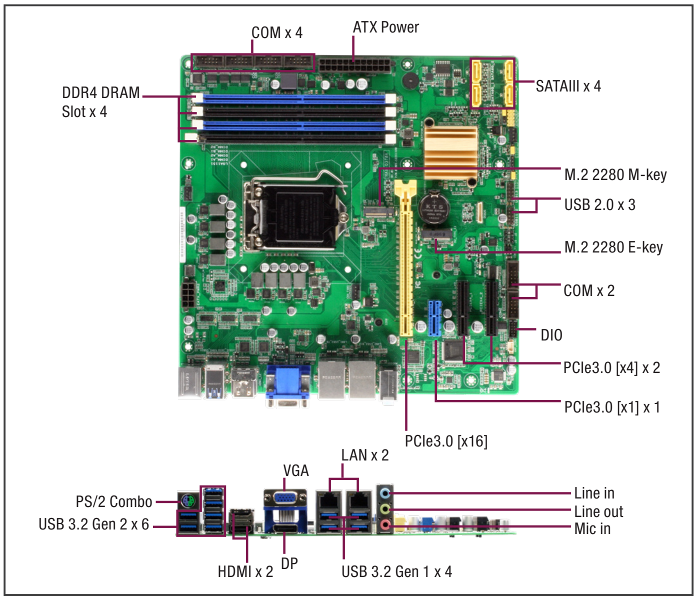
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/ 422/485	Expansion Slot	Power	TPM	Temp.
MAX-Q470A-A11-210	LGA 1200 socket	DDR4 2933/2666/2400	Fan	HDMI x 3, VGA x 1, LVDS x 1	1	SATA3 x 4, M.2 2280/2242 M-key (PCIex4) x 1	Intel®GbE x 2	USB 3.2 Gen2 x 2, USB 3.2 Gen1 x 4, USB 3.2 Gen1 box header x 1, USB 3.2 Gen1 (vertical) type A x 1, USB 2.0 header x 1	3	1	PCIe[x16] x 1, PCIe[x16] (8lanes) x 1, PCIe[x4] x 1, PCIe[x4] (2lanes) x 1, M.2 2230 E-key (PCIe/CNVI) x 1, M.2 2280/2242 M-key (PCIex4) x 1, M.2 3042/3052/2242 B-key (PCIe/USB/SATA) x 1, Micro SIM card Slot x 1	ATX	Onboard	32°F ~ 140°F (0°C ~ 60°C)

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)
1700190450	USB3.2 Gen 1 Cable (19P, 450mm, w/bracket)
AP-FNTH1Q370010	CPU Cooler (2-Ball Bearing, 2U, TDP Max. 100W)

MAX-Q370A

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



Features

- 8th/9th Generation Intel® Core™ LGA1151 Processor
- Supports Max. TDP 8 Core 95W.
- DDR4 2666/2400/2133 MHz, max. 128GB
- Three Independent Displays: HDMI x 2, VGA x 1, DP x 1
- Dual Intel® Gigabit Ethernet, i210AT x 1, i219LM x 1, i219LM Supports iAMT 12.0
- USB 3.2 Gen 2 ports x 6, USB 3.2 Gen 1 ports x 4, USB 2.0 ports x 3
- M.2 E-key (PCIe/USB) x 1, M.2 M-key (PCIex4/SATA3) x 1
- TPM Onboard

1000 Giga LAN · DDR 4 · PCI Express · USB 3.2 Gen 1 · USB 2.0 · Audio

Specifications

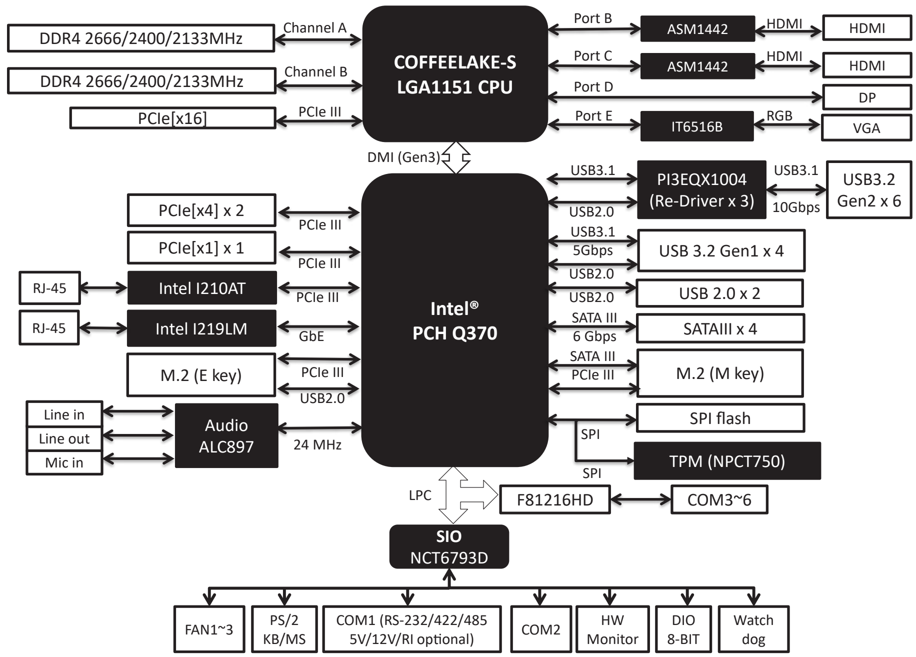
System	
Processor	8th/9th Generation Intel® (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5 /i3, Pentium™ 14nm LGA 1151 socket processor, max. TDP 8 Core 95W
Chipset	Intel® Q370 Express Chipset
Memory	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB) Non-ECC, un-buffered memory Dual-channel memory architecture
I/O Chipset	NCT6793D+ F81216HD
Ethernet	Intel® PHY i219LM Gb LAN (supports Intel® AMT 12.0) x 1 Intel® i210AT Gb LAN x 1 RJ45 x 2
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750 TPM2.0 onboard
Expansion Slots	PCIe 3.0[x16] Slot x 1 PCIe 3.0[x4] Slot (open edge) x 2 PCIe 3.0[x1] Slot (open edge) x 1 M.2 2230 E-key (PCIe/USB) x 1 M.2 2280 M-key (PCIex4/SATA3) x 1
BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	HDMI+VGA+DP, HDMI+HDMI+VGA, HDMI+HDMI+DP
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Micro-ATX Form Factor, 9.6"x9.6" (244 mm x 244 mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	264,820

Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 ports (10 Gbps) x 6, USB 3.2 Gen 1 ports (5 Gbps) x 4
Display I/O	DP x 1, VGA x 1, HDMI x 2
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2
Serial Port	—
PS/2 Port	PS/2 combo Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280 M-key (PCIex4/SATA3) x 1
USB	USB 2.0 headers support additional 3 USB ports (2x5PIN, p=2.54mm)
Display I/O	—
Audio I/O	—
Serial Port	RS-232 Box headers x 5 RS-232/422/485 Box header (COM1, Pin9 supports 5V/12V/RI optional) x 1
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (In/Out programmable) x 1
FAN	CPU Fan connector (4-pin) x 1 Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Chassis intrusion x 1 AT/ATX mode select jumper x 1 Front panel header x 1 Clear CMOS jumper x 1 3-pin ME lock header x1 Buzzer on-board x1
OS	
OS Support	Windows® 10 64bit, Windows® 11 64bit, Linux Ubuntu 64bit (18.04.1/Kernal4.8.0)

Packing List

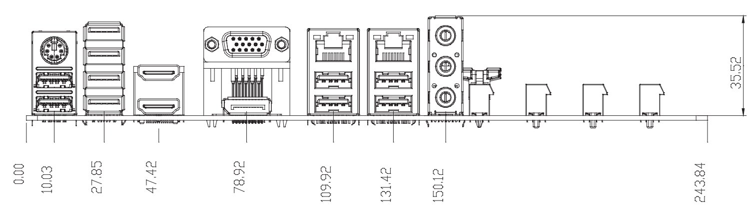
- **14001-00630100 SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)**
- **14001-00400100 COM Port Cable (9P, 260mm, p=2.54mm w/bracket)**
- **I/O Shield**
- **MAX-Q370A**

Block Diagram



Dimension

Unit: mm



Ordering Information

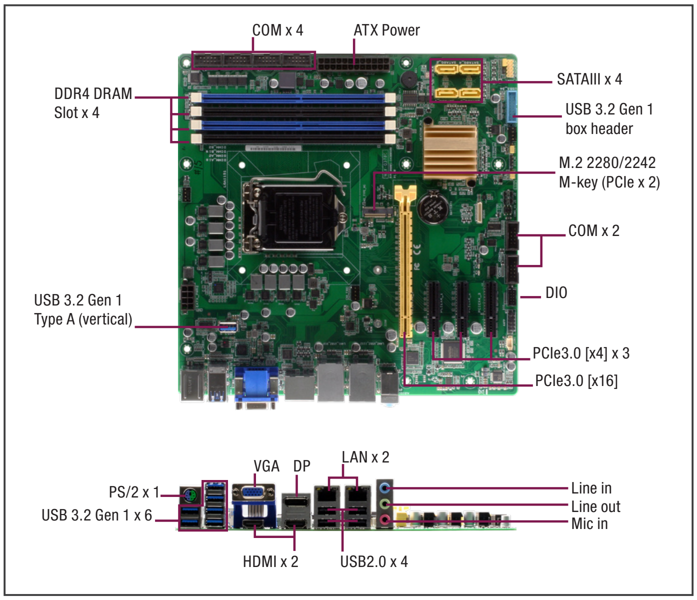
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MAX-Q370A-A20-210	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 2 VGA x 1 DP x 1	—	SATA3 x 4 M.2 2280 M-key x 1	Intel®GbE x 2	USB 3.2 Gen 2 x 6 USB 3.2 Gen 1 x 4 USB 2.0 x 3	5	1	PCIe[x16] x 1, PCIe[x4] x 2, PCIe[x1] x 1, M.2 2230 E-key x 1, M.2 2280 M-key x 1	ATX	Onboard	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
AP-FNTH1Q370010	CPU Cooler (2-Ball Bearing, 2U, TDP Max. 100W)
1709100330	USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
170910020K	USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)

MAX-Q370C

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



Features

- 8th/9th Generation Intel® Core™ LGA1151 Processor
- Supports Max. TDP 6 Core 95W, Do Not Support 8 Core 65W/ 95W
- DDR4 2666/2400/2133 MHz, max. 128GB
- Three Independent Displays: HDMI x 2, VGA x 1, DP x 1
- Dual Intel® Gigabit Ethernet, LAN1 Supports iAMT 12.0
- USB 3.2 Gen 1 x 9, USB 2.0 x 4
- Internal USB 3.2 Gen 1 box header x 1, USB 3.2 Gen 1 Type A (vertical) x 1, M.2 2280/2242 M-key (PCIe x 2) x 1
- TPM Onboard

1000 Giga LAN | DDR 4 | PCI Express | USB 3.2 Gen 1 | USB 2.0 | Audio

Specifications

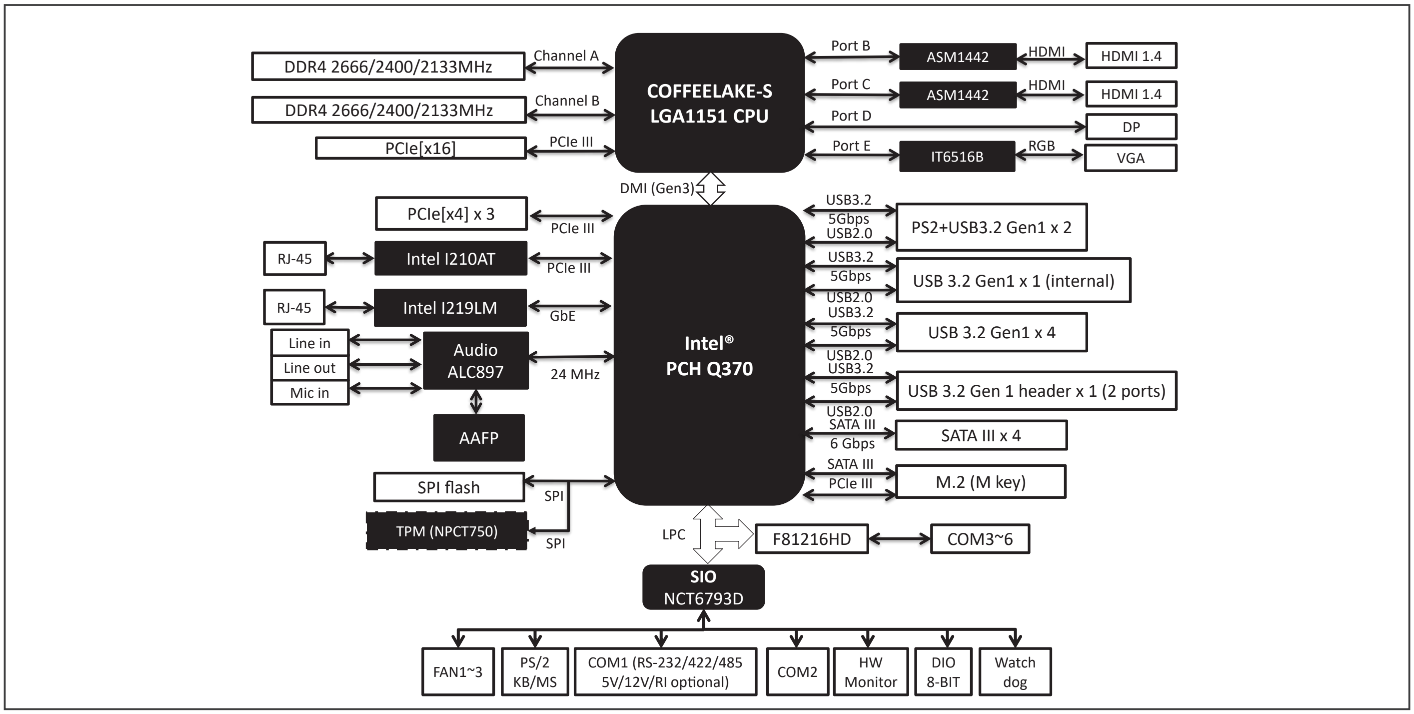
System	
Processor	Intel® 8th/9th Generation (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9 /i7/ i5 /i3, Pentium 14nm LGA 1151 socket Processor, Max. 6 Core 95W
Chipset	Intel® Q370 Express Chipset
Memory	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB) non-ECC, un-buffered memory Dual channel memory architecture
I/O Chipset	NCT6793D+ F81216HD
Ethernet	Intel® PHY i219LM Giga LAN (supports Intel® AMT 12.0) x 1 Intel® i210AT Giga LAN x 1 RJ45 x 2
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750 TPM2.0 onboard
Expansion Slots	PCIe 3.0[x16] Slot x 1 PCIe 3.0[x4] Slot (open edge) x 3 M.2 2280/2242 M-key (PCIe SSD (Ideal speed: 800MB/S)) x 1
BIOS	256 Mbit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® Graphics Media Accelerator
Graphics Multi Display	HDMI+VGA+DP, HDMI+HDMI+VGA, HDMI+HDMI+DP
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Micro-ATX Form Factor, 9.6"x9.6" (244 mm x 244 mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	264,820

Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 ports (5 Gbps) x 6, USB 2.0 ports x 4
Display I/O	DP x 1, VGA x 1, HDMI x 2
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2
Serial Port	—
PS/2 Port	PS/2 combo Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280/2242 M-key (PCIe SSD (Ideal speed: 800MB/S)) x 1
USB	USB 3.2 Gen 1 box header x 1, support additional 2 ports (2x5PIN, p=2.54mm), USB 3.2 Gen 1 Type A (vertical) connector x 1
Display I/O	—
Audio I/O	AAFP x 1
Serial Port	RS-232 headers x 5 RS-232/422/485 (COM1, supports 5V/12V/RI optional) x 1
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (In/Out programmable) x 1
FAN	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Chassis Intrusion x 1 AT/ATX mode select jumper x 1 Front panel header x 1 Clear CMOS jumper x 1 3-pin ME lock header x 1 Buzzer on-board x1
OS	
OS Support	Windows® 10 64bit, Windows® 11 64bit, Linux Ubuntu 64bit (18.04.1/Kernal4.8.0)

