

AAEON

Always Agile, Always Ahead.

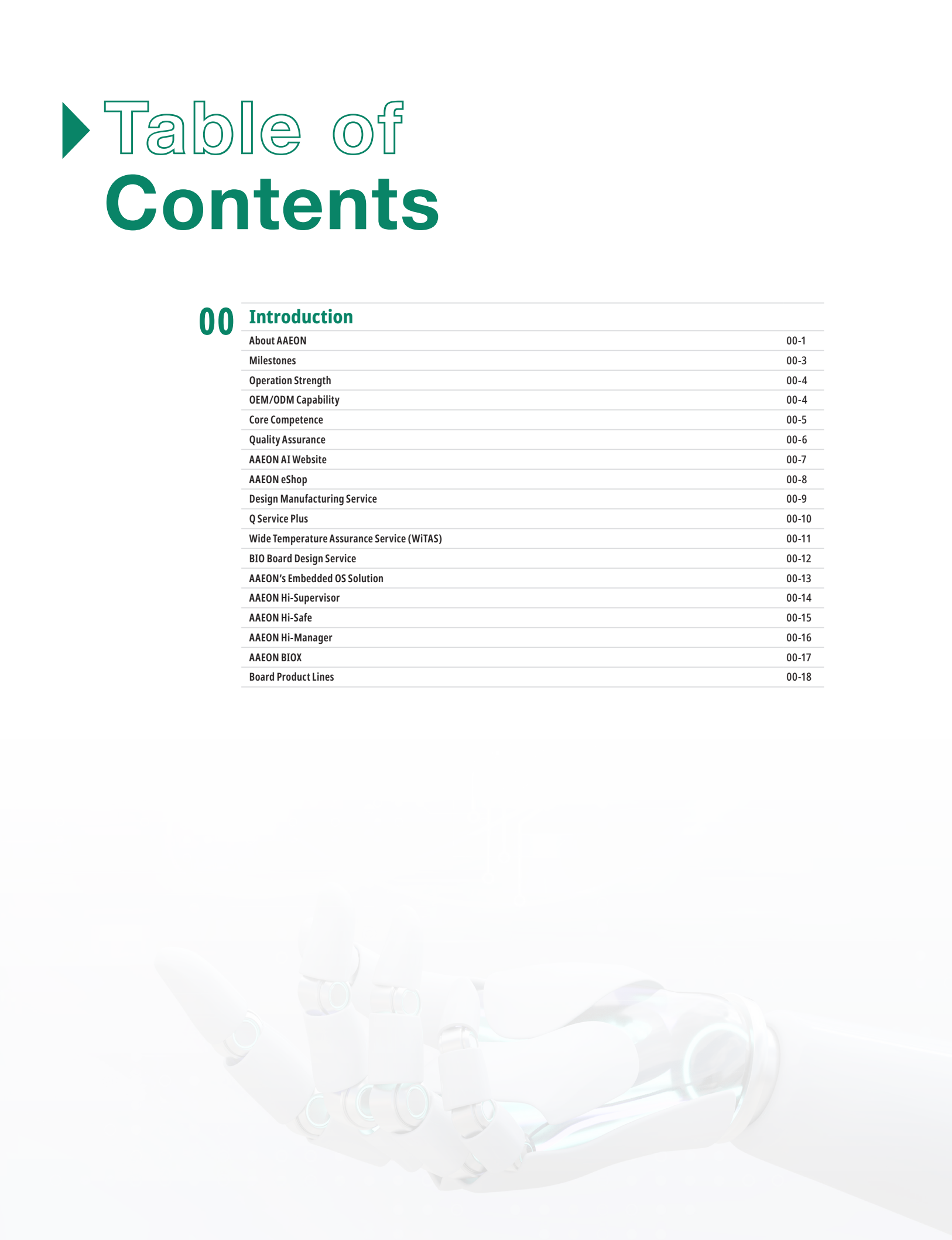
EMBEDDED PLATFORMS

2025 Product Catalog

Table of Contents

00 Introduction

About AAEON	00-1
Milestones	00-3
Operation Strength	00-4
OEM/ODM Capability	00-4
Core Competence	00-5
Quality Assurance	00-6
AAEON AI Website	00-7
AAEON eShop	00-8
Design Manufacturing Service	00-9
Q Service Plus	00-10
Wide Temperature Assurance Service (WiTAS)	00-11
BIO Board Design Service	00-12
AAEON's Embedded OS Solution	00-13
AAEON Hi-Supervisor	00-14
AAEON Hi-Safe	00-15
AAEON Hi-Manager	00-16
AAEON BIOX	00-17
Board Product Lines	00-18



01 AI Edge Computing Solutions

MXM-ACMA-PUC	System Box with 12th/13th/14th Generation Intel Core Processor & MXM 3.1 Type A Intel A370M/A350M GPU	01-1
MXM-ACMA	Embedded MXM 3.1 Type A Module with Intel® Arc™ A370/A350 GPU	01-3
PICO-APL3-A10-FAI1	AI Edge Computing Kit with Kneron KL520 NPU	01-5
M2AI-2242-720	AI Edge Computing Module with Kneron KL720 NPU	01-7
M2AI-2280-720	AI Edge Computing Module with Kneron KL720 NPU	01-9
Mini-AI-720	AI Edge Computing Module with Kneron KL720 NPU	01-11

Advanced Graphics Card

GAR-A750E	Advanced graphics card with Intel® Arc™ A750E GPU architecture	01-13

02 Gateway Board

SRT-IMX8P	Standard RISC Gateway with ARM i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor	02-1
PICO-IMX8PL	Pico-ITX Board with ARM i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor	02-3
PICO-AM62	Pico-ITX Board with TI AM62x Sitara™ Processors	02-5

03 Pico-ITX Boards

PICO-MTU4	Pico-ITX Board with Intel® Core™ Ultra 7/Ultra 5 Processors	03-1
PICO-RAP4	Pico-ITX Board with 13th Gen Intel® Core™ i7/i5/i3 Processor	03-3
PICO-ASL4 Rev.B	Pico-ITX Board with Intel Atom® x7000RE Series	03-5
PICO-ADN4 Rev.B	Pico-ITX Board with Intel Atom® x7000E Series, Intel® Processor N-series, and Intel® Core™ i3 Processor N-series	03-7
PICO-ADN4	Intel Atom® x7000E Series, N-series, Core™ i3-N305 Processor (formerly Alder Lake N)	03-9
PICO-V2K4	Pico-ITX Board with AMD RYZEN™ V2000 embedded Processor Family	03-11
PICO-V2K4-SEMI	PICO-SEMI with AMD RYZEN™ V2000 embedded Processor Family	03-13
PICO-TGU4	Pico-ITX Board with 11th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC	03-15
PICO-TGU4-SEMI	PICO-SEMI Embedded with 11th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC	03-17
PICO-WHU4	Pico-ITX Board with 8th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC	03-19
PICO-WHU4-SEMI	PICO-SEMI Embedded with 8th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC	03-21
PICO-KBU4	Pico-ITX Board with 7th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC	03-23
PICO-KBU4-SEMI	Pico-SEMI TurnKit with 7th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC	03-25
PICO-EHL1	Pico-ITX Board with Intel Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series Processors	03-27
PICO-EHL4	Pico-ITX Board with Intel® Atom® x6000E Series, Intel® Pentium®, and Celeron® N and J series processors	03-29
PICO-EHL4-SEMI	PICO-SEMI TurnKit with Intel® Pentium® and Celeron® N and J Series Processors	03-31
PICO-APL1	Pico-ITX Board with Intel® Atom® E3900 series/ Pentium® N4200/ Celeron® N3350 Processor SoC	03-33
PICO-APL1-SEMI	PICO-SEMI Embedded Barebone Kit with Intel® Atom® Processor SoC	03-35
PICO-APL2	Pico-ITX Board with Intel Atom® E3900 series/ Pentium® N4200/ Celeron® N3350 Processor SoC	03-37
PICO-APL3	Pico-ITX Board with Intel® Pentium® N4200/ Celeron® N3350/ Atom® Processor SoC	03-39
PICO-APL3-SEMI	PICO-SEMI Embedded Barebone Kit with Intel® Celeron/Pentium Processor SoC	03-41
PICO-APL4	Pico-ITX Board with Intel® Atom®/ Pentium® N4200/ Celeron® N3350 Processor SoC	03-43
PICO-APL4-SEMI	PICO-SEMI TurnKit with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC	03-45
PICO-BT01	Pico-ITX Board with Intel® Atom®/ Celeron® Processor SoC	03-47

Pico-ITX Boards-BIO

PER-P30D	Power Supply Module with DC 5V & DC 12V Output	03-49
BIO-ST01-L1U2	2.5" BIO Daughter Board with Gigabit LAN and USB	03-50
BIO-ST01-M1U1	2.5" BIO Daughter Board with Mini-Card, SIM and USB	03-51
BIO-ST02-C4M1	2.5" BIO Daughter Board with COM x 4, Mini-Card, SIM and USB	03-52
BIO-ST03-P2U1	3.5" BIO Daughter Board with PoE, USB 3.2 Gen 1	03-53
BIO-ST02-C14-D32	2.5" BIO Daughter Board with 14 COM, 32bit DIO, LAN and USB 3.2 Gen 1	03-54

Table of **Contents**

Table of Contents

04 COM Express CPU Modules

COM-ASLC6	COM Express Type 6 Compact Size with Intel Atom® X Series Processors	04-1
COM-ADNC6	COM Express Type 6 Compact Size with Intel Atom® X Series/N-series/Core™ i3 Processors	04-3
COM-R2KC6	COM Express Type 6 Compact Size with AMD Ryzen™ Embedded R2000 Series Processors	04-5
COM-RAPC6	COM Express Type 6 Compact Size with 13th Generation Intel® Core™ i7/i5/i3 Processor SoC	04-7
COM-TGHB6	COM Express Type 6 with 11th Gen Intel® Core™/Xeon® W Processors	04-9
COM-CFHB6	COM Express Type 6 Basic Size with 8th/9th Gen Intel® Core™/Xeon® E Processors	04-11
COM-TGUC6	COM Express Type 6 Compact Size with 11th Gen Intel® Core™/Celeron® Processor 6000 Series Processors	04-13
COM-TGUC6 Rev.B	COM Express Type 6 Compact Size with 11th Gen Intel® Core™/Celeron® Processors	04-15
COM-TGUC6 Rev.C	COM Express Type 6 Compact Size with 11th Gen Intel® Core™/Celeron® Processors	04-17
COM-WHUC6	COM Express Type 6 Compact Size with 8th Gen Intel® Core™/Celeron® Processor 4000 Series Processors	04-19
COM-ICDB7	COM Express Type 7 with Intel® Xeon® D Processors	04-21
NanoCOM-RAP	COM Express Type 10 with 13th Generation Intel® Core™ U-series Processors	04-23
NanoCOM-ASL	COM Express Type 10 with Intel Atom® x7000RE Series	04-25
NanoCOM-ADN	COM Express Type 10 with Intel Atom® Processor X Series/Intel® Core™ i3/Processor N-series	04-27
NanoCOM-TGU	COM Express Type 10 with 11th Gen Intel® Core™ Processors	04-29
NanoCOM-EHL	COM Express Type 10 with Intel Atom® X/Pentium® Processor J/Celeron® Processor J & N Series Processors	04-31
HPC-ADSC / HPC-RPSC	COM HPC Client Size C with 12th/13th/14th Gen Intel® Core™ Processors	04-33
uCOM-ASL	SMARC Module with Intel Atom® Processor x7000RE Series	04-35
uCOM-ADN	SMARC Module with Intel Atom® Processor X Series, Intel® Processor N-series, & Intel® Core™ i3-N305 Processor	04-37
uCOM-IMX8P	SMARC CPU Module with NXP I.MX8M Plus Cortex-A53 x4 + Cortex-M7 processor	04-39
uCOM-IMX93	SMARC CPU Module with NXP I.MX93 Cortex-A55 x2 + Cortex-M33 processor	04-41
uCOM-M700	SMARC CPU Module with MediaTek Genio 700 / 510, up to Cortex-A78 x2 + Cortex-A55x6 processor	04-43
AQ7-ADN	Qseven CPU Module with Intel Atom® X Series/N-series/Core™ i3-N305 processor	04-45

COM Carrier Boards

ECB-920A-A11	COM Express Evaluation Carrier Board (Type 6/Type 10)	04-43
ECB-927A	COM Express Evaluation Carrier Board (Type 7)	04-45
ECB-980A	COM HPC Client Carrier board for Size A/B/C	04-47
ECB-970G	COM Qseven Carrier Board	04-49
ECB-960T	SMARC Carrier Board	04-51

05 EPIC Boards

EPIC-RPS9	EPIC Board with 12th/13th Generation Intel® Core™ Processor	05-1
EPIC-ADN9	EPIC Board with Intel Atom® x7000E Series, Intel® Processor N Series, and Intel® Core™ i3-N305 Processors	05-3
EPIC-TGH7	EPIC Board with 11th Generation Intel® Core™/Xeon® Processors	05-5
EPIC-TGH7-PUC	EPIC System with 11th Generation Intel® Core™/Intel® Xeon® W Series Processors	05-7
EPIC-KBS7	EPIC Board with 6th/7th Generation Intel® Core™ Processors (Socket Type)	05-9
EPIC-BT07	EPIC Board with Intel Atom®/Celeron® Processor SoC	05-11

06 SubCompact Boards

GENE-MTH6	3.5" SubCompact Board with Intel® Meteor Lake U/H Core Ultra Platform SoC	06-1
GENE-ADN5	3.5" SubCompact Board with Intel Atom® Processors x7000RE Series Processors	06-3
GENE-ASL5	3.5" SubCompact Board with Intel Atom® Processors x7000RE Series Processors	06-5
GENE-ADN6	3.5" SubCompact Board with Intel Atom® x7000E Series, Intel® Processor N Series, Intel® Core™ i3-N305 Processors	06-7
GENESYSM-ADN6	GENE System with Intel Atom® x7000E Series, Intel® Processor N Series, Intel® Core™ i3-N305 Processors	06-9
GENE-ASL6	3.5" SubCompact Board with Intel Atom® Processors x7000RE Series Processors	06-11
GENE-RAP6	3.5" SubCompact Board with 13th Generation Intel® Core™ i7/i5/i3 Processor SoC	06-13
GENESYSM-RAP6	GENE System with 13th Generation Intel® Core™ i7/i5/i3 Processor SoC	06-15
GENE-ADP6	3.5" SubCompact Board with 12th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC	06-17

GENESYSM-ADP6	GENE System with 12th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC	**06-19**
GENE-TGU6	3.5" SubCompact Board with 11th Generation Intel® Core™ i7/i5/i3/Celeron® Processor	**06-21**
GENESYSM-TGU6	GENE System with 11th Generation Intel® Core™ i7/i5/i3/Celeron Processor	**06-23**
GENE-WHU6	3.5" SubCompact Board with 8th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC	**06-25**
GENESYS-WHU6	GENE System with 8th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC	**06-27**
GENE-KBU6	3.5" SubCompact Board with 7th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC	**06-29**
GENESYS-KBU6	GENE System with 7th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC	**06-31**
GENE-SKU6	3.5" SubCompact Board with Intel® Core™ i7/i5/i3/Celeron® Processor SoC	**06-33**
GENE-EHL5	3.5" SubCompact Board with Intel Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series Processors	**06-35**
GENESYSM-EHL5	GENE System with Intel Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series Processors	**06-37**
GENE-EHL7	3.5" SubCompact Board with Intel Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series Processors	**06-39**
GENE-APL5	3.5" SubCompact Board with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC	**06-41**
GENE-APL6	3.5" SubCompact Board with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC	**06-43**
GENE-APL7	3.5" SubCompact Board with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC	**06-45**
GENESYS-APL7	GENE System with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC	**06-47**
GENE-BSW5	3.5" SubCompact Board with Intel® Pentium & Celeron® N3000 Series Processor SoC	**06-49**
GENE-BT05	3.5" SubCompact Board with Intel® Atom® and Celeron® Processor SoC	**06-51**
GENE-BT06	3.5" SubCompact Board with Intel® Atom® E3845/ E3825 and Celeron® Processor SoC	**06-53**
GENE-5315 Rev.A	3.5" SubCompact Board with AMD Geode™ LX Series Processor	**06-55**
GENE-5315 Rev.B	3.5" SubCompact Board with AMD Geode™ LX Series Processor	**06-57**

07 de next

de next-RAP8	86mm x 55mm Single Board with 13th Generation Intel® Core™ i7/i5/i3 Processor	**07-1**
de next-TGU8	86mm x 55mm Single Board with 11th Generation Intel® Core™ i7/i5/i3 Processor	**07-3**
de next-V2K8	86mm x 55mm Single Board with AMD Ryzen™ Embedded V2000 Series Processors	**07-5**
de next-TGU8-EZBOX	de next system with onboard 11th Gen. Intel® Core™ Series Processor	**07-7**

08 UP Boards

UP 4000	UP Developer Board with Intel® Celeron® N3350/ Intel® Pentium® N4200/ Intel Atom® x7-E3950 Processor SoC	**08-1**
UP 7000	UP 7000 Developer Board with Intel® Processor N-series Processor (formerly Alder Lake-N)	**08-3**
UP 710S	UP 710S Developer Board with Intel® Processor N-series Processor (formerly Alder Lake-N)	**08-5**
UP Squared	UP Squared Developer Board with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC	**08-7**
UP Squared V2	UP Squared V2 Developer Board with Intel® Pentium® Celeron® Processor SoC	**08-9**
UP Squared i12	UP Squared i12 Developer Board with 12th/13th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC	**08-11**
UP Squared 7100	UP Squared 7100 Developer Board with Intel® Processor N-series SoC	**08-13**
UP Squared Pro	Developer Board with Intel® Pentium® N4200/ Celeron® N3350/ Atom® E3950 Processor SoC	**08-15**
UP Squared Pro 7000	UP Squared Pro 7000 Developer Board with Intel Atom® x7000E/x7000RE Series, Intel® Processor N-series, and Intel® Core™ i3-N305 Processor	**08-17**
UP Squared Pro 710H	UP Squared Pro 710H Developer Board with Intel Atom® x7000RE Series, Intel® Processor N Series, and Intel® Core™ i3-N305 Processors	**08-19**
UP Xtreme i11	UP Xtreme i11 Developer Board with 11th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC	**08-21**
UP Xtreme i12	UP Xtreme i12 Developer Board with 12th/13th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC	**08-23**
UP Xtreme i14	UP Xtreme i14 Developer Board with Intel® Core™ Ultra 5/7 Processors	**08-25**
UP Xtreme 7100	UP Xtreme 7100 Developer Board with Intel® Processor N-series Processor	**08-27**

Table of Contents

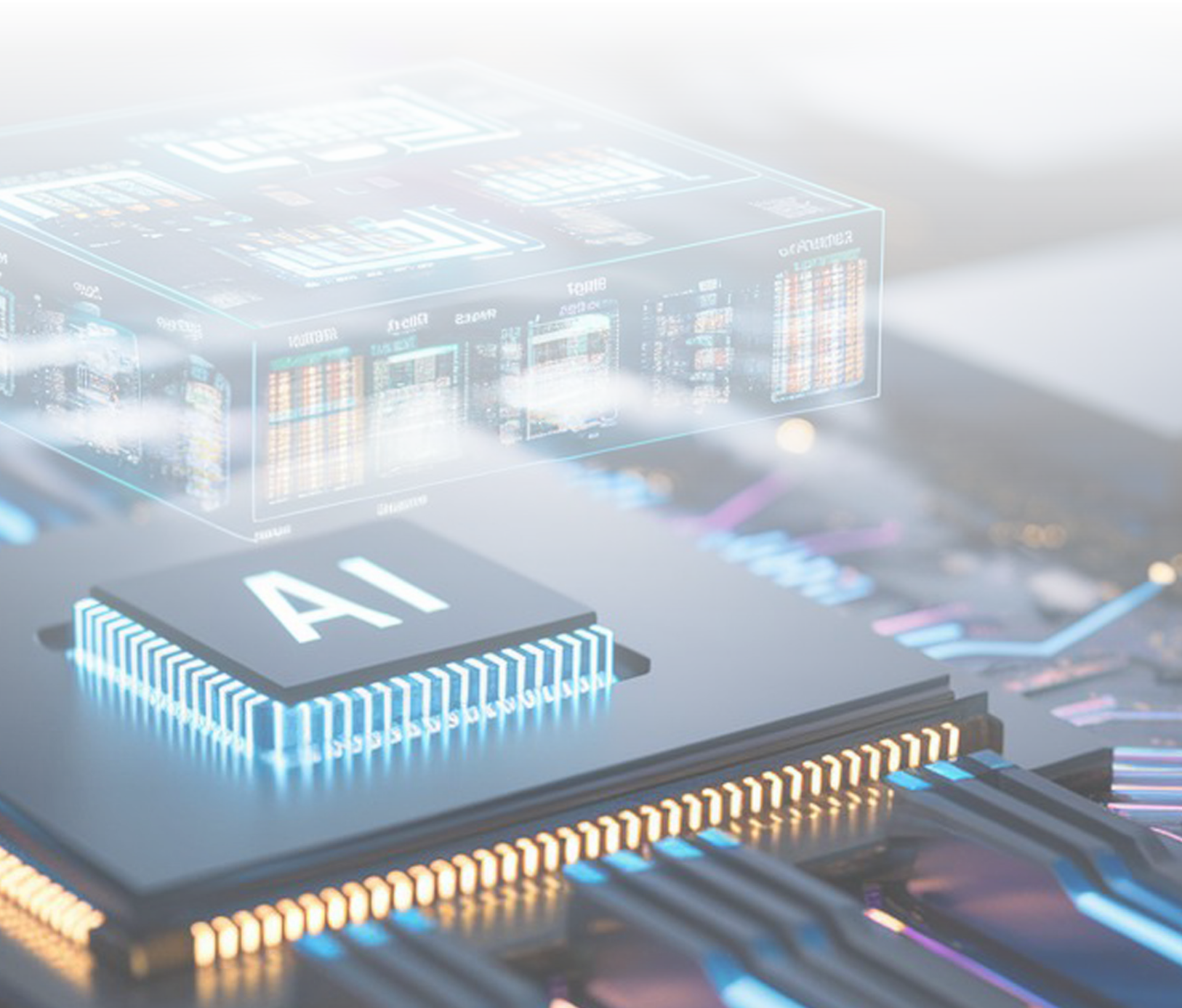
Table of Contents

UP Expansion Modules		
MIPICSI Camera RPI Converter Kit	MIPI-CSI Camera RPI Converter Kit for UP Squared Pro 7000/UP Squared i12/UP Xtreme i12/UP Xtreme i14/UP Squared Pro 710H	**08-29**
MIPICSI Camera RVP Converter Kit	MIPI-CSI Camera RVP Converter Kit for UP Squared Pro 7000/UP Squared i12	**08-31**
UP Xtreme 7100 DIO Carrier Board	UP Xtreme 7100 DIO Carrier Board	**08-33**
UP-3G HAT	RS-232/422/485 x 2, Mini Card x 1, uSIM Card Reader x 1	**08-34**
UP 4000 M.2 Plus	UP 4000 Carrier Board for M.2 2230/3042/3052/2280	**08-35**
UP POE V2 Expansion Board	UP POE V2 Expansion Board for UP 4000, UP 7000, UP Squared V2	**08-36**
HDMI In Carrier Board	HDMI In Carrier Board	**08-37**
CAN Bus Carrier Board	UP CAN Bus Carrier Board with USB/UART interface for UP product line	**08-38**
09 Industrial Motherboards		
EMB-APL1	Mini-ITX Embedded Motherboard with Intel® N3350(DC)/N4200(QC) Processor	**09-1**
EMB-APL3	Mini-ITX Embedded Motherboard with Intel® N3350(DC)/N4200(QC) Processor	**09-3**
EMB-BT1	Mini-ITX Embedded Motherboard with Intel® Celeron® J1900/N2807/ Atom® E3845 Processor, SATA3 x 2, SATA2 x 2, USB x 8	**09-5**
EMB-BT2	Mini-ITX Embedded Motherboard with Intel® Celeron® J1900 Processor, SATA2 x 2, USB 2.0 x 10, Dual LVDS	**09-7**
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	**09-9**
MIX-EHLD1	Mini-ITX with Intel Atom® x6000E Series/Intel® Pentium®/Celeron® N & J Series Processors (12W)	**09-11**
MIX-TLUD1	Mini-ITX with Intel® 11thGen Core™ U-Processor, Max. 28W TDPs, 4Display output, 2.5GbEx1 + 1GbEx1	**09-13**
MIX-H310A1	Mini-ITX with 8th/9th Gen Intel® Core™ Processor Family, Max. 65W TDPs, Giga-LAN x 4	**09-15**
MIX-H310A2	Mini-ITX with 8th/9th Generation Intel® Core™ LGA1151 Socket Processor, Max. 65W TDPs, Giga-LAN x 2	**09-17**
MIX-H310D1	Mini-ITX with 8th/9th Generation Intel® Core™ LGA1151 Socket Processor, Max. 65W TDPs, 12V DC Power input	**09-19**
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	**09-21**
MIX-H610A1	Mini-ITX with 12th/13th/14th Generation Intel® Core™ LGA1700 Socket Processor, Max. 65W	**09-23**
MIX-H610A2	Mini-ITX with 12th/13th/14th Generation Intel® Core™ LGA 1700 Socket Processors, Max. 65W TDP	**09-25**
MIX-Q370A1	Mini-ITX with 8th/9th Gen Intel® Core™ Processor Family, Max. 65W TDPs, Giga-LAN x 4	**09-27**
MIX-Q370D1	Mini-ITX with 8th/9th Gen Intel® Core™ Processor Family, DDR4 DRAM, USB x 10, Max. 65W TDPs	**09-29**
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	**09-31**
MIX-Q670A1	MIX with 12th/13th/14th Gen Intel® Core™ Processors	**09-33**
MIX-Q670D1	Mini-ITX with 12th/13th/14th Generation Intel® Core™ LGA1700 Socket Processor, Max. 65W TDPs	**09-35**
MIX-ALND1	Mini-ITX with Intel Atom® x7000E Series and Intel® Processor N-series Processors	**09-37**
MIX-ASLD1	Mini-ITX with Intel® Processor N-series	**09-39**
MIX-MTLD1	Mini-ITX with Intel® Core™ Ultra Processor, TDP 15W (U-series)/28W (H-series)	**09-41**
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	**09-43**
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	**09-45**
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	**09-47**
MAX-Q670A	Micro-ATX with 12th/13th/14th Generation Intel® Core™ LGA1700 Socket Processors, TDP Max. 125W	**09-49**
MAX-Q470A	Micro-ATX Industrial Motherboard with 10th Generation Intel® Core™ Processor, DDR4 DRAM, Multiple Display Ports, Supports iAMT 12.0	**09-51**
MAX-Q370A	Micro-ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Multiple Display Ports, Supports iAMT 12.0	**09-53**
MAX-C246A	Micro-ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Multiple Display Ports, Supports iAMT 12.0	**09-55**
MAX-H310A	Micro-ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM	**09-57**
IMBM-Q170A	Micro-ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 DRAM, USB x 14, Supports iAMT 11.0	**09-59**
IMBM-H110A	Micro-ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 DRAM, M.2 x 1, USB x 10	**09-61**

ATX-Q670A	ATX with 12th/13th Generation Intel® Core™ LGA1700 Socket Processors, TDP Max. 125W, DDR5 DRAM, Multiple Display Ports	**09-63**
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	**09-65**
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	**09-67**
ATX-H310A	ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Option: 4G+LTE Function	**09-69**
IMBA-Q170A	ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 DRAM, USB x 14, Supports iAMT 11.0	**09-71**
IMBA-H110A	ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 Max. 32GB, M.2 x 1, USB x 10	**09-73**
Module		
MOD-RMB	Out-Of-Band Remote Management Module	**09-75**

10 Industrial Server

ARES-WHI0	Intel® Whitely Platform Server Board, Support Intel 3rd Gen. Xeon® Scalable Ice Lake-SP CPU	**10-1**
ZEUS-PUR0	4U Rackmount Purley Platform Server System, Support Xeon® FPGA CPU	**10-3**
ZEUS-WHI0	4U Rackmount Whitely Platform Server System, Supports a 3rd Generation Intel® Xeon® Scalable Ice Lake-SP CPU	**10-5**
ARES-EAG0	Intel® Eagle stream Platform Server Board, Support Intel 4th/5th Gen. Xeon® Scalable CPU	**10-7**



About AAEON

The Trusted Innovation Partner

We have the drive to provide innovative, trusted solutions tailored to benefit our customers.



Established in 1992, AAEON stands at the forefront of industrial IoT and AI Edge solutions, renowned for its commitment to continual innovation. As a leading designer and manufacturer, AAEON specializes in delivering reliable, high-quality computing platforms and offers comprehensive OEM/ODM services on a global scale. Collaborating with businesses, AAEON goes beyond providing individual platforms, extending its expertise to offer end-to-end solutions that prioritize technological innovation and design excellence, fostering a reputation for delivering a trusted, customer-centric, and high standard of service.

Working closely with premier chip designers, AAEON ensures the creation of stable and reliable platforms, showcasing an innovative approach to product development and operational flexibility that solidifies its standing as a provider synonymous with demonstrated quality and dependability. The experienced engineering team at AAEON has played a pivotal role in assisting numerous companies worldwide, guiding them through product launches with solutions tailored to their specific needs. AAEON's customer-centric approach is underscored by expedited, localized technical support and meticulous attention to detail, reinforcing its dedication to delivering unparalleled service.

AAEON Core Values

Innovation:

Technological Innovation – continually seeking to bring new and exciting technologies to market for our customers

Product Innovation – evolving with our customer's needs to maximize the utility of embedded solutions

Innovative Business Model – maintaining a worldwide community model for peer-to-peer collaboration and expert technical support

Trusted Quality:

Design Quality – rigorously monitoring standards to ensure continual improvement

Advanced Manufacturing – integrating AI, automation, and new technologies into our processes

Higher Standard Of Service – building industry trust in our abilities through external endorsements from premier organizations

Flexibility:

Low Total Cost Of Ownership (TCO) – adopting a modular design process for streamlined customization to lower the cost of entry

Fast Service – faster troubleshooting for issue resolution, straightforward after-sales care

Customer Focus – provide localized solutions for even the most complex customer needs through regional RD & design center

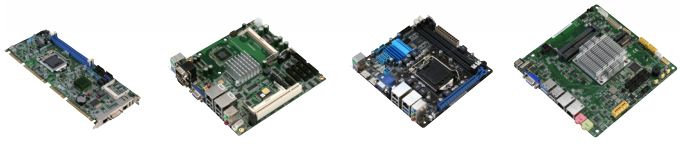
Note: All specifications are subject to change without notice.

About AAEON











System Level Products

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

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

Board Level Products

Embedded boards are the beating heart of every computer system. AAEON offers a diverse range of different embedded boards to consolidate your systems. Our products include Compact Boards, 3.5" Sub-Compact Boards, EPIC boards, PICO-ITX boards, COM Express Modules, de next boards, PC/104 Modules, RISC 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

2024
- AAEON awarded the 33rd Taiwan Symbol of Excellence Award
- AAEON awarded the 2nd New Taipei Enterprise Classic Awards.
- AAEON awarded the 17th Taiwan Corporate Sustainability Awards
- AAEON awarded the 1st Humanities Enterprise Award
- AAEON awarded the Rising Star in Taiwan International Brand Value Evaluation

2023
- AAEON awarded The 19th Annual ESG Award
- AAEON awarded 2023 Excellence in Corporate Social Responsibility
- AAEON awarded 2023 Commonwealth Talent Sustainability Award
- AAEON awarded 2023 Outstanding Organization Award in Promoting Family Education

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

Note: All specifications are subject to change without notice.

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.



Note: All specifications are subject to change without notice.

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: 2022	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

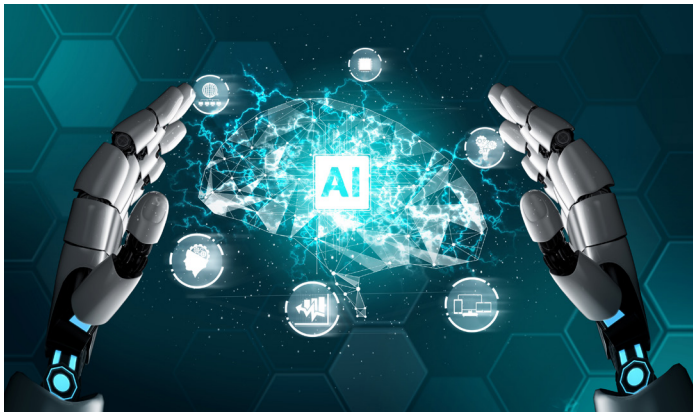
AAEON AI Website



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.

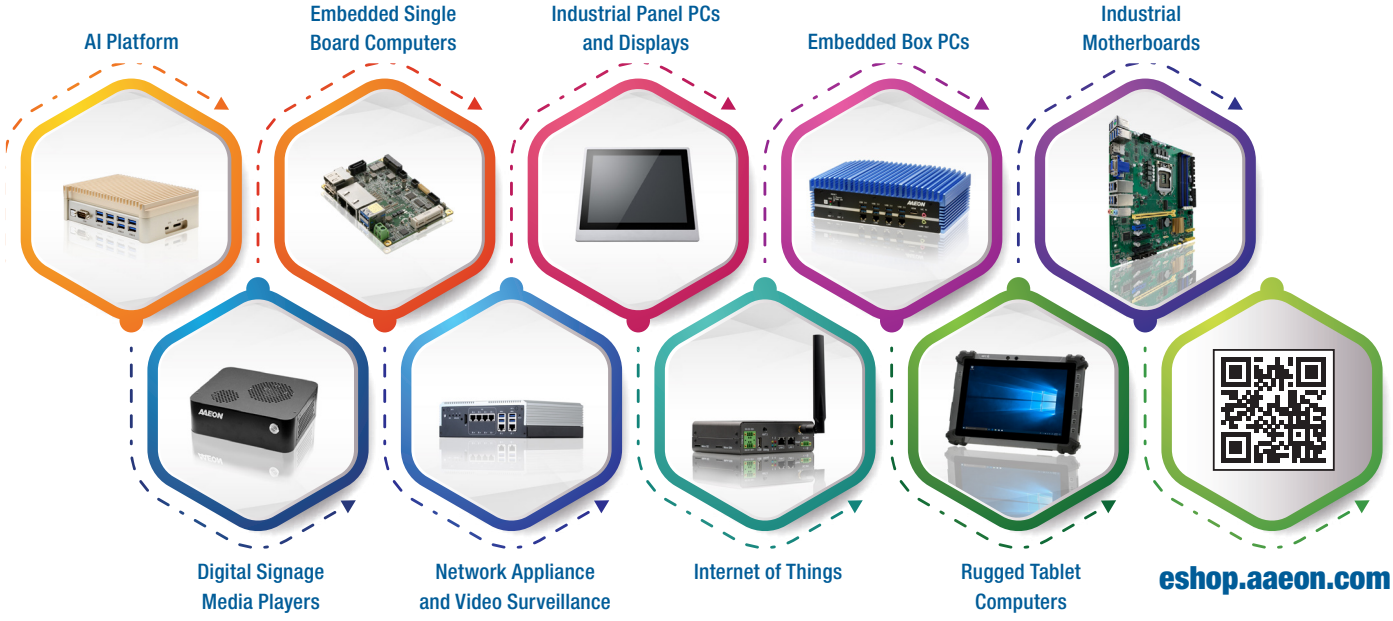


Visit AAEON.ai today and explore the latest in AI Edge technology from AAEON!

Note: All specifications are subject to change without notice.

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.



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)



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

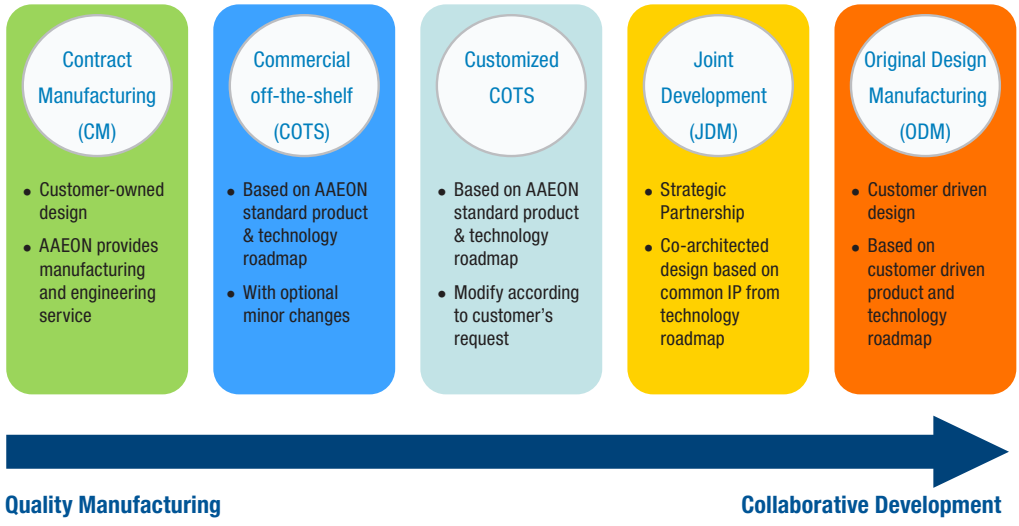


- PCBA Assembly
- System Manufacturing
- Component and Subsystem Assembly
- Functional Testing
- Engineering Change Management
- BTO (Build to Order)
- Supplier Qualification
- Warehousing
- Failure Analysis

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



Note: All specifications are subject to change without notice.

Q Service Plus

Service Plus

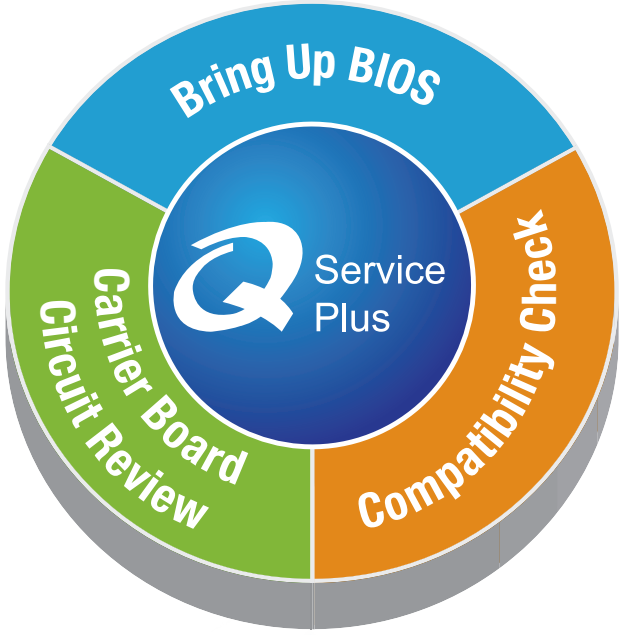


What is Q Service Plus?

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.

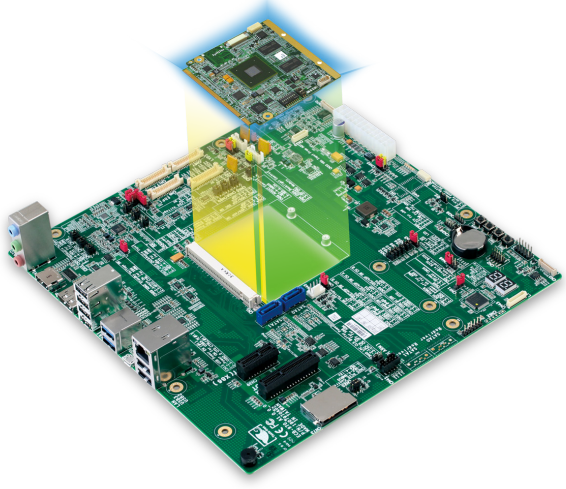
Q Service Plus Commitment:

- 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

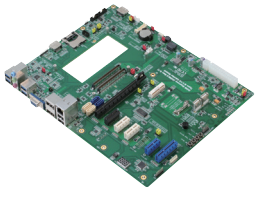
With over 20 years of quality design and manufacturing experience, AAEON provides professional carrier board design services according to the customer's specifications and passes all compatibility and functional tests required in the process. There are also default carrier boards available for evaluation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



NanoCOM Module



COM Module



Carrier Board

Note: All specifications are subject to change without notice.

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.

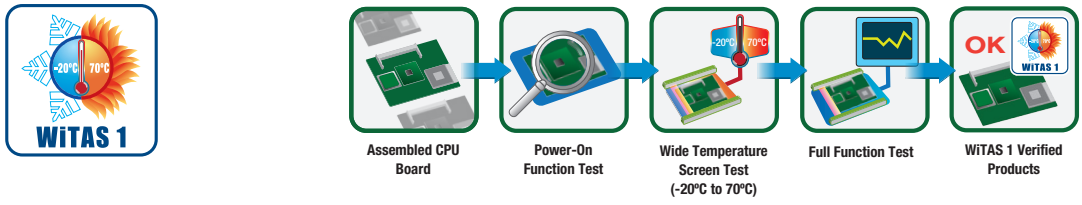
AAEON has been designing and manufacturing quality embedding products for over two decades. Our accumulated experience in all aspects of the embedded electronics market puts us in a strong position to develop wide temperature CPU boards and systems.

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

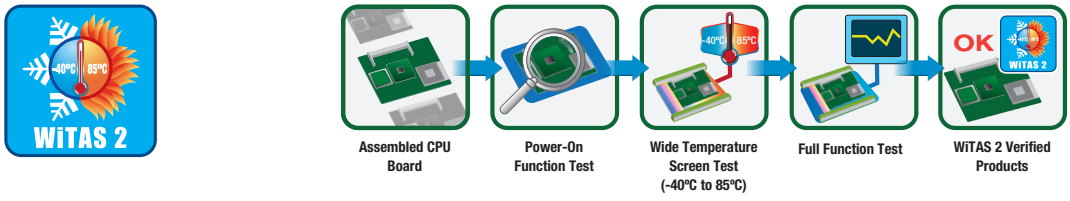
-20°C to 70°C (-4°F ~ 158°F) = WiTAS 1
-40°C to 85°C (-40°F ~ 185°F) = WiTAS 2

Processes for WiTAS Production

WiTAS 1 Production



WiTAS 2 Production



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









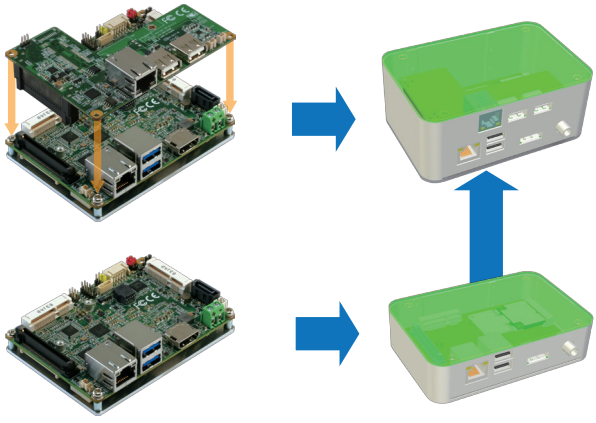
Note: All specifications are subject to change without notice.

BIO Board Design Service

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.



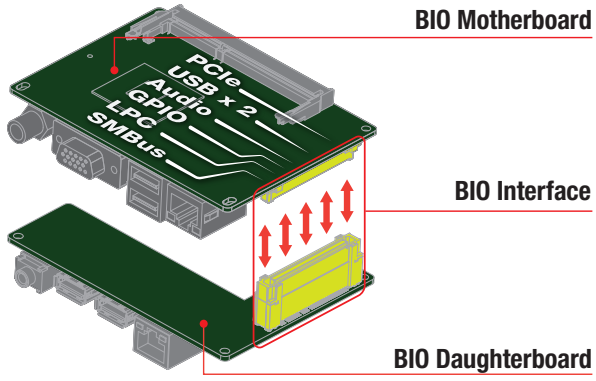


BIO Standardized Pin Definition

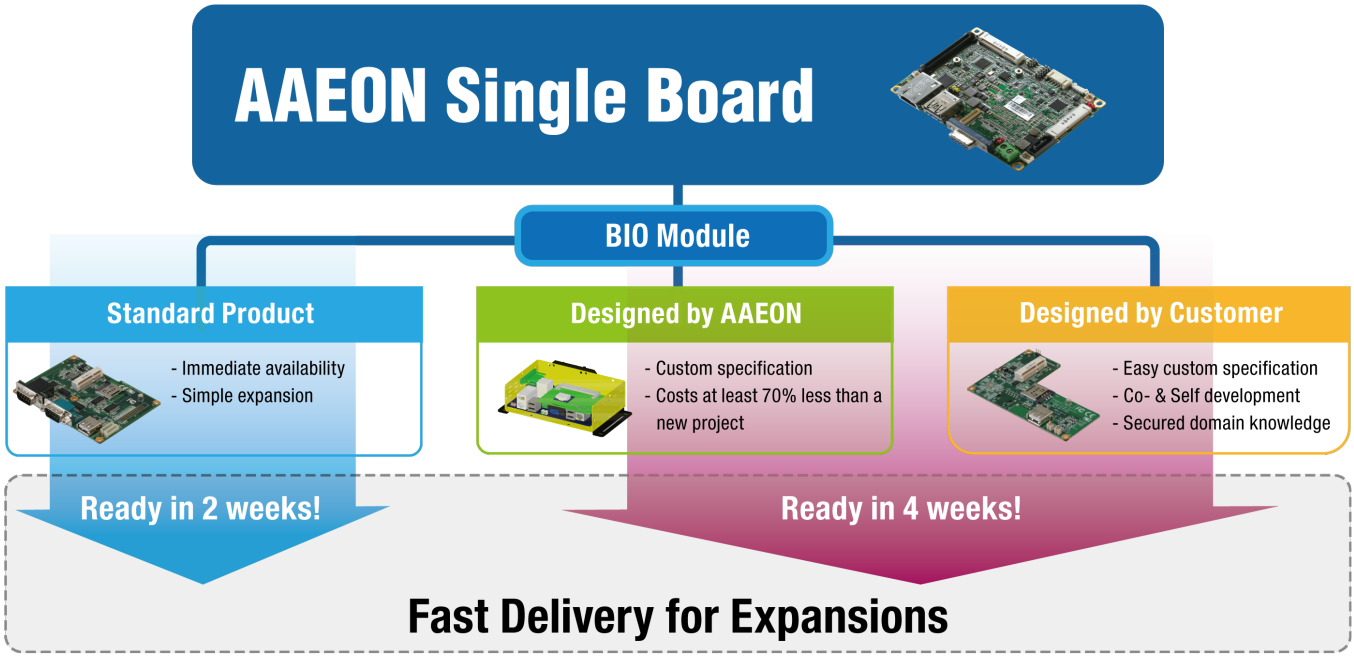
While there are many ways in which a product can be customized, AAEON recommends the BIO daughterboards, a series of daughterboards equipped with AAEON's Board-to-board Interface for AAEON's Standard Products. Simple in design and made to order, these boards take the time and effort out of customization 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



Note: All specifications are subject to change without notice.

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 7	Windows® Embedded 8 Standard	Windows® 10 IoT Enterprise	Windows® 11 IoT Enterprise
Intel® 13th and 14th Raptor Lake	—	—	✓	✓
Intel® 12th Alder Lake	—	—	✓	✓
Intel® 11th Tiger Lake	—	—	✓	✓
Intel® 10th Comet Lake	—	—	✓	✓
Intel® 8th and 9th Coffee Lake	—	—	✓	✓
Intel® 8th Whiskey Lake	—	—	✓	✓
Intel® 7th KabyLake (Q170/H110/C236)	—	—	✓	✓
Intel® 6th SkyLake (Q170/H110/C236)	✓	✓	✓	—
Intel® ApolloLake (N4200/N3350/E3930/E3940/E3950)	✓	✓	✓	—
Intel® Baytrail (J1900/N2000/E3800)	✓	✓	—	—

Note 1: Former Windows® Embedded

Note: All specifications are subject to change without notice.

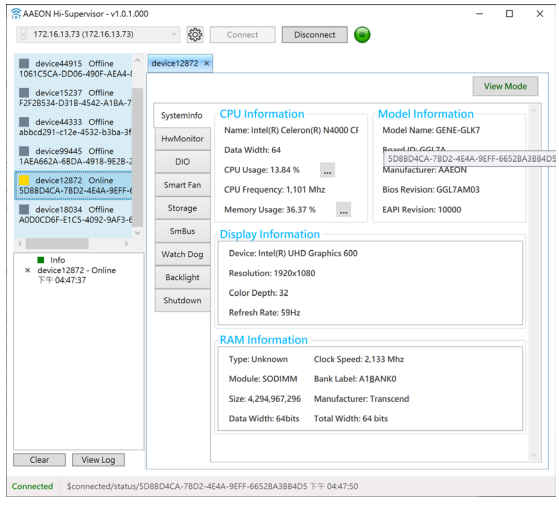
AAEON's Embedded OS Solution/Hi-Supervisor

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

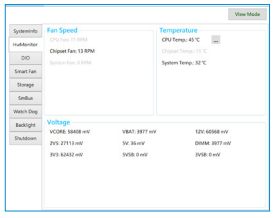
AAEON Hi-Supervisor

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.

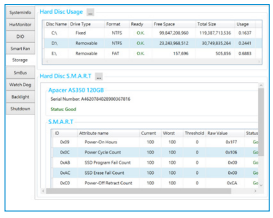


Hi-Supervisor Advantages

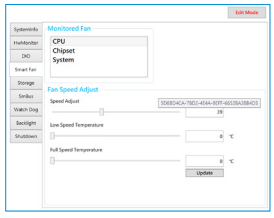
- **Support Hi-Safe full functions remotely**
- **Customized support**
- **Support Azure IoT Central**



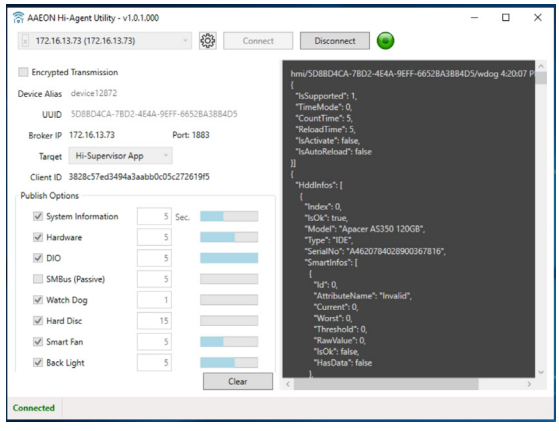
Hardware Monitor:
Retrieves fan, temperature and voltage data



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

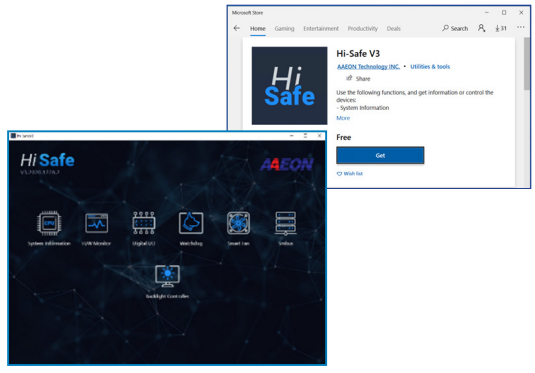


Remote Control Fan



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.



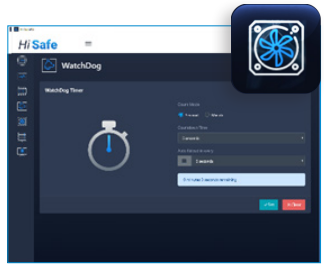
Hi-Safe V3 Advantages

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



System Information:

Receives CPU, display and RAM information



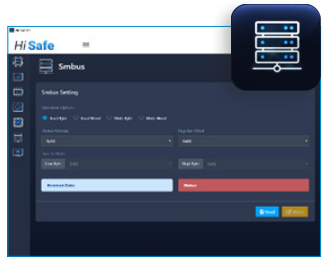
Smart Fan:

Supports multi-stage adjustment of temperature and speed controls



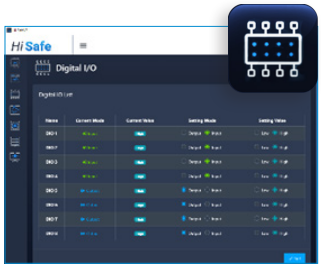
Hardware Monitor:

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



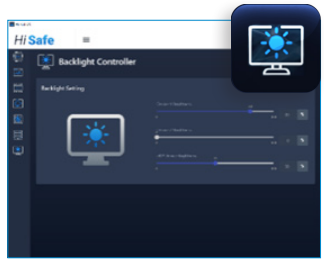
SM Bus:

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



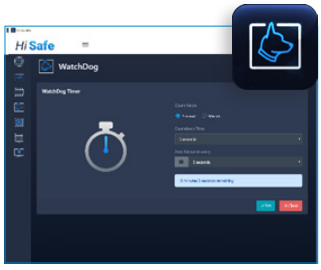
DIO:

Obtains DIO information:
sets the pin direction and pin data



Backlight Controller:

Controls LVDS or eDP display



Watchdog:

Sets the system reboot timer

Note: All specifications are subject to change without notice.

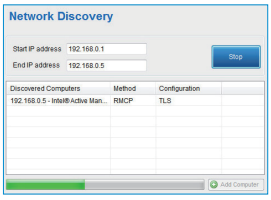
AAEON Hi-Manager

Hi-Manager is a tool based on the Intel® Active Management Technology 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.

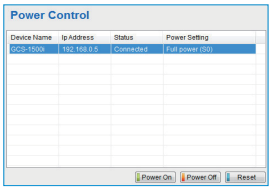


Hi-Manager Advantages

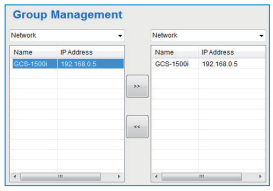
- **Easy to use and build custom applications**
- **Supports AAEON products with iAMT**
- **In-depth technical support**



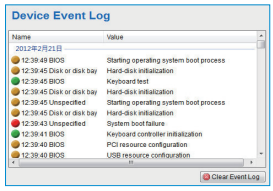
Network Discovery:
AMT device discovery



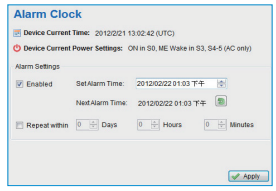
Power Control:
Powers On/Off the target device



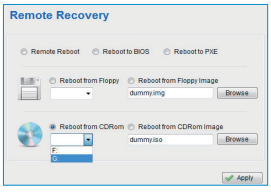
Group Management:
Arrange devices in this function



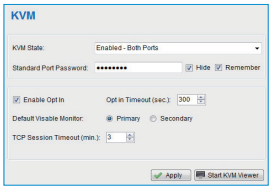
Event Log:
Logs boot records of the selected device



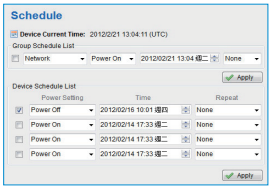
Alarm Clock:
Sets timer to wake up a sleeping device



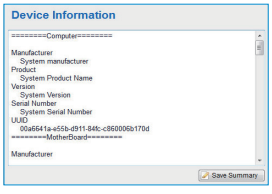
Remote Recovery:
Mounts boot image or physical CD-Rom to target device



KVM:
Controls remotely from the target device



Schedule:
Schedules the power On/ Off target devices



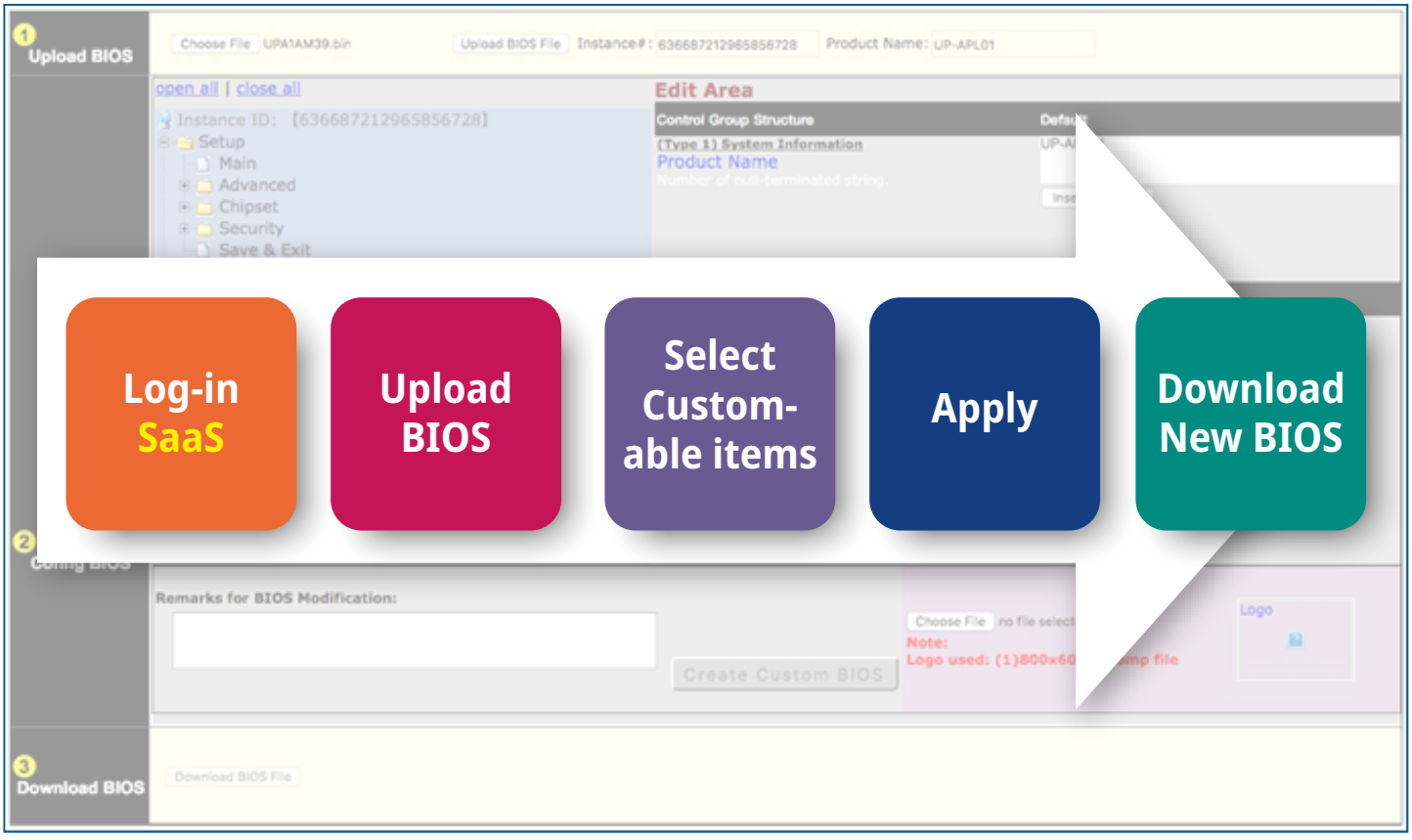
Device Information:
Shows target device assets

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	✓

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

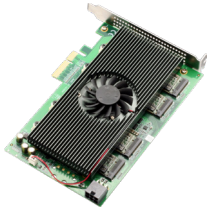
- Retrievable
- Re-customizable
- History Traceable



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

Note: All specifications are subject to change without notice.

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.

Note: All specifications are subject to change without notice.

Focus • Agility • Competitiveness

01

01

AI Edge Computing Solutions



MXM-ACMA-PUC

System Box with 12th/13th Generation Intel Core Processor & MXM 3.1 Type A Intel® Arc™ A370E/Intel® Arc™ A350E GPU



Features

- **12th/13th Gen Intel® Core™ Processor, up to 35W**
- **DDR5 SODIMM 4800 x 2, up to 64GB**
- **HDMI 2.0 x 1 (Supported by Main Board), DP++ 1.4 x 4 (Supported by MXM)**
- **2.5GbE x 3, 1GbE x 1**
- **USB 3.2 Gen 2 x 2, USB 2.0 x 2**
- **M.2 2280 M-Key x 1, M.2 3052 B-Key x 1, M.2 2230 E-Key x 1**
- **Supports MXM 3.1 Type A Module, up to 55W (MXM-ACMA series)**
- **COM Port x 2, GPIO 8-bit, DC 19V-24V**

Specifications

System	
Form Factor	MXM System
CPU	12th/13th Generation Intel® Core™ Processor, up to 35W
Chipset	Intel® Q670E Chipset
Memory Type	Dual Channel DDR5 4800 SODIMM x 2, up to 64GB
BIOS	UEFI
Wake On Lan	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0
RTC Battery	Lithium Battery 3V/240mAh
Dimension	310mm x 160mm x 75mm
OS Support	Windows 10 (64bit) Ubuntu 24.04/kernel 6.8
Power	
Power Requirement	+19V to +24V
Power Supply Type	AT/ATX
Connector	3Pin Phoenix Connector
Power Consumption	Intel ® Core ™ i7-13700TE, DDR5 32GB x 2, Intel® Arc™ A370E, 3.54A @22.9V, 80.83W (Typical) Intel ® Core ™ i7-13700TE, DDR5 32GB x 2, Intel® Arc™ A370E, 7.48A @23.1V, 167.71W (Max)
Display	
Controller	CPU Graphic Controller Intel® UHD Graphics 770 (i5 SKU and above) Intel® UHD Graphics 730 (i3 SKU) MXM-ACMA Graphic Module: Intel® Arc™ A370E/Intel® Arc™ A350E Graphics
LVDS/eDP	—
Display Interface	HDMI 2.0 x 1, up to 3840 x 2160 @60Hz (from Main Board) DP++ 1.4 x 4 (from MXM Module)
Multiple Display	Up to 1 Simultaneous Displays from Main Board Up to 4 Simultaneous Displays from MXM-ACMA
Audio	
CODEC	—
Audio Interface	—
Speaker	—

External I/O	
Ethernet	Intel® Ethernet Controller I226-LM, 2.5GbE RJ-45 x 3 Intel® Ethernet Connection I219-LM, GbE RJ-45 x 1
USB	USB 3.2 Gen 2 x 2 , USB 2.0 x 2
Serial Port	COM 1 ~ COM 2 (RS-232/422/485, RI as default, 5V/12V selected by BOM change)
Video	HDMI 2.0 x 1, up to 3840 x 2160 @60Hz (from Main Board) DP++1.4 x 4 (from MXM Module) up to 1920 x 1080
Internal I/O	
USB	—
Serial Port	—
Video	—
SATA	SATA 6Gb/s x 2, +5V SATA Power Connector x 2
Audio	—
DIO/GPIO	—
SMBus/I2C	—
Touch	—
Fan	4-Pin Smart Fan (CPU) x 1, 3-Pin Fan (MXM-ACMA) x 1, System Fan x 1
SIM	Nano SIM x 1
Front Panel	Power Button, Power LED
Others	—
Expansion	
Mini PCI-E/mSATA	—
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1) M.2 3052 B-Key x 1 (PCIe 3.0 [x2] + USB 3.2 + USB 2.0) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0)
Others	MXM 3.1 Type A Module
Environment & Certification	
Operating Temperature	14°F ~ 122°F (-10°C ~ 50°C) with 0.7m/sec airflow
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	823,430 Hours
EMC	CE/FCC Class A

Packing List

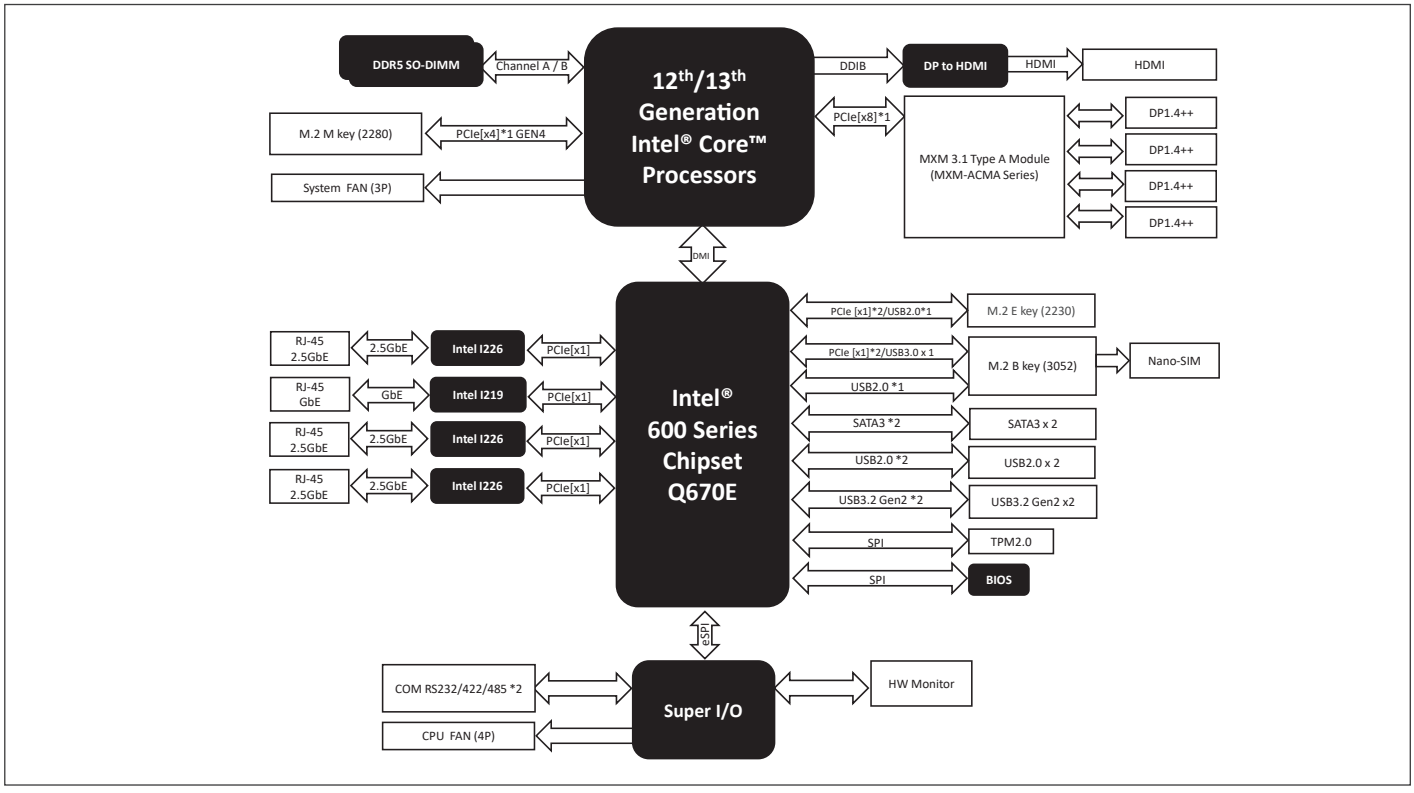
- **MXM-ACMA-PUC**

Optional Accessories

Part Number	Description	Qty
170X000593	SATA Cable	1
1702150155	SATA POWER Cable	1
1255903300	AC/DC Adapter.19.5V.330W.16.9A.AC.100-240.3P phoenix 7.62mm	1
1702031802	Power code for US	1
1702031803	Power code for Europe	1
170203180E	Power Cord for Japan	1
170203180J	Power Cord for UK	1
170203180B	Power Cord for China	1
1702031811	1702031811	1

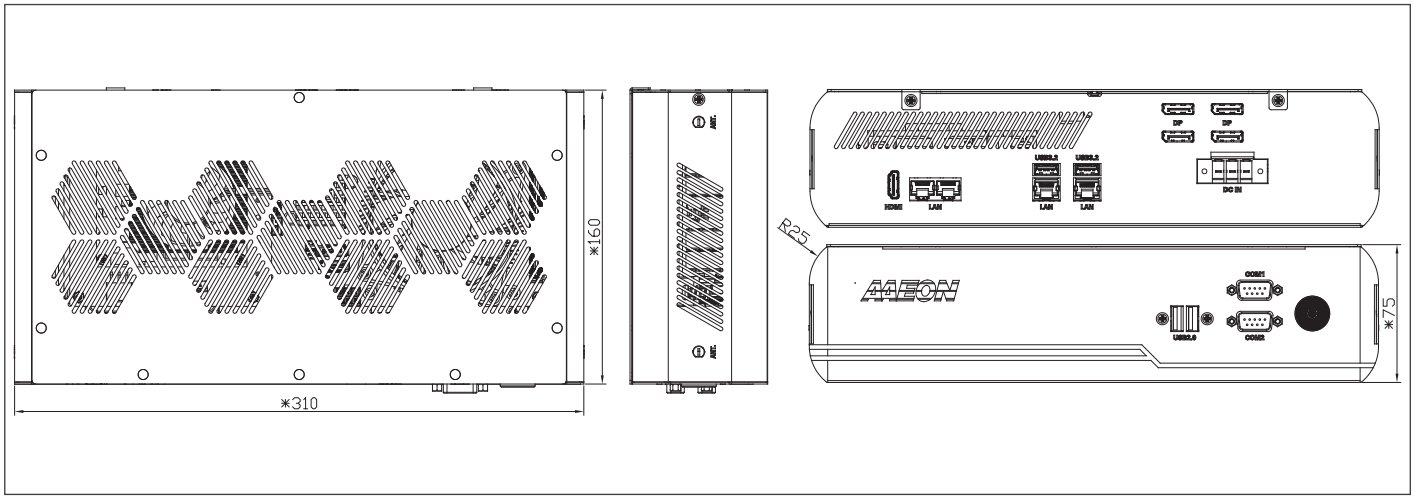
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

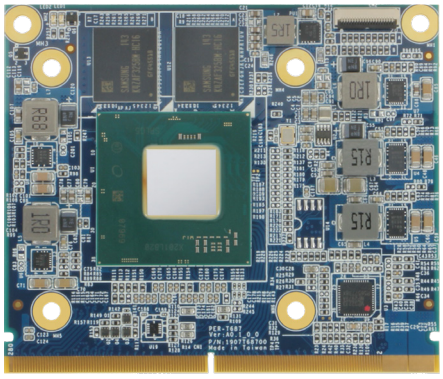


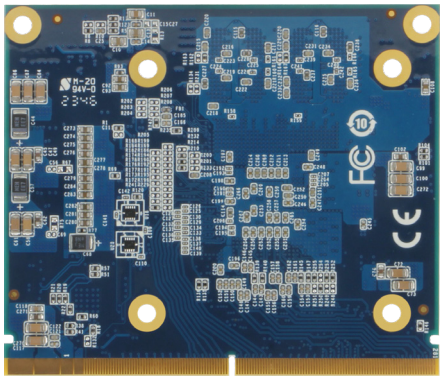
Ordering Information

Part Number	CPU	Memory	Display	Storage	LAN	USB	COM Port	Expansion	TPM	Power	Operating Temperature	Others
MXM-ACMA-PUC-A10-0001	Intel ® Core ™ i7-13700TE (with Q670E)	DDR5 SODIMM 8GB x 2	HDMI x 1 , DP++ x 4	SATA 6.0 Gbps x 2	2.5GbE x 3 , GbE x 1	USB3.2 Gen2 x 2 USB2.0 x 2	RS232/422/485 x 2	M.2 2280 M-Key x 1, M.2 3052 B-Key x 1, M.2 2230 E-Key x 1, PCIe[x8] x 1	TPM 2.0	+19V to +24V AC power connector	-10°C ~ 50°C	Nano SIM x 1, MXM-ACMA (A370E)
MXM-ACMA-PUC-A10-0003	Intel ® Core ™ i3-13100TE (with Q670E)	DDR5 SODIMM 8GB x 2	HDMI x 1 , DP++ x 4	SATA 6.0 Gbps x 2	2.5GbE x 1 , GbE x 1	USB3.2 Gen2 x 2 USB2.0 x 2	RS232/422/485 x 2	M.2 3052 B-Key x 1, M.2 2230 E-Key x 1, PCIe[x8] x 1	TPM 2.0	+19V to +24V AC power connector	-10°C ~ 50°C	Nano SIM x 1, MXM-ACMA (A350E)

MXM-ACMA

Embedded MXM 3.1 Type A Module with Intel® Arc™ A370/A350 GPU





Features

- **Intel® Arc™ A370M/A350M Embedded GPU, up to 8 Xe-cores**
- **4GB GDDR6 Memory**
- **PCIe 4.0 [x8] Interface**
- **DP++ 1.4/HDMI 2.1 x 4**
- **Standard MXM 3.1 Type A form factor**
- **OpenCL™/OpenGL®/oneAPI/Direct X12/Ray Tracing Support**

Specifications

System	
Form Factor	Standard MXM 3.1 Type A form factor
GPU	Intel® Arc™ A370M GPU (8 Xe-cores, TGP 35W) Intel® Arc™ A350M GPU (6 Xe-cores, TGP 25W)
Memory	4GB GDDR6, 64-bit , Bandwith 112GB/s
Display Interface	DP++ 1.4 x 4 or HDMI 2.1 x 4
Dimension	3.2" x 2.7" (82mm x 70mm)
Power Consumption	Intel® Arc™ A370M GPU, TGP 35W Intel® Arc™ A350M GPU, TGP 25W
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C) in 0.5m/sec airflow
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
OS Support	Windows 10 (64bit) / Windows 11 Ubuntu 22.04 LTS
Others	OpenCL™ 4.6/OpenGL® 3.0/oneAPI/DirectX 12 Ultimate/Ray Tracing Support

Packing List

- **MXM-ACMA x 1**

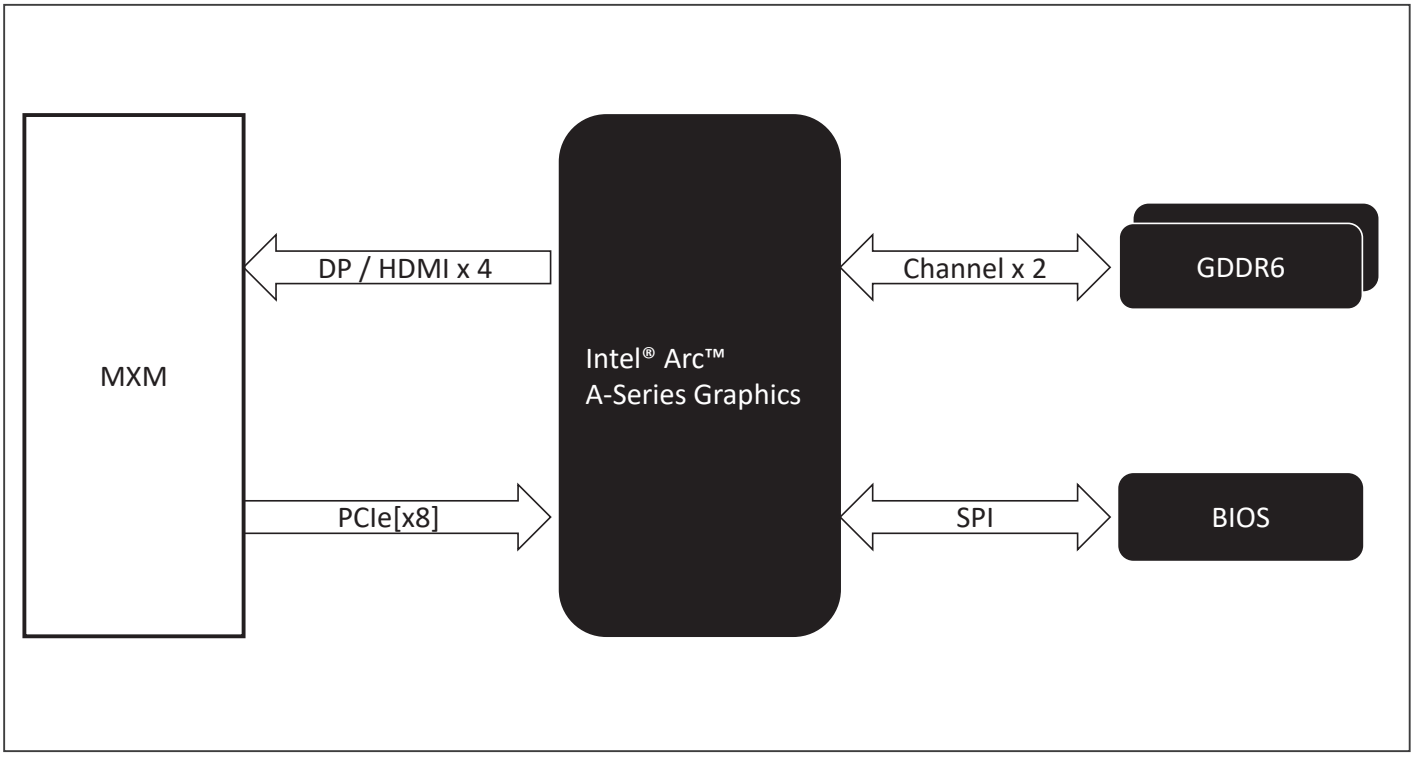
Optional Accessories

Part Number	Description	Qty
PER-T686-A02-0001	PCIe to MXM riser card	1
MXM-ACMA-FAN01	Cooler.Smart FAN.64*55*18mm.4pin	1

Note: All specifications are subject to change without notice.

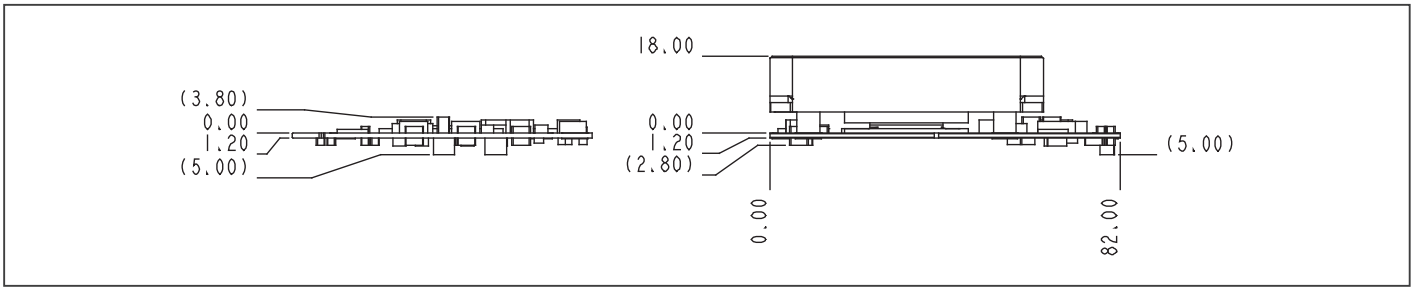
Block Diagram

Unit: mm



Dimension

Unit: mm

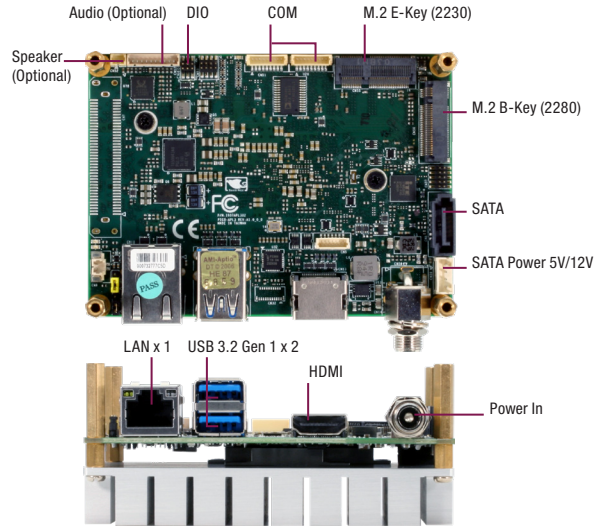


Ordering Information

Part Number	Form Factor	GPU	Memory	Display	TGP	Operating Temperature	Interface
MXM-ACMA-A10-0001	MXM 3.1 Type A	Intel® Arc™ A370M	4GB GDDR6	DP++1.4 x 4	35W	0°C ~ 60°C	PCIe 4.0 [x8]
MXM-ACMA-A10-0002	MXM 3.1 Type A	Intel® Arc™ A350M	4GB GDDR6	DP++1.4 x 4	25W	0°C ~ 60°C	PCIe 4.0 [x8]

PICO-APL3-A10-FAI1

AI Edge Computing Kit with Kneron KL520 NPU



M2AI-2280-520



EverFocus Full HD Camera EUA1200



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**

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	—

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

Note: All specifications are subject to change without notice.

Packing List

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

Ordering Information

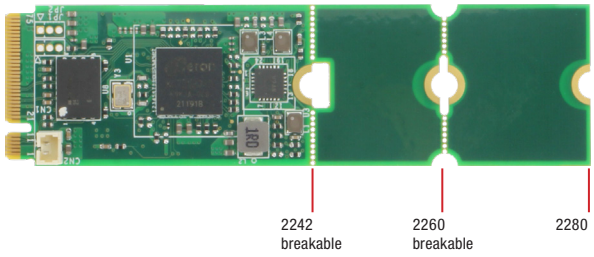
Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/ 422/485	Expansion Slot	Power	Temp.	Others
PICO-APL3-A10-FAI1	Celeron® N4200 (Quad Core)	Onboard DDR3L 4GB	w/ Heatsink	HDMI x 1	SATA 3.0 x 1 M.2 2280 (B Key) x 1 eMMC 32GB	GbE x 1	USB 3.2 Gen 1 x 2 (Rear) USB 2.0 x 2 (Internal)	1	—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

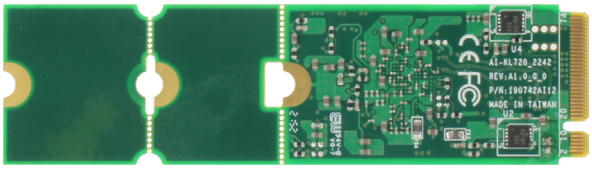
Optional Accessories

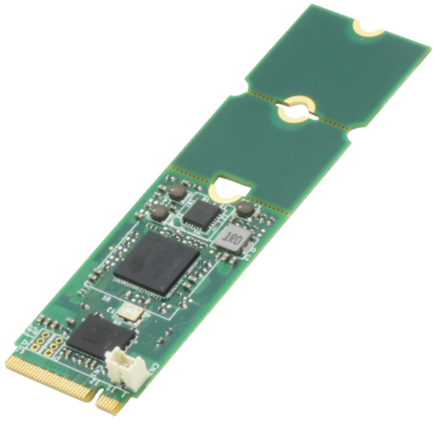
Part Number	Description	Qty
1709070500	(TF) SATA Cable, 50cm	1
1702150155	(TF) SATA Power Cable, 15cm	1
1700040151	(TF) USB Cable, 15cm	2
1701090122	(TF)Flat Cable, D-Sub 9P(M), 9P 1.0mm Housing, 12cm	1
125530040C	(TF)Power Adapter.12V.40W.FSP.FSP040-DHAN3	1
1702031802	Power Cord (US Type)	1
1702031803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

M2AI-2242-720

AI Edge Computing Module with Kneron KL720 NPU







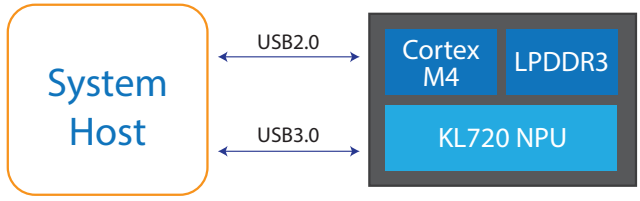
Features

- **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

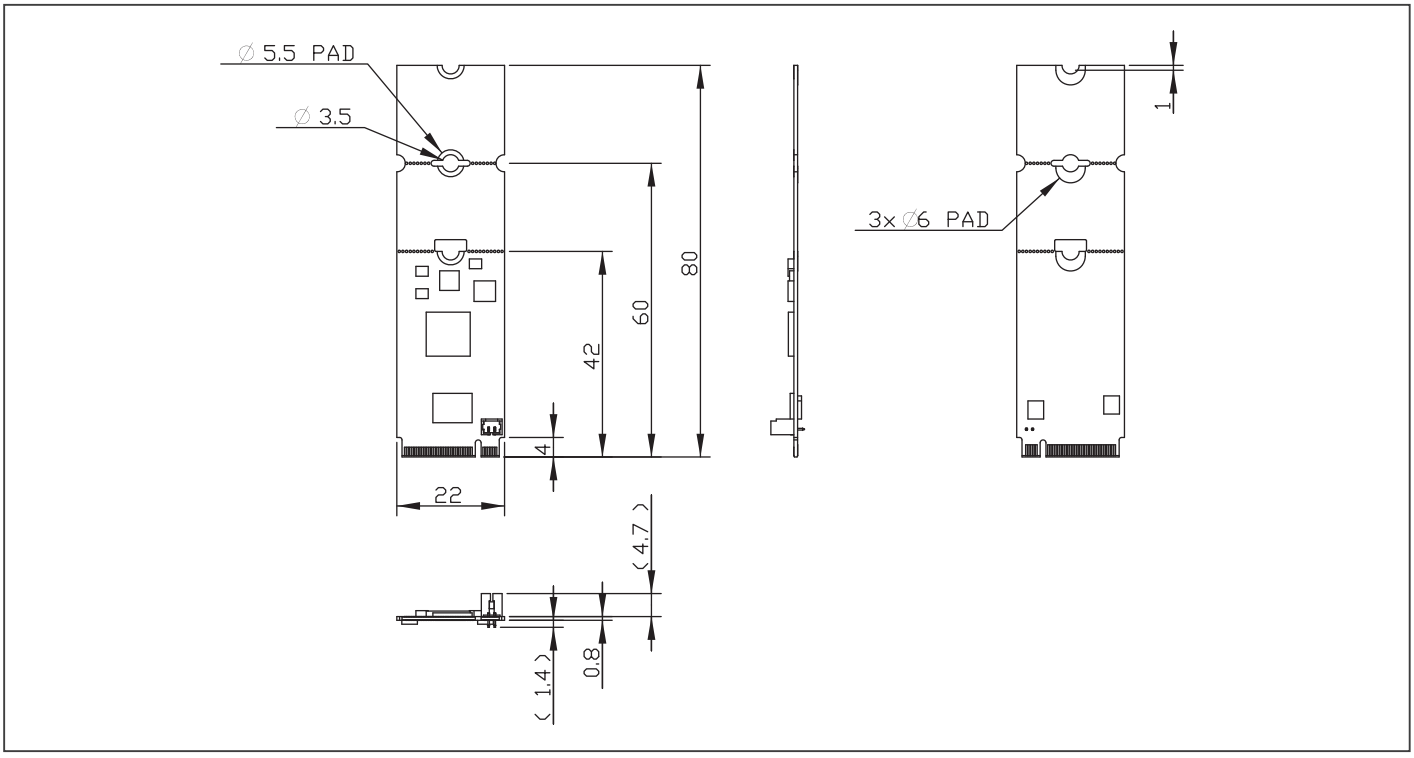
AI Architecture



Note: All specifications are subject to change without notice.