Packing List

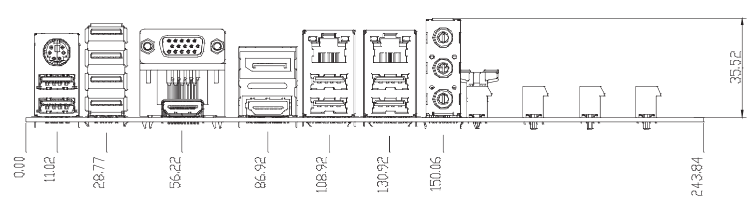
- **14001-00630100 SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)**
- **14001-00400100 COM Port Cable (9P, 260mm, p=2.54mm w/bracket)**
- **I/O Shield**
- **MAX-Q370C**

Block Diagram



Dimension

Unit: mm



Ordering Information

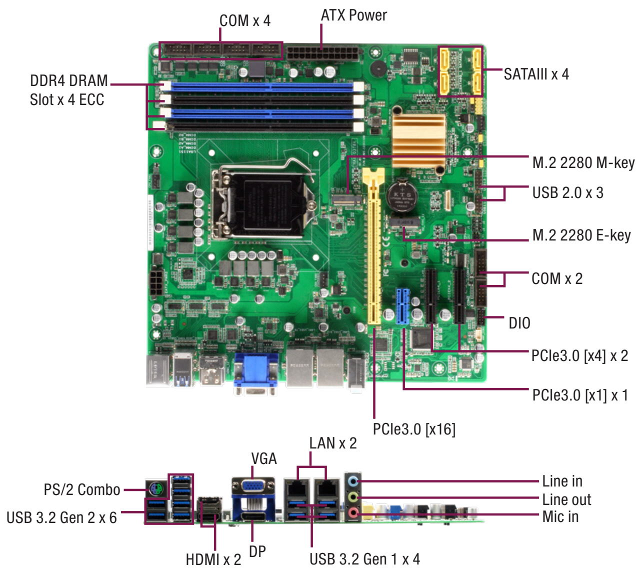
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/ 422/485	Expansion Slot	Power	TPM	Temp.
MAX-Q370C-A11-210	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 2, VGA x 1, DP x 1	—	SATA3 x 4, M.2 2280/2242 M-key x 1	Intel®GbE x 2	USB 3.2 Gen 1 x 6, USB 2.0 x 4, USB 3.2 Gen 1 box header x 1, USB 3.2 Gen 1 type A (vertical) x 1	5	1	PCIe[x16] x 1, PCIe[x4] (open edge) x 3, M.2 2280/2242 M-key x 1	ATX	Onboard	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
1700190450	USB 3.2 Gen 1 Cable (19P, 450mm, w/bracket)
AP-FNTH1Q370010	CPU Cooler (2-Ball Bearing, 2U, TDP Max. 100W)
1709100330	USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
170910020K	USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)

MAX-C246A

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



Features

- 8th/9th Generation Intel® Core™ LGA1151 Processor
- Supports Power 95W max.
- DDR4 2666/2400/2133 MHz, max. 128GB
- Three Independent Displays: HDMI x 2, VGA x 1, DP x 1
- Dual Intel® Gigabit Ethernet, i210AT x 1, i219LM x 1, i219LM Supports iAMT 12.0
- USB 3.2 Gen 2 ports x 6, USB 3.2 Gen 1 ports x 4, USB 2.0 ports x 3
- M.2 E-key (PCIe/USB) x 1, M.2 M-key (PCIex4/SATA3) x 1
- TPM Onboard

1000 Giga LAN · DDR 4 · PCI Express · USB 3.2 Gen 1 · USB 2.0 · Audio

Specifications

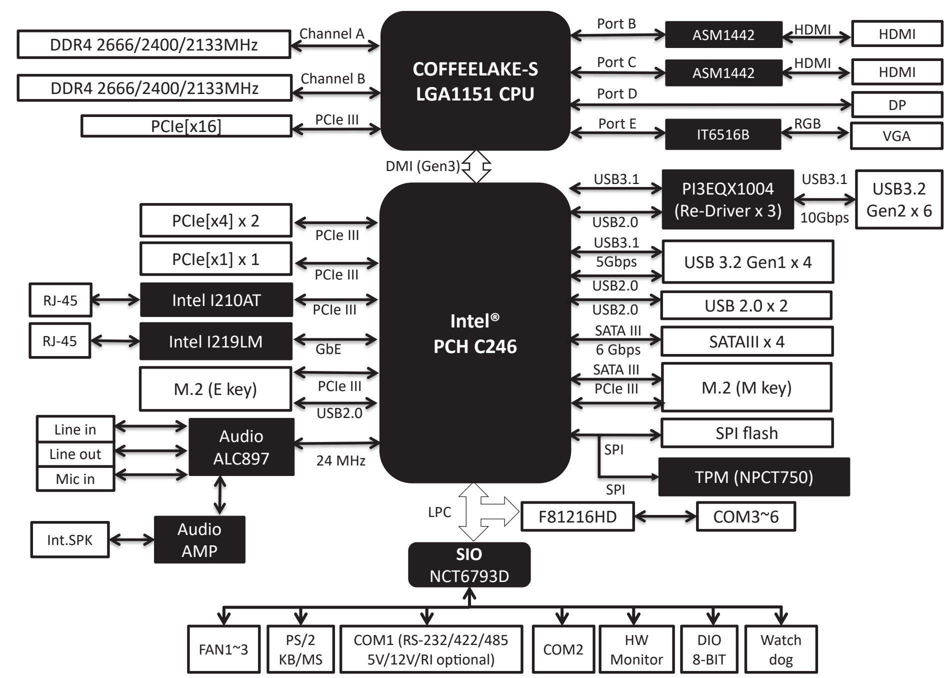
System	
Processor	8th/9th Generation Intel® (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5 /i3, Pentium™ 14nm, Celeron™, Xeon™ E-2200/2100, LGA 1151 socket Processor, max. TDP 8 Core 95W
Chipset	Intel® C246 Express Chipset
Memory	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB) ECC, un-buffered memory Dual-channel memory architecture
I/O Chipset	NCT6793D+ F81216HD
Ethernet	Intel® PHY i219LM Gb LAN (supports Intel® AMT 12.0) x 1 Intel® i210AT Gb LAN x 1 RJ45 x 2
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750 TPM2.0 onboard
Expansion Slots	PCIe 3.0[x16] Slot x 1 PCIe 3.0[x4] Slot x 2(open edge) PCIe 3.0[x1] Slot x 1(open edge) M.2 2230 E-key x 1(PCIe/USB) M.2 2280 M-key x 1(PCIex4/SATA3)
BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	HDMI+VGA+DP, HDMI+HDMI+VGA, HDMI+HDMI+DP
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A

Form Factor	Micro-ATX Form Factor, 9.6"x9.6" (244mmx244mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	264,820
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 ports (10 Gbps) x 6, USB 3.2 Gen 1 ports (5 Gbps) x 4
Display I/O	DP x 1, VGA x 1, HDMI x 2
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2
Serial Port	—
PS/2 Port	PS/2 combo port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280 M-key (PCIex4/SATA3) x 1
USB	USB 2.0 headers support additional 3 USB ports (2x5PIN, p=2.54mm)
Display I/O	—
Audio I/O	Speaker for 2W@4Ω x 1
Serial Port	RS-232 Box headers x 5 RS-232/422/485 Box header (COM1, Pin9 supports 5V/12V/RI optional) x 1
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (In/Out programmable) x 1
FAN	CPU Fan connector (4-pin) x 1 Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Chassis Intrusion x 1 AT/ATX mode select jumper x 1 Front panel header x 1 Clear CMOS jumper x 1 3-pin ME lock header x 1 Buzzer on-board x 1
OS	
OS Support	Windows® 10 64bit, Windows® 11 64bit, Linux Ubuntu 64-bit (18.04.1/Kernal4.8.0)

Packing List

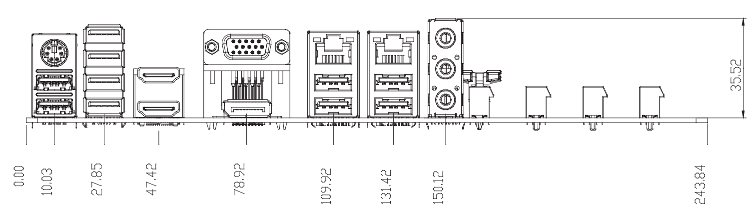
- **14001-00630100 SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)**
- **14001-00400100 COM Port Cable (9P, 260mm, p=2.54mm w/bracket)**
- **I/O Shield**
- **MAX-C246A**

Block Diagram



Dimension

Unit: mm



Ordering Information

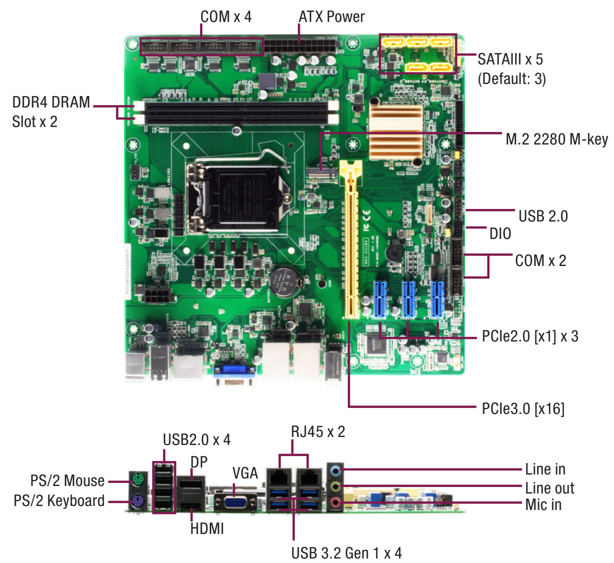
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MAX-C246A-A21	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 2 VGA x 1 DP x 1	—	SATA3 x 4, M.2 2280 M-key x 1	Intel®GbE x 2	USB 3.2 Gen 2 x 6 USB 3.2 Gen 1 x 4 USB 2.0 x 3	5	1	PCIe[x16] x 1, PCIe[x4] x 2, PCIe[x1] x 1, M.2 2230 E-key x 1, M.2 2280 M-key x 1	ATX	Onboard	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
AP-FNTH1Q370010	CPU Cooler (2-Ball Bearing, 2U, TDP Max. 100W)
1709100330	USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
170910020K	USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)

MAX-H310A

Micro-ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM



Features

- 8th/9th Generation Intel® Core™ LGA1151 Processor
- DDR4 2666/2400/2133 MHz, max. 64GB
- Two Independent Displays: HDMI x 1, VGA x 1, DP x 1
- Dual Intel® Gigabit Ethernet, i210AT x 1, i219V x 1
- USB 3.2 Gen 1 ports x 4, USB 2.0 ports x 6
- M.2 M-key (PCIe or SATA) x 1, up to 5 SATA III (Optional)
- TPM Onboard

1000 Giga LAN · DDR 4 · PCI Express · USB 3.2 Gen 1 · USB 2.0 · Audio

Specifications

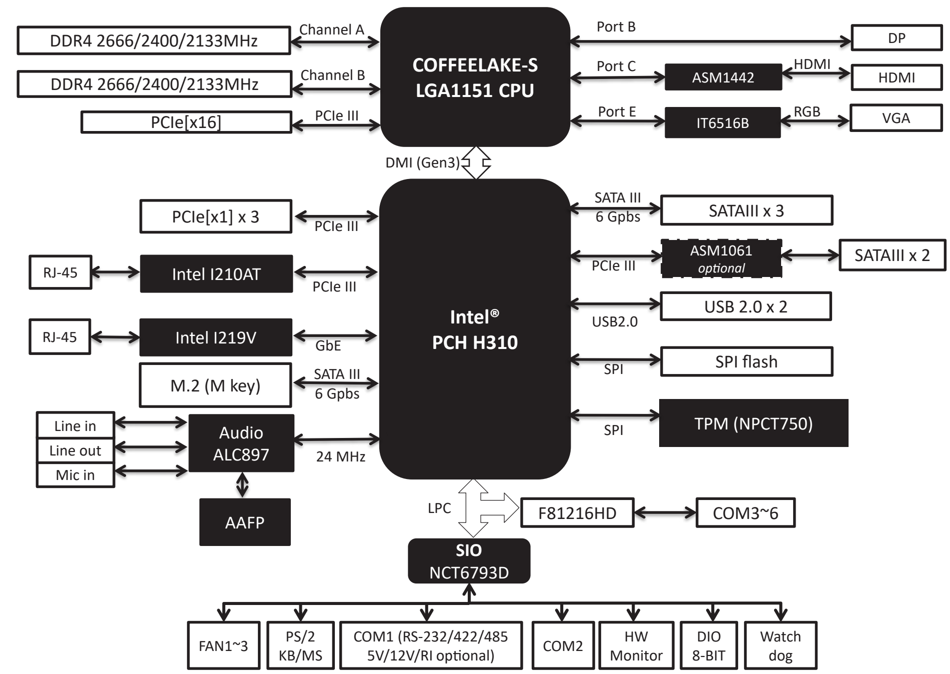
System	
Processor	8th/9th Generation Intel® (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5 /i3, Pentium 14nm LGA 1151 socket Processor
Chipset	Intel® H310 Express Chipset
Memory	DIMM x 2, DDR4 (2666/2400/2133 MHz, max. 64GB) non-ECC, un-buffered memory Dual-channel memory architecture
I/O Chipset	NCT6793D+ F81216HD
Ethernet	Intel® PHY i219V Gb LAN x 1 Intel® i210AT Gb LAN x 1 RJ45 x 2
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750 TPM2.0 onboard
Expansion Slots	PCIe 3.0[x16] Slot x 1 PCIe 2.0[x1] Slot (open edge) x 3 M.2 2280 M-key (BOM option: PCIe or SATA; default: SATA) x 1
BIOS	128Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan x 1 Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	VGA+DP; VGA+HDMI; DP+HDMI
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Micro-ATX Form Factor, 9.6"x9.6" (244 mm x 244 mm)

Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	261,090
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 ports (5 Gbps) x 4, USB 2.0 ports x 4
Display I/O	DP x 1, VGA x 1, HDMI x 1
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2
Serial Port	—
PS/2 Port	PS/2 stack Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA III (6.0Gb/s) ports x 3; BOM option: can support additional 2 SATA M.2 2280 M-key (BOM option: PCIex1 or SATA; default: SATA) x 1
USB	USB 2.0 header support additional 2 USB ports (2x5PIN, p=2.54mm) x 1
Display I/O	—
Audio I/O	AAFP x 1
Serial Port	RS-232Box headers x 5 RS-232/422/485Box header (COM1, Pin9 supports 5V/12V/RI optional) x 1
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (In/Out programmable) x 1
FAN	CPU Fan connector (4-pin) x 1 Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Chassis intrusion x 1 AT/ATX mode select jumper x 1 Front panel header x 1 Clear CMOS jumper x 1 LPC box header x 1 3-pin ME lock header x 1 Buzzer on-board x 1
OS	
OS Support	Windows® 10 64bit, Windows® 11 64bit, Linux Ubuntu 64bit (18.04.1/Kernal4.8.0)

Packing List

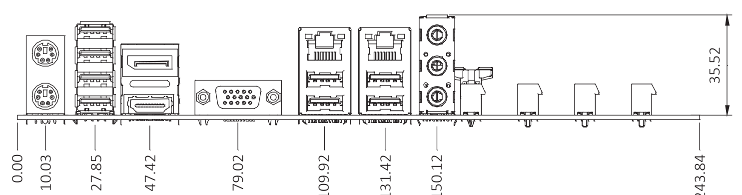
- 14001-00630100 SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)
- 14001-00400100 COM Port Cable (9P, 260mm, p=2.54mm w/bracket)
- I/O Shield
- MAX-H310A

Block Diagram



Dimension

Unit: mm



Ordering Information

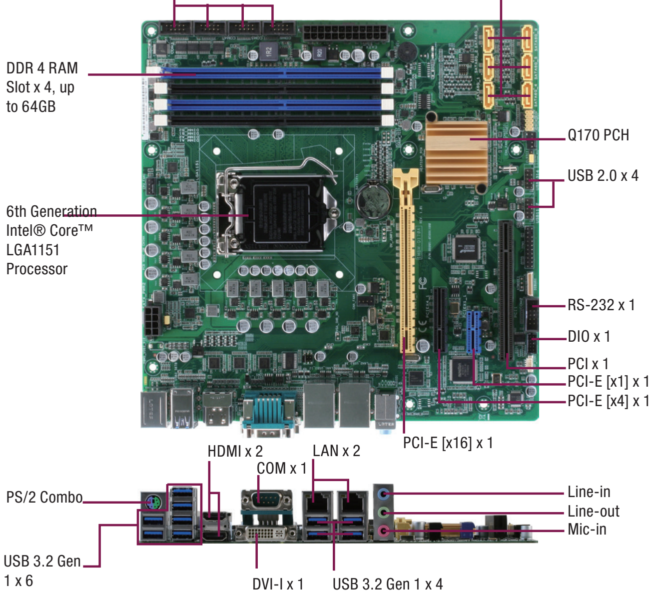
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MAX-H310A-A11-210	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 1 VGA x 1 DP x 1	—	SATA3 x 3 M.2 2280 M-key (SATA) x 1	Intel®GbE x 2	USB 3.2 Gen 1 x 4 USB 2.0 x 6	5	1	PCIe[x16] x 1 PCIe[x1] x 3 M.2 2280 M-key (SATA) x 1	ATX	on-board	32°F ~140°F (0°C ~ 60°C)

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)

IMBM-Q170A

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



Features

- 6th/7th Generation Intel® Core™ LGA1151 Processor
- DDR4 DRAM Support, 2133 MHz, Max. 64GB
- Three Independent Display: HDMI x 2, DVI-I Port x 1
- Dual Intel® Gigabit Ethernet, LAN1 Supports iAMT 11.0
- USB 3.2 Gen 1 Port x 10, USB 2.0 Port x 4
- TPM Optional

PCI Express Giga LAN DDR 4 USB 3.2 Gen 1 USB 2.0 HDMI CE FC

Specifications

System	
Processor	7th/6th Generation Intel® Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor
Chipset	Intel® Q170 Express Chipset
Memory	288-pin DIMM x 4, max. 64GB, DDR4 2133/1867 MHz, non-ECC, un-buffered memory, dual-channel memory architecture
I/O Chipset	NCT6791D, F81216HD
Ethernet	LAN 1: Intel® PHY i219LM Gb LAN (supports iAMT 11.0) x 1 LAN 2: Intel® i210AT Gb LAN x 1 ,RJ-45 x 2
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750 TPM2.0 onboard (optional; default: not onboard)
Expansion Slots	PCIe 3.0/2.0[x16] Slot x 1, PCIe 3.0/2.0[x4] Slot (open edge) x 1, PCIe 3.0/2.0[x1] Slot (open edge) x 1, PCI x 1
BIOS	128M bit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	DVI-I+HDMI, HDMI+HDMI
VGA	Up to 1920 x 1200 @60Hz
DVI	Up to 1920 x 1200 @60Hz
HDMI	HDMI 1.4 up to 4096 x 2304 @30Hz
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Micro-ATX Form Factor, 9.6” x 9.6” (244mm x 244mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	193,470

Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 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 header supports additional 2 USB ports x 2
Display I/O	—
Audio I/O	Speaker header x 1 (Line-out)
Serial Port	RS-232 header x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface x 1 (In/Out programmable)
FAN	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, 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

Packing List

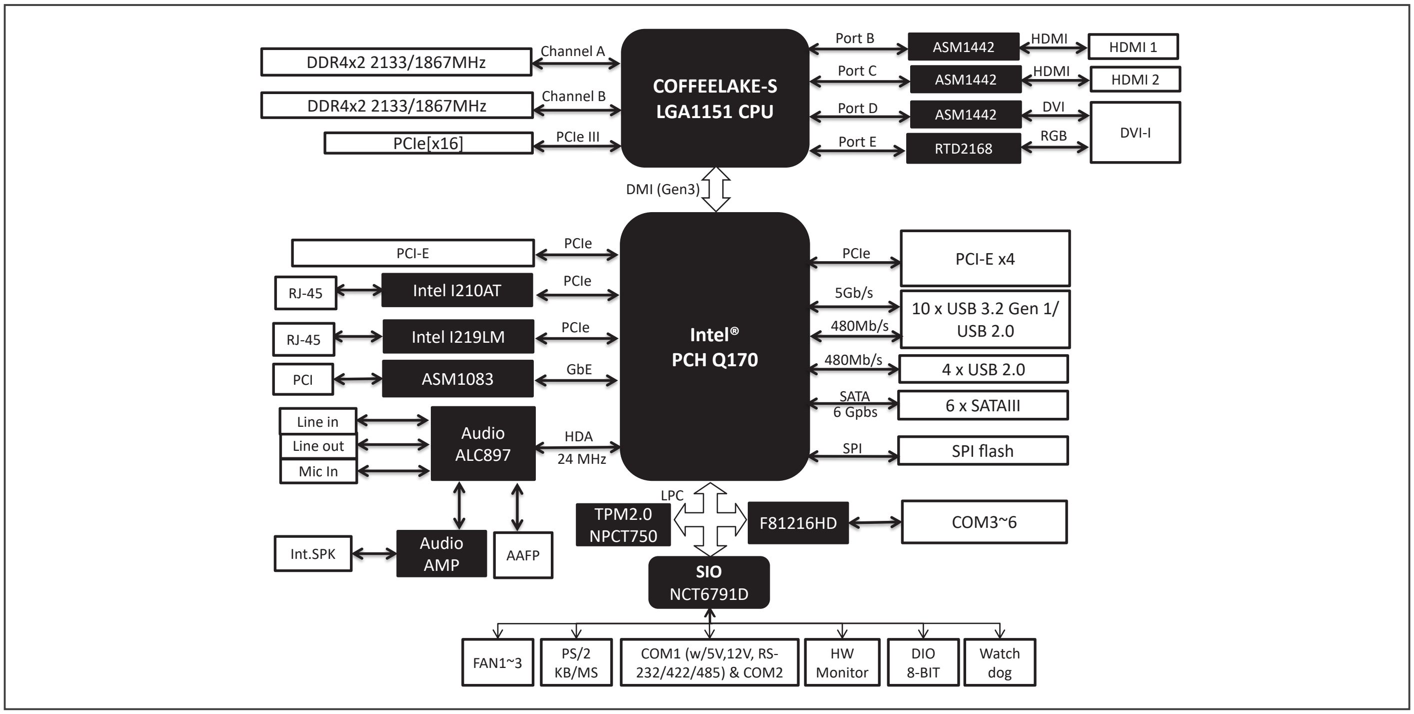
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)
- **14001-00400100**
  COM Port Cable (9P, 260mm, p=2.54mm w/bracket)
- **I/O Shield**
- **IMBM-Q170A**

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)

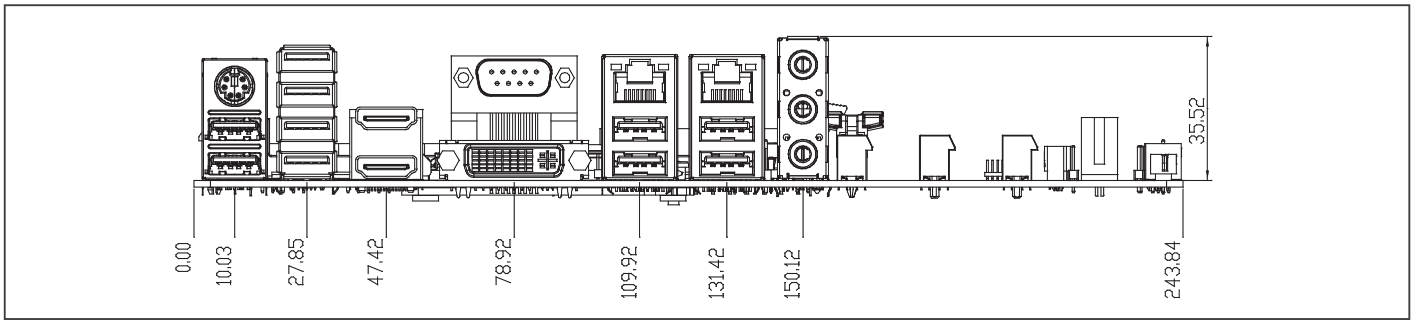
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

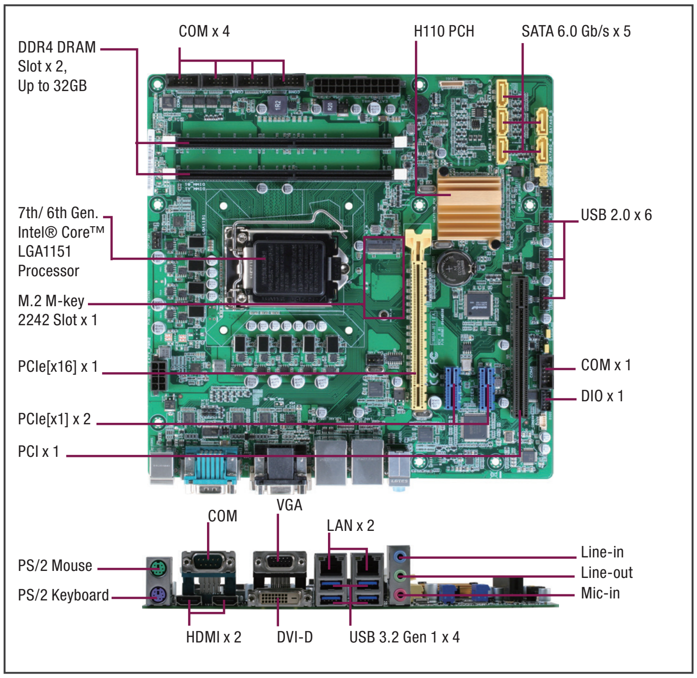


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBM-Q170A-A12-210	LGA1151 socket	DDR4 2133	Fan	DVI-I x 1, HDMI x 2	SATA3 x 6	—	Intel®GbE x 2	USB 3.2 Gen 1 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	—	32°F ~ 140°F (0°C ~ 60°C)

IMBM-H110A

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



Features

- 7th/6th Generation Intel® Core™ LGA1151 Processor
- DDR4 DRAM Support, 2400MHz, Max. 32GB
- Two Independent Display: HDMI x 2, VGA x 1, DVI-D x 1
- Dual Intel® Gigabit Ethernet
- M.2 Slot (M key) x 1
- USB 3.2 Gen 1 Port x 4, USB 2.0 Port x 6

PCI Express Giga LAN DDR 2 USB 2.0 CE FC

Specifications

System	
Processor	7th/6th Generation Intel® Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor
Chipset	Intel® H110
Memory	288-pin DIMM x 2, max. 32GB, DDR4 2400/2133/1867, dual-channel
I/O Chipset	NCT6791D, F81216HD
Ethernet	Intel® i210AT Gb LAN x 2
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT650 TPM2.0 (default : No)
Expansion Slots	PCIe [x16] x 1, PCIe [x1] (open edge) x 2, PCI x 1, M.2 M key (22 x 42mm) x 1
BIOS	128M bit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V/ 3VSB/VBAT, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan x 1, Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	DVI-D+HDMI, HDMI+HDMI, VGA+HDMI, DVI-D+VGA
VGA	Up to 1920 x 1200 @60Hz
DVI	Up to 1920 x 1200 @60Hz
HDMI	HDMI 1.4 up to 4096 x 2304 @24Hz
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operation Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Micro-ATX, 9.6" x 9.6" (244mm x 244mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	245,250

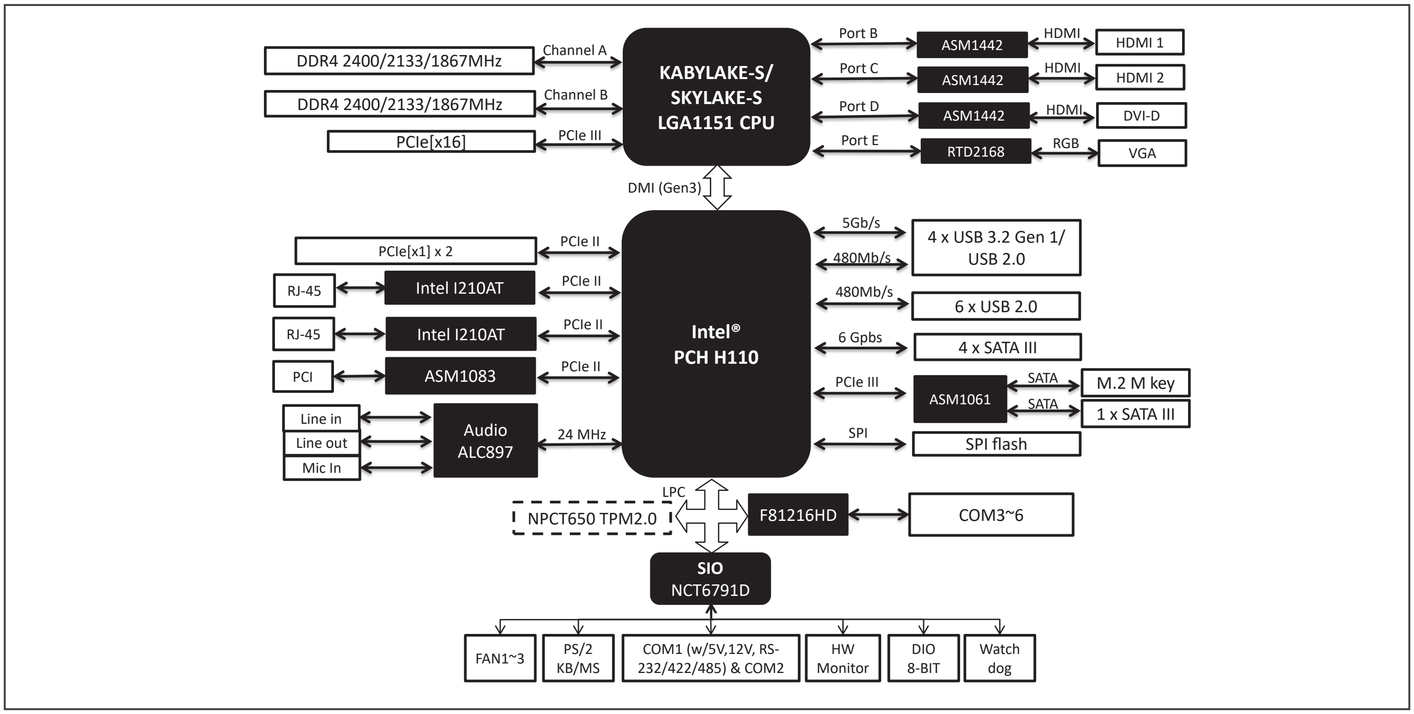
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 x 4
Display I/O	HDMI x 2, VGA x 1, DVI-D x 1
Audio I/O	Line-in, Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	DB-9 COM x 1 (supports RS-232/422/485)
PS/2 Port	Stack Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA 6.0Gb/s x 5, M.2 M key (22 x 42mm) x 1
USB	USB 2.0 x 6
Display I/O	—
Audio I/O	—
Serial Port	RS-232 header x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit x 1 (In/Out programmable)
FAN	4-pin CPU Fan x 1, 4-pin Chassis Fan x 2
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (2[x4]P p=1.27mm) x 1, Chassis Intrusion x 1, AT/ATX mode select jumper x 1
OS	
OS Support	Windows® 7 32/64-bit (not supported when a Kaby Lake processor is used), Windows® 8.1 64-bit (not supported when a Kaby Lake processor is used), Windows® 10 64-bit, ,Linux Fedora 64bit

Packing List

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

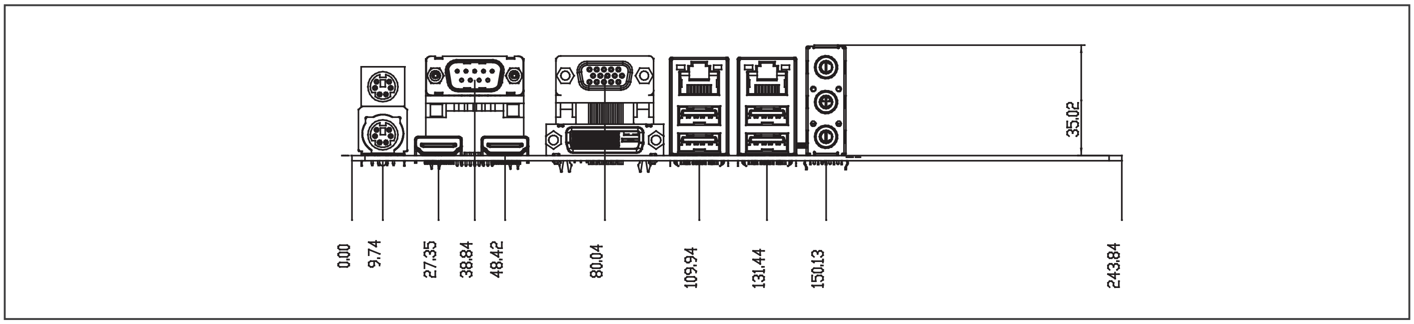
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