Dimension

Unit: mm



Packing List

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

Optional Accessories

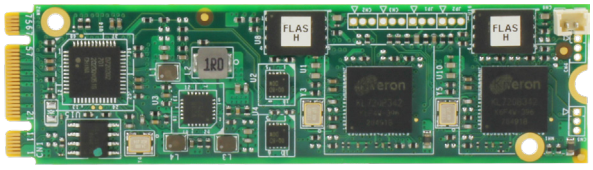
- PER-T720-M2AI-FAN01

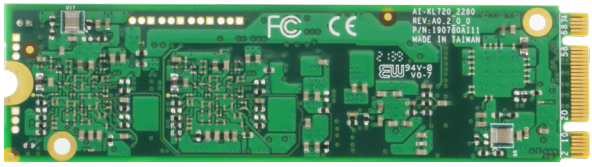
Ordering Information

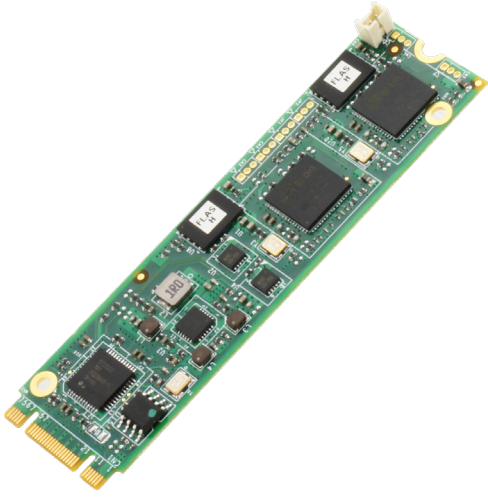
Part Number	Description
PER-T720-M2AI-A10-0421	AI.NPU 720.M.2 B Key 2242(USB interface).A1.0

M2AI-2280-720

AI Edge Computing Module with Kneron KL720 NPU







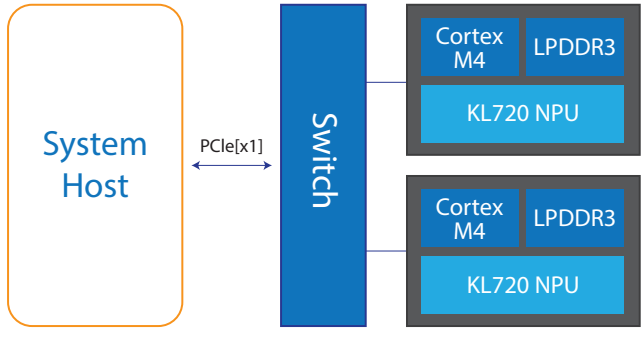
Features

- **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

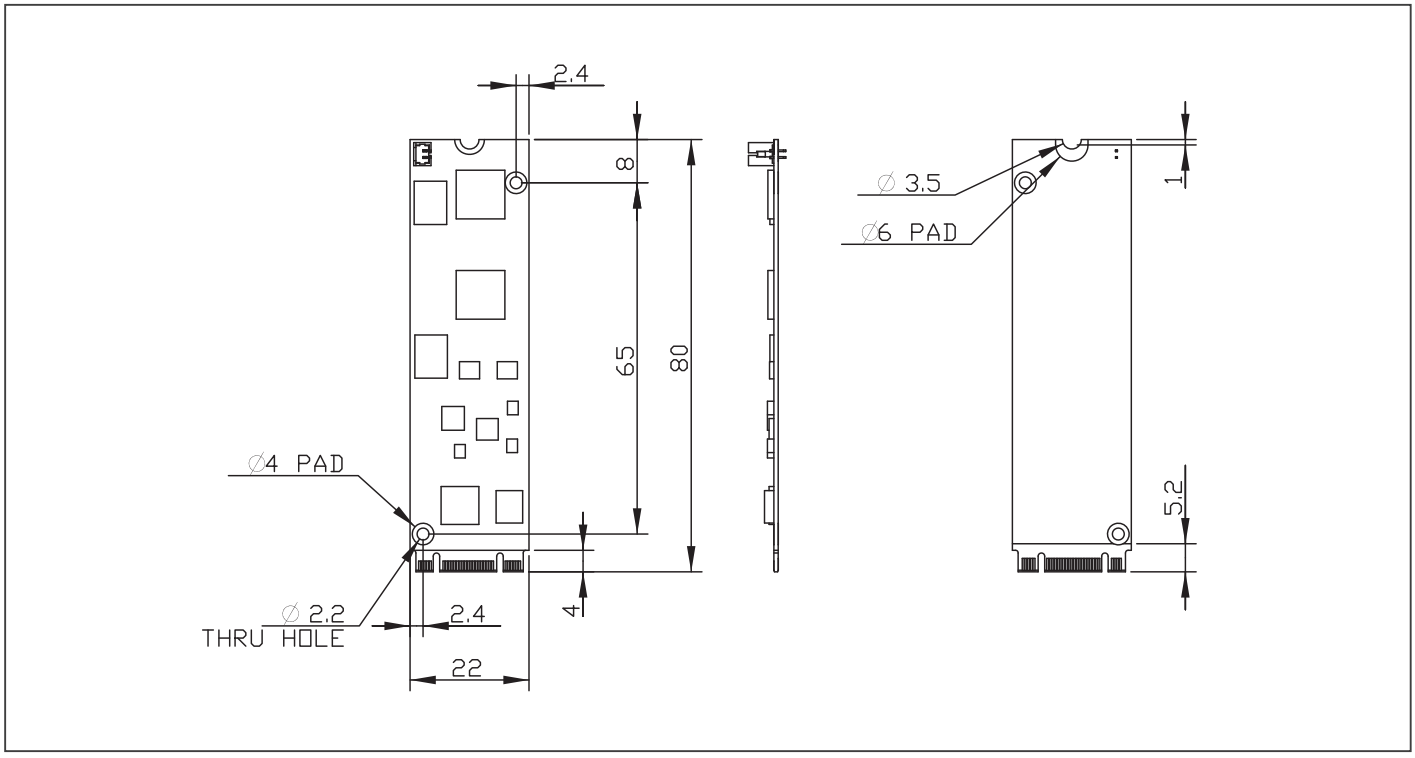
AI Architecture



Note: All specifications are subject to change without notice.

Dimension

Unit: mm



Packing List

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

Optional Accessories

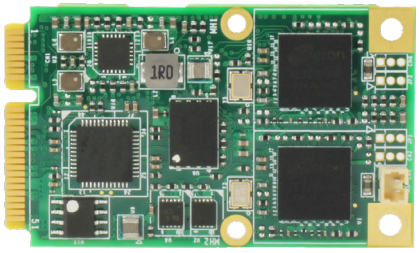
- PER-T720-M2AI-FAN02

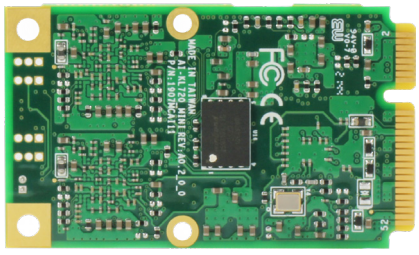
Ordering Information

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

Mini-AI-720

AI Edge Computing Module with Kneron KL720 NPU







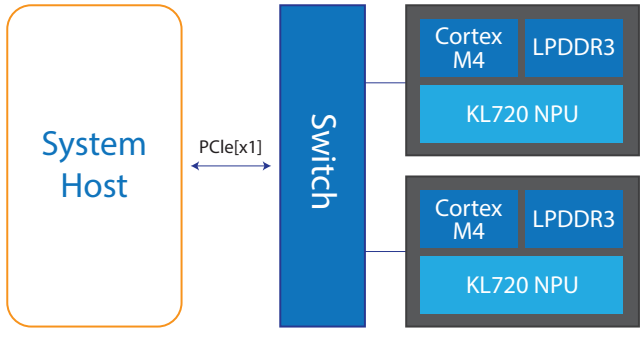
Features

- **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**

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

AI Architecture

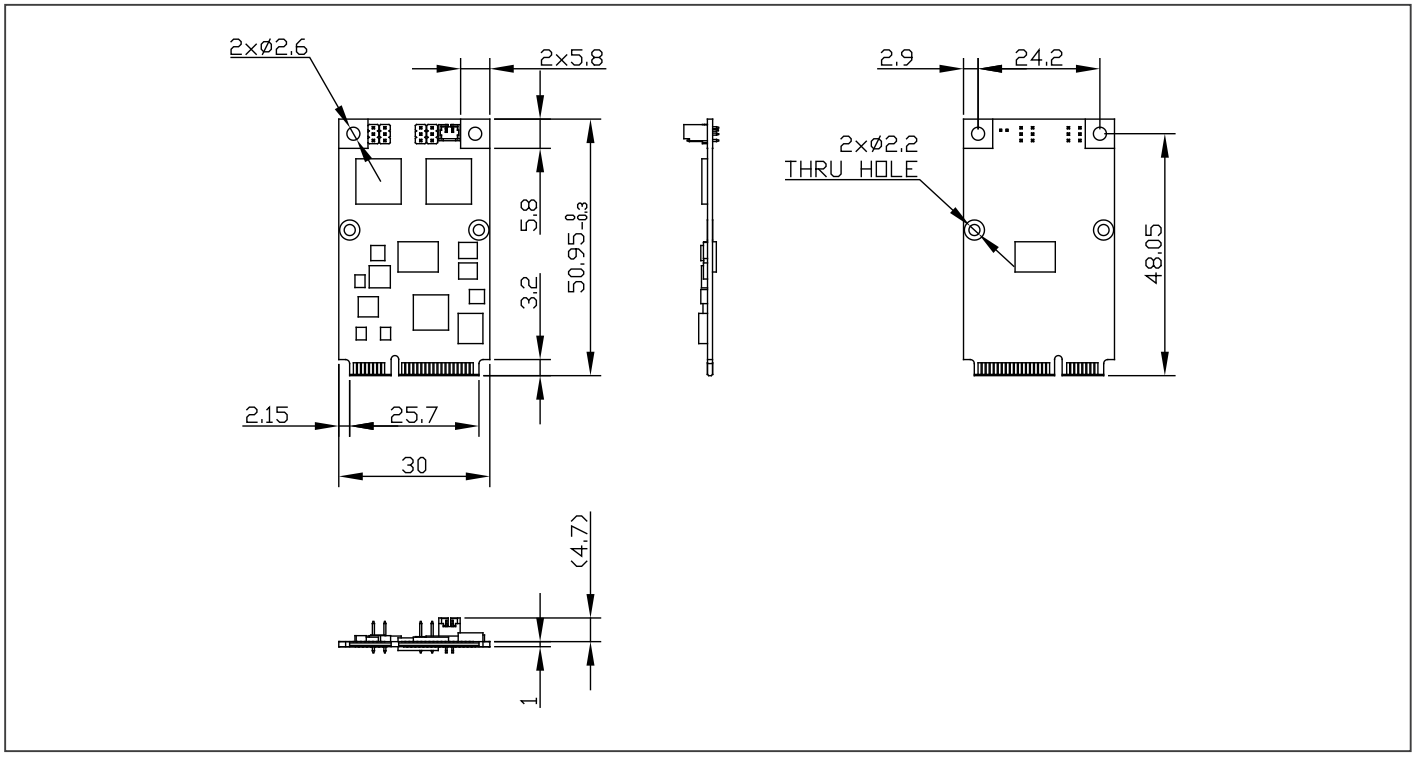


Packing List

Note: All specifications are subject to change without notice.

Dimension

Unit: mm



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

GAR-A750E PRELIMINARY

Advanced graphics card with Intel® Arc™ A750E GPU architecture





Features

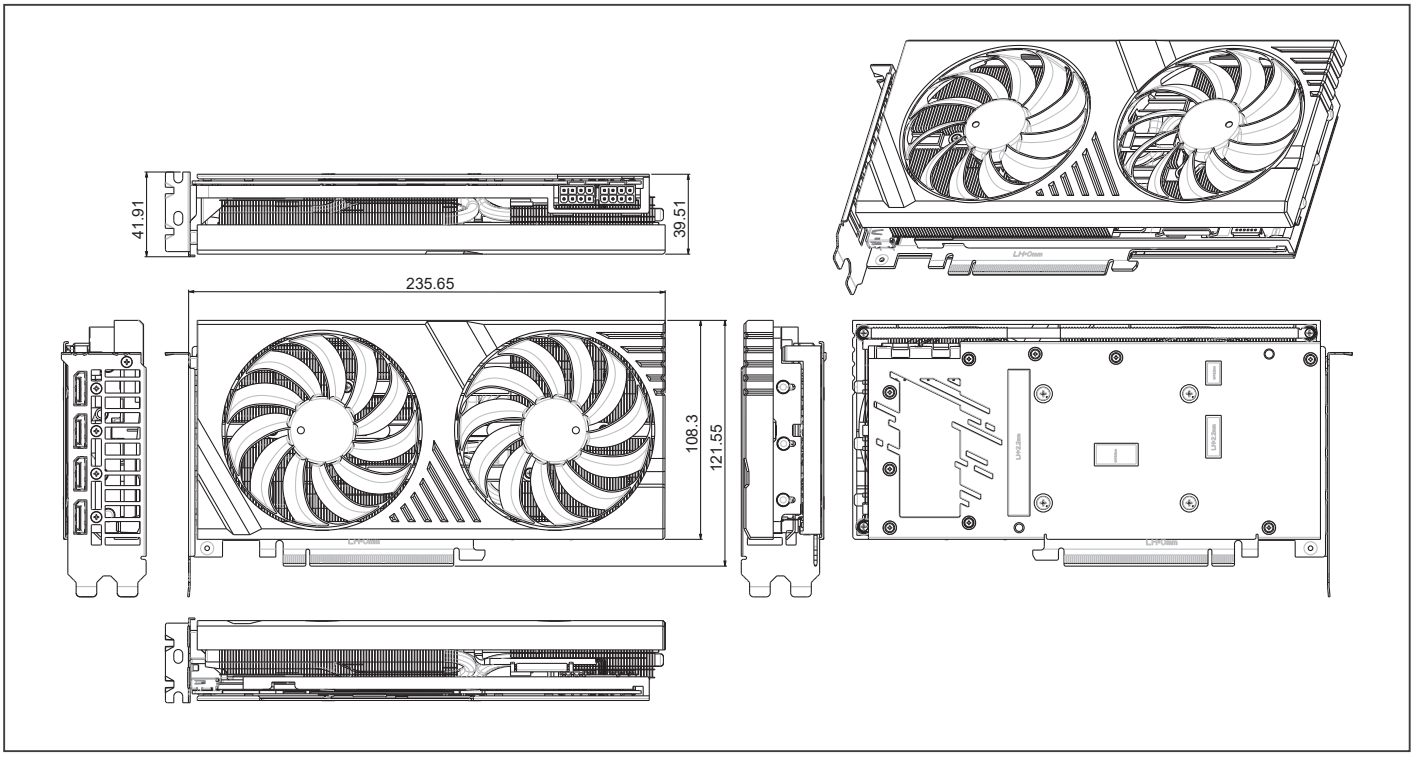
- **High-Performance Graphics: 2400MHz turbo frequency, 28 Xe-Cores, and 28 Ray Tracing Units**
- **16GB GDDR6 Memory: 256-bit interface, 16 Gbps memory speed.**
- **Broad Compatibility: PCIe 4.0 x16 interface for versatile motherboard compatibility.**
- **Quad Display Support: Simultaneous display outputs up to 7680 x 4320 @ 60Hz.**
- **Video Encoding/Decoding: H.264, H.265 (HEVC), AV1, and VP9 hardware support.**
- **Advanced Technologies: Ray tracing, variable rate shading (VSR), and DirectX 12 Ultimate.**
- **Intel Deep Link Integration: Benefit from Intel Deep Link features for enhanced AI and media processing**

System	
Graphics High Frequency	2050MHz
Graphics Turbo Frequency	2400MHz
Xe-Core	28
Render Slices	7
Ray Tracing Units	28
Intel® XMX Engines	448
Xe Vector Engines	448
Memory Size	16GB GDDR6
Graphics Memory Interface	256 bit
Graphics Memory Bandwidth	512 GB/s
Graphics Memory Speed	16 Gbps
Bus Type	PCI Express 4.0 x16
TBP	225W
Display output	DP 2.0 x 4 up to UHBR 10
Resolution	DP: 7680 x 4320@60Hz
H.264 Hardware Encode/Decode	Yes
H.265 (HEVC) Hardware Encode/ Decode	Yes
AV1 Encode/Decode	Yes
VP9 Bitstream & Decoding	Yes
Features	
Ray Tracing	Yes
Variable Rate Shading (VSR)	Yes
DirectX Support	DirectX 12 Ultimate
Vulkan	1.3
OpenGL	Up to 4.6
OpenCL	3.0
Adaptive Sync	Yes
AV1 Encode / Decode	Yes
VP9 Bistream & Decoding	Yes
Intel Deep Link Hyper Compute	Yes
Intel Deep Link Hyper Encode	Yes
Intel Deep Link Stream Assist	Yes
Mechanical	
Dimension	236mm x 109mm x 42mm
Requirement	
Minimum recommended PSU	550 Watt or greater (for single graphics card configuration)
PCIe power connector	Two available 8-pin or 6+2pin
OS	Windows 11, Windows 10, Ubuntu* 22.04.
Graphics slot	PCI Express 3.0, 4.0 or 5.0 compliant motherboard with one

Note: All specifications are subject to change without notice.

Dimension

Unit: mm



Packing List

- GAR-A750E

Ordering Information

- GAR-A750E-A10

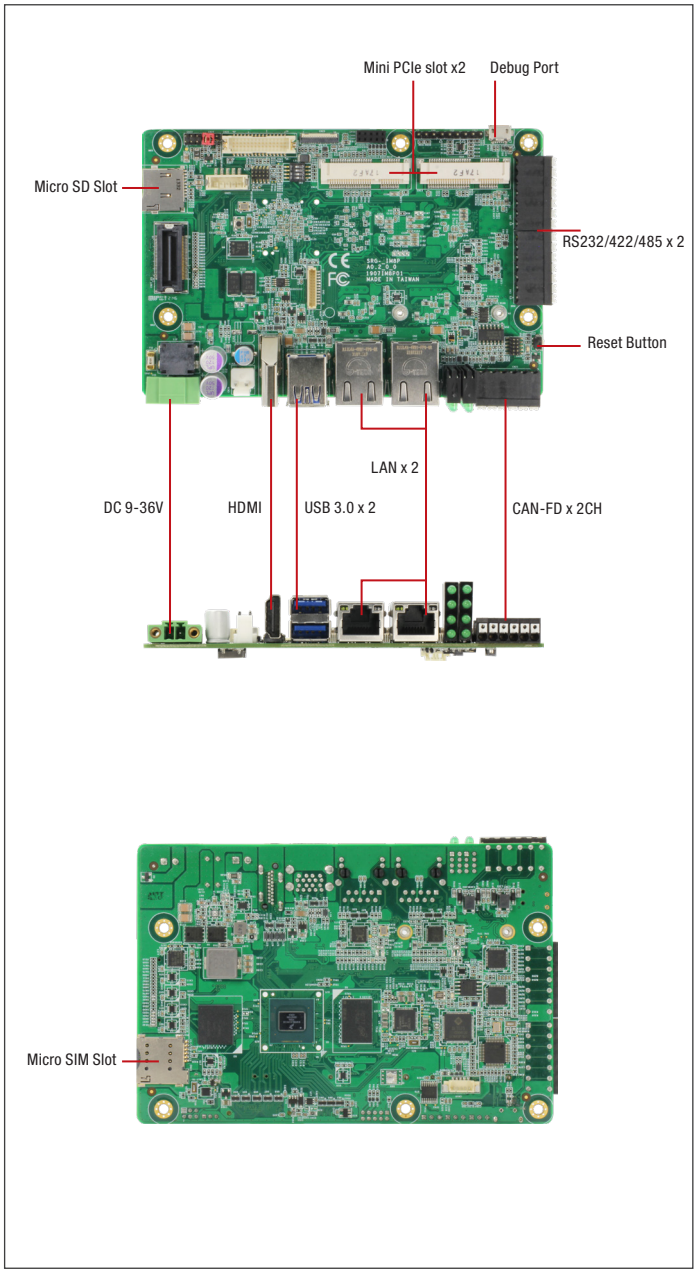
02

02
Gateway Board



SRT-IMX8P

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



Features

- NXP i.MX8M Plus Quad Cortex-A53 1.6 GHz RISC Processor
- Onboard LPDDR4 2GB / eMMC 16GB (Optional 4GB RAM/ eMMC 32GB)
- HDMI 2.0a
- GbE x 2
- USB 3.0 x 2, Full size mPCIe x 2, CAN-FD x 2 CH, Micro SD Card Slot x 1, RTC, TPM 2.0
- Wide DC Input 9~36V
- Wide Temperature -20 °C ~ 70 °C
- UL61010 certificated; PLC and heavy industry IEC61000-6-2, IEC61000-6-4, IEC61131-2 qualified
- Pre-Install Linux Debian 11; Support Android 13, Win 10 IoT, Yocto
- Supports Modbus/ MQTT Library/ OPCUA/ Security boot/ GUI/ Machine learning eIQ (by request)

CAN Bus	CAN-FD x 2 CH, Phoenix Connector
Display	HDMI 2.0a x 1
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	Board to board connector to ODM board (PCIe Gen3 x 1, USB 3.0 x 1, I2C x 2, GPIO x 4)
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
Certification	CE/FCC Class A UL61010/IEC61000-6-2/IEC61000-6-4/IEC61131-2

Specifications

System	
Processor	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor (NPU Optional)
Memory	Onboard LPDDR4 2GB (Optional 4GB)
Storage	eMMC 5.1 16GB (Optional 32GB)
Real Time Clock	RTC x 1, with 3V CR2032H 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 11(Default, GUI is optional) Android 13 Win 10 IoT Yocto
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	—

Packing List

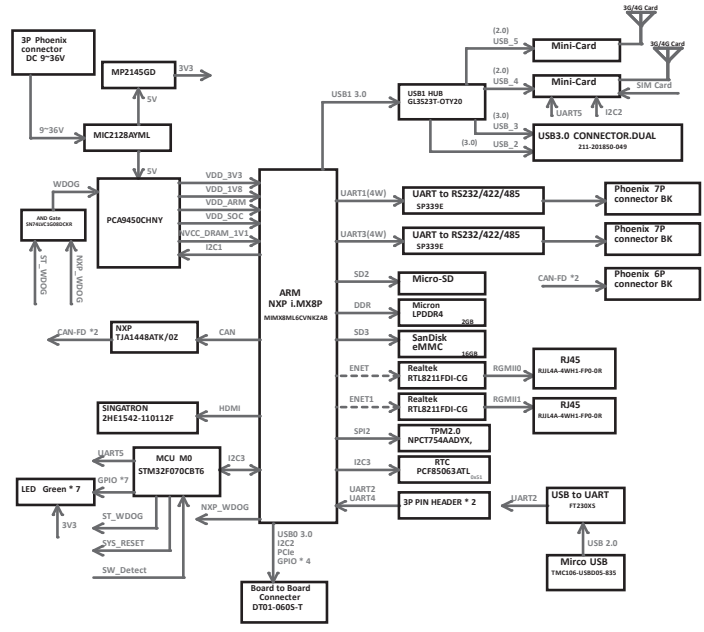
- SRT-IMX8P

Optional Accessories

Part Number	Description
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.
170203180J	POWER CORD.3P-250V 13A.1.8M.UK
9651IM8P00	Windows® 10 IoT Enterprise LTSC Base for Arm64 EPKEA (only for SRG-IMX8P 4G RAM SKU)

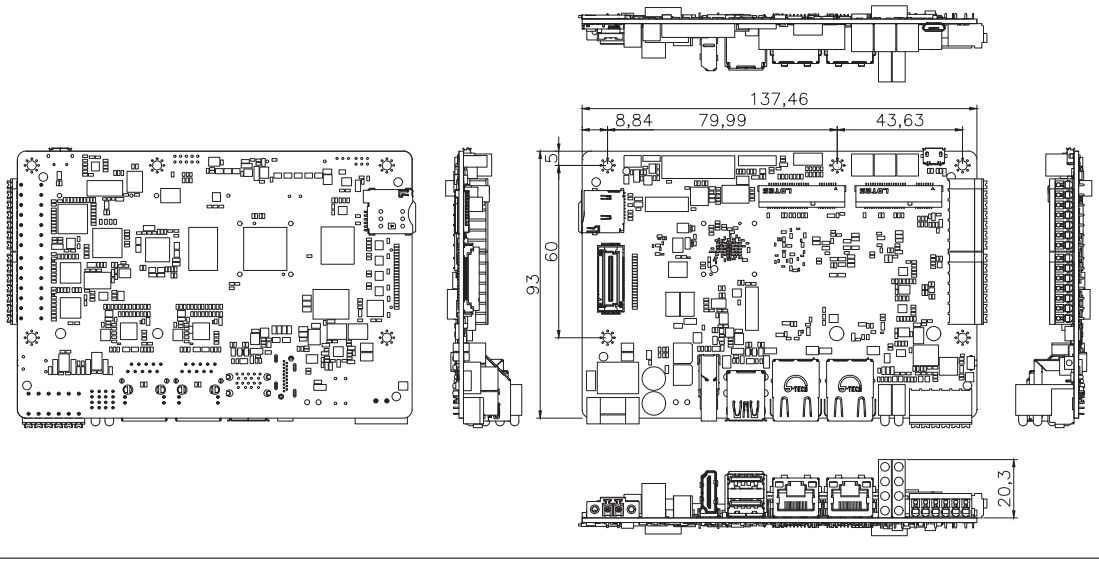
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

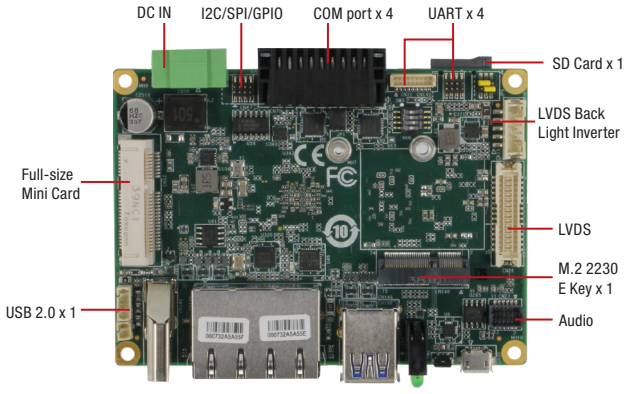


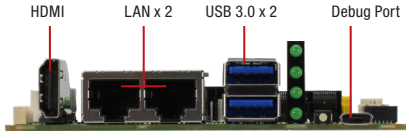
Ordering Information

Part Number	CPU	NPU	Memory	Thermal	Ports	Storage	LAN	USB	Expansion slot	Power	Operation Temp.	Others
SRT-IMX8P-A11-0216	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor	2.3 TOPs	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-A11-0432	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor	2.3 TOPs	Onboard LPDDR4 1866MHz 4GB	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)

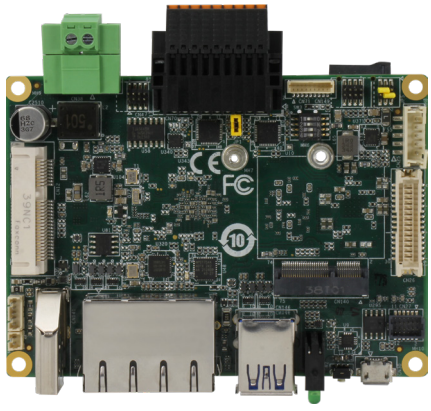
PICO-IMX8PL

Pico-ITX Board with ARM i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor





Phoenix Connector



Features

- **ARM NXP i.MX8M Plus Quad-Core, Cortex-A53 1.6GHz**
- **LPDDR4, up to 4 GB (8GB by customer request)**
- **eMMC 5.1 x 1**
- **HDMI 2.0 x 1 , LVDS x 1**
- **GbE x 2**
- **USB 3.0 Gen 1 x 2 , USB 2.0 x 1**
- **M.2 2230 E Key x 1, Full-sized minicard x 1**
- **COM x 2, CAN x 2, TPM 2.0 , GPIO x 8**

LPDDR4 · USB 3.0 · USB 2.0 · HDMI · Giga LAN · CE · FC

I/O Interfaces	
Serial Port	RS-232/422/485 switchable x 2, Phoenix Connector
Ethernet	Gigabit Ethernet x 2, RJ-45 support IEEE 1588, TSN, integrated RGMII
Audio	Line in / Line Out / Mic x 1 (optional)
USB	USB 3.0 Gen1 x 2 (rear I/O) USB 2.0 x 1 (pin header)
ADC	—
DI/DO	—
CAN Bus	CAN-FD x 2 CH, Phoenix Connector
Display	HDMI 2.0 x 1 LVDS x 1, dual channel, 18/24bit
Power Connector	2 Pin 3.81mm Pitch Phoenix Connector
Debug Port	Micro USB x 1
Expansion Slot	M.2 2230 E-key x 1, support Wifi/BT module, etc Full Size Mini Card x 1, support 4G module, etc Power control available by software
Other Interface	GPIO x 8 (w/o TPM: include SPI x1, I2C x1, GPIO x2, w/TPM: I2C x1, GPIO x2) UART x 1 (optional w/o debug port)
Power Supply	
Power Requirement	DC 9-36V (Optional: 12V)
Power Consumption	14.8W (Full Loading)
MTBF (Hours)	1,699,754 Hours
Environmental and Mechanical	
Dimension	3.94" x 2.84"(100mm x 72mm)
Weight	0.18 lbs (0.08 kg)
Mount Options	—
Operation Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C) (Option: 0°C ~ 60°C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operation Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A

Specifications

System	
Form Factor	PICO-ITX, 2.5" SBC
Processor	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor (Default w/NPU, optional w/o NPU)
Memory	Onboard LPDDR4 up to 4GB
Storage	eMMC 5.1 16/32GB (Optional 64/128 GB) Micro SD Card slot x1
Real Time Clock	RTC x 1, with 3V CR2032H Lithium battery
Security	TPM 2.0 (optional)
Indicators	Programmable LED control x 3
Cellular	Full Size Mini Card x 1 (USB signal)
Wireless Lan	M.2 2230 E-key x 1 (USB, PCIe)
Operating System	Debian 11(Default, GUI is optional) Android 13 Win 10 IoT Yocto
Support Protocol	Modbus, MQTT, OPCUA

Packing List

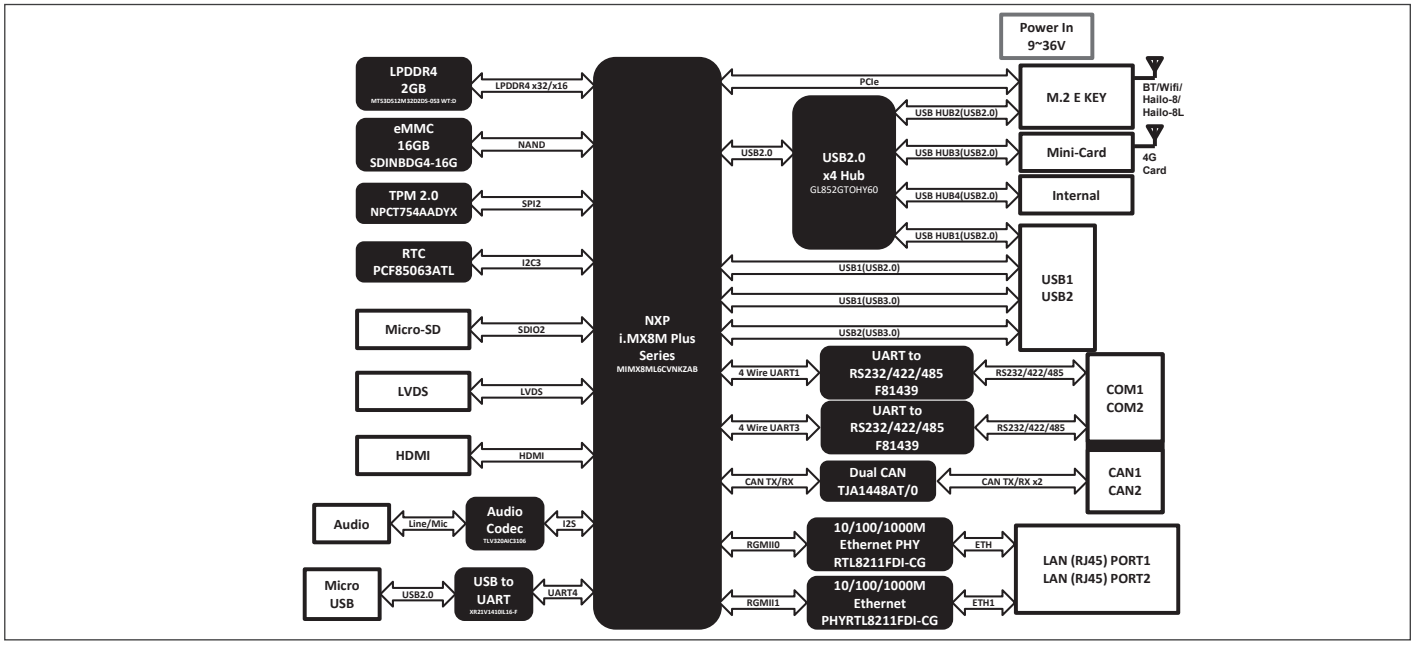
- **PICO-IMX8PL x 1**
- **2pin 3.81mm Power Terminal block w/lock AWG 28~14 x 1**
- **18pin 2.54mm Phoenix plug in Connector/lock AWG 30~20 x 1**

Optional Accessories

Part Number	Description
9741EG25G0	PCIe mini card. 4G LTE. module kit. Global Band W/ SIM holder. W/Cable & antenna. Quectel. EG25-G
9651882200	M.2 2230 E key Wireless Kit.802.11 ac/a/b/g/n + BT 5.0.2T2R,Enli RTL-8822CE.w/2 sets of cable and antenna
1700050207	USB2.0 cable. 20cm
170X000156	Audio cable. 25cm
170X000866	COM cable. 12cm
PICO-IMX8PL-HSK01	PICO-IMX8PL Heat Sink.100*72*15.5mm.Silver.
9651PX8L00	AC/DC Adapter.100V-240V.12VDC.40W.3.34A (for sample order), w/packaging box
125530040D	Power Adapter.DC.100-240V.12V.3.34A.40W.3P Phoenix P=3.81mm.
170203180J	POWER CORD.3P-250V 13A.1.8M.UK
170X000799	POWER CORD.3P-125V 10A.1.8M.USA
170X000800	POWER CORD.3P-250V 10A.1.8M.EU
170X000806	POWER CORD.3P-125V 7A.1.8M.TWN
170X000803	POWER CORD.3P-125V 7A.1.8M.JPN

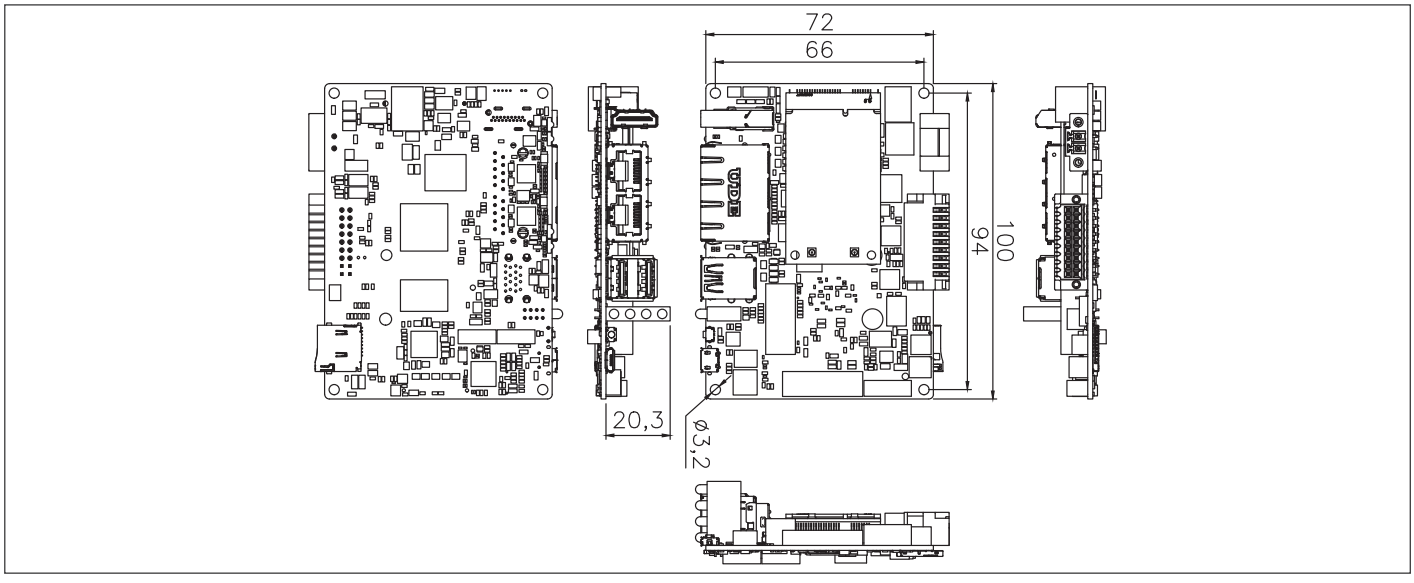
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

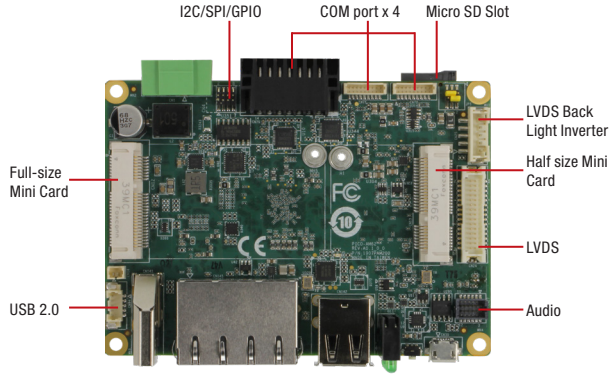


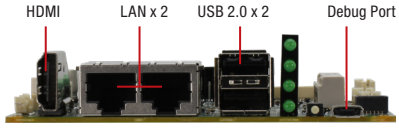
Ordering Information

Part Number	CPU	NPU	Memory	Display	Storage	LAN	USB	COM	Expansion slot	Power	Operation Temp.	Audio	Others	OS
PICO-IMX8PL-A10-0001	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor	2.3 TOPs	Onboard LPDDR4 2GB	HDMI x 1 (rear I/O) LVDS x 1	eMMC 16GB, MicroSD x1	GbE x 2	USB 3.0 Gen1 x 2 (rear I/O) USB 2.0 x 1 (pin header)	RS232(4-wire)/422/485 x 2 (rear I/O)	M.2 2230 E-key x 1 miniCard (Full) x 1	+12V (Lockable terminal block)	-40°C ~ 80°C	—	SPI x 1, I2C x 1, GPIO x 2 CAN 2.0 FD x 2 (rear I/O)	Debian 11
PICO-IMX8PL-A10-0002	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor	2.3 TOPs	Onboard LPDDR4 4GB	HDMI x 1 (rear I/O) LVDS x 1	eMMC 32GB, MicroSD x1	GbE x 2	USB 3.0 Gen1 x 2 (rear I/O) USB 2.0 x 1 (pin header)	RS232(4-wire)/422/485 x 2 (rear I/O)	M.2 2230 E-key x 1 miniCard (Full) x 1	+ 9 ~36 V (Lockable terminal block)	-40°C ~ 80°C	Line in / Line Out / Mic x 1	I2C x 1, GPIO x 2, TPM x 1 CAN 2.0 FD x 2 (rear I/O)	Debian 11

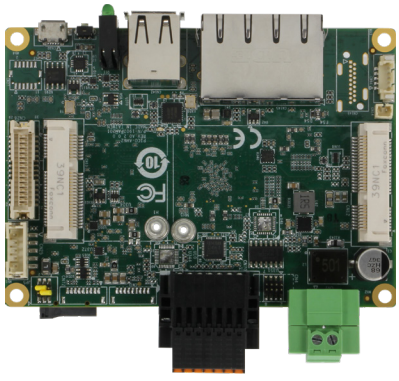
PICO-AM62

Pico-ITX Board with TI AM62x Sitara™ Processors





Phoenix Connector



Features

- ARM TI AM62x, up to Quad 64-bit Arm® Cortex®-A53
- DDR4, up to 4 GB, eMMC 5.1 x 1
- HDMI 1.4b x 1, LVDS x 1
- GbE x 2
- USB 2.0 host/device x 1, USB 2.0 x 2
- Minicard x 2 (half x 1, full x 1)
- COM x 4, CAN x 2, TPM 2.0

DDR4 | USB 2.0 | HDMI | Giga LAN | debian | CE | FC

USB	USB 2.0 Gen1 x 2 (rear I/O) -Host/device by image option, default: host x 1 -Host x 1 USB2.0 (Pin Header) x 1
ADC	—
DI/DO	—
CAN Bus	CAN-FD x 2 CH, Phoenix Connector (optional)
Display	HDMI 1.4b up to 1080p x 1 LVDS x 1, dual channel, 18/24bit
Power Connector	2 Pin 3.81mm Pitch Phoenix Connector
Debug Port	Micro USB x 1
Expansion Slot	Half Size Mini Card (USB2.0) x 1, power control available by software Full Size Mini Card (USB2.0) x 1, power control available by software SPI x 4 (optional) I2C x 2 (optional) UART x 2 (optional)
Other Interface	GPIO x 1, I2C x 1, SPI x 1 (CSx2)
Power Supply	
Power Requirement	DC 9-36V (Optional: 12V)
Power Consumption	5.76W (Full Loading)
MTBF (Hours)	1,279,408 Hours
Environmental and Mechanical	
Dimension	3.94" x 2.84"(100mm x 72mm)
Weight	0.18 lbs (0.08 kg)
Mount Options	—
Operation Temperature	-40 °F ~ 185 °F (-40 °C ~ 85 °C) (Option: 0°C ~ 60°C)
Storage Temperature	-40 °F ~ 185 °F (-40 °C ~ 85 °C)
Operation Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A

Specifications

System	
Form Factor	PICO ITX , 2.5" SBC
Processor	ARM TI AM62x, up to Quad 64-bit Arm® Cortex®-A53
Memory	Onboard DDR4 16 bit, up to 4 GB
Storage	eMMC 5.1 16 GB (Optional 32/64/128 GB) Micro SD Card slot x1
Real Time Clock	RTC x 1, with 3V CR2032H Lithium battery
Security	TPM 2.0 (optional)
Indicators	Programmable LED control x 3
Cellular	Full Size Mini Card x 1 (USB signal)
Wireless Lan	Half Size Mini Card x 1 (USB signal)
Operating System	Debian 12 (w/ GUI)
Support Protocol	—
I/O Interfaces	
Serial Port	RS-232/422/485 switchable x 4, 2 by Phoenix Connector, 2 by pin header
Ethernet	Gigabit Ethernet x 2, RJ-45 support IEEE 1588, TSN, integrated RGMII
Audio	Line in / Line Out / Mic x 1 (optional)

Packing List

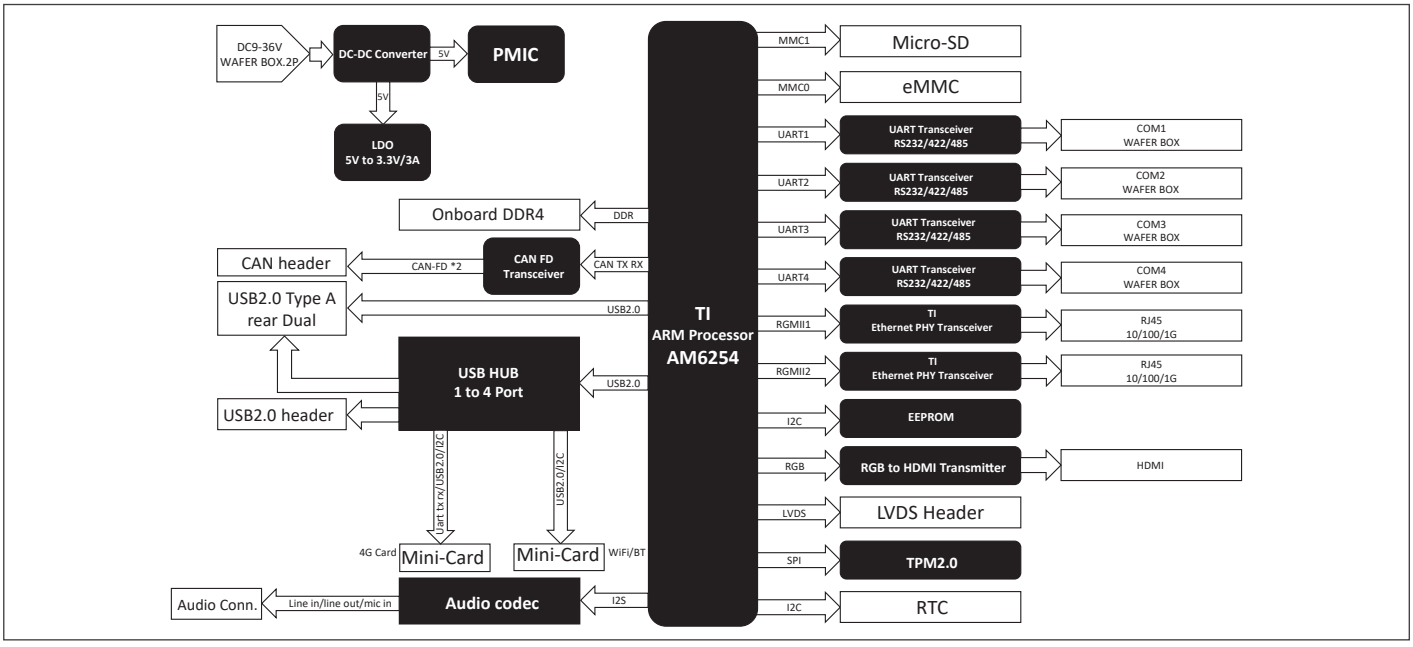
- PICO-AM62 x 1
- 2pin 3.81mm Power Terminal block w/lock AWG 28~14 x 1
- 14pin 2.54mm Phoenix plug in Connector/lock AWG 30~20 x 1

Optional Accessories

Part Number	Description
9741EG25G0	PCIe mini card. 4G LTE. module kit. Global Band W/ SIM holder. W/Cable & antenna. Quectel. EG25-G
9651239A00	Mini card WiFi Kit.802.11ac/a/b/g/n. BT5.0. W/ Cable&Antenna.SparkLan.WPET-239ACN(BT)
1700050207	USB2.0 cable. 20cm
170X000156	Audio cable. 25cm
170X000866	COM cable. 12cm
9651PX8L00	AC/DC Adapter.100V-240V.12VDC.40W.3.34A (for sample order), w/packaging box
170203180J	POWER CORD.3P-250V 13A.1.8M.UK
170X000799	POWER CORD.3P-125V 10A.1.8M.USA
170X000800	POWER CORD.3P-250V 10A.1.8M.EU
170X000806	POWER CORD.3P-125V 7A.1.8M.TWN
170X000803	POWER CORD.3P-125V 7A.1.8M.JPN

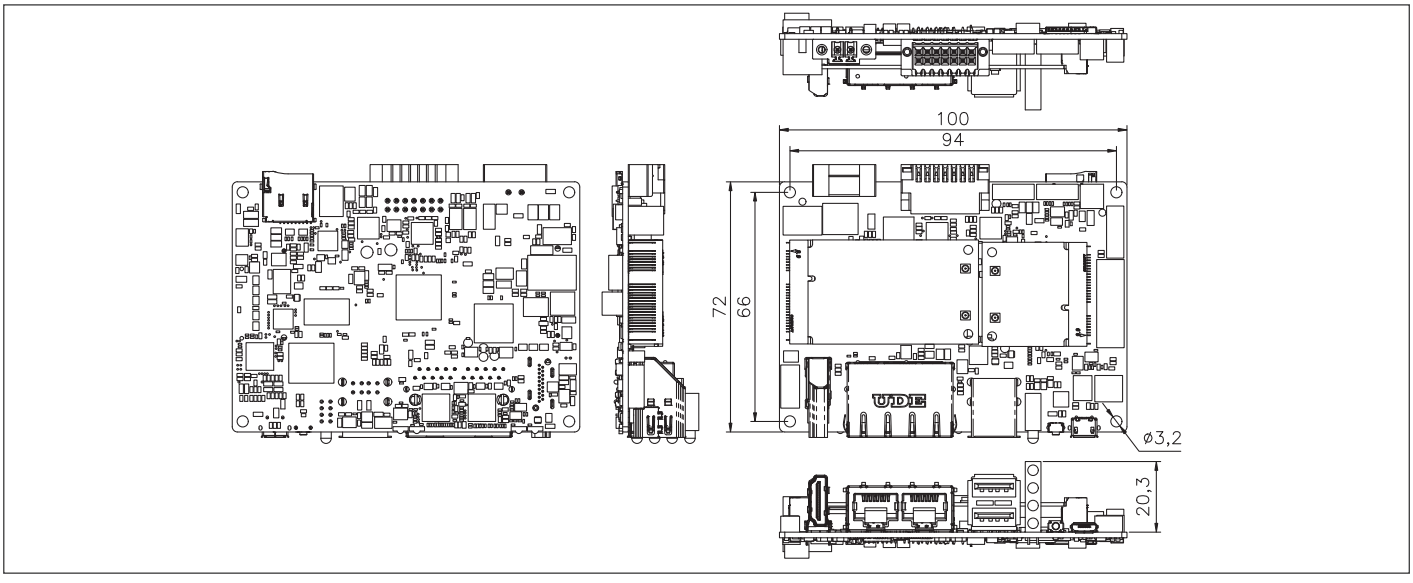
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	NPU	Memory	Display	Storage	LAN	USB	COM	Expansion slot	Power	Operation Temp.	Audio	Others	OS
PICO-AM62-A10-0001	ARM TI AM6232, Dual-Core Cortex-A53 1.4GHz Processor	—	Onboard DDR4 2GB	LVDS x 1	eMMC 16GB, MicroSD x1	GbE x 1	USB 2.0 x 3	RS232(2-wire)/422/485 x 2	Half Size Mini Card x 1 Full Size Mini Card x 1	+12V (Lockable terminal block)	-40°C ~ 85°C	—	SPI x 1, I2C x 1, GPIO x 1 CAN 2.0 FD x 2	Debian 12
PICO-AM62-A10-0002	ARM TI AM6254, Quad-Core Cortex-A53 1.4GHz Processor	—	Onboard DDR4 2GB	HDMI x 1 LVDS x 1	eMMC 16GB, MicroSD x1	GbE x 2	USB 2.0 x 3	RS232(2-wire)/422/485 x 2 RS232/422/485 x 2	Half Size Mini Card x 1 Full Size Mini Card x 1	+ 9 ~36 V (Lockable terminal block)	-40°C ~ 85°C	Line in / Line Out / Mic x 1	SPI x 1, I2C x 1, GPIO x 1, TPM x 1 CAN 2.0 FD x 2	Debian 12

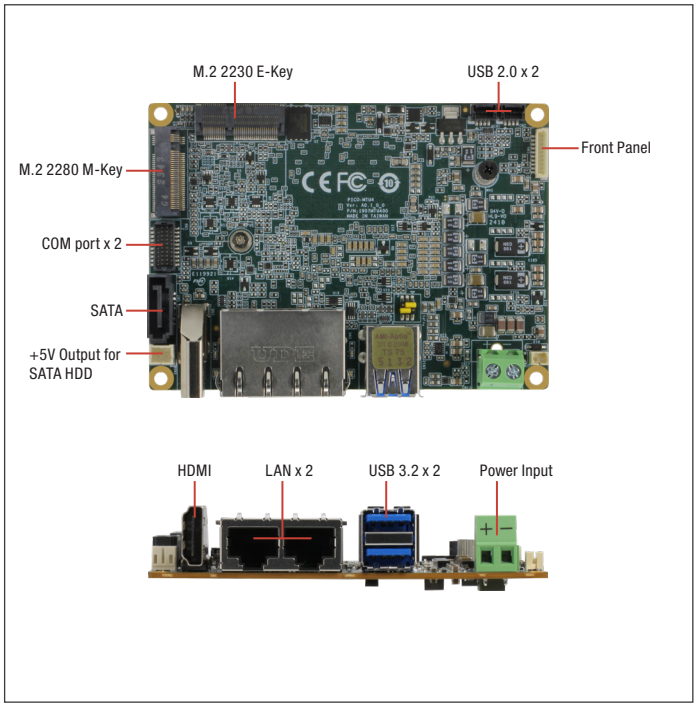
03

03
Pico-ITX Boards



PICO-MTU4

Pico-ITX Board with Intel® Core™ Ultra 7/Ultra 5 Processors



Features

- Intel® Core™ Ultra 7/Ultra 5 Processor SoC
- Onboard LPDDR5, up to 32GB
- 2.5GbE + 1GbE
- HDMI 1.4 + eDP 1.4
- M.2 2280 M-Key x 1 (PCIe 4.0 [x4]/SATA)
- M.2 2230 E-Key x 1 (PCIe 4.0 [x1] + USB 2.0)
- USB 3.2 Gen 2 x 2 ports + USB 2.0 x 2
- RS-232/422/485 x 2
- TPM, GPIO 4-bit, SATA 6.0 Gb/s x 1
- SMBus/I2C (Default SMBus)

2.5GbE USB 2.0 USB 3.2 Gen 2

Specifications

System	
Form Factor	PICO-ITX
CPU	Intel® Core™ Ultra 7 Processor 165U (2PC+10EC/14T, P-core 1.70 GHz, E-core 1.20 GHz, 15W) Intel® Core™ Ultra 7 Processor 155U (2PC+10EC/14T, P-core 1.70 GHz, E-core 1.20 GHz, 15W) Intel® Core™ Ultra 5 Processor 135U (2PC+10EC/14T, P-core 1.60 GHz, E-core 1.10 GHz, 15W) Intel® Core™ Ultra 5 Processor 125U (2PC+10EC/14T, P-core 1.30 GHz, E-core 0.80 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory Type	Single-Channel LPDDR5 6400, up to 32GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0
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 10/11 (64bit) Linux Ubuntu 22.04.2 kernel 5.19.0 32 generic
Power	
Power Requirement	12V only
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (Optional)
Power Consumption	Intel® Core™ Ultra 7 Processor 165U, DDR5 32GB x1, 2.94A@+12V (Typical) Intel® Core™ Ultra 7 Processor 165U, DDR5 32GB x1, 5.13A@+12V (Max)
Display	
Controller	Intel® Graphics
LVDS/eDP	eDP 1.4 x 1
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz
Multiple Display	Up to 2 Simultaneous Displays
Audio	
Codec	—
Audio Interface	—
Speaker	—
External I/O	
Ethernet	Intel® Ethernet Controller I226 2.5GbE, RJ-45 x 1 Intel® Ethernet Connection I219, 1GbE, RJ-45 x 1
USB	USB 3.2 Gen 2 x 2 ports
Serial Port	—
Video	HDMI 1.4 x 1
Internal I/O	
USB	USB 2.0 x 2
Serial Port	COM 1 ~ 2 (RS-232/422/485, supports 5V/12V/RI)
Video	—
SATA	SATA 6Gb/s x 1 +5V SATA Power Connector x 1
Audio	—
DIO/GPIO	GPIO 4-bit
SMBus/I2C	I2C/SMBus (Default: SMBus)
Fan	4pins Smart Fan x1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	—
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] / SATA, Default: PCIe [x4], select by BOM) M.2 2230 E-Key x 1 (PCIe 4.0 [x1] + USB 2.0)
Others	—
Environment & Certification	
Operating Temp	-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)	1,063,716
EMC	CE/FCC Class A

Packing List

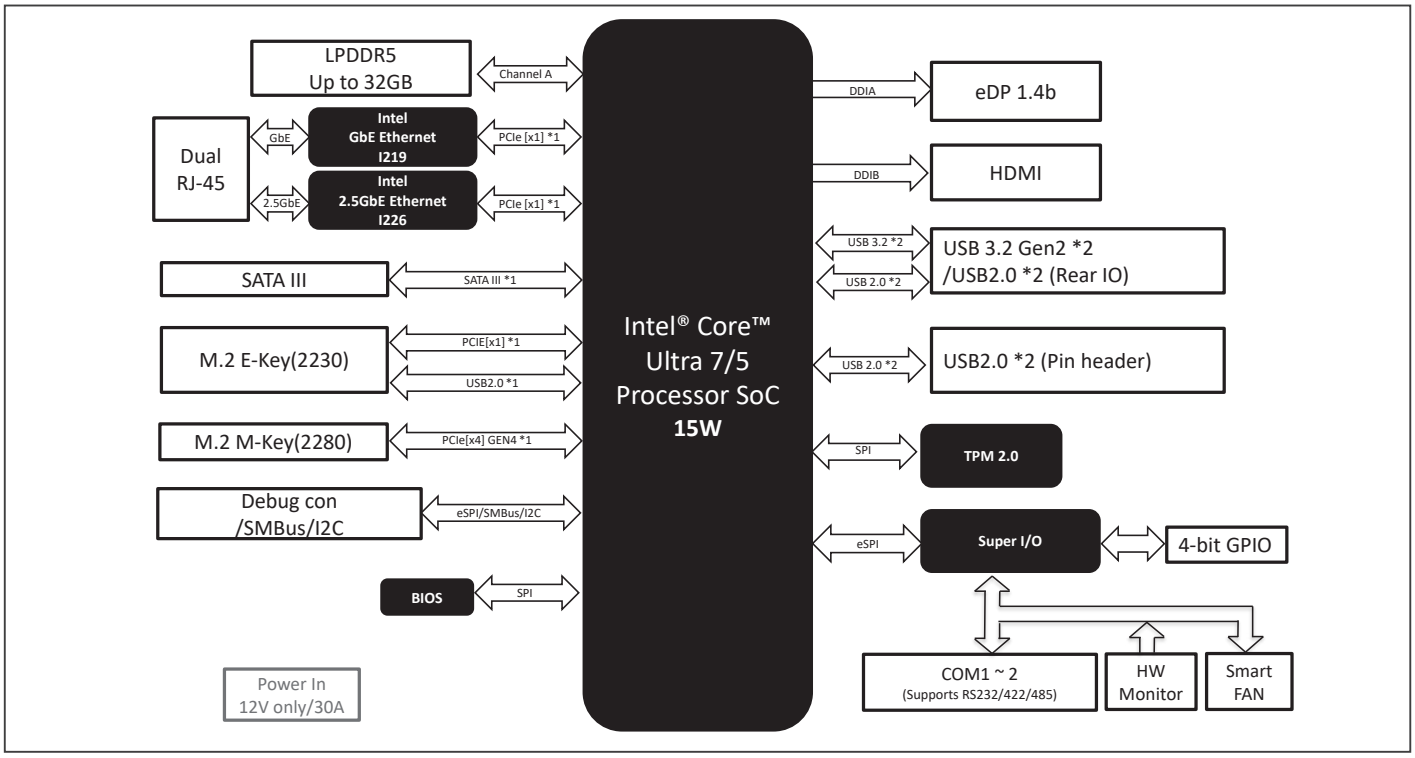
- PICO-MTU4

Optional Accessories

Part Number	Description	Qty.
170X000603	Front Panel cable.10cm	1
170X000231	Dual COM cable.30cm	1
170X000880	Single USB 2.0 lockable cable.20cm	2
1709070500	SATA cable.50cm	1
1702150155	SATA power cable.15cm	1
1702030200	Power cable (Phoenix type to DC Jack).20cm	1
PICO-MTU4-FAN01	Cooler.100*72*14mm.5200rpm.for PICO-MTU4	1
PER-P30D-A10-0001	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	1

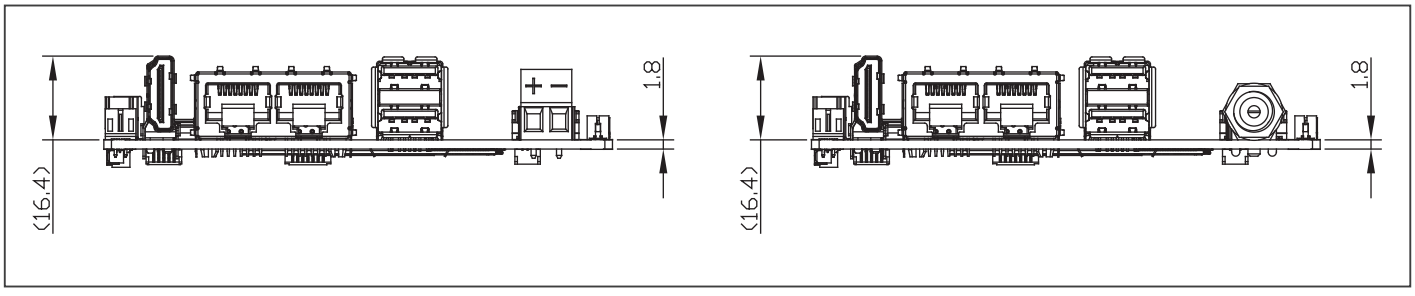
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

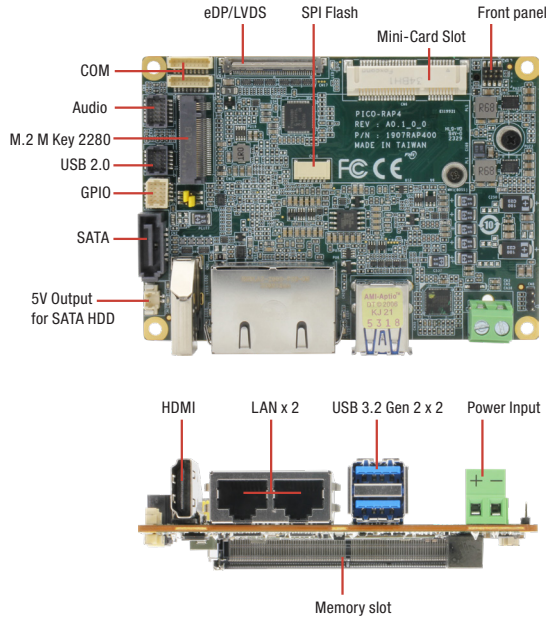


Ordering Information

Part number	CPU	Memory	Display	Storage	LAN	USB	COM	Expansion slot	Power	Operating Temp	Audio	Others
PICO-MTU4-A10-0001	Intel® Core™ Ultra 5 Processor 125U	LPDDR5 8GB	HDMI x 1 eDP x 1	SATAIII x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	RS232/422/485 x 2	M.2 2230 E-key x 1 M.2 2280 M-key x 1	+12V (Terminal block)	-20°C ~ 70°C	—	SMBus x 1, TPM2.0, GPIO
PICO-MTU4-A10-0002	Intel® Core™ Ultra 5 Processor 125U	LPDDR5 16GB	HDMI x 1 eDP x 1	SATAIII x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	RS232/422/485 x 2	M.2 2230 E-key x 1 M.2 2280 M-key x 1	+12V (Terminal block)	-20°C ~ 70°C	—	SMBus x 1, TPM2.0, GPIO
PICO-MTU4-A10-0003	Intel® Core™ Ultra 5 Processor 125U	LPDDR5 32GB	HDMI x 1 eDP x 1	SATAIII x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	RS232/422/485 x 2	M.2 2230 E-key x 1 M.2 2280 M-key x 1	+12V (Terminal block)	-20°C ~ 70°C	—	SMBus x 1, TPM2.0, GPIO
PICO-MTU4-A10-0004	Intel® Core™ Ultra 7 Processor 155U	LPDDR5 32GB	HDMI x 1 eDP x 1	SATAIII x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	RS232/422/485 x 2	M.2 2230 E-key x 1 M.2 2280 M-key x 1	+12V (Terminal block)	-20°C ~ 70°C	—	SMBus x 1, TPM2.0, GPIO

PICO-RAP4

Pico-ITX Board with 13th Gen Intel® Core™ i7/i5/i3 Processor



Features

- 13th Gen Intel® Core™ i7/i5/i3 Processor SoC
- DDR5 SODIMM, Max. 32 GB
- 2.5GbE Intel i226 + 1GbE Intel i219
- HDMI1.4 + eDP1.4/LVDS dual channel 18~24bit
- Half Size mPCIe/mSATA x 1, M.2 2280 M key x 1
- USB 3.2 Gen 2 x 2, USB 2.0 x 2, RS-232/422/485 x 2
- TPM2.0, SATA 6.0Gbps x 1, SMBUS/I2C x 1, GPIO 8-bit
- Mipi-CSI 4 lane x 2
- Line-in/Line-out/MIC (Optional)

2.5GbE USB 2.0 USB 3.2 Gen 2 PCIe PCI Express

Specifications

System	
Form Factor	PICO-ITX
CPU	13th Generation Intel® Core™/U series Processors: Intel® Core™ i7-1370PE (6P+8E/20T, 1.90 GHz, 28W) Intel® Core™ i7-1370PRE (6P+8E/20T, 1.90 GHz, 28W) Intel® Core™ i5-1340PE (4P+8E/16T, 1.80 GHz, 28W) Intel® Core™ i3-1320PE (4P+4E/12T, 1.70 GHz, 28W) Intel® Processor U300E (1P+4E/6T, 1.10 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 5200, SODIMM x 1, Non-ECC (Max. 32GB)
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) Ubuntu 22.04.2 (eDP is verified on Ubuntu 23.10.1)
Power	
Power Requirement	12V only
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (Optional)
Power Consumption	Intel® Core™ i7-1370PE, DDR5 32GB, 4.51A@ +12V (TYPICAL) Intel® Core™ i7-1370PE, DDR5 32GB, 7.46A@ +12V (MAX)
Display	
Controller	Intel® UHD Graphics
LVDS/eDP	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz eDP 1.4 x 1, up to 3840 x 2160 (Optional)
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz
Multiple Display	Up to 2 Simultaneous Displays
Audio	
Codec	Realtek ALC256
Audio Interface	Line-in/Line-out/Mic (Optional, Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® i226 2.5GbE, RJ-45 x 1 Intel® i219, 1GbE, RJ-45 x 1
USB	USB 3.2 Gen2 x 2
Serial Port	—
Video	HDMI 1.4 x 1
Internal I/O	
USB	USB 2.0 x 2
Serial Port	COM1~2 (RS232/422/485, supports 5V/12V/RI)
Video	LVDS/eDP x 1(Default: LVDS) Inverter x 1 (12V/2A)
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Optional, Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus/ I2C x 1 (Default: SMBus)
Fan	4pins Smart Fan x1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Half Size mSATA/mPCIe x 1 (default: mSATA, select with BIOS)
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4])
Others	MIPI-CSI via 61-Pin FPC Connector
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)	1,087,053
EMC	CE/FCC Class A

Packing List

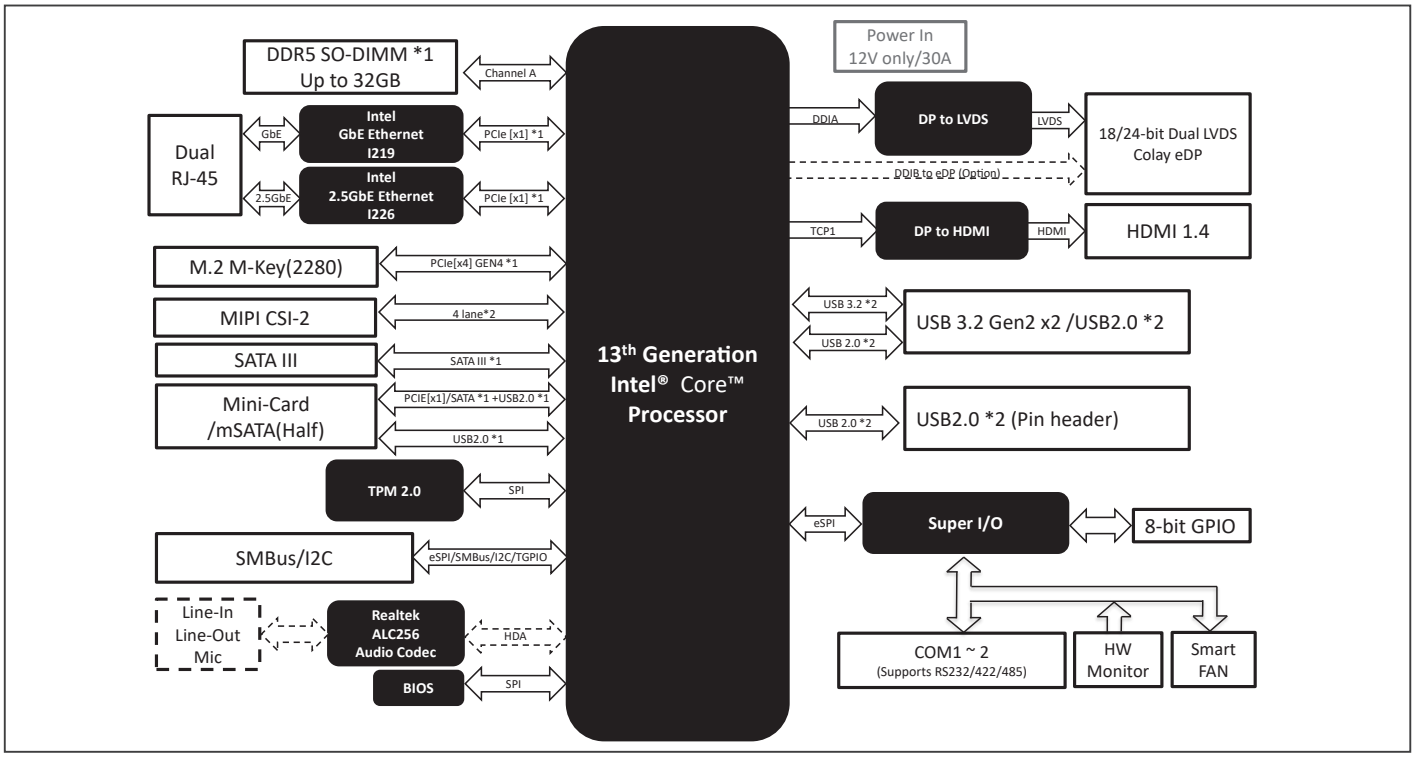
- PICO-RAP4

Optional Accessories

Part Number	Description	Qty.
1709100108	Front Panel cable.10cm	1
1701090122	COM cable.1 port .12cm	2
170010010D	USB2.0 cable.2 ports .10cm	1
1709070500	SATA cable.50cm	1
170X000322	SATA power cable.6cm	1
170X000156	Audio cable.Line in /Line out/ Mic.25cm	1
1702030200	Power cable (Phoenix type to DC Jack).20cm	1
PICO-RAP4-HSP01	Heat Spreader.AL.100*72*10.8mm	1
PICO-RAP4-FAN01	Cooler.100*72*24.3mm.for PICO-RAP4	1
PER-P30D-A10-0001	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	1

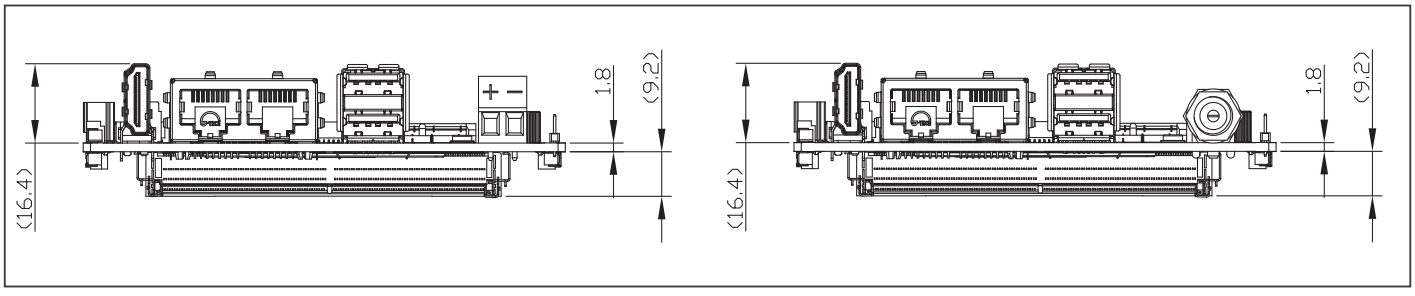
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

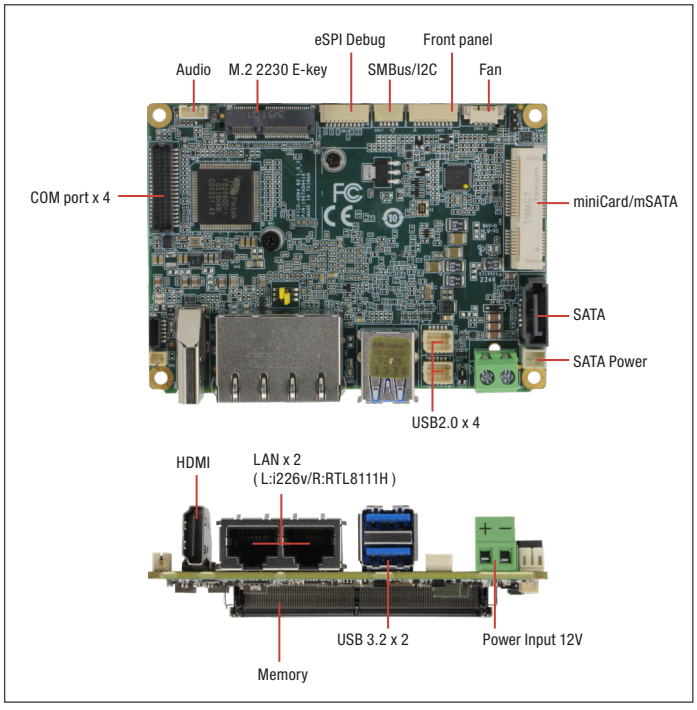


Ordering Information

Part number	CPU	Memory	Display	Storage	LAN	USB	COM	Expansion slot	Power	Operating Temp	Audio	Others
PICO-RAP4-A10-0001	U300E	SO-DIMM	HDMI x 1 LVDS x 1	SATA 6Gb/s x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2280 M-Key x 1 miniCard (Half) x 1	+12V (Terminal block)	0°C ~ 60°C	—	GPIO, SMBUS, TPM, MIPI-CSI
PICO-RAP4-A10-0002	i3-1320PE	SO-DIMM	HDMI x 1 LVDS x 1	SATA 6Gb/s x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2280 M-Key x 1 miniCard (Half) x 1	+12V (Terminal block)	0°C ~ 60°C	—	GPIO, SMBUS, TPM, MIPI-CSI
PICO-RAP4-A10-0003	i5-1340PE	SO-DIMM	HDMI x 1 LVDS x 1	SATA 6Gb/s x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2280 M-Key x 1 miniCard (Half) x 1	+12V (Terminal block)	0°C ~ 60°C	—	GPIO, SMBUS, TPM, MIPI-CSI
PICO-RAP4-A10-0004	i7-1370PE	SO-DIMM	HDMI x 1 LVDS x 1	SATA 6Gb/s x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2280 M-Key x 1 miniCard (Half) x 1	+12V (Terminal block)	0°C ~ 60°C	—	GPIO, SMBUS, TPM, MIPI-CSI
PICO-RAP4W2-A10-0005	i7-1370PRE	SO-DIMM	HDMI x 1 LVDS x 1	SATA 6Gb/s x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2280 M-Key x 1 miniCard (Half) x 1	+12V (Terminal block)	-40°C ~ 85°C	—	GPIO, SMBUS, TPM, MIPI-CSI

PICO-ASL4 Rev.B

Pico-ITX Board with Intel Atom® x7000RE Series



Features

- Intel Atom® x7000RE series
- DDR5 4800 MHz, SODIMM x 1, Up to 16GB
- HDMI1.4 x 1, eDP1.4b/LVDS x 1
- Intel® i226v 2.5GbE, RJ-45 x 1 , REALTEK.RTL8111H 1GbE, RJ-45 x 1
- Full-Size mSATA/mPCIe x 1, M.2 2230 E-key x1
- USB 3.2 Gen2[x1] x 2 ports, USB2.0 x 4,
- RS-232/422/485 x 2, RS-232 x 2
- TPM2.0, SATA 6.0Gbps x 1, GPIO 4-bit, SMBUS/I2C x 1
- DC 9~36V input (Optional, support by power adapter card)

2.5GbE USB 2.0 USB 3.2 Gen 2 PCI Express

Specifications

System	
Form Factor	PICO-ITX
CPU	Intel Atom® x7000E Series Atom® x7433RE(4C, 1.5GHz, 9W) Atom® x7835RE(8C, 1.3GHz, 12W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 4800, Single Channel SODIMM x 1, Max.16GB, Non-ECC
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 10/11 (64 bit) Ubuntu 22.04.2/Kernel 5.19
Power	
Power Requirement	+12V (Optional: +9 ~ 36V, support by power adapter card)
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (Optional)
Power Consumption	Intel® x7835RE, DDR5 16GB x1, 3.06A@ +12V (TYPICAL) Intel® x7835RE, DDR5 16GB x1, 4.21A@ +12V (MAX)
Display	
Controller	Intel® UHD Graphics for 12th Gen Intel® Processors
LVDS/eDP	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz eDP 1.4 x 1, 3840 x 2160 @60Hz (Optional)
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz
Multiple Display	Up to 2 Simultaneous Displays
Audio	
Codec	Realtek ALC256
Audio Interface	Line-out (Optional, audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® i226 2.5GbE, RJ-45 x 1 Realtek. RTL8111H-CG, 1GbE, RJ-45 x 1
USB	USB 3.2 Gen2[x1] x 2 ports
Serial Port	—
Video	HDMI 1.4 x 1

Internal I/O	
USB	USB 2.0 x 4
Serial Port	COM1~2 (RS232/422/485, supports 5V/12V/RI) COM3~4 (RS232)
Video	LVDS/eDP x 1(Default: LVDS) Inverter x 1 (12V/2A)
SATA	SATA 6.0Gbps x 1 +5V SATA Power Connector x 1
Audio	Line-out header x 1 (Optional, audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 4-bit
SMBus/I2C	SMBus/ I2C x 1 (Default: SMBus)
Fan	4pins Smart Fan x1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-Sized mSATA/mPCIe x 1 (default: mSATA, select with BIOS)
M.2	M.2 2230 E-Key x 1
Others	—
Environment & Certification	
Operating Temp	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)	2,219,397
EMC	CE/FCC Class A

Packing List

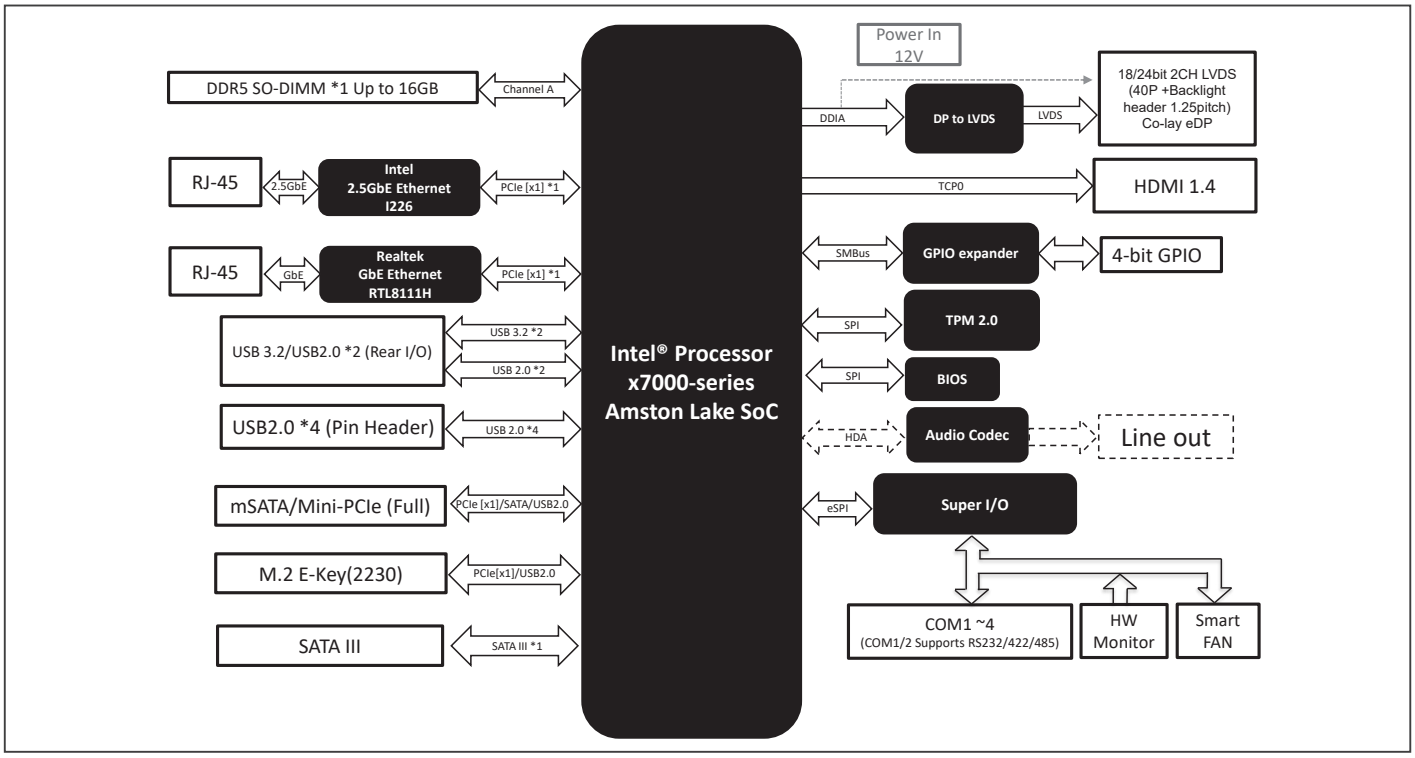
- PICO-ASL4 Rev.B

Optional Accessories

Part Number	Description	Qty.
170X000287	Front Panel cable.10cm	1
170X000317	Quad COM cable.15cm	1
170010010D	USB2.0 cable.10cm	2
1709070500	SATA CABLE.50cm	1
1702150155	SATA power cable.15cm	1
170X000779	Audio cable.25cm	1
1702030200	Power cable (Phoenix type to DC Jack).20cm	1
PICO-ASL4-FAN01	Cooler.100*72*25.5mm.for PICO-ASL4 Rev.B/PICO-ADN4 Rev.B	1
PICO-ASL4-HSK01	Heat Sink.100*72*25.5mm (Heat spreader-less, all in one HSK).for PICO-ASL4 Rev.B/PICO-ADN4 Rev.B	1
PICO-ASL4-HSP01	Heat Spreader.AL.100*72*12mm.for PICO-ASL4 Rev.B/PICO-ADN4 Rev.B	1
PER-P30D-A10	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	1

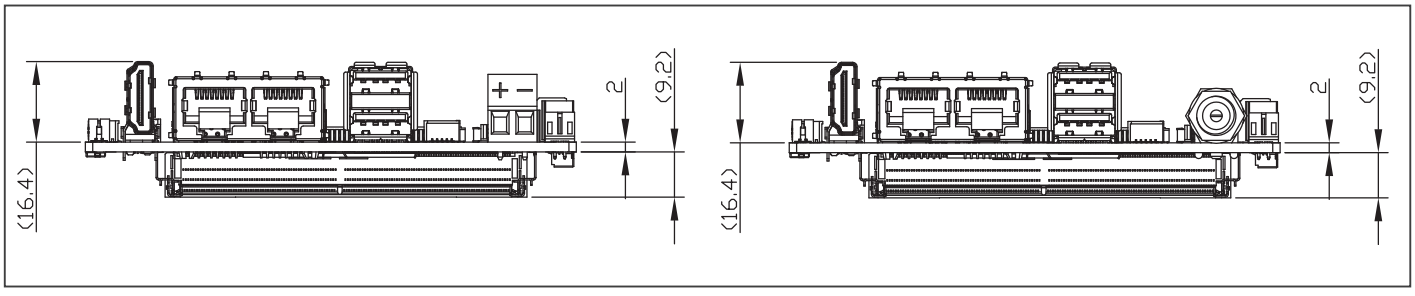
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

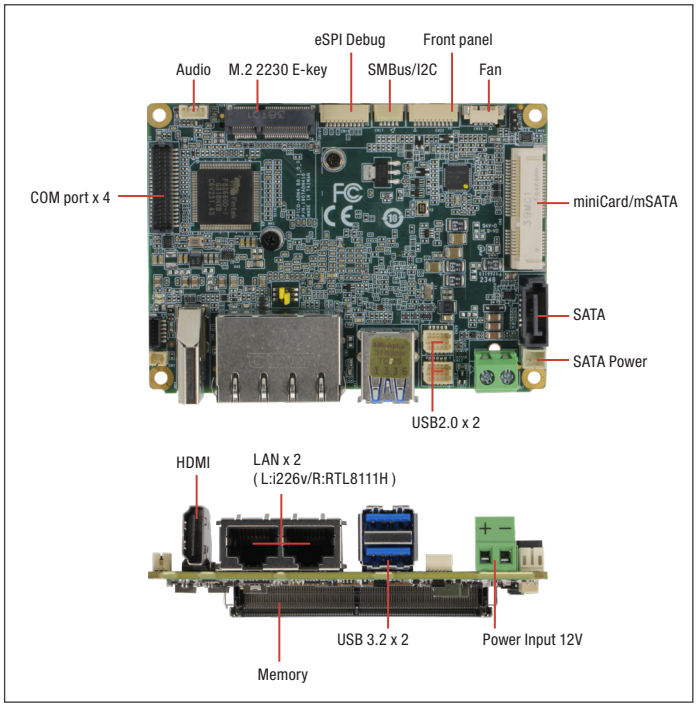


Ordering Information

Part number	CPU	Memory	Display	Storage	LAN	USB	COM	Expansion slot	Power	Operating Temp	Audio	Others
PICO-ASL4W2-B10-0001	x7433RE	SD-DIMM	HDMI x 1 LVDS x 1	SATAIII x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 4 USB3.2 Gen 2 x 2	RS232/422/485 x 2 RS232 x 2	M.2 2230 E-key x 1 miniCard (Full) x 1	+12V (Terminal block)	-40°C ~ 85°C	—	SMBus x 1, TPM2.0, GPIO
PICO-ASL4W2-B10-0002	x7835RE	SD-DIMM	HDMI x 1 LVDS x 1	SATAIII x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 4 USB3.2 Gen 2 x 2	RS232/422/485 x 2 RS232 x 2	M.2 2230 E-key x 1 miniCard (Full) x 1	+12V (Terminal block)	-40°C ~ 85°C	—	SMBus x 1, TPM2.0, GPIO

PICO-ADN4 Rev.B

Pico-ITX Board with Intel Atom® x7000E Series, Intel® Processor N-series, and Intel® Core™ i3 Processor N-series



Features

- DDR5 4800 SODIMM, up to 16GB
- HDMI 1.4 x 1, eDP 1.4b/LVDS x 1
- 2.5GbE x 1, 1GbE x 1
- Full-size mSATA/mPCIe x 1, M.2 2230 E-Key x 1
- USB 3.2 Gen 2 x 2 ports, USB 2.0 x 4
- RS-232/422/485 x 2, RS-232 x 2
- TPM 2.0, SATA 6Gb/s, 4-bit GPIO, SMBUS/I2C
- DC 9 ~ 36V input (Optional via power adapter card)

2.5GbE USB 2.0 USB 3.2 Gen 2 PCI Express

Specifications

System	
Form Factor	PICO-ITX
CPU	Intel Atom® x7000E Series, Intel® Processor N-series, and Intel® Core™ i3 Processor N-series Processors: Intel® Processor N97 (4C/4T, 2.00 GHz, 12W) Intel® Core™ i3-N305 Processor (8C/8T, 1.80 GHz, 15W) Intel Atom® x7425E Processor (4C/4T, 1.50 GHz, 12W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 4800, Single Channel SODIMM x 1, Max.16GB, Non-ECC
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 10/11 (64 bit) Ubuntu 22.04.2/Kernel 5.19
Power	
Power Requirement	+12V (Optional: +9 ~ 36V, support by power adapter card)
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (Optional)
Power Consumption	Intel® x7835RE, DDR5 16GB x1, 3.06A@ +12V (TYPICAL) Intel® x7835RE, DDR5 16GB x1, 4.21A@ +12V (MAX)
Display	
Controller	Intel® UHD Graphics for 12th Gen Intel® Processors
LVDS/eDP	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz eDP 1.4 x 1, 3840 x 2160 @60Hz (Optional)
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz
Multiple Display	Up to 2 Simultaneous Displays
Audio	
Codec	Realtek ALC256
Audio Interface	Line-out (Optional, no audio function in WiTAS 2)
Speaker	—
External I/O	
Ethernet	Intel® Ethernet Controller I226 2.5GbE, RJ-45 x 1 Realtek RTL8111H-CG, 1GbE, RJ-45 x 1,
USB	USB 3.2 Gen 2 x 2
Serial Port	—
Video	HDMI 1.4 x 1
Internal I/O	
USB	USB 2.0 x 4
Serial Port	COM1~2 (RS232/422/485, supports 5V/12V/RI) COM3~4 (RS232)
Video	LVDS/eDP x 1(Default: LVDS) Inverter x 1 (12V/2A)
SATA	SATA 6.0Gbps x 1 +5V SATA Power Connector x 1
Audio	Line-out header x 1 (Optional, no audio function in WiTAS 2)
DIO/GPIO	GPIO 4-bit
SMBus/I2C	SMBus/ I2C x 1 (Default: SMBus)
Fan	4pins Smart Fan x1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-Sized mSATA/mPCIe x 1 (default: mSATA, select with BIOS)
M.2	M.2 2230 E-Key x 1
Others	—
Environment & Certification	
Operating Temp	-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)	2,219,397
EMC	CE/FCC Class A