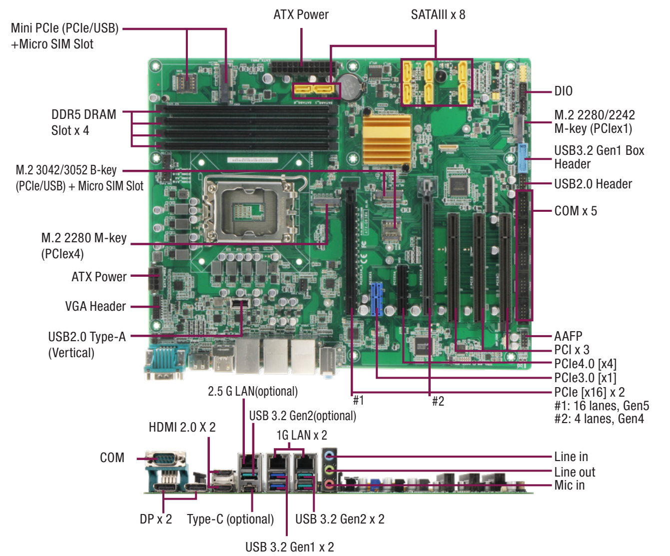
Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBM-H110A-A11-210	LGA1151 socket	DDR4 2400	Fan	HDMI x 2, VGA x 1, DVI-D x 1	M.2 M key 2242 x 1 SATA3 x 5	—	GbE x 2	USB 3.2 Gen 1 x 4, USB2.0 x 6	5	1	PCIe[x16] x 1, PCIe[x1] x 2, PCI x 1	ATX	—	32°F~140°F (0°C~60°C)

Optional Accessories

Part Number	Description
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)

ATX-Q670A

ATX with Intel® 12th Generation Core™ LGA1700 Socket Processor, Max.125W TDPs, DDR5 DRAM, Multiple Display Ports



Features

- 12th Gen. Intel® Core™ LGA1700 Processor
- DDR5 DRAM Support, 4000MHz, Max. 128GB
- Four Independent Display: HDMI2.0 x2, DP x2, VGA Header x1
- Dual Intel® Gigabit Ethernet (Option: additional LAN3 i225LM x1)
- M.2 Slot(M key) x2, M.2 Slot(B key) x1+Micro SIM Slot x1, Mini PCIe x1+Micro SIM Slot x1
- USB 3.2 Gen2 x2, USB 3.2 Gen1 x4, USB 2.0 x3 (Option: USB Type-C x1; USB 3.2 Gen2 x3)
- SATA ports x8
- USB Power switchable feature, convenient way to reset USB device remotely
- Bootable feature in rear USB Port, enhance the security level
- TPM 2.0 on board

PCI Express Giga LAN DDR 4 HDMI USB 3.2 Gen 1 USB 2.0

Specifications

System	
Processor	Intel® Alder Lake-S, LGA 1700 socket, Processor Max. 125W TDPs
Chipset	Intel® Q670 Express Chipset
Memory	DIMM x4, DDR5 (4000MHz x 4, Up to 128GB) Non-ECC, Un-buffered Memory, Dual-Channel Memory Architecture
I/O Chipset	NCT6126D
Ethernet	Intel® PHY i219LM Giga LAN x 1 (supports Intel® AMT 12.0) Intel® i210AT Giga LAN x 1 Intel® i225LM Giga LAN x 1 (Optional) RJ45 x 2 (Option: RJ45 x 3, LAN3 with USB3.2 Gen2 x 1)
Audio	Realtek ALC897 6-Channel High Definition Audio CODEC
TPM	TPM 2.0 onboard
Expansion Slots	PCIe [x16] Slot (16 lanes, Gen5) x 1 PCIe [x1] Slot (open Slot) (1 lane, Gen3) x 1 PCIe [x4] Slot (open Slot) (4 lanes, Gen4) x 1 PCIe [x16] Slot (4 lanes, Gen4) x 1 PCI Slot x 3 M.2 3042/3052 B Key (PCIe 3.0 x1 / USB3.2 Gen1) x 1 Mini PCIe Slot (PCIe 3.0 / USB2.0) x 1 Micro SIM Card Slot x1 (either with M.2 B-Key or Mini PCIe Slot)
BIOS	256Mbit 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 step by software program
Smart Fan Control	CPU Fan x1/ Chassis Fan x3
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® Graphics Media Accelerator
Graphics Multi Display	HDMI+HDMI+DP+DP, HDMI+HDMI+DP+VGA, HDMI+VGA+DP+DP
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 60 / 30 Hz, with digital audio (HDMI2.0)
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin 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

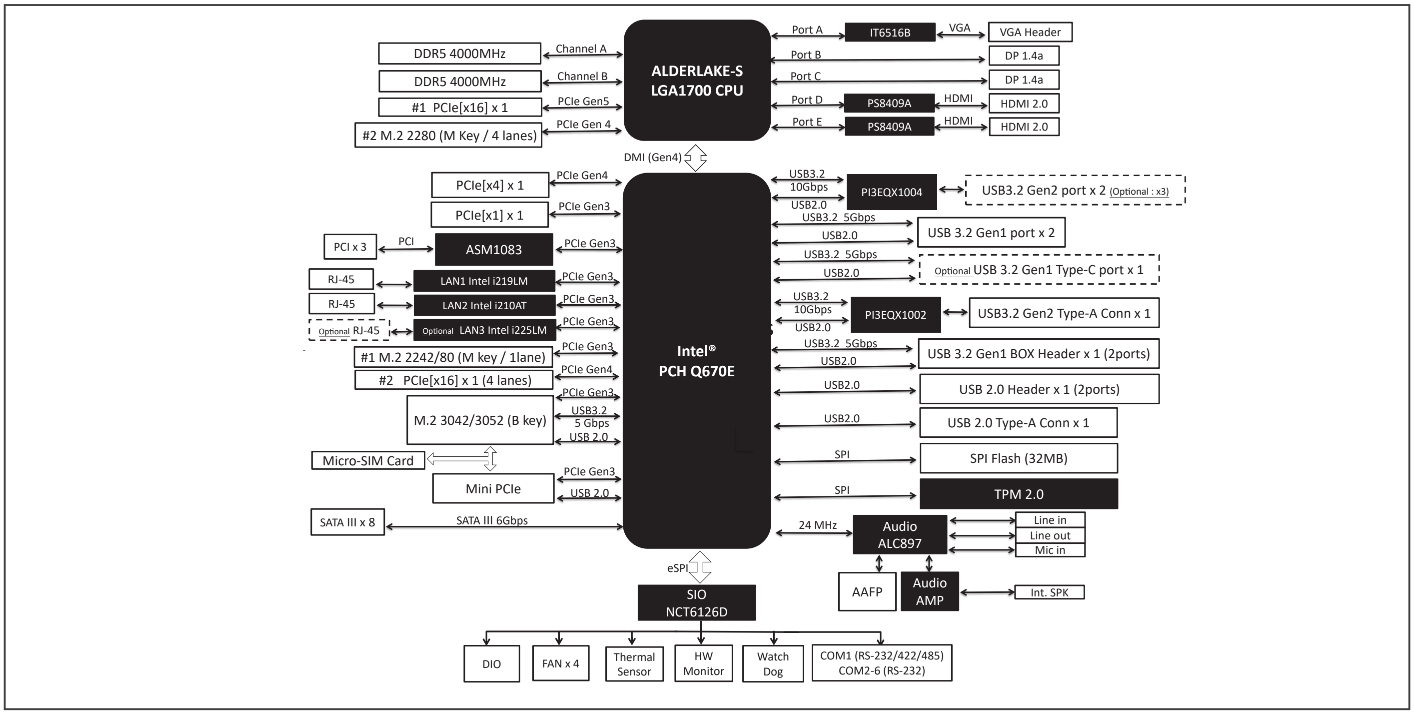
Certificate	CE & FCC Class A
Form Factor	ATX Form Factor, 12" x 9.6" (305mm x 244mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	—
Rear Panel I/O Ports	
USB	USB 3.2 Gen2 (10Gbps) x 2 (Option: x3units if with LAN3 i225LM) USB 3.2 Gen1 (5Gbps) x 2, Type C (5Gbps, 5V, 1.5A) x 1 (Optional) (All ports are bootable, can be deactivated per BIOS function; USB Power switchable feature)
Display I/O	HDMI2.0 x 2, DP1.4 x 2
Audio I/O	3 x Audio Jack: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ-45) port x 2 (Option: RJ45 x 3)
Serial Port	DB-9 COM (supports RS-232/422/485, 5V/12V/RI) x 1
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA III ports x 8, support RAID 0/1/5/10 M.2 2280 M key (PCIe 4 lanes, Gen4.0) x 1 M.2 2242/80 M key (PCIe 1 lane, Gen3.0) x 1
USB	USB 3.0 Box Header x 1 (2x5PIN, p=2.54mm) support 2 USB3.2 Gen1 ports (USB Power switchable feature) USB 2.0 Header x 1 (2x5PIN, p=2.54mm) support 2 USB2.0 ports (USB Power switchable feature) USB 2.0 Vertical type A connector x1
Display I/O	VGA Header x 1
Audio I/O	Speaker header(Line-out), AAFP x 1
Serial Port	RS-232 headers x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (In/Out programmable) x 1
FAN	4-pin CPU Fan connector(PWM mode) x 1 4-pin Chassis Fan connector(PWM mode) x 3
Power	—
Others	Chassis Intrusion x1, AT/ATX mode select jumper x1, Front panel header x 1 Clear CMOS jumper x 1, Buzzer onboard x 1, 3-pin ME lock header x 1
OS	
OS Support	Windows® 10 64-bit, Windows® 11 64-bit

Packing List

- **14001-0063010**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in1)
- **14019-00060700**
  VGA Cable (320mm, 2X8P, w/bracket)
- **I/O Shield**
- **ATX-Q670A**

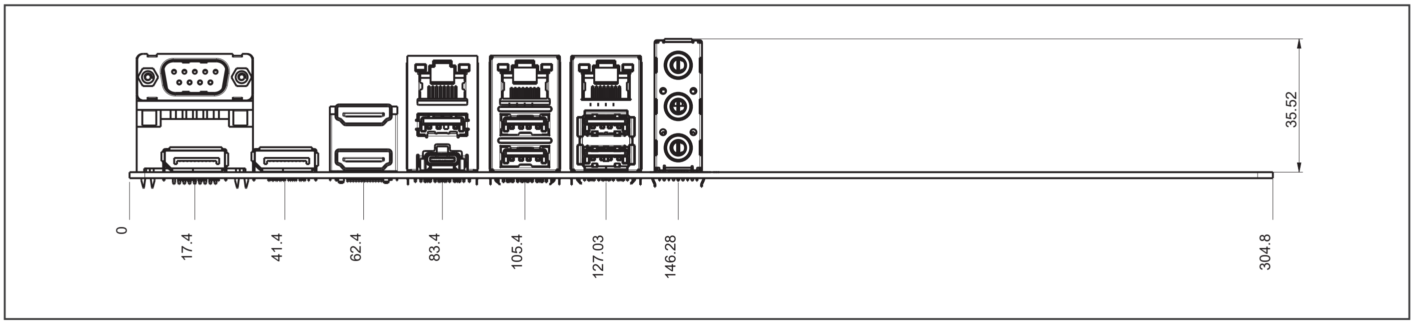
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

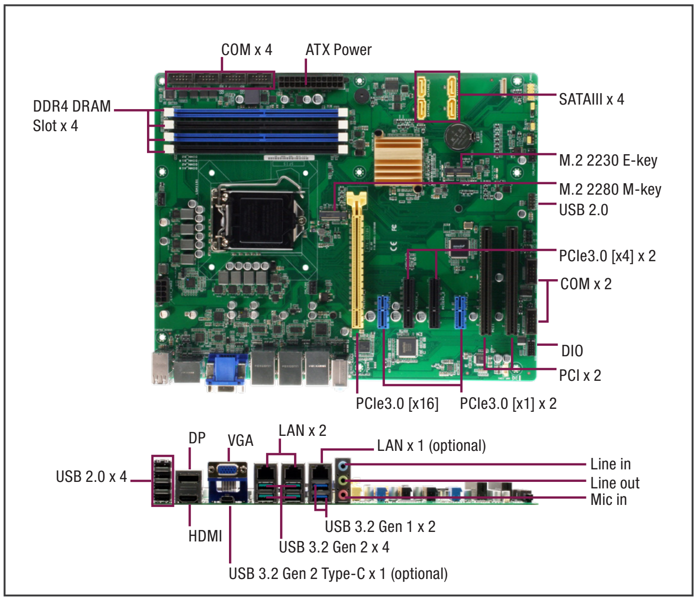
Part Number	CPU	RAM	Fan/ Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
ATX-Q670A-A10-2L	LGA1700 Socket	DDR5 4000MHz	Fan	HDMIx2, DPx2, VGA header x1	SATA3 x 8, M.2 2280 M-Key x1, M.2 2242/80 M-key x1	—	Intel®GbE x 2	USB 3.2 Gen2 x2, USB 3.2 Gen1 x2, USB 3.0 Header x1, USB 2.0 Header x1, USB2.0 (Vertical) type A x1	5	1	PCIe [x16] Slot x1, PCIe [x1] Slot x1, PCIe [x4]Slot] x1, PCIe [x16] Slot (4 lanes) x1, PCI Slot x3, M.2 3042/3052 B Key (PCIe/USB) x1, Mini PCIe Slot (PCIe/USB) x1, Micro SIM Card Slot x1	ATX	TPM2.0 onboard	32°F ~ 140°F (0°C ~ 60°C)

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)
1700190450	USB3.2 Gen 1 Cable (19P, 450mm, w/bracket)

ATX-Q370A

ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Supports iAMT 12.0, and Intel® CNVi WLAN Card, Option: LAN x 3, Type-C Alternate (Display + Data USB 3.2 Gen 1) Function



Features

- 8th/9th Generation Intel® Core™ LGA1151 Processor
- Supports Power 95W max.
- DDR4 2666/2400/2133 MHz, max. 128GB
- Three Independent Displays: HDMI x 1, VGA x 1, DP x 1, USB Type-C x 1 (optional)
- Dual Intel® Gigabit Ethernet, i210AT x 1 (option: i210AT x 2), i219LM x 1
- USB 3.2 Gen 2 ports x 4, USB 3.2 Gen 1 ports x 2, USB 2.0 ports x 6
- M.2 E-key (PCIex1/USB2.0/CNVi) x 1, M.2 M-key (PCIex4/SATA3) x 1
- TPM Onboard

1000 Giga LAN · DDR 4 · PCI Express · USB 3.2 Gen 2 · USB 2.0 · Audio

Specifications

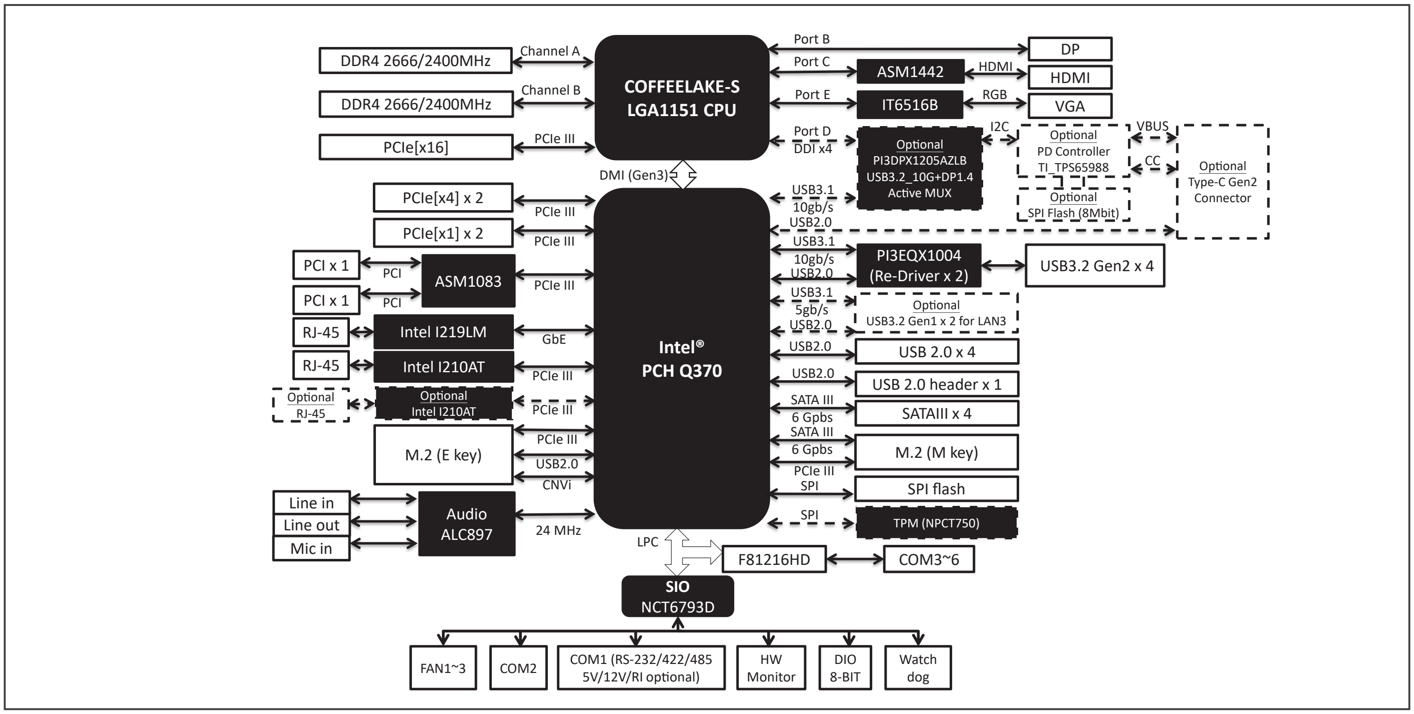
System	
Processor	Intel® 8th/9th Generation (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5 /i3, Pentium 14nm LGA 1151 socket Processor, max. TDP 8 Core 95W
Chipset	Intel® Q370 Express Chipset
Memory	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB) Non-ECC, un-buffered memory Dual channel memory architecture
I/O Chipset	NCT6793D + F81216HD
Ethernet	Intel® PHY i219LM Giga LAN x 1 (supports Intel® AMT 12.0) Intel® i210AT Giga LAN x 1 (BOM option: i210AT x 2) RJ45 x 2 (BOM option: RJ45 x 3)
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750 TPM2.0 onboard
Expansion Slots	PCIe 3.0[x16] Slot x 1, PCIe 3.0[x4] Slot (open edge) x 2, PCIe 3.0[x1] Slot (open edge) x 2, PCI x 2, M.2 2230 E-key (PCIex1/USB2.0/CNVi) x 1, M.2 2280 M-key (PCIex4/SATA3) x 1
BIOS	256Mbit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® Graphics Media Accelerator
Graphics Multi Display	HDMI+VGA+DP (BOM option: USB 3.2 Gen 2-10Gbps Type-C connector (Alternate Mode: USB+DP) x 1)
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	ATX Form Factor, 12”x9.6” (305mm x 244mm)

Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	281,410
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 ports (10 Gbps) x 4, USB 3.2 Gen 1 ports (5 Gbps) x 2, USB 2.0 ports x 4
Display I/O	HDMI x 1, VGA x 1, DP x 1, USB Type-C x 1 (optional)
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2 (BOM option: RJ45 x 3)
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280 M-key (PCIex4/SATA3) x 1
USB	USB 2.0 headers x 1 support additional 2 USB ports (2x5PIN, p=2.54mm)
Display I/O	—
Audio I/O	—
Serial Port	5 x RS-232 headers 1 x RS-232/422/485 (COM1, supports 5V/12V/RI optional)
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (In/Out programmable) x 1
FAN	CPU Fan connector(s) (4-pin) x 1 Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Chassis Intrusion x 1 AT/ATX mode select jumper x 1 Front panel header x 1 Clear CMOS jumper x 1 3-pin ME lock header x 1 Buzzer on-board x1
OS	
OS Support	Windows® 10 64bit, Windows® 11 64bit, Linux Ubuntu 64bit (18.04.1/Kernal4.8.0)

Packing List

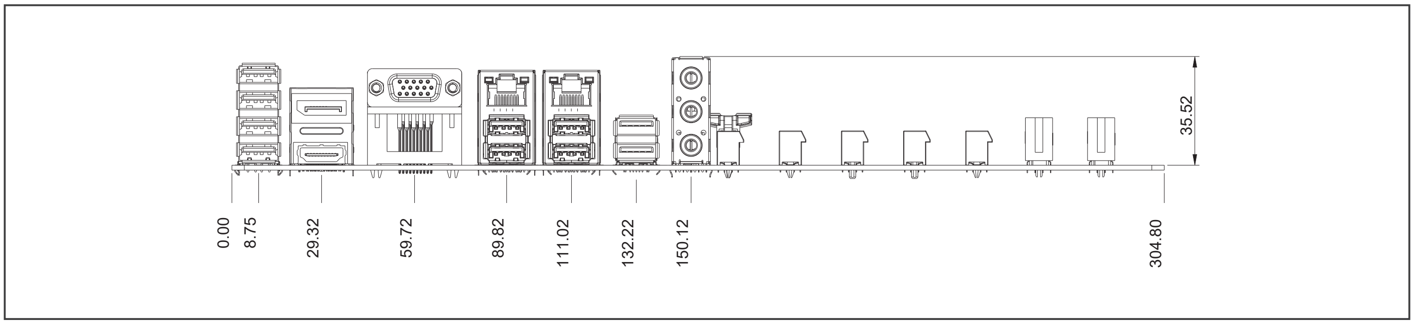
- **14001-00630100 SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)**
- **14001-00400100 COM Port Cable (9P, 260mm, p=2.54mm w/bracket)**
- **I/O Shield**
- **ATX-Q370A**

Block Diagram



Dimension

Unit: mm



Ordering Information

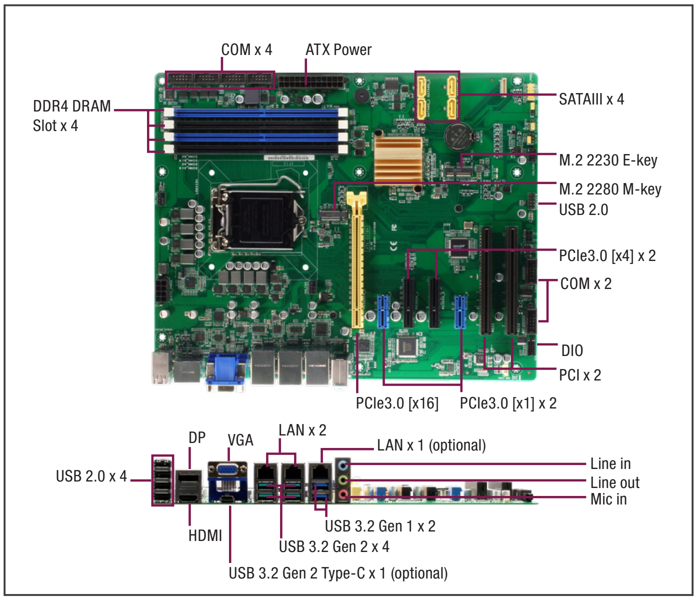
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232 /422/485	Expansion Slot	Power	TPM	Temp.
ATX-Q370A-A20-2L-210	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 1 VGA x 1 DP x 1	—	SATA3 x 4 M.2 2280 M-key x 1	Intel®GbE x 2	USB 3.2 Gen 2 x 4 USB 3.2 Gen 1 x 2 USB 2.0 x 6	5	1	PCIe[x16] x 1, PCIe[x4] (open edge) x 2, PCIe[x1] (open edge) x 2, PCI x 2, M.2 2230 E-key x 1, M.2 2280 M-key x 1	ATX	Onboard	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
AP-FNTH1Q370010	CPU Cooler (2-Ball Bearing, 2U, TDP Max. 100W)
1709100330	USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
170910020K	USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)

ATX-C246A

ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Supports iAMT 12.0, and Intel® CNVi WLAN Card, Option: LAN x 3, Type-C Alternate (Display + Data USB 3.2 Gen 2) Function



Features

- 8th/9th Generation Intel® Core™ LGA1151 Processor
- Supports Power 95W max.
- DDR4 2666/2400/2133 MHz, max. 128GB
- Three Independent Displays: HDMI x 1, VGA x 1, DP x 1, USB Type-C x 1 (optional)
- Dual Intel® Gigabit Ethernet, i210AT x 1 (option: i210AT x 2), i219LM x 1
- USB 3.2 Gen 2 ports x 4, USB 3.2 Gen 1 ports x 2, USB 2.0 ports x 6
- M.2 E-key (PCIex1/USB2.0/CNVi) x 1, M.2 M-key (PCIex4/SATA3) x 1
- TPM Onboard

Giga LAN DDR 4 PCI Express USB 3.2 Gen 2 USB 2.0 Audio

Specifications

System	
Processor	Intel® 8th/9th Generation (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5 /i3, Pentium 14nm, Celeron™, Xeon E-2200/2100, LGA 1151 socket Processor, max. TDP 8 Core 95W
Chipset	Intel® C246 Express Chipset
Memory	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB) ECC, un-buffered memory Dual channel memory architecture
I/O Chipset	NCT6793D + F81216HD
Ethernet	Intel® PHY i219LM Giga LAN x 1 (supports Intel® AMT 12.0) Intel®i210AT Giga LAN x 1 (BOM option: i210AT x 2) RJ45 x 2 (BOM option: RJ45 x 3)
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750 TPM2.0 onboard
Expansion Slots	PCIe 3.0[x16] Slot x 1, PCIe 3.0[x4] Slot (open edge) x 2, PCIe 3.0[x1] Slot (open edge) x 2, PCI x 2, M.2 2230 E-key (PCIex1/USB2.0/CNVi) x 1, M.2 2280 M-key (PCIex4/SATA3) x 1
BIOS	256Mbit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® Graphics Media Accelerator
Graphics Multi Display	HDMI+VGA+DP (BOM option: USB 3.2 Gen 2-10Gbps Type-C connector (Alternate Mode: USB+DP) x 1)
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	ATX Form Factor, 12"x9.6" (305mm x 244mm)

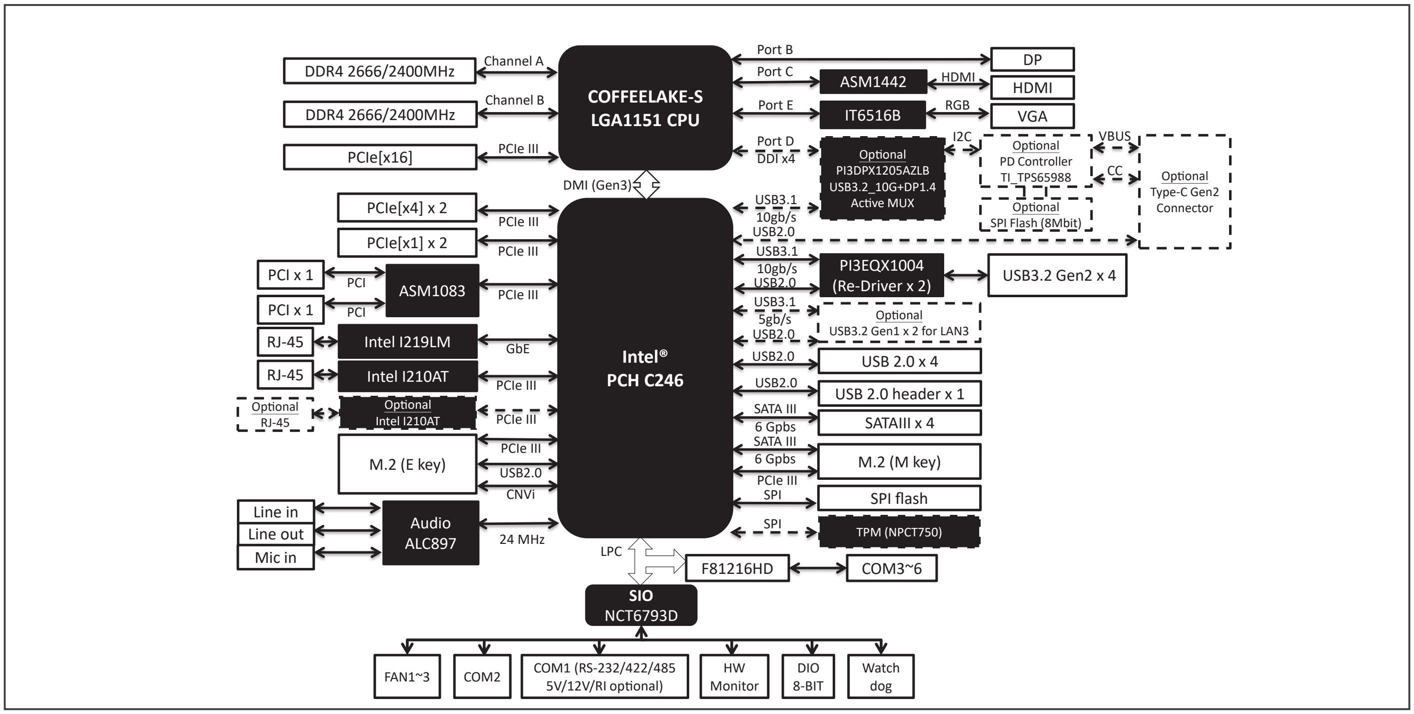
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	281,410
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 ports (10 Gbps) x 4, USB 3.2 Gen 1 ports (5 Gbps) x 2, USB 2.0 ports x 4
Display I/O	HDMI x 1, VGA x 1, DP x 1, USB Type-C x 1 (optional)
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2 (BOM option: RJ45 x 3)
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280 M-key (PCIex4/SATA3) x 1
USB	USB 2.0 headers x 1 support additional 2 USB ports (2x5PIN, p=2.54mm)
Display I/O	—
Audio I/O	—
Serial Port	5 x RS-232 headers 1 x RS-232/422/485 (COM1, supports 5V/12V/RI optional)
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (In/Out programmable) x 1
FAN	CPU Fan connector(s) (4-pin) x 1 Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Chassis Intrusion x 1 AT/ATX mode select jumper x 1 Front panel header x 1 Clear CMOS jumper x 1 3-pin ME lock header x 1 Buzzer on-board x 1
OS	
OS Support	Windows® 10 64bit, Windows® 11 64bit, Linux Ubuntu 64bit (18.04.1/Kernal4.8.0)

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**
- **ATX-C246A**

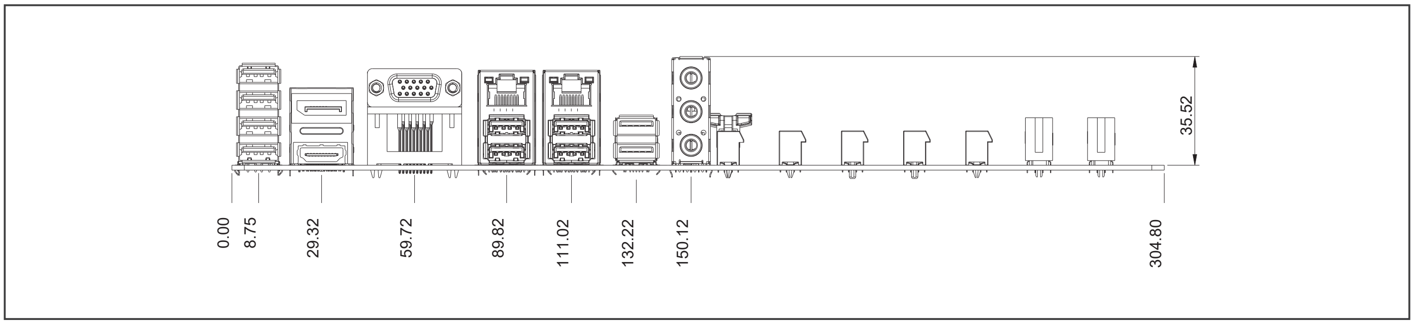
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