Packing List

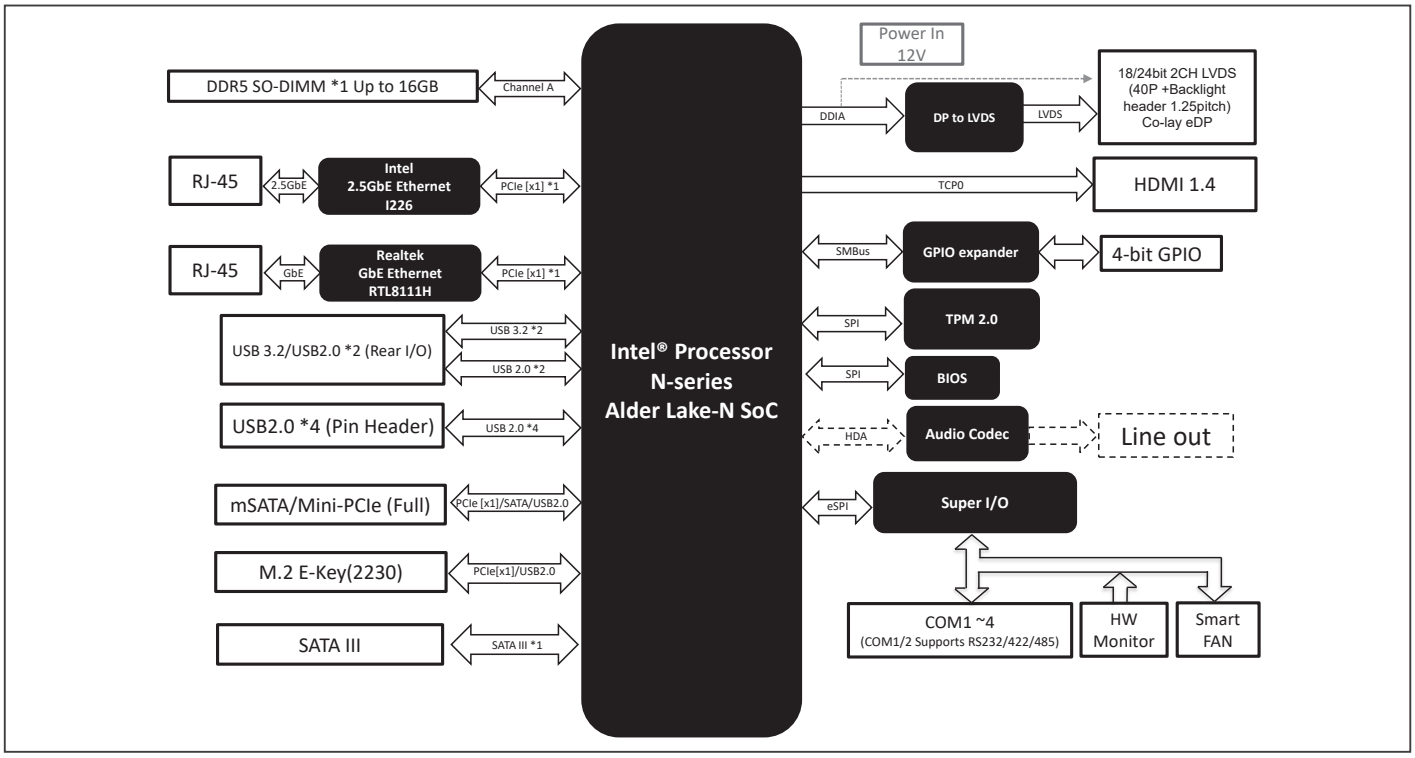
- PICO-ADN4 Rev.B

Optional Accessories

Part Number	Description	Qty.
170X000287	Front Panel cable.10cm	1
170X000317	Quad COM cable.15cm	1
170010010D	Dual USB2.0 cable.10cm	2
170X000593	SATA CABLE.15cm	1
1702150155	SATA power cable.15cm	1
170X000779	Audio cable.25cm	1
1702030200	Power cable (Phoenix type to DC Jack).20cm	1
PICO-ASL4-FAN01	Cooler.100*72*25.5mm.for PICO-ASL4 Rev.B/PICO-ADN4 Rev.B	1
PICO-ASL4-HSK01	Heat Sink.100*72*25.5mm (Heat spreader-less, all in one HSK).for PICO-ASL4 Rev.B/PICO-ADN4 Rev.B	1
PICO-ASL4-HSP01	Heat Spreader.AL.100*72*12mm.for PICO-ASL4 Rev.B/PICO-ADN4 Rev.B	1
PER-P30D-A10-0001	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	1

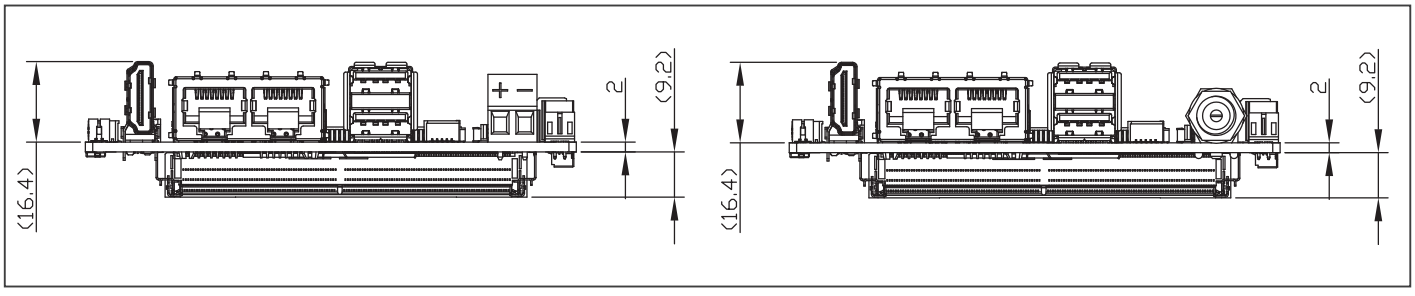
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

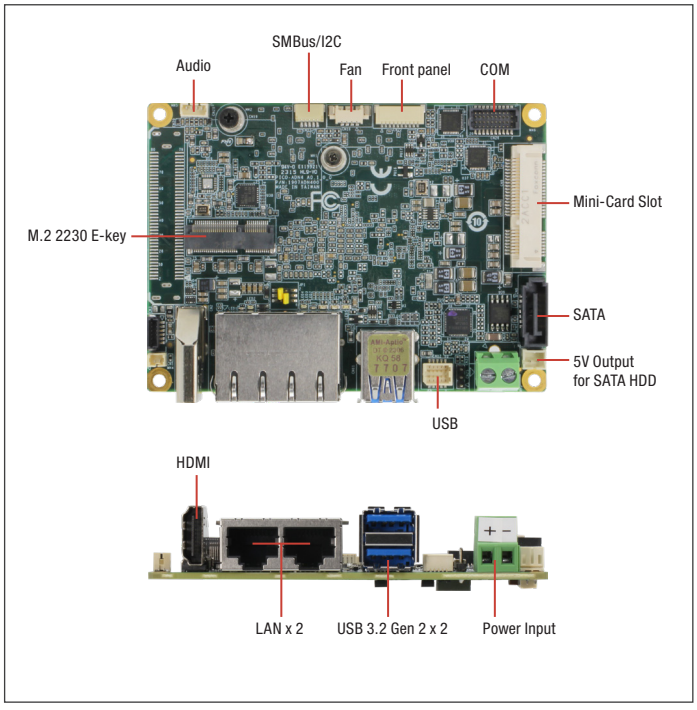


Ordering Information

Part number	CPU	Memory	Display	Storage	LAN	USB	COM	Expansion slot	Power	Operating Temp	Audio	Others
PICO-ADN4-B10-0001	Intel® Processor N97	SD-DIMM	HDMI x 1 LVDS x 1	SATAIII x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 4 USB3.2 Gen 2 x 2	RS232/422/485 x 2 RS232 x 2	M.2 2230 E-key x 1 miniCard (Full) x 1	+12V (Terminal block)	-20°C ~ 70°C	—	SMBus x 1, TPM2.0, GPIO

PICO-ADN4

Intel Atom® x7000E Series, N-series, Core™ i3-N305 Processor (formerly Alder Lake N)



Features

- Onboard LPDDR5 4800, Single Channel (Max.16GB)
- HDMI1.4 x 1, eDP1.4/LVDS x 1
- Intel® i226v 2.5GbE, RJ-45 x 1
- REALTEK.RTL8111H-CG 1GbE, RJ-45 x 1
- Full-Size mSATA/mPCIe x 1, M.2 2230 E-key x1
- USB 3.2 Gen2 x 2, USB2.0 x 2, RS-232/422/485 x 2
- TPM2.0, SATA 6.0Gbps x 1, GPIO 4-bit, SMBUS/I2C x 1
- BIO support (Optional), Audio: Line out (Optional)
- DC 9~36V input (Optional, support by power adapter card)

2.5GbE USB 2.0 USB 3.2 Gen 2 PCI Express

Specifications

System	
Form Factor	PICO-ITX
CPU	Intel Atom® x7000E Series, Intel® Processor N-series, and Intel® Core™ i3 Processor N-series Processors: Intel® Processor N50 (2C/2T, 1.00 GHz, 6W) Intel® Processor N97 (4C/4T, 2.00 GHz, 12W) Intel® Core™ i3-N305 (8C/8T, 1.80 GHz, 15W) Intel Atom® x7425E (4C/4T, 1.50 GHz, 12W)
Chipset	Integrated with Intel® SoC
Memory Type	Onboard LPDDR5, Single Channel (Max. 16GB)
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0
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 10/11 (64 bit) Ubuntu 22.04.2/Kernel 5.19
Power	
Power Requirement	+12V
Power Supply Type	AT/ATX
Connector	2-pin Phoenix Connector (Default) Lockable DC Jack Connector (Optional)
Power Consumption	Intel® Core™ i3-N305, LPDDR5 16GB x1, 2.97A@ +12V (TYPICAL) Intel® Core™ i3-N305, LPDDR5 16GB x1, 4.46A@ +12V (MAX)
Display	
Controller	Intel® UHD Graphics
LVDS/eDP	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz eDP 1.4 x 1, 7680 x 4320 (Optional)
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz DDI (Via BIO, Optional)
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	Realtek ALC256 (Optional)
Audio Interface	Line-Out (Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® I226 2.5GbE, RJ-45 x 1 Realtek RTL8111H-CG, 1GbE, RJ-45 x 1
USB	USB 3.2 Gen 2 x 2
Serial Port	—
Video	HDMI 1.4 x 1
Internal I/O	
USB	USB 2.0 x 2
Serial Port	COM 1~2 (RS-232/422/485, supports 5V/12V/RI)
Video	LVDS/eDP x 1 (Default: LVDS) Inverter x 1 (12V/2A)
SATA	SATA 6Gb/s x 1 +5V SATA Power Connector x 1
Audio	Line-out header x 1 (Optional, audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 4-bit
SMBus/I2C	SMBus/I2C x 1 (Default: SMBus)
Fan	4pins Smart Fan x1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (default: mSATA, select with BIOS)
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0)
Others	BIO (Optional, need customized BIOS, USB2.0, SMBUS, DDI, LPC, PCIe [x1] x 1)
Environment & Certification	
Operating Temp	-4°F ~ 158°F (-20°C ~ 70°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)	1,087,822
EMC	CE/FCC Class A

Packing List

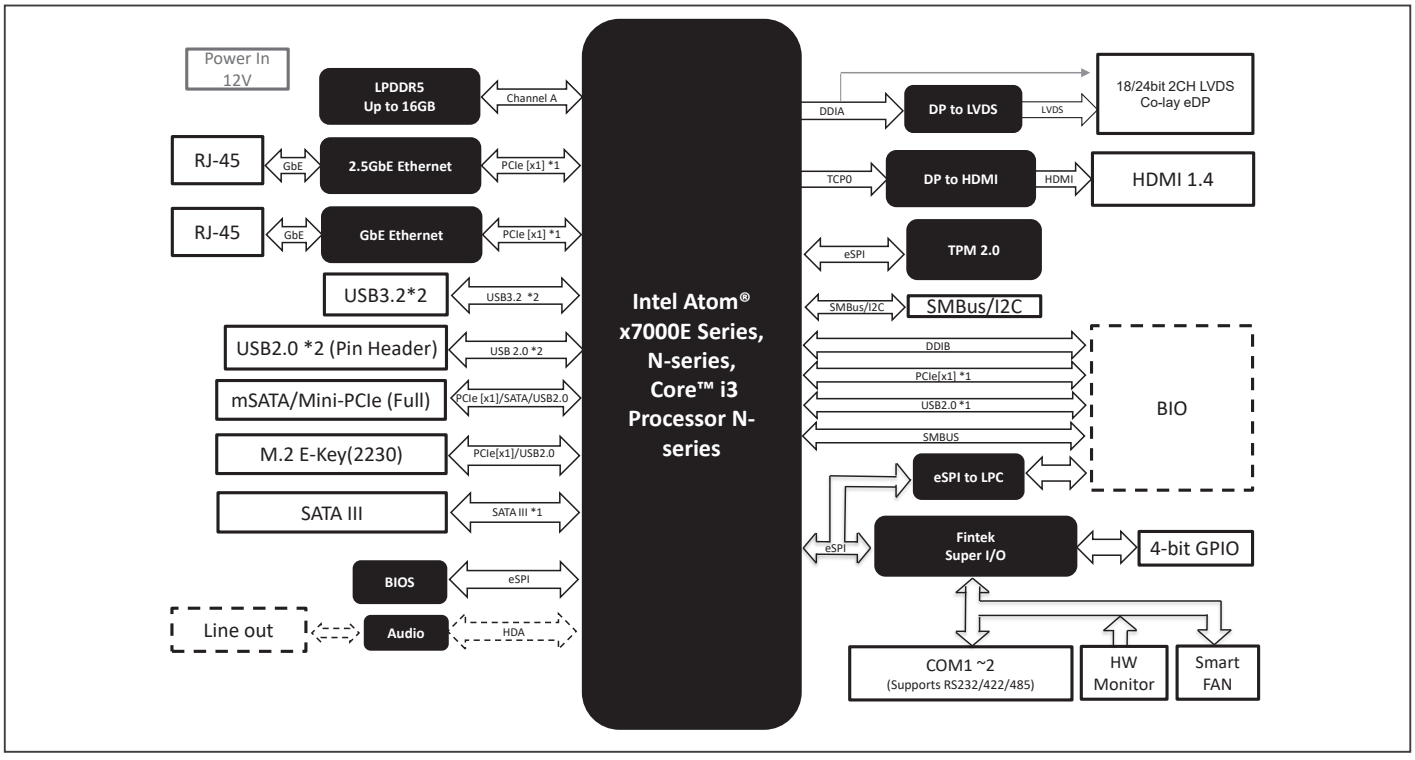
- PICO-ADN4

Optional Accessories

Part Number	Description	Qty.
170X000287	Front Panel cable.10cm	1
170X000231	Dual COM cable.30cm	1
170010010D	Dual USB2.0 cable.10cm	1
170X000593	SATA CABLE.15cm	1
1702150155	SATA power cable.15cm	1
170X000779	Audio cable.25cm	1
1702030200	Power cable (Phoenix type to DC Jack).20cm	1
PICO-ADN4-HSP01	Heat Spreader.AL.100*72*10.5mm	1
PICO-ADN4-HSK01	Heat Sink.100*72*15.5mm.Silver.To be used with HSP	1
PICO-ADN4-FAN01	Cooler.100*72*20.3mm.for PICO-ADN4	1
PER-P30D-A10-0001	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	1

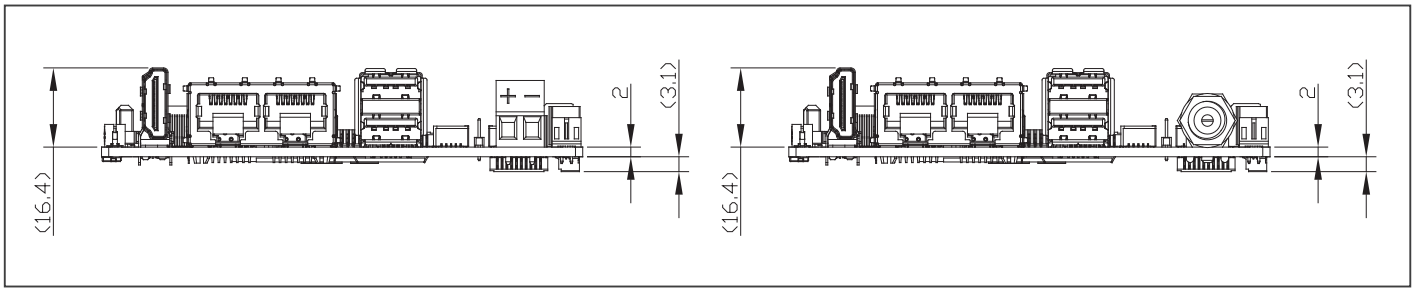
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

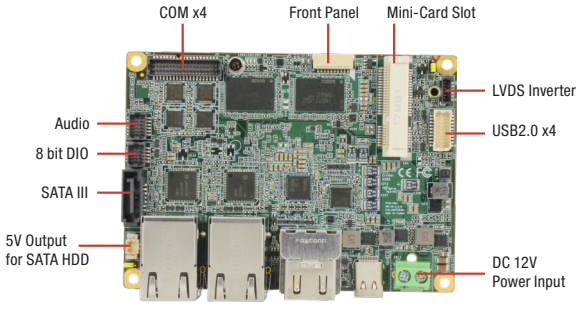


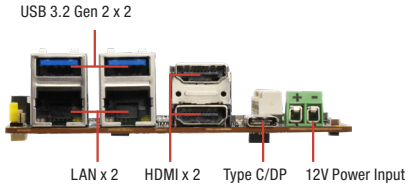
Ordering Information

Part number	CPU	Memory	Display	Storage	LAN	USB	COM	Expansion slot	Power	Operating Temp	Audio	Others
PICO-ADN4-A10-0001	Intel® Processor N50	LPDDR5 8GB	HDMI x 1 LVDS x 1	SATA 6Gb/s x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2230 E-key x 1 miniCard (Full) x 1	+12V (Terminal block)	-20°C ~ 70°C	—	GPIO, SMBUS, TPM
PICO-ADN4-A10-0002	Intel® Processor N97	LPDDR5 8GB	HDMI x 1 LVDS x 1	SATA 6Gb/s x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2230 E-key x 1 miniCard (Full) x 1	+12V (Terminal block)	-20°C ~ 70°C	—	GPIO, SMBUS, TPM
PICO-ADN4-A10-0003	Intel Atom® x7425E	LPDDR5 8GB	HDMI x 1 LVDS x 1	SATA 6Gb/s x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2230 E-key x 1 miniCard (Full) x 1	+12V (Terminal block)	-20°C ~ 70°C	—	GPIO, SMBUS, TPM
PICO-ADN4-A10-0004	Intel® Core™ i3-N305	LPDDR5 16GB	HDMI x 1 LVDS x 1	SATA 6Gb/s x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2230 E-key x 1 miniCard (Full) x 1	+12V (Terminal block)	-20°C ~ 70°C	—	GPIO, SMBUS, TPM
PICO-ADN4W2-A10-0002	Intel® Processor N97	LPDDR5 8GB	HDMI x 1 LVDS x 1	SATA 6Gb/s x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2230 E-key x 1 miniCard (Full) x 1	+12V (Terminal block)	-40~85°C	—	GPIO, SMBUS, TPM

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**

Gigo LAN · LPDDR4 · 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, 1.70GHz, 25W) V2516 (6C/12T, 2.10GHz, 25W)
Chipset	Integrated with AMD RYZEN™ V2000 embedded Processor
Memory Type	Onboard LPDDR4x 3733, Dual Channel, Non-ECC (Max.32GB)
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 5.18.0-4449-amd+
Power	
Power Requirement	+12V
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
Power Consumption	V2718, LPDDR4x 32GB, NVMe64GB 4.24A @ +12V(TYPICAL) V2718, LPDDR4x 32GB, NVMe64GB, 4.82A @ +12V(MAX)
Display	
Controller	AMD Radeon 6, 7 Graphics (Renoir)
LVDS/eDP	LVDS x 1 (18/24bit) 1024 x 768 @60Hz eDP1.3 x 1, 3840 x 2160 @60Hz (Optional)
Display Interface	Type C to DP x 1, 3480 x 2160 @60Hz HDMI 2.0 x 1, 3480 x 2160 @60Hz HDMI 1.4 x 1, 3480 x 2160 @30Hz
Multiple Display	Up to 4 Simultaneous Displays
Audio	
Codec	Realtek ALC269 (Optional)
Audio Interface	Line-In / Line-Out / Mic (Optional, audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® i225/i226 2.5GbE, RJ-45 x 1 Intel® i210 1GbE, RJ-45 x 1
USB	USB3.2 Gen2 Type C x 1 USB3.2 Gen2 x 2
Serial Port	—
Video	DP x 1 (Via Type C) HDMI 2.0 x 1, HDMI 1.4 x 1
Internal I/O	
USB	USB2.0 x 4
Serial Port	COM1~4 (RS232/422/485, support 5V/12V/RI)
Video	LVDS/eDP x 1(Default: LVDS)
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1 Onboard NVME SSD (Optional, up to 128GB, PCIE[x2])
Audio	Audio Header (Optional, audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 8-bit
SMBus/I2C	I2C/SMBus x 1 (Default: SMBus)
Fan	4pins Smart Fan x 1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mPCIe, select with HW BOM)
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4]/SATA, Default: PCIe [x4], select with BIOS)
Others	—
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)	407,784
EMC	CE/FCC Class A

Packing List

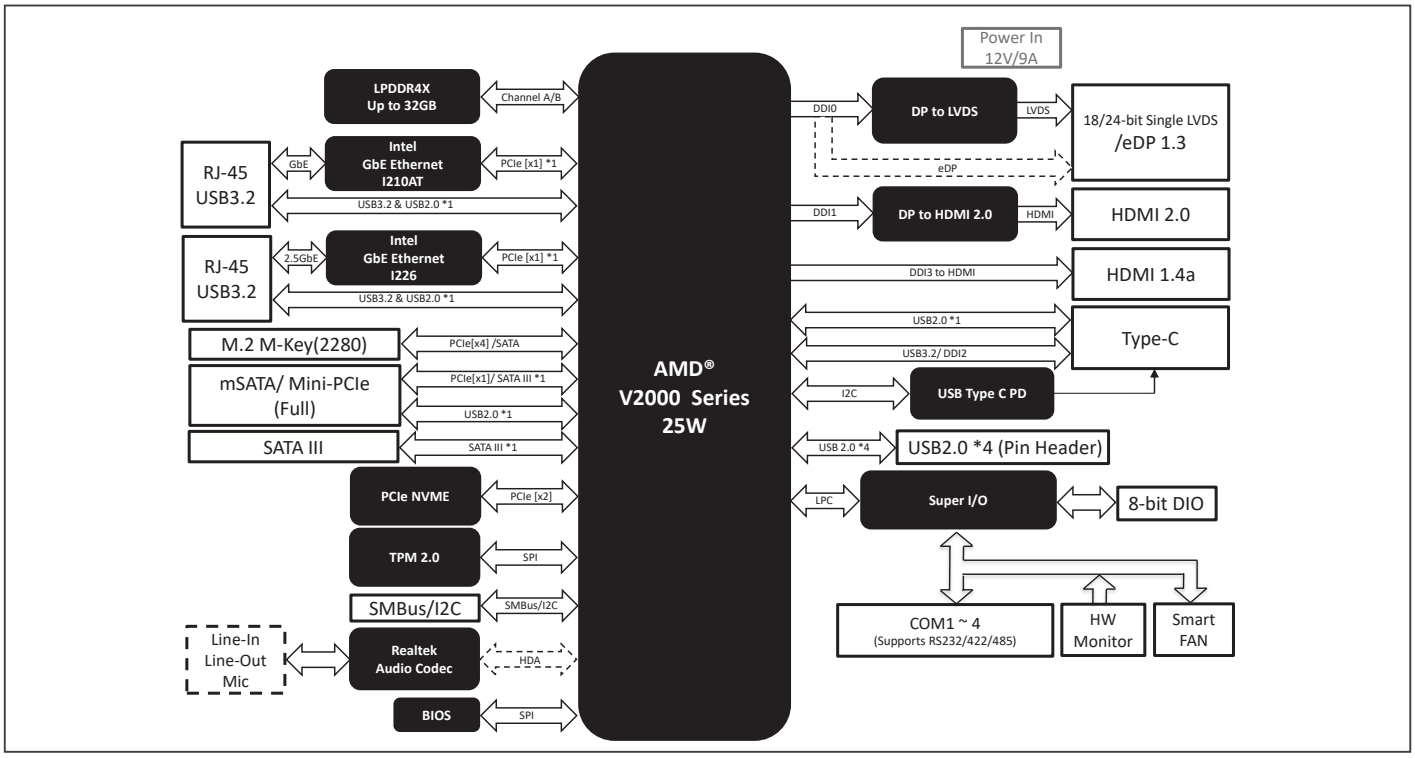
- **PICO-V2K4**

Optional Accessories

Part Number	Description	Qty.
170X000287	Front Panel Cable.100mm	1
170X000317	COM Cable.4ports.150mm	1
170X000390	USB2.0 Cable.4 ports.120mm	1
1709070500	SATA CABLE.50cm	1
170X000322	SATA Power Cable.60mm	1
170X000156	Audio cable.250mm	1
PICO-V2K4-FAN01	CPU Cooler.100*72*24mm.AL Fin+CU Block.4800rpm.Smart FAN	1
PICO-V2K4-HSP01	Heat Spreader.AL Fin+CU Block.100*72*10.7mm	1
PER-P30D-A10	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	1

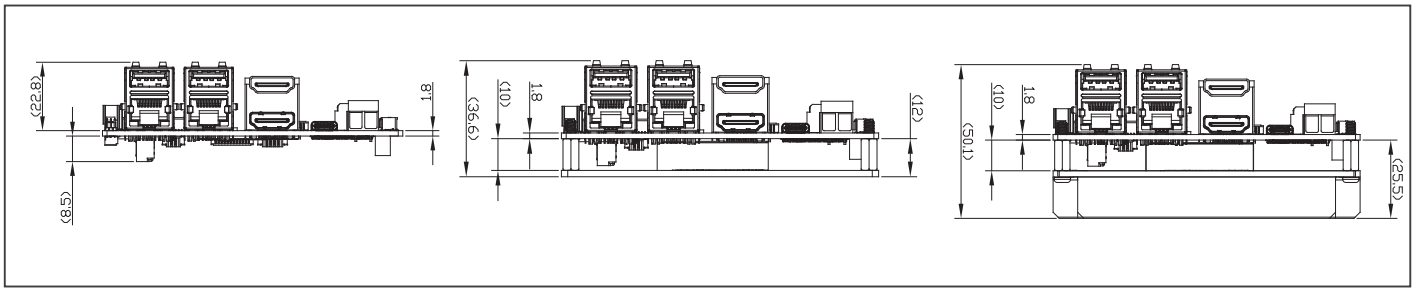
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

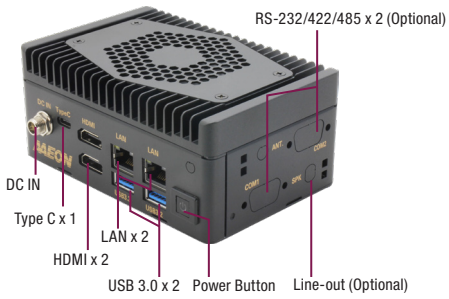


Ordering Information

Part number	CPU	Memory	Display	Storage	LAN	USB	RS-232/ 422/485	Expansion slot	Power	Operating Temp	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 1 2.5GbE x 1	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 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 1 2.5GbE x 1	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 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 1 2.5GbE x 1	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 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 1 2.5GbE x 1	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 TPM2.0
PICO-V2K4-A11-0006	V2718	32GB	Type C to DP x 1 HDMI x 2 eDP x 1	SATAIII x 1	GbE x 1 2.5GbE x 1	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 TPM2.0
PICO-V2K4W2-A11-0006	V2718	32GB	Type C to DP x 1 HDMI x 2 eDP x 1	SATAIII x 1	GbE x 1 2.5GbE x 1	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)	-40~85˚C	—	SMBUS x 1 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, 1.70GHz, 25W) V2516 (6C/12T, 2.10GHz, 25W)
Chipset	Integrated with AMD RYZEN™ V2000 embedded Processor
Memory Type	Onboard LPDDR4x 3733, Dual Channel, Non-ECC (Max.32GB)
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 5.18.0-4449-amd+
Power	
Power Requirement	+12V
Power Supply Type	ATX
Connector	DC Jack Connector
Power Consumption	V2718, LPDDR4x 32GB, NVMe64GB 4.24A @ +12V(TYPICAL) V2718, LPDDR4x 32GB, NVMe64GB, 4.82A @ +12V(MAX)
Display	
Controller	AMD Radeon 6, 7 Graphics (Renoir)
LVDS/eDP	—
Display Interface	Type C to DP x 1, 3480 x 2160 @60Hz HDMI 2.0 x 1, 3480 x 2160 @60Hz HDMI 1.4 x 1, 3480 x 2160 @30Hz
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	Realtek ALC269 (Optional)
Audio Interface	Line-out (Optional)
Speaker	—
External I/O	
Ethernet	Intel® i225/i226 2.5GbE, RJ-45 x 1 Intel® i210 1GbE, RJ-45 x 1
USB	USB3.2 Gen2 Type C x 1 USB3.2 Gen2 x 2 USB2.0 x 2 (Optional)
Serial Port	COM1~2 (RS232/422/485, support 5V/12V/RI, Optional)
Video	DP x 1 (Via Type C) HDMI 2.0 x 1, HDMI 1.4 x 1
Internal I/O	
USB	—
Serial Port	—
Video	—
SATA	Onboard NVME SSD (Optional, up to 128GB, PCIE[x2])
Audio	Line-out (Optional)
DIO/GPIO	—
SMBus/I2C	—
Fan	4pins Smart Fan x1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mPCIe, select with HW BOM)
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4]/SATA, Default: PCIe [x4], select with 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

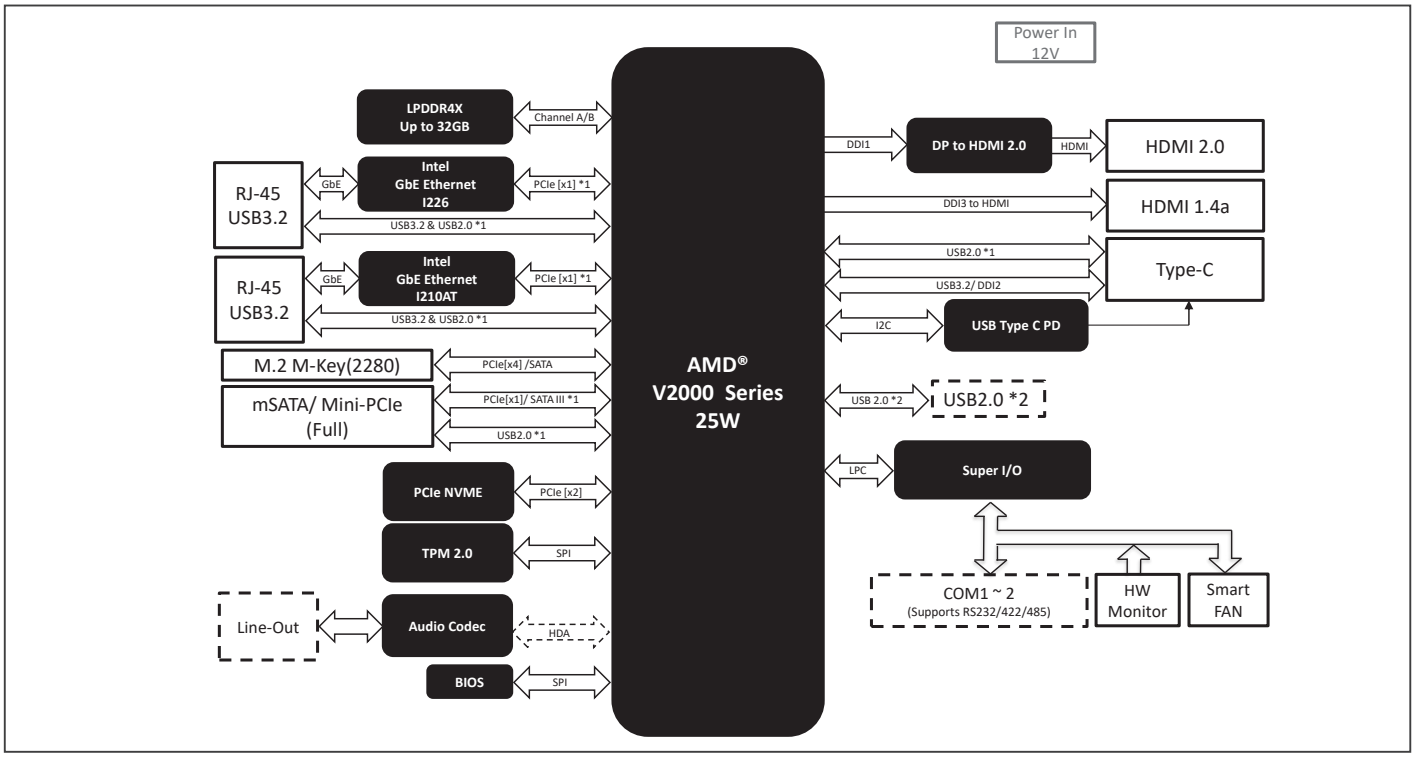
- **PICO-V2K4-SEMI**

Optional Accessories

Part Number	Description	Qty.
1702031802	POWER CORD.3P-125V 10A 180D.1.8M.(US Type)	1
1702031803	POWER CORD.3P-250V 10A 180D.1.8M.VDE. (Europe Type)	1
170203180E	Power cord.3P.125V/7A.1.8M.(Japan type)	1
1255201200	Power Adapter 12V/10A 120W FSP120-AHAN3 w/o Lock	1
1255X00063	AC/DC Adapter.100-240V.150W.12V/12.5A.AC C14 DC JACK W/Lock 180D. DELTA.DPS-150AB-15 J	1
170X000568	COM Cable.2ports.150mm	1
170X000576	USB2.0 Cable.2ports.100mm	1
170X000482	Audio cable.50mm	1
PICO-V2K4-SEMI-VESA1	VESA bracket kit	1
PICO-V2K4-SEMI-WMT1	Wallmount bracket kit	1
PICO-V2K4-SEMI-DIN1	Din rail kit	1

Note: All specifications are subject to change without notice.

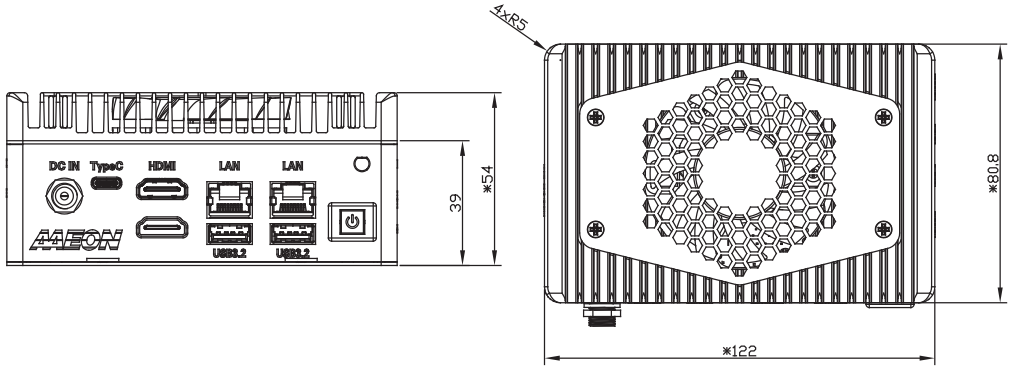
Block Diagram



Dimension

Unit: mm

Lite version

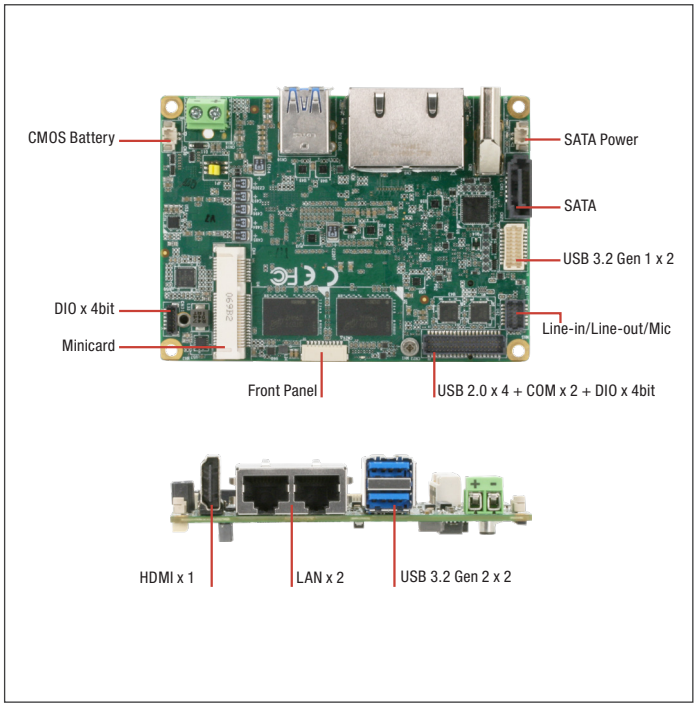


Ordering Information

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 1 2.5GbE x 1	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 1 2.5GbE x 1	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 1 2.5GbE x 1	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

Gigo LAN · LPDDR4 · USB 2.0 · USB 3.2 Gen 2 · HDMI

Internal I/O	
USB	USB3.2 Gen1 x 2 USB2.0 x 4
Serial Port	COM1~2 (RS232/422/485, support 5V/12V/RI)
Video	eDP x 1
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1
Audio	Audio Header (Optional, audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 8-bit
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)
Fan	4pins Smart Fan x1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mPCIe, select with BIOS)
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4]/SATA, Default: PCIe [x4], select with HW BOM)
Others	—
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

Specifications

System	
Form Factor	PICO-ITX
CPU	Intel® 11th Generation Core™ / Celeron Processors: i7-1185G7E (4C/8T, 1.80GHz, 15W) i5-1145G7E (4C/8T, 1.5GHz, 15W) i3-1115G4E (2C/4T, 2.20GHz, 15W) 6305E (2C/2T, 1.80GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory Type	Onboard LPDDR4x 3200, Dual Channel, In-Band ECC (select SKUs, Max.32GB)
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 20.10.2/Kernel 5.8.0-33-generic
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 32GB, 2.89A@ +12V (TYPICAL)
Display	
Controller	Intel® Iris® Xe (i5/i7 support) Intel® UHD Graphics (i3/Celeron support)
LVDS/eDP	eDP1.3 x 1, 3840 x 2160@60Hz
Display Interface	HDMI2.0 x 1, 3840 x 2160 @60Hz
Multiple Display	Up to 2 Simultaneous Displays
Audio	
Codec	Realtek ALC269 (Optional)
Audio Interface	Line-In / Line-Out / Mic (Optional, audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® i225/226, 2.5GbE, RJ-45 x 1 Intel® i219, 1GbE, RJ-45 x 1
USB	USB3.2 Gen2 x 2
Serial Port	—
Video	HDMI2.0 x 1

Packing List

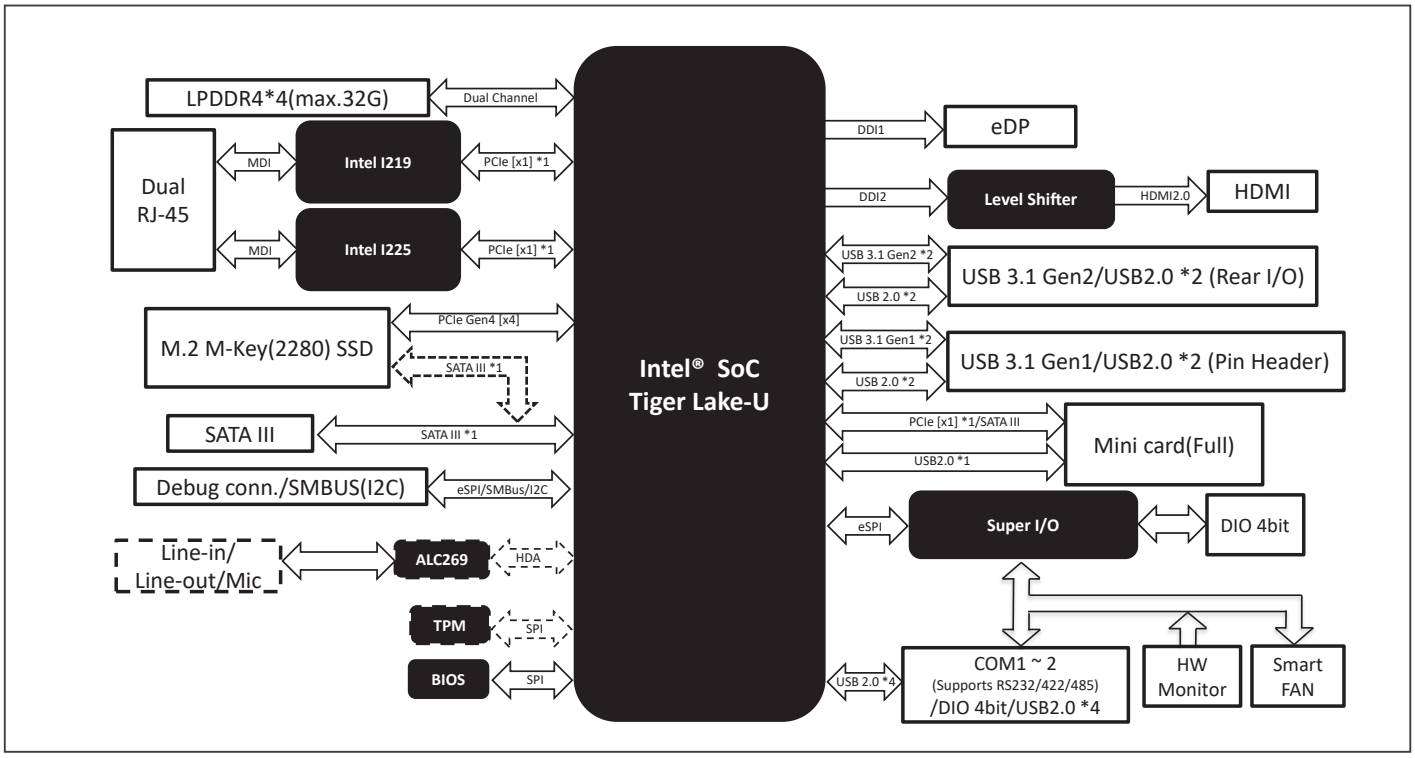
- PICO-TGU4

Optional Accessories

Part Number	Description	Qty.
170X000285	USB3.2 Cable.2 port.120mm	1
170X000284	combo Cable.2ports.120mm.	1
170X000287	Front Panel Cable.100mm	1
170X000156	Audio Cable.250mm	1
1709070500	SATA CABLE.500mm	1
170X000322	SATA Power Cable.60mm	1
PICO-TGU4-FAN01	CPU Cooler.100*72*24mm.AL Fin+CU Block.3600rpm.Smart FAN	1
PICO-TGU4-HSP01	Heat Spreader.AL Fin+CU Block.100*72*10.7mm	1
PER-P30D-A10	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	1

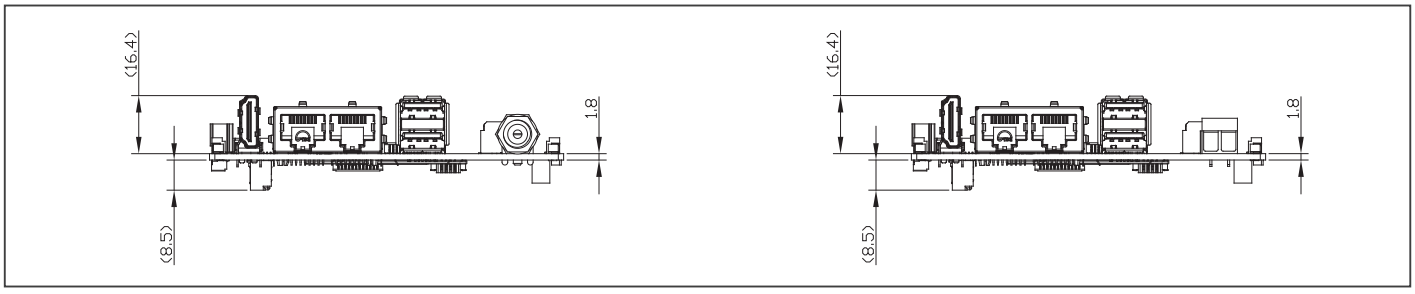
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



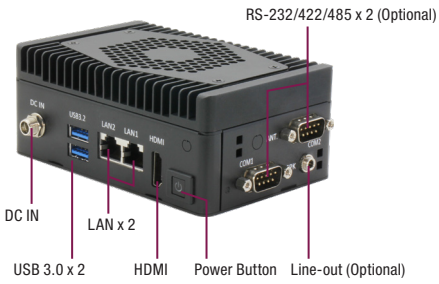
Ordering Information

Part Number	CPU	Memory	Display	Storage	LAN	USB	RS-232/ 422/485	Expansion Slot	Power	Operating Temp	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 (By request)

LPDDR4 2.5GbE USB 2.0 USB 3.2 Gen 2 PCIe Express CE FC

Internal I/O	
USB	—
Serial Port	—
Video	—
SATA	—
Audio	Line-out (By request)
DIO/GPIO	—
SMBus/I2C	—
Fan	4pins Smart Fan x 1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mPCIe, select with BIOS)
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4]/SATA, Default: PCIe [x4], select with HW BOM)
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)	424,208
EMC	CE/FCC Class A

Specifications

System	
Form Factor	PICO-SEMI
CPU	Intel® 11th Generation Core™ / Celeron Processors: i7-1185G7E (4C/8T, 1.80GHz, 15W) i5-1145G7E (4C/8T, 1.5GHz, 15W) i3-1115G4E (2C/4T, 2.20GHz, 15W) 6305E (2C/2T, 1.80GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory Type	Onboard LPDDR4x 3200, Dual Channel, In-Band ECC (select SKUs, Max.32GB)
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 20.10.2/Kernel 5.8.0-33-generic
Power	
Power Requirement	+12V
Power Supply Type	ATX
Connector	DC Jack Connector
Power Consumption	Intel® i7-1185G7E, LPDDR4x 32GB, 2.89A@ +12V (TYPICAL)
Display	
Controller	Intel® Iris® Xe (i5/i7 support) Intel® UHD Graphics (i3/Celeron support)
LVDS/eDP	—
Display Interface	HDMI2.0 x 1, 3840 x 2160 @60Hz
Multiple Display	Single display
Audio	
Codec	Realtek ALC269 (By request)
Audio Interface	Line-out (By request)
Speaker	—
External I/O	
Ethernet	Intel® i225/226, 2.5GbE, RJ-45 x 1 Intel® i219, 1GbE, RJ-45 x 1
USB	USB3.2 Gen2 x 2
Serial Port	COM1~2 (RS232/422/485, support 5V/12V/RI, Optional)
Video	HDMI2.0 x 1

Packing List

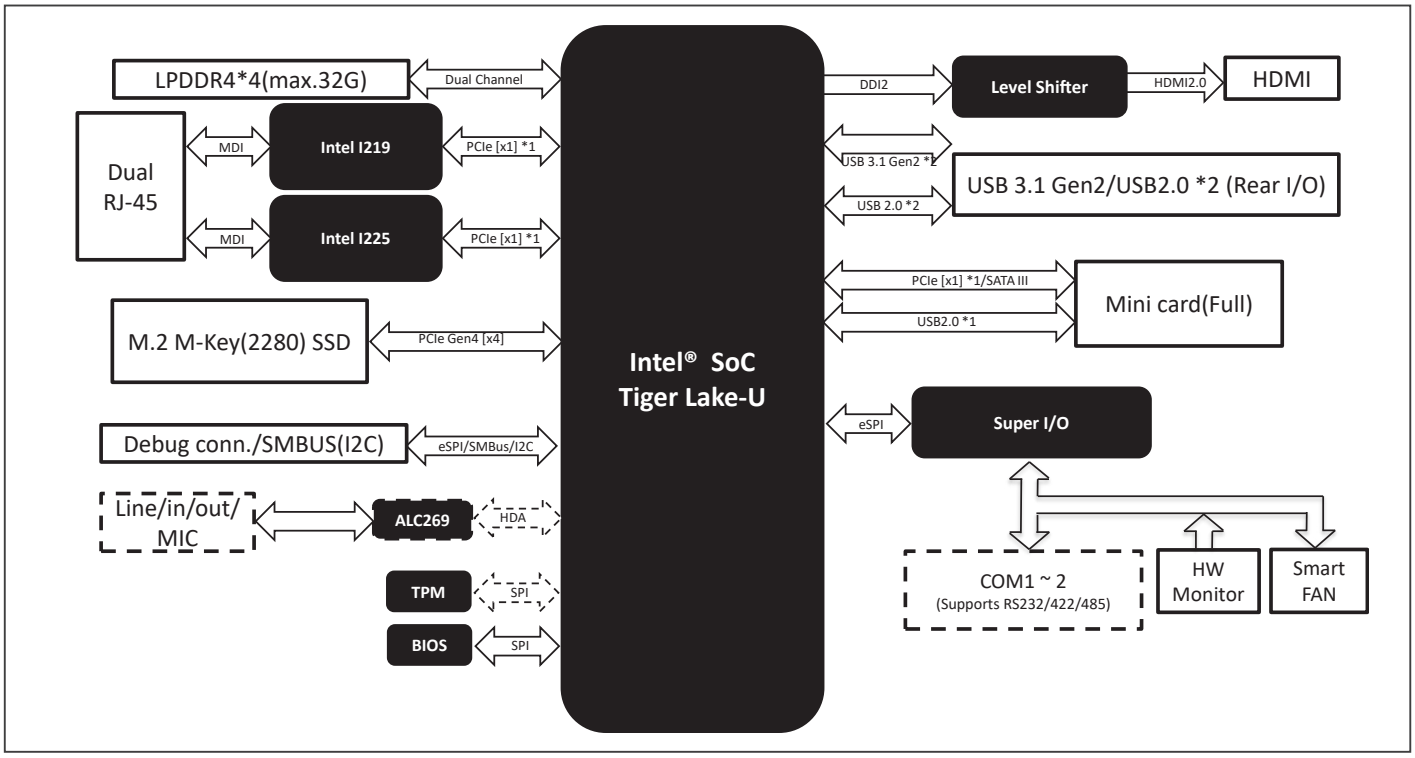
- PICO-TGU4-SEMI

Optional Accessories

Part Number	Description	Qty.
1702031802	POWER CORD.3P-125V 10A 180D.1.8M (US Type)	1
1702031803	POWER CORD.3P-250V 10A 180D.1.8M.VDE (Europe Type)	1
170203180E	Power cord.3P.125V/7A.1.8M.PSE (Japan type)	1
1255X00063	Power Adapter 12V/12.5A 150W	1
170X000482	Audio cable.50mm	1
170X000483	Dual COM cable. 120mm	1
PICO-TGU4-SEMI-VESA1	VESA bracket kit	1
PICO-TGU4-SEMI-WMT1	Wallmount bracket kit	1
PICO-V2K4-SEMI-DIN1	Din rail kit	1

Note: All specifications are subject to change without notice.

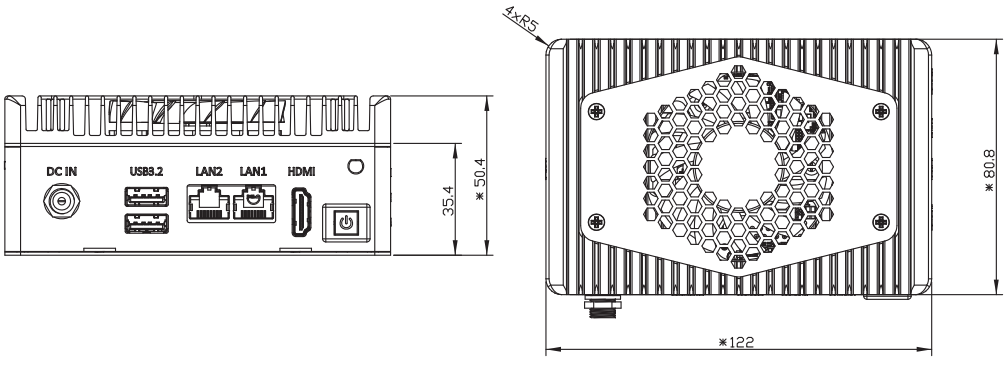
Block Diagram



Dimension

Unit: mm

Lite version

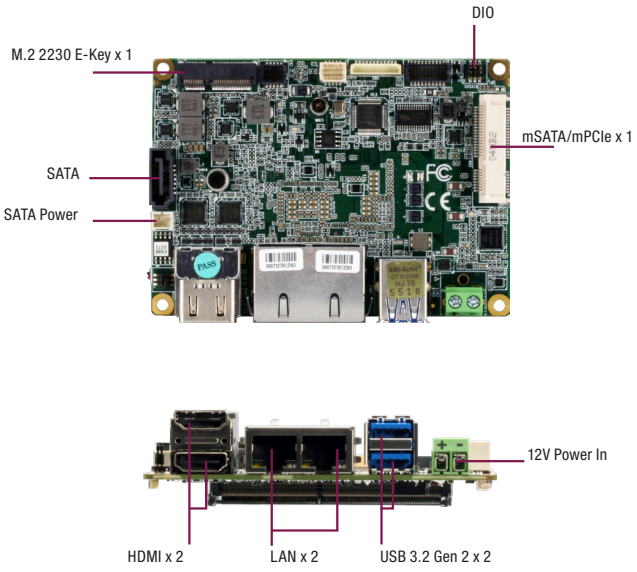


Ordering Information

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
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
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
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

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)

Gigo LAN · DDR 4 · USB 2.0 · USB 3.2 Gen 2 · HDMI

Specifications

System	
Form Factor	PICO-ITX
CPU	Intel® 8th Generation Core™ / Celeron Processors: i7-8665UE (4C/8T, 1.70GHz, 15W) i5-8365UE (4C/8T, 1.60GHz, 15W) i3-8145UE (2C/4T, 2.20GHz, 15W) 4305UE (2C/2T, 2.00GHz,15W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR4 2400, SODIMM x 1, Non-ECC (Max. 32GB)
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) Linux Ubuntu 18.04.3/Kernel 5.3.0-51-generic
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 1.4 x 2, up to 3840 x 2160 @30Hz
Multiple Display	Up to 2 Simultaneous Displays
Audio	
Codec	—
Audio Interface	—
Speaker	—
External I/O	
Ethernet	Realtek 8111 1GbE, RJ45 x 2
USB	USB 3.2 Gen2 x 2
Serial Port	—
Video	HDMI 1.4 x 2

Internal I/O	
USB	USB2.0 x 2
Serial Port	COM1~2 (RS232/422/485, support 5V/12V/RI)
Video	—
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1
Audio	—
DIO/GPIO	GPIO 4-bit
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)
Fan	4pins Smart Fan x1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mPCIe, select with BIOS)
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0)
Others	—
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

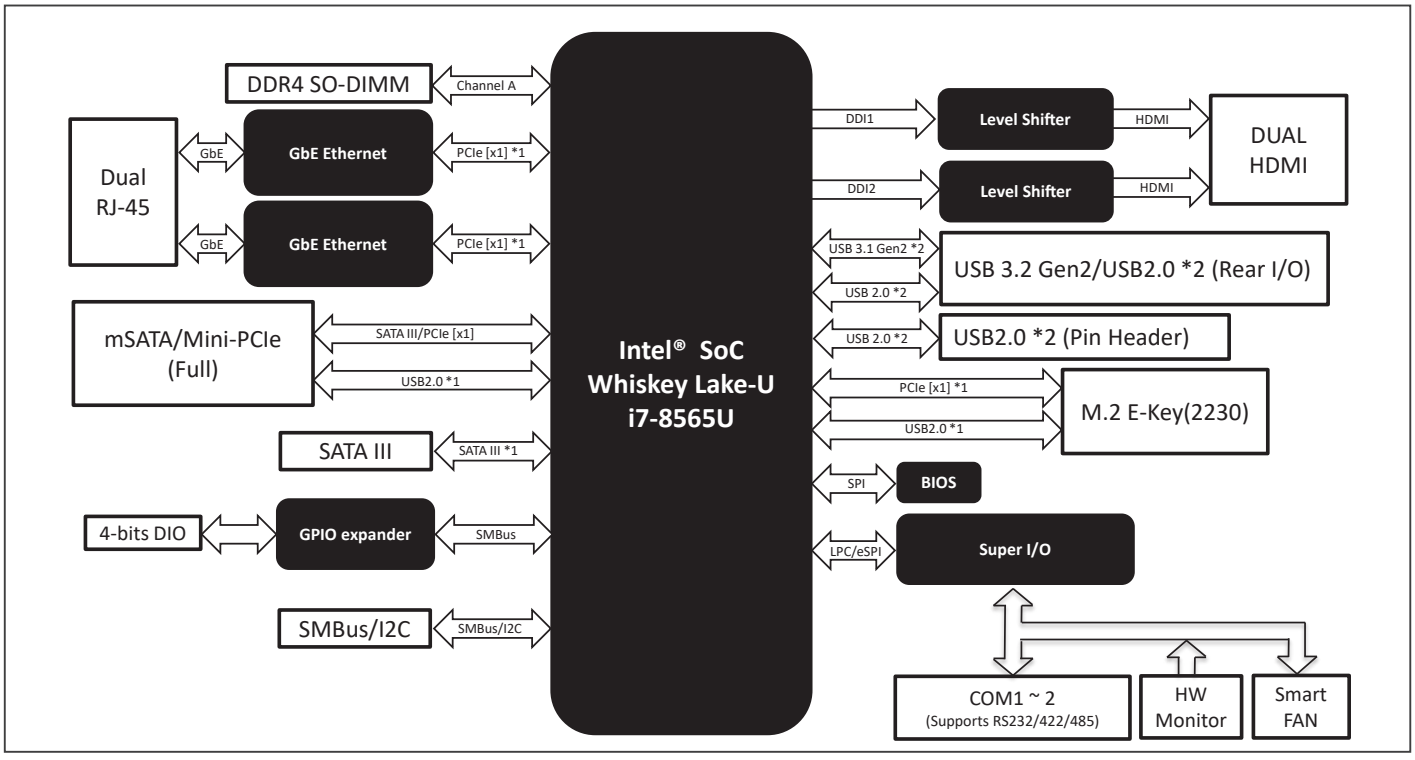
- **PICO-WHU4**

Optional Accessories

Part Number	Description	Qty.
1702150155	SATA Power Cable.150mm	1
170X000593	SATA CABLE.15cm	1
1701200102	SERIAL Cable.2ports.100mm	1
170010010D	USB Cable.2ports.100mm	1
1702030200	Power cable (Phoenix type to DC Jack).20cm	1
PICO-WHU4-FAN01	CPU Cooler.100*72*24mm.Silver	1
PICO-WHU4-HSP01	Heat Spreader.Silver.100*72*10.5mm	1
PER-P30D-A10-0001	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	1

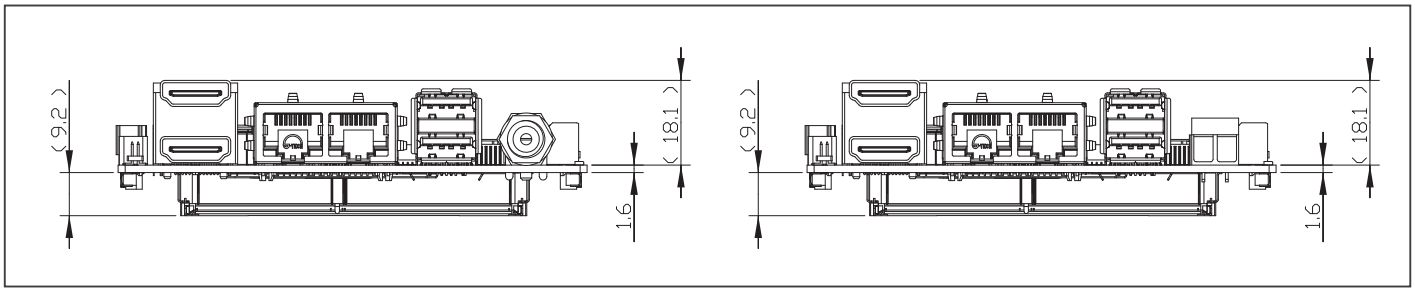
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



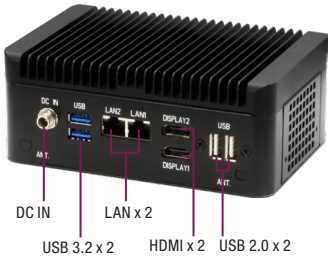
Ordering Information

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





Specifications

System	
Form Factor	PICO-SEMI
CPU	Intel® 8th Generation Core™ / Celeron Processors: i7-8665UE (4C/8T, 1.70GHz, 15W) i5-8365UE (4C/8T, 1.60GHz, 15W) i3-8145UE (2C/4T, 2.20GHz, 15W) 4305UE (2C/2T, 2.00GHz,15W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR4 2400, SODIMM x 1, Non-ECC (Max. 32GB)
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	—
RTC Battery	Lithium Battery 3V/240mAh
Dimension	5.9" 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) Linux Ubuntu 18.04.3/Kernel 5.3.0-51-generic
Power	
Power Requirement	+12V
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 1.4 x 2, up to 3840 x 2160 @30Hz
Multiple Display	2 Simultaneous Displays
Audio	
Codec	—
Audio Interface	—
Speaker	—
External I/O	
Ethernet	Realtek 8111 1GbE, RJ45 x 2
USB	USB 3.2 Gen2 x 2 USB 2.0 x 2
Serial Port	COM1~2 (RS232/422/485, support 5V/12V/RI, Optional)
Video	HDMI 1.4 x 2

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

Gigo LAN · DDR 4 · USB 2.0 · USB 3.2 Gen 2 · HDMI

Internal I/O	
USB	—
Serial Port	—
Video	—
SATA	SATA 6.0 Gb/s x 1(Optional) +5V SATA Power Connector x 1
Audio	—
DIO/GPIO	—
SMBus/I2C	—
Fan	4pins Smart Fan x1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mPCIe, select with BIOS)
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0)
Others	—
Environment & Certification	
Operating Temp	32°F ~ 122°F (0°C ~ 50°C) with airflow 0.5m/s for 2.5" 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

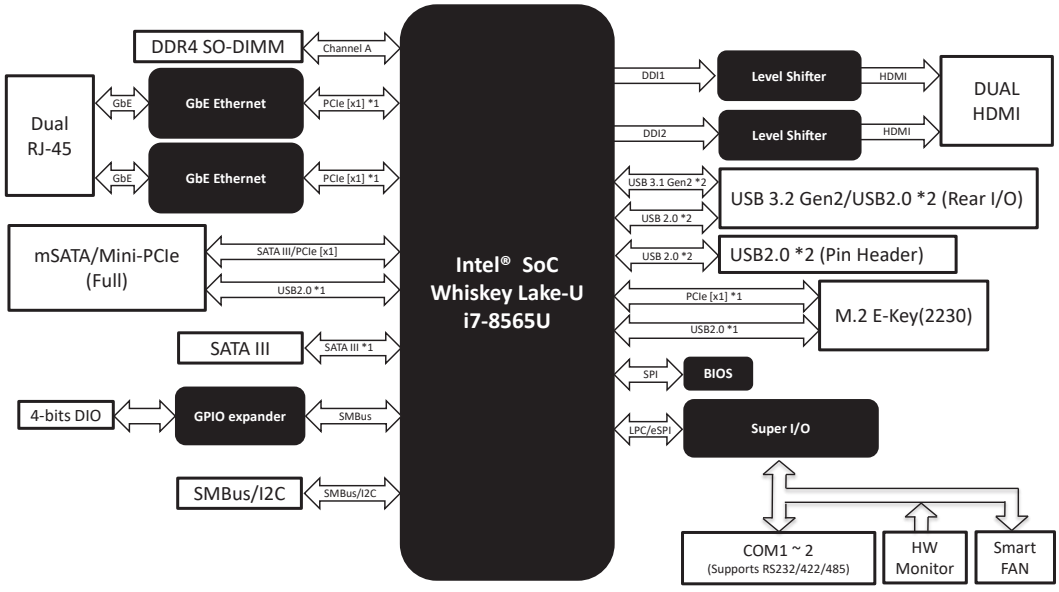
- PICO-WHU4-SEMI

Optional Accessories

Part Number	Description	Qty.
1701200102	COM Port Cable.2ports.100mm	1
1255300960	Power Adapter.100-240VAC~50/60Hz.12V/8A.96W.DC jack W/lock.FSP.FSP096-AHAN3/9NA0961403	1
1702031802	POWER CORD.3P-125V 10A 180D.1.8M USA (US Type)	1
1702031803	POWER CORD.3P-250V 10A 180D.1.8M.VDE (Europe Type)	1
170203180E	Power cord.3P.125V/7A.1.8M (Japan type)	1
PICO-WHU4-SEMI-VESA1	VESA bracket kit	1
PICO-WHU4-SEMI-WMT1	Wallmount bracket kit	1

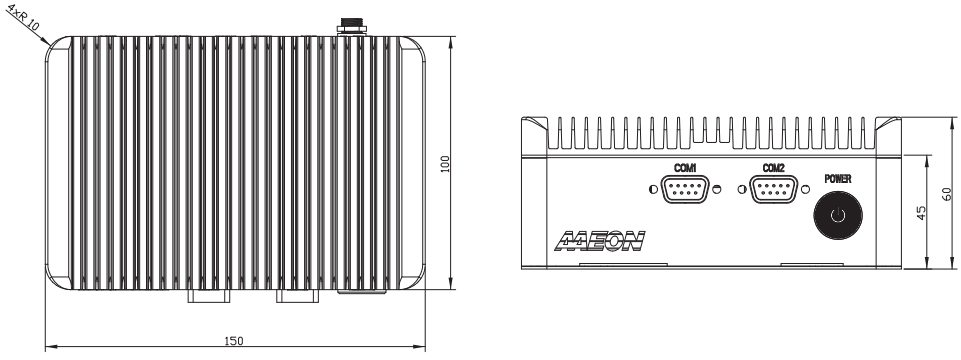
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

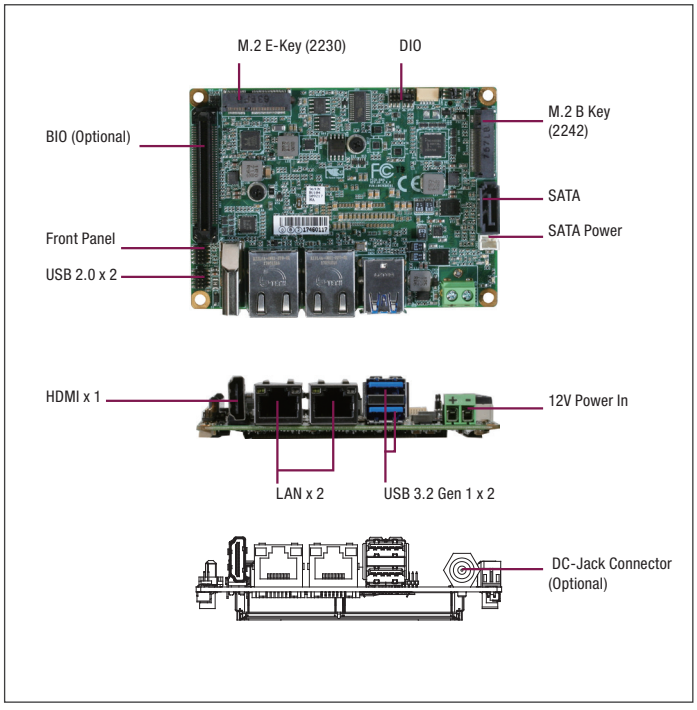


Ordering Information

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	Barebone kit
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	Barebone kit
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	Barebone kit
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	Barebone kit
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	System kit

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 16GB
- Dual Gigabit Ethernet Support
- HDMI 1.4b, LVDS 2CH Display
- USB 3.2 Gen 1 x 2, USB 2.0 x 2, SATA III x 1
- COM 1: RS-232, COM 2: RS-232/422/485
- M.2 2242 B-Key x 1, M.2 2230 E-Key x 1
- BIO (Optional)

Gigo LAN · DDR 4 · USB 2.0 · USB 3.2 Gen 1 · HDMI

Specifications

System	
Form Factor	PICO-ITX
CPU	7th Generation Intel® Core™/Celeron® Processors: Intel® Core™ i7-7600U (2C/4T, 2.80GHz, 15W) Intel® Core™ i5-7300U (2C/4T, 2.60GHz, 15W) Intel® Core™ i3-7100U (2C/4T, 2.40GHz, 15W) Intel® Celeron® Processor 3965U (2C/2T, 2.20GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR4 2133, SODIMM x 1, Non-ECC (Max. 16GB)
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) Linux Ubuntu 16.04.3/Kernel 4.10.0
Power	
Power Requirement	+12V
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
Power Consumption	Intel® Core™ i7-7600U , DDR4 16GB, 1.53A@ +12V(TYPICAL)
Display	
Controller	Intel® HD Graphics 510/620
LVDS/eDP	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz DDI (Via BIO, Optional)
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	Realtek ALC269
Audio Interface	Line-Out (Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Realtek 8111 1GbE, RJ45 x 2
USB	USB 3.2 Gen1 x 2
Serial Port	—
Video	HDMI 1.4 x 1

Internal I/O	
USB	USB 2.0 x 2
Serial Port	COM1 (RS232) COM2 (RS232/422/485, support 5V/12V/RI)
Video	LVDS x 1
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1
Audio	Line-out header x 1 (Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 4-bit
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)
Fan	4pins Smart Fan x1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	—
M.2	M.2 2242 B-Key x 1 (PCIe 3.0 [x1]/SATA, Default: mSATA, select with BIOS) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0)
Others	BIO x 1 (Optional, supports PCIe [x1] x 2, line out, DDI, GPIO, LPC, SMBUS/I2C,USB.3.0/2.0)
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)	163,000
EMC	CE/FCC Class A

Packing List

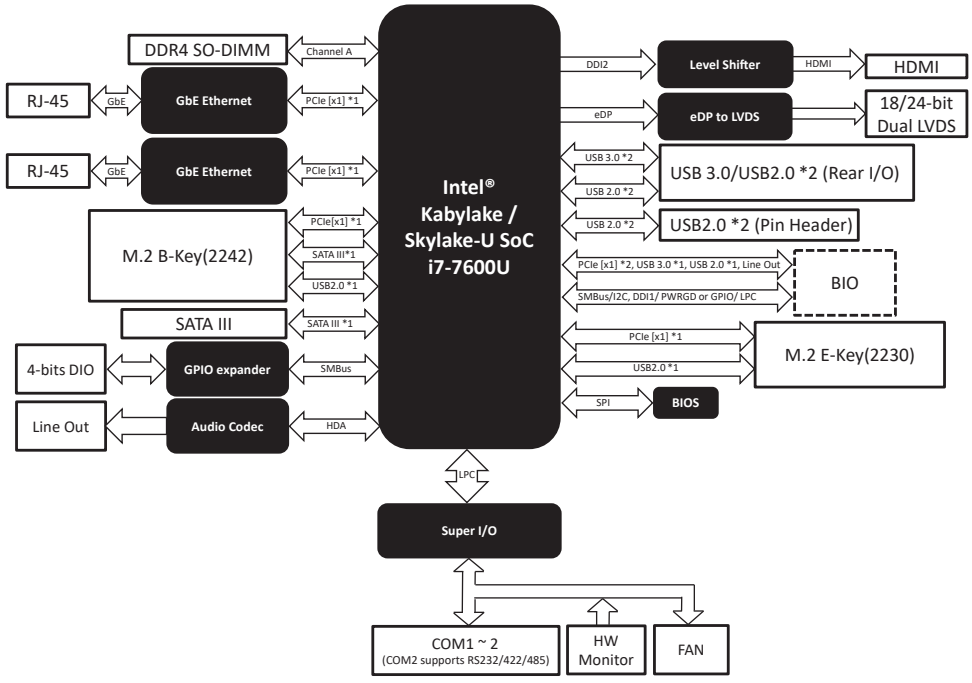
- PICO-KBU4

Optional Accessories

Part Number	Description	Qty.
1709070500	SATA CABLE.500mm	1
1702150155	SATA Power Cable.150mm	1
170010010D	USB Cable.2ports.100mm	1
1701200101	COM Cable 2ports. + line-out. 100mm	1
PICO-KBU4-HSP01	Heat Spreader.100*72*10.5mm	1
PICO-KBU4-FAN01	CPU Cooler.100*72*10.5mm.Silver	1
PER-P30D-A10	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	1

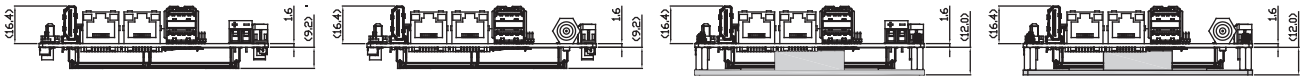
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Without Heat-spreader

With Heat-spreader

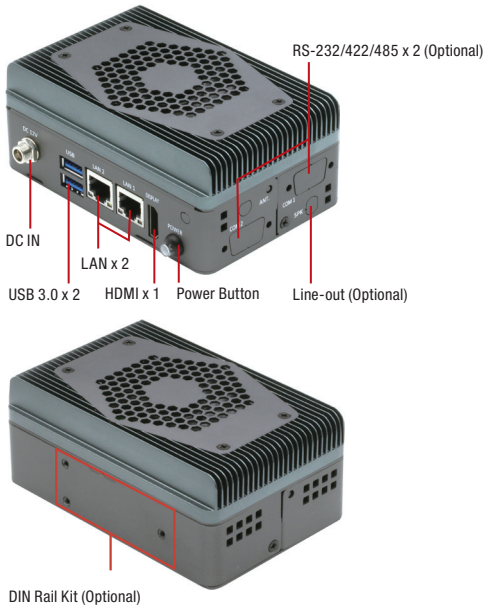
* DC Jack is optional

Ordering Information

Part Number	CPU	Memory	Display	Storage	LAN	USB	RS-232	RS-232/ 422/485	Expansion Slot	Power	Operating Temp	Others
PICO-KBU4-A10-0001	Celeron ® 3965	DDR4 Socket	HDMI x 1 LVDS x 1	SATAIII 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 M.2 2242 B-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	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 M.2 2242 B-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	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 M.2 2242 B-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	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 M.2 2242 B-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	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 M.2 2242 B-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	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 M.2 2242 B-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	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 M.2 2242 B-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	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 M.2 2242 B-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

- Lightweight system, easy to deploy
- DDR4 SODIMM Slot x 1, up to 16GB (Non-ECC)
- 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 I/O)
- Lockable DC 12V

Specifications

System	
Form Factor	PICO-SEMI
CPU	7th Generation Intel® Core™/Celeron® Processors: Intel® Core™ i7-7600U (2C/4T, 2.80GHz, 15W) Intel® Core™ i5-7300U (2C/4T, 2.60GHz, 15W) Intel® Core™ i3-7100U (2C/4T, 2.40GHz, 15W) Intel® Celeron® Processor 3965U (2C/2T, 2.20GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR4 2133, SODIMM x 1, Non-ECC (Max. 16GB)
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) Linux Ubuntu 16.04.3/Kernel 4.10.0
Power	
Power Requirement	+12V
Power Supply Type	ATX
Connector	Lockable DC Jack Connector
Power Consumption	Intel® i7-7600, DDR4 16GB, 1.53A@ +12V(TYPICAL)
Display	
Controller	Intel® HD Graphics 510/620
LVDS/eDP	—
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz
Multiple Display	1 Simultaneous Display
Audio	
Codec	Realtek ALC269 (Optional)
Audio Interface	Line-out (Optional)
Speaker	—
External I/O	
Ethernet	Realtek 8111 1GbE, RJ45 x 2
USB	USB 3.2 Gen1 x 2
Serial Port	COM1 (RS232, Optional) COM2 (RS232/422/485, support 5V/12V/RI, Optional)
Video	HDMI 1.4 x 1

Internal I/O	
USB	—
Serial Port	—
Video	—
SATA	—
Audio	Line-out (Optional)
DIO/GPIO	—
SMBus/I2C	—
Fan	4pins Smart Fan x1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	—
M.2	M.2 2242 B-Key x 1 (PCIe 3.0 [x1]/SATA, Default: mSATA, select with BIOS) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + 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)	163,000
EMC	CE/FCC Class A

Packing List

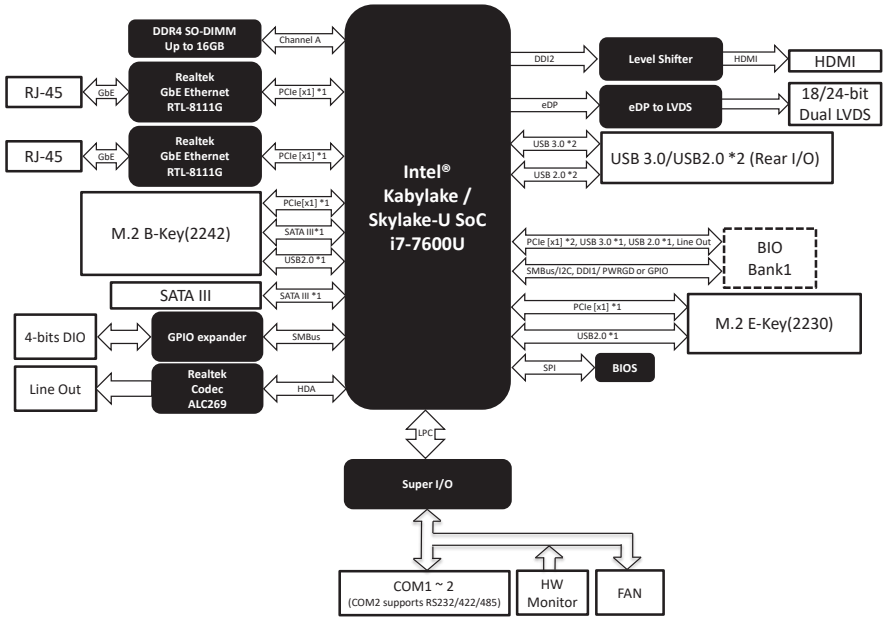
- PICO-KBU4-SEMI

Optional Accessories

Part Number	Description	Qty.
125530040C	Power Adapter.12V.40W.FSP.FSP040-DHAN3.9NA0406805	1
125530060Z	Power Adapter 12V/5A 60W FSP060-DHAN3	1
1702031802	POWER CORD.3P-125V 10A 180D.1.8M USA (US Type)	1
1702031803	POWER CORD.3P-250V 10A 180D.1.8M.VDE (Europe Type)	1
170203180E	Power cord.3P.125V/7A.1.8M (Japan type)	1
1701200101	COM Port Cable.2ports.100mm	1
9761SEMI01	DIN-RAIL Kits	1
9761SEMI00	WALL MOUNT KITS	1

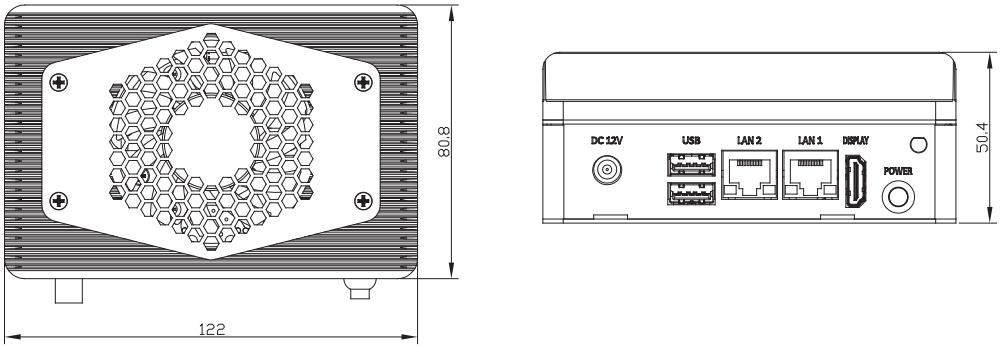
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

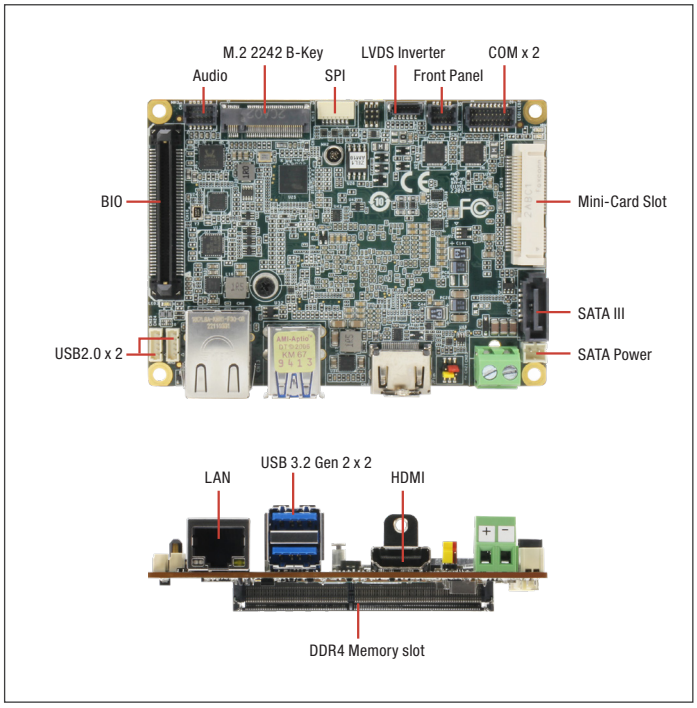


Ordering Information

Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	Operating Temp	Others
PICO-KBU4-SEMI-A10-B001	Intel® Celeron® Processor 3965U	DDR4 Socket	w/Cooler	HDMI x 1	SATAIII x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear)	—	—	M.2 2230 E-Key x 1 M.2 2242 B-Key x 1	+12V (ATX)	0°C ~ 50°C	DIO 4 bit
PICO-KBU4-SEMI-A10-B002	Intel® Core™ i3-7100U	DDR4 Socket	w/Cooler	HDMI x 1	SATAIII x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear)	—	—	M.2 2230 E-Key x 1 M.2 2242 B-Key x 1	+12V (ATX)	0°C ~ 50°C	DIO 4 bit
PICO-KBU4-SEMI-A10-B003	Intel® Core™ i5-7300U	DDR4 Socket	w/Cooler	HDMI x 1	SATAIII x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear)	—	—	M.2 2230 E-Key x 1 M.2 2242 B-Key x 1	+12V (ATX)	0°C ~ 50°C	DIO 4 bit
PICO-KBU4-SEMI-A10-B004	Intel® Core™ i7-7600U	DDR4 Socket	w/Cooler	HDMI x 1	SATAIII x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear)	—	—	M.2 2230 E-Key x 1 M.2 2242 B-Key x 1	+12V (ATX)	0°C ~ 50°C	DIO 4 bit
PICO-KBU4-SEMI-A10-B005 (6th Gen)	Intel® Celeron® Processor 3965U	DDR4 Socket	w/Cooler	HDMI x 1	SATAIII x 1	GbE x 2	USB 3.2 Gen 1 x 2 (Rear)	—	—	M.2 2230 E-Key x 1 M.2 2242 B-Key x 1	+12V (ATX)	0°C ~ 50°C	DIO 4 bit

PICO-EHL1

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



Features

- DDR4 3200MHz SODIMM x 1, up to 32GB
- eDP 1.3/LVDS x 1 (2CH 18/24-bit)
- HDMI 1.4b x 1
- Realtek RTL8111H-CG x 1
- Line-in/Line-out/MIC (Optional)
- TPM 2.0 (Optional)
- Full Size mPCIe/mSATA x 1
- M.2 2242 B-Key x 1
- USB 3.2 Gen 2 x 2, USB 2.0 x 2
- RS-232/422/485 x 2
- BIO (PCIe [x2], line out, DDI, GPIO, LPC, SMBUS, USB 3.0/2.0)

1000 Gigo LAN · USB 2.0 · USB 3.2 Gen 2 · HDMI

Specifications

System	
Form Factor	PICO-ITX
CPU	Intel® Atom® x6000E series, Pentium®, and Celeron® N and J series Processors: J6412 (4C/4T, 2.00GHz, 10W) N6210 (2C/2T, 1.20GHz, 6.5W) x6425E (4C/4T, 2.0GHz, 12W) x6211E (2C/2T, 1.3GHz, 6W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR4 3200, SODIMM x 1, Non-ECC (Max.32GB)
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 20.04.5/Kernel 5.15
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, DDR4 32GB, 2.67A@ +12V (TYPICAL) Intel Atom® x6425E, DDR4 32GB, 2.84A@ +12V (MAX)
Display	
Controller	Intel® UHD Graphics for 10th Gen Intel® Processors
LVDS/eDP	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz eDP1.3 x 1, 3840 x 2160 @60Hz (Optional)
Display Interface	HDMI 1.4 x 1, 3480 x 2160 @30Hz
Multiple Display	Up to 2 Simultaneous Displays
Audio	
Codec	Realtek ALC269 (Optional)
Audio Interface	Line-In / Line-Out / Mic (Optional, audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Realtek 8111H-CG 1GbE, RJ45 x 1
USB	USB 3.2 Gen2 x 2
Serial Port	—
Video	HDMI 1.4 x 1

Internal I/O	
USB	USB 2.0 x 2
Serial Port	COM1~2 (RS232/422/485, support 5V/12V/RI)
Video	LVDS/eDP x 1(Default: LVDS)
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Optional, audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 4-bit
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)
Fan	4pins Smart Fan x1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mSATA, select with BIOS)
M.2	M.2 2242 B-key x 1 (PCIe [x2] as default, USB2.0 is optional)
Others	BIO x 1 (Optional, supports PCIe [x1] x 2, line out, DDI, GPIO, LPC, SMBUS,USB.3.0/2.0)
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)	489,989
EMC	CE/FCC Class A

Packing List

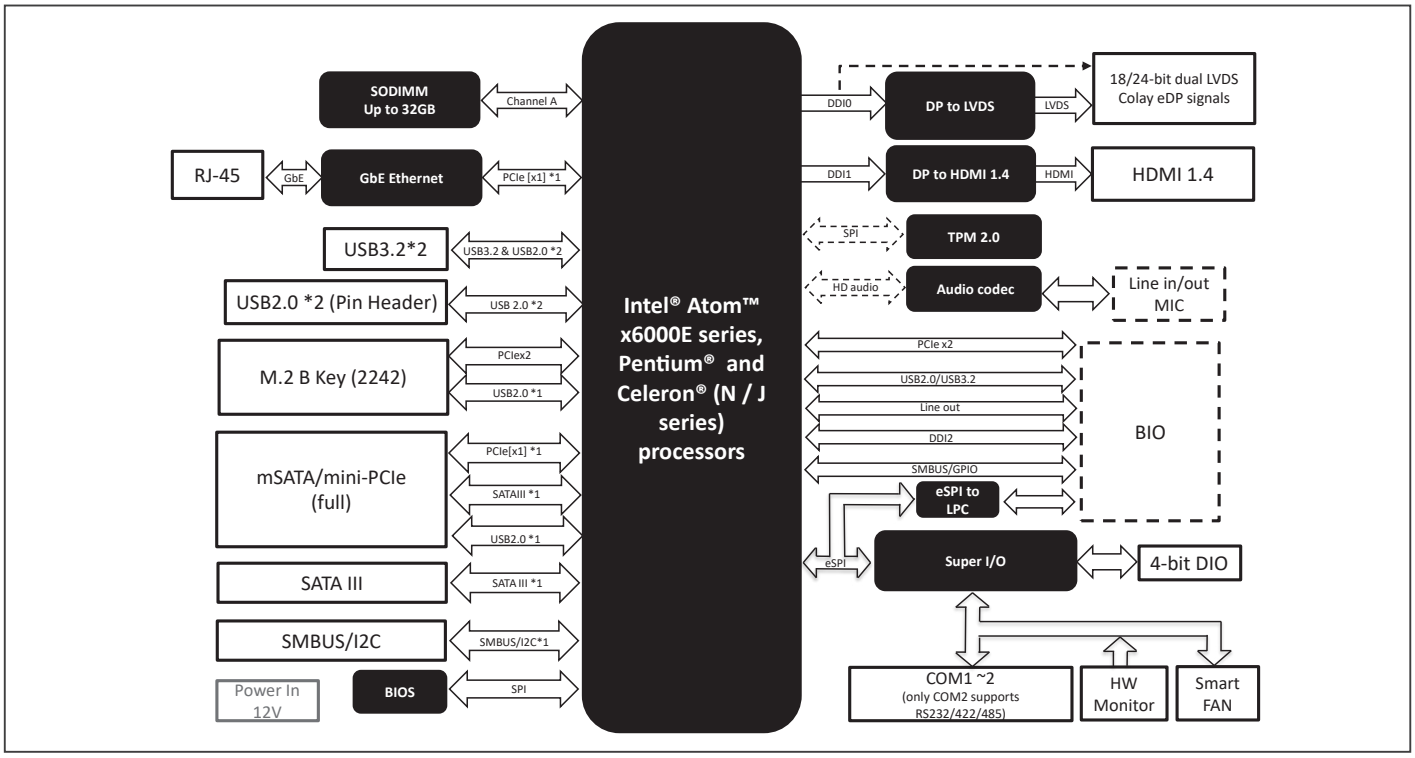
- PICO-EHL1

Optional Accessories

Part Number	Description	QTY
1709100108	Front Panel cable.10cm	1
170X000231	Dual COM cable.30cm	1
1700050207	USB2.0 cable.20cm	1
170X000593	SATA CABLE.15cm	1
1702150155	SATA power cable.15cm	1
1702030200	Power cable (Phoenix type to DC Jack).20cm	1
170X000156	Audio cable.25cm	1
PICO-EHL1-FAN01	Cooler.100*72*24mm.for J6412/N6210	1
PICO-EHL1-FAN02	Cooler.100*72*22.8mm.for x6425E/x6211E	1
PICO-EHL1-HSP01	Heat Spreader.AL.100*72*10.5mm.for J6412/N6210	1
PICO-EHL1-HSP02	Heat Spreader.AL.100*72*9.3mm.for x6425E/x6211E	1
PICO-EHL4-HSK01	Heat Sink.100*72*15.5mm.Silver.To be used with HS	1
PER-P30D-A10	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	1