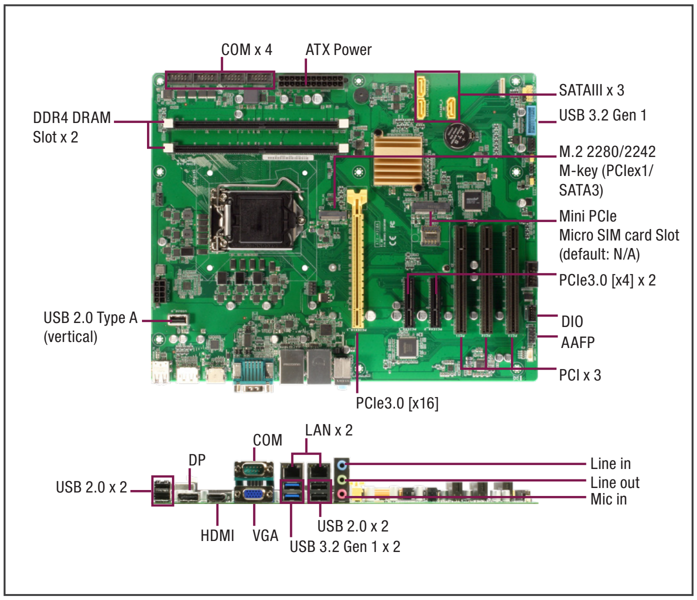
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232 /422/485	Expansion Slot	Power	TPM	Temp.
ATX-C246A-A20-2L-210	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 1 VGA x 1 DP x 1	—	SATA3 x 4 M.2 2280 M-key x 1	Intel®GbE x 2	USB 3.2 Gen 2 x 4 USB 3.2 Gen 1 x 2 USB 2.0 x 6	5	1	PCIe[x16] x 1, PCIe[x4] (open edge) x 2, PCIe[x1] (open edge) x 2, PCI x 2, M.2 2230 E-key x 1, M.2 2280 M-key x 1	ATX	Onboard	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
AP-FNTH1Q370010	CPU Cooler (2-Ball Bearing, 2U, TDP Max. 100W)
1709100330	USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
170910020K	USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)

ATX-H310A

ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Option: 4G+LTE Function



Features

- 8th/9th Generation Intel® Core™ LGA1151 Processor
- Supports Max. TDP 6 Core 95W
- DDR4 2666/2400/2133 MHz, max. 64GB
- Two Independent Displays: HDMI x 1, VGA x 1, DP x 1
- Dual Intel® Gigabit Ethernet, i210AT x 1, i219V x 1
- USB 3.2 Gen1 ports x 4, USB 2.0 ports x 5
- M.2 2280/2242 M-key (PCIex1/SATA3) x 1
- TPM Onboard

Specifications

System	
Processor	Intel® 8th/9th Generation (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5 /i3, Pentium 14nm LGA 1151 socket Processor, Max. 6 Core 95W
Chipset	Intel® H310 Express Chipset
Memory	DIMM x 2, DDR4 (2666/2400/2133 MHz, max. 64GB) non-ECC, un-buffered memory Dual channel memory architecture
I/O Chipset	NCT6793D+ F81216HD
Ethernet	Intel® PHY i219V Giga LAN x 1 Intel® i210AT Giga LAN x 1 RJ45 x 2
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750 TPM2.0 onboard (optional, default: on-board)
Expansion Slots	PCIe 3.0[x16] Slot x 1, PCIe 2.0[x4] Slot (open edge) x 2 (#1: 1Lane #2: Default: 2Lanes, only support 1Lane when Mini PCIe slot is installed.), PCI x 3, M.2 2280/2242 M-key (PCIex1/SATA3) x 1, Mini PCIe + Micro SIM card Slot (optional, default: N/A)
BIOS	128Mbit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® Graphics Media Accelerator
Graphics Multi Display	HDMI+VGA, HDMI+DP, VGA+DP
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 30 Hz
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~85°C)
Operation Humidity	0% ~ 90%RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	ATX Form Factor, 12" x 9.6" (305mm x 244mm)

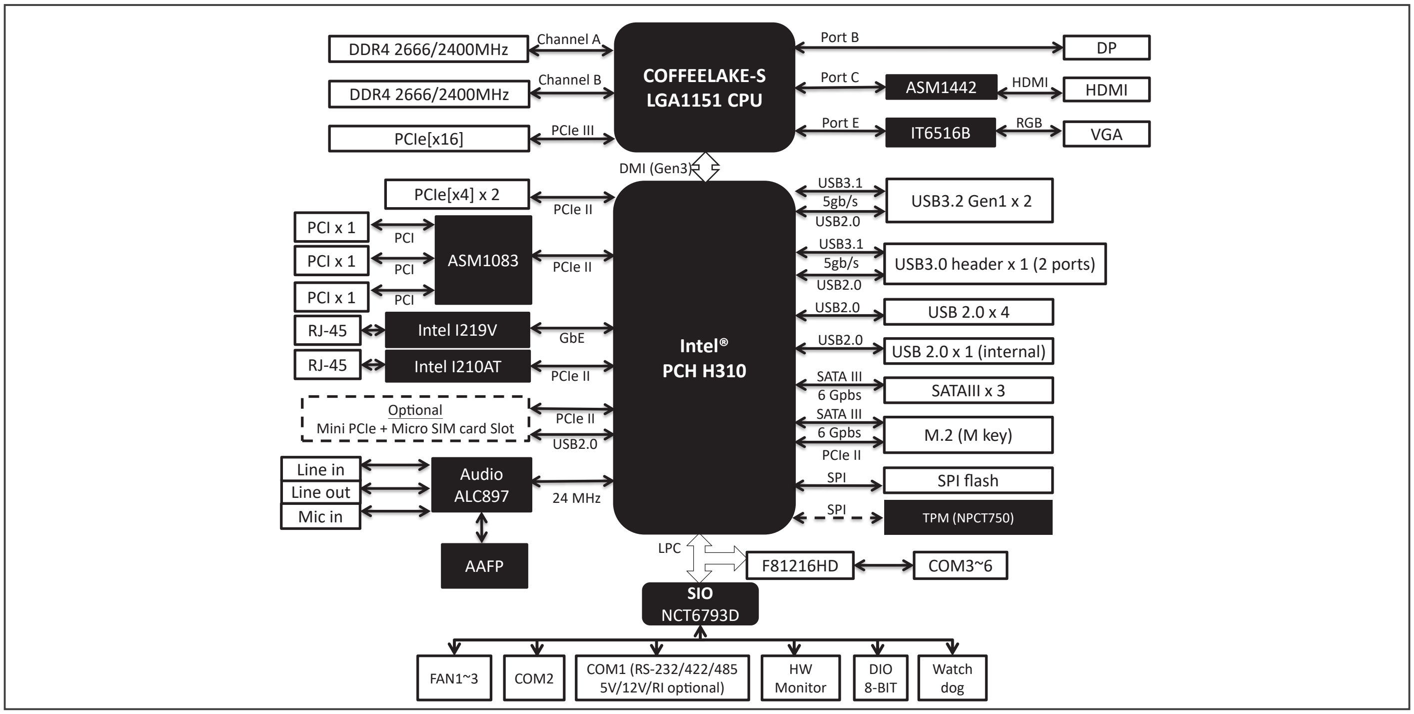
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	285,600
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 ports x 2, USB 2.0 ports x 4
Display I/O	HDMI x 1, VGA x 1, DP x 1
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2
Serial Port	DB-9 COM x 1 (supports RS-232/422/485, 5V/12V/RI)
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA III (6.0Gb/s) ports x 3 M.2 2280/2242 M-key (PCIex1/SATA3) x 1
USB	USB 3.2 Gen 1 headers support additional 2 USB ports (2x5PIN, p=2.54mm) x 1, USB 2.0 Type A (vertical) x 1
Display I/O	—
Audio I/O	AAFP x 1
Serial Port	RS-232 headers x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface (In/Out programmable) x 1
FAN	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2
Power	—
Others	Chassis Intrusion x 1, AT/ATX mode select jumper x 1, Front panel header x 1, Clear CMOS jumper x 1, 3-pin ME lock header x 1, Buzzer on-board x 1
OS	
OS Support	Windows® 10 64bit, Windows® 11 64bit, Linux Ubuntu 64 bit (18.04.3/Kernal5)

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**
- **ATX-H310A**

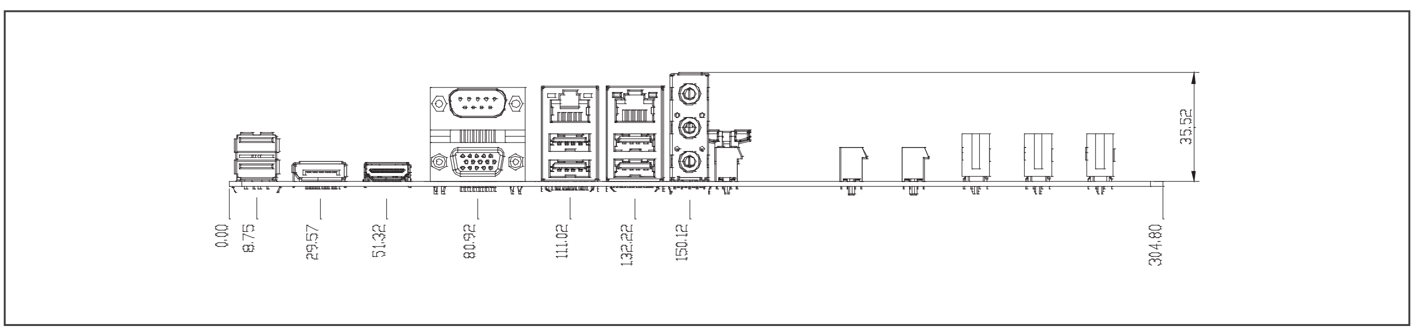
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

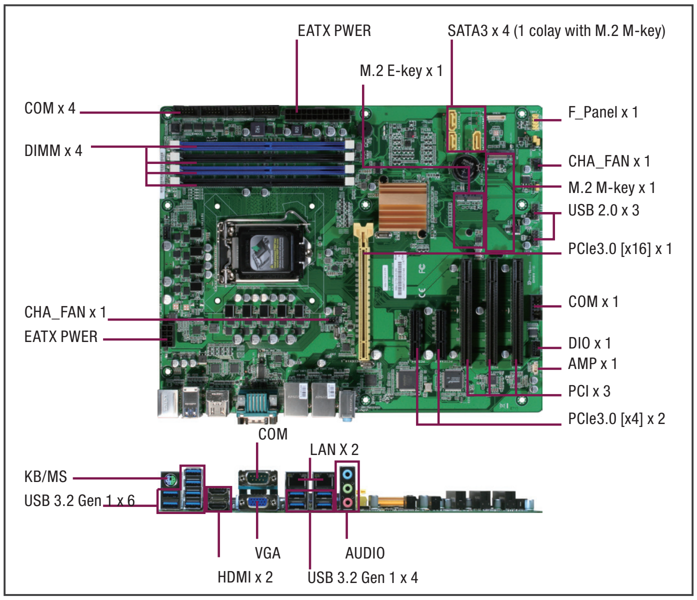
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232 /422/485	Expansion Slot	Power	TPM	Temp.
ATX-H310A-A11-210	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 1 VGA x 1 DP x 1	—	SATA3 x 3, M.2 2280/2242 M-key x 1	Intel®GbE x 2	USB 3.2 Gen 1 x 2 USB 2.0 x 4 USB 3.2 Gen 1 header x 1 USB 2.0 type A (vertical) x 1	5	1	PCIe[x16] x 1, PCIe[x4] (open edge) x 2 (#1: 1Lane, #2: 2Lanes), PCI x 3, M.2 2280/2242 M-key x 1	ATX	on-board	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
1700190450	USB3.2 Gen 1 Cable (19P, 450mm, w/bracket)
1709100330	USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)
170910020K	USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
AP-FNTH1Q370010	CPU Cooler (2-Ball Bearing, 2U, TDP Max. 100W)

IMBA-Q170A

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



Features

- 7th/6th Generation Intel® Core™ LGA1151 Processor
- DDR4 DRAM Support, 2400 MHz, Max. 64GB
- Three Independent Display: HDMI x 2, VGA x 1
- Dual Intel® Gigabit Ethernet, LAN1 Supports iAMT 11.0
- PCIe [x16] x 1, PCIe [x4] x 2, PCI x 3
- M.2 Slot (M key) x 1, M.2 Slot (E key) x 1
- USB 3.2 Gen 1 Port x 10, USB 2.0 Port x 3

USB 3.2 Gen 1 Giga LAN DDR 4 PCI Express

Specifications

System	
Processor	Intel® 7th/ 6th Generation(Kaby Lake-S/ Skylake-S) Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor
Chipset	Intel® Q170
Memory	288-pin DIMM x 4, max. 64GB, DDR4 2400/2133/1867, dual-channel
I/O Chipset	NCT6791D, F81216HD
Ethernet	LAN1: Intel® PHY I219LM Gb LAN (supports iAMT 11.0), LAN2: Intel® I210AT Gb LAN
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750AADYX TPM2.0 onboard (optional; default: onboard)
Expansion Slots	SKU1: PCIe [x16] x 1, PCIe [x4] (open edge) x 2, PCI x 3, M.2 E key (22 x 30mm) x 1, M.2 M key (22 x 80mm, for SATA) x 1 SKU2: PCIe [x16] x 1, PCIe [x4] (open edge) x 1, PCI x 3, M.2 E key x 1, M.2 M key (for SATA & PCIex4) x 1
BIOS	128M bit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan x1, Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+HDMI, HDMI+HDMI, VGA+HDMI+HDMI
VGA	Up to 1920 x 1200 @60Hz
DVI	—
HDMI	HDMI 1.4 up to 4096 x 2304 @24Hz
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	ATX, 12" x 9.6" (305 mm x 244 mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	219,970

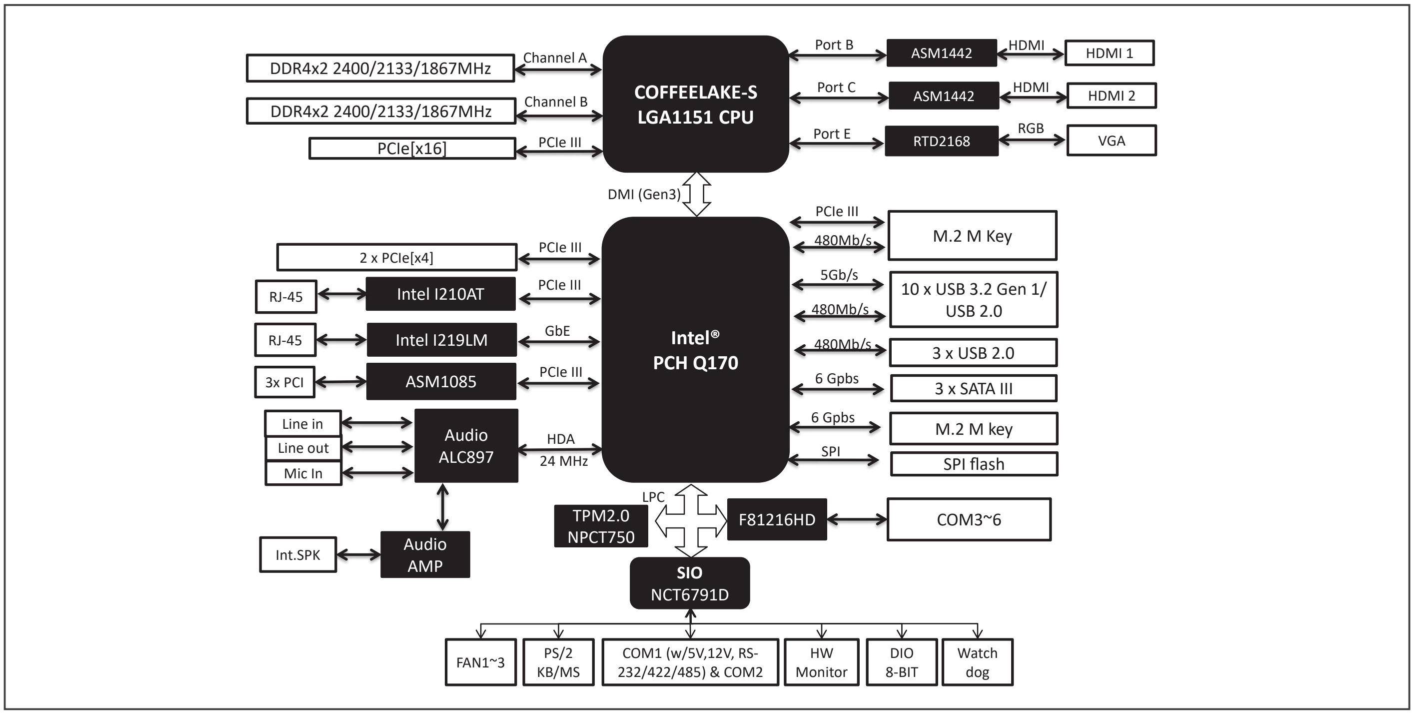
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 x 10
Display I/O	HDMI x 2, VGA x 1
Audio I/O	Line-in, Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	DB-9 COM x 1 (supports RS-232/422/485, 5V/12V/RI)
PS/2 Port	Stack Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	Supports RAID 0/1/5/10 SKU1: SATA 6.0Gb/s x 3, M.2 M key (SATA) x 1 SKU2: SATA 6.0Gb/s x 4, M.2 M key (PCIex4) x 1
USB	USB 2.0 x 3
Display I/O	—
Audio I/O	Speaker header x 1 (Line-out)
Serial Port	RS-232 header x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit DIO x 1 (In/Out programmable)
FAN	4-pin CPU Fan x 1, 4-pin Chassis Fan x 2
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (2[x4]P p=1.27mm) x 1, Chassis Intrusion x 1, AT/ATX mode select jumper x 1
OS	
OS Support	Windows® 7 32/64-bit (not supported when a Kaby Lake processor is used), Windows® 8.1 64-bit (not supported when a Kaby Lake processor is used), Windows® 10 64-bit, ,Linux Fedora 64bit