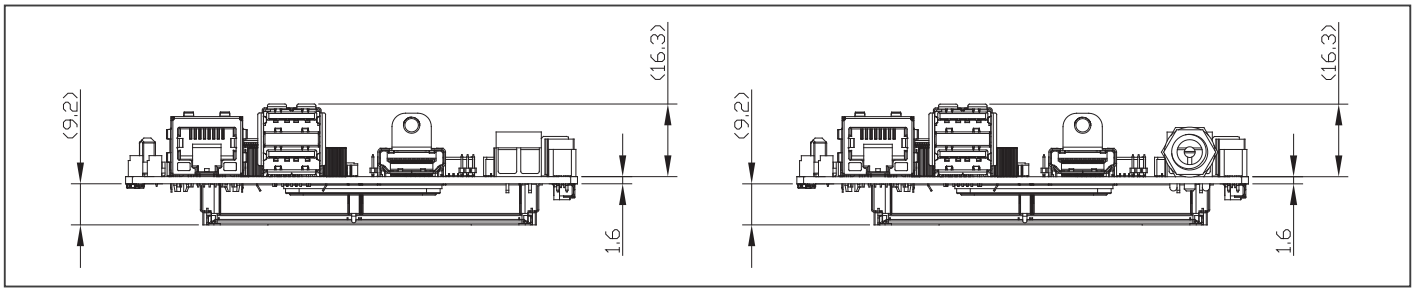
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

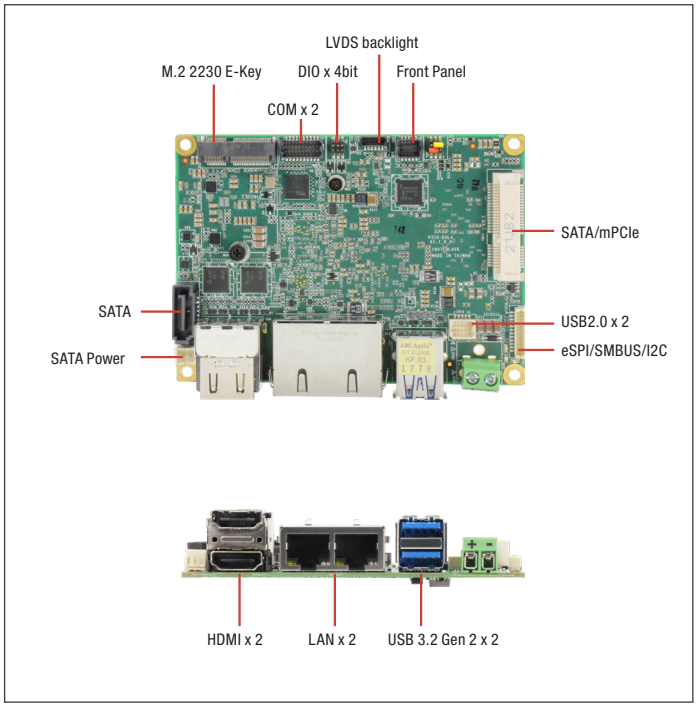


Ordering Information

Part number	CPU	Display	Storage	LAN	USB	RS-232/422/485	Expansion slot	Power	Operating Temp	Others
PICO-EHL1-A10-0001	Intel® Celeron® Processor N6210	HDMI x 1 LVDS x 1	SATA III x 1	GbE x 1	USB 2.0 x 2 USB 3.2 Gen 2 x 2	2	M.2 2242 B-Key x 1 Full Size Mini Card x 1	+12V (Terminal block)	0~60°C	DIO
PICO-EHL1-A10-0002	Intel® Celeron® Processor J6412	HDMI x 1 LVDS x 1	SATA III x 1	GbE x 1	USB 2.0 x 2 USB 3.2 Gen 2 x 2	2	M.2 2242 B-Key x 1 Full Size Mini Card x 1	+12V (Terminal block)	0~60°C	DIO
PICO-EHL1W2-A10-0003	Intel Atom® x6425E	HDMI x 1 LVDS x 1	SATAIII x 1	GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2242 B-key x 1 miniCard (Full) x 1	+12V (Terminal block)	-40~85°C	DIO

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**

Gigo LAN · LPDDR4 · USB 2.0 · USB 3.2 Gen 2 · HDMI

Specifications

System	
Form Factor	PICO-ITX
CPU	Intel® Atom® x6000E series, Pentium®, and Celeron® N and J series Processors: J6412 (4C/4T, 2.00GHz, 10W) N6210 (2C/2T, 1.20GHz, 6.5W) x6425E (4C/4T, 2.0GHz, 12W) x6211E (2C/2T, 1.3GHz, 6W)
Chipset	Integrated with Intel® SoC
Memory Type	Onboard LPDDR4x 3200, Single Channel, Non-ECC (Max.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 20.04.4/Kernel 5.13.0-30-generic
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	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz eDP1.3 x 1, 3840 x 2160 @60Hz (Optional)
Display Interface	HDMI 2.0 x 2, 3840 x 2160 @60Hz
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	—
Audio Interface	—
Speaker	—
External I/O	
Ethernet	Realtek 8111 1GbE, RJ45 x 2
USB	USB 3.2 Gen2 x 2
Serial Port	—
Video	HDMI 2.0 x 2
Internal I/O	
USB	USB 2.0 x 2
Serial Port	COM1~2 (RS232/422/485, support 5V/12V/RI)
Video	LVDS/eDP x 1(Default: LVDS)
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1 eMMC5.1 32GB (Optional to 16/64/128GB)
Audio	—
DIO/GPIO	GPIO 4-bit
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)
Fan	4pins Smart Fan x1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full size mPCIe/mSATA x 1 (SATA as default, PCIe selected by BIOS)
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + 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) 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)	489,989
EMC	CE/FCC Class A

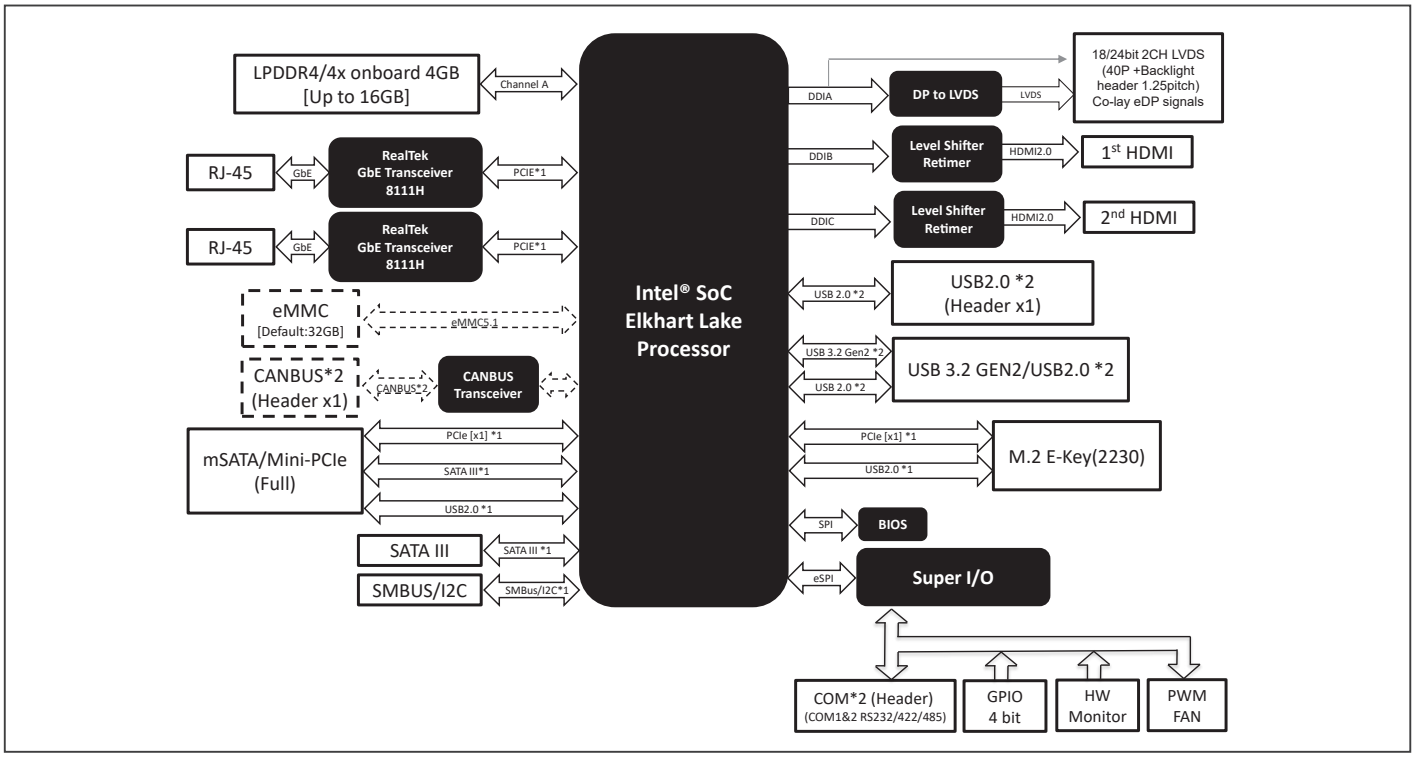
Optional Accessories

Part Number	Description	Qty.
170X000231	Dual COM cable.300mm	1
170010010D	Dual USB2.0 cable.100mm	1
1702150155	SATA power cable.150mm	1
170X000593	SATA CABLE.15cm	1
1709100108	Front panel cable.100mm	1
1702030200	Power cable (Phoenix type to DC Jack).20cm	1
PICO-EHL4-HSP01	Heat Spreader.AL.100*72*6.8mm.for J6412/N6210	1
PICO-EHL4-HSP02	Heat Spreader.AL.100*72*5.8mm.for x6425E/x6211E	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 J6412/N6210	1
PICO-EHL4-FAN02	Cooler.100*72*19.3mm.for x6425E/x6211E	1
PER-P30D-A10-0001	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	1

Note:
eDP Panel : B173ZAN01.0-AUO LVDS Panel : G101EVN01.0-AUO

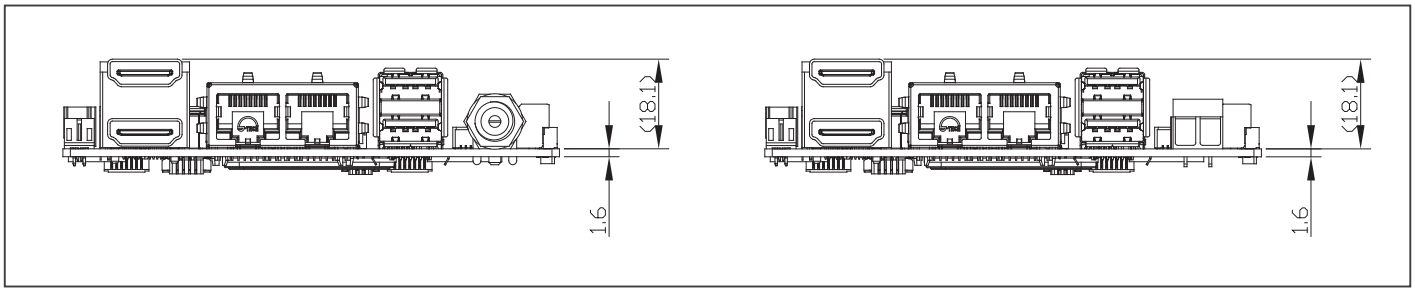
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Packing List

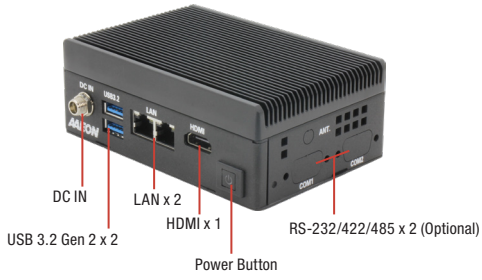
- **PICO-EHL4**

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	GPIO 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	GPIO 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	GPIO 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	GPIO 4 bit SMBUS/eSPI x 1
PICO-EHL4W2-A11-0005	x6425E	16GB	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	-40°C ~ 85°C	GPIO 4 bit SMBus/eSPI x 1

PICO-EHL4-SEMI

PICO-SEMI TurnKit with Intel® Pentium® and Celeron® N and J Series Processors





Features

- **Intel® Pentium®, and Celeron® N and J series processors (formerly Elkhart Lake)**
- **Onboard LPDDR4x System Memory**
- **32GB eMMC5.1 (Optional: 64GB/128GB)**
- **HDMI 2.0 x 1**
- **GbE x 2, USB 3.2 Gen 2 x 2**
- **Mini Card x 1, M.2 2230 E-Key x 1**
- **COM x 2 (Optional)**

Giga LAN · LPDDR4 · USB 2.0 · USB 3.2 Gen 2 · HDMI

Specifications

System	
Form Factor	PICO-SEMI
CPU	Intel® Celeron® Processor J6412 (4C/4T, 2.00 GHz, 10W) Intel® Celeron® Processor N6210 (2C/2T, 1.20 GHz, 6.5W)
Chipset	Integrated with Intel® SoC
Memory Type	Onboard Single-Channel LPDDR4x 3200MHz (Max. 16GB, Non ECC)
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	Intel® PTT (Integrated TPM)
RTC Battery	Lithium Battery 3V/240mAh
Dimension	4.80" x 3.18" x 1.75" (122mm x 80.8mm x 44.4mm)
Gross Weight	0.88 lb. (0.40kg)
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® Pentium® J6426, LPDDR4x onboard 16GB, 1.43A@ +12V(TYPICAL) Intel® Pentium® J6426, LPDDR4x onboard 16GB, 1.78A@ +12V(MAX)
Display	
Controller	Intel® UHD Graphics for 10th Gen Intel® Processors
LVDS/eDP	—
Display Interface	HDMI 2.0 x 1, 3840 x 2160 @60Hz
Multiple Display	Up to 1 Display
Audio	
Codec	—
Audio Interface	—
Speaker	—
External I/O	
Ethernet	RTL8111H-CG 1GbE, RJ45 x 2
USB	USB 3.2 Gen 2 x 2
Serial Port	COM 1, COM 2 (RS-232/422/485, supports 5V/12V/RI, Optional)
Video	HDMI 2.0 x 1
Internal I/O	
USB	—
Serial Port	—
Video	—
SATA	32GB eMMC 5.1 (Optional: 64GB/128GB)
Audio	—
DIO/GPIO	—
SMBus/I2C	—
Fan	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full size mPCIe/mSATA x 1 (SATA as default, PCIe selected by BIOS)
M.2	M.2 2230 E-Key x 1 (PCIe [x1]/USB 2.0)
Others	—
Environment & Certification	
Operating Temp	32°F ~ 122°F (0°C ~ 50°C) with 0.5m/s air flow
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

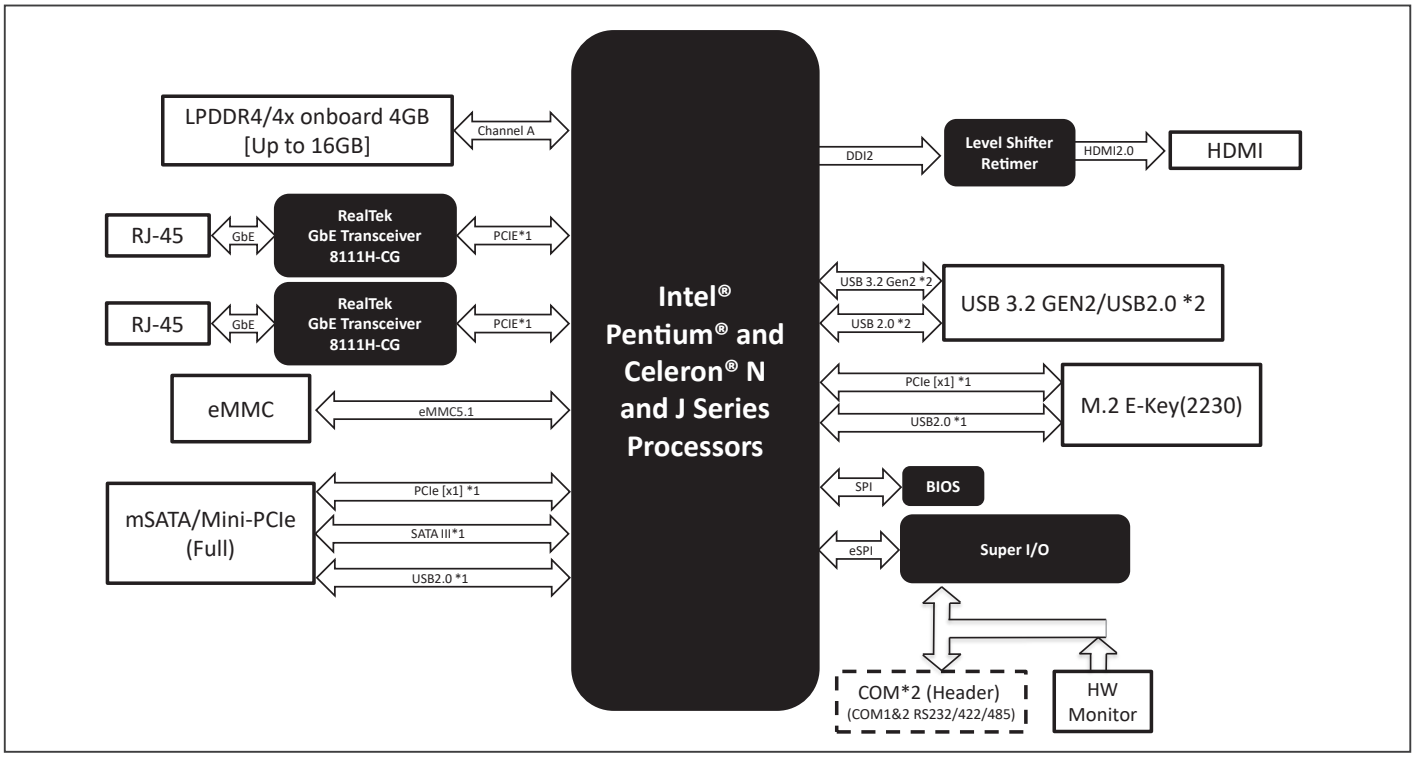
- **PICO-EHL4-SEMI**

Optional Accessories

Part Number	Description	Qty.
1702031802	Power Cord (US Type)	1
1702031803	Power Cord (Europe Type)	1
170203180E	Power Cord (Japan)	1
125530060Z	Power Adapter 12V/5A 60W FSP060-DHAN3 w/Lock	1
170X000654	Dual COM port cable (100mm)	1
PICO-EHL4-SEMI-VESA1	PICO-EHL4-SEMI VESA bracket kit	1
PICO-EHL4-SEMI-WMT1	PICO-EHL4-SEMI Wallmount bracket kit	1
PICO-EHL4-SEMI-DIN1	Din rail kit	1

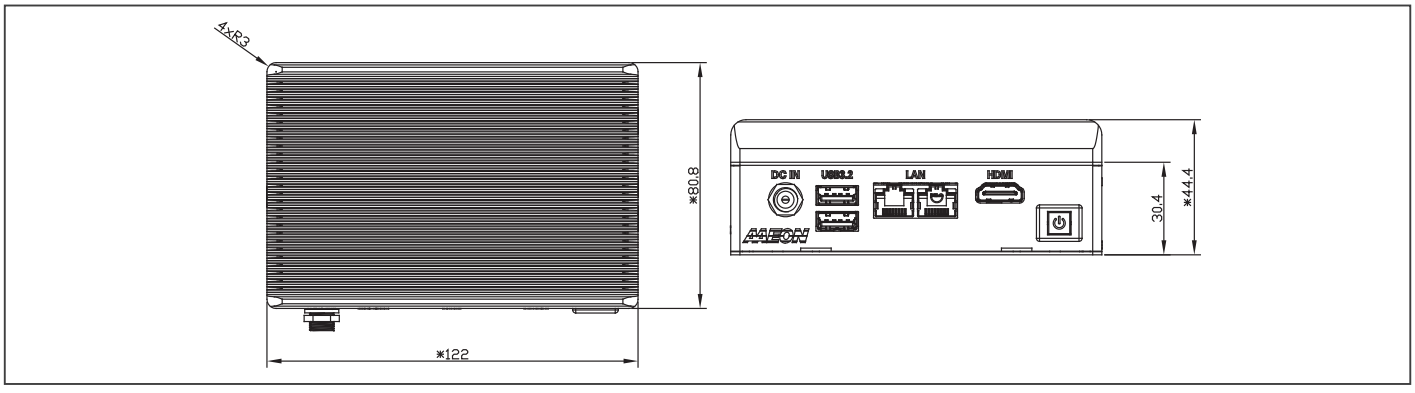
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

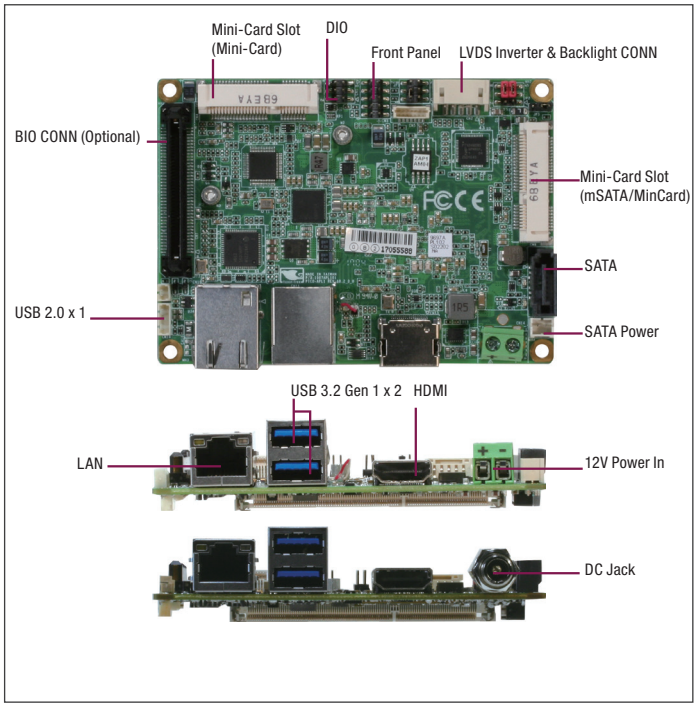


Ordering Information

Part number	CPU	Memory	Display	Storage	LAN	USB	Expansion slot	Power	Operating Temp	Others
PICO-EHL4-SEMI-A11-S001	Intel® Celeron® Processor N6210	4GB	HDMI x 1	eMMC 32GB	GbE x 2	USB3.2 Gen 2 x 2	M.2 2230 E-key x 1 mSATA(Full-size) x 1	+12V (ATX)	0~50°C	—
PICO-EHL4-SEMI-A11-S002	Intel® Celeron® Processor J6412	8GB	HDMI x 1	eMMC 32GB	GbE x 2	USB3.2 Gen 2 x 2	M.2 2230 E-key x 1 mSATA(Full-size) x 1	+12V (ATX)	0~50°C	—

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 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)**
- **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)**

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

Specifications

System	
Form Factor	PICO-ITX
CPU	Intel® Atom® / Celeron® / Pentium® Processors: N4200 (4C/4T,1.10GHz, 6W) N3350 (2C/2T,1.10GHz, 6W) E3950 (4C/4T,1.60GHz, 12W) E3940 (4C/4T,1.60GHz, 9.5W) E3930 (2C/2T,1.306GHz, 6.5W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
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) Linux Ubuntu 20.04.4/ Kernel 5.11.0-13-generic
Power	
Power Requirement	+12V
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
Power Consumption	Intel® E3940 Processor, DDR3L 8GB x 1, 1.11A@+12V(TYPICAL)
Display	
Controller	Intel® HD Graphics 500/505
LVDS/eDP	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz (Optional)
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz DDI (Via BIO, Optional)
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	Realtek ALC897/892
Audio Interface	Line-Out (Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® i210 1GbE, RJ45 x 1
USB	USB 3.2 Gen1 x 2
Serial Port	—
Video	HDMI 1.4 x 1

Internal I/O	
USB	USB 2.0 x 1
Serial Port	COM1 (RS232) COM2 (RS232/422/485, support 5V/12V/RI)
Video	LVDS x 1
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1
Audio	Line-out header x 1 (Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 4-bit
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)
Fan	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mSATA, select with HW BOM) Half-Sized mPCIe x 1
M.2	—
Others	BIO x 1 (Optional, supports PCIe [x1] x 2, line out, DDI, GPIO, LPC, SMBUS,USB3.0/2.0)
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

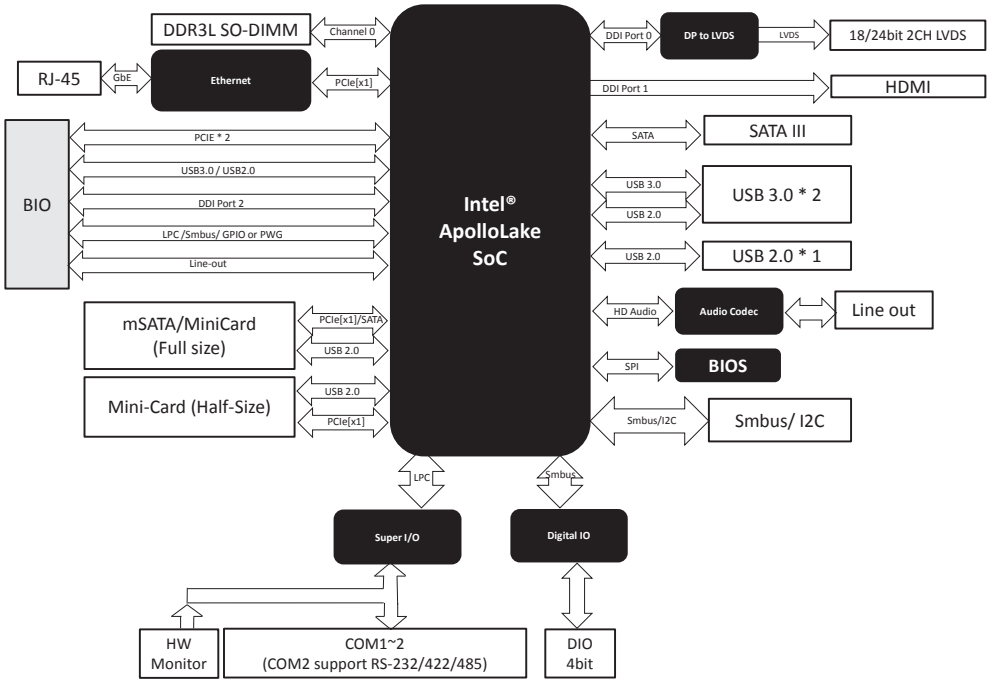
- **1703200153 (Optional by model)**
  COM x 2, Line-out Cable
- **PICO-APL1**

Optional Accessories

Part Number	Description	Qty.
1709070500	SATA CABLE.500mm	1
1702150155	SATA Power Cable.150mm	1
1700050207	USB Cable.200mm.for PFM-945C Active Others	1
1703200153	COM Port 1/2 & line out cable.2ports.150mm	1
PICO-APL1-HSP01	Heatspreader.100*72*8.5mm.Silver	1
PICO-APL1-HSP02	Heat spreader.100*72*8.5mm for E3950/E3940/E3930	1
PICO-APL1-HSK02	Heat Sink.100*72*15.5mm.Silver.used with HSP	1
PER-P30D-A10	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	1

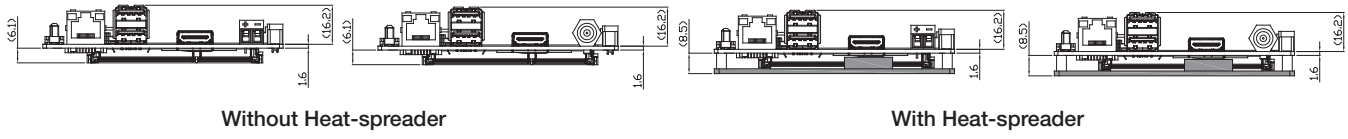
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Without Heat-spreader

With Heat-spreader

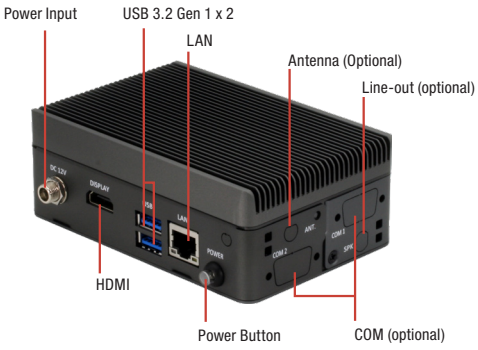
Ordering Information

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 · 1000 Giga LAN · USB 2.0 · USB 3.2 Gen 1 · PCIe PCI Express · CE · FC

Specifications

System	
Form Factor	PICO-SEMI
CPU	Intel® Celeron® Processor: N3350 (2C/2T, 1.10GHz, 6W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	—
RTC Battery	Lithium Battery 3V/240mAh
Dimension	4.8" x 3.18" x 1.75" (122mm x 80.8mm x 44.4 mm)
Gross Weight	0.59 lb (0.27 kg)
OS Support	Windows 10 (64 bit) Linux Ubuntu 20.04.4/ Kernel 5.11.0-13-generic
Power	
Power Requirement	+12V
Power Supply Type	ATX
Connector	Lockable DC Jack Connector
Power Consumption	Intel® N3350 Processor, DDR3L 8GB x 1, 0.91A@+12V(TYPICAL)
Display	
Controller	Intel® HD Graphics 500
LVDS/eDP	—
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz
Multiple Display	1 Simultaneous Display
Audio	
Codec	Realtek ALC897/892 (Optional)
Audio Interface	Line-out (Optional)
Speaker	—
External I/O	
Ethernet	Intel® i210 1GbE, RJ45 x 1
USB	USB 3.2 Gen1 x 2
Serial Port	COM1 (RS232, Optional) COM2 (RS232/422/485, support 5V/12V/R, Optional)
Video	HDMI 1.4 x 1
Internal I/O	
USB	—
Serial Port	—
Video	—
SATA	—
Audio	Line-out (Optional)
DIO/GPIO	—
SMBus/I2C	—
Fan	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mSATA, select with HW BOM) Half-Sized mPCIe x 1
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.

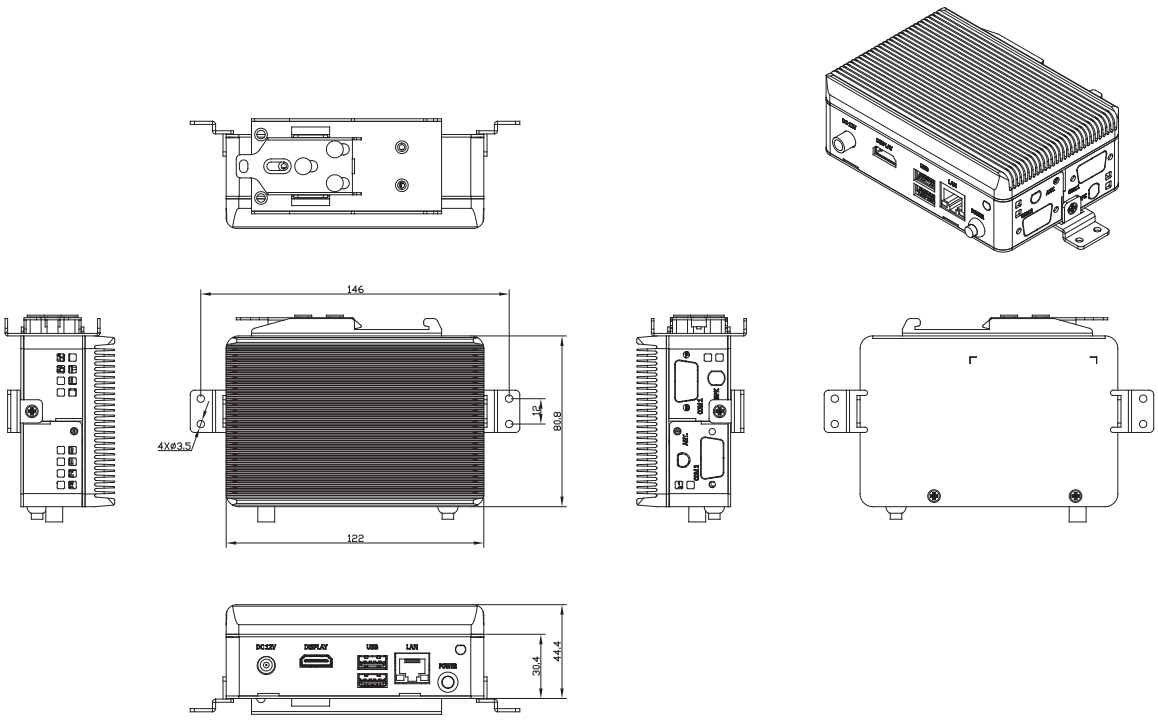
Optional Accessories

Part Number	Description	Qty.
125530040C	Power Adapter.12V.40W.FSP.FSP040-DHAN3.9NA0406805	1
1702031802	POWER CORD.3P-125V 10A 180D.1.8M USA (US Type)	1
1702031803	POWER CORD.3P-250V 10A 180D.1.8M.VDE (Europe Type)	1
170203180E	Power cord.3P.125V/7A.1.8M (Japan type)	1
1703200052	WIRE.20P.D-SUP 9P*2 + Audio *1 Cable.with GND ring.50mm	1
968C016G0V	SATA DOM.16GB.,MLC.3ME3.15nm,0~70°C.InnoDisk.DESSC-16GD09BC1SC-26CF,F/W:S17411	1
9761SEMI00	WALL MOUNT KITS	1
9761SEMI01	DIN-RAIL Kits	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.

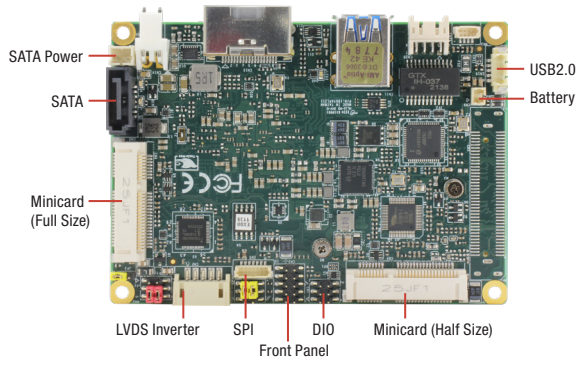
Ordering Information

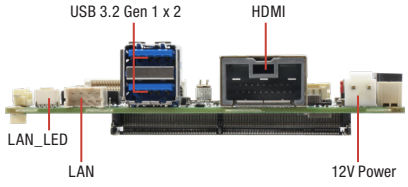
Part Number	CPU	Memeory	Fan/Fanless	Display	Storage	LAN	USB	Expansion Slot	Power	Temp	Others
PICO-APL1-SEMI-A10-FB02	N3350	DDR3L SODIMM Socket	Fanless	HDMI	SATA x 1, mSATA x 1 (Full-size)	GbE x 1	USB 3.2 Gen 1 x 2, USB2.0 x 1	miniCard x 1 (Half-Size)	12V DC Jack	0°C ~ 50°C @ 0.5 m/s airflow	COM Port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

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

PICO-APL2

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 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
- 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)

Giga LAN · USB 2.0 · USB 3.2 Gen 1 · HDMI

Specifications

System	
Form Factor	PICO-ITX
CPU	Intel® Atom® / Celeron® / Pentium® Processors: N3350 (2C/2T,1.10GHz, 6W) N4200 (4C/4T,1.10GHz, 6W) E3950 (4C/4T,1.60GHz, 12W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
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) Linux Ubuntu 20.04.4/ Kernel 5.11.0-30-generic
Power	
Power Requirement	+12V
Power Supply Type	AT/ATX
Connector	Line-Out (Audio function not available for WiTAS SKU)
Power Consumption	Intel® N4200, DDR3L 8GB x 1, 2.16A@ +12V(TYPICAL) Intel® N4200, DDR3L 8GB x 1, 2.28A@ +12V(MAX)
Display	
Controller	Intel® HD Graphics 500/505
LVDS/eDP	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz DDI (Via BIO, Optional)
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	Realtek ALC897/888
Audio Interface	Line-Out (Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® i210 1GbE, RJ45 x 1
USB	USB 3.2 Gen1 x 2
Serial Port	—
Video	HDMI 1.4 x 1
Internal I/O	
USB	USB 2.0 x 1
Serial Port	COM1 (RS232) COM2 (RS232/422/485, support 5V/12V/RI)
Video	LVDS x 1
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1
Audio	Line-out header x 1 (Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 4-bit
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)
Fan	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mSATA, select with HW BOM) Half-Sized mPCIe x 1
M.2	—
Others	BIO x 1 (Optional, supports PCIe [x1] x 2, line out, DDI, GPIO, LPC, SMBUS,USB.3.0/2.0)
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)	525,137
EMC	CE/FCC Class A

Packing List

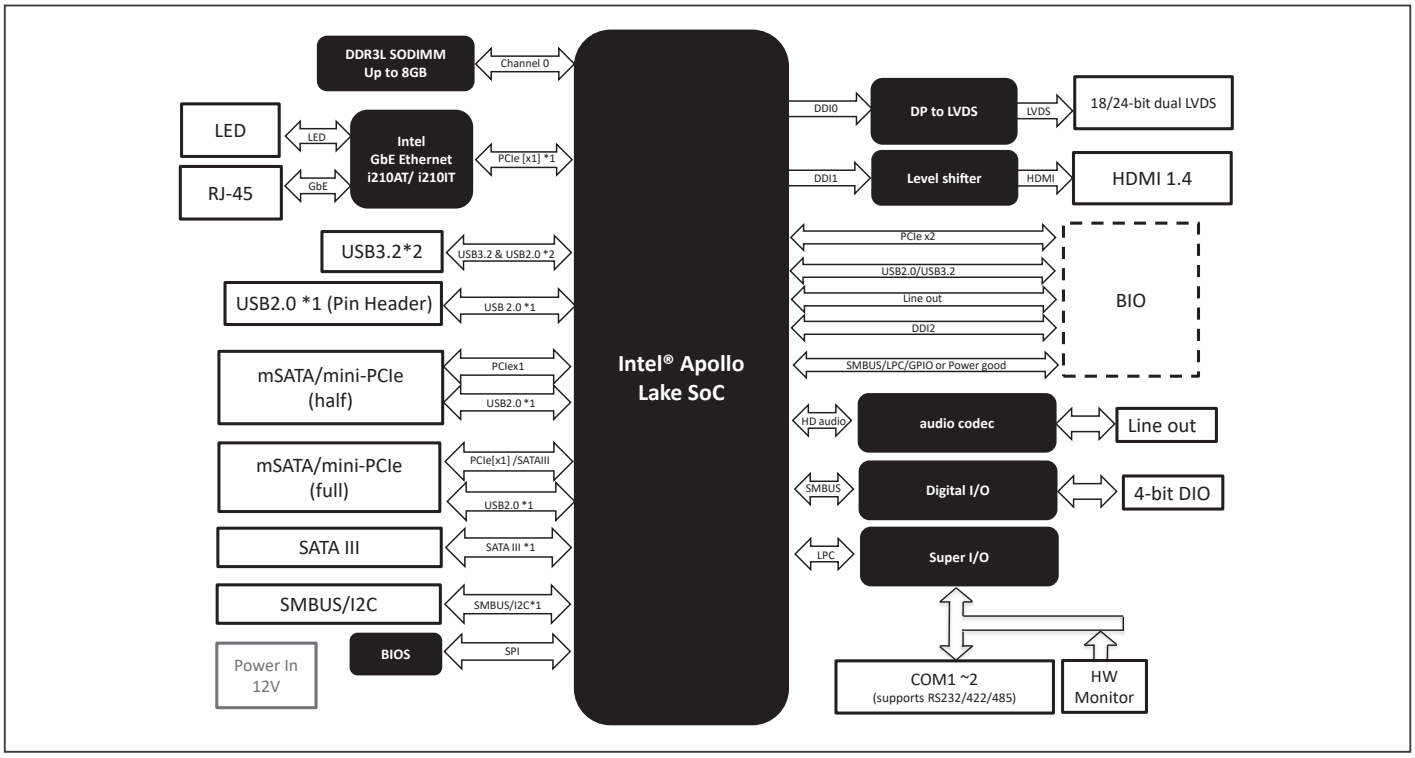
- **PICO-APL2**

Optional Accessories

Part Number	Description	Qty.
1709070500	SATA CABLE.500mm	1
1702150155	SATA Power Cable.150mm	1
1700050207	USB Cable.200mm.for PFM-945C Active Others	1
1703200153	COM Port 1/2 & line out cable.2ports.150mm	1
PICO-APL1-HSP01	Heatspreader.100*72*8.5mm.Silver.for Pentinum N4200/ Celeron N3350 of PICO-APL2	1
PICO-APL1-HSP02	Heat spreader.100*72*8.5mm for Atom E39XX series of PICO-APL2	1
PICO-APL1-HSK02	Heat Sink.100*72*15.5mm.Silver.used with HSP	1
PER-P30D-A10	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	1

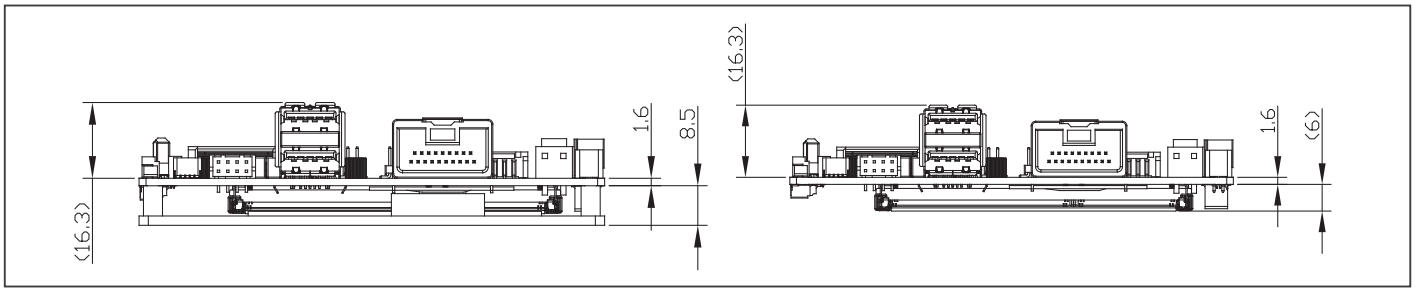
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

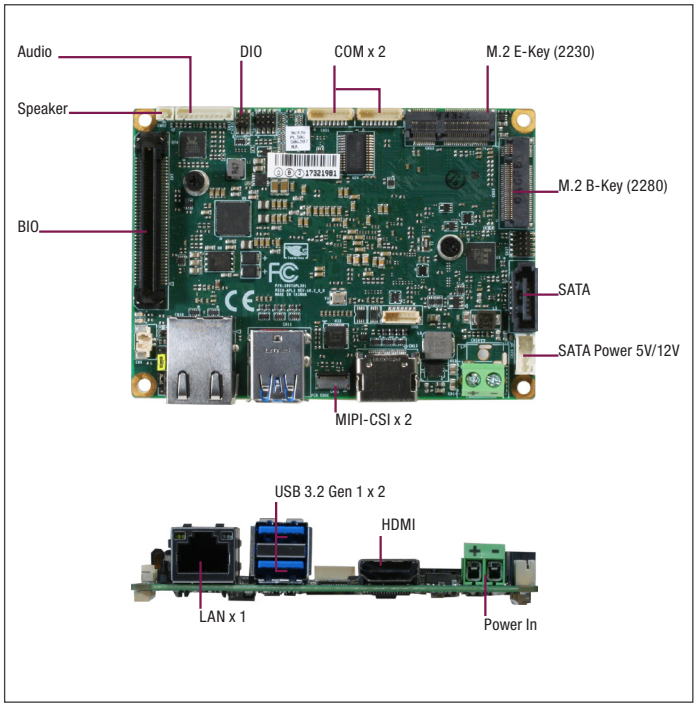


Ordering Information

Part number	CPU	Memory	Display	Storage	LAN	USB	RS-232/422/485	Expansion slot	Power	Operating Temp	Others
PICO-APL2-A10-0001	N4200	DDR3L	HDMI x 1 LVDS x 1	SATAIII x 1	GbE x 1	USB3.2 Gen 1 x 2 USB2.0 x 1	2	Full-size mSATA/mPCIE or USB2.0 x 1 Half-size Mini Card x 1	+12V	0°C ~ 60°C	DIO 4 bit SMBus
PICO-APL2-A10-0002	N3350	DDR3L	HDMI x 1 LVDS x 1	SATAIII x 1	GbE x 1	USB3.2 Gen 1 x 2 USB2.0 x 1	2	Full-size mSATA/mPCIE or USB2.0 x 1 Half-size Mini Card x 1	+12V	0°C ~ 60°C	DIO 4 bit SMBus
PICO-APL2-A10-0003	E3950	DDR3L	HDMI x 1 LVDS x 1	SATAIII x 1	GbE x 1	USB3.2 Gen 1 x 2 USB2.0 x 1	2	Full-size mSATA/mPCIE or USB2.0 x 1 Half-size Mini Card x 1	+12V	0°C ~ 60°C	DIO 4 bit SMBus

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)**

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

Specifications

System	
Form Factor	PICO-ITX
CPU	Intel® Atom® / Celeron® / Pentium® Processors: N4200 (4C/4T,1.10GHz, 6W) N3350 (2C/2T,1.10GHz, 6W) E3950 (4C/4T,1.60GHz, 12W) E3940 (4C/4T,1.60GHz, 9.5W) E3930 (2C/2T,1.306GHz, 6.5W)
Chipset	Integrated with Intel® SoC
Memory Type	Onboard DDR3L 1866, Single Channel, Non-ECC (Max.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) Linux Ubuntu 16.04.2/ Kernel 4.8.0-36
Power	
Power Requirement	+12V
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
Power Consumption	Intel® N4200, DDR3L 8GB x 1, 1.08A, eMMC 32GB@ +12V(TYPICAL)
Display	
Controller	Intel® HD Graphics 500/505
LVDS/eDP	eDP x 1, 1920 x1080 @60Hz (Optional)
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz DDI (Via BIO, Optional)
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	Realtek ALC269
Audio Interface	Line-In / Line-Out / Mic (Audio function not available for WiTAS SKU)
Speaker	Amplifier Header
External I/O	
Ethernet	Realtek 8111 1GbE, RJ45 x 1
USB	USB 3.2 Gen1 x 2
Serial Port	—
Video	HDMI 1.4 x 1

Internal I/O	
USB	USB 2.0 x 2
Serial Port	COM1~2 (RS232)
Video	eDP x 1 (Optional)
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1 eMMC5.1 32GB (Optional to 16/64GB)
Audio	Audio Header(Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 4-bit
SMBus/I2C	I2C/I2S x 1 (Default: I2C)
Fan	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	—
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0) M.2 2280 B-Key x 1 (SATA + USB2.0)
Others	MIPI-CSI x 2 Lanes (Optional) MIPI-CSI x 4 Lanes (Optional) BIO x 1 (Optional, supports PCIe [x1] x 2, DDI, LPC, SMBUS,USB3.0/2.0)
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**

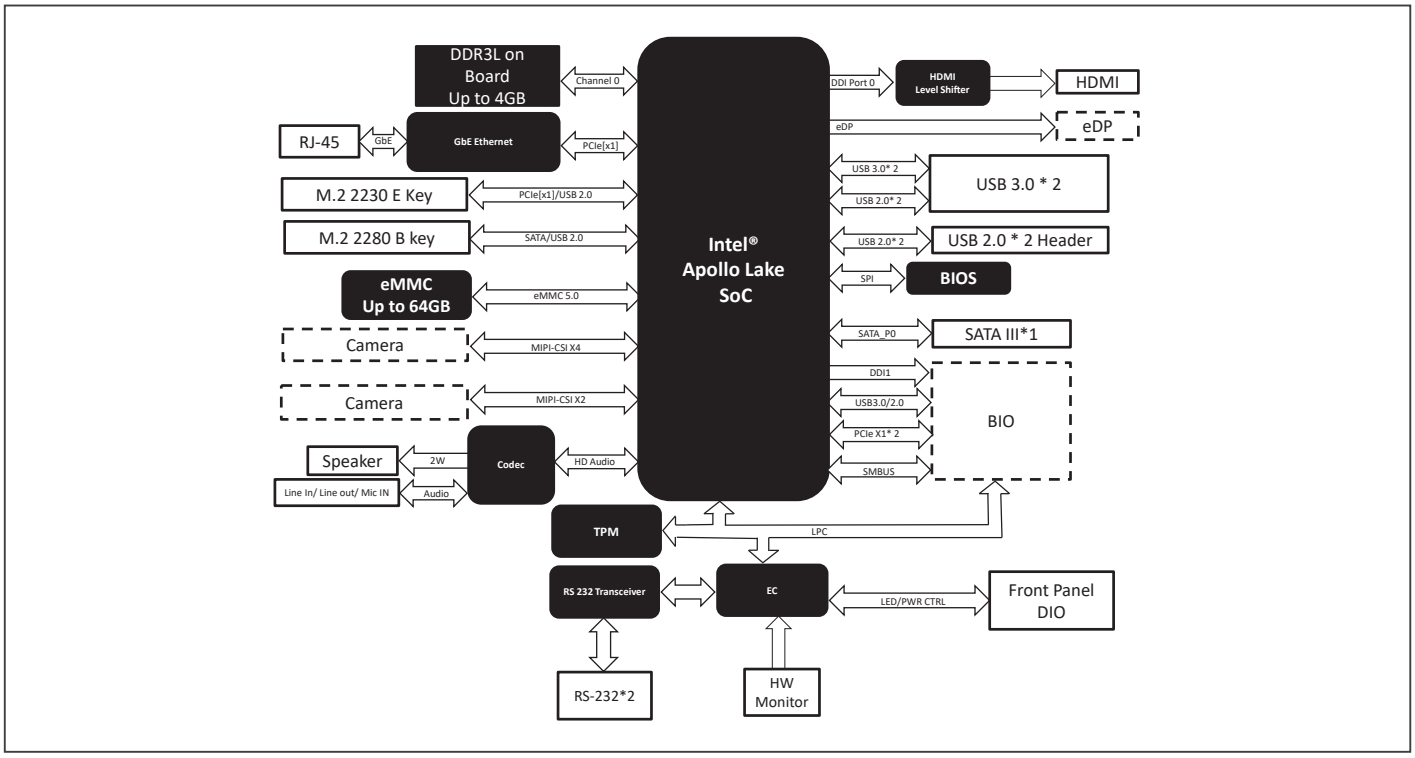
Optional Accessories

Part Number	Description	Qty
1709070500	SATA CABLE.500mm	1
1702150121	SATA power cable.120mm.for PFM-945C	1
PICO-APL3-HSK01	Heat Sink.100*72*15.5mm.Silver.used with HSP	1
PICO-APL3-HSP01	Heat Spreader.100*72*7mm.Silver.for PICO-APL3 N4200/N3350 CPU	1
1700040151	USB Cable.150mm.for PICO-APL3	2
1701090122	Flat Cable.120mm	2
1702030176	Power Cable.3P DC jack.TERMINAL*21.7mm	1
PER-P30D-A10	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	1

*Please refer to PICO-APL3-SEMI page for further option.
*eDP cable custom by required.

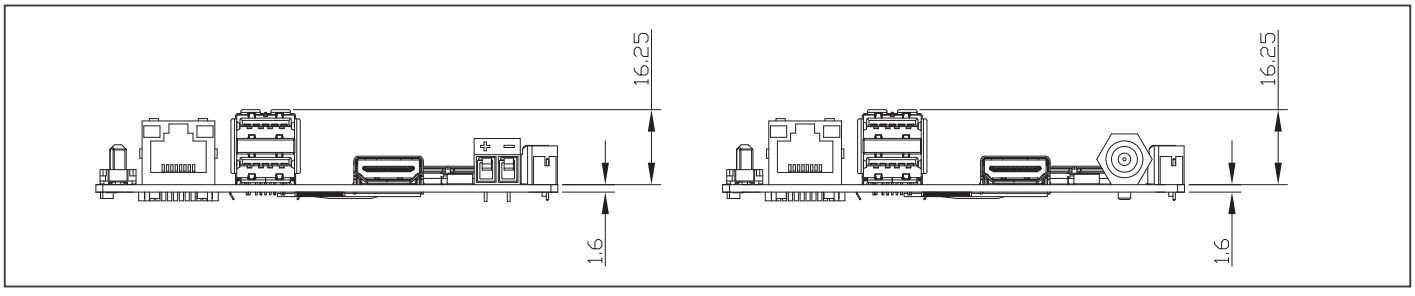
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



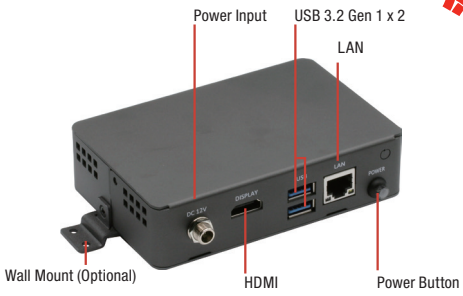
Ordering Information

Part Number	CPU	Memory	Thermal	Display	Storage	LAN	USB	RS-232	RS-232/ 422/485	Expansion Slot	Power	Temp.	Others
PICO-APL3-A10-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 · Gigo LAN · USB 2.0 · USB 3.2 Gen 1 · PCI Express

Specifications

System	
Form Factor	PICO-SEMI
CPU	Intel® Atom® / Celeron® / Pentium® Processors: N4200 (4C/4T,1.10GHz, 6W) N3350 (2C/2T,1.10GHz, 6W)
Chipset	Integrated with Intel® SoC
Memory Type	Onboard DDR3L 1866, Single Channel, Non-ECC (Max.4GB)
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimension	W/O heat sink: 4.80" x 3.18" x 1.18" (122mm x 80.8mm x 30mm) W/ heat sink: 4.80" x 3.18" x 1.75" (122mm x 80.8mm x 44.4mm)
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) Linux Ubuntu 16.04.2/ Kernel 4.8.0-36
Power	
Power Requirement	+12V
Power Supply Type	ATX
Connector	DC Jack Connector
Power Consumption	Intel® N4200, DDR3L 8GB x 1, 1.08A, eMMC 32GB@ +12V(TYPICAL)
Display	
Controller	Intel® HD Graphics 500/505
LVDS/eDP	—
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz
Multiple Display	1 Simultaneous Display
Audio	
Codec	Realtek ALC269 (Optional)
Audio Interface	Line-out (Optional)
Speaker	—
External I/O	
Ethernet	Realtek 8111 1GbE, RJ45 x 1
USB	USB 3.2 Gen1 x 2
Serial Port	COM1~2 (RS232, Optional)
Video	HDMI 1.4 x 1
Internal I/O	
USB	—
Serial Port	—
Video	—
SATA	eMMC5.1 32GB (Optional to 16/64GB)
Audio	Line-out (Optional)
DIO/GPIO	—
SMBus/I2C	—
Fan	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	—
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0) M.2 2280 B-Key x 1 (SATA + USB2.0)
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

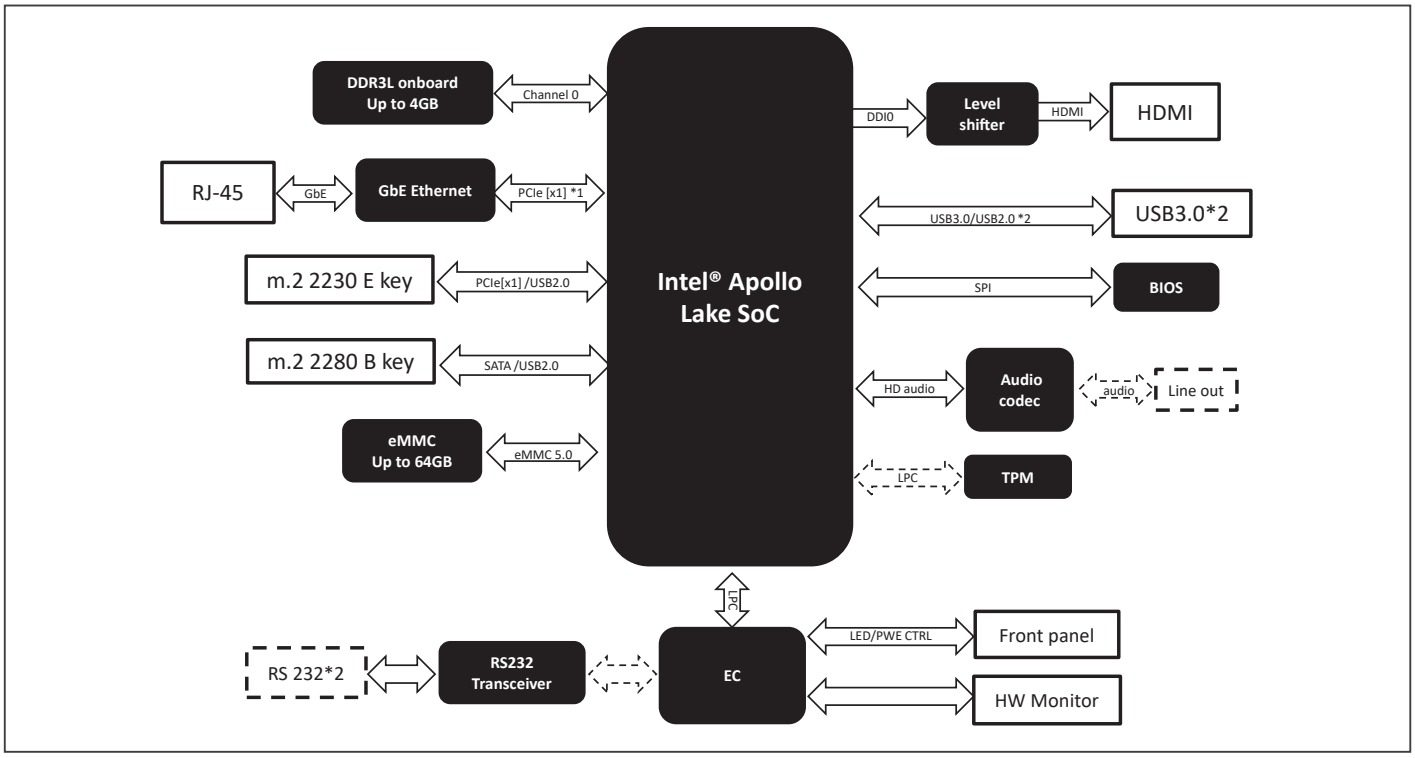
- PICO-APL3-SEMI

Optional Accessories

Part Number	Description	Qty.
125530040C	Power Adapter.12V.40W.FSP.FSP040-DHAN3.9NA0406805	1
125530060Z	Power Adapter 12V/5A 60W FSP060-DHAN3	1
1702031802	POWER CORD.3P-125V 10A 180D.1.8M USA (US Type)	1
1702031803	POWER CORD.3P-250V 10A 180D.1.8M.VDE (Europe Type)	1
170203180E	Power cord.3P.125V/7A.1.8M (Japan type)	1
1701090122	Flat Cable.120mm.for PICO-APL3.SEMI	2
1703100084	PHONE JACK Cable.80mm	1
9761SEMI00	WALL MOUNT KITS	1
9761SEMI01	DIN-RAIL Kits	1

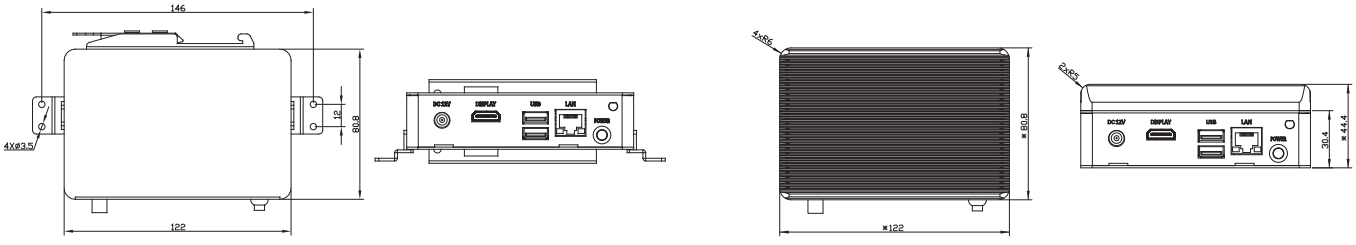
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Without Heat Sink

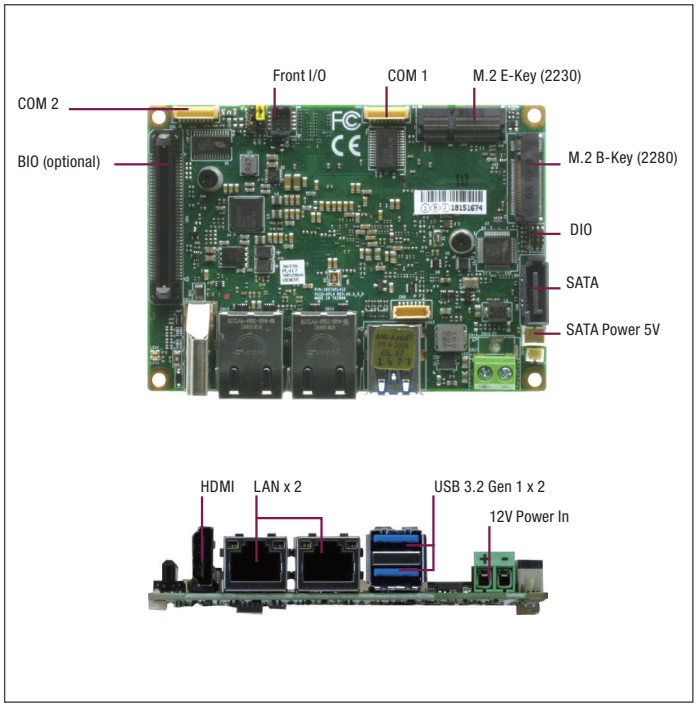
With Heat Sink

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

Internal I/O	
USB	USB 2.0 x 2 (Internal, co-use with FAN connector)
Serial Port	COM1 (RS232) COM2 (RS232/422/485, support 5V/12V/RI)
Video	eDP x 1
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1 eMMC5.1 32GB (Optional to 16/64GB)
Audio	—
DIO/GPIO	GPIO 4-bit
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)
Fan	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	—
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0) M.2 2280 B-Key x 1 (SATA + USB2.0)
Others	BIO x 1 (Optional, supports PCIe [x1] x 2, DDI, LPC, USB3.0/2.0)
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

Specifications

System	
Form Factor	PICO-ITX
CPU	Intel® Atom® / Celeron® / Pentium® Processors: N4200 (4C/4T,1.10GHz, 6W) N3350 (2C/2T,1.10GHz, 6W) E3950 (4C/4T,1.60GHz, 12W) E3940 (4C/4T,1.60GHz, 9.5W) E3930 (2C/2T,1.306GHz, 6.5W)
Chipset	Integrated with Intel® SoC
Memory Type	Onboard DDR3L 1866, Single Channel, Non-ECC (Max.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) Linux Ubuntu 16.04.2/ Kernel 4.8.0-36
Power	
Power Requirement	+12V
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
Power Consumption	Intel® N4200, DDR3L 4GB, 1.43A@+12V(TYPICAL)
Display	
Controller	Intel® HD Graphics 500/505
LVDS/eDP	eDP x 1, 1920x1080 @60Hz (Optional)
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz) DDI (Via BIO, Optional)
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	—
Audio Interface	—
Speaker	—
External I/O	
Ethernet	Realtek 8111 1GbE, RJ45 x 2
USB	USB 3.2 Gen1 x 2
Serial Port	—
Video	HDMI 1.4 x 1

Packing List

- **PICO-APL4**

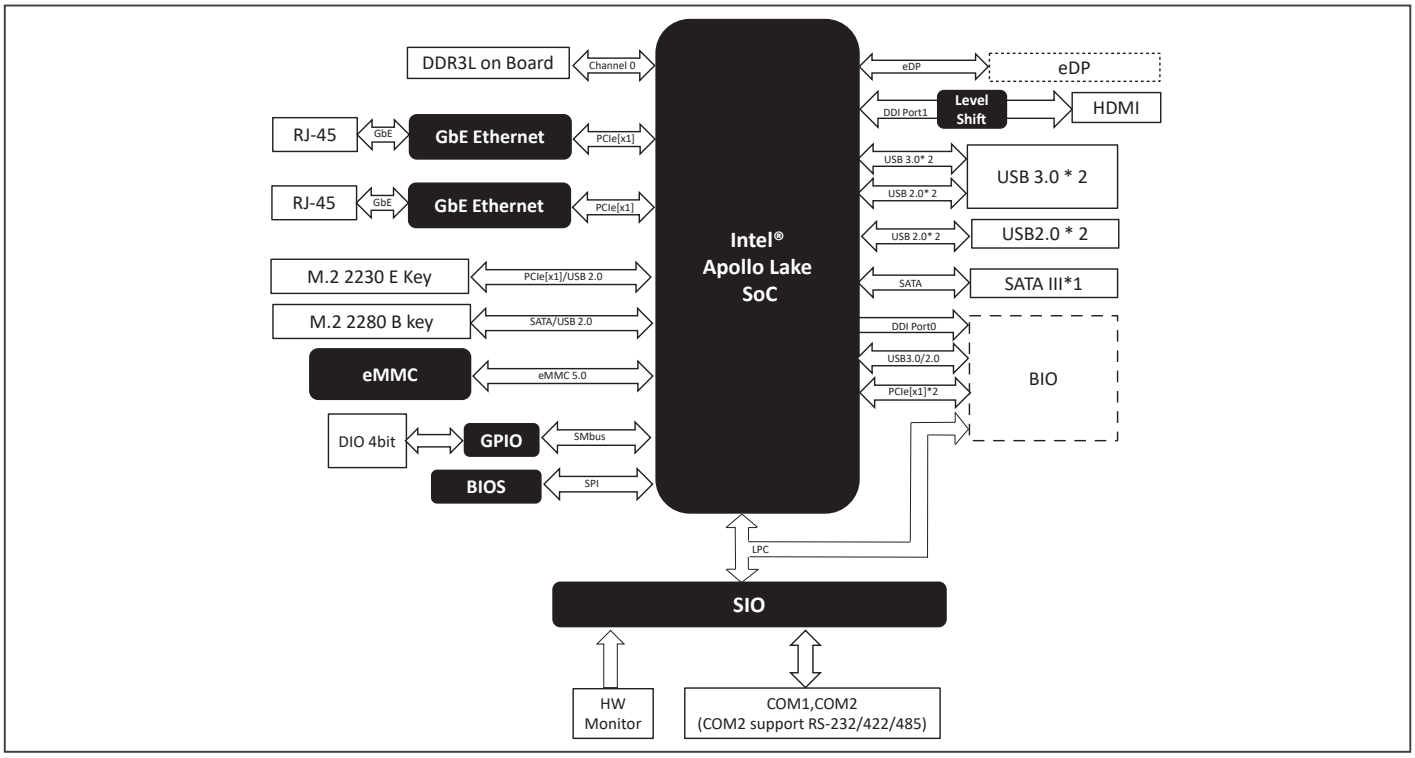
Optional Accessories

Part Number	Description	Qty
1709070500	SATA CABLE.500mm	1
1702150155	SATA Power Cable.150mm	1
PICO-APL4-HSK01	Heat Sink.100*72*15.5mm.Silver.used with HSP	1
PICO-APL4-HSP01	Heat Spreader.100*72*8.5mm.Silver	1
1700040151	USB Cable.150mm.for PICO-APL3	2
1701090122	Flat Cable.120mm	2
PICO-APL4-FAN01	CPU Cooler.100*72*15.5mm.Silver.use w/HSP	1
PER-P30D-A10	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	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

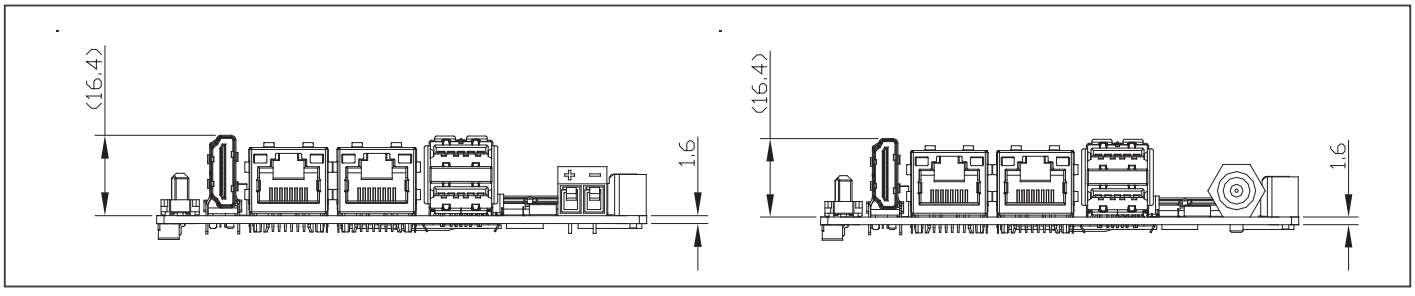
Note: All specifications are subject to change without notice.

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 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 M.2 2280 (B 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 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 M.2 2280 (B 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 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 M.2 2280 (B 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 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 M.2 2280 (B 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





DIN Rail Kit
(Optional)

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

DDR 3L · 1000 Giga LAN · USB 2.0 · USB 3.2 Gen 1 · PCIe PCI Express · CE · FC

Specifications

System	
Form Factor	PICO-SEMI
CPU	Intel® Atom® / Celeron® / Pentium® Processors: N4200 (4C/4T,1.10GHz, 6W) N3350 (2C/2T,1.10GHz, 6W)
Chipset	Integrated with Intel® SoC
Memory Type	Onboard DDR3L 1866, Single Channel, Non-ECC (Max.4GB)
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) Linux Ubuntu 16.04.2/ Kernel 4.8.0-36
Power	
Power Requirement	+12V
Power Supply Type	ATX
Connector	DC Jack Connector
Power Consumption	Intel® N4200, DDR3L 4GB, 1.18A@+12V(TYPICAL)
Display	
Controller	Intel® HD Graphics 500/505
LVDS/eDP	—
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz
Multiple Display	1 Simultaneous Display
Audio	
Codec	—
Audio Interface	—
Speaker	—
External I/O	
Ethernet	Realtek 8111 1GbE, RJ45 x 2
USB	USB 3.2 Gen1 x 2
Serial Port	COM1 (RS232, Optional) COM2 (RS232/422/485, support 5V/12V/RI, Optional)
Video	HDMI 1.4 x 1
Internal I/O	
USB	—
Serial Port	—
Video	—
SATA	eMMC5.1 32GB (Optional to 16/64GB)
Audio	—
DIO/GPIO	—
SMBus/I2C	—
Fan	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	—
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0) M.2 2280 B-Key x 1 (SATA + USB2.0)
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

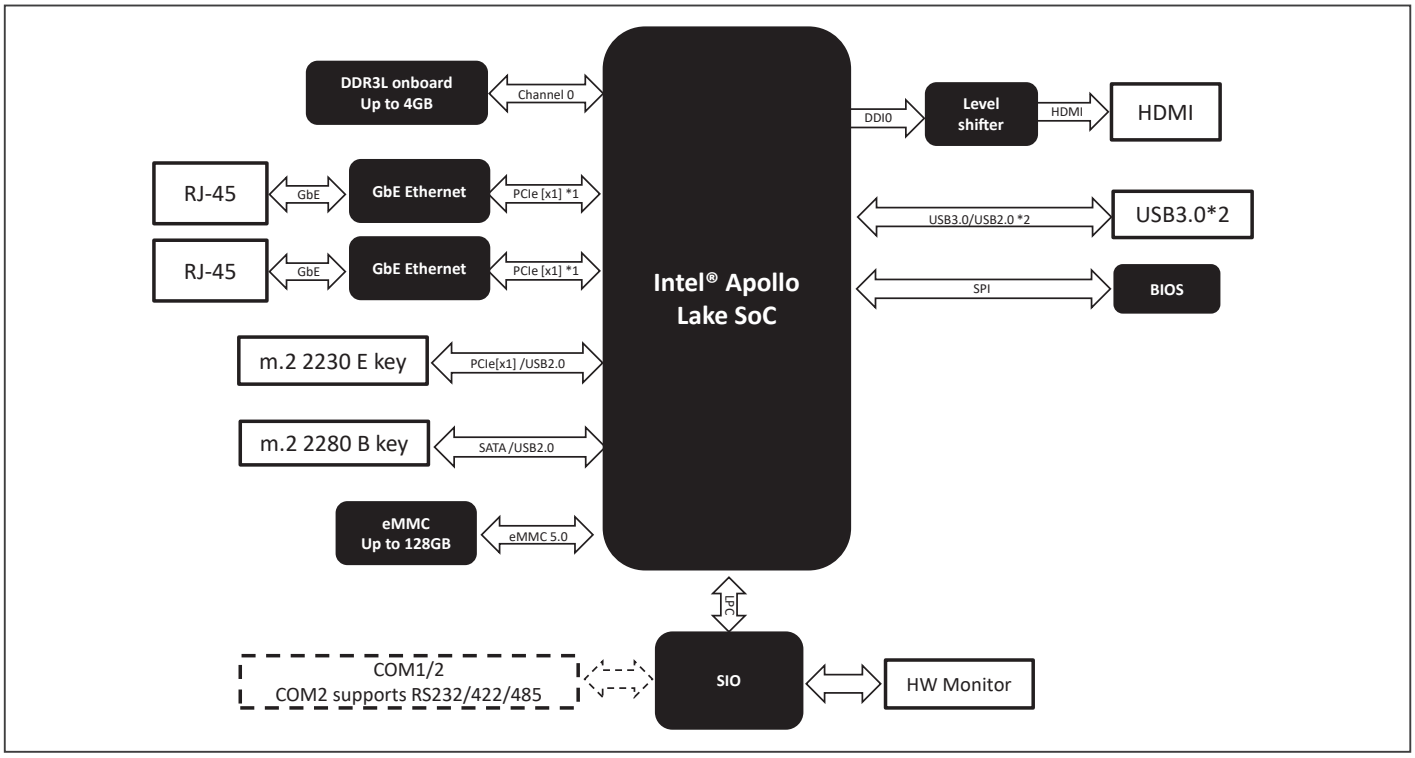
- **PICO-APL4-SEMI**

Optional Accessories

Part Number	Description	Qty.
125530040C	Power Adapter.12V.40W.FSP.FSP040-DHAN3.9NA0406805	1
125530060Z	Power Adapter 12V/5A 60W FSP060-DHAN3	1
1702031802	POWER CORD.3P-125V 10A 180D.1.8M USA (US Type)	1
1702031803	POWER CORD.3P-250V 10A 180D.1.8M.VDE (Europe Type)	1
170203180E	Power cord.3P.125V/7A.1.8M (Japan type)	1
1701090122	Serial Port Cable.120mm	2
9761SEMI01	DIN-RAIL Kits	1
9761SEMI00	WALL MOUNT KITS	1

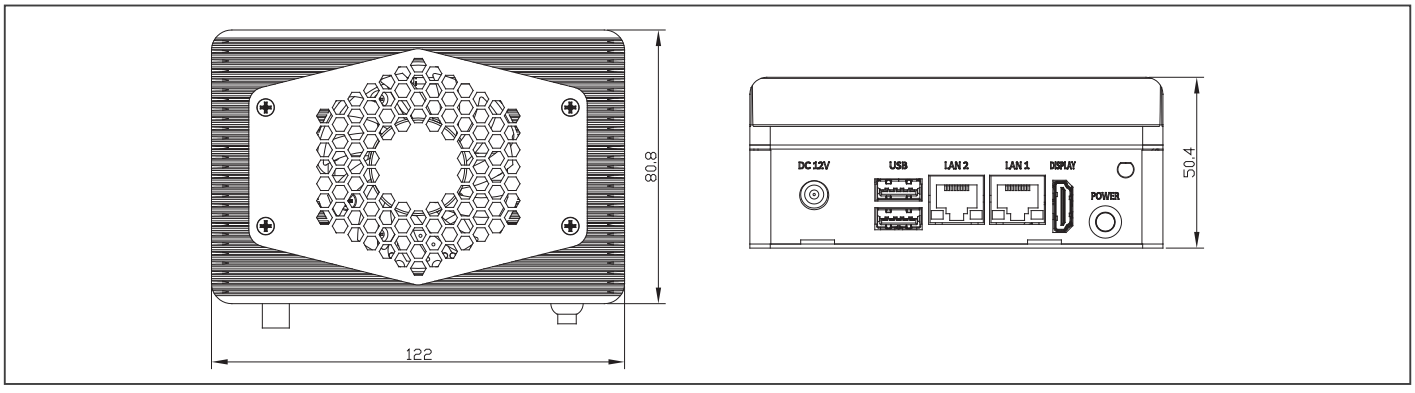
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

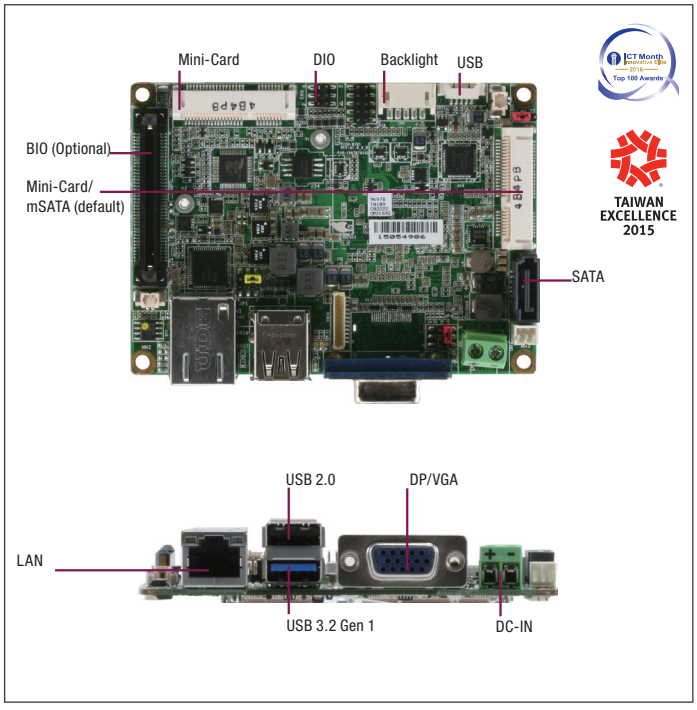


Ordering Information

Part number	CPU	Memory	Thermal	Display	Storage	LAN	USB	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

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

Specifications

System	
Form Factor	PICO-ITX
CPU	Intel® Atom® / Celeron® Processors: J1900 (4C/4T, 2.00GHz, 10W) N2930 (4C/4T, 1.83GHz, 7.5W) N2807 (2C/2T, 1.58GHz, 4.3W) E3845 (4C/4T, 1.91GHz, 10W) E3825 (2C/2T, 1.33GHz, 6W)
Chipset	Integrated with Intel ® SoC
Memory Type	DDR3L 1333, SODIMM x 1, Non-ECC (Max. 8GB)
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 7/10 (64 bit) Linux Ubuntu 21.04.0/ Kernel 5.11.0-13-generic
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 x 1, 1.14A@ +12V(TYPICAL)
Display	
Controller	Intel® HD Graphics for Intel Atom® Processor Z3700 Series
LVDS/eDP	LVDS x 1 (18/24-bit 2CH) 1400 x 900 @60Hz
Display Interface	VGA x 1, 2048 x 1152 @60Hz DP x 1, 2560 x 1400 @60Hz (Optional)
Multiple Display	Up to 2 Simultaneous Displays
Audio	
Codec	Realtek ALC897/892
Audio Interface	Line-Out (Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® i210 1GbE, RJ45 x 1
USB	USB 3.2 Gen1 x 1 USB 2.0 x 1
Serial Port	—
Video	VGA x 1 DP x 1 (Optional)
Internal I/O	
USB	USB 2.0 x 1
Serial Port	COM1 (RS232) COM2 (RS232/422/485, support 5V/12V/RI)
Video	LVDS x 1
SATA	SATA 3.0 Gb/s x 1, +5V SATA Power Connector x 1
Audio	Line-out header x 1 (Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 4-bit
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)
Fan	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mSATA, select with HW BOM) Half-Sized mPCIe x 1
M.2	—
Others	BIO x 1 (Optional, supports PCIe [x1], line out, GPIO, LPC, SMBUS/ I2C,USB3.0/2.0)
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

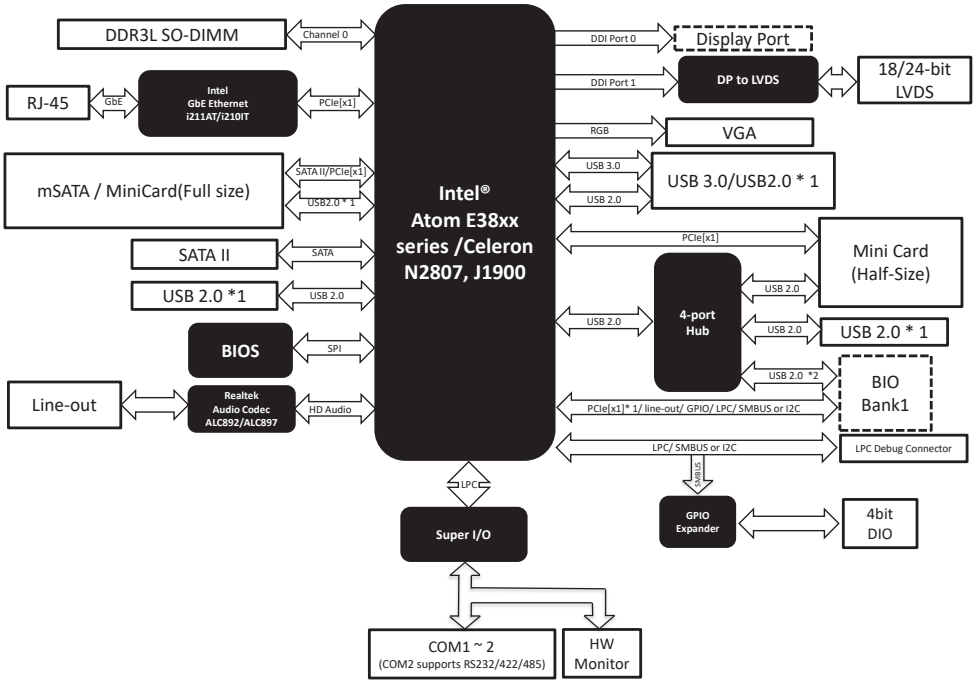
- **PICO-BT01-HSP01**
  Heat Spreader
- **1703200153**
  COM x 2, Line-out Cable
- **PICO-BT01**

Optional Accessories

Part Number	Description	Qty.
1709070500	SATA CABLE.500mm	1
1702150155	SATA Power Cable, 150mm	1
1702040167	Power Cable.2ports.160mm	1
1700050207	USB Cable.200mm.for PFM-945C Active Others	1
PICO-BT01-FAN01	CPU Cooler.84*53*22.2mm.Silver. use w/ HSP	1
PICO-BT01-HSK02	Heatsink.100*72*15.5mm.Silver. should use w/ HSP	1
PER-P30D-A10	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.0, 30 x 72mm	1

Note: All specifications are subject to change without notice.

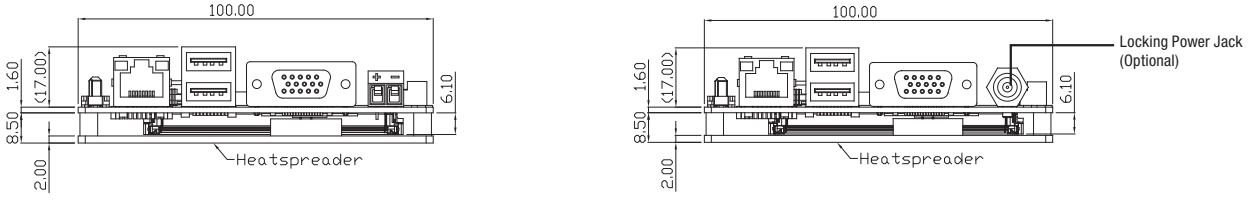
Block Diagram



Dimension

Unit: mm

Standard model with Heat-Spreader

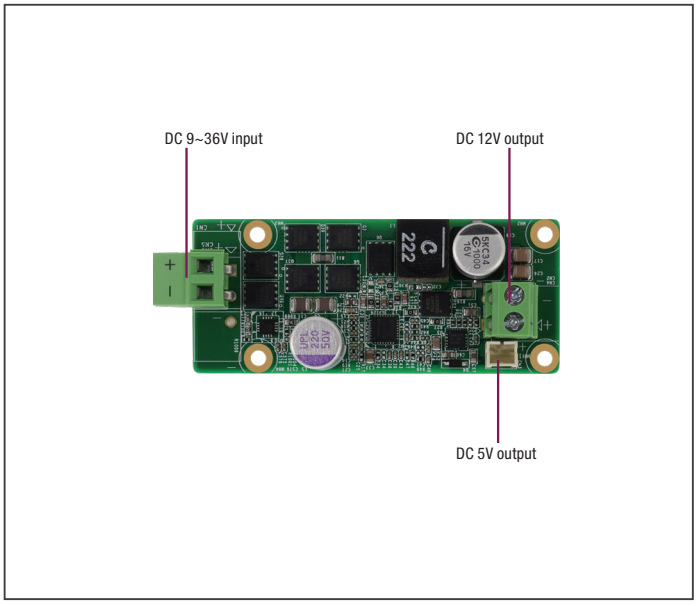


Ordering Information

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

PER-P30D

Power Supply Module with DC 5V & DC 12V Output



Features

- Max. 120W output
- DC 9~36V input
- Over voltage protection
- Under voltage protection
- Over current protection
- Reverse protection
- ±5% voltage tolerance
- Compact size for PICO boards

Specifications

System	
Power input	DC 9~36V
Power output	DC 5V + DC 12V /max.120W
Voltage tolerance	±5%
Dimension	1.18" x 2.84" (30mm x 72mm)
Gross Weight	0.07 lbs (0.03 kg)
Input Connector	2-pin Phoenix Connector.180D (Default) 3-pin Phoenix Connector.90D (colay)
Output Connector	2-pin Phoenix Connector.90D (Default)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)

Packing List

- PER-P30D

Ordering Information

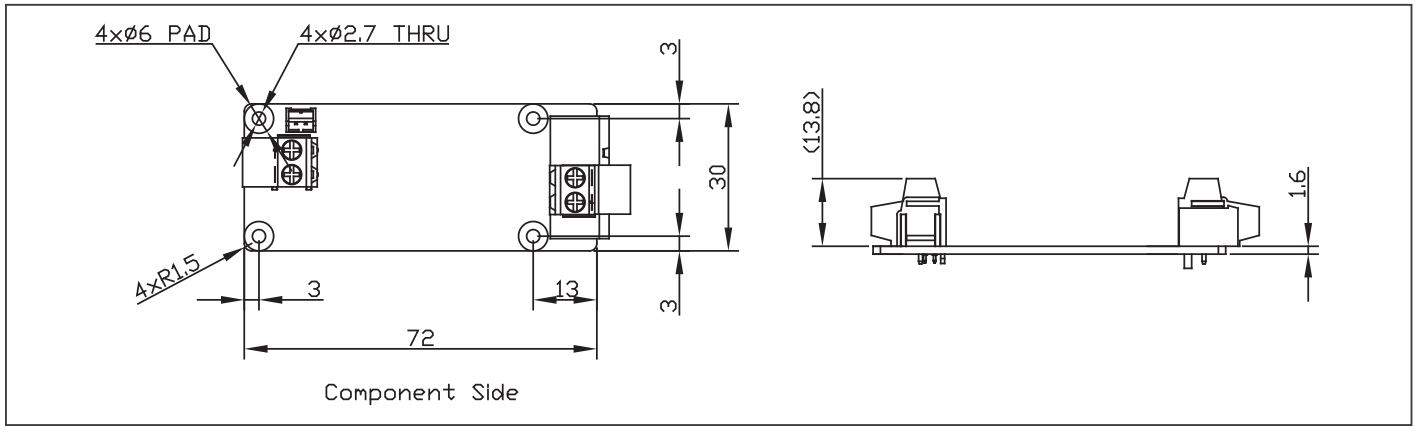
Part Number	Module	Power input	Power output	Temperature
PER-P30D-A10-0001	Power Supply Module with +5V & +12V Output	DC 9~36V	DC 5V + DC 12V / max.120W	0 ~ 60°C

Optional Accessories

Part Number	Description	Qty.
170X000742	12V output power cable.15cm	1
1702150155	5V SATA power cable.15cm	1

Dimension

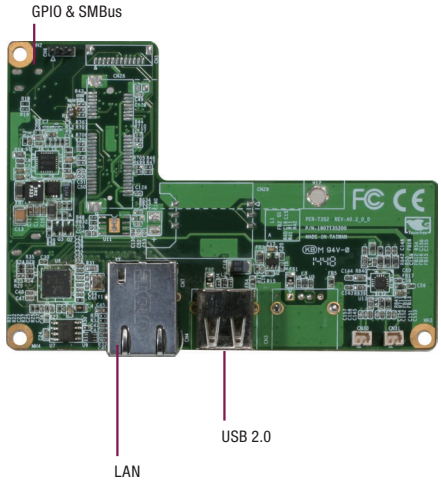
Unit: mm



Note: All specifications are subject to change without notice.

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)

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

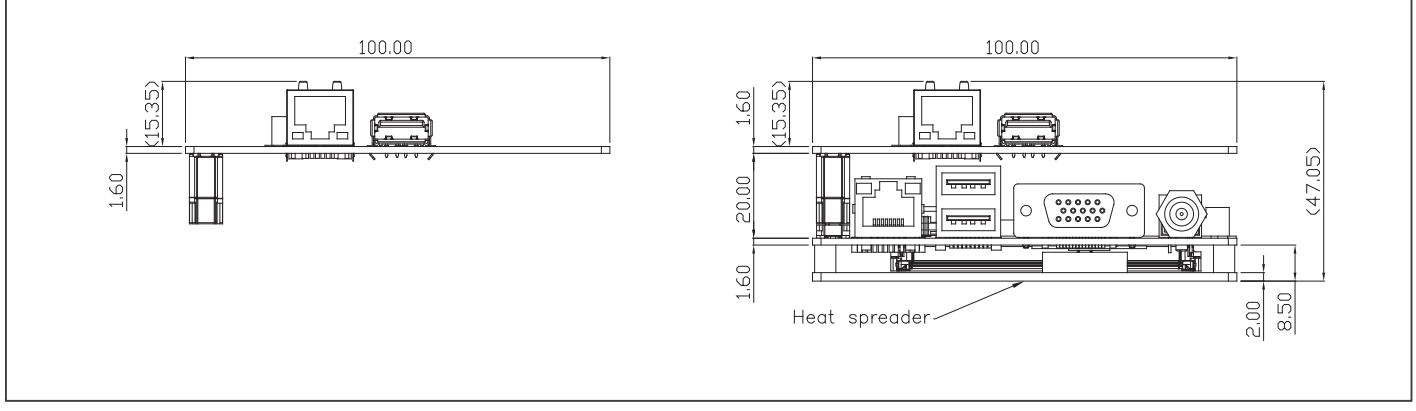
- Accessory Kit
- BIO-ST01-L1U2

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

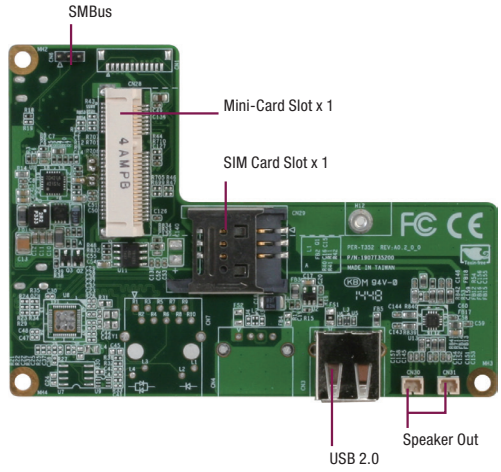
Dimension

Unit: mm



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

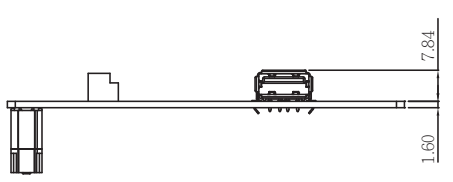
- Accessory kit
- BIO-ST01-M1U1

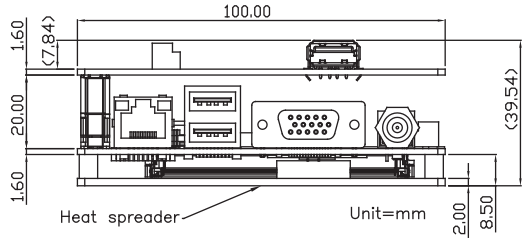
Ordering Information

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

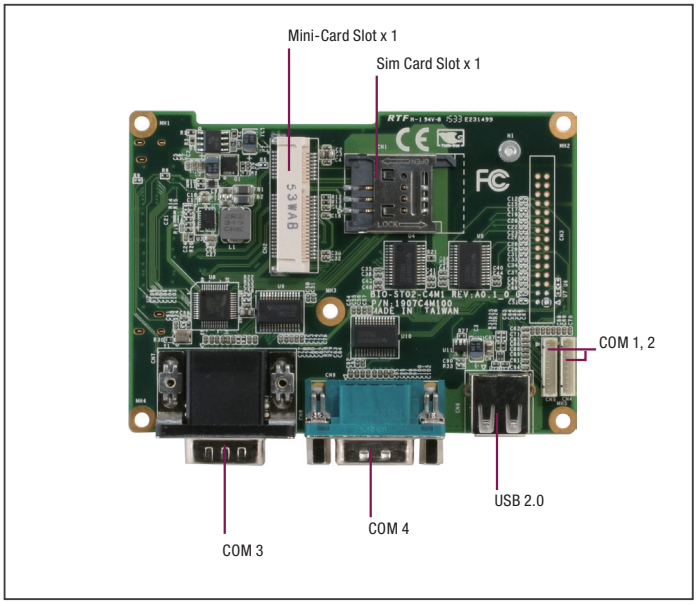




Note: All specifications are subject to change without notice.

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.

Gigo LAN USB 2.0

Specifications

System	
Form Factor	2.5" Board
BIO	80-Pin high speed Board to board connector
Power Requirement	Power Supplied from MB via board to board connector
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.44 lb (0.2 Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40 °F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	—
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**

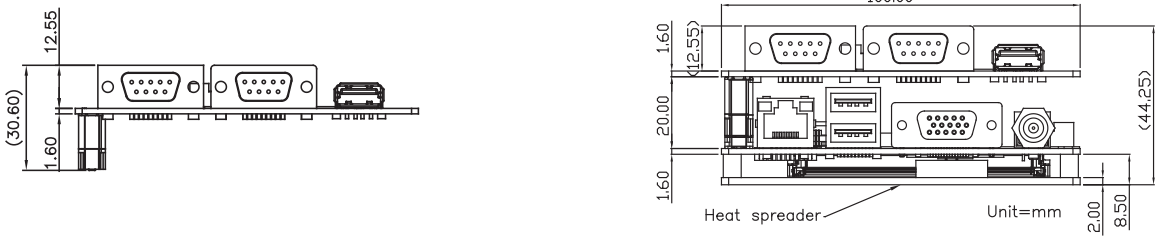
Ordering Information

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.

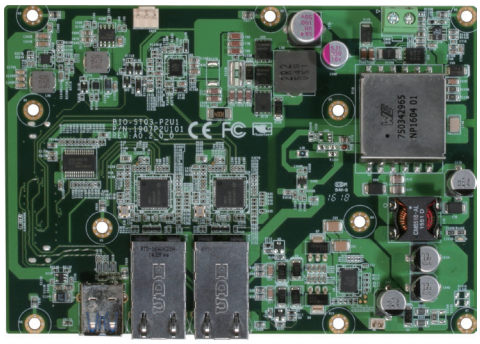
Dimension

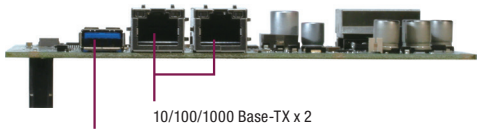
Unit: mm



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

Gigo 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

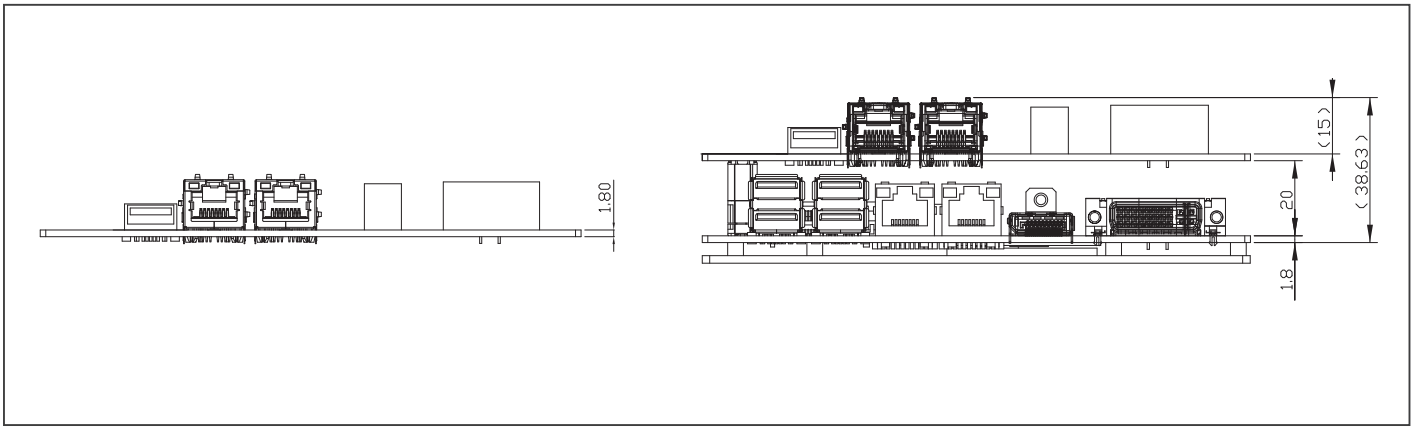
Ordering Information

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

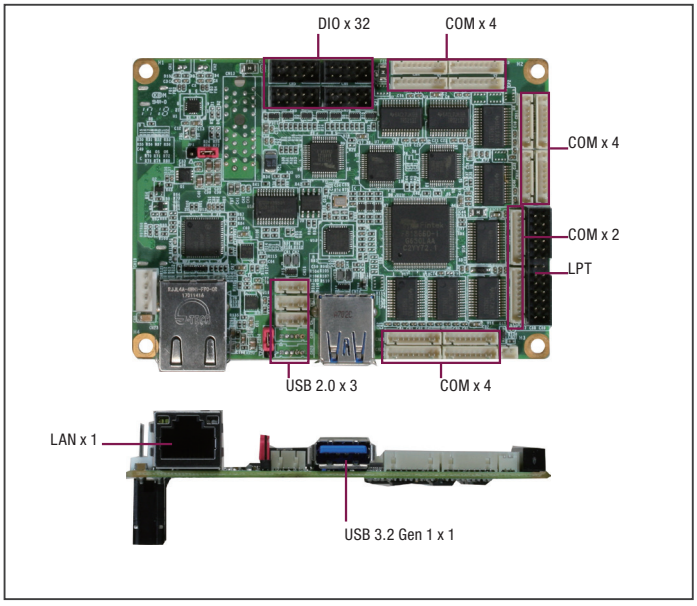
Unit: mm



Note: All specifications are subject to change without notice.

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

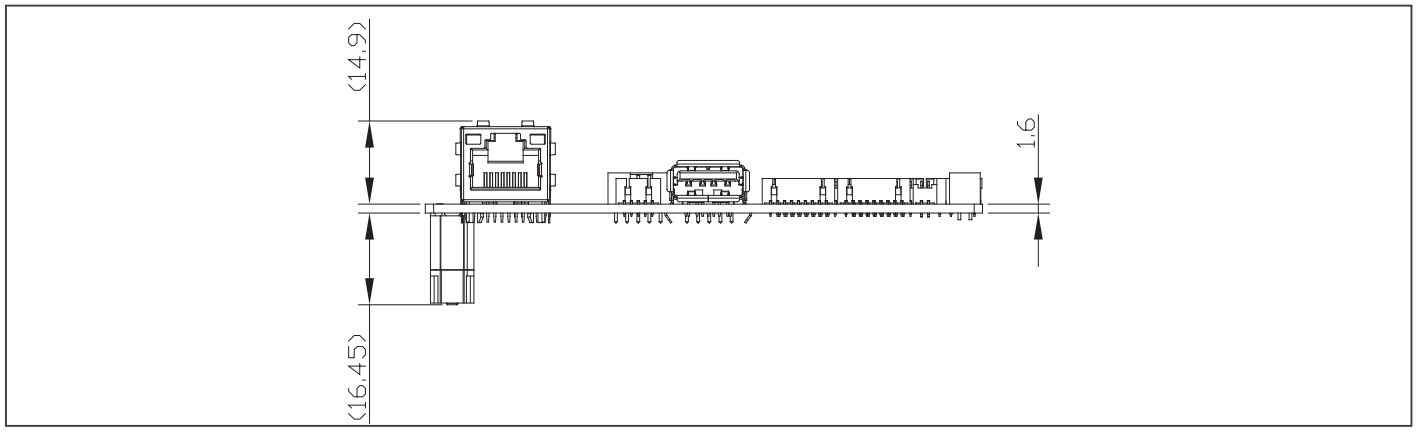
* Customized BIOS is required.

Optional Accessories

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

Dimension

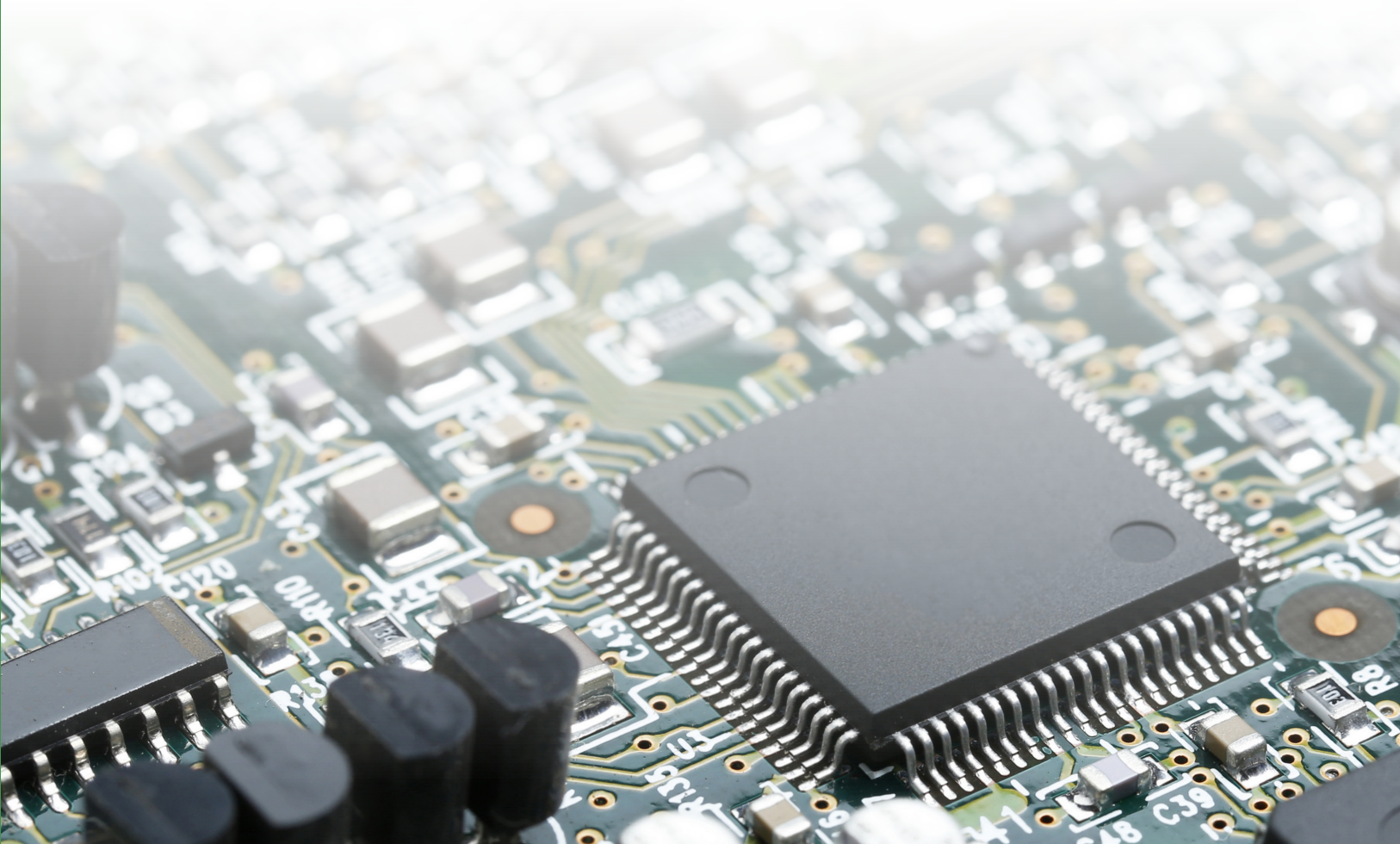
Unit: mm



04

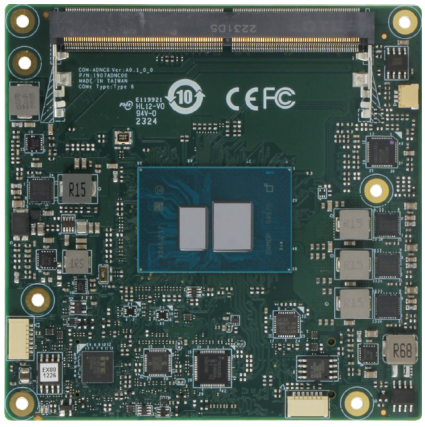
04

COM Express CPU Modules



COM-ASLC6

COM Express Type 6 Compact Size with Intel Atom® X Series Processors



Features

- Intel Atom® X Series CPU, max TDP 12W
- DDR5 SODIMM x 1, up to 16GB (non-ECC)
- Intel® Ethernet Controller I226-V/IT x 1
- SATA 6Gb/s x 2
- USB 2.0 x 8, USB 3.2 Gen 2 x 2
- PCIe [x4] (PCIe [x1] x 4 or [x2] x2), Up to 4 PCIe devices
- COM Express Type 6, Compact size, 95 x 95mm

2.5Giga LAN · HD Audio · DDR5 · USB 2.0 · USB 3.2 Gen 2 · PCI Express

Specifications

System	
Form Factor	COM Express Type 6, Compact Size
CPU	Intel Atom® X Series CPU Intel® Atom® x7835RE (8C, up to 3.6 GHz, 12W) Intel Atom® x7433RE (4C, up to 3.4 GHz, 9W) Intel Atom® x7213RE (2C, up to 3.4 GHz, 9W) Intel Atom® x7211RE (2C, up to 3.2 GHz, 6W)
Chipset	Integrated with Intel® SoC
Memory	DDR5 4800MHz Single Channel , SODIMM x1, up to 16GB
Onboard Storage	—
BIOS	AMI BIOS (UEFI)
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	3.74" x 3.74" (95mm x 95mm)
Security	TPM 2.0
Power	
Power Requirement	+12V and +5VSB for ATX, +12V for AT
Power Type	AT (default)/ATX, switch by BIOS
Power Consumption (Typical)	Intel Atom® x7835RE, 1.94A@+12V
Display	
Graphics Controller	Intel® UHD Graphics
Video Output	3 Displays: 18/24-bit Single/Dual-Channel LVDS/eDP x 1, up to 1920 x 1080/ 3840 x 2160 DP x 2, up to 3840 x 2160
I/O	
Ethernet	Intel® Ethernet Controller I226-V or I226-IT 2.5GbE 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 x 2 (Tx/Rx)
HDD Interface	SATA 6Gb/s x 2
Expansion	PCIe [x1] x 4 or [x2] x 2, LPC, WDT, HWM
GPIO	8-bit
SMBus/I2C	I2C x 1, SMBus x 1
Environment	
Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C) -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 11 (64-bit) Linux Ubuntu 22.04.02/Kernel 5.19
Weight	0.26 lb. (0.12Kg)

Packing List

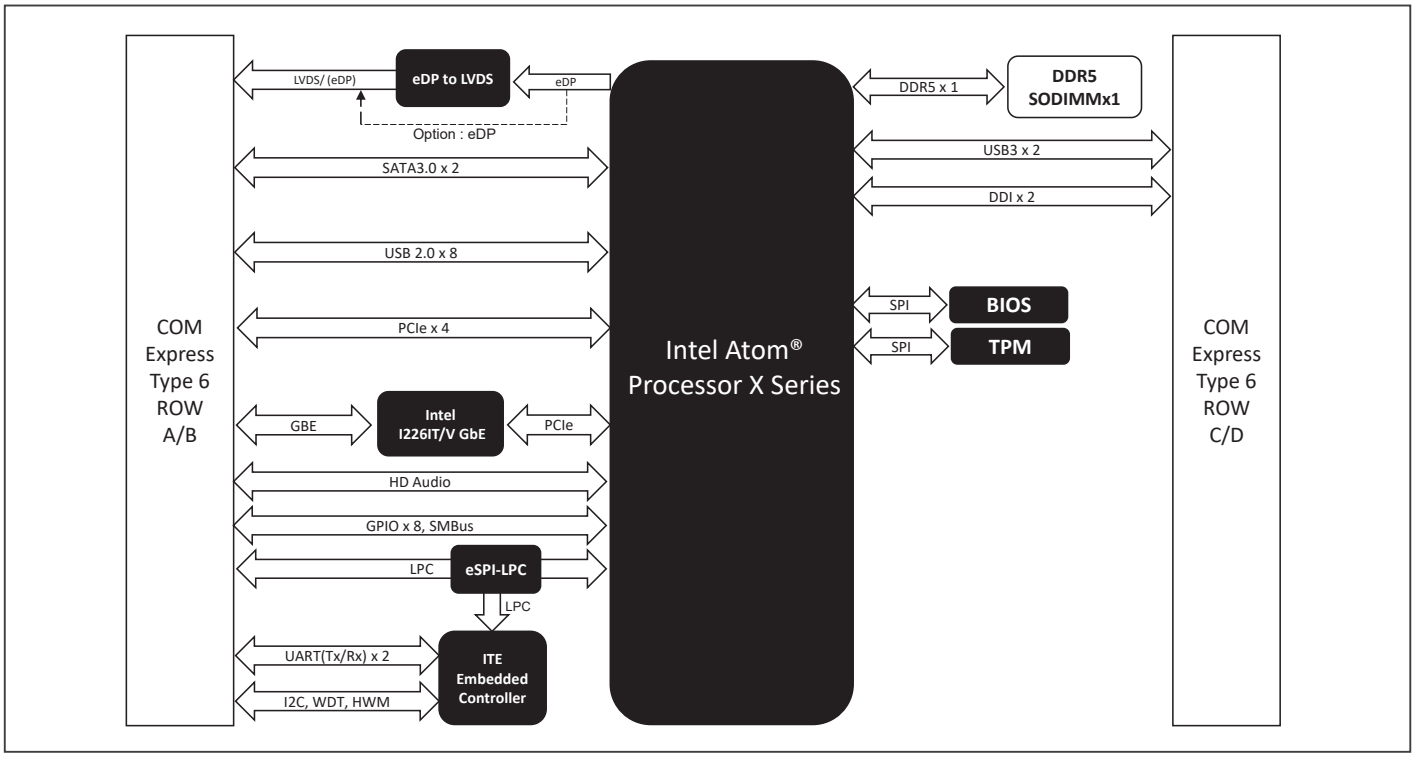
- COM-ASLC6 x 1

Optional Accessories

Part Number	Description
COM-ADNC6-FAN01	Cooler.95*95*29mm.4pin
COM-ADNC6-HSP01	Heat Spreader.95*95*11mm
ECB-920A-A11-0001	COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX. Rev.A1.1

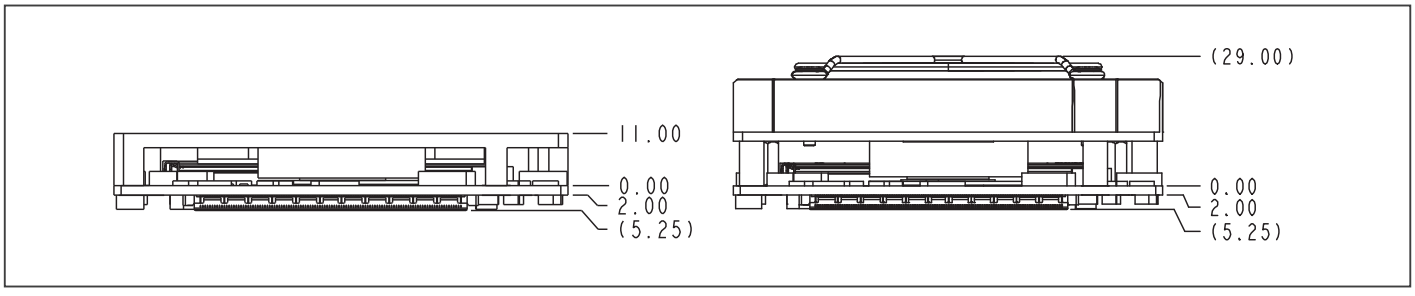
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

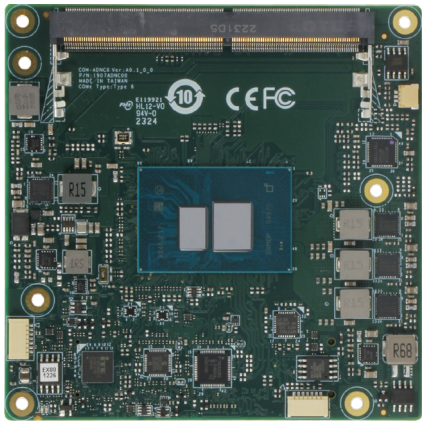


Ordering Information

Part Number	Com Express Type	CPU	Memory	ECC Support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
COM-ASLC6W2-A10-0001	Type 6	Intel® Atom®x7835RE	DDR5 SODIMM x 1	—	LVDS x 1, DP x 2	SATA 6Gb/s x 2	Intel® Ethernet Controller I226-IT x 1	USB 2.0 x 8, USB 3.2 Gen 2 x 2	2-Wire UART x 2 (Tx/Rx)	PCIe x4 lanes ([x1]*4 or [x2]*2)	12V	-40°C ~ 85°C	LPC, GPIO 8-bit, I2C, SMBus
COM-ASLC6W2-A10-0002	Type 6	Intel® Atom®x7433RE	DDR5 SODIMM x 1	—	LVDS x 1, DP x 2	SATA 6Gb/s x 2	Intel® Ethernet Controller I226-IT x 1	USB 2.0 x 8, USB 3.2 Gen 2 x 2	2-Wire UART x 2 (Tx/Rx)	PCIe x4 lanes ([x1]*4 or [x2]*2)	12V	-40°C ~ 85°C	LPC, GPIO 8-bit, I2C, SMBus
COM-ASLC6W2-A10-0003	Type 6	Intel® Atom®x7213RE	DDR5 SODIMM x 1	—	LVDS x 1, DP x 2	SATA 6Gb/s x 2	Intel® Ethernet Controller I226-IT x 1	USB 2.0 x 8, USB 3.2 Gen 2 x 2	2-Wire UART x 2 (Tx/Rx)	PCIe x4 lanes ([x1]*4 or [x2]*2)	12V	-40°C ~ 85°C	LPC, GPIO 8-bit, I2C, SMBus
COM-ASLC6W2-A10-0004	Type 6	Intel® Atom®x7211RE	DDR5 SODIMM x 1	—	eDP x 1, DP x 2	SATA 6Gb/s x 2	Intel® Ethernet Controller I226-IT x 1	USB 2.0 x 8, USB 3.2 Gen 2 x 2	2-Wire UART x 2 (Tx/Rx)	PCIe x4 lanes ([x1]*4 or [x2]*2)	12V	-40°C ~ 85°C	LPC, GPIO 8-bit, I2C, SMBus

COM-ADNC6

COM Express Type 6 Compact Size with Intel Atom® X Series/N-series/Core™ i3 Processors



Features

- Intel Atom® X Series/N-series/Core™ i3-N305 CPU, max TDP 15W
- DDR5 SODIMM x 1, up to 16GB (non-ECC)
- Intel® Ethernet Controller I226-V/IT x 1
- SATA 6Gb/s x 2
- USB 2.0 x 8, USB 3.2 Gen 2 x 2
- PCIe [x4] (PCIe [x1] x 4 or [x2] x2), Up to 4 PCIe devices
- COM Express Type 6, Compact size, 95 x 95mm

2.5Giga LAN · HD Audio · DDR5 · USB 2.0 · USB 3.2 Gen 2 · PCI Express

Specifications

System	
Form Factor	COM Express Type 6, Compact Size
CPU	Intel Atom® X Series/N-series/Core™ i3-N305 CPU Intel® Core™ i3-N305 (8C, up to 3.8 GHz, 15W) Intel Atom® x7425E (4C, up to 3.4 GHz, 12W) Intel Atom® x7211E (2C, up to 3.2 GHz, 6W) Intel® Processor N97 (4C, up to 3.6 GHz, 12W) Intel® Processor N50 (2C, up to 3.4 GHz, 6W)
Chipset	Integrated with Intel® SoC
Memory	DDR5 4800MHz Single Channel , SODIMM x1, up to 16GB
Onboard Storage	—
BIOS	AMI BIOS (UEFI)
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	3.74" x 3.74" (95mm x 95mm)
Security	TPM 2.0
Power	
Power Requirement	+12V and +5VSB for ATX, +12V for AT
Power Type	AT (default)/ATX, switch by BIOS
Power Consumption (Typical)	Intel® Core™ i3-N305, 1.57A @+12V
Display	
Graphics Controller	Intel® UHD Graphics
Video Output	3 Displays: 18/24-bit Single/Dual-Channel LVDS/eDP x 1, up to 1920 x 1080/ 3840 x 2160 DP x 2, up to 3840 x 2160
I/O	
Ethernet	Intel® Ethernet Controller I226-V or I226-IT 2.5GbE 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 x 2 (Tx/Rx)
HDD Interface	SATA 6Gb/s x 2
Expansion	PCIe [x1] x 4 or [x2] x 2, LPC, WDT, HWM
GPIO	8-bit
SMBus/I2C	I2C x 1, SMBus x 1
Environment	
Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C) -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) Linux Ubuntu 22.04.02/Kernel 5.19
Weight	0.26 lb. (0.12Kg)

Packing List

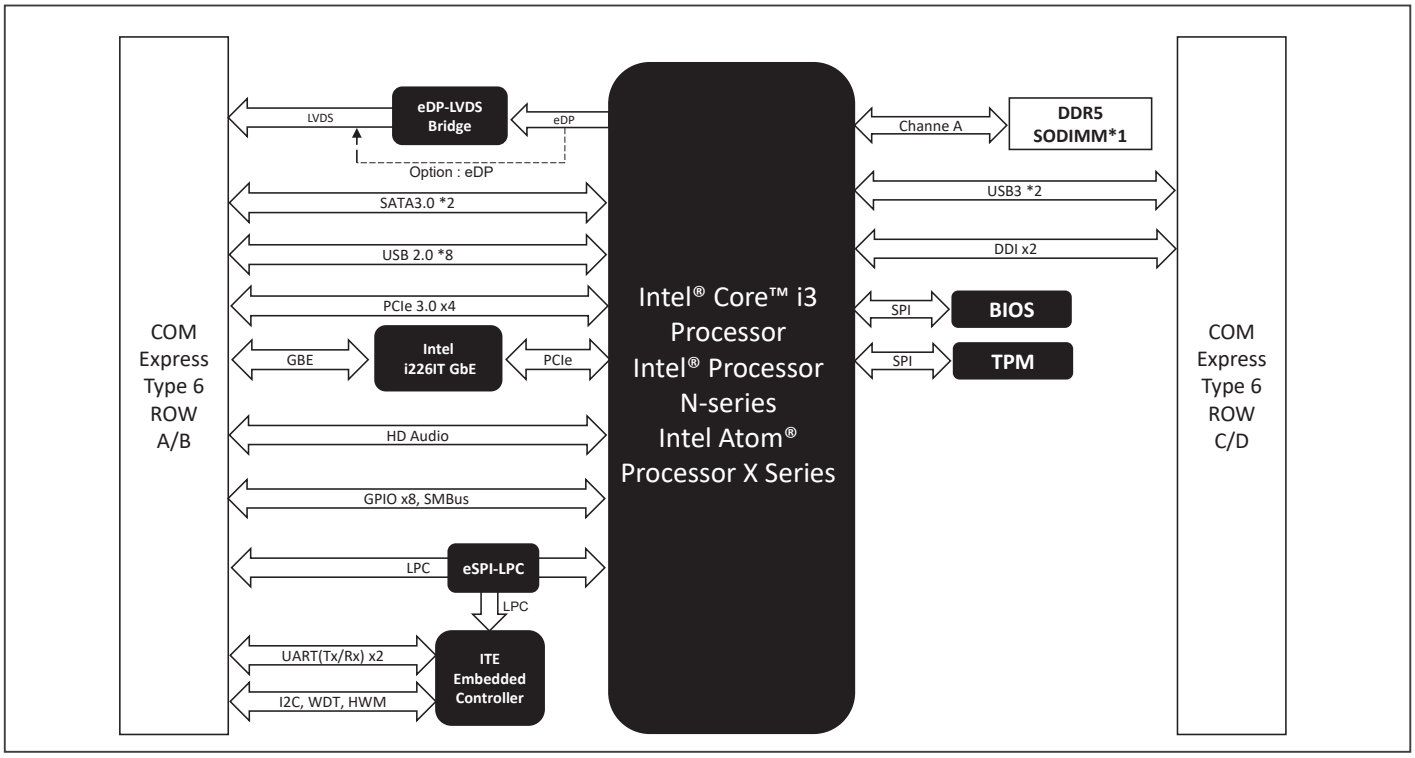
- COM-ADNC6 x 1

Optional Accessories

Part Number	Description
COM-ADNC6-FAN01	Cooler.95*95*29mm.4pin
COM-ADNC6-HSK01	Heat sink.Al.95x95x34mm.Silver
COM-ADNC6-HSP01	Heat Spreader.95*95*11mm
ECB-920A-A11-0001	COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX. Rev.A1.1

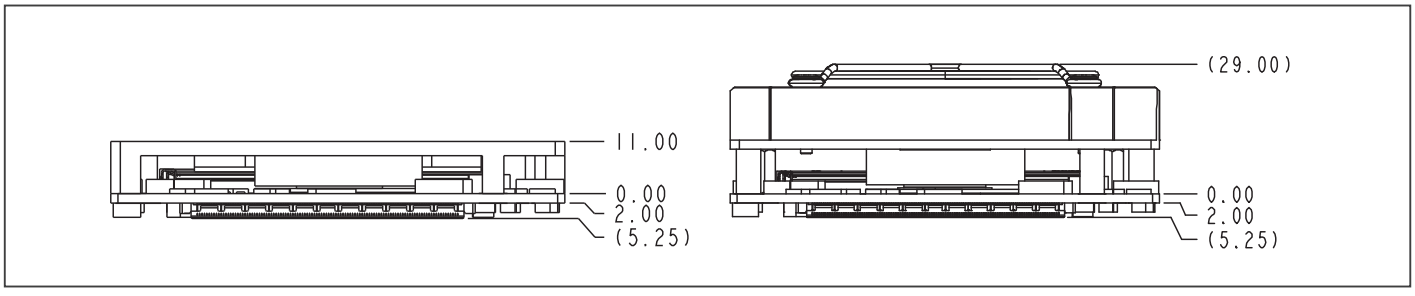
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

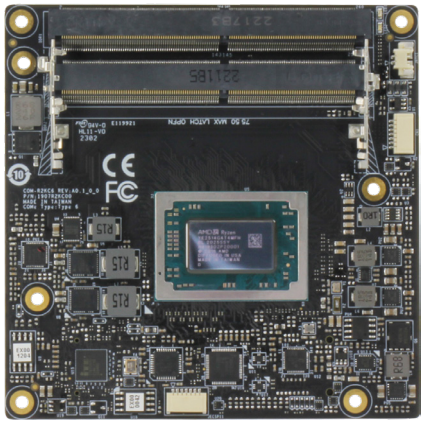


Ordering Information

Part Number	COM Express Type	CPU	Memory	ECC support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
COM-ADNC6-A10-0001	Type 6	Intel® Core™ i3-N305	DDR5 SODIMM x 1	—	LVDS x 1, DDI x 2	SATA 6Gb/s x 2	Intel® Ethernet Controller I226-V x 1	USB 2.0 x 8, USB 3.2 Gen 2 x 2	2-Wire UART x 2 (Tx/Rx)	PCIe x4 lanes ([x1]*4 or [x2]*2)	12V	-20°C ~ 70°C	LPC, GPIO 8-bit, I2C, SMBus
COM-ADNC6-A10-0002	Type 6	Intel® Processor N97	DDR5 SODIMM x 1	—	LVDS x 1, DDI x 2	SATA 6Gb/s x 2	Intel® Ethernet Controller I226-V x 1	USB 2.0 x 8, USB 3.2 Gen 2 x 2	2-Wire UART x 2 (Tx/Rx)	PCIe x4 lanes ([x1]*4 or [x2]*2)	12V	-20°C ~ 70°C	LPC, GPIO 8-bit, I2C, SMBus
COM-ADNC6-A10-0003	Type 6	Intel® Processor N50	DDR5 SODIMM x 1	—	LVDS x 1, DDI x 2	SATA 6Gb/s x 2	Intel® Ethernet Controller I226-V x 1	USB 2.0 x 8, USB 3.2 Gen 2 x 2	2-Wire UART x 2 (Tx/Rx)	PCIe x4 lanes ([x1]*4 or [x2]*2)	12V	-20°C ~ 70°C	LPC, GPIO 8-bit, I2C, SMBus
COM-ADNC6-A10-0004	Type 6	Intel Atom® x7425E	DDR5 SODIMM x 1	—	eDP x 1, DDI x 2	SATA 6Gb/s x 2	Intel® Ethernet Controller I226-V x 1	USB 2.0 x 8, USB 3.2 Gen 2 x 2	2-Wire UART x 2 (Tx/Rx)	PCIe x4 lanes ([x1]*4 or [x2]*2)	12V	-20°C ~ 70°C	LPC, GPIO 8-bit, I2C, SMBus
COM-ADNC6W2-A10-0001	Type 6	Intel® Core™ i3-N305	DDR5 SODIMM x 1	—	LVDS x 1, DDI x 2	SATA 6Gb/s x 2	Intel® Ethernet Controller I226-IT x 1	USB 2.0 x 8, USB 3.2 Gen 2 x 2	2-Wire UART x 2 (Tx/Rx)	PCIe x4 lanes ([x1]*4 or [x2]*2)	12V	-40°C~85°C	LPC, GPIO 8-bit, I2C, SMBus

COM-R2KC6

COM Express Type 6 Compact Size with AMD Ryzen™ Embedded R2000 Series Processors



Features

- DDR4 3200MHz SODIMM x 2, up to 32GB
- USB 2.0 x 8, USB3.2 10Gbps x2, USB3.2 5Gbps x1
- PCIe [x4] x 1, PCIe [x1] x 4, PEG [x4] x 1
- Intel® I226-LM/IT 2.5GbE x 1
- COM Express Type 6, 3.74" x 3.74" (95mm x 95mm)

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

Specifications

System	
Form Factor	COM Express Compact Size, Type 6
CPU	AMD Ryzen™ Embedded R2000 Series Processors: AMD Ryzen™ Embedded R2544 (4C/8T, 3.35 GHz, 45W) AMD Ryzen™ Embedded R2514 (4C/8T, 2.10 GHz, 15W) AMD Ryzen™ Embedded R2314 (4C/4T, 2.10 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory	DDR4 3200MHz SODIMM x 2, up to 32GB
Onboard Storage	—
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	3.74" x 3.74" (95mm x 95mm)
Security	TPM 2.0
Power	
Power Requirement	+12V and +5VSB for ATX, +12V for AT
Power Type	AT/ATX
Power Consumption (Typical)	AMD Ryzen™ R2544, 4.8A @+12V
Display	
Graphics Controller	AMD Radeon™ Vega 8 Graphics / AMD Radeon™ Vega 6 Graphics
Video Output	4 Simultaneous Displays: eDP x 1, up to 3840 x 2160 DDI x 3, up to 3840 x 2160
I/O	
Ethernet	Intel® I226-LM/IT 2.5GbE x 1
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8, USB3.2 10Gbps x2, USB3.2 5Gbps x1
Serial Port	2-Wire UART x 2 (Tx/Rx)
HDD Interface	SATA III x 2
Expansion	PEG [x4] PCIe Gen3[x1] x4 (0~3) PCIe Gen3[x4] x1 (4~7) LPC
GPIO	8-bit
SMBus/I2C	I2C x 1, SMBus x 1
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) Linux Ubuntu 22.04.2/Kernel 5.19.0-32
Weight	0.44 lb. (0.20Kg)

Packing List

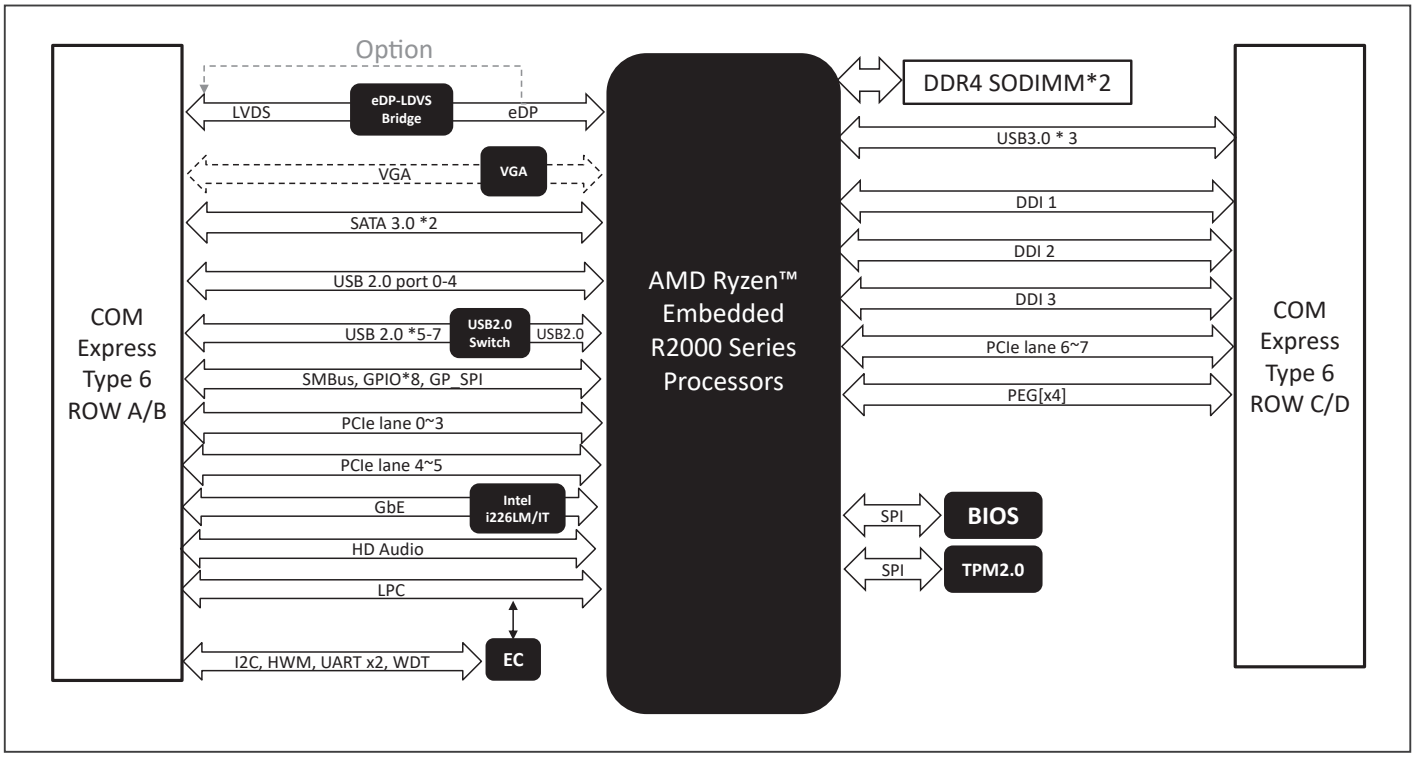
- COM-R2KC6

Optional Accessories

Part Number	Description
ECB-920A-A11-0001	COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX. Rev. A1.1
COM-R2KC6-FAN01	Cooler.95mm x 95mm x 46mm.4pin

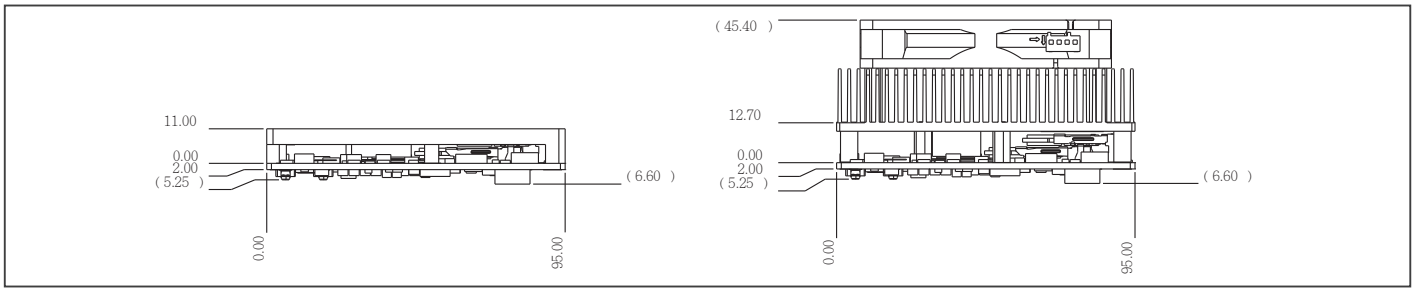
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



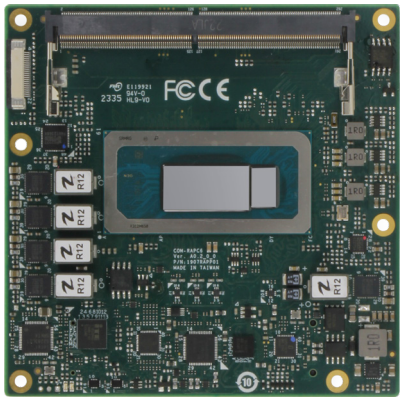
Ordering Information

Part Number	COM Express Type	CPU	Memory	ECC support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
COM-R2KC6-A10-0001	Type 6	AMD Ryzen™ R2544	DDR4 SODIMM x 2	Yes	eDP x 1, DDI x 3	SATA III x 2	Intel® I226-LM x 1	USB 2.0 x 8 USB 3.2 Gen 2 x 2 USB 3.2 Gen1 x 1	2-Wire UART x 2 (Tx/Rx)	PCIe[x4] x 1 PCIe[x1] x 4 PEG[x4] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-R2KC6-A10-0002	Type 6	AMD Ryzen™ R2514	DDR4 SODIMM x 2	Yes	eDP x 1, DDI x 3	SATA III x 2	Intel® I226-IT x 1	USB 2.0 x 8 USB 3.2 Gen 2 x 2 USB 3.2 Gen1 x 1	2-Wire UART x 2 (Tx/Rx)	PCIe[x4] x 1 PCIe[x1] x 4 PEG[x4] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-R2KC6-A10-0003	Type 6	AMD Ryzen™ R2314	DDR4 SODIMM x 2	Yes	eDP x 1, DDI x 3	SATA III x 2	Intel® I226-LM x 1	USB 2.0 x 8 USB 3.2 Gen 2 x 2 USB 3.2 Gen1 x 1	2-Wire UART x 2 (Tx/Rx)	PCIe[x4] x 1 PCIe[x1] x 4 PEG[x4] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI

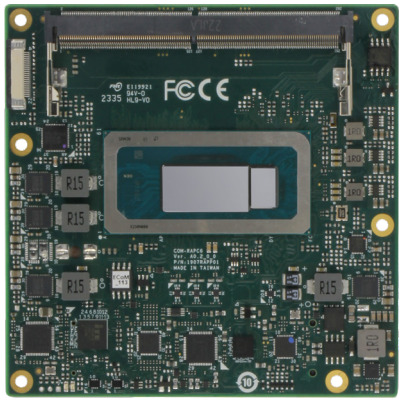
COM-RAPC6

COM Express Type 6 Compact Size with 13th Generation Intel® Core™ i7/i5/i3 Processor SoC

COM-RAPC6-H series CPU



COM-RAPC6-P/U series CPU



Features

- 13th Generation Intel® Core™ i7/i5/i3 Processor SoC, max TDP 45W
- DDR5 SODIMM x 2, up to 64GB (non-ECC)
- Intel i226 2.5GbE x 1
- SATA 6.0Gbps x 2
- USB3.2 Gen2 x 4, USB2.0 x 8
- Up to 6 PCIe devices
- 12V DC input
- COM Express Type 6, Compact size, 95 x 95mm

Giga LAN · HD Audio · DDR 5 · USB 2.0 · USB 3.2 Gen 2 · PCI Express

Specifications

System	
Form Factor	COM Express, Type 6
CPU	13th Intel® Core™Processor: Intel® Core™ i7-13800HRE Processor (14C/20T, 2.5GHz, 45W, In-Band ECC) Intel® Core™ i7-13800HE Processor (14C/20T, 2.5GHz, 45W) Intel® Core™ i5-13600HE Processor (12C/16T, 2.7GHz, 45W) Intel® Core™ i3-13300HE Processor (8C/12T, 2.1GHz, 45W) Intel® Core™ i7-1370PE Processor (14C/20T, 1.9GHz, 28W) Intel® Core™ i5-1340PE Processor (14C/16T, 1.8GHz, 28W) Intel® Core™ i3-1320PE Processor (8C/12T, 1.7GHz, 28W) Intel® Core™ i3-1315UE Processor (6C/8T, 1.2GHz, 15W)
Chipset	Integrated with Intel ® SoC
Memory	DDR5 SODIMM Socket x 2, non-ECC, up to 64GB (U Processor up to 4800MT/s, H/P Processor up to 5200 MT/s)
Onboard Storage	—
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	3.75" x 3.75" (95mm x 95mm)
Security	TPM 2.0

Power	
Power Requirement	+12V and +5VSB for ATX, +12V for AT
Power Type	AT/ATX
Power Consumption (Typical)	Intel® Core™ i7-13800HE, DDR5 32GB x 2, 8.30A@ +12V
Display	
Graphics Controller	Intel® Iris® Xe Graphics Intel® UHD Graphics
Video Output	4 Simultaneous Displays: DDI x 3, up to 3840 x 2160 18/24-bit Single/Dual-Channel LVDS/eDP x 1, up to1920 x 1080 / 3840 x 2160 @60Hz VGA x 1, up to 1920 x 1080
I/O	
Ethernet	Intel® Ethernet Controller I226, 2.5GbE 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 x 2 (Tx/Rx)
HDD Interface	SATA 6.0Gbps x 2
Expansion	PCIe[x1] x 4 (Configurable by BIOS)+ PCIe[x4] x 1+PCIe[x8] x 1 (PCIe[x8] for H series CPU only)
GPIO	8-bit
SMBus/I2C	I2C x 1, SMBus x 1
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) WiTAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) Linux Ubuntu 23.10.1/Kernel 6.5
Weight	0.25 lb. (0.12Kg)

Packing List

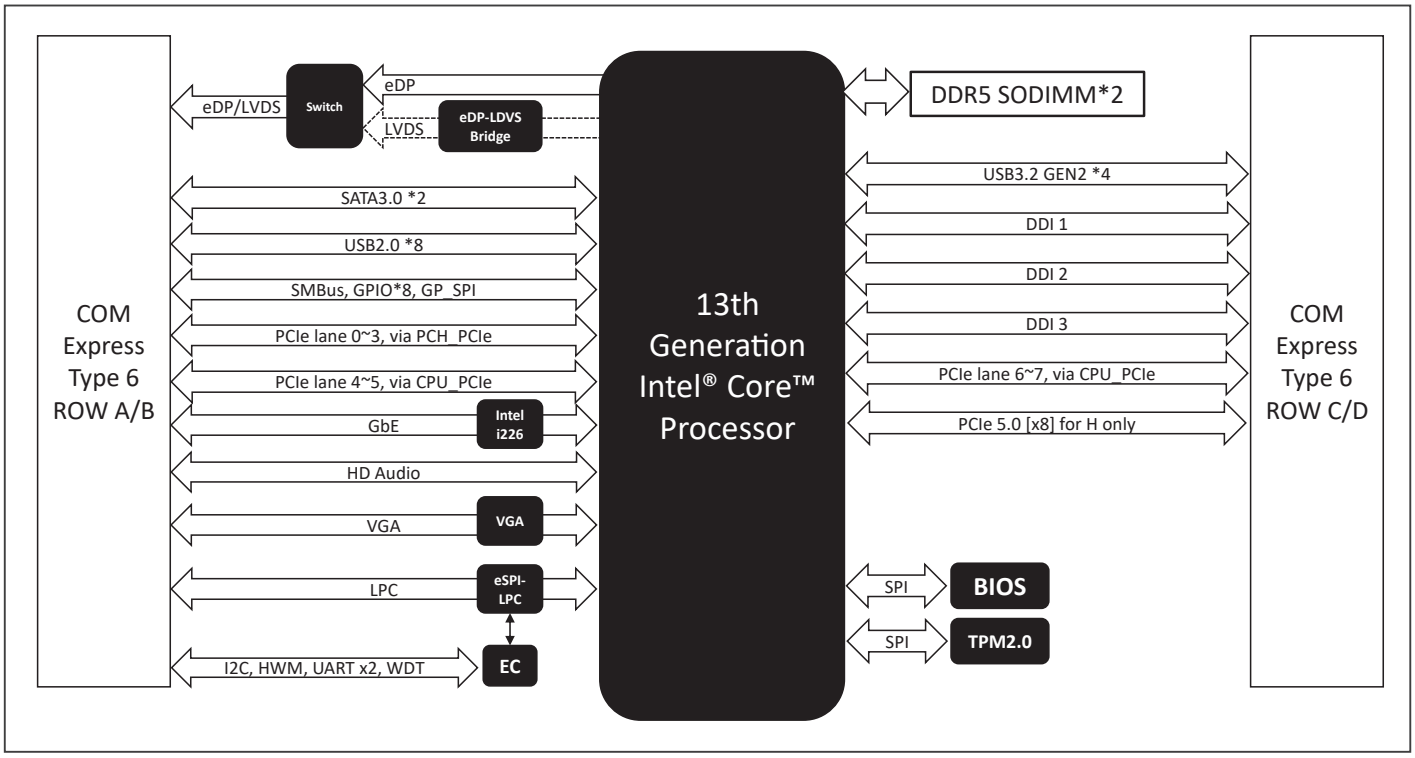
- COM-RAPC6

Optional Accessories

Part Number	Description
COM-RAPC6-FAN01	Cooler.95 x 95 x 45.4mm.4pin
ECB-920A-A11-0001	COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX. Rev.A1.1

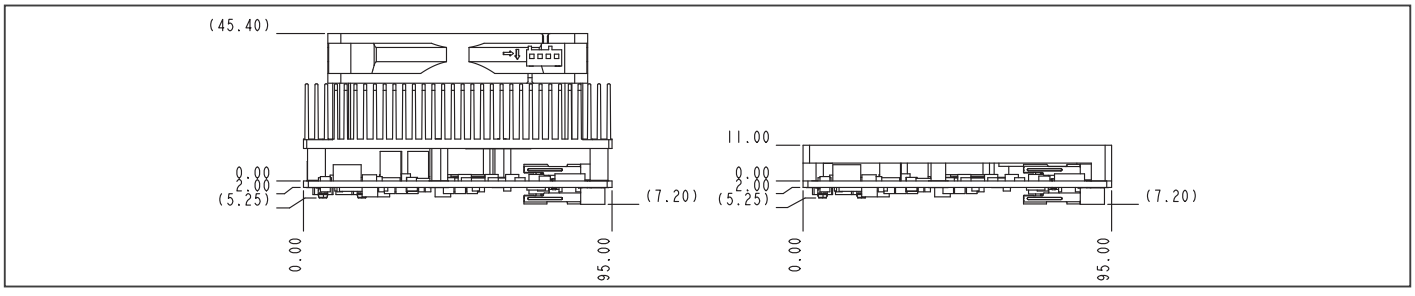
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

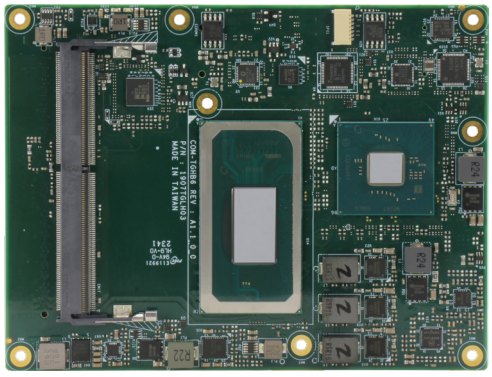


Ordering Information

Part Number	COM Express Type	CPU	Memory	ECC support	Display	LVDS	Storage	LAN	USB	UART	Expansion	Power	Temp	Others
COM-RAPC6-A10-0001	Type 6	Intel® Core™ i7-13800HE	DDR5 SODIMM x 2	—	VGA x 1, DDI x 3	18/24bits 2CH LVDS	SATA 6.0Gbps x 2	I226-ITx1	USB 2.0 x 8, USB3.2 Gen 2 x 4	2-Wire UART x 2 (Tx/Rx)	PCIe x 4 lanes ([x1] x 4 or [x2] x 2 or [x4] x 1) + PCIe [x4] x 1 + PCIe [x8] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
COM-RAPC6-A10-0002	Type 6	Intel® Core™ i5-13600HE	DDR5 SODIMM x 2	—	VGA x 1, DDI x 3	18/24bits 2CH LVDS	SATA 6.0Gbps x 2	I226-ITx1	USB 2.0 x 8, USB3.2 Gen 2 x 4	2-Wire UART x 2 (Tx/Rx)	PCIe x 4 lanes ([x1] x 4 or [x2] x 2 or [x4] x 1) + PCIe [x4] x 1 + PCIe [x8] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
COM-RAPC6-A10-0003	Type 6	Intel® Core™ i3-1320PE	DDR5 SODIMM x 2	—	VGA x 1, DDI x 3	18/24bits 2CH LVDS	SATA 6.0Gbps x 2	I226-ITx1	USB 2.0 x 8, USB3.2 Gen 2 x 4	2-Wire UART x 2 (Tx/Rx)	PCIe x 4 lanes ([x1] x 4 or [x2] x 2 or [x4] x 1), PCIe [x4] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
COM-RAPC6-A10-0005	Type 6	Intel® Processor U300E	DDR5 SODIMM x 2	—	VGA x 1, DDI x 3	18/24bits 2CH LVDS	SATA 6.0Gbps x 2	I226-ITx1	USB 2.0 x 8, USB3.2 Gen 2 x 4	2-Wire UART x 2 (Tx/Rx)	PCIe x 4 lanes ([x1] x 4 or [x2] x 2 or [x4] x 1), PCIe [x4] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
COM-RAPC6W2-A10-0001	Type 6	Intel® Core™ i7-13800HRE	DDR5 SODIMM x 2	—	VGA x 1, DDI x 3	18/24bits 2CH LVDS	SATA 6.0Gbps x 2	I226-ITx1	USB 2.0 x 8, USB3.2 Gen 2 x 4	2-Wire UART x 2 (Tx/Rx)	PCIe x 4 lanes ([x1] x 4 or [x2] x 2 or [x4] x 1) + PCIe [x4] x 1 + PCIe [x8] x 1	12V	-40°C ~ 85°C	LPC, GPIO 8-bit, I2C, SMBus

COM-TGHB6

COM Express Type 6 with 11th Gen Intel® Core™/Xeon® W Processors



Features

- DDR4 3200MHz SODIMM x 2, up to 64GB
- VGA x 1, LVDS x 1, DDI x 3
- USB 2.0 x 8, USB 3.2 Gen 2 x 4
- PCIe [x1] x 8, PCIe [x16] x 1
- Intel® I226-LM 2.5GbE x 1
- COM Express Type 6, 4.92" x 3.75" (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® Core™ Processors: Intel® Core™ i7-11850HE (8C/16T, 2.1 GHz, 35W) Intel® Core™ i5-11500HE (6C/12T, 2.1 GHz, 35W) Intel® Core™ i3-11100HE (4C/8T, 1.9 GHz, 35W) Intel® Xeon® W Processors: Intel® Xeon® W-11865MRE (8C/16T, 2.1 GHz, 35W) Intel® Xeon® W-11865MLE (8C/16T, 1.5 GHz, 25W)
Chipset	Intel® QM580E Intel® RM590E
Memory	DDR4 3200MHz Dual Channel , SODIMM x 2 , up to 64GB
Onboard Storage	—
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	4.92" x 3.75" (125mm x 95mm)
Security	TPM 2.0
Power	
Power Requirement	+12V and +5VSB for ATX, +12V for AT
Power Type	AT/ATX
Power Consumption (Typical)	Intel® Xeon® W-11865MRE, 5.26A @+12V
Display	
Graphics Controller	Intel® UHD Graphics
Video Output	4 Simultaneous Displays: DDI x 3, up to 3840 x 2160 LVDS/eDP x 1, up to 1920 x 1080 VGA x 1, up to 1920 x 1080
I/O	
Ethernet	Intel® I226-LM 2.5GbE 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 x 2 (Tx/Rx)
HDD Interface	SATA III x 4
Expansion	PEG 4.0 [x16] x 1 PCIe 3.0 [x1] x 8 LPC x 1
GPIO	8-bit
SMBus/I2C	I2C x 1, SMBus x 1
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) Linux Ubuntu 20.04.4/Kernel 5.13
Weight	0.33 lb. (0.15Kg)

Packing List

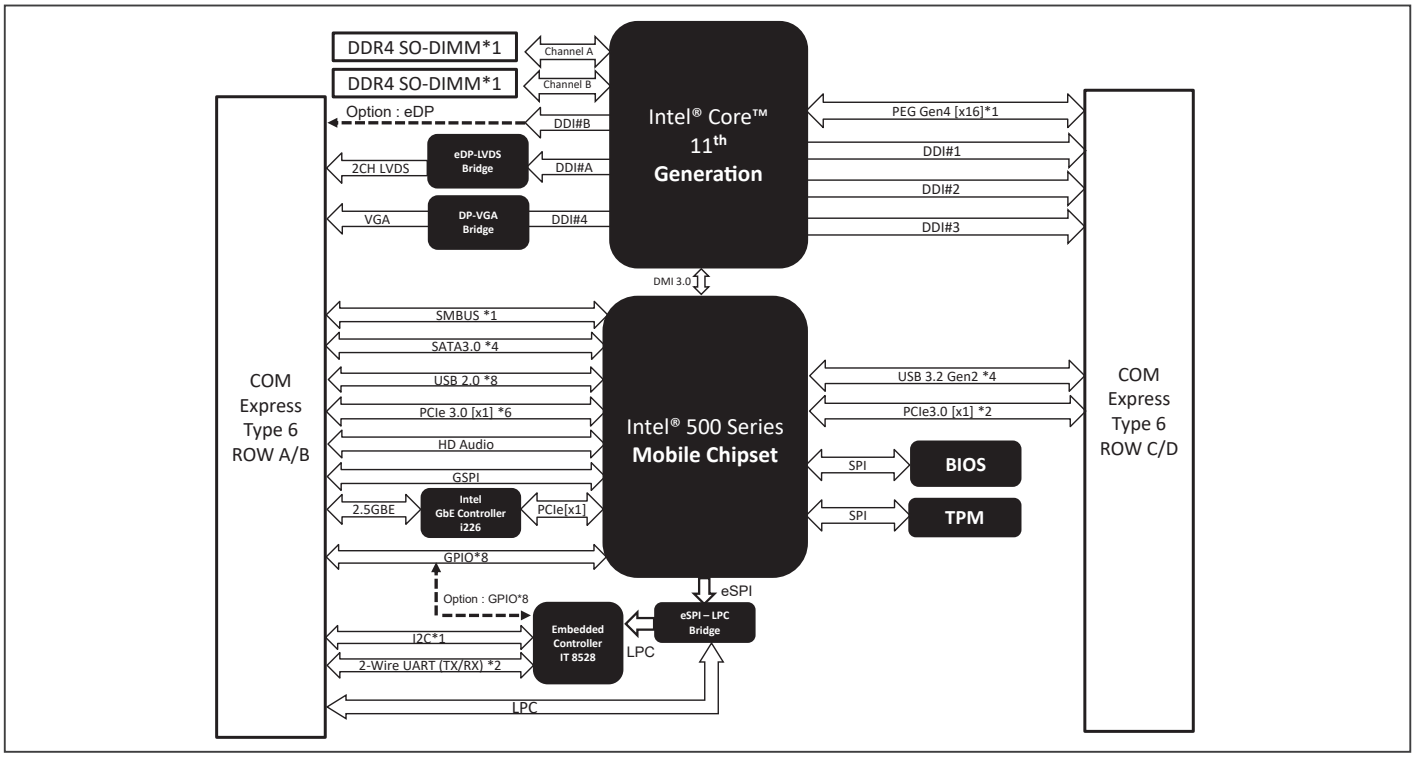
- COM-TGHB6

Optional Accessories

Part Number	Description
ECB-920A-A11-0001	COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX. Rev.A1.1
COM-TGHB6-HSP01	Heat Spreader.125mm x 95mm x 11mm.Black
COM-TGHB6-FAN01	Cooler.125mm x 95mm x 35mm.4pin

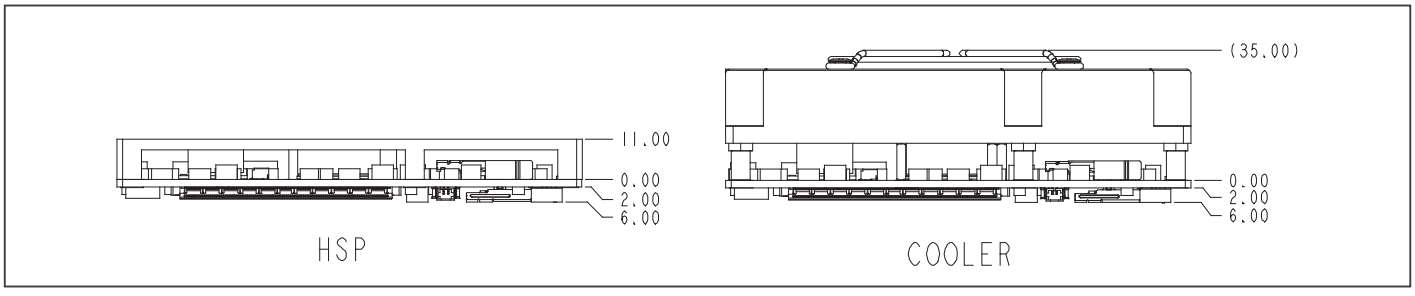
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

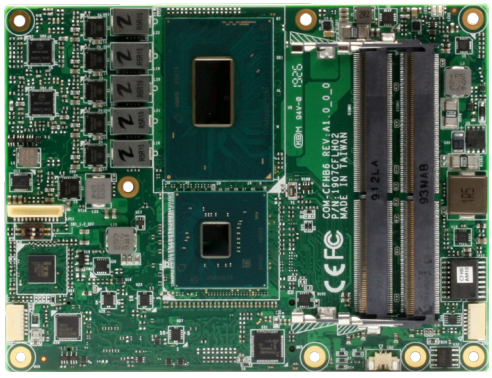


Ordering Information

Part Number	COM Express Type	CPU	Memory	ECC support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
COM-TGHB6-A11-0001	Type 6	Intel® Core™ i7-11850HE	DDR4 SODIMM x 2	—	VGA x 1, LVDS x 1, DDI x 3	SATA III x 4	Intel® I226-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 8 PEG [x16] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-TGHB6-A11-0002	Type 6	Intel® Core™ i5-11500HE	DDR4 SODIMM x 2	—	VGA x 1, LVDS x 1, DDI x 3	SATA III x 4	Intel® I226-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 8 PEG [x16] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-TGHB6-A11-0003	Type 6	Intel® Core™ i3-11100HE	DDR4 SODIMM x 2	—	VGA x 1, LVDS x 1, DDI x 3	SATA III x 4	Intel® I226-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 8 PEG [x16] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-TGHB6W2-A11-0001	Type 6	Intel® Xeon® W-11865MRE	DDR4 SODIMM x 2	Yes	VGA x 1,LVDS x 1 , DDI x 3	SATA III x 4	Intel® I226-IT x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx / Rx)	PCIE [x1] x 8 PEG [x16] x 1	12V	-40°C~85°C	LPC, GPIO 8-bit, I2C, SMBus, SPI

COM-CFHB6

COM Express Type 6 Basic Size with 8th/9th Gen Intel® Core™/Xeon® E Processors



Features

- DDR4 2666MHz SODIMM x 3, up to 96GB (ECC by SKU)
- VGA x 1, LVDS x 1, DDI x 2
- USB 2.0 x 8, USB 3.2 Gen 2 x 4
- PCIe [x1] x 8, PCIe [x16] x 1
- Intel® I219-LM GbE x 1
- COM Express Type 6, 4.92" x 3.75" (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	9th Generation Intel® Core™ Processors: Intel® Core™ i7-9850HL (6C/12T, 1.90 GHz, 25W) Intel® Core™ i7-9850HE (6C/12T, 2.70 GHz, 45W) 8th Generation Intel® Core™ Processors: Intel® Core™ i7-8850H (6C/12T, 2.60 GHz, 45W) Intel® Core™ i5-8400H (4C/8T, 2.50 GHz, 45W) Intel® Core™ i3-8100H (4C/4T, 3.00 GHz, 45W) Intel® Xeon® E Processors: Intel® Xeon® E-2176M (6C/12T, 2.70 GHz, 45W) Intel® Xeon® E-2276ME Processor (6C/12T, 2.80 GHz, 45W)
Chipset	Intel® QM370 Intel® CM246
Memory	DDR4 2666MHz SODIMM x 3, up to 96GB (ECC by SKU)
Onboard Storage	—
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	4.92" x 3.75" (125mm x 95mm)
Security	TPM 2.0 (Optional)
Power	
Power Requirement	+12V and +5VSB for ATX, +12V for AT
Power Type	AT/ATX
Power Consumption (Typical)	Intel® Xeon® E-2276ME, 4.65A @+12V
Display	
Graphics Controller	Intel® UHD Graphics 630 Intel® UHD Graphics P630
Video Output	3 Simultaneous Displays: 18/24-bit Single/Dual-Channel LVDS x 1, up to 1920 x 1080 DDI x 2, up to 3840 x 2160 VGA x 1, up to 1920 x 1080

I/O	
Ethernet	Intel® I219-LM 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 x 2 (Tx/Rx)
HDD Interface	SATA III x 4
Expansion	PEG 3.0 [x16] x 1 PCIe 3.0 [x1] x 8 LPC x 1
GPIO	8-bit
SMBus/I2C	I2C x 1, SMBus x 1
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) Linux Ubuntu 18.04.3/Kernel 5.0
Weight	0.44 lb. (0.20Kg)

Packing List

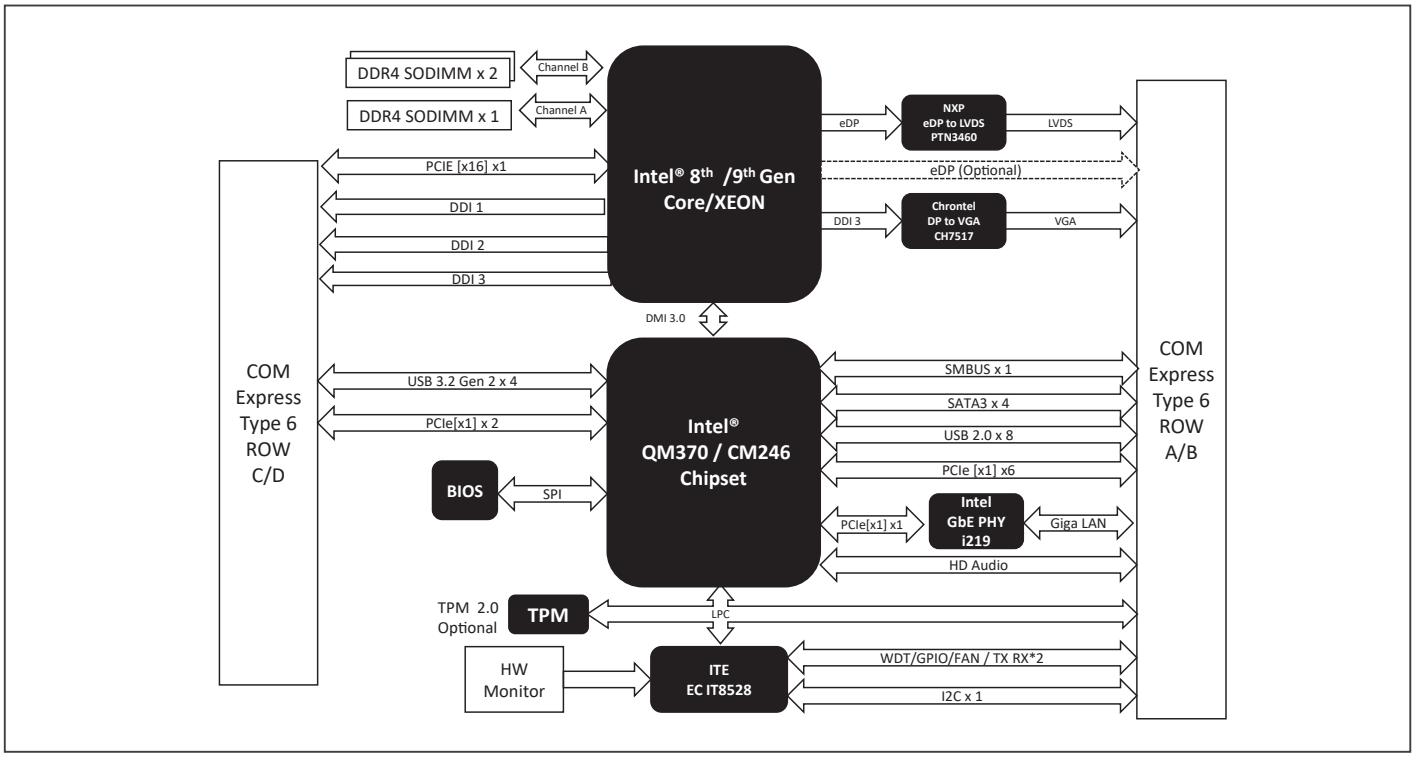
- COM-CFHB6

Optional Accessories

Part Number	Description
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	Cooler.125mm x 95mm x 42mm.3pin.for COM-CFHB6
COM-CFHB6-HSP01	Heat Spreader.125mm x 95mm x 11mm.Black

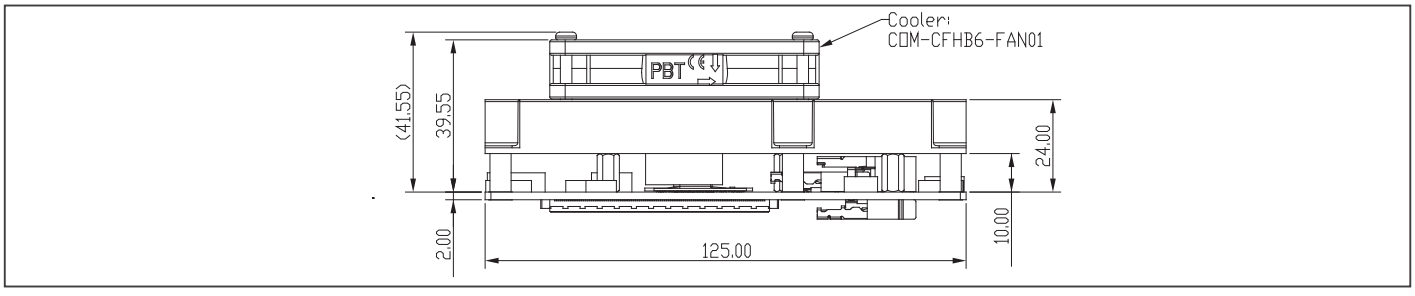
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

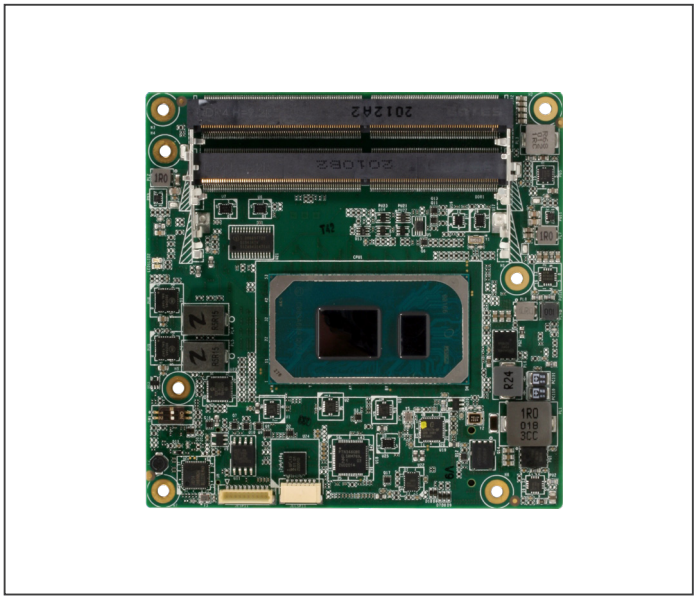


Ordering Information

Part Number	COM Express Type	CPU	Memory	ECC support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
COM-CFHB6-A11-0001	Type 6	Intel® Xeon® E-2176M	DDR4 SODIMM x 3	Yes	VGA x 1, DDI x 2	SATA III x 4	Intel® I219-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 6 PEG [x16] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-CFHB6-A11-0002	Type 6	Intel® Core™ i7-8850H	DDR4 SODIMM x 3	—	VGA x 1, DDI x 2	SATA III x 4	Intel® I219-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 6 PEG [x16] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-CFHB6-A11-0003	Type 6	Intel® Core™ i5-8400H	DDR4 SODIMM x 3	—	VGA x 1, DDI x 2	SATA III x 4	Intel® I219-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 6 PEG [x16] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-CFHB6-A11-0004	Type 6	Intel® Core™ i3-8100H	DDR4 SODIMM x 3	Yes	VGA x 1, DDI x 2	SATA III x 4	Intel® I219-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 6 PEG [x16] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-CFHB6-A11-0005	Type 6	Intel® Xeon® E-2276ME	DDR4 SODIMM x 3	Yes	VGA x 1, DDI x 2	SATA III x 4	Intel® I219-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 6 PEG [x16] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-CFHB6-A11-0006	Type 6	Intel® Xeon® E-2276ME	DDR4 SODIMM x 3	—	VGA x 1, DDI x 2	SATA III x 4	Intel® I219-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 6 PEG [x16] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-CFHB6-A11-0007	Type 6	Intel® Core™ i7-9850HE	DDR4 SODIMM x 3	—	VGA x 1, DDI x 2	SATA III x 4	Intel® I219-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 6 PEG [x16] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-CFHB6-A11-0008	Type 6	Intel® Core™ i7-9850HL	DDR4 SODIMM x 3	—	VGA x 1, DDI x 2	SATA III x 4	Intel® I219-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 6 PEG [x16] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI

COM-TGUC6

COM Express Type 6 Compact Size with 11th Gen Intel® Core™/Celeron® Processor 6000 Series Processors



Features

- DDR4 3200MHz SODIMM x 2, up to 64GB
- VGA x 1, LVDS x 1, DDI x 3
- USB 2.0 x 8, USB 3.2 Gen2 x 4
- PCIe [x1] x 5, PEG [x4] x1
- Intel® Ethernet Controller i225/i226-LM 2.5GbE x 1
- COM Express Type 6, 3.74" x 3.74" (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 Compact Size, Type 6
CPU	11th Generation Intel® Core™ Processors: Intel® Core™ i7-1185G7E (4C/8T, 1.8 GHz, 15W) Intel® Core™ i7-1185GRE (4C/8T, 1.80 GHz, 15W, In-Band ECC) Intel® Core™ i5-1145G7E (4C/8T, 1.5 GHz, 15W) Intel® Core™ i5-1145GRE (4C/8T, 1.50 GHz, 15W, In-Band ECC) Intel® Core™ i3-1115G4E (2C/4T, 2.20 GHz, 15W) Intel® Core™ i3-1115GRE (2C/4T, 2.20 GHz, 15W, In-Band ECC) Intel® Celeron® Processor 6000 Series: Intel® Celeron® 6305E Processor (2C/2T 1.80 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory	DDR4 3200MHz Dual Channel SODIMM x 2, up to 64GB (In-Band ECC by SKU)
Onboard Storage	—
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	3.74" x 3.74" (95mm x 95mm)
Security	TPM 2.0
Power	
Power Requirement	+12V and +5VSB for ATX, +12V for AT
Power Type	AT/ATX
Power Consumption (Typical)	Intel® Core™ i7-1185GRE, 3.5A @+12V
Display	
Graphics Controller	Intel® Iris® Xe Graphics Intel® UHD Graphics
Video Output	4 Simultaneous Displays: DDI x 3, up to 3840 x 2160 18/24-bit Single/Dual-Channel LVDS/eDP x 1, up to 1920 x 1080/3840 x 2160 VGA x 1, up to 1920 x 1080
I/O	
Ethernet	Intel® Ethernet Controller i225/i226-LM 2.5GbE 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 x 2 (Tx/Rx)
HDD Interface	SATA III x 2
Expansion	PEG 4.0 [x4] x 1 PCIe 3.0 [x1] x 5 LPC x 1
GPIO	8-bit
SMBus/I2C	I2C x 1, SMBus x 1
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) Linux Ubuntu 20.04.2/Kernel 5.8
Weight	0.44 lb. (0.20Kg)

Packing List

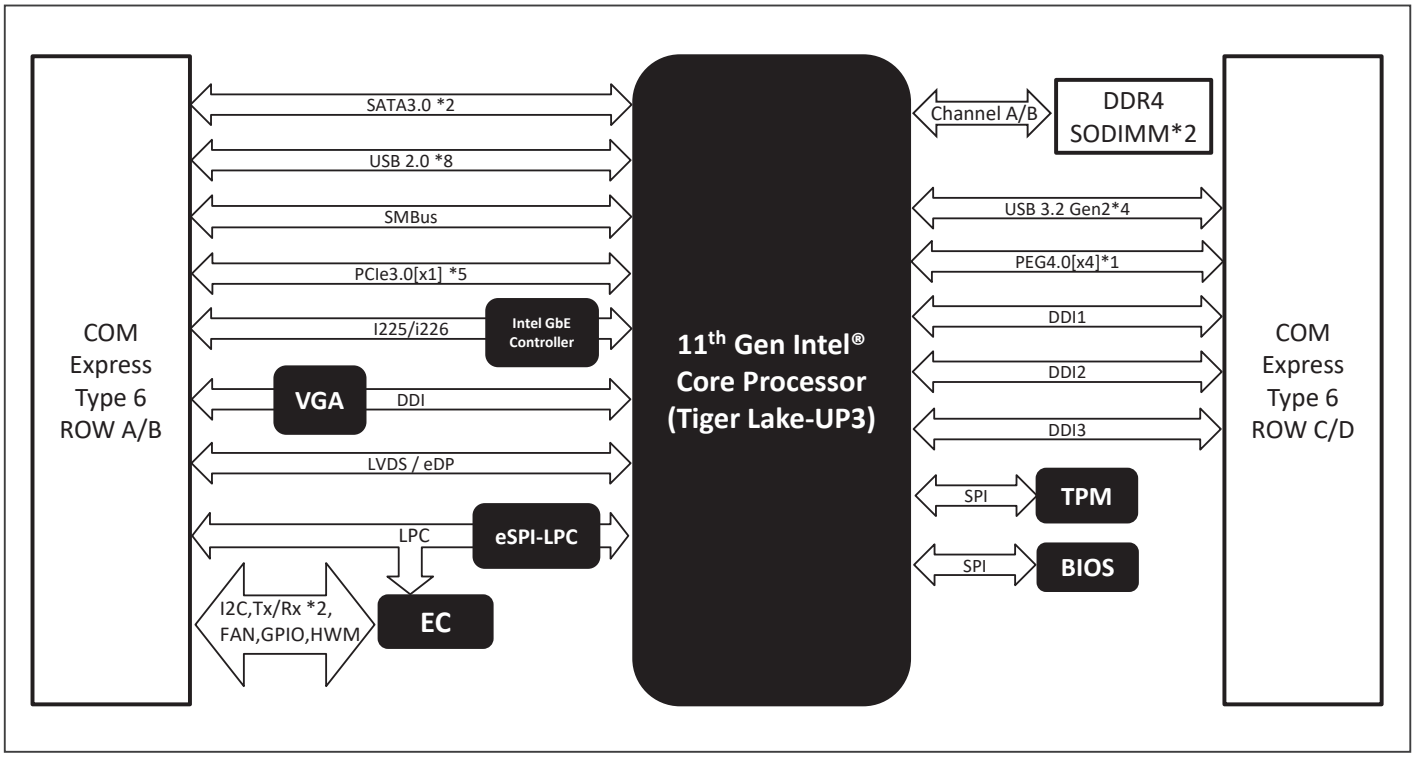
- COM-TGUC6

Optional Accessories

Part Number	Description
ECB-920A-A11-0001	COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX. Rev.A1.1
COM-TGUC6-FAN01	Cooler.95mm x 95mm x 24mm.4pin
COM-TGUC6-HSP01	Heat Spreader.95mm x 95mm x 11mm.Black