Packing List

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

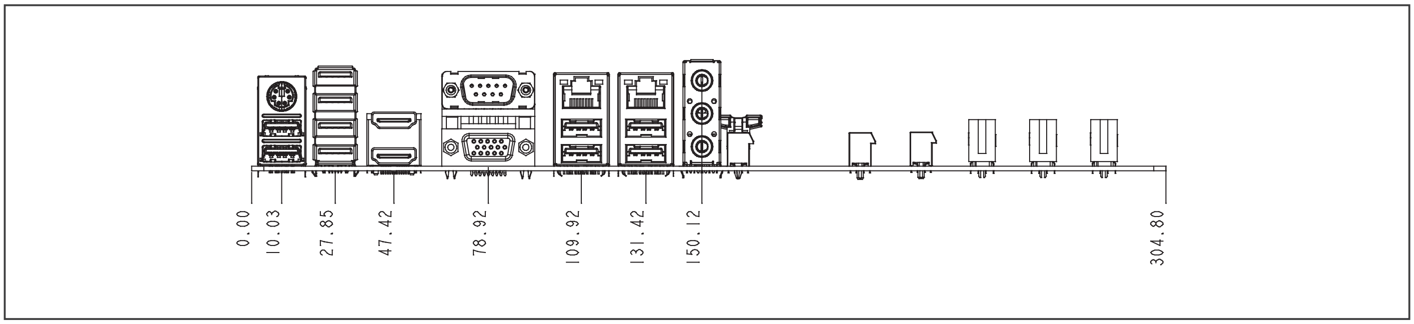
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

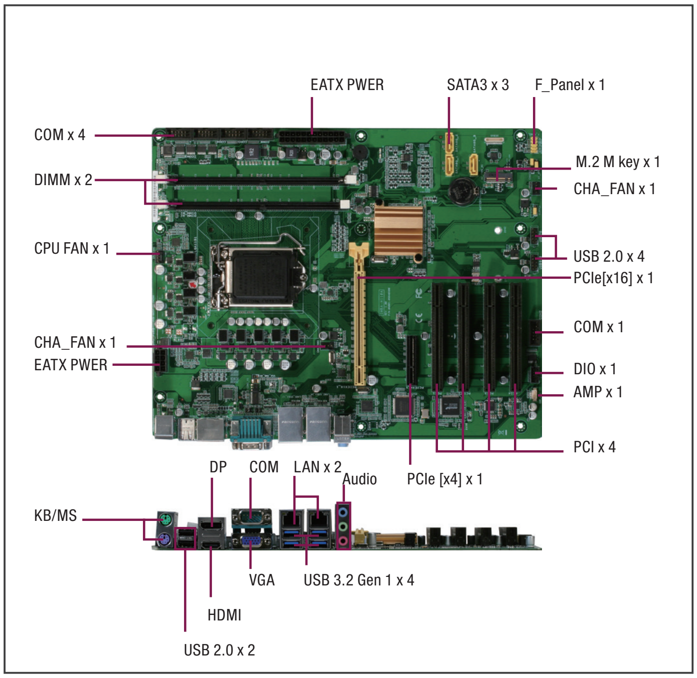
PN	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBA-Q170A-A11-2P4-210	LGA1151 socket	DDR4 2400	Fan	VGA x 1, HDMI x 2	M.2 M key 2280 x 1 (SATA module only), SATA3 x 3	—	GbE x 2	USB 3.2 Gen 1 x 10, USB2.0 x 3	5	1	PCIe[x16] x 1, PCIe [x4] x 2, PCI x 3, M.2 E key 2230 x 1	ATX	Onboard	32°F ~ 140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
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)

IMBA-H110A

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



Features

- 7th/6th Generation Intel® Core™ LGA1151 Processor
- DDR4 DRAM Support, 2400 MHz, Max. 32GB
- Two Independent Display: HDMI x 1, DP x 1, VGA x 1
- Dual Intel® Gigabit Ethernet
- M.2 Slot (M key) x 1
- USB 3.2 Gen 1 Port x 4, USB 2.0 Port x 6
- TPM onboard

PCI Express | Giga LAN | DDR 4 | HDMI | USB 3.2 Gen 1 | USB 2.0

Specifications

System	
Processor	7th/6th Generation Intel® Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor
Chipset	Intel® H110
Memory	288-pin DIMM x 2, max. 32GB, DDR4 2400/2133/1867, dual-channel
I/O Chipset	NCT6791D, F81216HD
Ethernet	LAN1: Intel® PHY I219V Gb LAN, LAN2: Intel® i210AT Gb LAN
Audio	Realtek® ALC897
TPM	Nuvoton NPCT750 TPM2.0
Expansion Slots	PCIe [x16] x 1, PCIe [x4] (open edge) x 1, PCI x 4, M.2 M key (22 x 80mm) x 1
BIOS	128M bit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan x 1, Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+HDMI, VGA+DP, HDMI+DP
VGA	Up to 1920 x 1200 @60Hz
DVI	—
HDMI	HDMI 1.4 up to 4096 x 2304 @24 Hz
Display Port	DP 1.2, up to 4096 x 2304 @60 Hz
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	ATX, 12" x 9.6" (305 mm x 244 mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	244,580

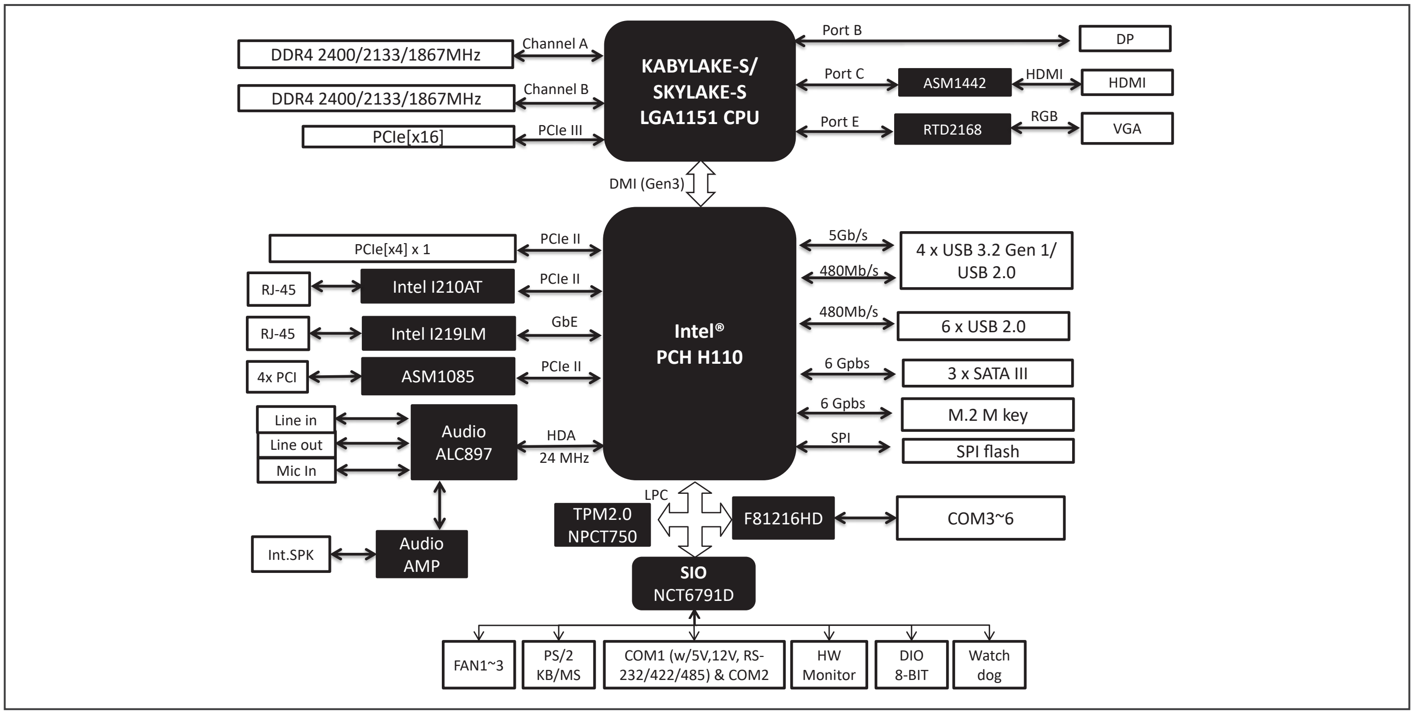
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 x 4, USB 2.0 x 2
Display I/O	HDMI x 1, DP x 1, VGA x 1
Audio I/O	Line-in, Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	DB-9 COM x 1 (supports RS-232/422/485)
PS/2 Port	Stack Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA 6.0Gb/s x 3, M.2 M key (22 x 80mm) x 1
USB	USB 2.0 x 4
Display I/O	—
Audio I/O	Speaker header x 1 (Line-out)
Serial Port	RS-232 header x 5
PS/2 Port	—
Parallel Port	—
DIO	8-bit x 1 (In/Out programmable)
FAN	4-pin CPU Fan x 1, 4-pin Chassis Fan x 2
Power	—
Others	Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (2[x4]P p=1.27mm) x 1, Chassis Intrusion x 1, AT/ATX mode select jumper x 1
OS	
OS Support	Windows® 7 32/64-bit (not supported when a Kaby Lake processor is used), Windows® 8.1 64-bit (not supported when a Kaby Lake processor is used), Windows® 10 64-bit, ,Linux Fedora 64bit

Packing List

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

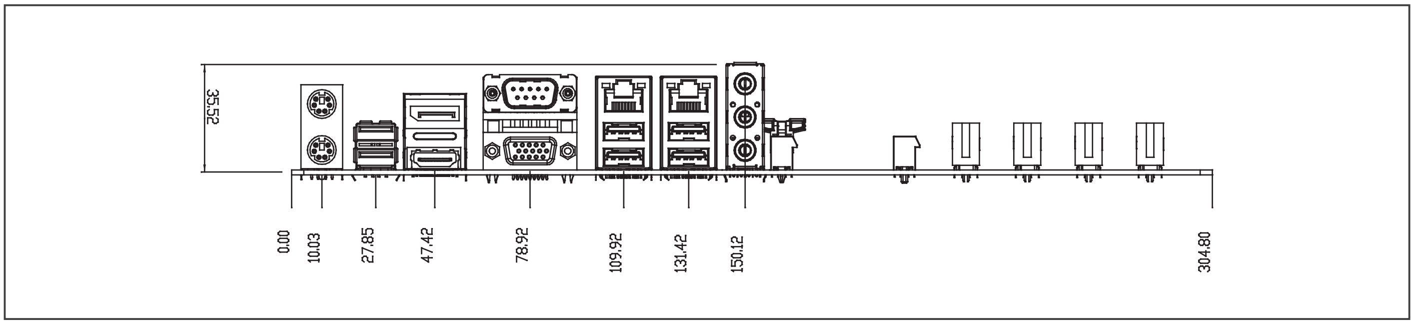
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBA-H110A-A11-210	LGA1151 socket	DDR4	Fan	HDMI x 1, DP x 1, VGA x 1	M.2 M key 2280 x 1 SATA3 x 3	—	GbE x 2	USB 3.2 Gen 1 x 4, USB2.0 x 6	5	1	PCIe[x16] x 1, PCIe [x4] x 1, PCI x 4	ATX	onboard	32°F ~ 140°F (0°C ~ 60°C)

Optional Accessories

Part Number	Description
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)

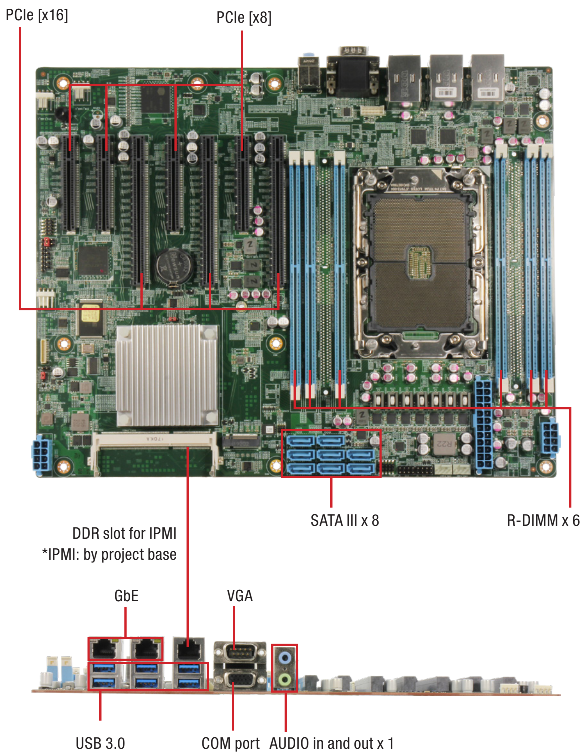
10

10

Industrial Server

ARES-WHIO

Intel® Whitely Platform Server Board, Support Intel 3rd Gen. Xeon® Scalable Ice Lake-SP CPU



Features

- ATX Server Board
- Single Intel 3rd Gen. Xeon® Scalable Ice Lake-SP processor
- Intel® Communications Chipset C621A
- DDR4 2666 MHz R-DIMM Slot x 6
- SATA III x 8, supporting RAID 0, 1, 5, 10
- M.2 2280 M-Key with PCIe [x4] signal
- Dual LAN with Intel® i210 Gigabit Ethernet Controller
- Audio In/Out and VGA
- TPM, DIO pin header reserved, and Case Open Support
- USB 3.0 x 6
- PCIe Gen 4 [x16] x 3, PCIe Gen 4 [x8] x 1, PCIe Gen 4 [x4] x 1, PCIe Gen 3 [x4] x 2
- 4-pin fan headers (up to 5 fans) x 5
- Operating Temperature Range 32°F ~ 140°F (0°C ~ 60°C)