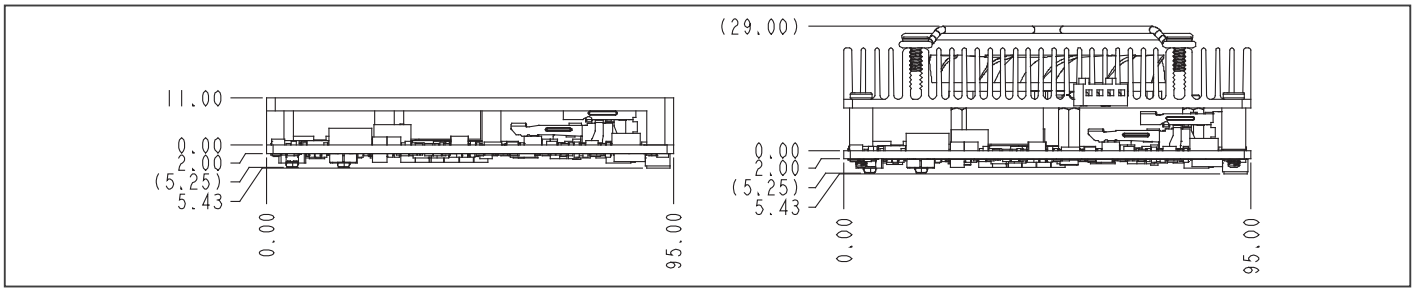
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

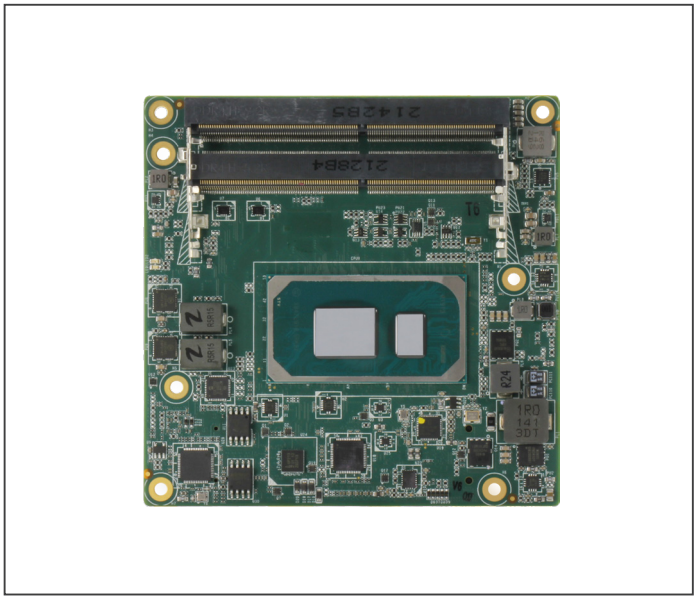


Ordering Information

Part Number	COM Express Type	CPU	Memory	ECC support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
COM-TGUC6-A10-0001	Type 6	Intel® Core™ i7-1185G7E	DDR4 SODIMM x 2	—	VGA x 1, LVDS x 1, DDI x 3	SATA III x 2	Intel® i225/i226-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 5 PEG [x4] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-TGUC6-A10-0002	Type 6	Intel® Core™ i5-1145G7E	DDR4 SODIMM x 2	—	VGA x 1, LVDS x 1, DDI x 3	SATA III x 2	Intel® i225/i226-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 5 PEG [x4] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-TGUC6W2-A10-0005	Type 6	Intel® Core™ i7-1185GRE	DDR4 SODIMM x 2	—	VGA x 1, LVDS x 1, DDI x 3	SATA III x 2	Intel® i225/i226-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 5 PEG [x4] x 1	12V	-40°C ~ 85°C	LPC, GPIO 8-bit, I2C, SMBus, SPI

COM-TGUC6 Rev.B

COM Express Type 6 Compact Size with 11th Gen Intel® Core™/Celeron® Processors



Features

- DDR4 3200MHz SODIMM x 2, up to 64GB (ECC by SKU)
- VGA x 1, LVDS (or eDP) x 1, DDI x 3
- USB 2.0 x 8, USB 3.2 Gen2 x 4
- PCIe [x1] x 5, PEG [x4] x1
- Intel® I225/I226 2.5GbE x 1
- COM Express Type 6, 3.74" x 3.74" (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 Compact Size, Type 6
CPU	11th Generation Intel® Core™ Processors: Intel® Core™ i7-1185G7E (4C/8T, 1.8 GHz, 15W) Intel® Core™ i5-1145G7E (4C/8T, 1.5 GHz, 15W) Intel® Core™ i3-1115G4E (2C/4T, 2.20 GHz, 15W) Intel® Celeron® Processor 6000 Series: Intel® Celeron® 6305E Processor (2C/2T 1.80 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory	DDR4 3200MHz Dual channel , SODIMM x 2, up to 64GB (In-Band ECC by SKU)
Onboard Storage	—
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	3.74" x 3.74" (95mm x 95mm)
Security	TPM 2.0
Power	
Power Requirement	+12V and +5VSB for ATX, +12V for AT
Power Type	AT/ATX
Power Consumption (Typical)	Intel® Core™ i7-1185G7E, 3.22A @+12V
Display	
Graphics Controller	Intel® Iris® Xe Graphics Intel® UHD Graphics
Video Output	4 Simultaneous Displays: DDI x 3, up to 3840 x 2160 18/24-bit Single/Dual-Channel LVDS/eDP x 1, up to 3840 x 2160/1920 x 1080 VGA x 1, up to 1920 x 1080
I/O	
Ethernet	Intel® I225/I226 2.5GbE 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 x 2 (Tx/Rx)
HDD Interface	SATA III x 2
Expansion	PEG 4.0 [x4] x 1 PCIe 3.0 [x1] x 5 LPC x 1
GPIO	8-bit
SMBus/I2C	I2C x 1, SMBus x 1
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) Linux Ubuntu 20.04.2/Kernel 5.8
Weight	0.44 lb. (0.20Kg)

Packing List

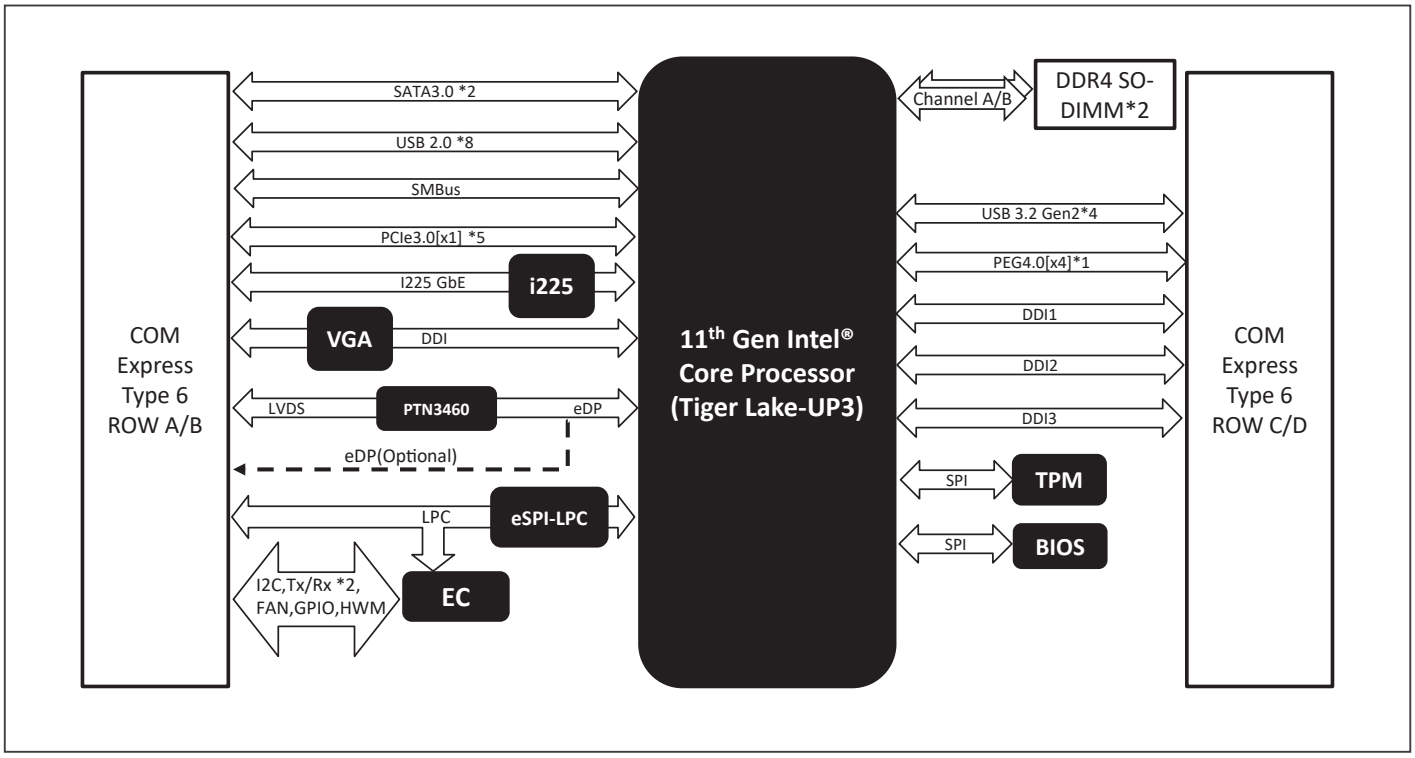
- COM-TGUC6 Rev.B

Optional Accessories

Part Number	Description
ECB-920A-A11-0001	COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX. Rev.A1.1
COM-TGUC6-FAN01	Cooler.95mm x 95mm x 24mm.4pin
COM-TGUC6-HSP01	Heat Spreader.95mm x 95mm x 11mm.Black
COM-FAN02	Cooler.95mm x 95mm x 26.5mm.3pin.w/HSP

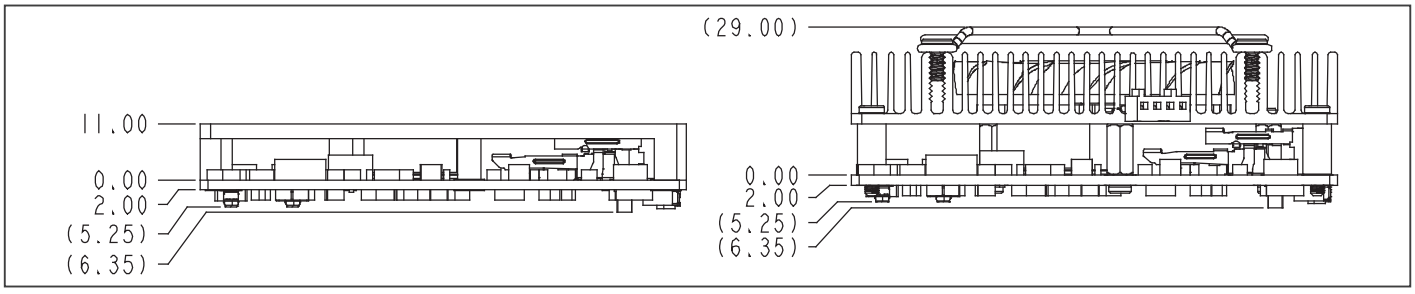
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

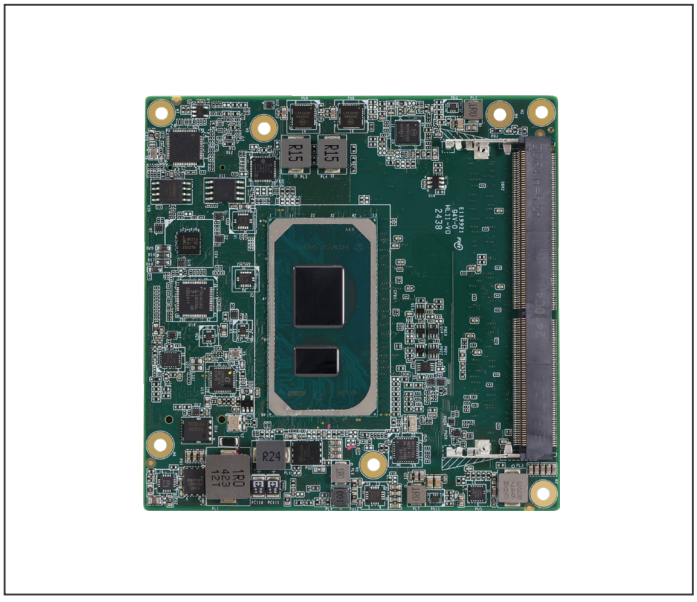


Ordering Information

Part Number	COM Express Type	CPU	Memory	ECC support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
COM-TGUC6-B10-0001	Type 6	Intel® Core™ i7-1185G7E	DDR4 SODIMM x 2	—	VGA x 1, LVDS x 1, DDI x 3	SATA III x 2	Intel® I225-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 5 PCIe [x4] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-TGUC6-B10-0002	Type 6	Intel® Core™ i5-1145G7E	DDR4 SODIMM x 2	—	VGA x 1, LVDS x 1, DDI x 3	SATA III x 2	Intel® I225-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 5 PCIe [x4] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-TGUC6-B10-0003	Type 6	Intel® Core™ i3-1115G4E	DDR4 SODIMM x 2	—	VGA x 1, LVDS x 1, DDI x 3	SATA III x 2	Intel® I225-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 5 PCIe [x4] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-TGUC6-B10-0004	Type 6	Intel® Celeron® 6305E Processor	DDR4 SODIMM x 2	—	VGA x 1, LVDS x 1, DDI x 3	SATA III x 2	Intel® I225-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 5 PCIe [x4] x 1	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI

COM-TGUC6 Rev.C PRELIMINARY

COM Express Type 6 Compact Size with 11th Gen Intel® Core™/Celeron® Processors



Features

- DDR4 3200MHz SODIMM x 2, up to 64GB
- VGA x 1, LVDS (or eDP) x 1, DDI x 3
- USB 2.0 x 8, USB 3.2 Gen2 x 4
- PCIe [x1] x 5, PEG [x4] x1
- Intel® I226 2.5GbE x 1
- COM Express Type 6, 3.74" x 3.74" (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 Compact Size, Type 6
CPU	11th Generation Intel® Core™ Processors: Intel® Core™ i7-1185G7E (4C/8T, 1.8 GHz, 15W) Intel® Core™ i3-1115G4E (2C/4T, 2.20 GHz, 15W) Intel® Core™i7-1185GRE (4C/8T, 1.8 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory	DDR4 3200MHz Dual channel , SODIMM x 2, up to 64GB
Onboard Storage	—
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	3.74" x 3.74" (95mm x 95mm)
Security	TPM 2.0
Power	
Power Requirement	+12V and +5VSB for ATX, +12V for AT
Power Type	AT/ATX
Power Consumption (Typical)	Intel® Core™ i7-1185G7E, 3.22A @+12V
Display	
Graphics Controller	Intel® Iris® Xe Graphics Intel® UHD Graphics
Video Output	4 Simultaneous Displays: DDI x 3, up to 3840 x 2160 18/24-bit Single/Dual-Channel LVDS/eDP x 1, up to 3840 x 2160/1920 x 1080 VGA x 1, up to 1920 x 1080
I/O	
Ethernet	Intel® I226 2.5GbE 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 x 2 (Tx/Rx)
HDD Interface	SATA III x 2
Expansion	PEG 3.0 [x4] x 1 PCIe 3.0 [x1] x 5 LPC x 1
GPIO	8-bit
SMBus/I2C	I2C x 1, SMBus x 1

Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) WiTAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit)
Weight	0.26 lb. (0.12 Kg)

Packing List

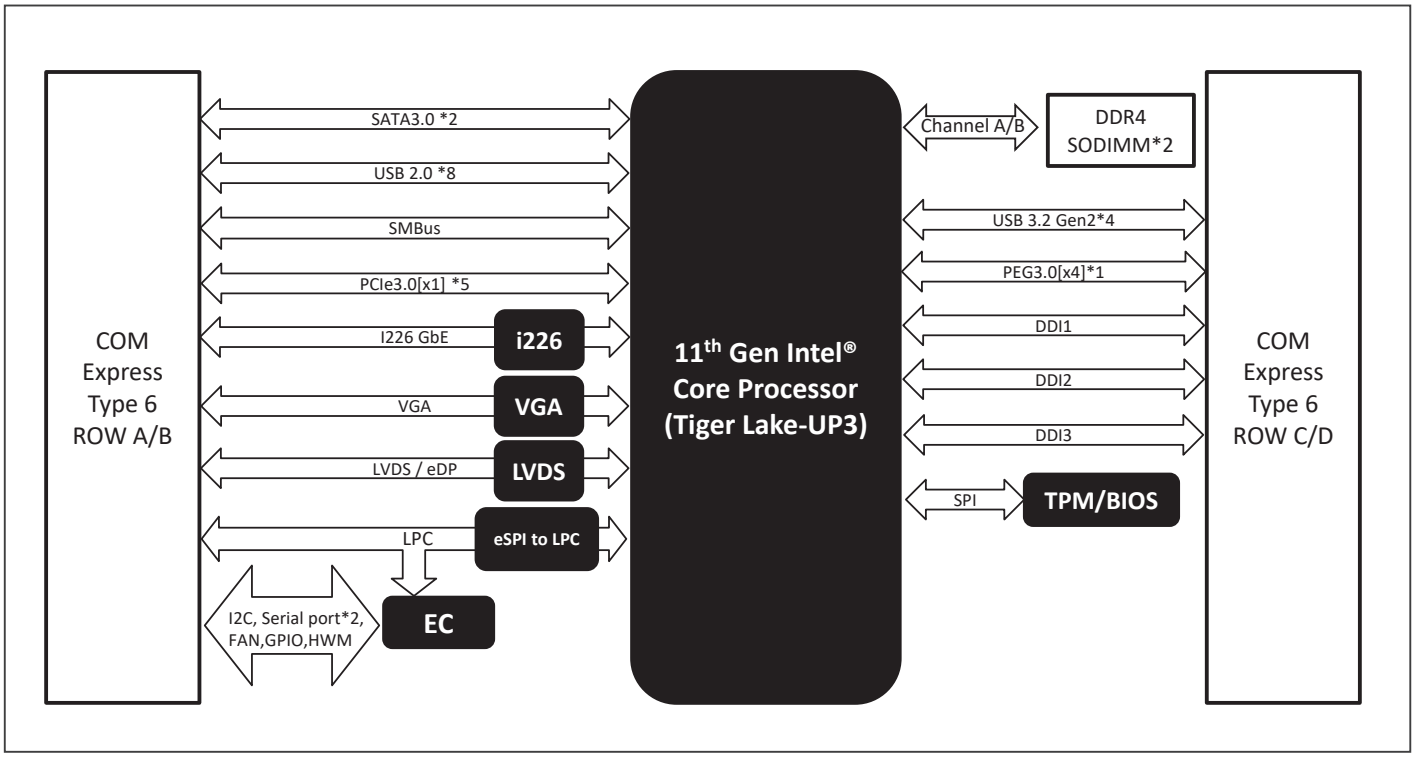
- COM-TGUC6 Rev.C

Optional Accessories

Part Number	Description
ECB-920A-A11-0001	COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX. Rev.A1.1
COM-TGUC6-FAN01	Cooler.95mm x 95mm x 24mm.4pin
COM-TGUC6-HSP01	Heat Spreader.95mm x 95mm x 11mm.Black
COM-FAN02	Cooler.95mm x 95mm x 26.5mm.3pin.w/HSP

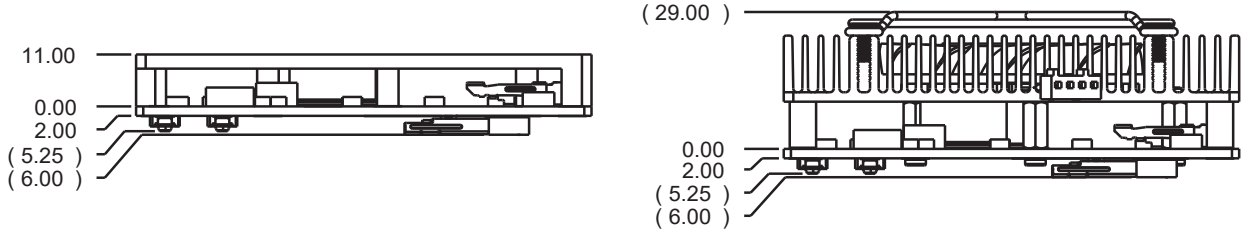
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

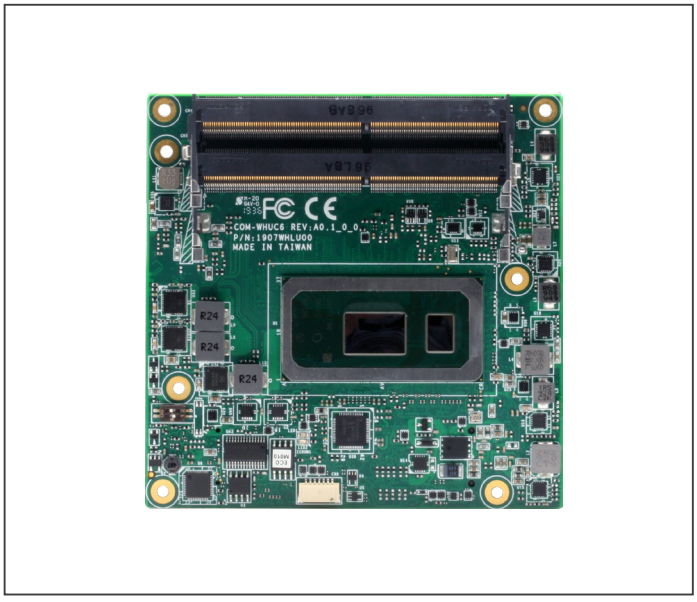


Ordering Information

Part Number	COM Express Type	CPU	Memory	ECC support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
COM-TGUC6-C10-0001	Type 6	Intel® Core™ i7-1185G7E	DDR4 SODIMM x 2	—	VGA x 1, LVDS(or eDP) x 1, DDI x 3	SATA III x 2	Intel® Ethernet Controller I226-IT x 1	USB 2.0 x 8, USB 3.2 Gen 2 x 4	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 5 PCIe [x4] x 1	12V	0°C ~ 70°C	LPC, GPIO 8-bit, I2C, SMBus
COM-TGUC6-C10-0003	Type 6	Intel® Core™ i3-1115G4E	DDR4 SODIMM x 2	—	VGA x 1, LVDS(or eDP) x 1, DDI x 3	SATA III x 2	Intel® Ethernet Controller I226-IT x 1	USB 2.0 x 8, USB 3.2 Gen 2 x 4	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 5 PCIe [x4] x 1	12V	0°C ~ 70°C	LPC, GPIO 8-bit, I2C, SMBus
COM-TGUC6W2-C10-0001	Type 6	Intel® Core™ i7-1185GRE	DDR4 SODIMM x 2	—	VGA x 1, LVDS(or eDP) x 1, DDI x 3	SATA III x 2	Intel® Ethernet Controller I226-IT x 1	USB 2.0 x 8, USB 3.2 Gen 2 x 4	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 5 PCIe [x4] x 1	12V	-40°C ~ 85°C	LPC, GPIO 8-bit, I2C, SMBus

COM-WHUC6

COM Express Type 6 Compact Size with 8th Gen Intel® Core™/Celeron® Processor 4000 Series Processors



Features

- DDR4 2400MHz SODIMM x 2, up to 64GB
- VGA x 1, LVDS x 1, DDI x 1
- USB 2.0 x 8, USB 3.2 Gen 2 x 4
- PCIe [x1] x 8
- Intel® I219-LM GbE x 1
- COM Express Type 6, 3.74" x 3.74" (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 Compact Size, Type 6
CPU	8th Generation Intel® Core™ Processors: Intel® Core™ i7-8665UE (4C/8T, 1.70 GHz, 15W) Intel® Core™ i5-8365UE (4C/8T, 1.60 GHz, 15W) Intel® Core™ i3-8145UE (2C/4T, 2.20 GHz, 15W) Intel® Celeron® Processor 4000 Series: Intel® Celeron® Processor 4305UE (2C/2T, 2.00 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory	DDR4 2400MHz SODIMM x 2, up to 64GB (non-ECC)
Onboard Storage	eMMC, up to 64GB (Optional)
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	3.74" x 3.74" (95mm x 95mm)
Security	TPM 2.0 (Optional)
Power	
Power Requirement	+12V and +5VSB for ATX, +12V for AT
Power Type	AT/ATX
Power Consumption (Typical)	Intel® Core™ i7-8665UE, 2.61A @+12V
Display	
Graphics Controller	Intel® UHD Graphics 620 Intel® UHD Graphics 610
Video Output	3 Simultaneous Displays: DDI x 1, up to 3840 x 2160 18/24-bit Single/Dual-Channel LVDS/eDP x 1, up to 1920 x 1080 VGA x 1, up to 2048 x 1152
I/O	
Ethernet	Intel® I219-LM 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 x 2 (Tx/Rx)
HDD Interface	SATA III x 2
Expansion	PCIe 3.0 [x1] x 4 PCIe 3.0 [x4] x 1 LPC x 1
GPIO	8-bit
SMBus/I2C	I2C x 1, SMBus x 1
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) Linux Ubuntu 18.04.2/Kernel 4.18
Weight	0.44 lb. (0.20Kg)

Packing List

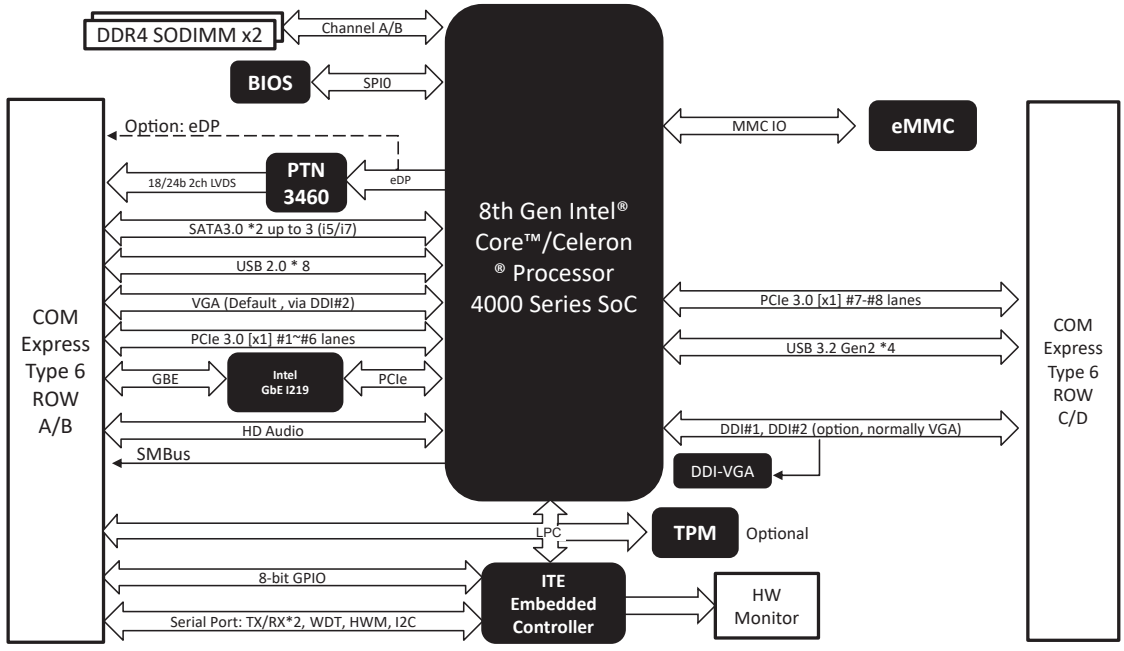
- COM-WHUC6

Optional Accessories

Part Number	Description
ECB-920A-A11-0001	COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX. Rev.A1.1
COM-WHUC6-HSP01	Heat Spreader.95mm x 95mm x 11mm.Black
COM-WHUC6-FAN01	Cooler.95mm x 95mm x 36mm.3pin
COM-FAN02	coole.95mm x 95mm x 26.5mm.3pin.w/HSP

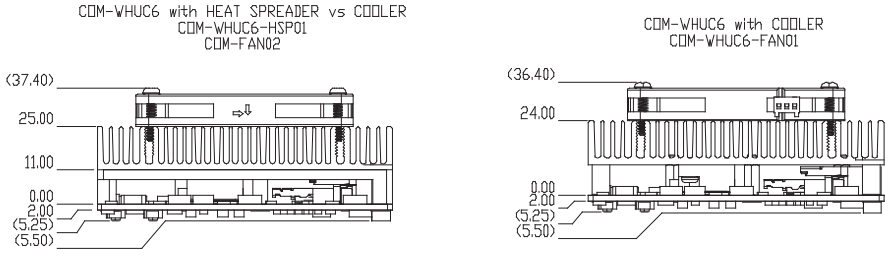
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

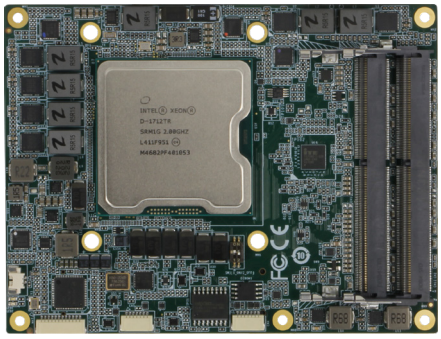


Ordering Information

Part Number	COM Express Type	CPU	Memory	ECC support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
COM-WHUC6-A10-0001	Type 6	Intel® Core™ i7-8665UE	DDR4 SODIMM x 2	—	VGA x 1, LVDS x 1, DDI x 1	SATA III x 2 64GB eMMC	Intel® I219-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 8	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-WHUC6-A10-0002	Type 6	Intel® Core™ i5-8365UE	DDR4 SODIMM x 2	—	VGA x 1, LVDS x 1, DDI x 1	SATA III x 2 64GB eMMC	Intel® I219-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 8	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-WHUC6-A10-0003	Type 6	Intel® Core™ i3-8145UE	DDR4 SODIMM x 2	—	VGA x 1, LVDS x 1, DDI x 1	SATA III x 2 64GB eMMC	Intel® I219-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 8	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-WHUC6-A10-0004	Type 6	Intel® Celeron® Processor 4305UE	DDR4 SODIMM x 2	—	VGA x 1, LVDS x 1, DDI x 1	SATA III x 2 64GB eMMC	Intel® I219-LM x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 8	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus, SPI

COM-ICDB7

COM Express Type 7 with Intel® Xeon® D Processors



Features

- DDR4 2400MHz SODIMM x 4, up to 128GB
- USB 2.0 x 4, USB 3.2 Gen 1 x 4
- PCIe [x2] x 8, PEG [x16] x 1
- Intel® I210-IT GbE x 1, 10GbE x 4
- COM Express Type 7, 4.92" x 3.75" (125mm x 95mm)

Specifications

System	
Form Factor	COM Express Basic Size, Type 7
CPU	Intel® Xeon® D-1848TER (10C/20T, 2.00 GHz, 57W) Intel® Xeon® D-1746TER (10C/20T, 2.00 GHz, 67W) Intel® Xeon® D-1735TR (8C/16T, 2.20 GHz, 59W) Intel® Xeon® D-1712TR (4C/4T, 2.00 GHz, 40W)
Chipset	Integrated with Intel® SoC
Memory	DDR4 2400MHz SODIMM x 4, Dual Channel, up to 128GB
Onboard Storage	—
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	4.92" x 3.75" (125mm x 95mm)
Security	TPM 2.0
Power	
Power Requirement	+12V and +5VSB for ATX, +12V and +5V for AT
Power Type	AT/ATX(default)
Power Consumption (Typical)	Intel® Xeon® D-1746TER, 7.75A @+12V
Display	
Graphics Controller	—
Video Output	—
I/O	
Ethernet	Intel® I210-IT GbE x 1 10GbE x 4, support x557(default) or SFP+
Audio	—
USB Port	USB 2.0 x 4, USB 3.2 Gen 1 x 4
Serial Port	2-Wire UART x 2 (Tx/Rx)
HDD Interface	SATA III x 2
Expansion	PEG 4.0 [x16] x 1 PCIe 3.0 [x2] x 8 LPC x 1
GPIO	8-bit
SMBus/I2C	I2C x 1 (Windows® 10 Ready), SMBus x 1

Environment	
Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) Linux Ubuntu 20.04/Kernel 5.4
Weight	0.44 lb. (0.20Kg)

Packing List

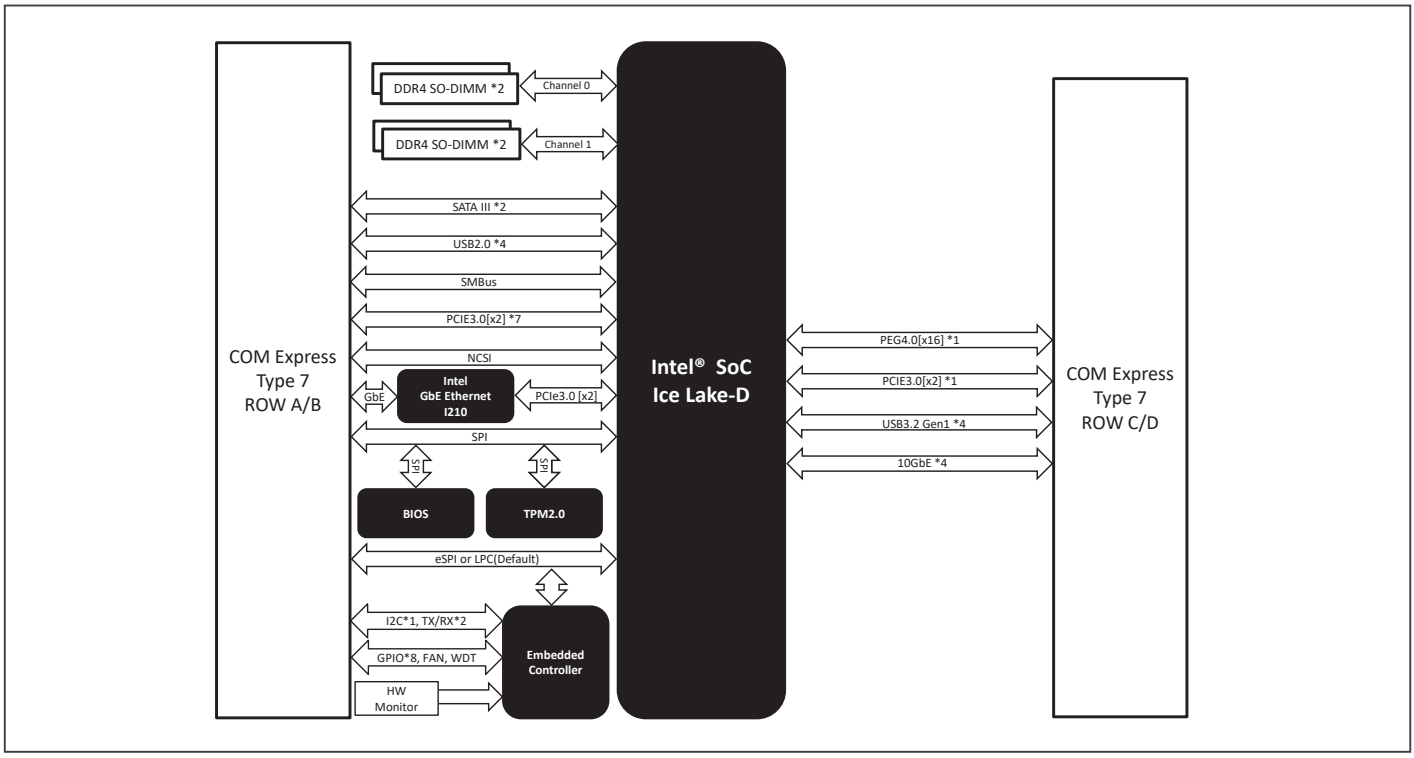
- COM-ICDB7

Optional Accessories

Part Number	Description
ECB-927A-A10-0001	COMe T7.Carrier Board. 4x10G via x557. 4USB3.PEG+PCIe.2COM.2SATA.AT/ATX.Rev A1.0
COM-ICDB7-HSP01	Heat Spreader.125 x 95 x 11mm.Black
COM-ICDB7-FAN01	Cooler.125 x 95 x 50mm.4pin

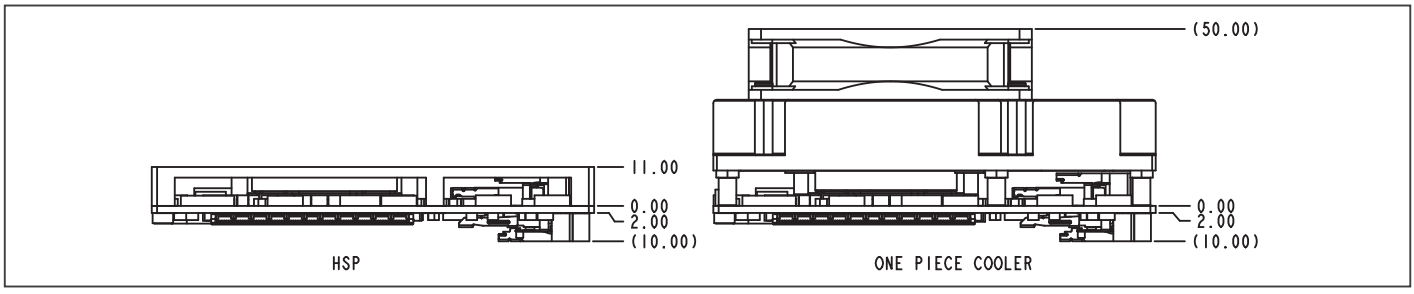
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

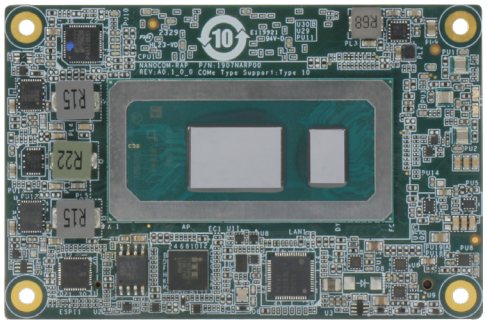


Ordering Information

Part Number	COM Express Type	CPU	Memory	ECC support	Display	LVDS	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
COM-ICDB7-A12-0005	Type 7	Intel® Xeon® D-1712TE	DDR4 SODIMM x 4	Yes	—	—	SATA III x 2	Intel® I210-IT x 1 10G Base-KR x 4	USB 3.2 Gen 1 x 4 USB 2.0 x 4	2-Wire UART x 2 (Tx/Rx)	PCIe [x2] x 8 PEG [x16] x 1	12V	-20°C ~ 70°C	LPC, GPIO 8-bit, I2C, SMBus, SPI
COM-ICDB7-A12-0006	Type 7	Intel® Xeon® D-1848TER	DDR4 SODIMM x 4	Yes	—	—	SATA III x 2	Intel® I210-IT x 1 10G Base-KR x 4	USB 3.2 Gen 1 x 4 USB 2.0 x 4	2-Wire UART x 2 (Tx/Rx)	PCIe [x2] x 8 PEG [x16] x 1	12V	-20°C ~ 70°C	LPC, GPIO 8-bit, I2C, SMBus, SPI

NanoCOM-RAP

COM Express Type 10 with 13th Generation Intel® Core™ U-series Processors



Features

- Onboard LPDDR5, up to 16GB
- Onboard NVMe, up to 128GB (Optional)
- eDP x 1, DDI x 1
- USB 2.0 x 8, USB 3.2 Gen 2 x 2
- PCIe [x1] x 4
- Intel® I226-IT GbE x 1
- COM Express Type 10, 3.31" x 2.17" (84mm x 55mm)

Specifications

System	
Form Factor	COM Express Mini Size, Type 10
CPU	13th Generation Intel® Core™ U-series Processors: Intel® Core™ i7-1365UE (10C/12T, 1.70 GHz, 15W) Intel® Core™ i5-1335UE (10C/12T, 1.30 GHz, 15W) Intel® Core™ i3-1315UE (6C/8T, 1.20 GHz, 15W) Intel® Processor U300E (5C/6T, 1.10 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory	Onboard LPDDR5, up to 16GB
Onboard Storage	NVMe, up to 128GB (Optional)
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	3.31" x 2.17" (84mm x 55mm)
Security	TPM2.0
Power	
Power Requirement	+9V-15V and +5VSB for ATX, +9-15V for AT
Power Type	AT/ATX
Power Consumption (Typical)	Intel® Core™ i7-1365UE, LPDDR5 16GB, 2.82A@ +12V
Display	
Graphics Controller	Intel® UHD Graphics for 13th Gen Intel® Processors
Video Output	Dual Display: DDI x 1, up to 3840 x 2160 eDP x 1, up to 3840 x 2160 @60Hz
I/O	
Ethernet	Intel® I226-IT 2.5GbE 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 x 2 (Tx/Rx)
HDD Interface	SATA 6Gb/s x 2

Expansion	PCIe [x1] x 4 LPC x 1
GPIO	8-bit
SMBus/I2C	I2C x 1, SMBus x 1
Environment	
Operating Temperature	32°F ~ 140°F (0°c ~ 60°c) WiTAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) Linux Ubuntu 22.04.2/Kernel 5.19
Weight	0.15 lb. (0.07Kg)

Packing List

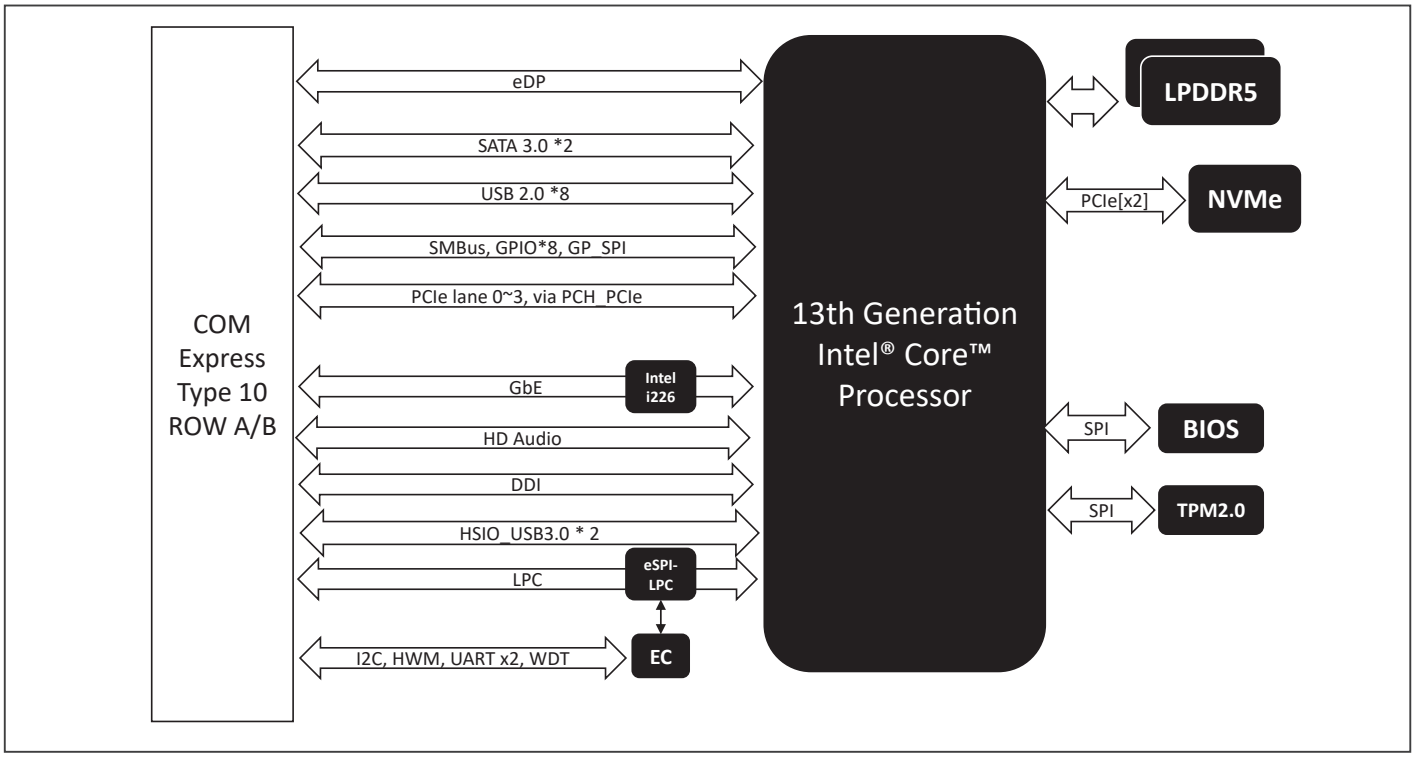
- NANOCOM-RAP

Optional Accessories

Part Number	Description
ECB-920A-A11-0001	COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX. Rev. A1.1
NANOCOM-RAP-HSP01	Heat Spreader. 84 x 55 x 11 mm. Black
NANOCOM-RAP-FAN01	Cooler.84 x 55 x 18 mm.4pin.

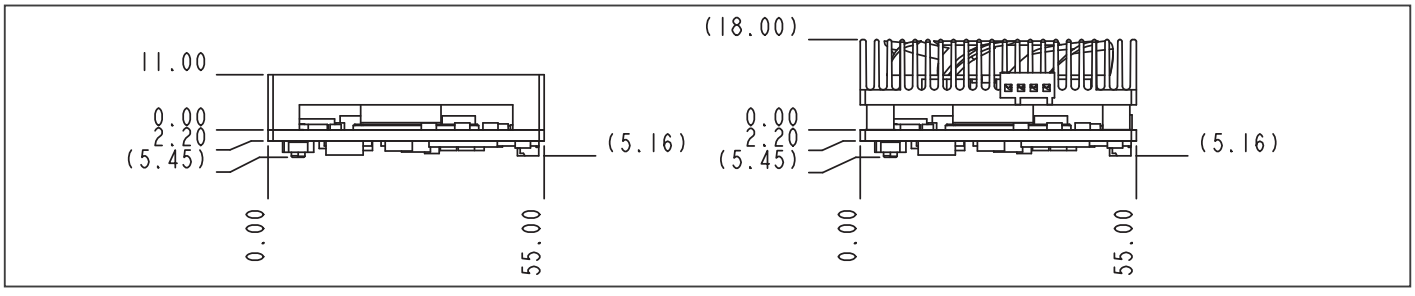
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

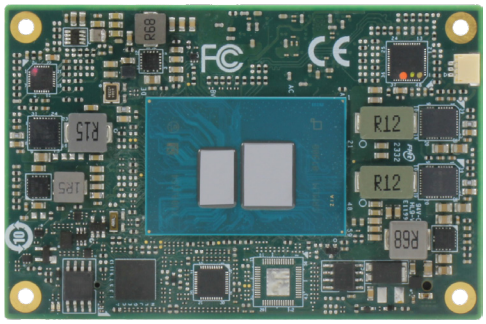


Ordering Information

Part Number	COM Express Type	CPU	Memory	ECC support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
NANOCOM-RAP-A10-0001	Type 10	Intel® Core™ i7-1365UE	16GB Onboard LPDDR5x	—	eDP x 1, DDI x 1	SATA III x 2 128GB NVMe	Intel® I226-IT x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 4	9V-15V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
NANOCOM-RAP-A10-0002	Type 10	Intel® Core™ i5-1335UE	16GB Onboard LPDDR5x	—	eDP x 1, DDI x 1	SATA III x 2 128GB NVMe	Intel® I226-IT x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 4	9V-15V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
NANOCOM-RAP-A10-0003	Type 10	Intel® Core™ i3-1315UE	8GB Onboard LPDDR5x	—	eDP x 1, DDI x 1	SATA III x 2 64GB NVMe	Intel® I226-IT x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 4	9V-15V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
NANOCOM-RAP-A10-0004	Type 10	Intel® Processor U300E	8GB Onboard LPDDR5x	—	eDP x 1, DDI x 1	SATA III x 2 64GB NVMe	Intel® I226-IT x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 4	9V-15V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
NANOCOM-RAPW2-A10-0001	Type 10	Intel® Core™ i7-1365URE	16GB Onboard LPDDR5x	—	eDP x 1, DDI x 1	SATAIII x 2 128GB NVMe	Intel® I226-IT x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 4	9V-15V	-40°C ~ 85°C	LPC, GPIO 8-bit, I2C, SMBus

NanoCOM-ASL PRELIMINARY

COM Express Type 10 with Intel Atom® x7000RE Series



Features

- Onboard LPDDR5, up to 16GB
- Onboard eMMC, up to 64GB
- LVDS x 1, DDI x 1
- USB 2.0 x 8, USB 3.2 Gen 2 x 2
- PCIe [x1] x 4
- Intel® I226-V/IT 2.5GbE x 1
- COM Express Type 10, 3.31" x 2.17" (84mm x 55mm)

Specifications

System	
Form Factor	COM Express Mini Size, Type 10
CPU	Intel Atom® x7835RE (8C, 1.30 GHz, 12W) Intel Atom® x7433RE (4C, 1.50 GHz, 9W) Intel Atom® x7213RE (2C, 2.00 GHz, 9W)
Chipset	Integrated with Intel® SoC
Memory	Onboard LPDDR5x 4800MHz, 4 Channel , up to 16GB
Onboard Storage	eMMC, up to 64GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	3.31" x 2.17" (84mm x 55mm)
Security	TPM
Power	
Power Requirement	+12V and +5VSB for ATX, +12V for AT
Power Type	AT/ATX, switch by BIOS
Power Consumption (Typical)	Intel® Core™ i3-N305, 2.32A @+12V
Display	
Graphics Controller	Intel® UHD Graphics
Video Output	Dual Display: DDI x 1, up to 3840 x 2160 18/24-bit Single-Channel LVDS x 1, up to 1920 x 1080
I/O	
Ethernet	Intel® I226-V/IT 2.5GbE 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 x 2 (Tx/Rx)
HDD Interface	SATA 6Gb/s x 2
Expansion	PCIe 3.0 [x1] x 4 LPC x 1
GPIO	8-bit
SMBus/I2C	I2C x 1, SMBus x 1
Environment	
Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C) -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 / 11 (64-bit) Linux Ubuntu 22.04.2/Kernel 5.19
Weight	0.15 lb. (0.07Kg)

Packing List

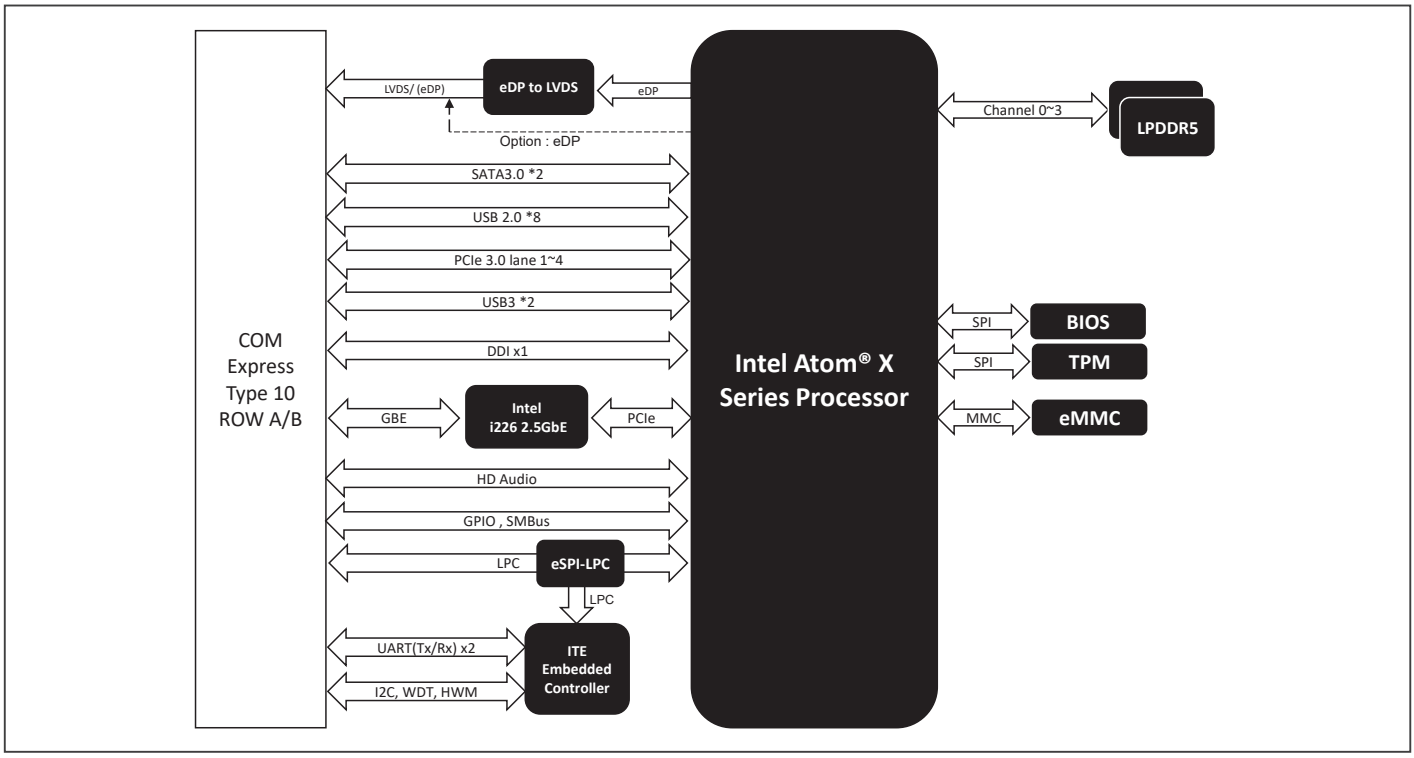
- NANOCOM-ASL

Optional Accessories

Part Number	Description
ECB-920A-A11-0001	COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX. Rev. A1.1
NANOCOM-ADN-HSP01	Heat Spreader. 84 x 55 x 11 mm.Black
NANOCOM-ADN-FAN01	Cooler.84 x 55 x 18 mm.4pin.

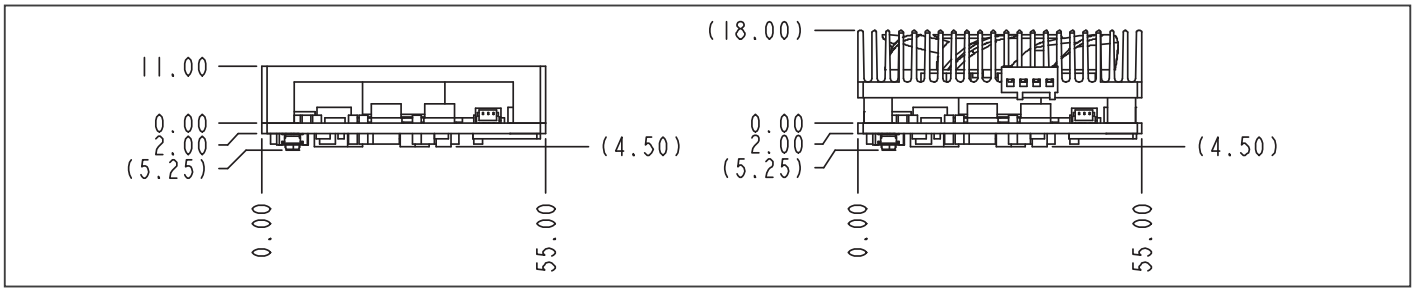
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

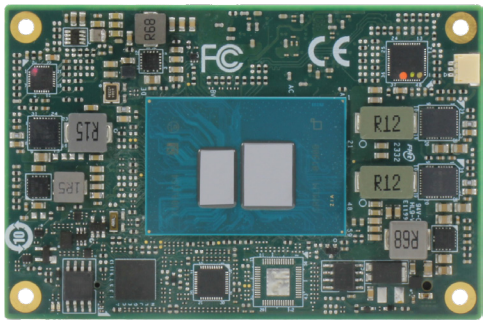


Ordering Information

- **TBD**

NanoCOM-ADN

COM Express Type 10 with Intel Atom® Processor X Series/Intel® Core™ i3/Processor N-series



Features

- **Onboard LPDDR5, up to 16GB**
- **Onboard eMMC, up to 64GB**
- **LVDS x 1, DDI x 1**
- **USB 2.0 x 8, USB 3.2 Gen 2 x 2**
- **PCIe [x1] x 4**
- **Intel® I226-V/IT 2.5GbE x 1**
- **COM Express Type 10, 3.31" x 2.17" (84mm x 55mm)**

Specifications

System	
Form Factor	COM Express Mini Size, Type 10
CPU	Intel Atom® x7000E Series: Intel Atom® x7425E (4C, 1.50 GHz, 12W) Intel® Processor N-series: Intel® Core™ i3-N305 (8C, up to 3.8 GHz, 15W) Intel® Processor N97 (4C, 2.00 GHz, 12W) Intel® Processor N50 (2C, 1.00 GHz, 6W)
Chipset	Integrated with Intel® SoC
Memory	Onboard LPDDR5x 4000MHz, up to 16GB
Onboard Storage	eMMC, up to 64GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	3.31" x 2.17" (84mm x 55mm)
Security	TPM2.0
Power	
Power Requirement	+12V and +5VSB for ATX, +12V for AT
Power Type	AT/ATX, switch by BIOS
Power Consumption (Typical)	Intel® Core™ i3-N305, 2.32A @+12V
Display	
Graphics Controller	Intel® UHD Graphics
Video Output	Dual Display: DDI x 1, up to 3840 x 2160 18/24-bit Single-Channel LVDS x 1, up to 1024 x 768
I/O	
Ethernet	Intel® Ethernet Controller I226-V 2.5GbE 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 x 2 (Tx/Rx)
HDD Interface	SATA 6Gb/s x 2

Expansion	PCIe 3.0 [x1] x 4 LPC x 1
GPIO	8-bit
SMBus/I2C	I2C x 1, SMBus x 1
Environment	
Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 / 11 (64-bit) Linux Ubuntu 22.04.4/Kernel 6.5
Weight	0.15 lb. (0.07Kg)

Packing List

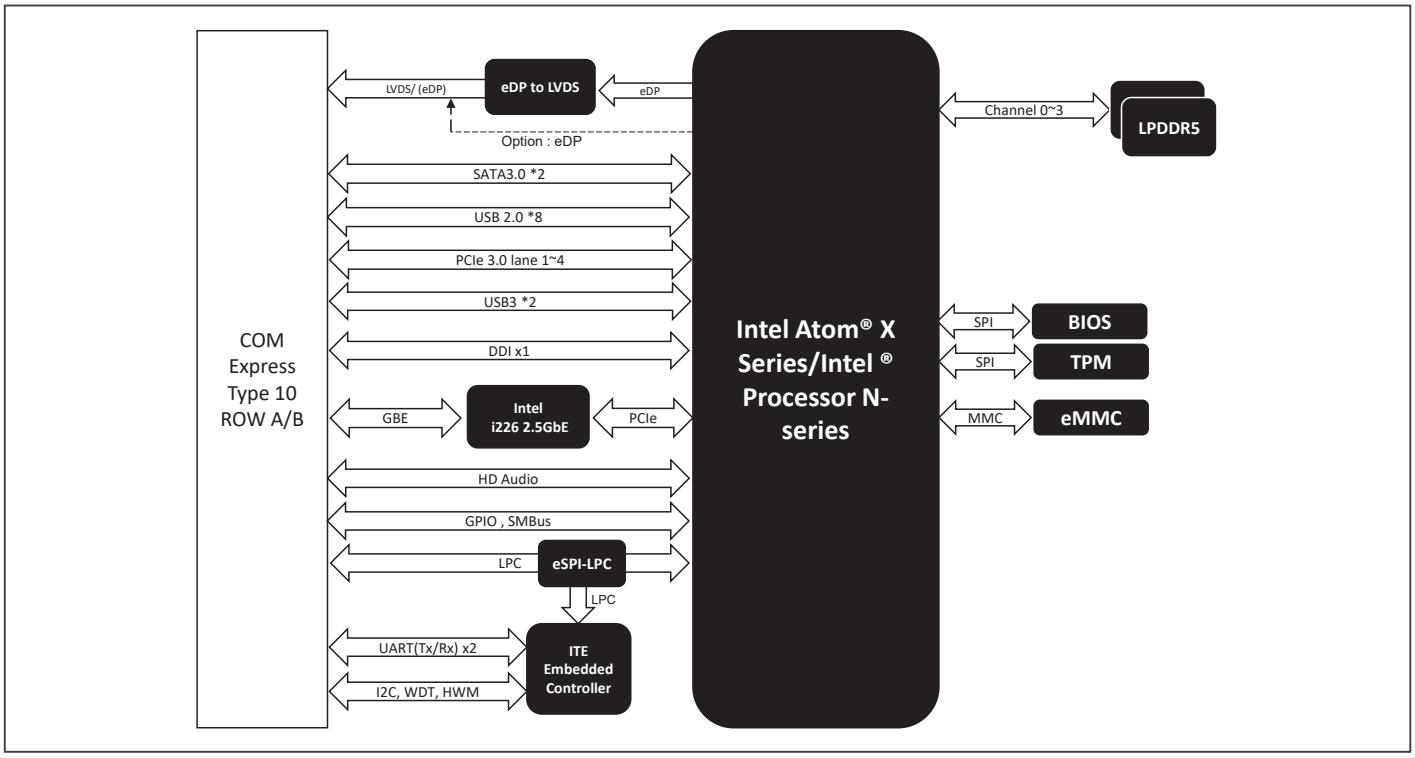
- **NANOCOM-ADN**

Optional Accessories

Part Number	Description
ECB-920A-A11-0001	COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX. Rev. A1.1
NANOCOM-ADN-HSP01	Heat Spreader. 84 x 55 x 11 mm.Black
NANOCOM-ADN-FAN01	Cooler.84 x 55 x 18 mm.4pin

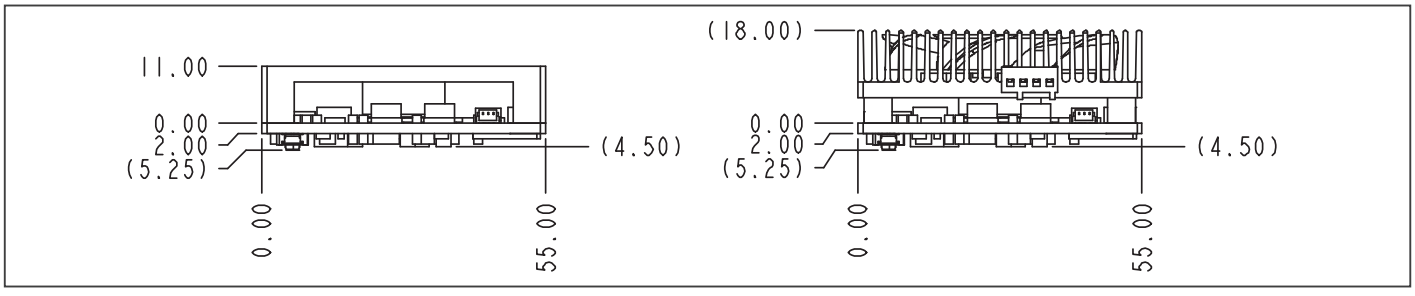
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

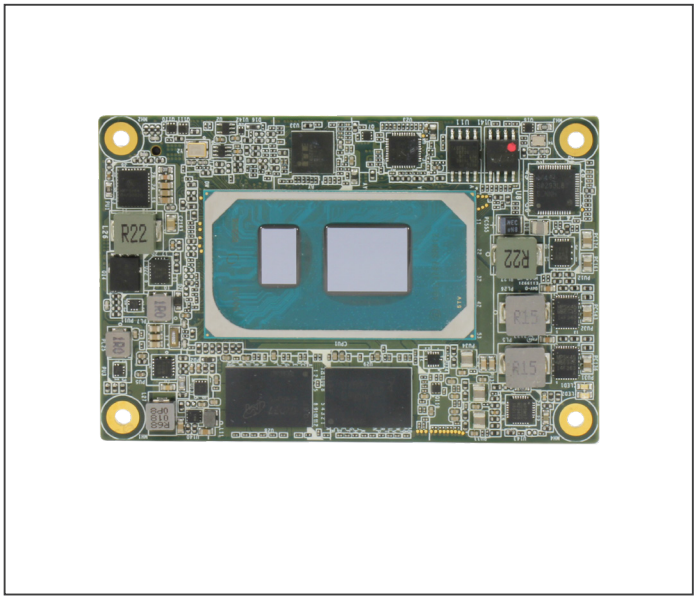


Ordering Information

Part Number	COM Express Type	CPU	Memory	ECC support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
NANOCOM-ADN-A10-0001	Type 10	Intel® Core™ i3-N305	16GB Onboard LPDDR5x	—	LVDS x 1, DDI x 1	SATA III x 2 64GB eMMC	2.5GbE x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe[x1] x 4	12V	-20°C ~ 70°C	LPC,GPIO 8-bit, I2C, SMBus
NANOCOM-ADN-A10-0003	Type 10	Intel® Processor N97	8GB Onboard LPDDR5x	—	LVDS x 1, DDI x 1	SATA III x 2 32GB eMMC	2.5GbE x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 4	12V	-20°C ~ 70°C	LPC, GPIO 8-bit, I2C, SMBus
NANOCOM-ADN-A10-0004	Type 10	Intel® Processor N50	4GB Onboard LPDDR5x	—	LVDS x 1, DDI x 1	SATA III x 2 32GB eMMC	2.5GbE x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 4	12V	-20°C ~ 70°C	LPC, GPIO 8-bit, I2C, SMBus
NANOCOM-ADN-A10-0005	Type 10	Intel Atom® x7425E	8GB Onboard LPDDR5x	—	LVDS x 1, DDI x 1	SATA III x 2 64GB eMMC	2.5GbE x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe [x1] x 4	12V	-20°C ~ 70°C	LPC, GPIO 8-bit, I2C, SMBus

NanoCOM-TGU

COM Express Type 10 with 11th Gen Intel® Core™ Processors



Features

- Onboard LPDDR4, up to 16GB
- SATA III x 2, Onboard PCIe SSD x 1
- eDP x 1, DP x 1
- USB 2.0 x 8, USB 3.2 Gen 2 x 2
- PCIe 3.0 [x1] x 4
- Intel® I225-LM 2.5GbE x 1
- COM Express Type 10, 3.31" x 2.17" (84mm x 55mm)

Specifications

System	
Form Factor	COM Express Mini Size, Type 10
CPU	11th Generation Intel® Core™ Processors: Intel® Core™ i7-1185G7E (4C/8T, 1.80 GHz, 15W) Intel® Core™ i5-1145G7E (4C/8T, 1.50 GHz, 15W) Intel® Core™ i3-1115G4E (2C/4T, 2.20 GHz, 15W) Intel® Core™ i7-1185GRE (4C/8T, 1.80 GHz, 15W) Intel® Core™ i5-1145GRE (4C/8T, 1.80 GHz, 15W) Intel® Core™ i3-1115GRE (2C/4T, 2.20 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory	Onboard LPDDR4 4267MHz, up to 16GB
Onboard Storage	NVMe, up to 256GB (Optional)
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	3.31" x 2.17" (84mm x 55mm)
Security	fTPM
Power	
Power Requirement	+12V and +5VSB for ATX, +12V for AT
Power Type	AT/ATX
Power Consumption (Typical)	Intel® Core™ i7-1185G7E, 2.75A @+12V
Display	
Graphics Controller	Intel® UHD Graphics for 11th Gen Intel® Processors
Video Output	Dual Display: DP x 1, up to 3840 x 2160 eDP x 1, up to 3840 x 2160
I/O	
Ethernet	Intel® I225-LM/IT 2.5GbE 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 x 2 (Tx/Rx)
HDD Interface	SATA III x 2
Expansion	PCIe 3.0 [x1] x 4 LPC x 1
GPIO	8-bit
SMBus/I2C	I2C x 1, SMBus x 1
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) WiTAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) Linux Ubuntu 20.04.4/Kernel 5.13.0
Weight	0.15 lb. (0.07Kg)

Packing List

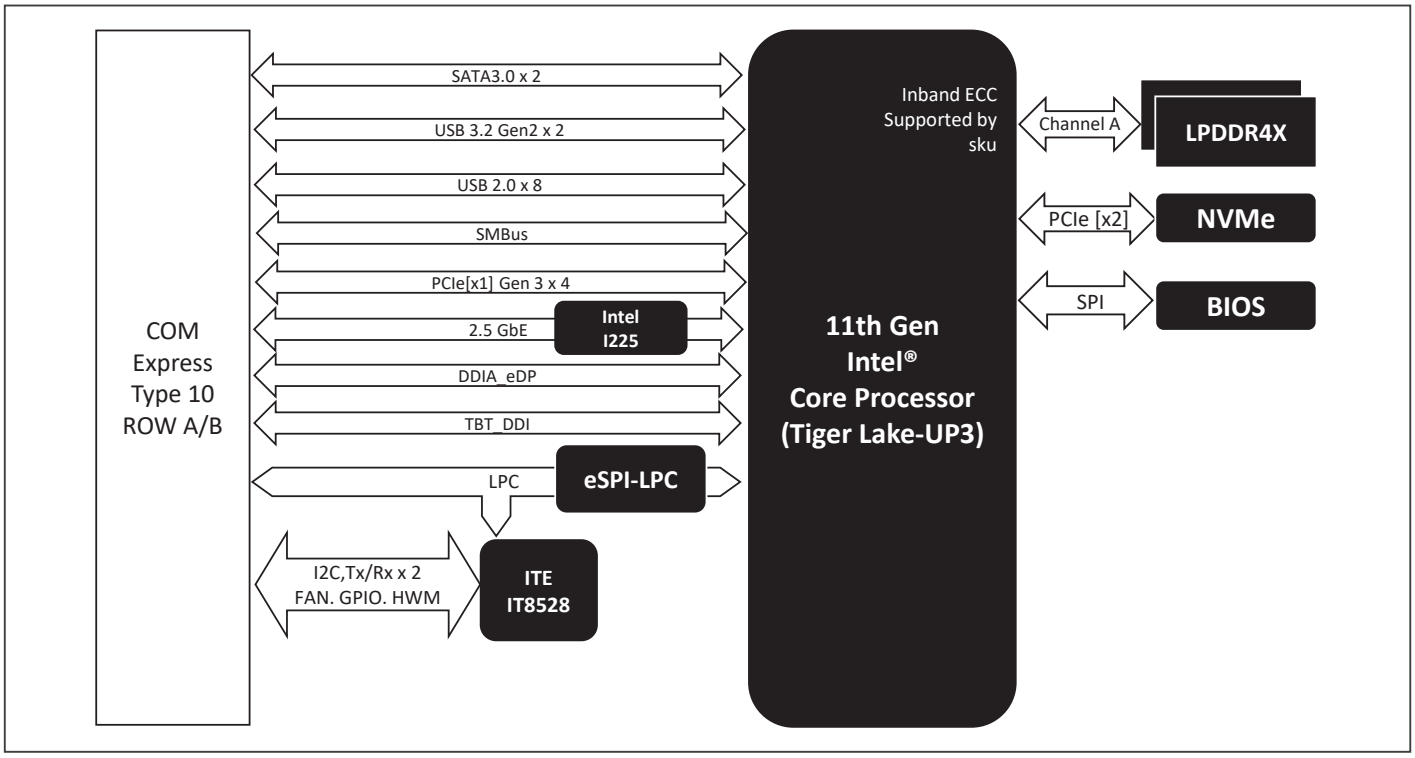
- NANOCOM-TGU

Optional Accessories

Part Number	Description
ECB-920A-A11-0001	COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX. Rev. A1.1
NanoCOM-TGU-Fan01	Cooler.84 x 55 x 18 mm.4pin.
NanoCOM-TGU-HSP01	Heat Spreader. 84 x 55 x 11 mm.Black

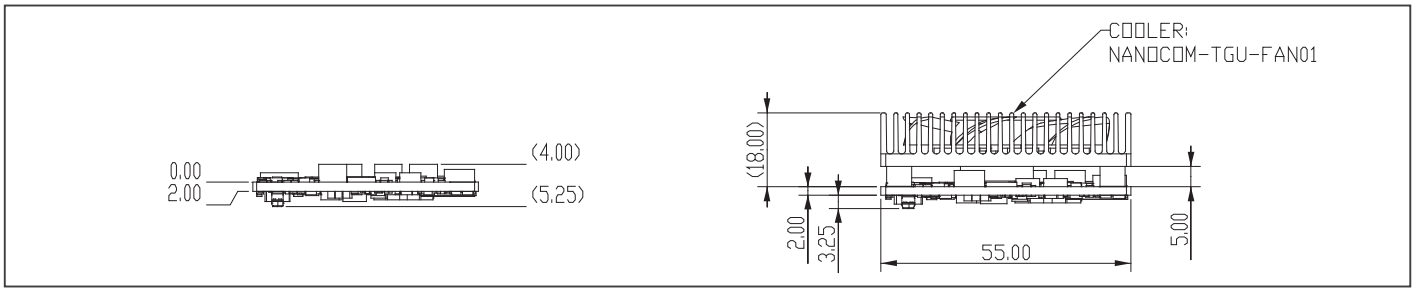
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

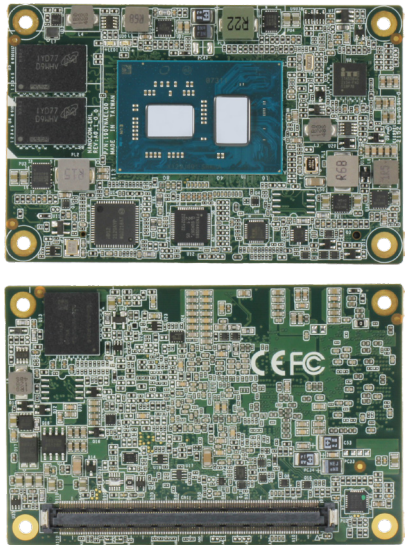


Ordering Information

Part Number	COM Express Type	CPU	Memory	ECC support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
NANOCOM-TGU-A10-0001	Type 10	Intel® Core™ i7-1185G7E	16GB Onboard DDR4	—	eDP x 1, DDI x 1	SATA III x 2, 64GB NVMe	Intel® I225-LM x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe 3.0 [x1] x 4	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
NANOCOM-TGU-A10-0002	Type 10	Intel® Core™ i5-1145G7E	16GB Onboard DDR4	—	eDP x 1, DDI x 1	SATA III x 2, 64GB NVMe	Intel® I225-LM x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe 3.0 [x1] x 4	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
NANOCOM-TGU-A10-0003	Type 10	Intel® Core™ i3-1115G4E	8GB Onboard DDR4	—	eDP x 1, DDI x 1	SATA III x 2, 64GB NVMe	Intel® I225-LM x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe 3.0 [x1] x 4	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
NANOCOM-TGU-A10-0005	Type 10	Intel® Core™ i7-1185GRE	16GB Onboard DDR4	in-band ECC	eDP x 1, DDI x 1	SATA III x 2, 64GB NVMe	Intel® I225-LM x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe 3.0 [x1] x 4	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
NANOCOM-TGUW2-A10-0001	Type 10	Intel® Core™ i7-1185GRE	16GB Onboard DDR4	—	eDP x 1, DDI x 1	SATA III x 2 , 128GB NVMe	Intel® I225-IT x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe 3.0 [x1] x4	12V	-40°C~85°C	LPC, GPIO 8-bit, I2C, SMBus

NanoCOM-EHL

COM Express Type 10 with Intel Atom® X/Pentium® Processor J/Celeron® Processor J & N Series Processors



Features

- Onboard LPDDR4, up to 16GB
- SATA III x 2, Onboard eMMC, up to 64GB (Optional)
- LVDS/eDP x 1, DDI x 1
- USB 2.0 x 8, USB 3.2 Gen 2 x 2
- PCIe Gen3 [x1] x4
- Intel® I226 2.5GbE x 1
- COM Express Type 10, 3.31" x 2.17" (84mm x 55mm)
- Supports Wide Temperature -40°F ~ 185°F (-40°C ~ 85°C)

Specifications

System	
Form Factor	COM Express Mini Size, Type 10
CPU	Intel Atom® Processor X Series: Intel Atom® x6413E (4C/4T, 1.50 GHz, 9W) Intel Atom® x6425E (4C/4T, 2.20 GHz, 12W) Intel Atom® x6425RE (4C/4T, 1.90 GHz, 12W) Intel® Celeron® Processor J & N Series: Intel® Celeron® Processor J6412 (4C/4T, 2.00 GHz, 10W) Intel® Celeron® Processor N6211 (2C/2T, 1.20 GHz, 6.5W) Intel® Pentium® Processor J Series: Intel® Pentium® Processor J6426 (4C/4T, 2.00 GHz, 10W)
Chipset	Integrated with Intel® SoC
Memory	Onboard LPDDR4 3733MHz, up to 16GB
Onboard Storage	eMMC, up to 64GB (Optional)
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	3.31" x 2.17" (84mm x 55mm)
Security	fTPM
Power	
Power Requirement	+12V and +5VSB for ATX, +12V for AT
Power Type	AT/ATX
Power Consumption (Typical)	Intel Atom® x6425E, 1.44A @+12V
Display	
Graphics Controller	Intel® UHD Graphics for 10th Gen Intel® Processors
Video Output	Dual Display: DDI x 1, up to 3840 x 2160 18/24-bit Single-Channel LVDS x 1, up to 1920 x 1080 or eDPx 1, up to 3840 X 2160
I/O	
Ethernet	Intel® I226-IT 2.5GbE 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 x 2 (Tx/Rx)

HDD Interface	SATA III x 2
Expansion	PCIe 3.0 [x1] x 4 LPC x 1
GPIO	8-bit
SMBus/I2C	I2C x 1, SMBus x 1
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) WiTAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) Linux Ubuntu 20.04.3/Kernel 5.13.0
Weight	0.15 lb. (0.07Kg)

Packing List

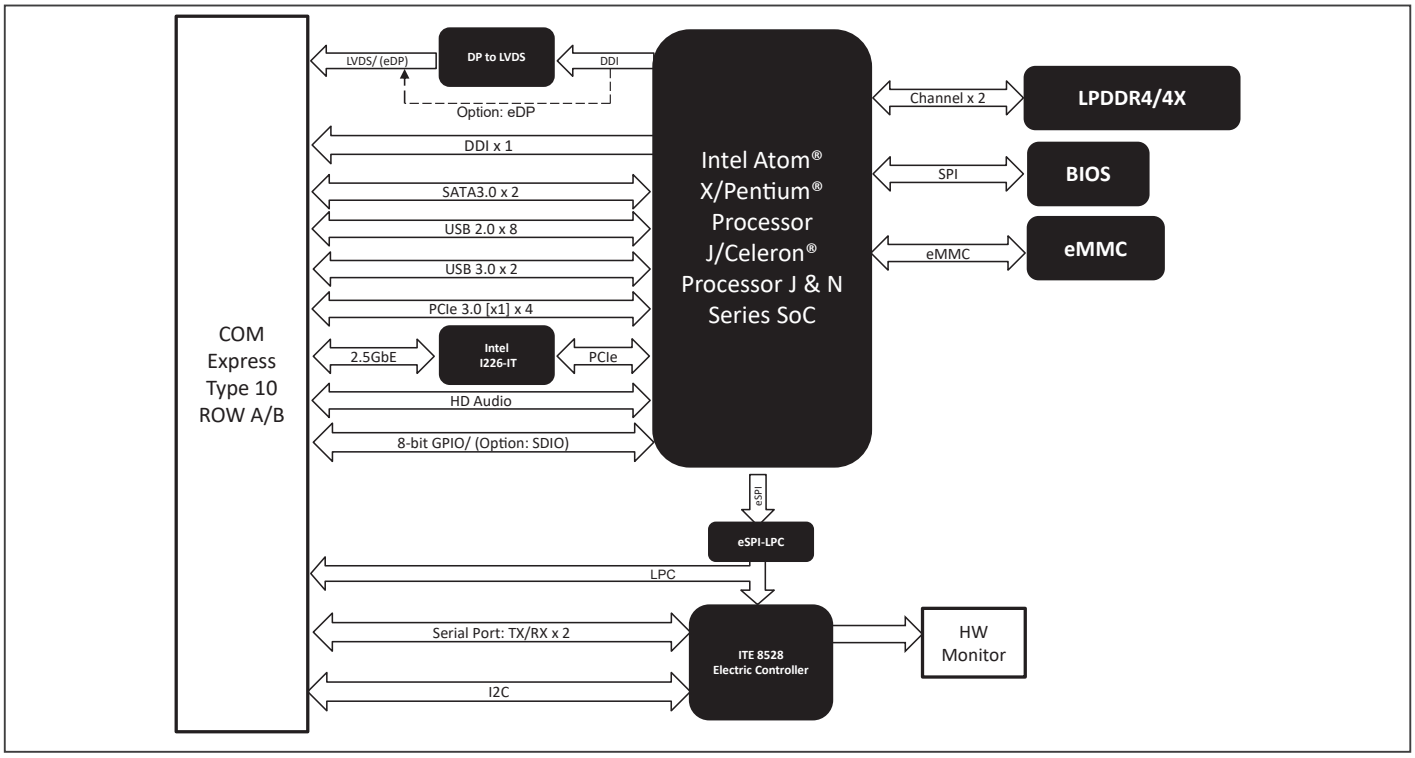
- **NANOCOM-EHL**

Optional Accessories

Part Number	Description
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	Cooler.84 x 55 x 18mm.4pin.NanoCOM-EHL for x6000E series
NanoCOM-EHL-FAN02	Cooler.84 x 55 x 18mm.4pin.NanoCOM-EHL for N, J series
NANOCOM-EHL-HSP01	Heat Spreader.84*55*11mm.NanoCOM-EHL for X series
NANOCOM-EHL-HSP02	Heat Spreader.84*55*11mm.NanoCOM-EHL N,J series

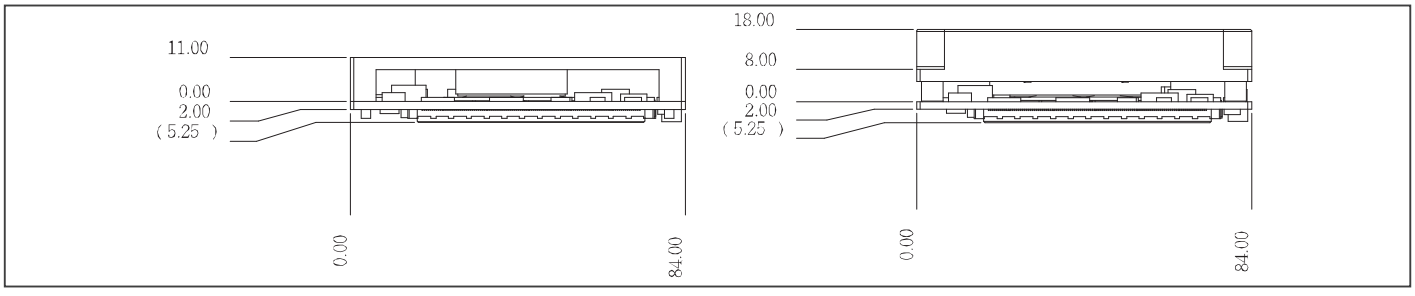
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

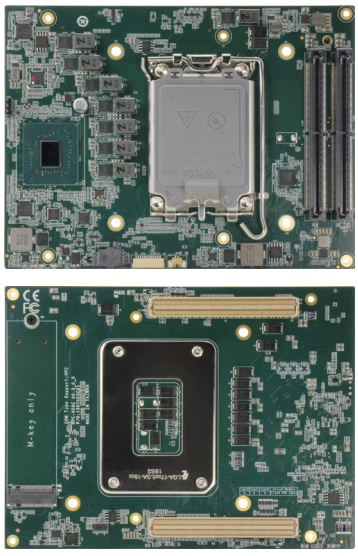


Ordering Information

Part Number	COM Express Type	CPU	Memory	ECC support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
NANOCOM-EHL-A11-0002	Type 10	Intel® Celeron® Processor J6412	8GB Onboard DDR4	—	LVDS x 1, DDI x 1	SATA III x 2, 32GB eMMC	Intel® I226-IT x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe 3.0 [x1] x 4	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
NANOCOM-EHL-A11-0003	Type 10	Intel® Pentium® Processor J6426	16GB Onboard DDR4	—	LVDS x 1, DDI x 1	SATA III x 2, 64GB eMMC	Intel® I226-IT x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe 3.0 [x1] x 4	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
NANOCOM-EHL-A11-0005	Type 10	Intel Atom® x6413E	8GB Onboard DDR4	—	LVDS x 1, DDI x 1	SATA III x 2, 64GB eMMC	Intel® I226-IT x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe 3.0 [x1] x 4	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
NANOCOM-EHL-A11-0006	Type 10	Intel Atom® x6425E	8GB Onboard DDR4	—	LVDS x 1, DDI x 1	SATA III x 2, 64GB eMMC	Intel® I226-IT x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe 3.0 [x1] x 4	12V	0°C ~ 60°C	LPC, GPIO 8-bit, I2C, SMBus
NANOCOM-EHLW2-A11-0006	Type 10	Intel Atom® x6425E	8GB Onboard DDR4	—	LVDS x 1, DDI x 1	SATA III x 2, 64GB eMMC	Intel® I226-IT x 1	USB 3.2 Gen 2 x 2 USB 2.0 x 8	2-Wire UART x 2 (Tx/Rx)	PCIe 3.0 [x1] x 4	12V	-40°C ~ 85°C	LPC, GPIO 8-bit, I2C, SMBus

HPC-ADSC / HPC-RPSC

COM HPC Client Size C with 12th/13th/14th Gen Intel® Core™ Processors



Features

- DDR5 5600 MHz, Dual Channel SODIMM x 2,up to 64GB
- USB 2.0 x 8, USB 3.2 x 6
- PCIe [x1] x 8, PCIe [x4] x 3, PEG [x16] x 1
- Intel® I226-LM 2.5GbE x 2
- M.2 2280 M-Key x 1
- COM HPC Client Type, Size C, 6.30" x 4.72" (160mm x 120mm)

Specifications

System	
Form Factor	COM HPC Client Size C
CPU	14th Generation Intel® Core™ Processors: Intel® Core™ i9-14900 (24C/32T, P-core 2.00 GHz, E-core 1.50 GHz, 65W) Intel® Core™ i7-14700 (20C/28T, P-core 2.10 GHz, E-core 1.50 GHz, 65W) Intel® Core™ i5-14500 (14C/20T, P-core 2.60 GHz, E-core 1.90 GHz, 65W) 13th Generation Intel® Core™ Processors: Intel® Core™ i9-13900E (24C/32T, P-core 1.80 GHz, E-core 1.30 GHz, 65W) Intel® Core™ i9-13900 (24C/32T, P-core 2.00 GHz, E-core 1.50 GHz, 65W) Intel® Core™ i7-13700E (16C/24T, P-core 1.90 GHz, E-core 1.30 GHz, 65W) Intel® Core™ i5-13500E (14C/20T, P-core 2.40 GHz, E-core 1.50 GHz, 65W) 12th Generation Intel® Core™ Processors: Intel® Core™ i9-12900E (16C/24T, P-core 2.30 GHz, E-core 1.70 GHz, 65W) Intel® Core™ i7-12700E (12C/20T, P-core 2.10 GHz, E-core 1.60 GHz, 65W) Intel® Core™ i7-12700 (12C/20T, P-core 2.10 GHz, E-core 1.60 GHz, 65W)
Chipset	Intel® R680E
Memory	DDR5 5600 MHz, Dual Channel SODIMM x 2,up to 64GB(ECC)
Onboard Storage	—
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	6.30" x 4.72" (160mm x 120mm)
Security	TPM 2.0
Power	
Power Requirement	+12V and +5VSB for ATX, +12V for AT
Power Type	AT/ATX
Power Consumption (Typical)	Intel® Core™ i9-13900E, 7.13A @+12V
Display	
Graphics Controller	Intel® UHD Graphics 770
Video Output	4 Simultaneous Displays: eDP x 1, up to 3840 x 2160 @60Hz DDI x 3, up to 3840 x 2160 @144Hz
I/O	
Ethernet	Intel® Ethernet Controller I226-LM 2.5GbE x 2
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8 USB 3.2 Type-C x 2 (20Gbps x 2) USB 3.2 Type-A x 4 (10Gbps)
Serial Port	4-Wire UART x 2 (Tx/Rx)
HDD Interface	SATA III x 2
Expansion	PEG 5.0 [x16] x 1 PCIe 4.0 [x4] x 3 PCIe 3.0 [x1] x 8 eSPI x 1 LPC x 1 M.2 2280 M-Key x 1
GPIO	12-bit
SMBus/I2C	I2C x 2, SMBus x 1
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) Linux Ubuntu 20.04.1/Kernel 5.15
Weight	0.66 lb. (0.30Kg)

Packing List

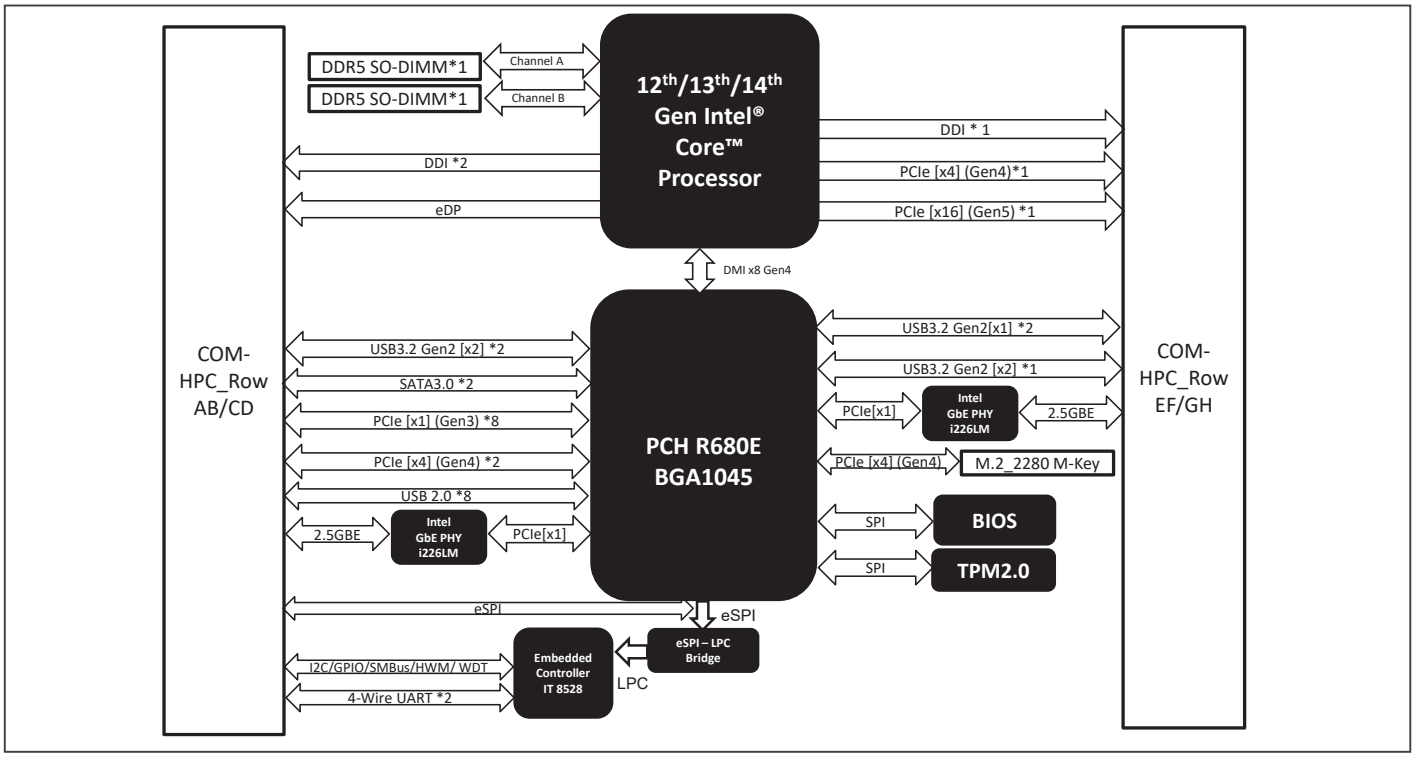
- HPC-ADSC/HPC-RPSC

Optional Accessories

Part Number	Description
ECB-980A-A11-0001	COM HPC Client Carrier.Size A/B/C.HDMI.DP.2GbE.3USB(TypeC).2SATA.PCIe.ATX.A1.1
HPC-RPSC-FAN01	Cooler.90mm x 90mm x 50mm.4pin

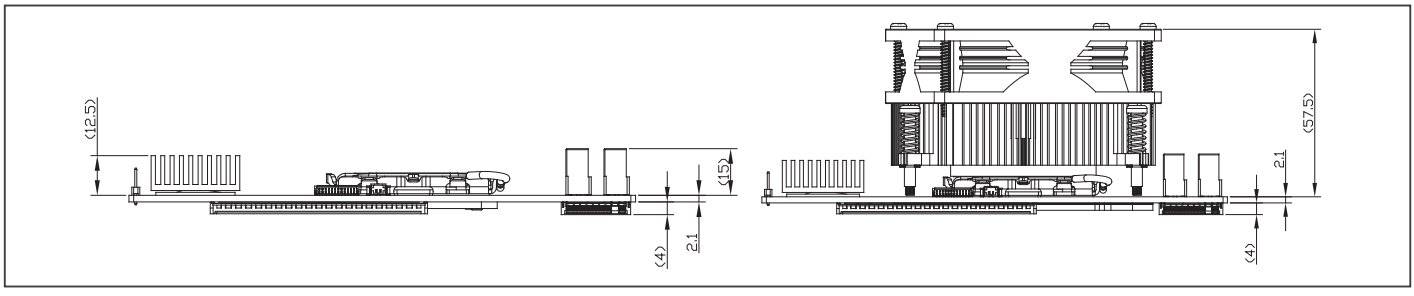
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

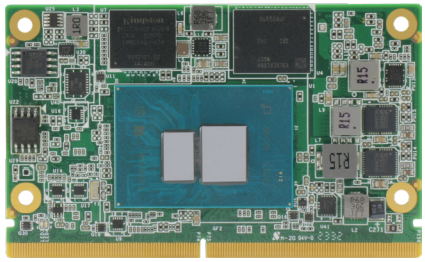


Ordering Information

Part Number	COM Express Type	CPU	Memory	ECC support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
HPC-RPSC-A11-0001	HPC Client Size C	12th/13th/14th Gen Intel® Core™ Series	DDR5 SODIMM x 2	Yes	eDP x 1, DDI x 3	SATA III x 2	Intel® I226-LM x 2	USB 2.0 x 8 USB 3.2 Type-C x 2 (20Gbps x 2) USB 3.2 Type-A x 4 (10Gbps)	4-Wire UART x 2 (Tx/Rx)	PEG [x16] x 1 PCIe [x4] x 3 PCIe [x1] x 8	12V	0°C ~ 60°C	LPC, GPIO 12-bit, I2C, SMBus, SPI

uCOM-ASL

SMARC Module with Intel Atom® Processor x7000RE Series



Features

- LPDDR5(x) x 1, up to 16GB
- eMMC, up to 64GB
- DP++ x 2, eDP x 1
- USB 3.2 Gen 2 x 2, USB 2.0 x 6
- PCIe Gen 3 [x1] x 3, max 1x PCIe[x2]
- Intel® Ethernet Controller I226-IT x 2
- 5V input
- SMARC Module size 82mm x 50mm

Specifications

System	
Form Factor	SMARC Module
CPU	Intel Atom® x7835RE Processor (8C, up to 3.6 GHz, 12W) Intel Atom® x7433RE Processor (4C, up to 3.4 GHz, 9W) Intel Atom® x7213RE Processor (2C, up to 3.4 GHz, 9W) Intel Atom® x7211RE Processor (2C, up to 3.2 GHz, 6W)
Chipset	Integrated with Intel® SoC
Memory	Onboard LPDDR5(x) 4800MHz, up to 16GB
Onboard Storage	eMMC, up to 64GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	3.23" x 1.97" (82mm x 50mm)
Security	TPM 2.0
Power	
Power Requirement	+5V for ATX / AT
Power Type	AT (default)/ATX, switch by BIOS
Power Consumption (Typical)	Intel Atom® x7835RE, 5.03A @+12V (including carrier)
Display	
Graphics Controller	Intel® UHD Graphics
Video Output	Display: DP++ x 2, up to 3840 x 2160 eDP x 1, up to 3840 x 2160
I/O	
Ethernet	Intel® Ethernet Controller I226-V/IT 2.5GbE x 2
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 6, USB 3.2 x 2
Serial Port	2-Wire UART x 2 (Tx/Rx) 4-Wire UART x 2 (Tx/Rx/RTS/CTS)
HDD Interface	SATA 6Gb/s x 1
Expansion	PCIe Gen 3 [x1] x 3 (Max PCIe [x2] x 1) MIPI CSI x 2 Note: To get a fourth PCIe Gen 3 [x1] interface, please contact the AAEON support team.
GPIO	7-bit (up to 14-bit by customization)
SMBus/I2C	GP_I2C x 1 SMBus x 1

Environment	
Operating Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) / Windows 11(Enterprise) Linux Ubuntu 22.04.2/Kernel 5.19
Weight	0.14 lb. (0.06Kg)

Packing List

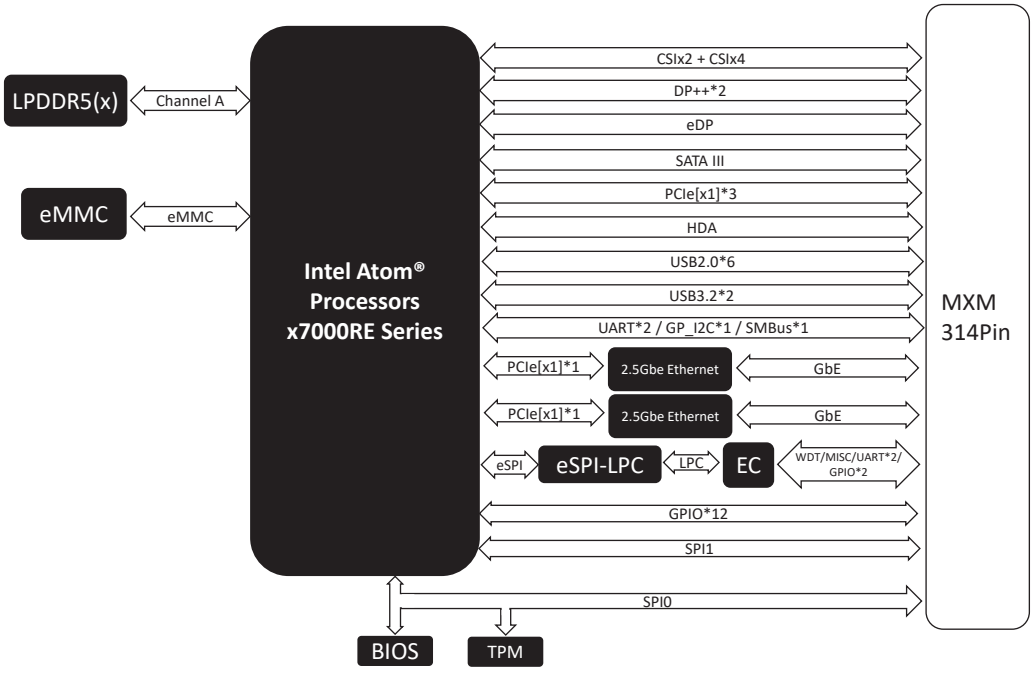
- uCOM-ASL

Optional Accessories

Part Number	Description
uCOM-ADN-FAN01	Cooler.82*42*16mm.4pin
ECB-960T-A15-0001	SMARC Carrier.2DP.LCD.2LAN.6USB.SATA.4COM.PCIe.HDA.12V.A1.5 for x86
uCOM-ADN-HSP01	Heat Spreader.82x42x6mm.Black

Note: All specifications are subject to change without notice.

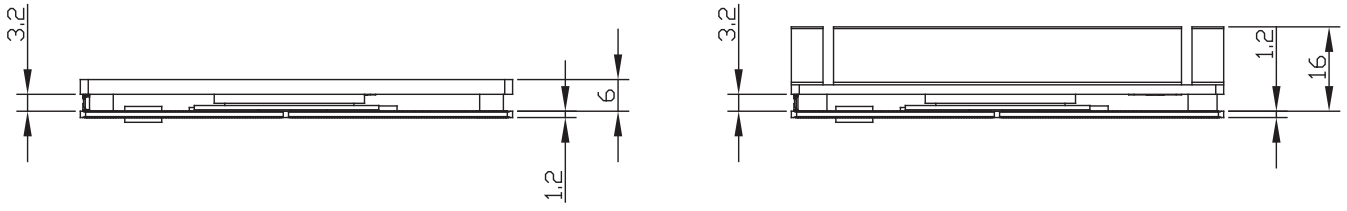
Block Diagram



Note: To get a fourth PCIe Gen 3 [x1] interface, please contact the AAEON support team.

Dimension

Unit: mm

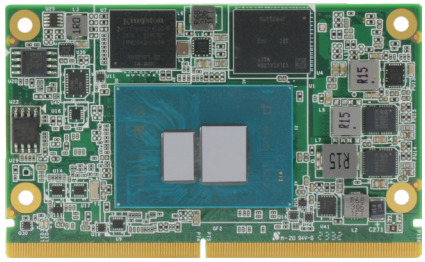


Ordering Information

Part Number	Form Factor	CPU	Memory	ECC support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
uCOM-ASLW2-B10-0001	SMARC	Intel Atom® x7835RE Processor	16GB LPDDR5(x)	—	eDP x 1 DP++ x 2	64GB eMMC	Intel® Ethernet Controller I226-IT x 2	USB 3.2 x 2 USB 2.0 x 6	4-wire UART x 2, 2-Wire UART x 2	PCIe [x1] x 3	+5V	-40°C ~ 85°C	LPC, GPIO 7-bit, I2C, SMBus
uCOM-ASLW2-B10-0002	SMARC	Intel Atom® x7433RE Processor	8GB LPDDR5x	—	eDP x 1 DP++ x 2	64GB eMMC	Intel® Ethernet Controller I226-IT x 2	USB 3.2 x 2 USB 2.0 x 6	4-wire UART x 2, 2-Wire UART x 2	PCIe [x1] x 3	+5V	-40°C ~ 85°C	LPC, GPIO 7-bit, I2C, SMBus
uCOM-ASLW2-B10-0003	SMARC	Intel Atom® x7213RE Processor	4GB LPDDR5x	—	eDP x 1 DP++ x 2	32GB eMMC	Intel® Ethernet Controller I226-IT x 2	USB 3.2 x 2 USB 2.0 x 6	4-wire UART x 2, 2-Wire UART x 2	PCIe [x1] x 3	+5V	-40°C ~ 85°C	LPC, GPIO 7-bit, I2C, SMBus
uCOM-ASLW2-B10-0004	SMARC	Intel Atom® x7211RE Processor	4GB LPDDR5x	—	eDP x 1 DP++ x 2	32GB eMMC	Intel® Ethernet Controller I226-IT x 2	USB 3.2 x 2 USB 2.0 x 6	4-wire UART x 2, 2-Wire UART x 2	PCIe [x1] x 3	+5V	-40°C ~ 85°C	LPC, GPIO 7-bit, I2C, SMBus

uCOM-ADN

SMARC Module with Intel Atom® Processor X Series, Intel® Processor N-series, & Intel® Core™ i3-N305 Processor



Features

- **LPDDR5x x 1, up to 8GB**
- **eMMC, up to 64GB**
- **DP++ x 2, eDP x 1**
- **USB 3.2 Gen 2 x 2, USB 2.0 x 6**
- **PCIe Gen 3 [x1] x 3, max 1x PCIe[x2]**
- **Intel® Ethernet Controller I226-V/IT x 2**
- **5V input**
- **SMARC Module size 82mm x 50mm**

Specifications

System	
Form Factor	SMARC Module
CPU	Intel® Core™ i3-N305 Processor (8C/8T, up to 3.8 GHz, 15W) Intel Atom® x7425E Processor (4C, up to 3.4 GHz, 12W) Intel® Processor N97 (4C, up to 3.6 GHz, 12W)
Chipset	Integrated with Intel® SoC
Memory	Onboard LPDDR5x 4800MHz, up to 8GB
Onboard Storage	eMMC, up to 64GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	3.23" x 1.97" (82mm x 50mm)
Security	TPM 2.0
Power	
Power Requirement	+5V for ATX / AT
Power Type	AT (default)/ATX, switch by BIOS
Power Consumption (Typical)	Intel® Core™ i3-N305, 4.23A @+5V
Display	
Graphics Controller	Intel® UHD Graphics
Video Output	Display: DP++ x 2, up to 3840 x 2160 eDP x 1, up to 3840 x 2160
I/O	
Ethernet	Intel® Ethernet Controller I226-V/IT 2.5GbE x 2
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 6, USB 3.2 x 2
Serial Port	2-Wire UART x 2 (Tx/Rx) 4-Wire UART x 2 (Tx/Rx/RTS/CTS)
HDD Interface	SATA 6Gb/s x 1
Expansion	PCIe Gen 3 [x1] x 3 (Max PCIe [x2] x 1) MIPI CSI x 2 Note: To get a fourth PCIe Gen 3 [x1] interface, please contact the AAEON support team.
GPIO	7-bit (up to 14-bit by customization)
SMBus/I2C	GP_I2C x 1 SMBus x 1

Environment	
Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C) -40°F ~ 185°F (-40°C ~ 85°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) / Windows 11(enterprise) Linux Ubuntu 22.04.2/Kernel 5.19
Weight	0.14 lb. (0.06Kg)

Packing List

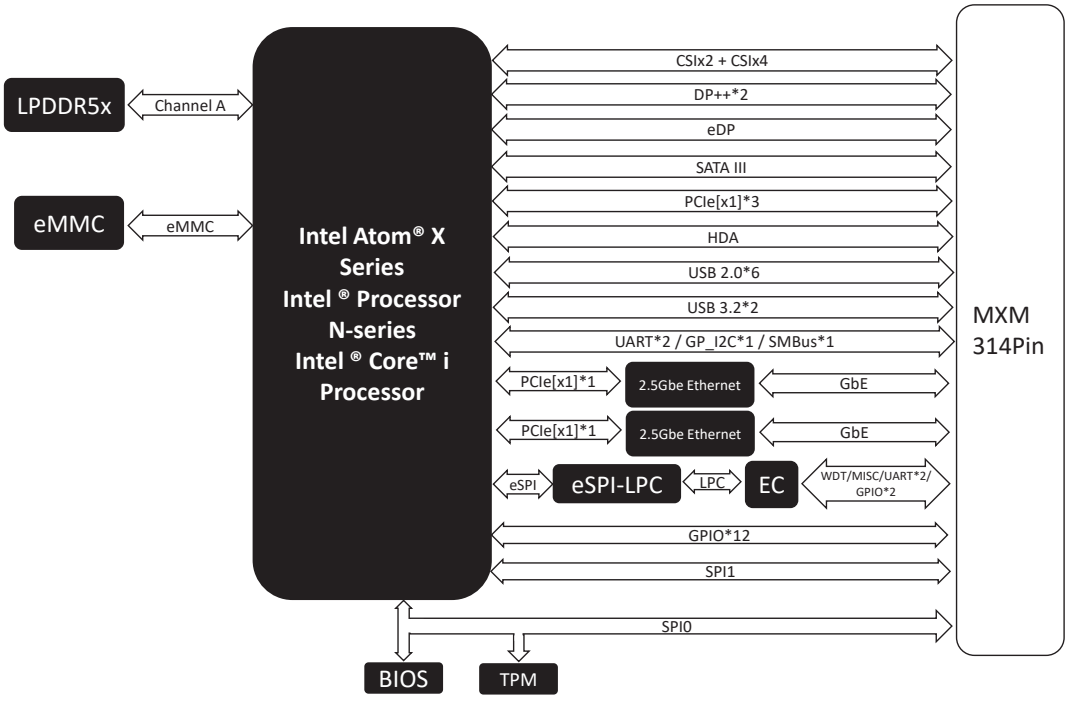
- **uCOM-ADN**

Optional Accessories

Part Number	Description
uCOM-ADN-FAN01	Cooler.82*42*16mm.4pin

Note: All specifications are subject to change without notice.

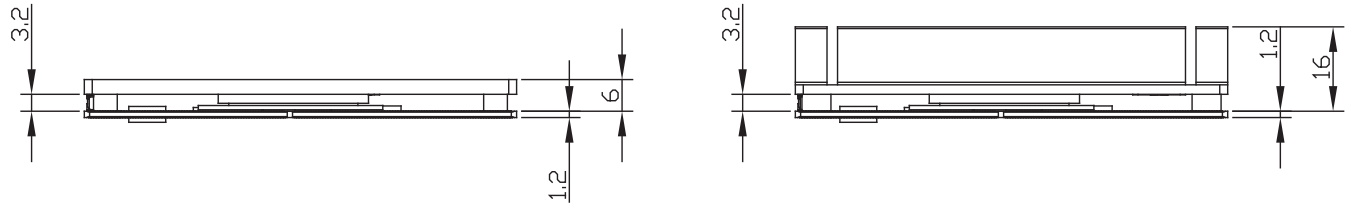
Block Diagram



Note: To get a fourth PCIe Gen 3 [x1] interface, please contact the AAEON support team.

Dimension

Unit: mm

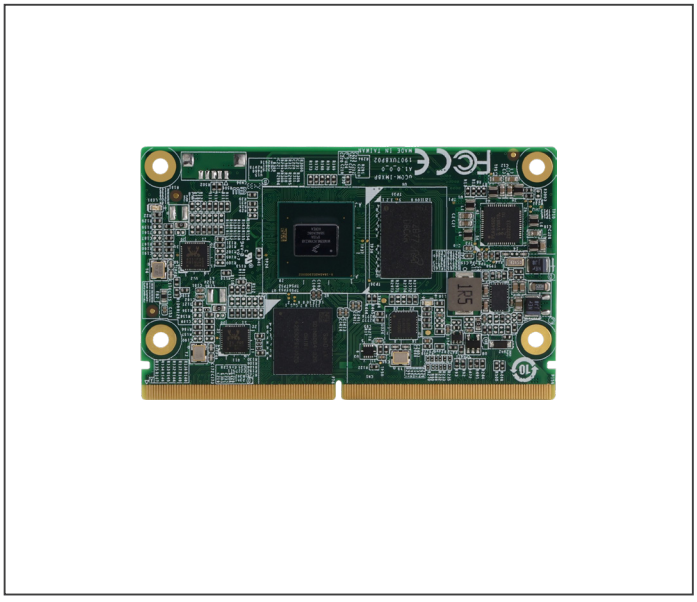


Ordering Information

Part Number	Form Factor	CPU	Memory	ECC support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
uCOM-ADN-B10-0001	SMARC	Intel Core™ Processor i3-N305	8GB LPDDR5x	—	eDP x 1 DP++ x 2	64GB eMMC	Intel® Ethernet Controller I226-V x 2	USB 3.2 x 2 USB 2.0 x 6	4-wire UART x 2, 2-Wire UART x 2	PCIe [x1] x 3	+5V	-20°C ~ 70°C	LPC, GPIO 7-bit, I2C, SMBus
uCOM-ADN-B10-0002	SMARC	Intel® Processor N97	8GB LPDDR5x	—	eDP x 1 DP++ x 2	32GB eMMC	Intel® Ethernet Controller I226-V x 2	USB 3.2 x 2 USB 2.0 x 6	4-wire UART x 2, 2-Wire UART x 2	PCIe [x1] x 3	+5V	-20°C ~ 70°C	LPC, GPIO 7-bit, I2C, SMBus
uCOM-ADN-B10-0003	SMARC	Intel Atom® Processor x7425E	8GB LPDDR5x	—	eDP x 1 DP++ x 2	64GB eMMC	Intel® Ethernet Controller I226-IT x 2	USB 3.2 x 2 USB 2.0 x 6	4-wire UART x 2, 2-Wire UART x 2	PCIe [x1] x 3	+5V	-40°C~85°C	LPC, GPIO 7-bit, I2C, SMBus

uCOM-IMX8P

SMARC CPU Module with NXP ARM i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor



Features

- **ARM NXP i.MX 8M Plus - Arm® Cortex®-A53, Cortex-M7, up to 1.6GHz per core**
- **Onboard LPDDR4, Up to 4GB**
- **HDMI2.0a x 1, LVDS x 1, MIPI-DSI 4 Lane x 1 (By request)**
- **GbE x 2**
- **USB 3.0 Gen1 x 2, USB 2.0 x 3 (support OTG x 1)**
- **PCIe Gen3 x 1**
- **UART x 4, GPIO x 14, CAN FD x 2, TPM 2.0**

Giga LAN · LPDDR4 · USB 2.0 · USB 3.2 Gen 2

Specifications

System	
Form Factor	SMARC 2.1 Compliant
CPU	NXP i.MX 8M Plus – Quad-Core Arm® Cortex®-A53 Processor, 1.6GHz (Default w/ NPU, optional w/o NPU)
Chipset	—
Memory	Onboard LPDDR4 up to 4GB
Storage	eMMC 5.1, 16/32GB (Optional: 64/128 GB)
BIOS	—
MTBF (Hours)	3,780,780
Wake On Lan	—
Watchdog Timer	Yes
Real Time Clock	RTC x 1
Boot Select	Carrier SD Card Module eMMC Flash
Security	TPM 2.0 (optional)
Display	
Graphics Controller	2D: Vivante GC520L 3D: Vivante GC7000UL
Video Output	HDMI 2.0a x 1 LVDS (2 CH, 4 Lane) x 1 MIPI-DSI 4 Lane x 1 (By request)
I/O Interfaces	
Ethernet	Gigabit Ethernet x 2 (TSN x 1)
USB	USB 3.0 Gen 1 + USB 2.0 x 2 (Host) USB 2.0 x 2 (Host) USB 2.0 x 1 (OTG)
Serial Port	UART x 4 (2-wire x 2, one for debug port, 4-wire x 2)
Audio	I2S x 1
PCIE	PCIe Gen 3.0 x 1
CANBus	CAN 2.0 FD x 2 (1.8V)
MIPI-CSI	MIPI CSI 2 Lane x 1 MIPI CSI 4 Lane x 1
GPIO	14 bits (one for PWM)
Other Interfaces	SPI x 2 (SPI x 1, QSPI x 1) I2C x 5 (Power Management x 1, Camera x 2, LCD Display x 1, General Purpose x 1)
Power	
Power Requirement	DC 3.3 V ~ 5.25 V
Power Consumpton	3.45 W (Full loading)

Envioronmental And Mechanical	
Dimention	3.23" x 1.97" (82mm x 50mm)
Weight	0.03 lb. (0.013kg)
Opreating Temperature	-40°F ~ 185°F (-40°C ~ 85°C) Optional: 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
OS Support	Debian 12 (default) Win 10 IoT (by request) Yocto (by request)
Support Protocol	Modbus, MQTT, OPCUA (by request)

Packing List

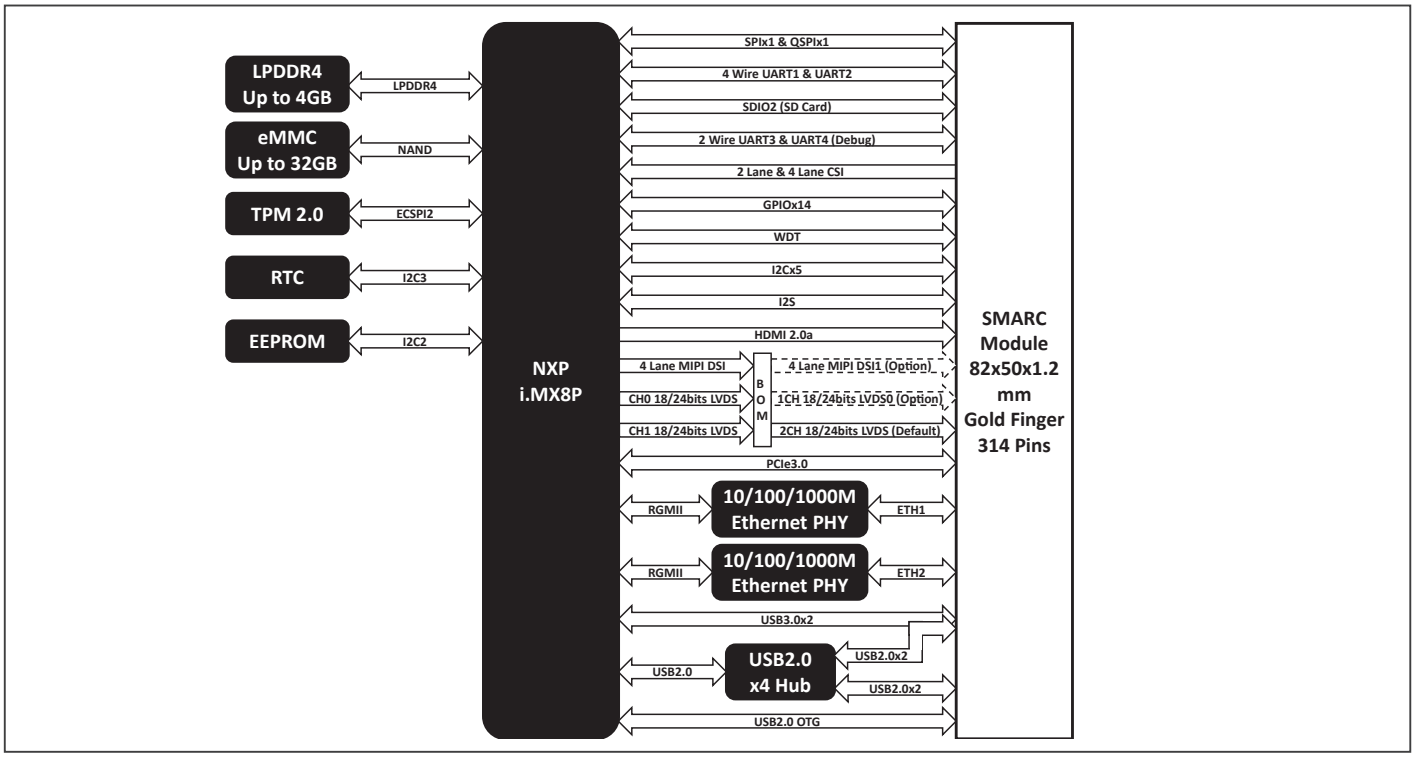
- **uCOM-IMX8P**

Optional Accessories

Part Number	Description
uCOM-IMX8P-HSK01	HeatSink.82*42*21.5mm.for uCOM-IMX8P
ECB-960T-A15-0002	Carrier board for uCOM-IMX8P

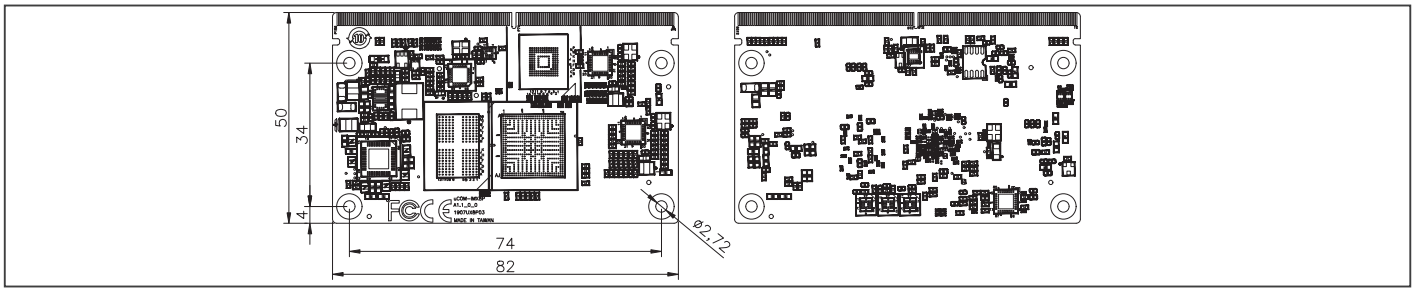
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

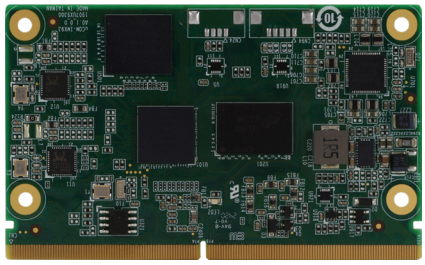


Ordering Information

Part Number	Form Factor	CPU	Memory	ECC Support	Display	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
uCOM-IMX8P-A11-0001	SMARC	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor (2.3 TOPs)	Onboard LPDDR4 2GB	—	HDMI 2.0a x 1 LVDS x 1 (2 CH, 18/24bit)	16GB eMMC	GbE x 2	USB3.0 Gen1 + USB 2.0 x 2 (Host) USB 2.0 x 2 (Host) USB 2.0 x 1 (OTG)	4-wire 1.8V UART x 2 2-wire 1.8V UART x 2 (one for debug port)	PCIe Gen 3.0 x 1	+5V	-40°C ~ 85°C	CAN-FD x 2 SPI x 2 I2C x 1(General purpose) GPIO 14 bits (one for PWM) MIPI-CSI x 2
uCOM-IMX8P-A11-0002	SMARC	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor (2.3 TOPs)	Onboard LPDDR4 4GB	—	HDMI 2.0a x 1 LVDS x 1 (2 CH, 18/24bit)	32GB eMMC	GbE x 2	USB3.0 Gen1 + USB 2.0 x 2 (Host) USB 2.0 x 2 (Host) USB 2.0 x 1 (OTG)	4-wire 1.8V UART x 2 2-wire 1.8V UART x 2 (one for debug port)	PCIe Gen 3.0 x 1	+5V	-40°C ~ 85°C	CAN-FD x 2 SPI x 2 I2C x 1(General purpose) GPIO 14 bits (one for PWM) MIPI-CSI x 2 TPM 2.0

uCOM-IMX93 PRELIMINARY

SMARC CPU Module with NXP I.MX93 Cortex-A55 x2 + Cortex-M33 processor



Features

- ARM NXP i.MX93 - Arm® Cortex®-A55 x2, Cortex-M33, up to 1.7GHz
- Onboard LPDDR4, Up to 2GB
- HDMI 2.0b or MIPI-DSI 4 lane x 1, LVDS x 1
- GbE x 2
- USB 2.0 OTG x1, USB 2.0 HOST x4
- UART x 4, GPIO x 8, MIPI CSI x 1, TPM 2.0, CAN-FD x2

Specifications

System	
Form Factor	SMARC 2.1 compliance
CPU	NXP I.MX93 Cortex-A55 x2 + Cortex-M33, Cortex-A55: 1.7GHz, Cortex-M33: 250MHz
Chipset	—
Memory	Onboard LPDDR4, up to 2 GB
Storage	eMMC 5.1, 16/32/64 GB (optional) SDIO 3.0 x 1 (for SD Card)
BIOS	—
MTBF (Hours)	TBD
Wake On Lan	—
Watchdog Timer	Yes
Real Time Clock	RTC x 1
Boot Select	Carrier SD Card Module eMMC Flash
Security	TPM 2.0 (optional)
Display	
Graphics Controller	NXP integrated 2D Graphic Acceleration
Video Output	HDMI 2.0b x 1 (optional w/ MIPI-DSI) LVDS 4-Lane x 1 (18/24bit) MIPI-DSI 4-Lane x 1 (Default)
I/O Interfaces	
Ethernet	Gigabit Ethernet x 2 (one support TSN)
USB	USB 2.0 x 4 (Host) USB 2.0 x 1 (OTG)
Serial Port	UART x 2 (4-wire, 1.8V) UART x 2 (2-wire, 1.8V, one for debug port)
Audio	I2S x 1
PCIE	—
CANBus	CAN 2.0 FD x 2 (1.8V)
MIPI-CSI	MIPI CSI 2 Lane x 1
GPIO	8 bits (one for PWM)
Other Interfaces	SPI x 2 (one colay with TPM) I2C x 4
Power	
Power Requirement	DC 3.3 V ~ 5.25 V
Power Consumpton	—

Envioronmental And Mechanical	
Dimention	3.23" x 1.97" (82mm x 50mm)
Weight	TBD
Opreating Temperature	-40 °F ~ 185 °F (-40 °C ~ 85 °C) (Option: 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 Class A
OS Support	Debian, Yocto
Support Protocol	—

Packing List

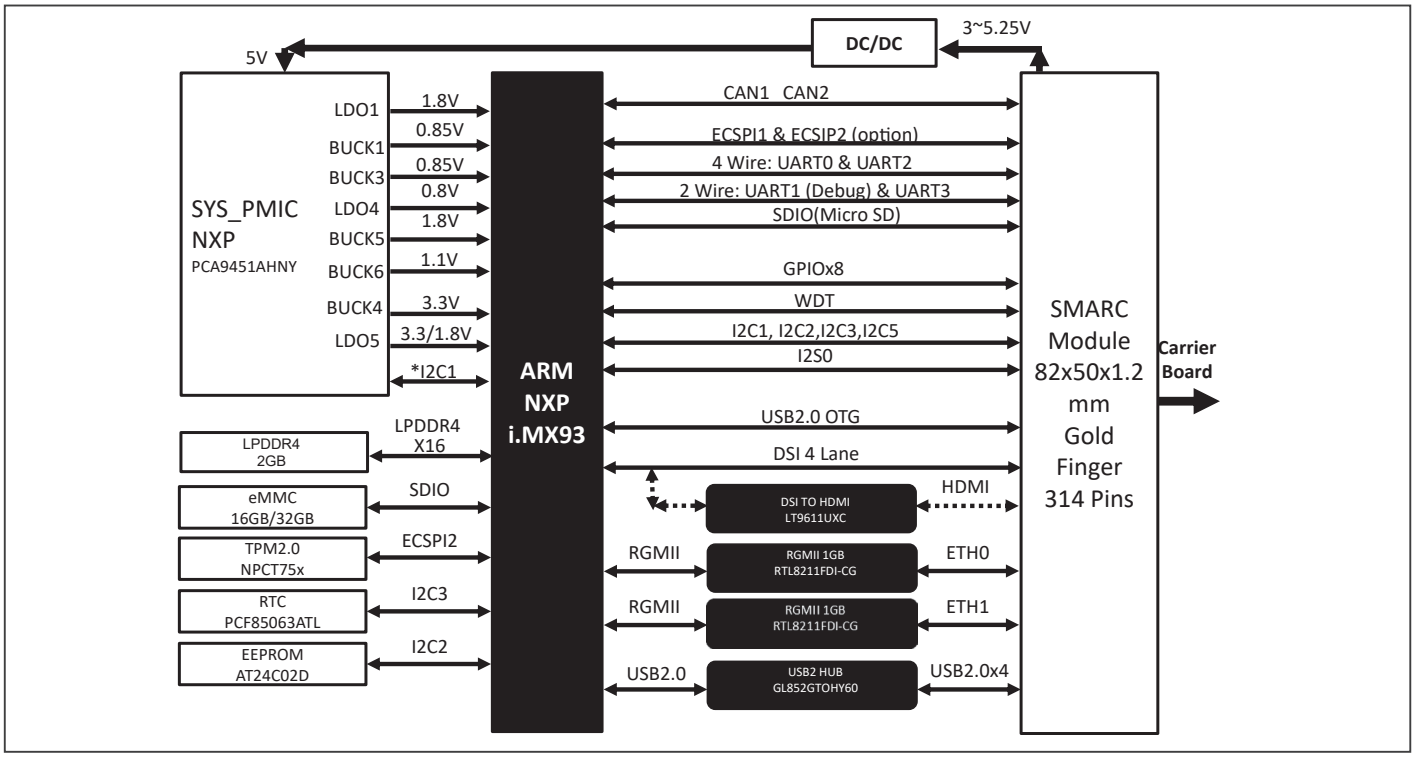
- uCOM-IMX93

Optional Accessories

- TBD

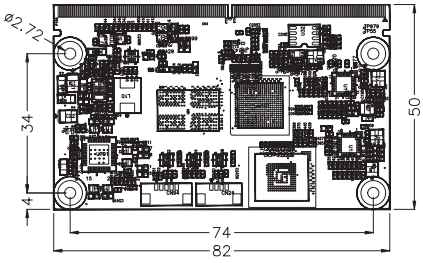
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

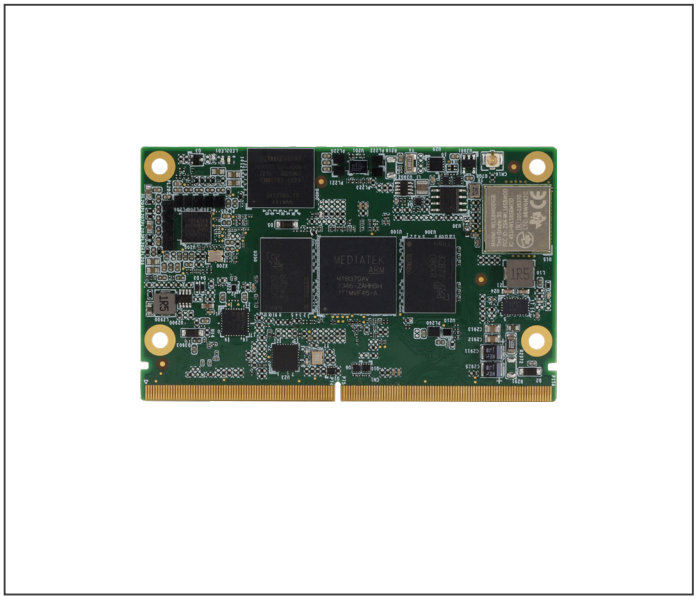


Ordering Information

- **TBD**

uCOM-M700 PRELIMINARY

SMARC CPU Module with MediaTek Genio 700/510, up to Cortex-A78 x2 + Cortex-A55x6 processor



Features

- ARM MediaTek Genio 700 / 510
- Onboard LPDDR4, Up to 8GB
- HDMI 2.0 x1, DP 1.4 x1
- eDP 2 lane x1, MIPI-DSI 4 lane x 1
- GbE x1
- USB 3.0+2.0 HOST x1, USB 2.0 OTG x1, USB 2.0 HOST x4
- UART x 4, GPIO x 12, MIPI CSI x 2, TPM 2.0

Specifications

System	
Form Factor	SMARC 2.1 compliance
CPU	MediaTek Genio 700/510 700: Cortex-A78 x2 + Cortex-A55 x6, 4 TOPs, Cortex-A78 2.2GHz, Cortex-A55 2.0GHz 510: Cortex-A78 x2 + Cortex-A55 x4, 3.2 TOPs Cortex-A78 2.0GHz, Cortex-A55 2.0GHz
Chipset	—
Memory	Onboard LPDDR4, up to 8 GB
Storage	SDIO 3.0 x 1 (for Micro SD Card) eMMC 5.1, 16/32/64 GB (optional)
BIOS	—
MTBF (Hours)	TBD
Wake On Lan	—
Watchdog Timer	Yes
Real Time Clock	RTC x 1
Boot Select	Carrier SD Card Module eMMC Flash
Security	TPM 2.0 (optional)
Display	
Graphics Controller	ARM Mali-G57 MC2/3, OpenGL ES 1.1/2.0/3.2, Vulkan 1.0/1.1 (700: MC3, 510: MC2)
Video Output	HDMI 2.0 x 1 (3840 x 2160 @ 60GHz) DP 1.4 x 1 (4k2k @ 60GHz) eDP 1.2 2-Lane x 1 MIPI-DSI 4-Lane x 1 *Support up to dual display (4K x1 + 2K x1)
I/O Interfaces	
Ethernet	Gigabit Ethernet x 1
USB	USB 3.0+2.0 x1 (Host) USB 2.0 x 4 (Host) USB 2.0 x 1 (OTG)
Serial Port	UART x 2 (4-wire, 1.8V) UART x 2 (2-wire, 1.8V, one for debug port)
Audio	I2S x 1
PCIE	PCIe 2.0 x1
CANBus	—
MIPI-CSI	MIPI CSI 4 Lane x 1 + 2 Lane x 1
GPIO	12 bits (one for PWM)
Other Interfaces	SPI x 2 I2C x 5

Power	
Power Requirement	DC 3~5.25 V, AT (Option: ATX for Yocto)
Power Consumpton	—
Envioronmental And Mechanical	
Dimention	3.23" x 1.97" (82mm x 50mm)
Weight	TBD
Opreating Temperature	-40°F ~ 185°F (-40°C ~ 85°C) (Option: 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 Class A
OS Support	Ubuntu, Yocto, Android
Support Protocol	—

Packing List

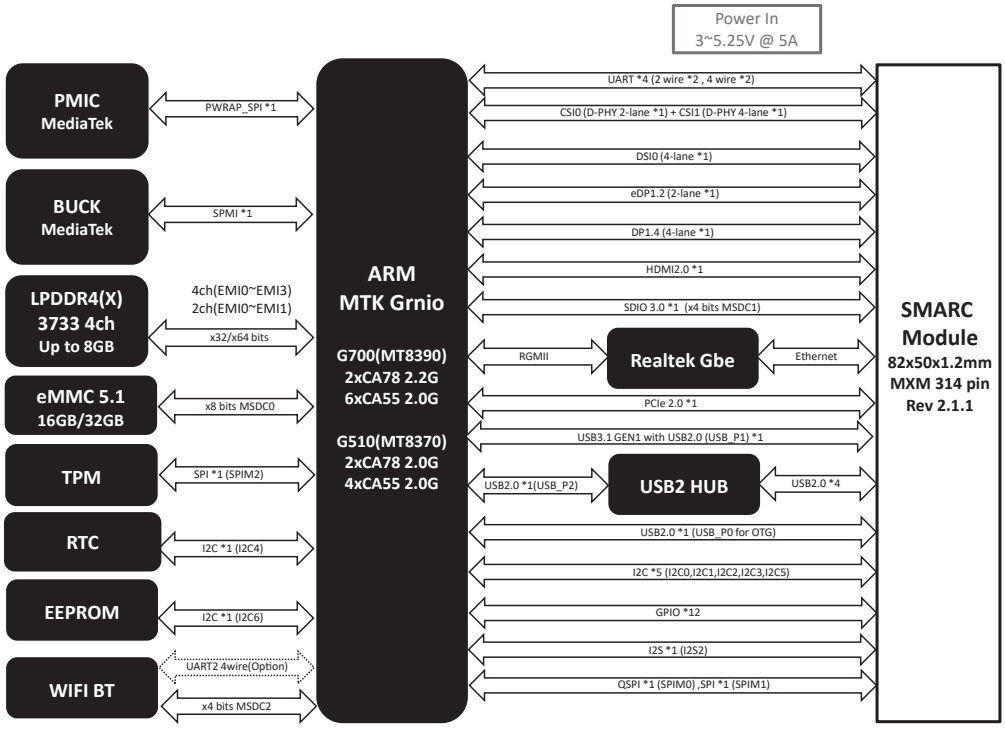
- uCOM-IMX8P

Optional Accessories

- TBD

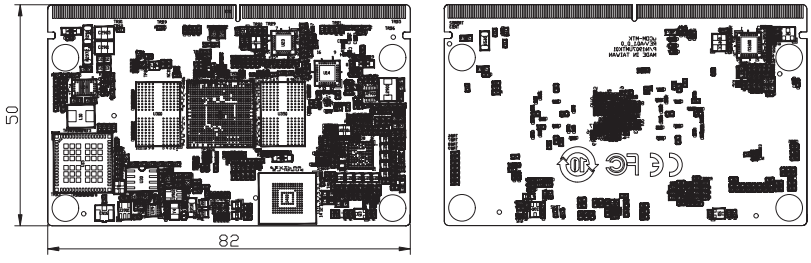
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

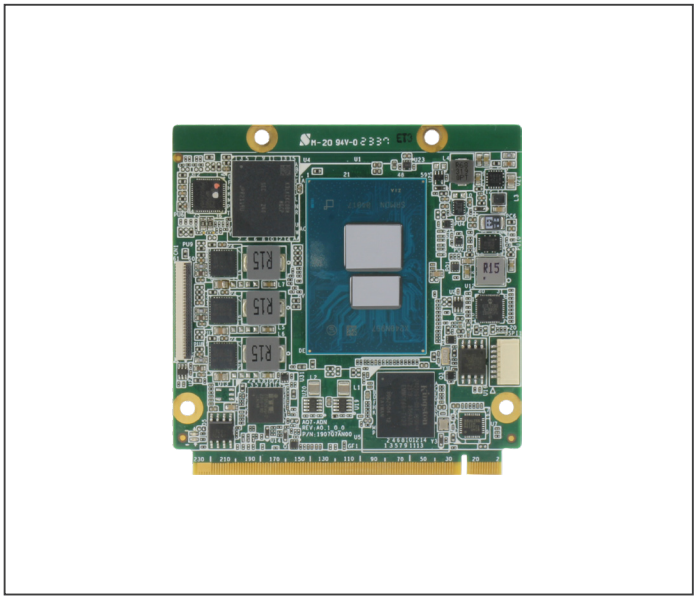


Ordering Information

- **TBD**

AQ7-ADN

Qseven CPU Module with Intel Atom® X Series/N-series/Core™ i3-N305 processor



Features

- **Intel Atom® X Series/N-series/Core™ i3-N305, Max TDP 15W**
- **Onboard LPDDR5x, up to 8GB**
- **Realtek RTL8111H-CG 1GbE x 1**
- **SATA 6Gb/s x 1**
- **USB 2.0 x 6, USB 3.2 x 2**
- **PCIe [x1] x 4**
- **DC +5V**
- **Qseven Module Size, 70mm x 70mm**

Specifications

System	
Form Factor	Qseven Module
CPU	Intel Atom® X Series/N-series/Core™ i3-N305 CPU Intel® Core™ i3-N305 (8C, up to 3.8 GHz, 15W) Intel Atom® x7425E (4C, up to 3.4 GHz, 12W) Intel® Processor N200 (4C, up to 3.7 GHz, 6W) Intel® Processor N97 (4C, up to 3.6 GHz, 12W) Intel® Processor N50 (2C, up to 3.4 GHz, 6W)
Chipset	Integrated with Intel ® SoC
Memory	LPDDR5x up to 4800MT/s, 8GB
Onboard Storage	eMMC up to 64GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	2.76" x 2.76" (70mm x 70mm)
Security	TPM 2.0 (Optional)
Power	
Power Requirement	+5V +/- 50mV, +3Vrtc
Power Type	AT (default) / ATX, switch by BIOS
Power Consumption (Typical)	Intel® Core™ i3-N305, LPDDR5x 8GB x1, 4.5A@ +5V
Display	
Graphics Controller	Intel® UHD Graphics
Video Output	Dual Display: DP x 1 eDP or LVDS x 1 (Change by BOM)
I/O	
Ethernet	Realtek RTL8111H-CG 1GbE x 1
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 6, USB 3.2 x 2
Serial Port	4-Wire UART x 1 (Tx/Rx/CSR/RTS)
HDD Interface	SATA III x 1
Expansion	PCIe [x1] x 4 4-lane MIPI-CSI x 1
GPIO	8-bit (Change by BOM)
SMBus/I2C	I2C x 1, SMBus x 1
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing

EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit) Linux Ubuntu 22.04.x/Kernel 5.19.0
Weight	0.26 lb. (0.12Kg)

Packing List

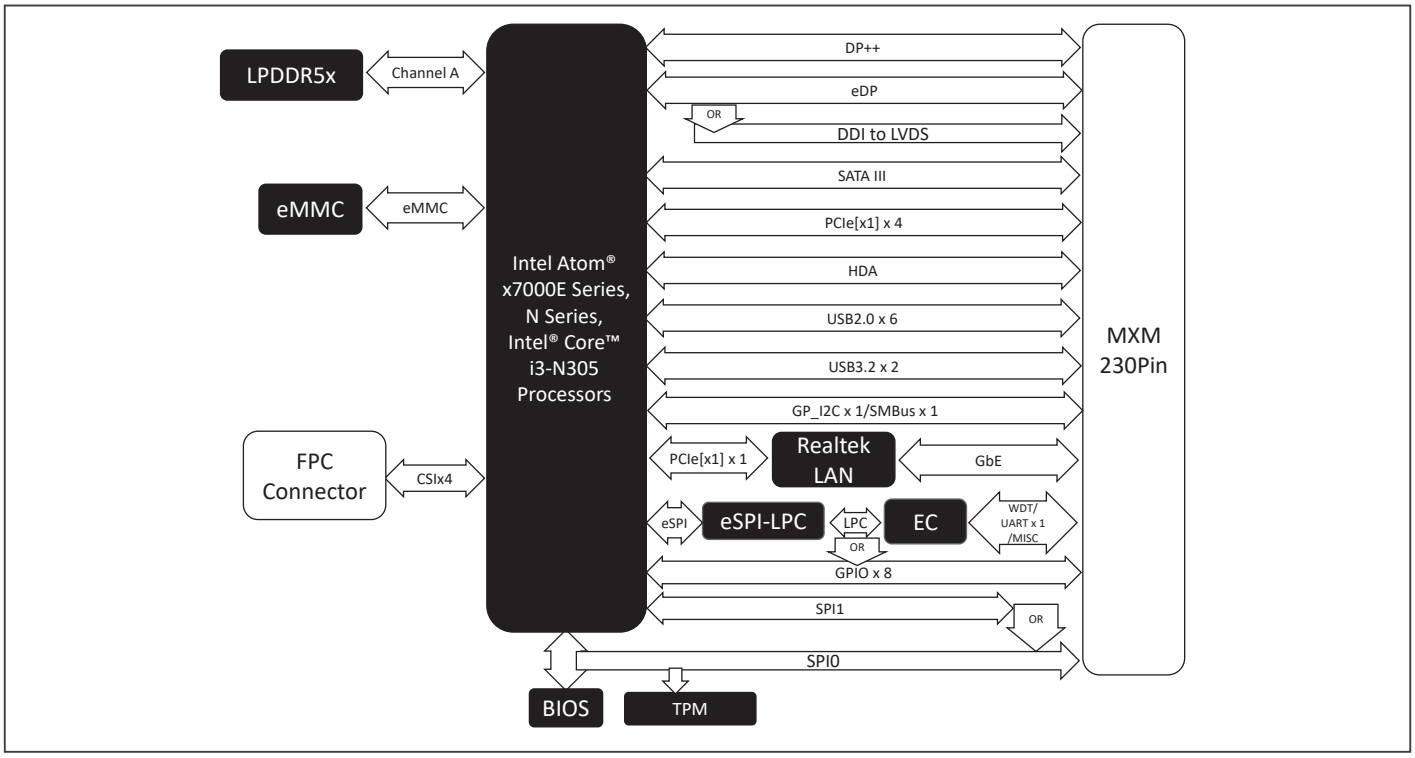
- **AQ7-ADN**

Optional Accessories

Part Number	Description
ECB-970G-A10-0001	COM Qseven Carrier Board. 2USB3, 2SATA, GbE, PCIe. AT/ATX. Rev A1.0
AQ7-ADN-FAN01	Cooler.60 x 70 x 19.1mm.4pin

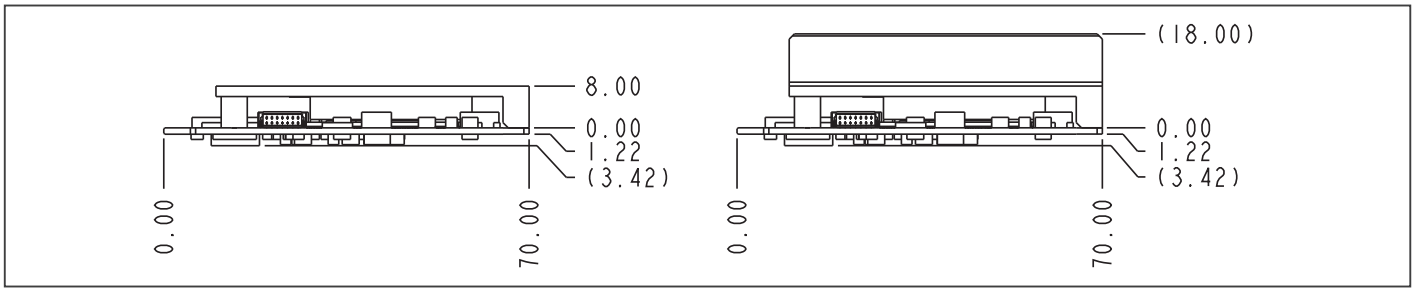
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

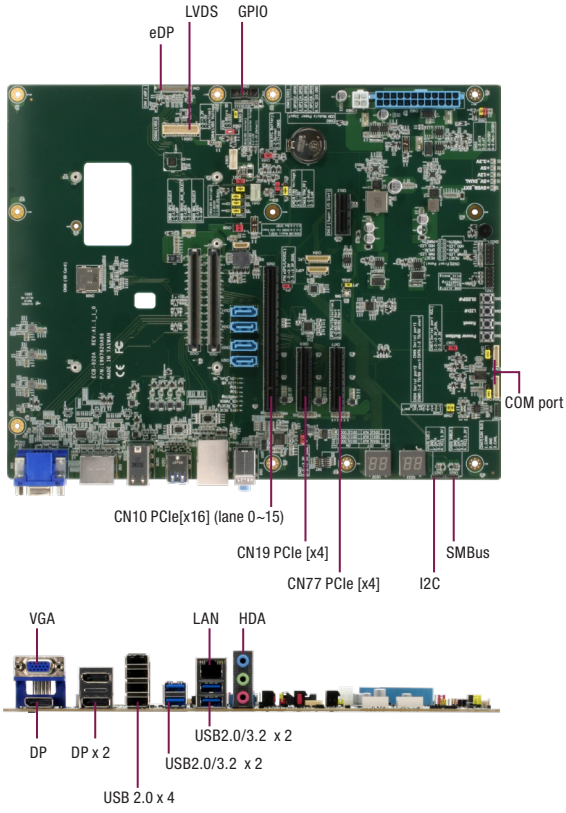


Ordering Information

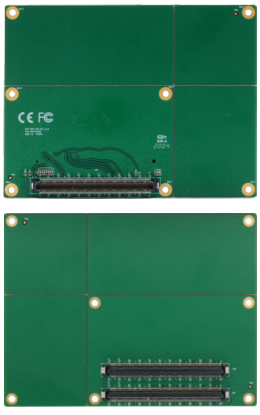
Part Number	COM Express Type	CPU	Memory	ECC support	Display	LVDS	Storage	LAN	USB	UART	Expansion	Power	Temperature	Others
AQ7-ADN-A10-0001	Qseven 2.1	Intel Core™ Processor i3-N305	LPDDR5x 8GB	—	DP x 1	LVDS x 1	eMMC 64GB	RTL8111H-CG 1GbE x 1	USB 2.0 x 6 USB3.2 x 2	4-Wire UART	PCIe [x1]x4 4-lane MIPI-CSI x 1	5V	0~60°C	I2C, SMBus, LPC, SPI0
AQ7-ADN-A10-0003	Qseven 2.1	Intel® Processor N97	LPDDR5x 8GB	—	DP x 1	LVDS x 1	eMMC 64GB	RTL8111H-CG 1GbE x 1	USB 2.0 x 6 USB3.2 x 2	4-Wire UART	PCIe [x1]x4 4-lane MIPI-CSI x 1	5V	0~60°C	I2C, SMBus, LPC, SPI0
AQ7-ADN-A10-0004	Qseven 2.1	Intel® Processor N50	LPDDR5x 4GB	—	DP x 1, eDP x 1	—	eMMC 32GB	RTL8111H-CG 1GbE x 1	USB 2.0 x 6 USB3.2 x 2	4-Wire UART	PCIe [x1]x4 4-lane MIPI-CSI x 1	5V	0~60°C	I2C, SMBus, GPIO 8-bit, SPI1
AQ7-ADN-A10-0005	Qseven 2.1	Intel Atom® Processor x7425E	LPDDR5x 8GB	—	DP x 1	LVDS x 1	eMMC 64GB	RTL8111H-CG 1GbE x 1	USB 2.0 x 6 USB3.2 x 2	4-Wire UART	PCIe [x1]x4 4-lane MIPI-CSI x 1	5V	0~60°C	I2C, SMBus, LPC, SPI0

ECB-920A-A11

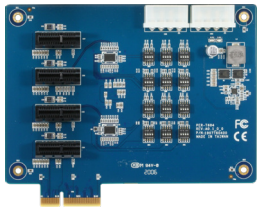
COM Express Evaluation Carrier Board (Type 6/Type 10)



PER-T603



PER-604



Features

- ATX Form Factor (305mm × 244mm)
- Supports COM Express Rev3.0, Pin out Type 6/Type 10
- PCIe [x16] x 1, PCIe [x4] x 2
- VGA x 1, LVDS, eDP, Display Port x 3
- USB 2.0 x 4, USB 3.2/2.0 x 4
- SATA III x 4
- RJ-45 GbE x 1, Supports up to 2.5GbE
- High Definition Audio
- LPC/eSPI Slot, GPIO/SDIO, SMBus x 1, I2C x 1
- COM Port x 2 (2-Wire UART Tx/Rx), GPIO 8-bit

Giga LAN · HD Audio · USB 2.0 · USB 3.2 Gen 2 · PCI Express

Specifications

System	
Form Factor	ATX Form Factor
COM Express Connector	x 2 (Row A,B & Row C,D)
I/O Chipset	—
Front Panel Control	10-pin Header (5x2)
Ethernet	10/100/1000/2500 Base-TX, RJ45 x 1 (From CPU Module)
Expansion Interface	PCIe [x4] x 2 PCIe [x16] 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. (0.6Kg)
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
Display	
LCD	LVDS: 40-pin Dual-Channel LVDS Connector (20x2) eDP: 30-pin Board Wire Connector
Display interface	Display Port x 3 (Dual x 1, Single x 1) D-SUB15 Connector x 1
I/O	
Storage	SATA III x 4
Serial Port	COM Port x 2 (2-Wire UART Tx/Rx)
USB	USB 2.0 x 4 (Type-A), USB 3.2/2.0 x 4 (Type-A)
Audio	Audio Jack, supports Line-in, Line-out, Microphone
GPIO	8-bit Programmable
Switch/Button	Power Button x 1 / Reset Button x 1
Debug LED	80 PORT
I2C	1
Expansion Interface	LPC, SMBus, eSPI, CAN Bus, 4 pin fan connector, Micro SD Card Slot x 1

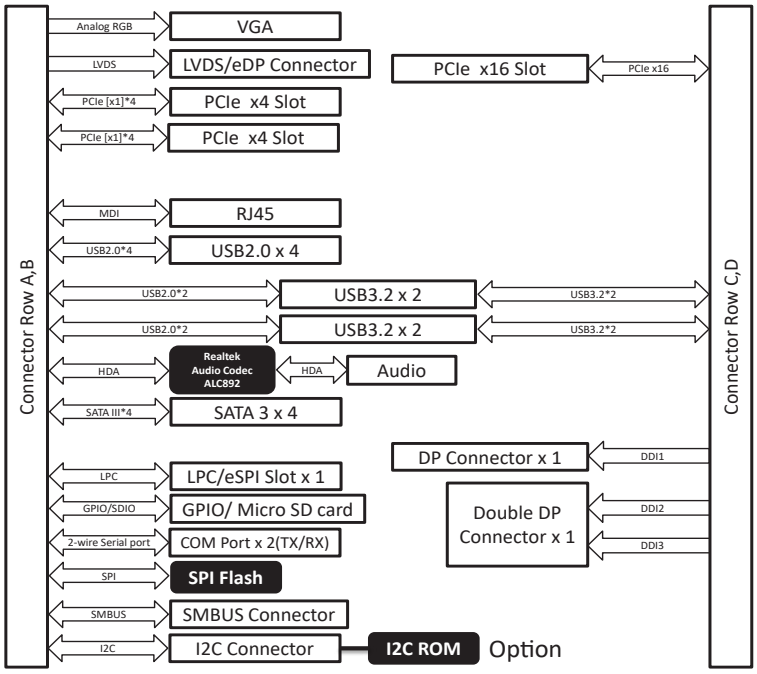
* I/O functions according to the type of module installed, please refer to function table.

Optional Accessories

- **ECB-920A-A11-BRKT01**
  ECB-920A-A11.IO Bracket
- **170X000324**
  5V Power cable 1x4P to ATX 2x2P.200mm

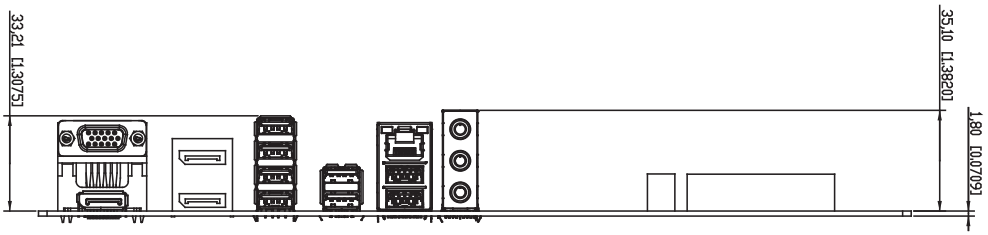
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Packing List

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

Ordering Information

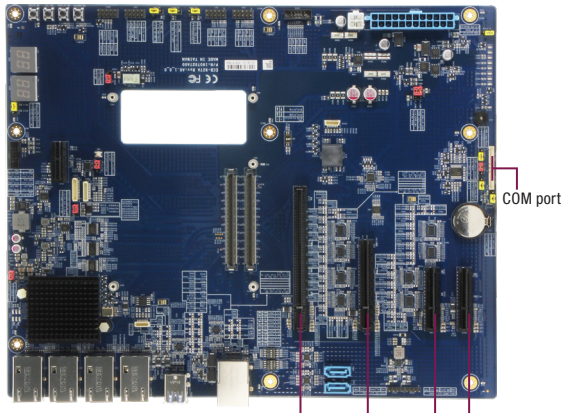
- **ECB-920A-A11-0001**
  COMe Type 6/10.Carrier Board.ATX.2.5GbE.8USB.2COM.4SATA.PCIe.AT/ATX.Rev. A1.1

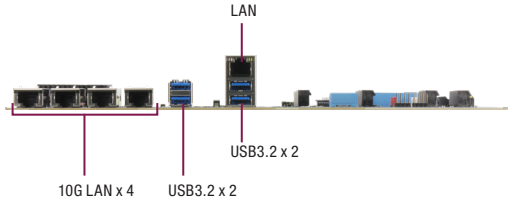
Type 6/10 Function Table

COM Type	Type 6	Type 10
PCIe [x16]	1	—
PCIe [x4]	1 (Lane 0 – Lane 3)	1 (Lane 0 – Lane 3)
PCIe [x1]	1 (Lane 4 – Lane 7)	—
VGA	1	—
DDI	3 (DDI1 – DDI3)	1
LVDS	1	1
LAN	1	1
SATA III	4 (Lane 0 – Lane 3)	2 (Lane 0 – Lane 1)
Serial Port (Tx/Rx)		
USB 3.2	4 (Lane 0 – Lane 3)	2 (Lane 0 – Lane 1)
USB 2.0	8 (Lane 0 – Lane 7)	8 (Lane 0 – Lane 7)
GPIO/SDIO	1 (GPIO 8 bits)	1 (GPIO 8 bits)

ECB-927A

COM Express Evaluation Carrier Board (Type 7)





Features

- ATX Form Factor
- Supports COM Express Type 7 Basic Size
- PCIe [x16] + PCIe [x8] + PCIe [x4] x 2
- Display via Console or 3rd Party Graphic Solution
- USB 3.2 Gen 2 x 4
- SATA III x 2
- 10GbE x 4 (Intel® Ethernet Connection X557-AT4)

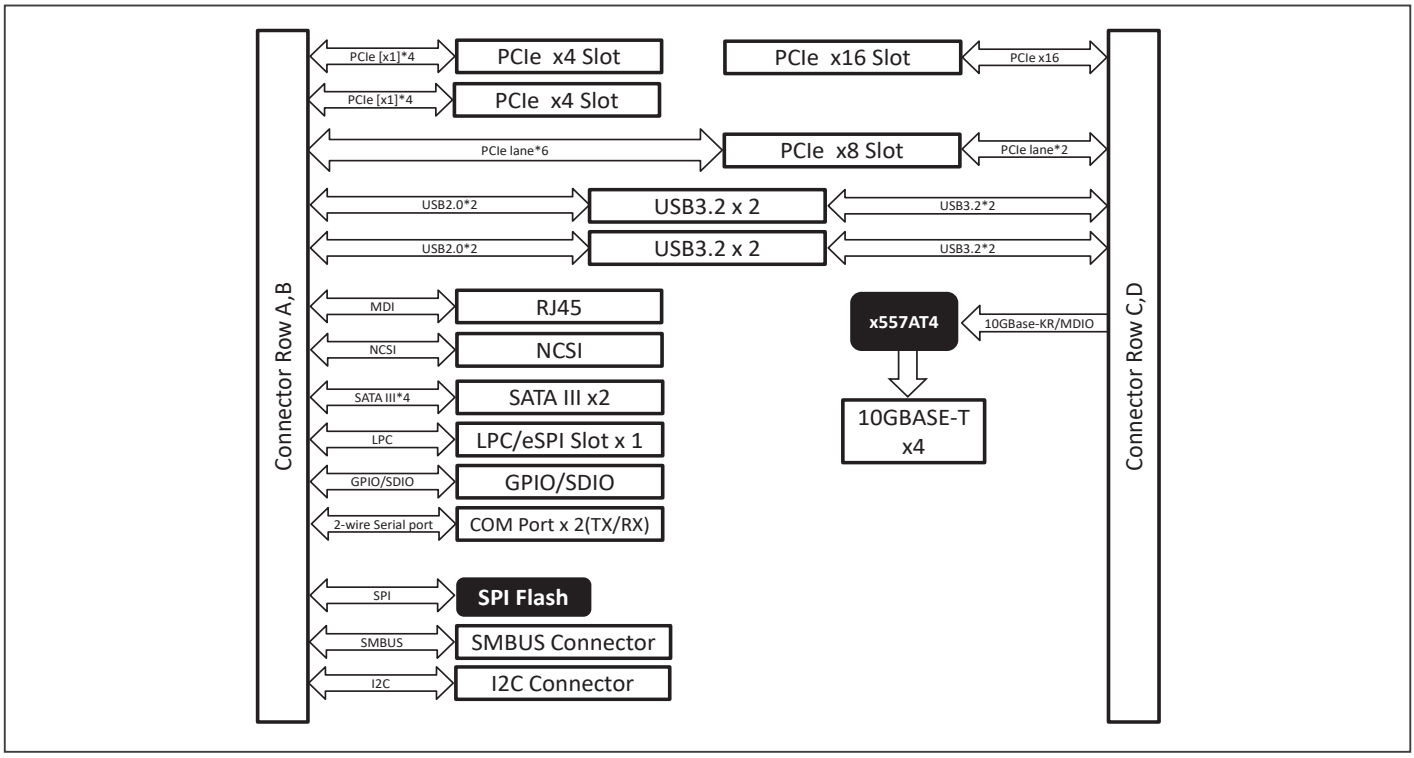
Specifications

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 Header (5x2)
Ethernet	10GbE Base-T x 4 (Intel® Ethernet Connection X557-AT4) GbE x 1 (from Module)
Expansion Interface	PCIe [x4] x 2 PCIe [x8] x 1 PCIe [x16] x 1 (PEG port)
Power Supply Type	Standard 24-pin ATX + 4-pin 12V
CMOS Battery	CR2032 Holder x 1
BIOS	—
Board Size	12" x 9.6" (305mm x 244mm)
Gross Weight	1.54 lb. (0.7Kg)
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
Display	
LCD	N/A. via PCIe Graphic card
Display interface	N/A. via PCIe Graphic card
I/O	
Storage	SATA x 2
Serial Port	2-wire UART x 2 (TX/RX)
USB	USB 3.2 x 4
Audio	N/A
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	SMBus, LPC/eSPI slot

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

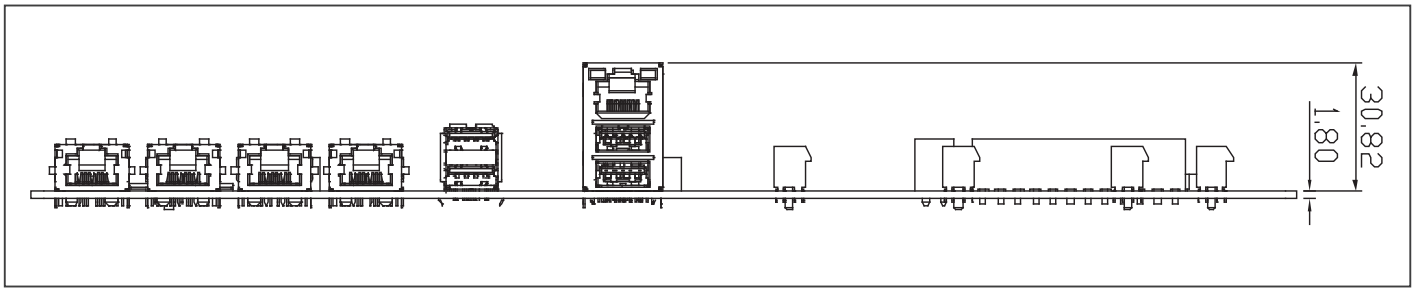
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Packing List

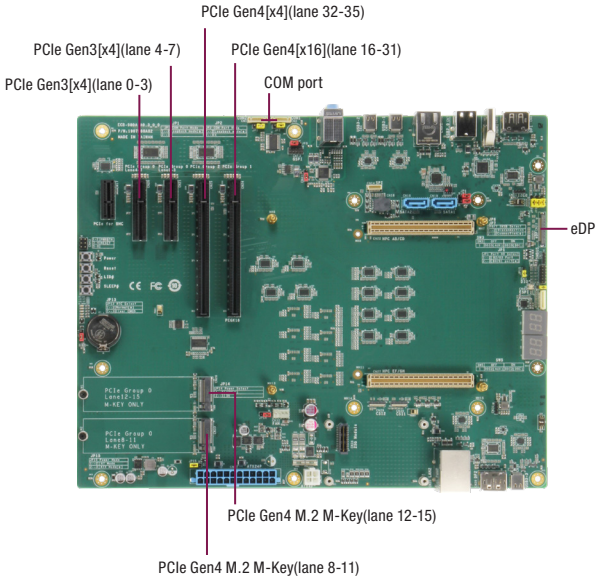
- COM Port Cable x 2
- ECB-927A-A10 x 1

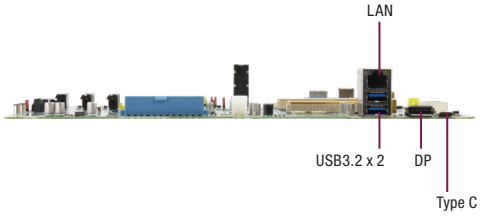
Ordering Information

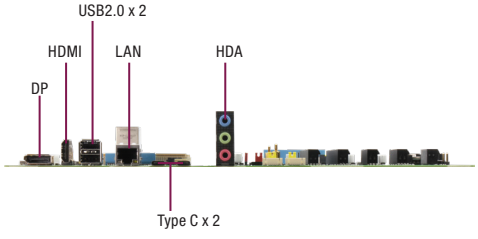
- **ECB-927A-A10-0001**
  COMe Type7.Carrier Board.4x10GbE.4USB.2COM.2SATA.PCIe.ATX.A1.0

ECB-980A

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







Features

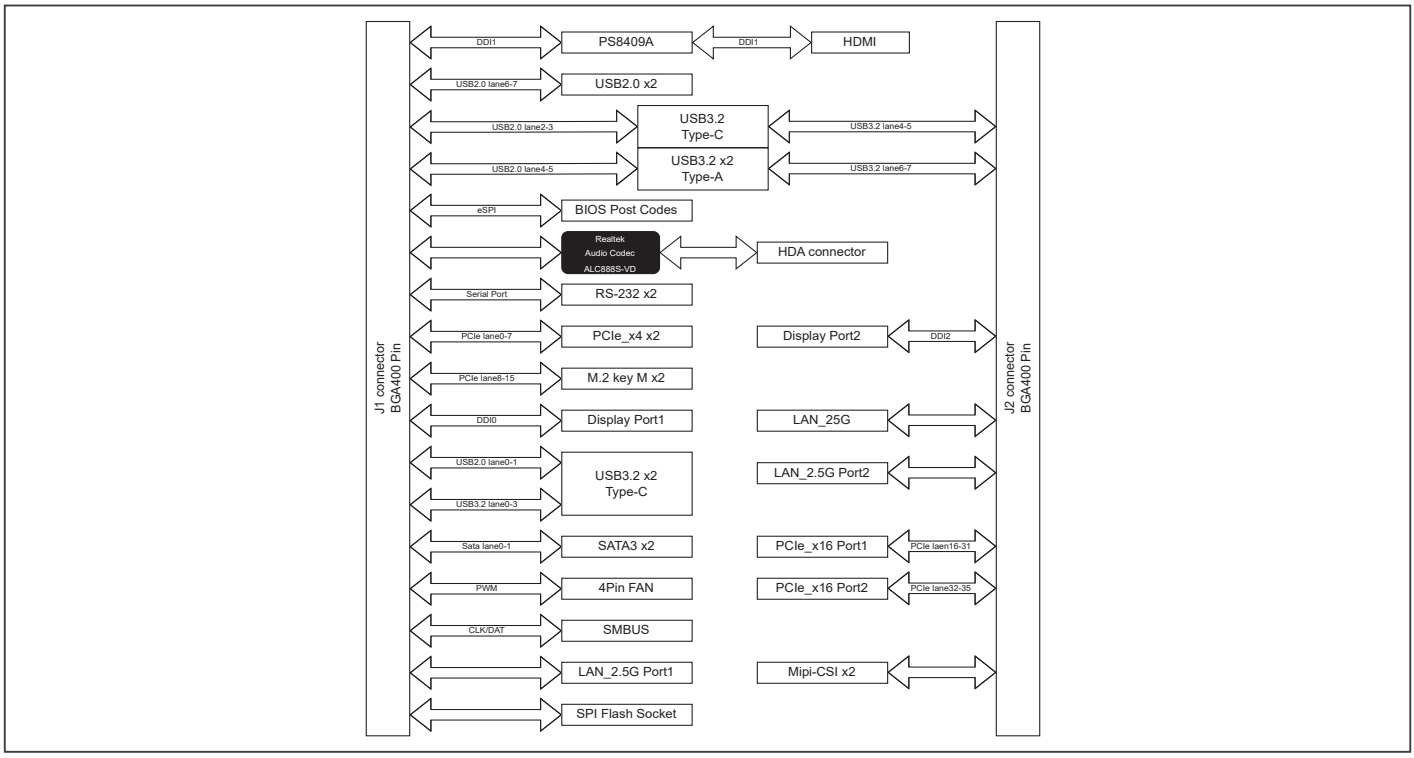
- **ATX Form Factor**
- **Supports COM HPC Client Size A/B/C, J1 and J2**
- **PEG x 2, PCIe [x4] x 2 + M.2 2280 M-Key x 2 (NVMe)**
- **DP x 2, HDMI x 1, eDP x 1**
- **USB Type C x 3 , USB Type A x 4**
- **RJ-45 x 2, SATA III x 2**

Specifications

System	
Form Factor	COM HPC Client Size A/B/C
COM Express Connector	x 2 (J1 and J2)
I/O Chipset	—
Front Panel Control	10-pin Header (2x5P)
Ethernet	2.5 GbE x 1 10 GbE x 1
Expansion Interface	PCIe [x4] x 2 (Group 0, Lane 0 ~ 7) PCIe [x16] x 2 (one PCIe [x16] only supports PCIe [x4])
Power Supply Type	Standard 24-pin ATX + 8-pin 12V
CMOS Battery	RTC battery socket x 1
BIOS	Yes
Board Size	12" x 9.6" (305mm x 244mm)
Gross Weight	1.54 lb. (0.7Kg)
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
Display	
LCD	eDP x 1
Display interface	Display Port x 2 HDMI x 1
I/O	
Storage	SATA x 2 M.2 2280 M-Key x 2 (PCIe Gen 4 [x4] for NVMe)
Serial Port	4-wire UART x 2
USB	USB 3.2 x 2 (20Gbps, up to Gen 2 x 2 support) USB 3.2 x 1 (10Gbps, up to Gen 2 x 1 support) USB 3.2 x 2 (5Gbps, up to Gen 1 x 1 support) USB 2.0 x 8
Audio	Audio Jack, supports Line-in, Line-out, Microphone
GPIO	12 bit
Switch/Button	Power Button x 1 / Reset Button x 1
Debug LED	7-Segment Display LED x 2 (80 Port Post Code Indicator)
I2C	x 1
Expansion Interface	SMBus, LPC/eSPI slot

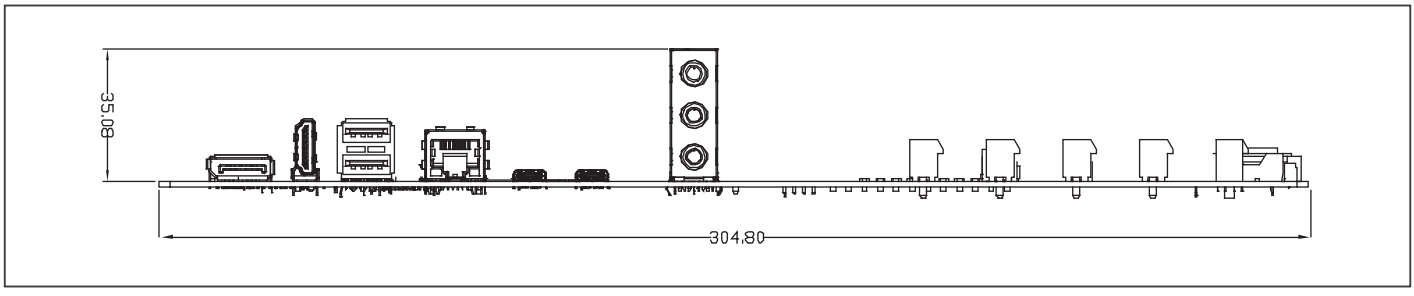
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Packing List

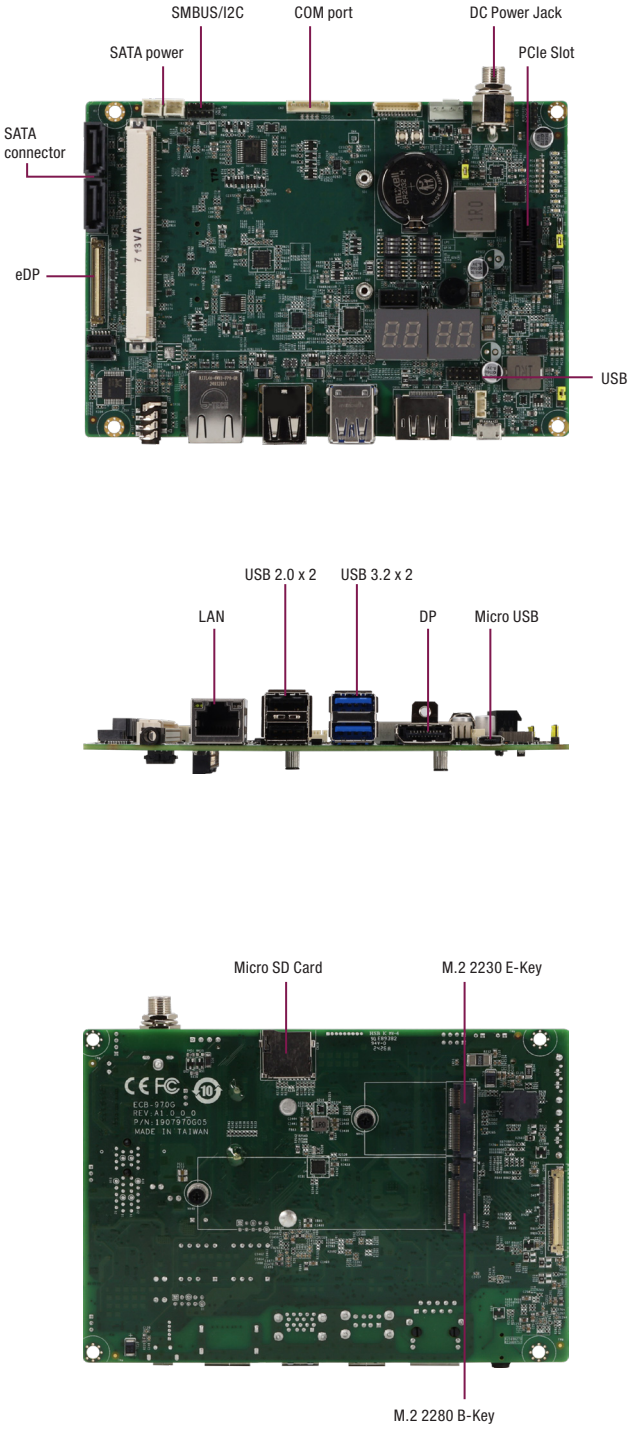
- COM Port Cable x 2
- Screw.M2.5*5mm x 2
- Bolt.M2.5mm.8mm x 4
- ECB-980A x 1

Ordering Information

- **ECB-980A-A11-0001**
  COM HPC Client Carrier.Size A/B/C.HDMI.DP.2GbE.3USB(TypeC).2SATA.PCIe.ATX.A1.1

ECB-970G

COM Qseven Carrier Board



Features

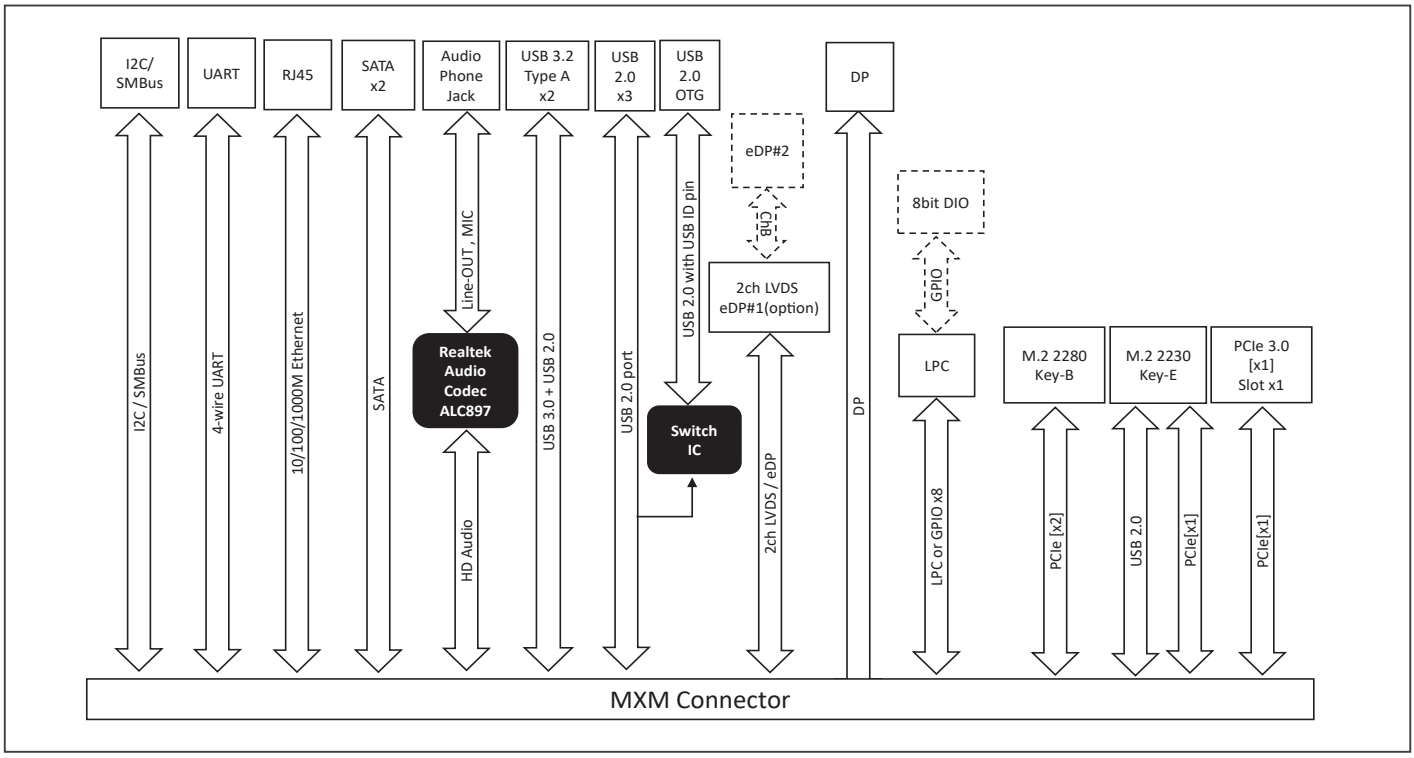
- 3.5" Form Factor
- Support QSeven R2.1
- PCIe [x1], M.2 2280 B-Key, M.2 2230 E-Key
- DP x 1, eDP x 2 or LVDS x 1
- USB 3.2 Gen 2 x 2, USB 2.0 x 2, Micro USB x 1
- RJ-45 x 1, SATA x 2