DDR4 RDIMM
Giga LAN
USB 3.2 Gen 1

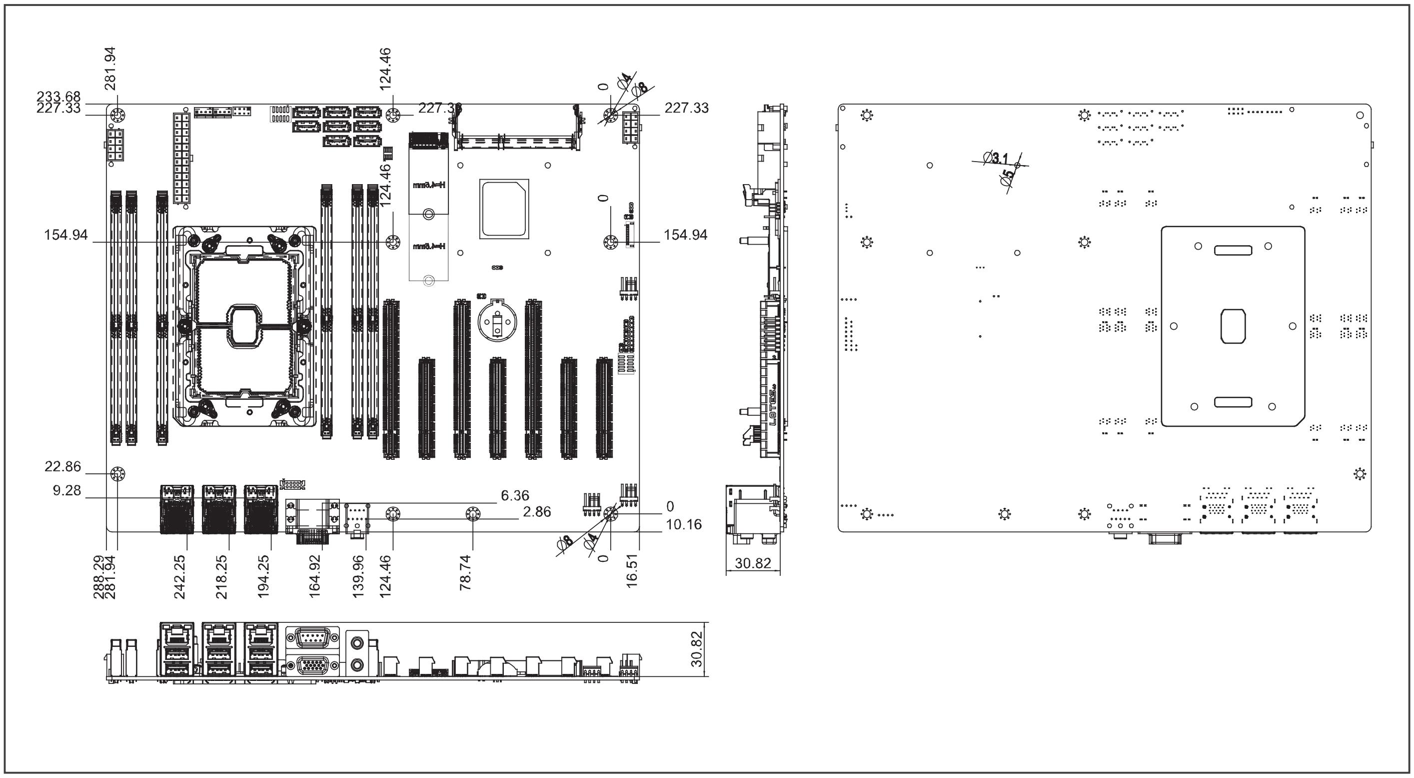
Specifications

System	
Form Factor	ATX Sever Board Whitely Platform
Processor	Single Intel® Xeon® Processor Ice Lake-SP processor, supports up to 270W
System Memory	DDR4 2666MHz R-DIMM Slot x 6, supports up to 192GB (32GB per DIMM)
Chipset	Intel®C621A
Ethernet	Intel® i210 Gigabit Ethernet x 2
COM	RS-232 x 1
BIOS	AMI BIOS
Serial ATA	SATA III port x 8
Audio and VGA	1
Expansion Interface	PCIE 1: 1 x PCIe x16 (Gen4 x16) slot PCIE 2: 1 x PCIe x8 (Gen3 x4) slot PCIE 3: 1 x PCIe x16 (Gen4 x16) slot PCIE 4: 1 x PCIe x8 (Gen4 x4) slot PCIE 5: 1 x PCIe x16 (Gen4 x16) slot PCIE 6: 1 x PCIe x8 (Gen3 x4) slot PCIE 7: 1 x PCIe x8 (Gen4 x8) slot
Watchdog Timer	1~255 steps by software programming
RTC	Internal RTC
System Fan	4-pin fan headers x 5(up to 5 fans)
Front I/O Panel	N/A
Rear I/O Panel	USB 3.0 x 6, 1Gb RJ45 LAN x 2, AUDIO in and out x 1, VGA x 1
Color	N/A
Power Supply	ATX
Dimension	12.0" x 9.6" (305mm × 244 mm)
Power Consumption	269W (Based on Intel® Xeon® Platinum 8352S)
MTBF (Hours)	292,321
Display	
Chipset	SM750
Graphic Engine	N/A
Resolution	1920x1080 (WIN Server 2019); 800x600 (CentOS 7.3)
Connector	VGA
I/O	
Serial Port	COM x 1 Pin
K/B and Mouse	N/A
USB	USB 3.0 x 6
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)
Operating Humidity	10%~80% relative humidity, non-condensing
Storage Humidity	10%~80% @40°C; non-condensing
Vibration	0.5 g rms/ 5 ~ 500Hz / operation (2.5" Hard Disk Drive) 1.5 g rms/ 5 ~ 500Hz / non operation
Shock	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation

Note: All specifications are subject to change without notice.

Dimension

Unit: mm



Ordering Information

Part Number	Chipset	RAM	Storage	RAID Support	Display	LAN	USB	Serial port	Expansion interface	Power requirement
ARES-WHI0-A10-00	Lewisburg C621A	288pin R-DIMM slot x 6	Supporting SATA slot x 8, M.2 M-Key 2280 x 1	RAID 0,1,5,10	VGA x 1	GbE x 2	USB 3.0 x 6	COM x1	[PCI-E 3.0 x 16] x 3, [PCI-E 3.0 x 4]use [PCI x 8 Slot] x 3, [PCIE-3.0 x 8] x 1	ATX

Packing List

- **ARES-WHI0 server board x1**
- **CPU carrier x1**
- **I/O Cable x2**
- **I/O Shield x1**

Optional Accessories

- **1709070800**
  SATA CABLE.7P Pitch 1.27mm.80cm.W/Lock

ZEUS-PURO PROJECT BASED

4U Rackmount Purley Platform Server System, Support Xeon® FPGA CPU

Front View

Rear View

Features

- 4U Rackmount Server System
- Dual Intel® Xeon® Processor Skylake-SP and Cascade Lake –SP processor
- Intel® Communications Chipset C621
- DDR4 2133/2400/2666 MHz DIMM (8 DIMM Per CPU) RDIMM x 16, Up to 512 GB
- IPMI Support
- Up to 32 Gigabit Ethernet Ports Via NIM (Project Base Up to 32 Gigabit Ethernet Ports Via NIM)
- 6 x 3.5" SATA HDD or 2.5" SATA HDD x 6, M.2 2260 Socket x 1
- Option Rear Side PCIe [x4] x 4 (or PCIe [x8] x 2) + PCIe [x8] x 2 (Or PCIe [x16] x 1)
- Option Front PCIe [x16] x 2
- Optional Parallel LCM with Keypad x 1
- RJ-45 Console x 1, USB 3.0 x 2, 1 GbE LAN x 2
- 800~1600W CRPS Redundant Power

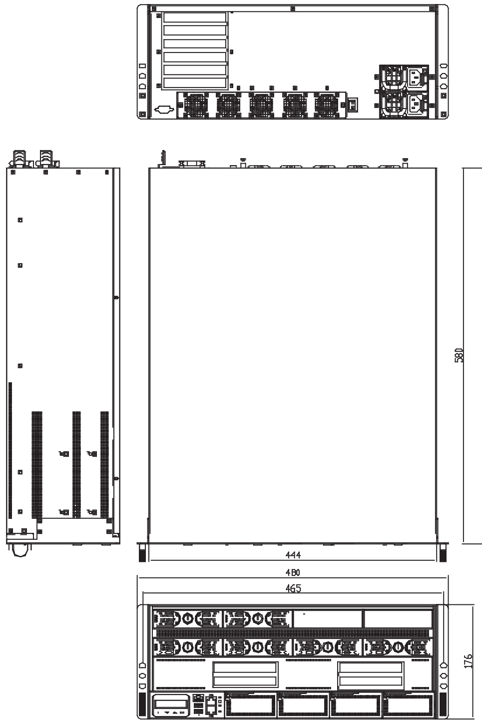
Specifications

System	
Form Factor	4U Rackmount Server System
Processor	Intel® Xeon® Skylake-SP and Cascade Lake-SP Processors
System Memory	DDR4 2133/2400/2666 R-DIMM, Up to 512 GB
Chipset	Intel® C621
Ethernet	Intel® i211 Gigabit Ethernet x 2
BIOS	AMI BIOS
Serial ATA	SATA II port x 6
Storage	2.5" HDD x 6 or 3.5" HDD x 6, M.2 x 1
Expansion Interface	NIM slot x 4 (Project Base NIM Slot x 8) Option front PCIe [x16] slots x 2 Option rear side PCIe [x4] x 4 (or PCIe [x8] x 2) + PCIe [x8] x 2 (Or PCIe [x16] x 1) M.2 Slot x 1 Mini PCIe x 1
Watchdog Timer	1~255 steps by software programmable
RTC	Internal RTC

System Fan	5
Front I/O Panel	Power LED x 1, Status LED x 1, HDD Active LED x 1
Rear I/O Panel	AC Power Input x 1, Power Switch x 1, VGA port (Optional), Rear Expansion Slot (Option)
Color	Black
Power Supply	800 ~1600W Redundant PSU
Dimension	(480mm x 600mm x 176mm)
Power Consumption	TBD
MTBF (Hours)	TBD
Display	
Chipset	AST2500
Graphic Engine	From IPMI or Mini PCIE Option
Resolution	—
Connector	VGA Option
I/O	
Serial Port	RJ-45 Console x 1
K/B and Mouse	N/A
USB	USB 3.0 x 2
Environmental	
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)
Operating Humidity	10% ~ 80% relative humidity, non-condensing
Storage Humidity	10% ~ 80% @40°C; non-condensing
Vibration	0.5 g rms/ 5 ~ 500Hz / operation (2.5" Hard Disk Drive) 1.5 g rms/ 5 ~ 500Hz / non operation
Shock	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation

Dimension

Unit: mm



Ordering Information

- TBD

Packing List

- ZEUS-PURO

Optional Accessories

- TBD

ARES-EAGO PRELIMINARY

Intel® Eagle stream Platform Server Board, Support Intel 4th Gen. Xeon® Scalable Sapphire Rapid-SP CPU

Launching in Q1

Features

- **EATX Server Board**
- **Dual Intel® 4th Gen. Xeon® Scalable Sapphire Rapid-SP CPU**
- **Intel® Emmitsburg Chipset**
- **DDR5 4800 MHz R-DIMM Slot x 12**
- **SSATA3 port x 2, miniSAS x 1 (up to 4x SATA), SlimSAS 4i x 1, SlimSAS 8i x 4**
- **M.2 M-Key 2280 with PCIe x 4 Signal**
- **1x GbE LAN RJ-45. 2x 10GbE LAN RJ-45**
- **VGA x 1, Audio In Out (Optional)**
- **TPM, Digital IO pin header reserved, and Case open Support**
- **PCIe Gen.5 [x16] x 6**
- **4-pin fan headers (up to 5 fans) x 5, CPU / System Overheat LED, Suspend static indicator LED**
- **Operating Temperature Range 2°F ~ 140°F (0°C ~ 60°C)**

LPDDR 5 10 GbE USB 3.2 Gen 1

Specifications

System	
Form Factor	EATX Sever Board Whitely Platform
Processor	Dual Intel® Xeon® Processor Sapphire Rapid-SP processor, supports up to 350W
System Memory	DDR5 4800 MHz R-DIMM Slot x 12
Chipset	Intel® Emmitsburg PCH
Ethernet	Intel® i226LM LAN controller x 1, Intel® X550-AT2 x 1
COM	Pin header x 1
BIOS	AMI BIOS
Serial ATA	SATA III port x 2, miniSAS x 1 (up to 4x SATA)
Audio and VGA	VGA x 1, Audio In Out (Optional)
Expansion Interface	PCIE 1: 1 x PCIe Gen. 5 [x16] slot PCIE 2: 1 x PCIe Gen. 5 [x16] slot PCIE 3: 1 x PCIe Gen. 5 [x16] slot PCIE 4: 1 x PCIe Gen. 5 [x16] slot PCIE 5: 1 x PCIe Gen. 5 [x16] slot PCIE 6: 1 x PCIe Gen. 5 [x16] slot
Watchdog Timer	1~255 steps by software programming
RTC	Internal RTC
System Fan	4-pin fan headers x 5(up to 5 fans)
Front I/O Panel	—
Rear I/O Panel	USB 3.2 Gen.1 x 4, 2.5Gb RJ45 LAN x 1, 10Gb RJ45 LAN x 2, VGA x 1, COM x 1
Color	—
Power Supply	ATX
Dimension	305 × 330 mm
Power Consumption	TBD
MTBF (Hours)	TBD
Display	
Chipset	AST2510
Graphic Engine	—
Resolution	TBD
Connector	VGA
I/O	
Serial Port	COM x 1 Pin
K/B and Mouse	—
USB	USB 3.2 Gen. 1 x 4
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)
Operating Humidity	10%~80% relative humidity, non-condensing
Storage Humidity	10%~80% @40°C; non-condensing
Vibration	0.5 g rms/ 5 ~ 500Hz / operation (2.5" Hard Disk Drive) 1.5 g rms/ 5 ~ 500Hz / non operation
Shock	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation

Packing List

- **TBD**

Ordering Information

- **TBD**

Optional Accessories

- **TBD**

Note: All specifications are subject to change without notice.

PRELIMINARY

ZEUS-WHI0

4U Rackmount Whitely Platform Server System, Support Intel 3rd Gen. Xeon® Scalable Ice Lake-SP CPU

Features

- 4U Rackmount Server System
- Single Intel® 3rd Gen. Xeon® Scalable Ice Lake-SP CPU
- Intel® Communications Chipset C621A
- DDR4 2666 MHz R-DIMM Slot x 6
- IPMI Support, optional
- 8 x 3.5" SATA HDD or 2.5" SATA HDD x 8, M.2 2280 M key socket x 1
- Rear side PCIe 3.0 [x16] x 3, PCIe 3.0 [x4] use PCIe [x8] slot x 3, PCIe 3.0 [x8] x 1
- 800~1600W mini redundant or CRPS PSU

CE FC

Specifications

System	
Form Factor	4U Rackmount Server System
Processor	Single Intel® Xeon® Processor Ice Lake-SP processor, supports up to 270W
System Memory	DDR4 2666MHz R-DIMM Slot x 6, supports up to 192GB (32GB per DIMM)
Chipset	Intel®C621A
Ethernet	Intel® i210 Gigabit Ethernet x 2
BIOS	AMI BIOS
Serial ATA	SATA III port x 8
Storage	2.5" HDD x 8 or 3.5" HDD x 8, M.2 2280 M key socket x 1
Expansion Interface	PCIE 1: 1 x PCIe x16 (Gen4 x16) slot PCIE 2: 1 x PCIe x8 (Gen3 x4) slot PCIE 3: 1 x PCIe x16 (Gen4 x16) slot PCIE 4: 1 x PCIe x8 (Gen4 x4) slot PCIE 5: 1 x PCIe x16 (Gen4 x16) slot PCIE 6: 1 x PCIe x8 (Gen3 x4) slot PCIE 7: 1 x PCIe x8 (Gen4 x8) slot
Watchdog Timer	1~255 steps by software programmable
RTC	Internal RTC
System Fan	3 x middle fans default; 2 x rear fans, optional
Front I/O Panel	Power LED x 1, Status LED x 1, HDD Active LED x 1
Rear I/O Panel	AC Power Input x 1, Power Switch button x 1, USB 3.0 x 6, 1Gb RJ45 LAN x 2, AUDIO in and out x 1, VGA x 1, Rear Expansion Slots x7
Color	Black
Power Supply	800 mini redundant PSU; 1600W CRPS PSU, optional
Dimension	596.0 (D) x430.4 (W) x174.8 (H) mm
Power Consumption	—
MTBF (Hours)	—
Display	
Chipset	SM750
Graphic Engine	—
Resolution	1920x1080 (WIN Server 2019); 800x600 (CentOS 7.3)
Connector	VGA
I/O	
Serial Port	COM x 1
K/B and Mouse	—
USB	USB 3.0 x 6
Environmental	
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)
Operating Humidity	10% ~ 80% relative humidity, non-condensing
Storage Humidity	10% ~ 80% @40°C; non-condensing
Vibration	0.5 g rms/ 5 ~ 500Hz / operation (2.5" Hard Disk Drive) 1.5 g rms/ 5 ~ 500Hz / non operation
Shock	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation

Packing List

- TBD

Ordering Information

- TBD

Optional Accessories

- TBD

Note: All specifications are subject to change without notice.

Memo

Memo

PRODUCT CATALOG 2023

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