Specifications

System	
Form Factor	3.5" Form Factor
COM Express Connector	MXM 230pin
I/O Chipset	—
Front Panel Control	10-pin Header (2x5P) Including: power button and LED, reset button, STATUS LED
Ethernet	10/100/1000M, RJ-45 x 1 (From CPU module)
Expansion Interface	—
Power Supply Type	+12V DC-in
CMOS Battery	RTC battery socket x 1
BIOS	SPI socket x1
Board Size	5.75" x 4" (146mm x 101.7mm)
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
Display	
LCD	Dual Channel LVDS x 1 or eDP x 2
Display Interface	Display Port x 1
I/O	
Storage	SATA x 2 Micro SD Card x 1
Serial Port	4-wire UART
USB	USB2.0(Type-A) x 2 USB3.2(Type-A) x 2 USB2.0(Wafer) x 1 or Micro USB x 1
Audio	Audio Jack, supports Line-in, Line-out, Microphone
GPIO	8-bit (LPC colay GPIO by switch)
Switch/Button	Power Button x 1 / Reset Button x 1
Debug LED	7-Segment Display LED x 2 (80 Port Post code indicator)
I2C	1
Expansion Interface	SMBus, WDT M.2 2230 E-Key x 1 (PCIe 3.0 [x1], USB 2.0) M.2 2280 B-Key (PCIe 3.0 [x2]) PCIe [x1] Slot (PCIe Lane 4)

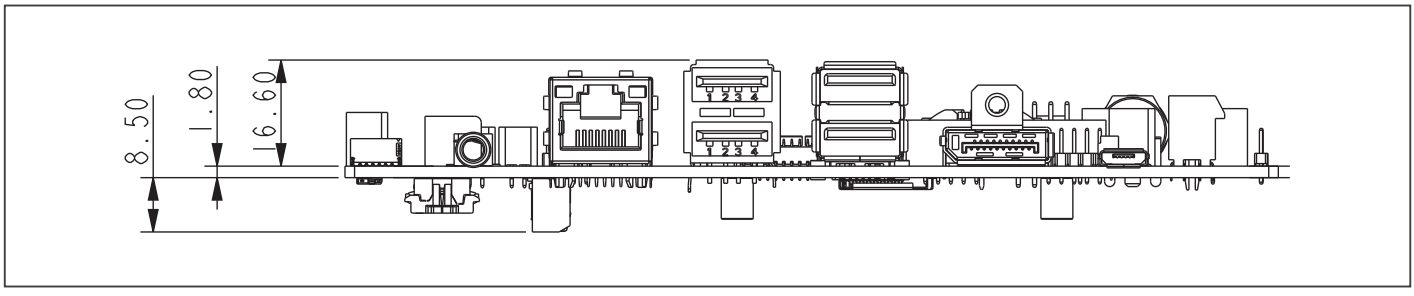
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Packing List

- COM port Cable x 1
- ECB-970G-A10 x 1
- USB cable x 1
- SATA power cable x 1

Optional Accessories

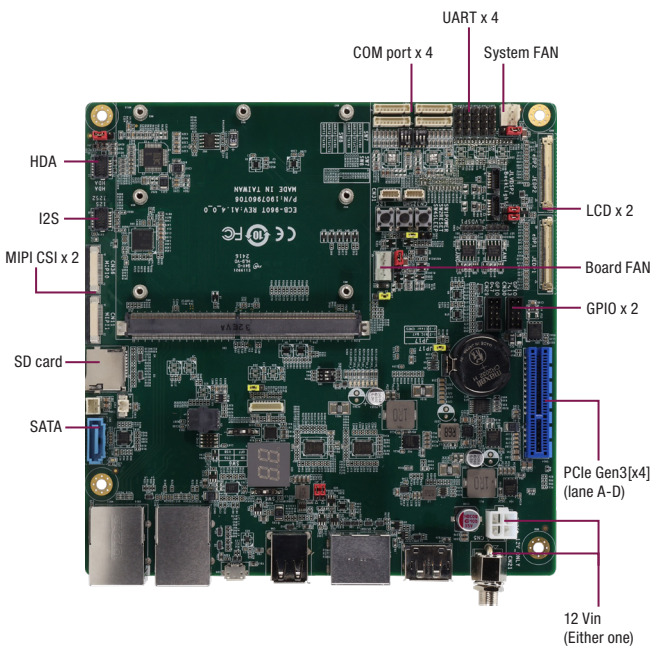
- 125530060Z
  AC/DC Adapter.DC.100/240V.12V.60W.5A.180D.W/Lock.FSP.FSP060-DHAN3/9NA0608078.W/UKCA mark

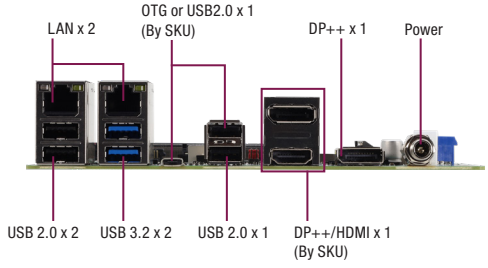
Ordering Information

- ECB-970G-A10-0001
  Qseven Carrier Board.DP.LVDS.RJ45.Audio Jack.COM.5USB.2SATA.PCIE.M.2 B/E.AT/ATX.A1.0

ECB-960T

SMARC Carrier Board





Features

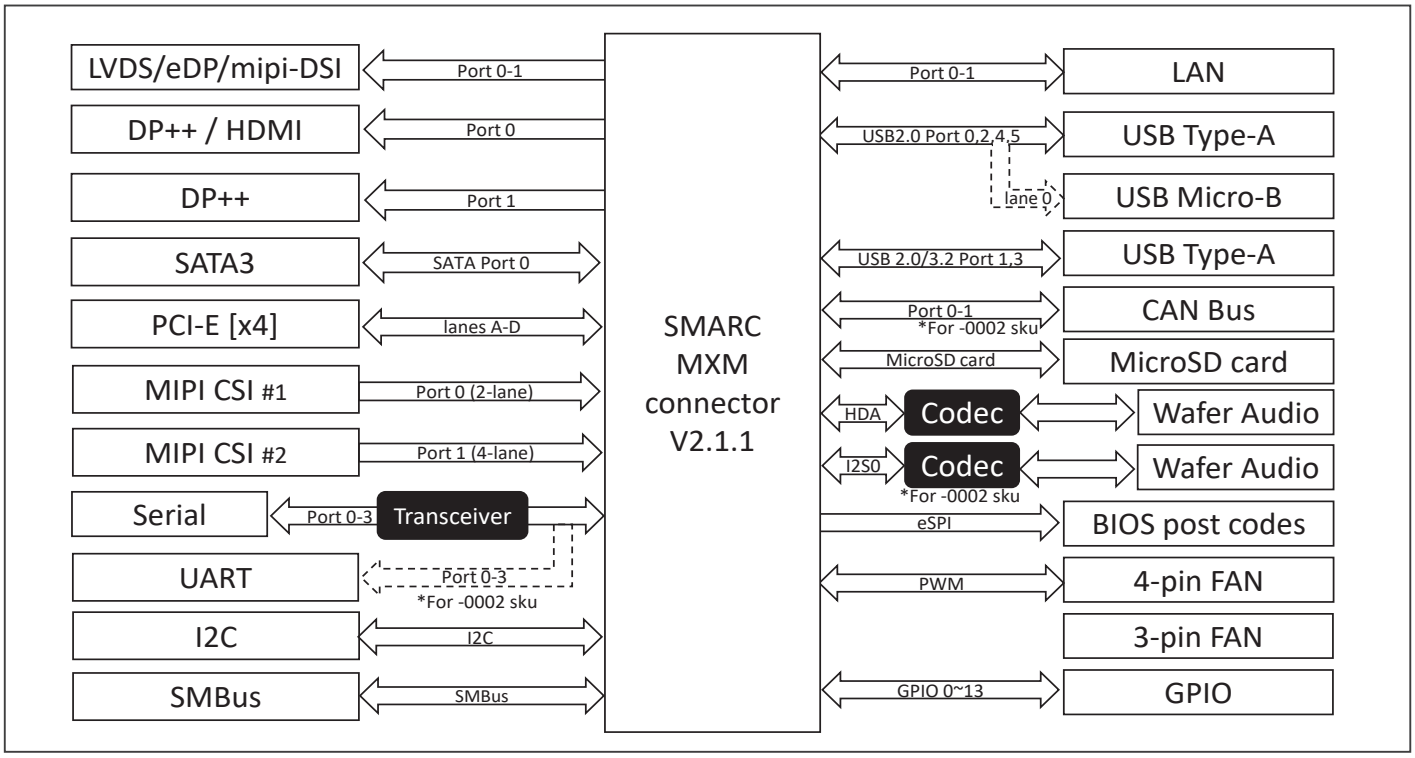
- **Mini-ITX form Factor**
- **Supports MXM SMARC module**
- **PCIe [x4] x 1, MIPI CSI x 2**
- **DP++ x 2, HDMI x 1, LCD x 2**
- **USB Type A x 6, Micro USB Type B x 1**
- **RJ-45 x 2, SATA III x 1**

Specifications

System	
Form Factor	Mini-ITX form Factor
COM Express Connector	—
I/O Chipset	—
Front Panel Control	—
Ethernet	10/100/1000/2500 Base-TX RJ45 x 2
Expansion Interface	PCIe lane[x4] x 1
Power Supply Type	AT / ATX Depends on module
CMOS Battery	RTC battery socket x 1
BIOS	—
Board Size	6.69" x 6.69" (170mm x 170mm)
Gross Weight	1.54 lb. (0.7Kg)
Operating Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Display	
LCD	LCD connectors x 2 for LVDS, eDP, DSI(4 lane), support by module features
Display Interface	DDI2: HDMI or DP++ (Optional, by BOM) DDI1: DP++
I/O	
Storage	SATA 6Gb/s x 1 (Optional, by BOM)
Serial Port	RS-232 x 2 (Tx/Rx) + RS-232 x 2 (Tx/Rx/RTS/CTS) or 4-wire UART x 2 + 2-wire UART x 2 (Optional, by BOM)
USB	Type A connector x 6 (USB 2.0 x 4 , USB 3.2/2.0 x 2) OTG x 1 (Client Mode Only) co-lay USB 2.0 x 1
Audio	High Definition Audio (pin header) x 1 or I2S x 1 (Optional, by BOM)
GPIO	7 bit (up to 14 bit ,optional by BOM)
Switch/Button	Power Button x 1/Reset Button x 1/Sleep Button x 1
Debug LED	7-Segment Display LED x 1 (80 Port Post Code Indicator) for x86
I2C	x 1
Expansion Interface	microSD card x 1 (Optional, by BOM) MIPI CSI x 2 (4 lane + 2 lane) CANBUS 2.0 A/B x 2 (Optional, by BOM) 3 pin Fan connector x 1 4 pin Fan connector x 1 SMBus x 1 SPI x 1 (Optional, by BOM)

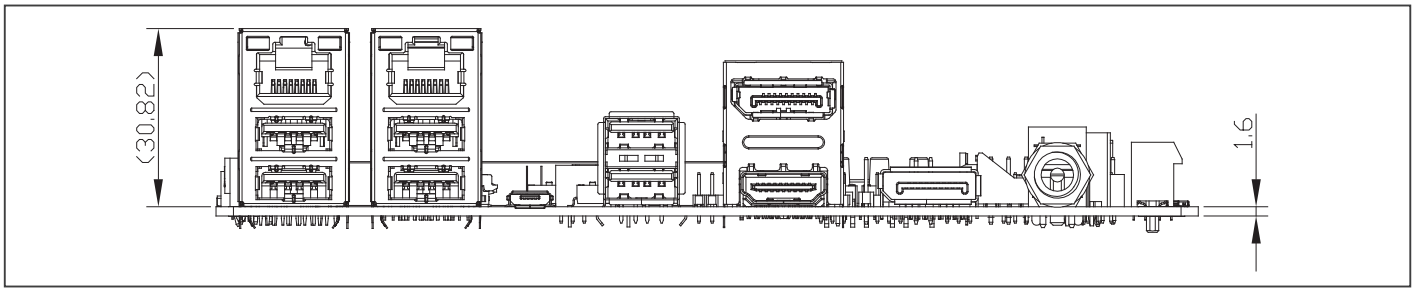
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Packing List

- **ECB-960T x 1**

Ordering Information

Part Number	Description	Cable List
ECB-960T-A15-0001	SMARC Carrier for x86.mITX.2LAN.6USB.4COM.SATA.2DP.LCD.2CSI. HDA.PCIe.12V.A1.5	COM Port Cable x 1 Audio Cable x 1 SATA Cable x 1 GPIO Cable x 1
ECB-960T-A15-0002	SMARC Carrier for ARM.HDMI.LVDS.2GbE.5USB.4UART.PCIe.2CSI. CANBUS.A1.5	Audio cable x 1 GPIO cable x 1

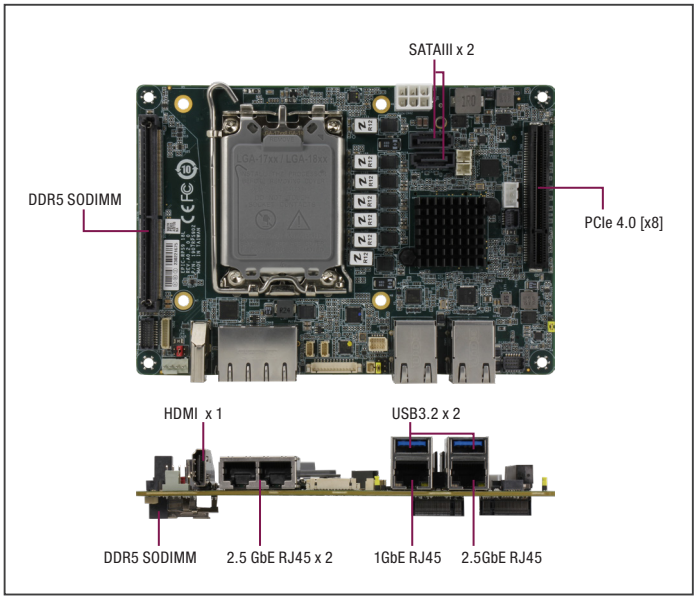
05

05
EPIC Boards



EPIC-RPS9

EPIC Board with 12th/13th Generation Intel® Core™ Processor



Features

- 12th/13th Generation Intel® Core™ Processor
- DDR5 SODIMM 4800 x 2, up to 64 GB
- Triple Display: HDMI 2.0 x 1, eDP x 1, VGA x 1
- Intel® I226-LM 2.5GbE x 3, Intel® I219-LM GbE x 1
- USB 3.2 Gen 2 x 2 (Rear I/O), USB 2.0 x 2 (Pin Header)
- M.2 2280 M-key x 1 , M.2 3052 B-key x 1 , M.2 2230 E-key x 1 , FPC (PCIe3.0[x2] x 1), PCIe4.0[x8] x 1
- COM Port x 2, GPIO 8-bit, DC 12V in

Specifications

System	
Form Factor	4" EPIC Board
CPU	13th Generation Intel® Core™ Processor (up to 35W/65W) 12th Generation Intel® Core™ Processor (up to 35W/65W)
Chipset	Intel 600 Series Chipset (R680E/Q670E/H610E)
Memory Type	DDR5 4800 Dual Channel SODIMM x 2, up to 64GB (ECC support only for R680E)
BIOS	UEFI
Wake On Lan	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimension	4.53" x 6.50" (115mm x 165mm)
OS Support	Windows 10 (64bit) Ubuntu 22.04.2/kernel 5.19.0-32-generic #33
Power	
Power Requirement	+12V (Note: To achieve stable performance, using the power supply unit rated 22A@12V DC output, to meet the potential maximum peak requirement is recommended)
Power Supply Type	AT/ATX
Connector	6-Pin Connector
Power Consumption	Intel® Core ™ i9-13900E, DDR5 32GB x2, 7.73A @+12V (Typical) Intel® Core ™ i9-13900E, DDR5 32GB x2, 21.39A @+12V (Max)
Display	
Controller	Intel® UHD Graphics 770 (i5 SKU and above) Intel® UHD Graphics 730 (i3 SKU) Intel® UHD Graphics 710 (Intel® Celeron® G6900TE SKU)
LVDS/eDP	eDP 1.4 x 1, up to 3840 x 2160
Display Interface	HDMI 2.0 x 1, up to 3840 x 2160 @60Hz VGA x 1, up to 1920 x 1080
Multiple Display	Up to 3 Simultaneous Displays
Audio	
CODEC	Realtek ALC897
Audio Interface	Line-In/Line-Out/MIC
Speaker	—
External I/O	
Ethernet	Intel® I226, 2.5GbE RJ-45 x 3, Intel® I219, GbE RJ-45 x 1(R680E & Q670E sku) Intel® I226, 2.5GbE RJ-45 x 1 + Intel® I219, GbE RJ-45 x 1 (H610E sku only)
USB	USB 3.2 Gen 2 x 2
Serial Port	—
Video	HDMI 2.0 x 1 up to 3840 x 2160 @60Hz
Internal I/O	
USB	USB 2.0 x 2
Serial Port	COM 1 (RS-232/422/485, supports RI only) COM 2 (RS-232/422/485, supports 12V/5V/RI)
Video	eDP 1.4 x 1, up to 3840 x 2160 VGA x 1, up to 1920 x 1080
SATA	SATA 6Gb/s x 2 +5V SATA Power Connector x 2
Audio	Audio Header x 1
DIO/GPIO	GPIO 8-bits
SMBus/I2C	SMBus /I2C (change by BOM, i2C only for Windows 10)
Touch	—
Fan	4 Pin Smart Fan
SIM	Nano SIM x 1
Front Panel	Power Button, Reset Button, Power LED, SATA LED, Buzzer
Others	TCC x 1 (R680E sku only)
Expansion	
Mini PCI-E/mSATA	—
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1, R680E & Q670E support) M.2 3052 B-Key x 1 (PCIe 3.0 [x1] + USB 3.0) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0)
Others	PCIe 4.0 [x8] Slot x 1 FPC Connector x 1 (PCIe 3.0 [x2] x 1)
Environment & Certification	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) (Note: To achieve the best performance, keeping the EPIC-RPS9 operating with 0.5m/sec airflow when DDR5 SODIMM1 installed on bottom side is recommended)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	353,666
EMC	CE/FCC Class A

Packing List

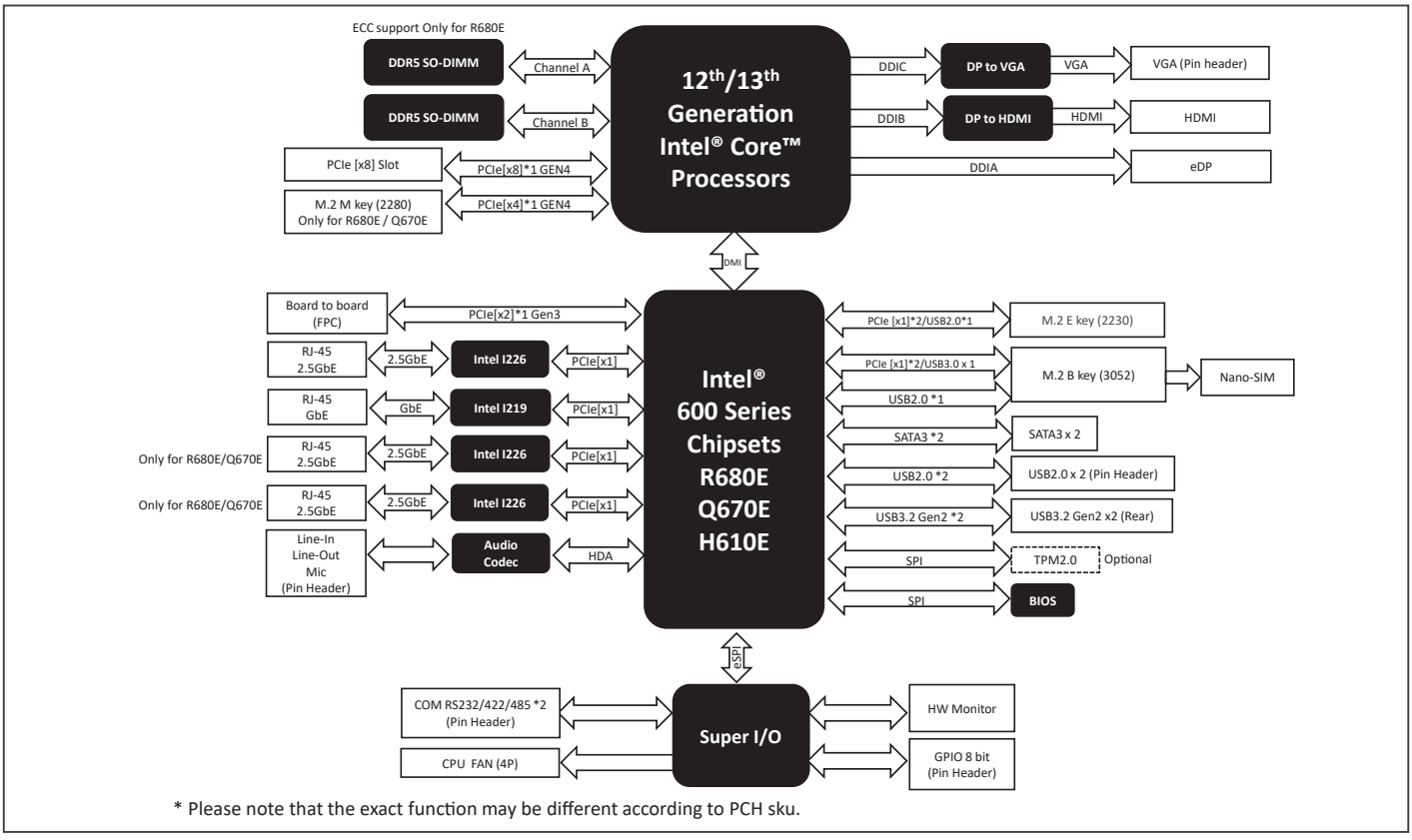
- EPIC-RPS9 x 1
- CPU Cooler Bracket x 2
- Screw Kit x 1

Optional Accessories

Part Number	Description	QTY
170X000593	SATA cable, Length 15 cm	1
1702150155	SATA Power Cable , Length 15cm	1
170X000231	Dual COM Port , Length 30 cm	1
170220020B	3 Pin ATX Cable	1
170010010D	Dual USB2.0 Cable, Length 10 cm	1
170X000517	Audio Cable , Length 20 cm	1
170X000603	Front Panel Cable, Length 10 cm	1
170X000823	3x2 DC in Power Cable	1
EPIC-RPS9-FAN01	CPU Cooler for EPIC-ADS7 & EPIC-RPS9	1

Note: All specifications are subject to change without notice.

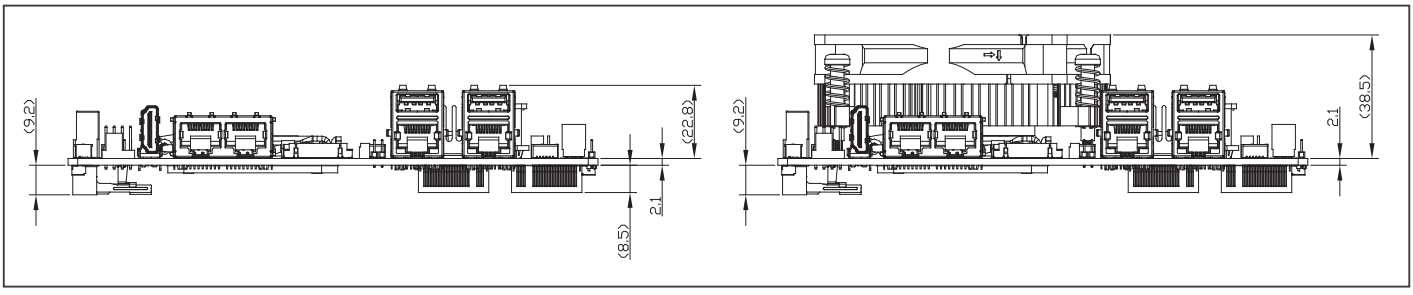
Block Diagram



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

Dimension

Unit: mm

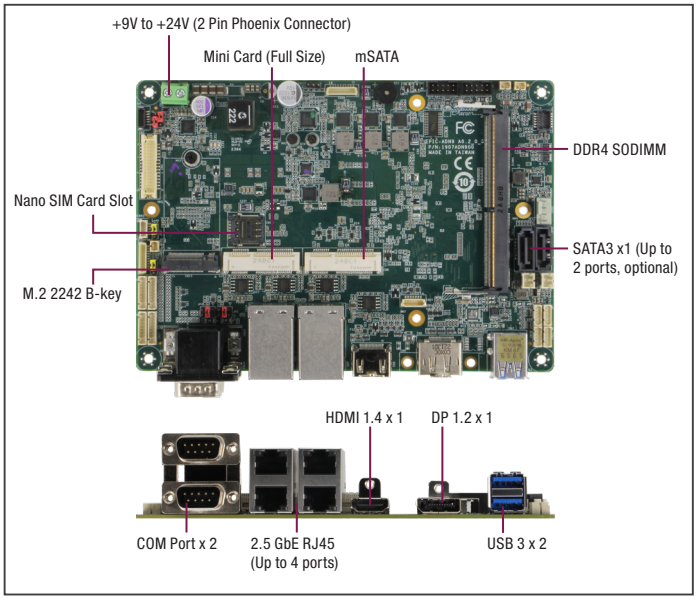


Ordering Information

Part Number	CPU	Memory	Display	Storage	LAN	USB	COM Port	Expansion	TPM	Power	Operating Temperature	Others
EPIC-RPS9-A10-0001	LGA1700 Socket Type (with R680E)	DDR5 SODIMM x 2	eDP x 1, HDMI x 1, VGA x 1	SATA 6.0 Gbps x 2	2.5GbE x 3 , GbE x 1	USB3.2 Gen2 x 2 USB2.0 x 2	RS232/422/485 x 2	M.2 2280 M-Key x 1, M.2 3052 B-Key x 1, M.2 2230 E-Key x 1, PCIe[x8] x 1, FPC x 1	Optional	+12Vin (3x2 ATX Connector)	0°C ~ 60°C	GPIO 8 bits, Nano SIM x 1, TCC x 1
EPIC-RPS9-A10-0002	LGA1700 Socket Type (with Q670E)	DDR5 SODIMM x 2 (Non-ECC)	eDP x 1, HDMI x 1, VGA x 1	SATA 6.0 Gbps x 2	2.5GbE x 3 , GbE x 1	USB3.2 Gen2 x 2 USB2.0 x 2	RS232/422/485 x 2	M.2 2280 M-Key x 1, M.2 3052 B-Key x 1, M.2 2230 E-Key x 1, PCIe[x8] x 1, FPC x 1	Optional	+12Vin (3x2 ATX Connector)	0°C ~ 60°C	GPIO 8 bits, Nano SIM x 1
EPIC-RPS9-A10-0003	LGA1700 Socket Type (with H610E)	DDR5 SODIMM x 2 (Non-ECC)	eDP x 1, HDMI x 1, VGA x 1	SATA 6.0 Gbps x 2	2.5GbE x 1 , GbE x 1	USB3.2 Gen2 x 2 USB2.0 x 2	RS232/422/485 x 2	M.2 3052 B-Key x 1, M.2 2230 E-Key x 1, PCIe[x8] x 1, FPC x 1	Optional	+12Vin (3x2 ATX Connector)	0°C ~ 60°C	GPIO 8 bits, Nano SIM x 1

EPIC-ADN9

EPIC Board with Intel Atom® x7000E Series, Intel® Processor N Series, and Intel® Core™ i3-N305 Processors



Features

- **Intel Atom® x7000E Series, Intel® Processor N Series, and Intel® Core™ i3-N305 Processors**
- **DDR4 3200MHz SODIMM x 1, up to 16GB**
- **HDMI 1.4b x 1, Dual-Channel LVDS x 1, DP or VGA x 1**
- **Full Sized mSATA x 1 + SATA III x 1**
- **Intel® I226-V 2.5GbE x 2 (Up to I226V 2.5GbE x 4 support)**
- **USB 3.2 Gen 2 x 2, USB 2.0 x 4**
- **M.2 2242 B-Key x 1, NanoSIM x 1**
- **COM Port x 6, GPIO 16-bit x 1**
- **Supports +9V ~ +24V Wide Voltage Input**

Specifications

System	
Form Factor	4" EPIC Board
CPU	Intel Atom® x7000E Series/Intel® Processor N Series/Intel® Core™ i3-N305 Processors: Intel® Core™ i3-N305 (8C/8T, up to 3.8 GHz, TDP 15W) Intel Atom® x7425E (4C/4T, up to 3.4 GHz, TDP 12W) Intel® Processor N97 (4C/4T, up to 3.6 GHz, TDP 12W) Intel® Processor N50 (2C/2T, up to 3.4 GHz, TDP 6W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR4 3200MHz Single-Channel SODIMM x 1, up to 16GB
BIOS	UEFI
Wake On Lan	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimension	4.53" x 6.50" (115mm x 165mm)
OS Support	Windows® 10 (64-bit) Ubuntu 22.04.2 LTS/Kernel 5.19
Power	
Power Requirement	+9-24V or +12V
Power Supply Type	AT/ATX
Connector	2-Pin Phoenix Connector
Power Consumption	Intel® Core™ i3-N305, DDR4 16GB, 1.87A+24V (Typical) Intel® Core™ i3-N305, DDR4 16GB, 2.66A +24V (Max)
Display	
Controller	Intel® UHD Graphics
LVDS/eDP	24/48-bit Dual-Channel LVDS x 1, up to 1920 x 1080 eDP 1,4 x 1 , up to 1920 x 1080 (Optional)
Display Interface	HDMI 1.4 x 1, up to 3840 x 2160 @30Hz DP 1.2 x 1, up to 3840 x 2160 @144Hz or VGA x 1, up to 1920 x 1080
Multiple Display	Up to 3 Simultaneous Displays
Audio	
CODEC	Realtek ALC897
Audio Interface	Line-In / Line-Out / MIC
Speaker	5W Speaker (Optional)
External I/O	
Ethernet	RJ-45 for Intel® I226-V 2.5GbE x 2 (Standard: 2 Ports, Advanced: 4 Ports)
USB	USB 3.2 Gen 2 x 2
Serial Port	COM 1, COM 2 (RS-232/422/485, support 5V/12V/RI)
Video	HDMI 1.4 x 1 DP 1.2 x 1
Internal I/O	
USB	USB 2.0 x 4
Serial Port	COM 3, COM 4, COM 5, COM 6 (RS-232, support RI only)
Video	LVDS / eDP x 1 (Default : LVDS) Inverter x 1 (5V/12V@2A)
SATA	SATA 6.0Gbps x 1 (Default) (up to SATA x 2 shared with mSATA, BOM Optional)
Audio	Audio Header x 1
DIO/GPIO	GPIO 16-bits
SMBus/I2C	SMBus / I2C (Default : SMBus)
Touch	—
Fan	4 Pin Smart Fan
SIM	Nano SIM x 1
Front Panel	Power Button, Reset Button, Power LED, SATA LED, Buzzer
Others	—
Expansion	
Mini PCI-E/mSATA	Full Sized mPCIe x 1 Full Sized mSATA x 1
M.2	M.2 2242 B-Key x 1 (PCIe 2.0 [x1] + USB 2.0)
Others	—
Environment & Certification	
Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	364,565
EMC	CE/FCC Class A

Packing List

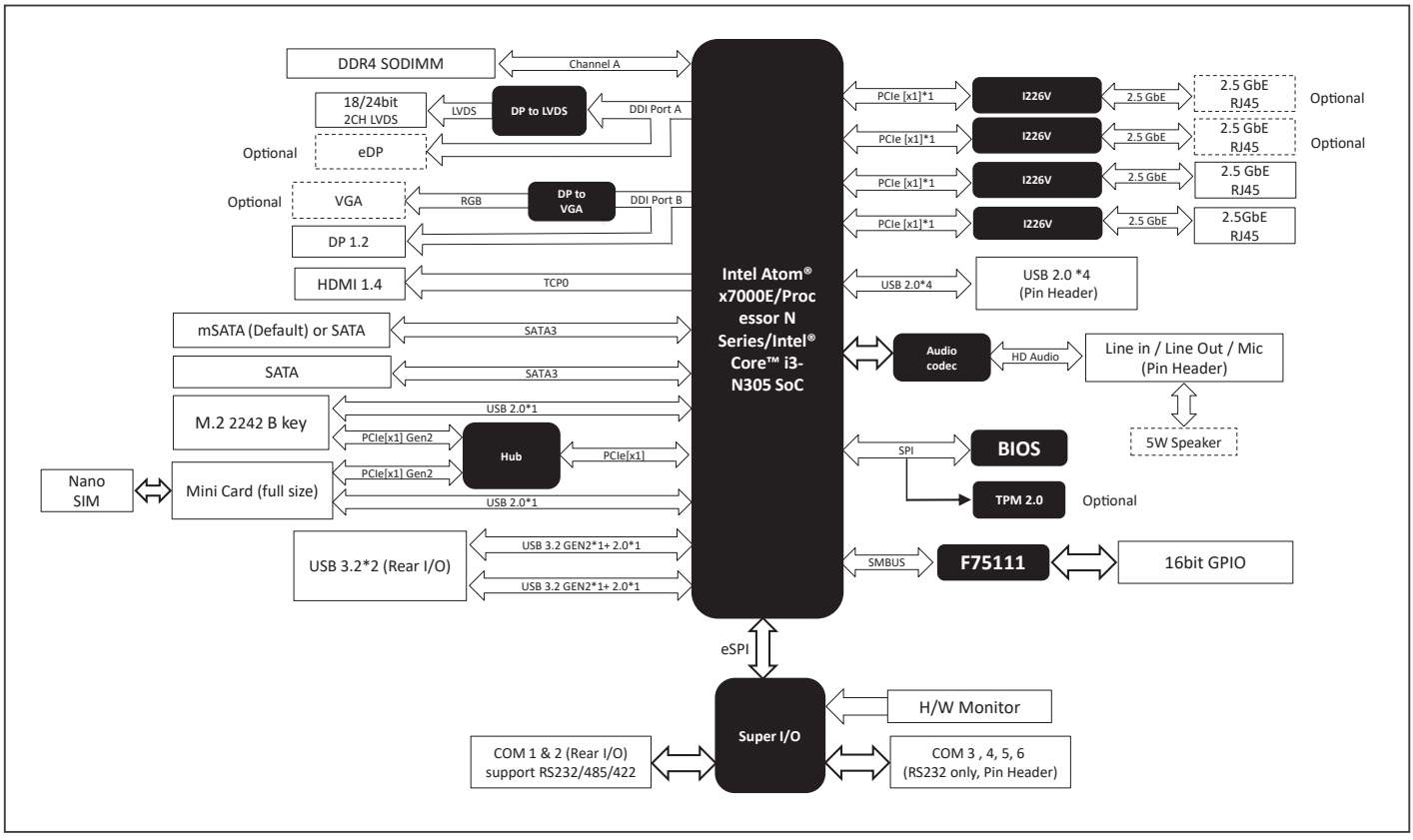
- **EPIC-ADN9 x 1**
- **Screw kit x 1**

Optional Accessories

Part Number	Description
EPIC-ADN9-HSK01	Heat sink. 165*101.6*20mm. Silver
1700050207	USB2.0 Connector Cable
1701090150	COM Port Cable
1709070150	SATA Cable
1702150155	SATA 5V power cable
170X000603	Front Panel cable

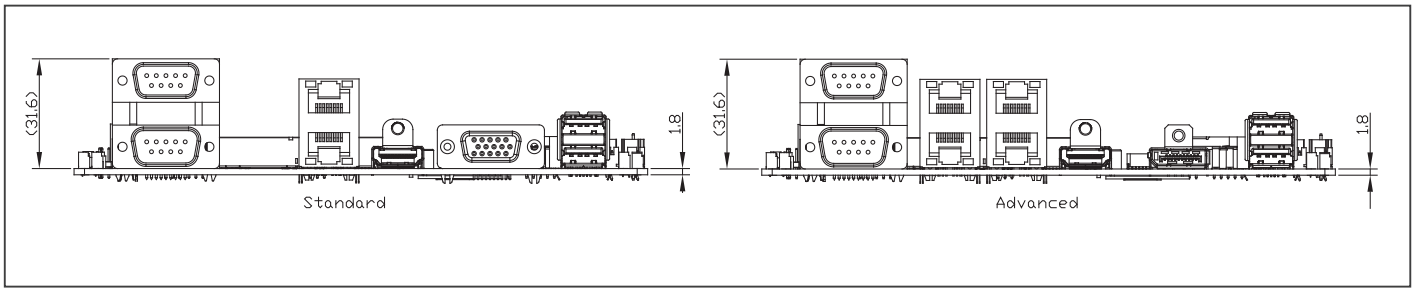
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

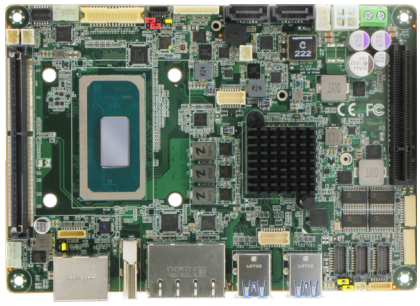


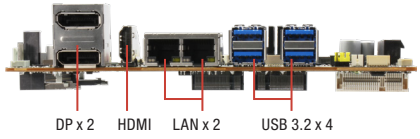
Ordering Information

Part Number	CPU	Memory	Display	Storage	LAN	USB	COM Port	Expansion	TPM	Power	Operating Temperature	Others
EPIC-ADN9-A10-0001	Intel® Core™ i3-N305	DDR4 SODIMM x 1	LVDS x 1, DP x 1, HDMI x 1	SATA 6.0Gbps x 1	I226V 2.5GbE x 4	USB 3.2 Gen 2 x 2 USB 2.0 x 4	RS232/422/485 x 2 RS232 x 4	Full Sized mPCIe x 1 Full Sized mSATA x 1 M.2 2242 B-key x 1	Optional	+9V to +24V (2 Pin Phoenix Connector)	-20°C ~ 70°C	NanoSIM x 1 GPIO 16 bits 5W Speaker
EPIC-ADN9-A10-0002	Intel Atom® x7425E	DDR4 SODIMM x 1	LVDS x 1, DP x 1, HDMI x 1	SATA 6.0Gbps x 1	I226V 2.5GbE x 4	USB 3.2 Gen 2 x 2 USB 2.0 x 4	RS232/422/485 x 2 RS232 x 4	Full Sized mPCIe x 1 Full Sized mSATA x 1 M.2 2242 B-key x 1	Optional	+9V to +24V (2 Pin Phoenix Connector)	-20°C ~ 70°C	NanoSIM x 1 GPIO 16 bits 5W Speaker
EPIC-ADN9-A10-0003	Intel® Processor N97	DDR4 SODIMM x 1	LVDS x 1, DP x 1, HDMI x 1	SATA 6.0Gbps x 1	I226V 2.5GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	RS232/422/485 x 2 RS232 x 4	Full Sized mPCIe x 1 Full Sized mSATA x 1 M.2 2242 B-key x 1	Optional	+9V to +24V (2 Pin Phoenix Connector)	-20°C ~ 70°C	NanoSIM x 1 GPIO 16 bits 5W Speaker
EPIC-ADN9-A10-0004	Intel® Processor N50	DDR4 SODIMM x 1	LVDS x 1, DP x 1, HDMI x 1	SATA 6.0Gbps x 1	I226V 2.5GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	RS232/422/485 x 2 RS232 x 4	Full Sized mPCIe x 1 Full Sized mSATA x 1 M.2 2242 B-key x 1	Optional	+9V to +24V (2 Pin Phoenix Connector)	-20°C ~ 70°C	NanoSIM x 1 GPIO 16 bits 5W Speaker
EPIC-ADN9-A10-0007	Intel® Processor N97	DDR4 SODIMM x 1	LVDS x 1, VGA x 1, HDMI x 1	SATA 6.0Gbps x 2	I226V 2.5GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	RS232/422/485 x 2 RS232 x 4	Full Sized mPCIe x 1 M.2 2242 B-key x 1	Optional	+12VIN (2 Pin Phoenix Connector)	-20°C ~ 70°C	NanoSIM x 1 GPIO 16 bits 5W Speaker
EPIC-ADN9-A10-0009	Intel® Processor N97	DDR4 SODIMM x 1	LVDS x 1, DP x 1 HDMI x 1	SATA 6.0 Gbps x 1	I226V 2.5GbE x 4	USB3.2 Gen2 x 2 USB2.0 x 4	RS232/422/485 x 2 RS232 x 4	Full Sized mPCIe x 1 Full Sized mSATA x 1 M.2 2242 B-key x 1	Optional	+9V to +24V (2 Pin Phoenix Connector)	-20°C ~ 70°C	NanoSIM x 1 GPIO 16 bits 5W Speaker

EPIC-TGH7

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





Features

- **Onboard 11th Generation Intel® Core™/Xeon® Processors**
- **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**
- **SATA 6Gb/s x 2**
- **2.5GbE RJ-45 x 1, GbE RJ-45 x 1**
- **USB 3.2 Gen 2 x 4, USB 2.0 x 4**
- **M.2 3052 B-Key x 1, M.2 2280 M-Key x 1, Mini Card x 1**
- **PCIe Gen 4 [x8] slot x 1, FPC (PCIe [x4]) x 1**
- **COM Port x 6, GPIO 16-bit x 1**
- **Supports +9V to +24Vin (Wide Voltage Input)**

Specifications

System	
Form Factor	4" EPIC Board
CPU	Onboard 11th Generation Intel® Core™/Xeon® Processors: Intel® Xeon® W-11865MRE (8C/16T, 2.60 GHz, 45W) Intel® Core™ i7-11850HE (8C/16T, 2.60 GHz, 45W) Intel® Core™ i5-11500HE (6C/12T, 2.60 GHz, 45W) Intel® Core™ i3-11100HE (4C/8T, 2.40 GHz, 45W) Intel® Celeron® 6600HE (2C/2T, 2.60 GHz, 35W)
Chipset	Intel® 500 Series Mobile Chipset (RM590E/HM570E)
Memory Type	DDR4 3200, Dual Channel SODIMM x 2, Max 64GB (ECC supported by Xeon only)
BIOS	UEFI
Wake On Lan	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimension	4.53" x 6.50" (115mm x 165mm)
OS Support	Windows 10 (64bit) Ubuntu 20.04.3/Kernel 5.11.0-27-generic x86_64 or above
Power	
Power Requirement	+9V to +24V (Optional: +12V)
Power Supply Type	AT/ATX
Connector	ATX 4-Pin connector + Phoenix 2-Pin Connector
Power Consumption	Xeon® W-11865MRE, DDR4 32GB x 2, 8.32A@12V, 99.84W (TYPICAL) Xeon® W-11865MRE, DDR4 32GB x 2, 12.52A@12V, 150.24W (MAX)
Display	
Controller	Intel® UHD Graphics for 11th Gen Intel® Processors
LVDS/eDP	LVDS x 1, Dual Channel 24/48bit, up to 1920 x 1080 eDP 1.4 x 1, up to 1920 x 1089
Display Interface	VGA x 1 , up to 1920 x 1080 DP++ 1.2 x 2, up to 3840 x 2160 @60Hz HDMI 2.0 x 1, up to 3840 x 2160 @60Hz
Multiple Display	Up to 4 Simultaneous Displays
Audio	
CODEC	Realtek ALC269
Audio Interface	Line-In/Line-Out/Mic
Speaker	2W Amp.
External I/O	
Ethernet	Intel® I225, 2.5GbE RJ-45 x 1 Intel® I219, 1GbE RJ-45 x 1
USB	USB 3.2 Gen 2 x 4
Serial Port	—
Video	VGA x 1 DP 1.2 x 2 HDMI 2.0 x 1

Internal I/O	
USB	USB 2.0 x 4
Serial Port	COM 1, COM 2 (RS-232/422/485, supports 5V/12V/RI) COM 3, COM 4, COM 5, COM 6 (RS-232 only, supports RI only)
Video	LVDS or eDP x 1 (Default: LVDS) LVDS Inverter 5V/12V @2A VGA x 1
SATA	SATA 6Gb/s x 2 +5V SATA Power Connector x 1 (Total up to 5V@2A) (Up to 5V@1A, shared with 2 x 2.5""SSD as limitation with 170X000592)
Audio	Audio Header x 1
DIO/GPIO	GPIO-16 bits
SMBus/I2C	SMBus/I2C (Default : SMBus)
Touch	4/5/8-wire Touch Controller x 1
Fan	4 Pin Smart Fan
SIM	Nano SIM x 1
Front Panel	Power Button, Reset Button, Power LED, SATA LED, Buzzer
Others	—
Expansion	
Mini PCI-E/mSATA	Half Size mSATA/mPCIe x 1 (Default: mPCIe, selected by BIOS)
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1) M.2 3052 B-Key x 1 (PCIe 3.0 [x2]) + USB 3.2 + USB 2.0)
Others	PCIe 4.0 [x8] Slot x 1 (Supply maximum 25W to the PCIe peripheral) FPC Connector x 1 (PCIe3.0 [x4] x 1)
Environment & Certification	
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)	274,169
EMC	CE/FCC Class A

Packing List

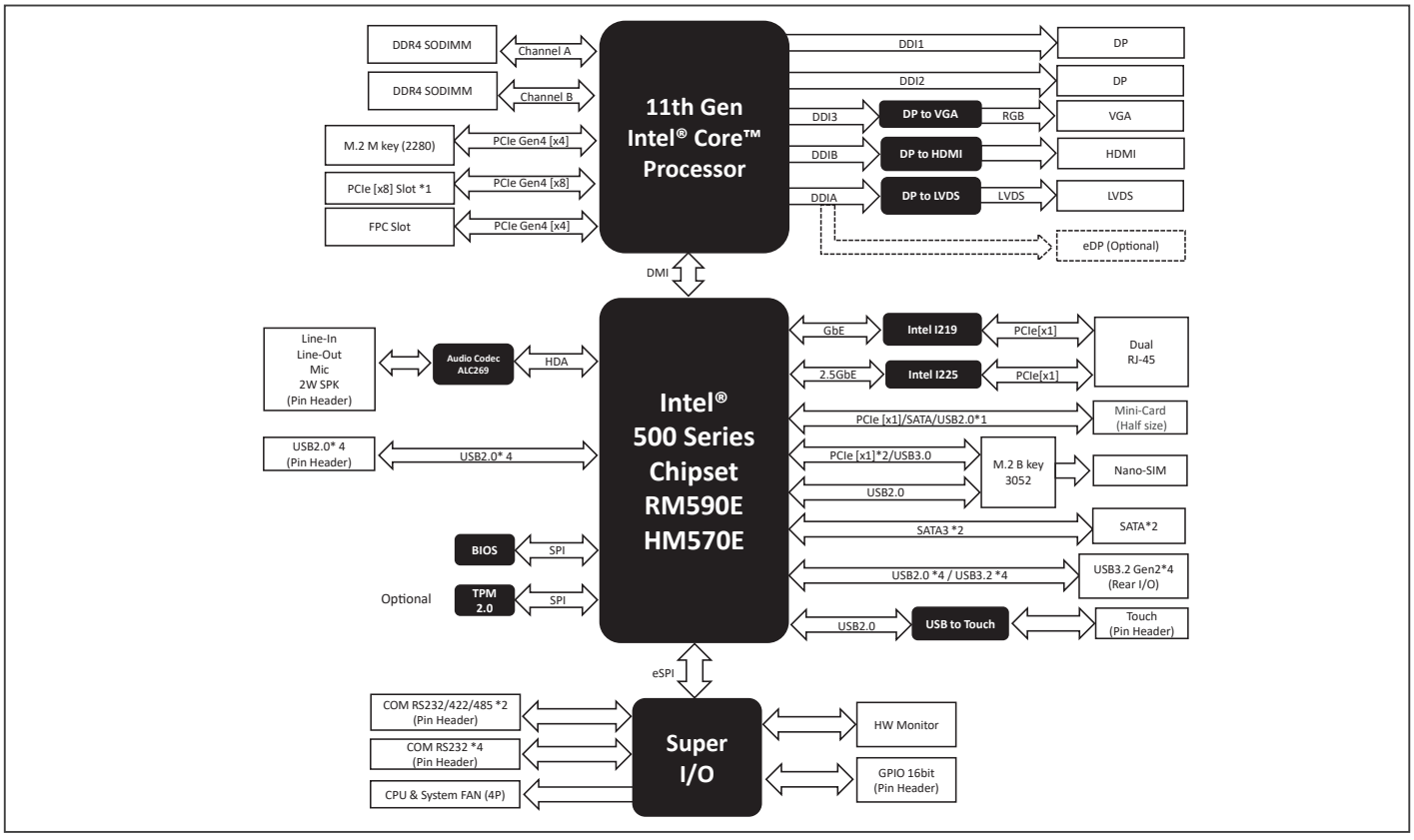
- **EPIC-TGH7 x 1**
- **Screw kit x 1**

Optional Accessories

Part Number	Description	QTY
170X000390	USB2.0 x 4, Length 12 cm	1
1709150151	VGA cable, Length 15 cm	1
1702150155	SATA power cable, Length 15cm	1
170X000593	SATA cable 15 cm	1
170X000592	SATA Power Y cable, Length 20 cm	1
170X000231	Dual COM Port , Length 30 cm	1
170204010R	Double 4P power cable, Length 10 cm	1
170X000287	Front Panel Cable, Length 10 cm	1
170X000156	Audio Cable, Length 25 cm	1
170X000594	Power Cable to DC Jack , 28cm	1
EPIC-TGH7-FAN01	4 pin CPU Cooler for EPIC-TGH7	1

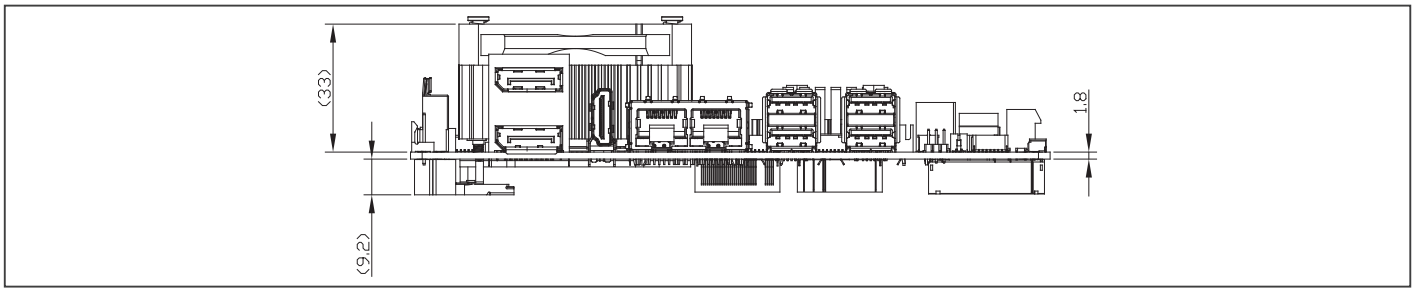
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



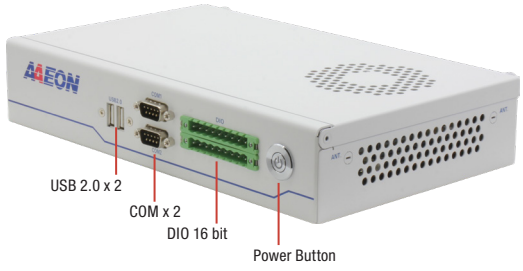
Ordering Information

Part Number	CPU	Memory	Display	Storage	LAN	USB	COM Port	Expansion	TPM	Power	Operating Temperature	Others
EPIC-TGH7-A10-0001	W-11865MRE (with RM590E)	DDR4 SODIMM x 2	LVDS x 1, DP x 2, HDMI x 1, VGA x 1	SATA 6Gb/s x 2	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 4 , USB 2.0 x 4	RS232/422/485 x 2, RS232 x 4	M.2 3052 B-key x 1 , M.2 2280 M-key x 1 , Mini Card (Half Size) x 1 , FPC Connector x 1	Optional	+9V to +24Vin (2 Pin Phoenix Connector + 4 Pin ATX Connector)	0°C ~ 60°C	GPIO 16 bits, Nano SIM x 1, Touch x 1
EPIC-TGH7-A10-0002	i7-11850HE (with HM570E)	DDR4 SODIMM x 2	LVDS x 1, DP x 2, HDMI x 1, VGA x 1	SATA 6Gb/s x 2	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 4 , USB 2.0 x 4	RS232/422/485 x 2, RS232 x 4	M.2 3052 B-key x 1 , M.2 2280 M-key x 1 , Mini Card (Half Size) x 1 , FPC Connector x 1	Optional	+9V to +24Vin (2 Pin Phoenix Connector + 4 Pin ATX Connector)	0°C ~ 60°C	GPIO 16 bits, Nano SIM x 1, Touch x 1
EPIC-TGH7-A10-0003	i5-11500HE (with HM570E)	DDR4 SODIMM x 2	LVDS x 1, DP x 2, HDMI x 1, VGA x 1	SATA 6Gb/s x 2	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 4 , USB 2.0 x 4	RS232/422/485 x 2, RS232 x 4	M.2 3052 B-key x 1 , M.2 2280 M-key x 1 , Mini Card (Half Size) x 1 , FPC Connector x 1	Optional	+9V to +24Vin (2 Pin Phoenix Connector + 4 Pin ATX Connector)	0°C ~ 60°C	GPIO 16 bits, Nano SIM x 1, Touch x 1
EPIC-TGH7-A10-0004	i3-11100HE (with HM570E)	DDR4 SODIMM x 2	LVDS x 1, DP x 2, HDMI x 1, VGA x 1	SATA 6Gb/s x 2	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 4 , USB 2.0 x 4	RS232/422/485 x 2, RS232 x 4	M.2 3052 B-key x 1 , M.2 2280 M-key x 1 , Mini Card (Half Size) x 1 , FPC Connector x 1	Optional	+9V to +24Vin (2 Pin Phoenix Connector + 4 Pin ATX Connector)	0°C ~ 60°C	GPIO 16 bits, Nano SIM x 1, Touch x 1

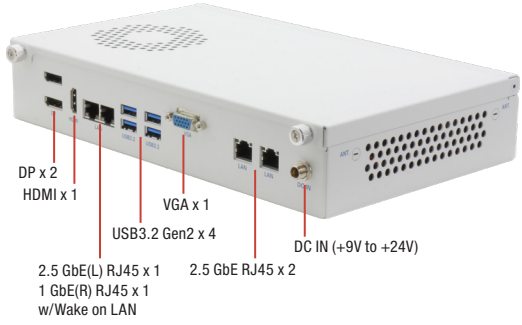
EPIC-TGH7-PUC

EPIC System with 11th Generation Intel® Core™/Intel® Xeon® W Series Processors

Front View



Rear View



Features

- **Onboard 11th Gen Intel® Core™/Intel® Xeon® W Series Processors**
- **Intel® 500 Series Chipset (RM590E/HM570E)**
- **DDR4 3200 SODIMM x 2, up to 64GB**
- **HDMI 2.0b x 1, DP++ 1.2a x 2, VGA x 1**
- **SATA III x 2**
- **RJ45 2.5 GbE x 3, RJ45 GbE x 1**
- **USB 3.2 Gen 2 x 4, USB 2.0 x 2**
- **M.2 3052 B-Key x 1, M.2 2280 M-Key x 1, Mini Card x 1**
- **COM Port x 2, DIO 16-bit x 1**
- **+9V ~ +24V Wide Voltage Input Support**

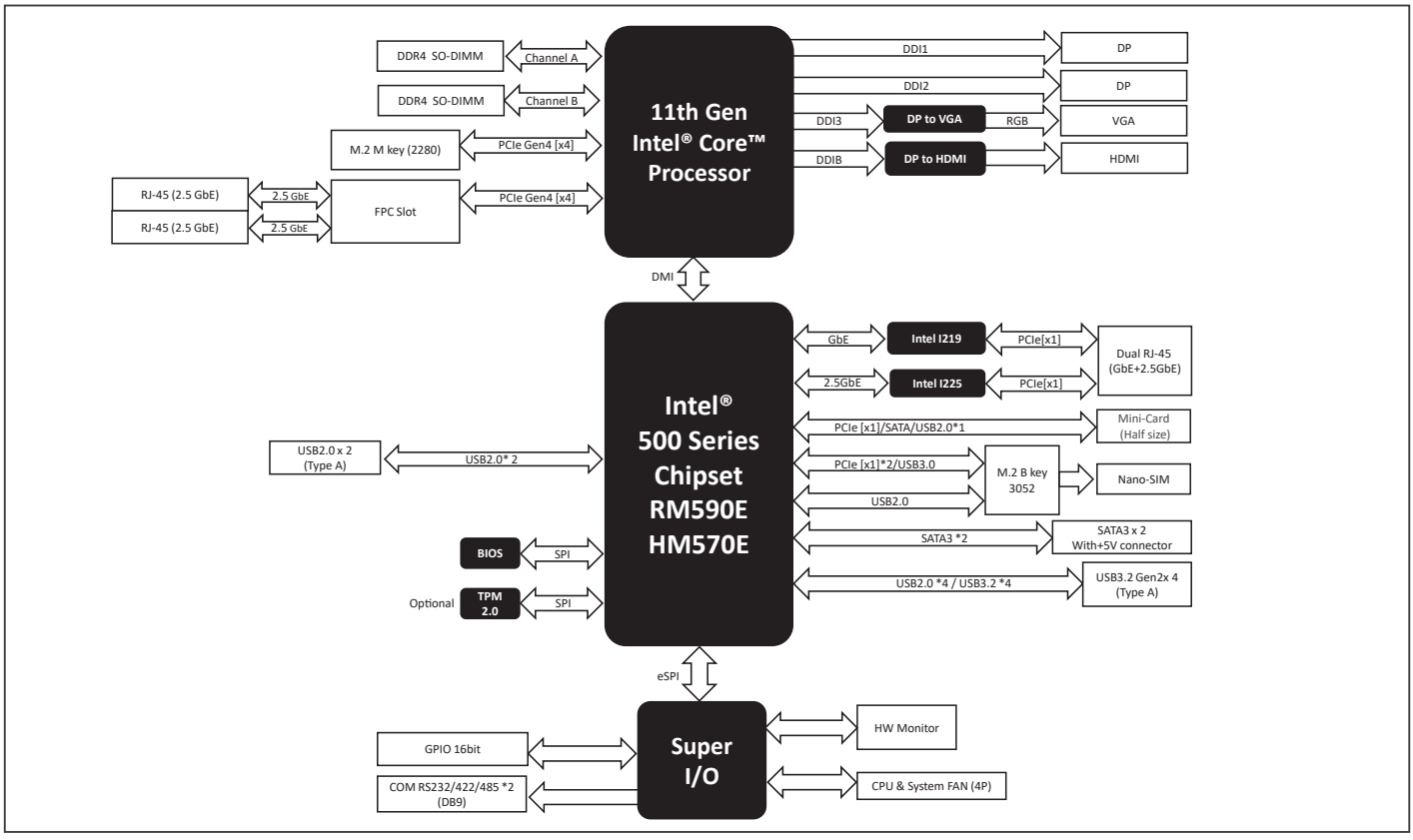
Specifications

System	
Form Factor	EPIC System
CPU	11th Generation Intel® Xeon/Core™ Processor : Intel® Core™ i7-11850HE (8C/16T, 2.60GHz, 45W) Intel® Xeon® W-11865MRE (8C/16T, 2.60GHz, 45W)
Chipset	Intel® 500 Series Mobile Chipsets (RM590E/HM570E)
Memory Type	DDR4 3200, Dual-Channel SODIMM x 2, Max 64GB (ECC supported by Intel® Xeon® only)
BIOS	UEFI
Wake On Lan	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimension	10.2" x 6.3" x 1.9" (260mm x 160mm x 50mm)
OS Support	Windows 10 (64bit) Ubuntu20.04.5 / Kernel 5.15.0-46-generic x86_64
Power	
Power Requirement	+9V to +24V
Power Supply Type	AT/ATX
Connector	DC Jack Connector
Power Consumption	Intel® Xeon® W-11865MRE, DDR4 32GB x 2, 8.32A @12V, 99.84W (Typical) Intel® Xeon® W-11865MRE, DDR4 32GB x 2, 12.52A @12V, 150.24W (Max)

Display	
Controller	Intel® UHD Graphics for 11th Gen Intel® Processors
LVDS/eDP	—
Display Interface	VGA x 1, up to 1920 x 1080 DP++ 1.2 x 2, up to 3840 x 2160 @60Hz HDMI 2.0 x 1, up to 3840 x 2160 @60Hz
Multiple Display	Up to 4 Simultaneous Displays
Audio	
CODEC	—
Audio Interface	—
Speaker	—
External I/O	
Ethernet	Intel® I226, 2.5GbE RJ-45 x 2 Intel® I225, 2.5GbE RJ-45 x 1 Intel® I219, GbE RJ-45 x 1 (Wake on LAN support for Intel® I219 x 1 + Intel® I225 x 1)
USB	USB 3.2 Gen 2 x 4 USB 2.0 x 2
Serial Port	COM 1 ~ COM 2 (RS-232/422/485, RI as default, 5V/12V selected by BOM change)
Video	VGA x 1, up to 1920 x 1080 DP++ 1.2a x 2, up to 3840 x 2160 @60Hz HDMI 2.0b x 1, up to 3840 x 2160 @60Hz
Internal I/O	
USB	—
Serial Port	—
Video	—
SATA	SATA III x 2 +5V SATA Power Connector x 1 (Total up to 5V @2A, up to 5V @1A, shared with 2.5"SSD x 2 as limitation with 170X000592)
Audio	—
DIO/GPIO	GPIO 16-bit
SMBus/I2C	—
Touch	—
Fan	4 Pin Smart Fan
SIM	Nano SIM x 1
Front Panel	Power Button, Power LED
Others	—
Expansion	
Mini PCI-E/mSATA	Half Size mSATA/mPCIe x 1 (Default: mPCIe, selected by BOM)
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1) M.2 3052 B-Key x 1 (PCIe 3.0 [x2] + USB 3.2 + USB 2.0)
Others	—
Environment & Certification	
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C) with 0.5m/sec air flow
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	250,817
EMC	CE/FCC Class A

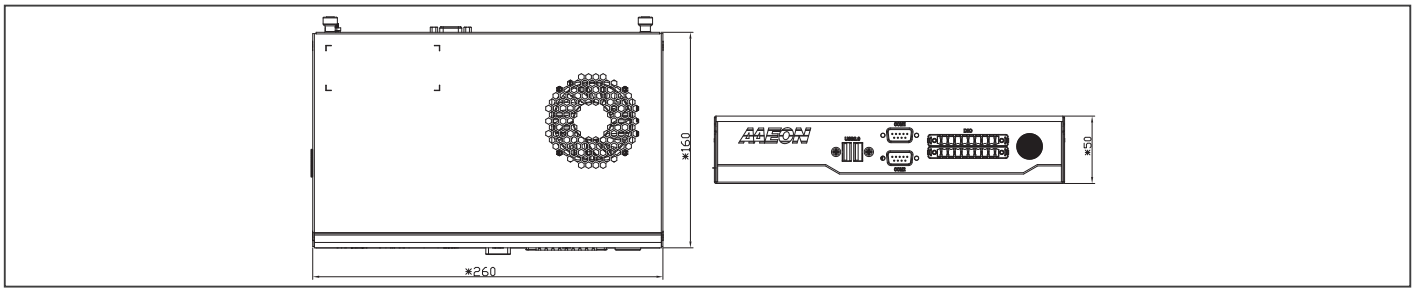
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	Memory	Display	Storage	LAN	USB	COM Port	Expansion	Power	Operating Temperature	Others
EPIC-TGH7-PUC-A10-0001	Intel® Xeon® W-11865MRE (with RM590E)	DDR4 SODIMM x 2	DP x 2 HDMI x 1 VGA x 1	SATA3 x 2	2.5GbE x 3 GbE x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 2	RS232/422/485 x 2	M.2 3052 B-key x 1 M.2 2280 M-key x 1 MiniCard (Half Size) x 1	+9V to +24V DC Jack Connector	0°C ~ 50°C	GPIO 16 bits Nano SIM x 1
EPIC-TGH7-PUC-A10-0002	iIntel® Core™ i7-11850HE (with HM570E)	DDR4 SODIMM x 2	DP x 2 HDMI x 1 VGA x 1	SATA3 x 2	2.5GbE x 3 GbE x 1	USB 3.2 Gen 2 x 4 USB 2.0 x 2	RS232/422/485 x 2	M.2 3052 B-key x 1 M.2 2280 M-key x 1 MiniCard (Half Size) x 1	+9V to +24V DC Jack Connector	0°C ~ 50°C	GPIO 16 bits Nano SIM x 1

Packing List

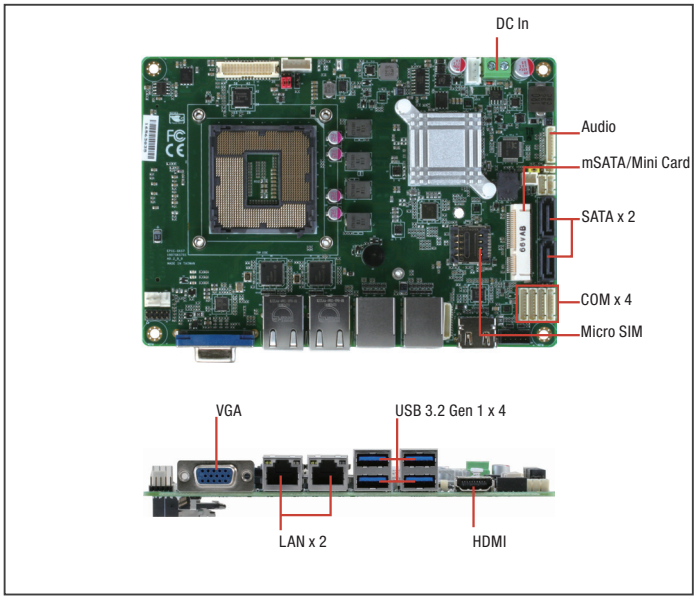
- **EPIC-TGH7-PUC x 1**
- **SATA Cable x 2**
- **Dual SATA Power Cable x 1**
- **Screw , thermal pads and accessories kit x 1**

Optional Accessories

Part Number	Description	QTY
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
1702150155	2 Pin SATA Power Cable, 15cm	1
1255X00063	AC/DC Adapter.150W.12V/12.5A.DC JACK W/Lock , Delta DPS-150AB-15 J	1

EPIC-KBS7

EPIC Board with 6th/7th Generation Intel® Core™ Processors (Socket Type)



Features

- 6th/7th Generation Intel® Core™ Processors (Socket Type)
- DDR4 2133 SODIMM x 1 (Non-ECC, up to 16GB)
- VGA x 1, HDMI x 1, LVDS x 1 (Optional)
- SATA 6Gb/s x 2
- RJ-45 GbE x 2
- USB 3.2 Gen 1 x 4, USB 2.0 x 2
- mSATA/Mini Card x 1
- COM Port x 4, GPIO 8-bit
- Support +9V to +24Vin (Wide Voltage Input)

Specifications

System	
Form Factor	4" EPIC Board
CPU	6th/7th Generation Intel Core™ Processor (up to 35W/54W): Intel® Core™ i7-7700T (4C/8T, 2.9 GHz, 35W) Intel® Core™ i5-7500T (4C/4T, 2.7 GHz, 35W) Intel® Core™ i3-7100T (2C/4T, 3.4 GHz, 35W) Intel® Core™ i7-6700TE (4C/8T, 2.4 GHz, 35W) Intel® Core™ i5-6500TE (4C/4T, 2.3 GHz, 35W) Intel® Core™ i3-6100TE (2C/4T, 2.7 GHz, 35W)
Chipset	Intel® 100 Series Mobile Chipset (H110/Q170)
Memory Type	DDR4 2133, Single channel SODIMM x 1, Up to 16GB (Non-ECC Support)
BIOS	UEFI
Wake On Lan	Yes
Watchdog Timer	255 Levels
Security	—
RTC Battery	Lithium Battery 3V/240mAh
Dimension	4.53" x 6.50" (115mm x 165mm)
OS Support	Windows 10 (64bit) Ubuntu 21.04/Kernel 5.11.0-13-generic
Power	
Power Requirement	+9V to +24V (Optional: +12V)
Power Supply Type	AT/ATX
Connector	Phoenix 2-Pin Connector
Power Consumption	Intel® Core™ i7-6700TE, DDR4 16GB, 3.50A @12V, 49.8W
Display	
Controller	Intel® HD Graphics 630 Intel® HD Graphics 530 (by CPU sku)
LVDS/eDP	LVDS x 1, Dual Channel 24/48bit, up to 1920 x 1080 (Q170 sku support only)
Display Interface	VGA x 1, up to 1920 x 1080 HDMI x 1, up to 3840 x 2160 @60Hz
Multiple Display	Up to 3 Simultaneous Displays
Audio	
CODEC	Realtek ALC897
Audio Interface	Line-In/Line-Out/Mic
Speaker	—
External I/O	
Ethernet	Intel®I210-AT, 1GbE RJ-45 x 2
USB	USB 3.2 Gen 1 x 4
Serial Port	—
Video	VGA x 1, up to 1920 x 1080 HDMI x 1, up to 3840 x 2160 @60Hz

Internal I/O	
USB	USB 2.0 x 2
Serial Port	COM 2 (RS-232/422/485, supports 5V/12V/RI) COM 1, COM 3, COM 4 (RS-232 only, supports RI only)
Video	LVDS x 1 (Q170 sku support only) LVDS Inverter 5V/12V @2A
SATA	SATA 6Gb/s x 2 +5V SATA Power Connector x 1 (Total up to 5V@2A) (Up to 5V@1A, shared with 2 x 2.5""SSD as limitation with 170X000592)
Audio	Audio Header x 1
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus/I2C (Default: SMBus)
Touch	—
Fan	4 Pin Smart Fan
SIM	Micro SIM x 1 (Optional)
Front Panel	Power Button, Reset Button, Power LED, SATA LED, Buzzer
Others	—
Expansion	
Mini PCI-E/mSATA	Full Size mSATA/mPCIe (Default: mSATA) (H110 SKU mPCIe by BOM Optional, Q170 SKU mPCIe selected by BIOS)
M.2	—
Others	—
Environment & Certification	
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)	393,440
EMC	CE/FCC Class A

Packing List

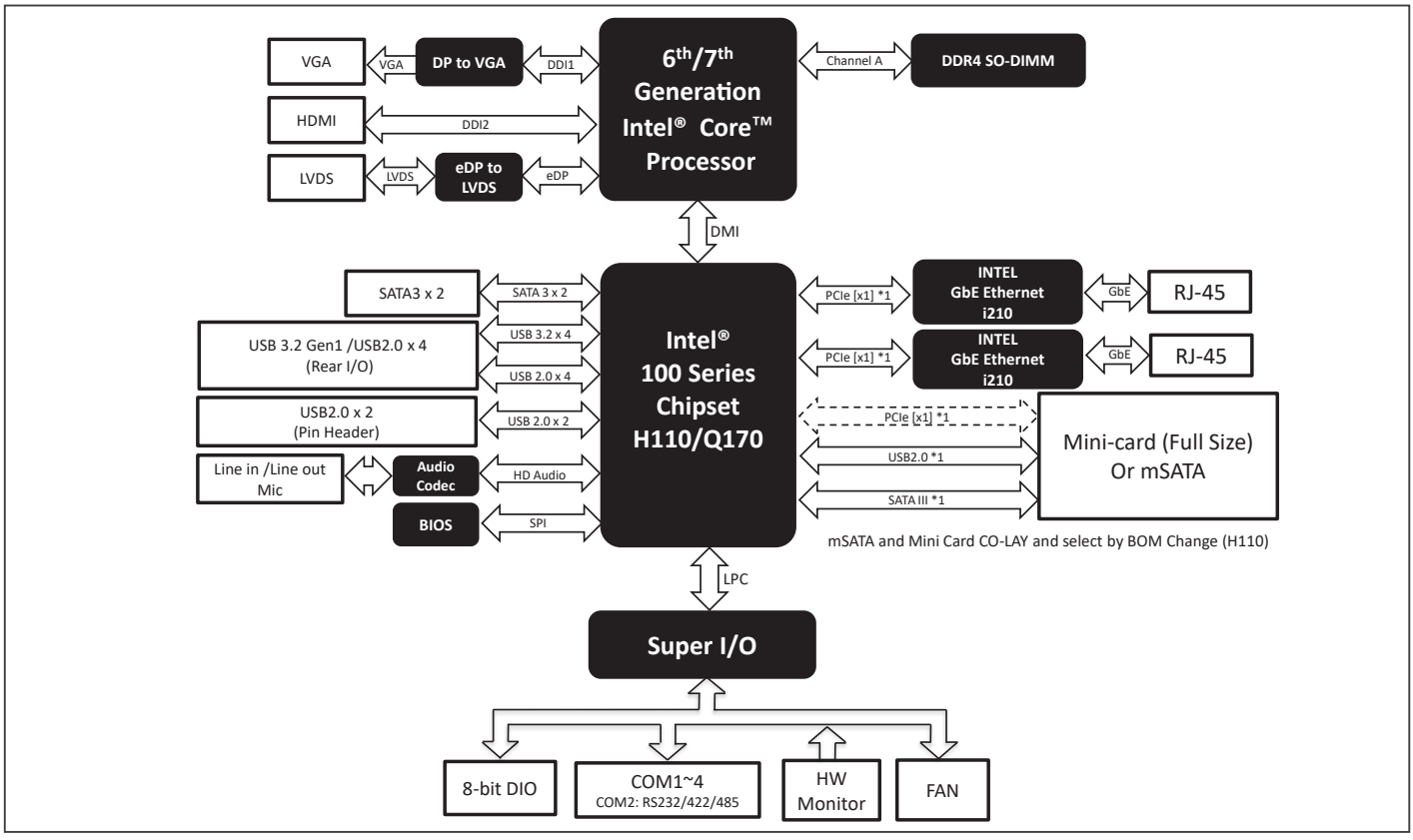
- EPIC-KBS7 x 1
- CPU Cover x 1
- SATA Cable x 2
- SATA Power Cable x 1
- Screw kit x 1

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
170X000592	Dual SATA Power Cable, Length 20cm	1
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

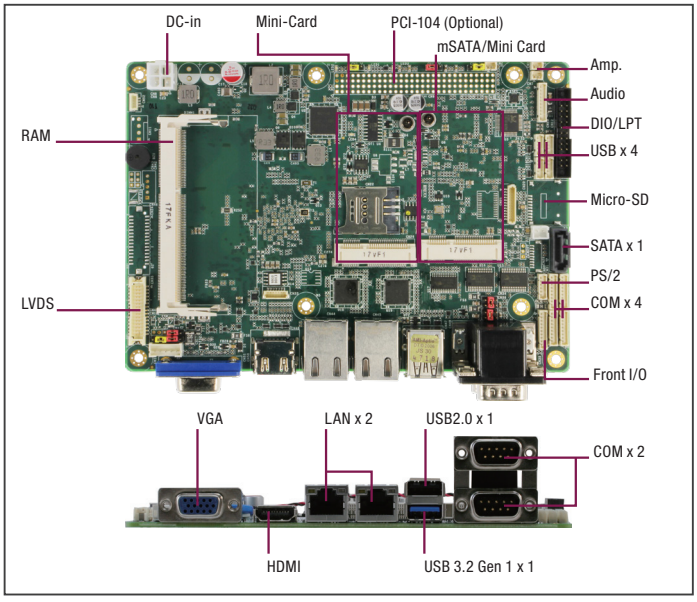


Ordering Information

Part Number	CPU	Memory	Display	Storage	LAN	USB	COM Port	Expansion	TPM	Power	Operating Temperature	Others
EPIC-KBS7-A11-00A1	LGA1151 Socket Type (with H110E)	DDR4 SODIMM x 1	VGA x 1, HDMI x 1	SATA 6Gb/s x 2	GbE x 2	USB3.2 Gen1 x 2, USB2.0 x 4	RS232/422/485 x 1 RS232 x 3	mSATA x 1 (Mini-PCIe by BOM Change)	—	+9V to +24V (2 Pin Phoenix Connector)	0°C ~ 60°C	GPIO 8 bits
EPIC-KBS7-A11-00A2	LGA1151 Socket Type (with Q170E)	DDR4 SODIMM x 1	LVDS x 1, VGA x 1, HDMI x 1	SATA 6Gb/s x 2	GbE x 2	USB3.2 Gen1 x 2, USB2.0 x 4	RS232/422/485 x 1 RS232 x 3	mSATA x 1 (Mini-PCIe selected by BIOS)	—	+9V to +24V (2 Pin Phoenix Connector)	0°C ~ 60°C	GPIO 8 bits, Micro SIM x 1

EPIC-BT07

EPIC Board with Intel Atom®/Celeron® Processor SoC



Features

- Onboard Intel Atom®/Celeron® Processors
- DDR3L 1333 SODIMM x 1, Up to 8GB
- Dual Display Configuration: VGA + LVDS, VGA + HDMI or HDMI + LVDS
- SATA 3Gb/s x 1
- RJ45 GbE x 2
- USB 3.2 Gen 1 x 1, USB 2.0 x 5
- Mini Card x 1, mSATA/Mini Card x 1, SIM x 1, Micro-SD Slot x 1
- COM Port x 6 , GPIO 16-bit/LPT, Audio 2CH, 2W Audio Amp.
- TPM (Optional), Touch Controller (Optional), PCI-104 (Optional)
- Support +9V to + 24Vin (Wide Voltage Input)

Specifications

System	
Form Factor	4" EPIC Board
CPU	Onboard Intel Atom®/Celeron® Processors: Intel® Celeron® Processor J1900 (4C/4T, 2.00GHz, 10W) Intel® Celeron® Processor N2930 (4C/4T, 1.83GHz, 7.5W) Intel® Celeron® Processor N2807 (2C/2T, 1.58GHz, 4.3W) Intel Atom® Processor E3845 (4C/4T, 1.91 GHz, 10W)
Chipset	Integrated with Intel ® SoC
Memory Type	DDR3L 1333, Single Channel SODIMM x 1 , up to 8GB
BIOS	UEFI
Wake On Lan	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Battery Lithium Battery 3V/240mAh
Dimension	4.53" x 6.50" (115mm x 165mm)
OS Support	Windows 7/10 (64bit) Ubuntu 21.04 / kernel 5.11.0-13-generic #14
Power	
Power Requirement	+9V to +24V (Optional : +12V)
Power Supply Type	AT/ATX
Connector	ATX 4-Pin connector or Phoenix 2-Pin Connector
Power Consumption	Intel® Celeron® Processor J1900, DDR3L 8GB, 0.99A@12V, 11.88W
Display	
Controller	Intel® HD Graphics for Intel Atom® Processor Z3700 Series
LVDS/eDP	LVDS x 1, Dual Channel 24/48bit, up to 1920 x 1080
Display Interface	VGA x 1, up to 1920 x 1080 HDMI x 1, up to 1920 x 1080
Multiple Display	Up to 2 Simultaneous Displays
Audio	
CODEC	Realtek ALC897
Audio Interface	Line-In / Line-Out / Mic (Audio function not available for WiTAS SKU)
Speaker	2W Amp.(Audio function not available for WiTAS SKU)
External I/O	
Ethernet	Intel® I210, 1GbE RJ-45 x 2
USB	USB 3.2 Gen 1 x 1 USB 2.0 x 1
Serial Port	COM 2, COM 3 (RS-232/422/485, supports 5V/12V/RI)
Video	HDMI x 1
Internal I/O	
USB	USB 2.0 x 4
Serial Port	COM 1, COM 4, COM 5, COM 6 (RS-232, supports RI only)
Video	LVDS x 1 LVDS Inverter 5V/12V@2A VGA x 1
SATA	SATA 3Gb/s x 1 (Default) (up to SATA x 2 shared with mSATA, BOM Optional)
Audio	Audio Header x 1 (Optional, Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 16-bits
SMBus/I2C	SMBus/I2C (Default: SMBus)
Touch	4/5/8-wire Touch Controller x 1 (Optional)
Fan	DC Fan x 1
SIM	SIM x 1
Front Panel	Power Button, Reset Button, Power LED, SATA LED, Buzzer
Others	Micro-SD x 1 (Optional, only E3800 series) PCI-104 x 1 (Optional, only E3800 series) LPT (SPP/EPP/ECP) x 1 (Optional, co-lay with GPIO, selected by BIOS)
Expansion	
Mini PCI-E/mSATA	Full Size mPCIe x 1 Full Size mSATA x 1
M.2	—
Others	—
Environment & Certification	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) 32°F ~ 185°F (-40°C ~ 85°C) W2 Support (E3845 SKU only)
Storage Temperature	32°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	358,806
EMC	CE/FCC Class A

Packing List

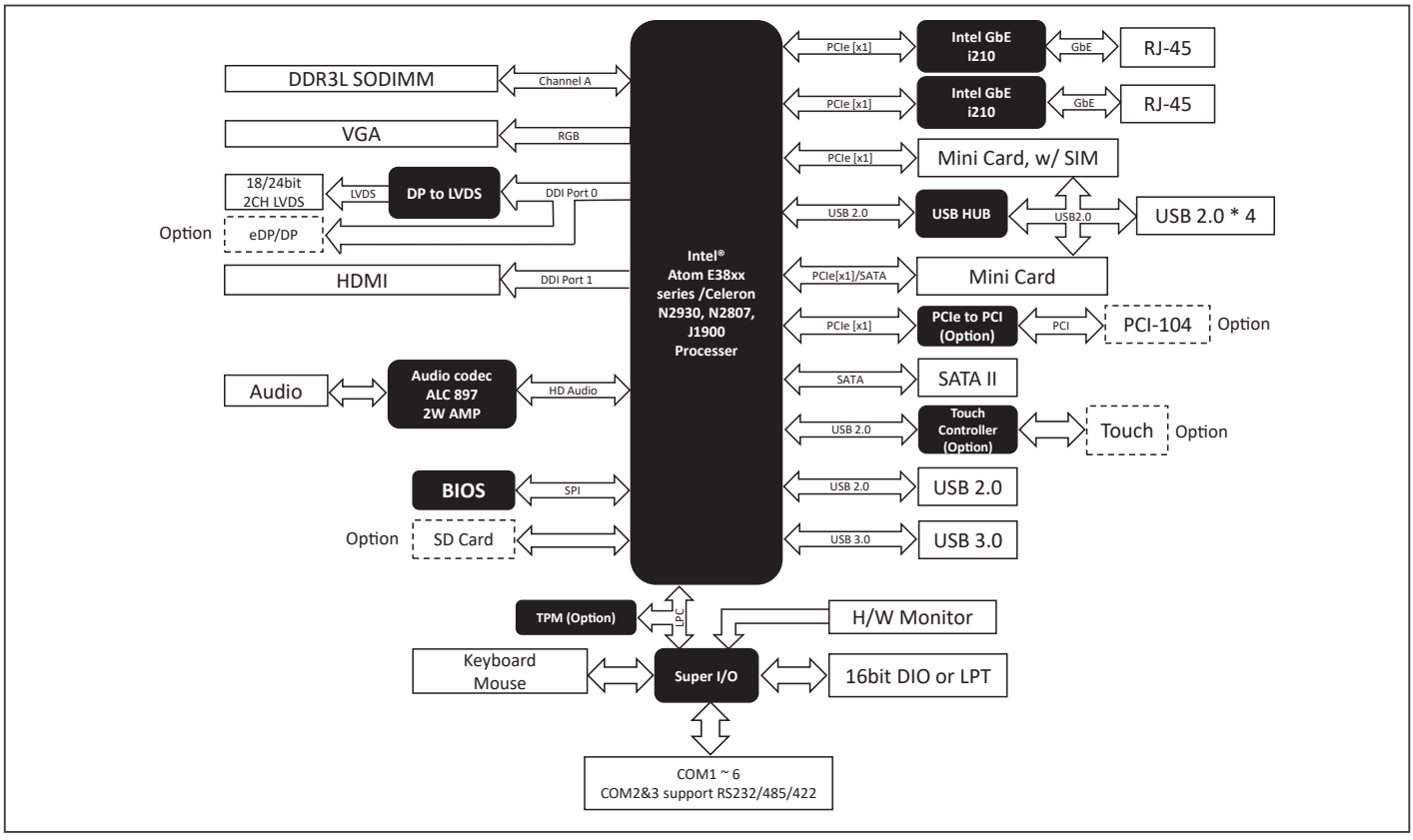
- EPIC-BT07 x 1
- SATA Cable x 1
- SATA Power Cable x 1
- Heat-Spreader x 1
- Screw kit x 1

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

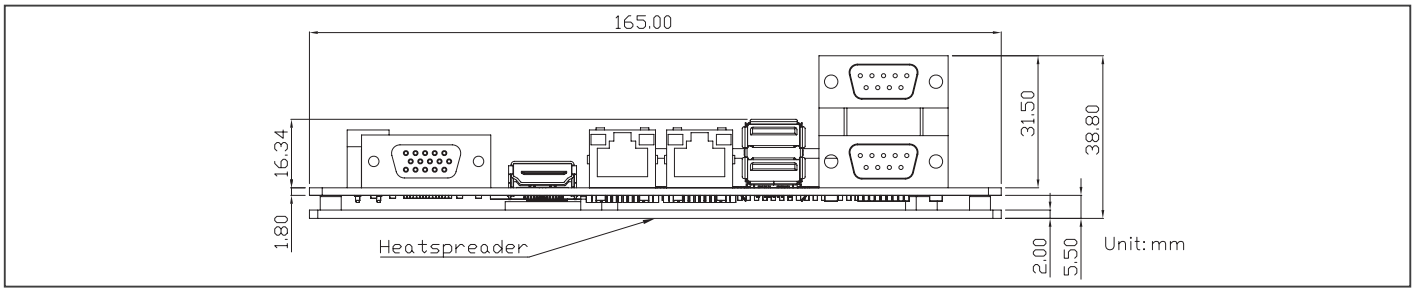
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	Memory	Display	Storage	LAN	USB	COM Port	Expansion	TPM	Power	Operating Temperature	Others
EPIC-BT07-A13-00A1	E3845	DDR3L SODIMM x 1	LVDS x 1, VGA x 1, HDMI x 1	SATA 3.0 Gbps x 1	GbE x 2	USB3.2 Gen1 x 1, USB2.0 x 5	RS232/422/485 x 2 RS232 x 4	Mini Card (Full Size) x 1 mSATA (Full Size) x 1	Optional	+9V to +24V (4 Pin ATX Connector)	0°C ~ 60°C	SIM x 1 PCI-104 x 1 Micro-SD x 1 GPIO 16 bits
EPIC-BT07-A13-00A2	J1900	DDR3L SODIMM x 1	LVDS x 1, VGA x 1, HDMI x 1	SATA 3.0 Gbps x 1	GbE x 2	USB3.2 Gen1 x 1, USB2.0 x 5	RS232/422/485 x 2 RS232 x 4	Mini Card (Full Size) x 1 mSATA (Full Size) x 1	Optional	+9V to +24V (4 Pin ATX Connector)	0°C ~ 60°C	SIM x 1 GPIO 16 bits
EPIC-BT07-A13-00A3	N2807	DDR3L SODIMM x 1	LVDS x 1, VGA x 1, HDMI x 1	SATA 3.0 Gbps x 1	GbE x 2	USB3.2 Gen1 x 1, USB2.0 x 5	RS232/422/485 x 2 RS232 x 4	Mini Card (Full Size) x 1 mSATA (Full Size) x 1	Optional	+9V to +24V (4 Pin ATX Connector)	0°C ~ 60°C	SIM x 1 GPIO 16 bits
EPIC-BT07-A13-00A5	E3845	DDR3L SODIMM x 1	LVDS x 1, VGA x 1, HDMI x 1	SATA 3.0 Gbps x 1	GbE x 2	USB3.2 Gen1 x 1, USB2.0 x 5	RS232/422/485 x 2 RS232 x 4	Mini Card (Full Size) x 1 mSATA (Full Size) x 1	Optional	+9V to +24V (2 Pin Phoenix Connector)	0°C ~ 60°C	SIM x 1 PCI-104 x 1 Micro-SD x 1 GPIO 16 bits
EPIC-BT07-A13-00A6	J1900	DDR3L SODIMM x 1	LVDS x 1, VGA x 1, HDMI x 1	SATA 3.0 Gbps x 1	GbE x 2	USB3.2 Gen1 x 1, USB2.0 x 5	RS232/422/485 x 2 RS232 x 4	Mini Card (Full Size) x 1 mSATA (Full Size) x 1	Optional	+9V to +24V (2 Pin Phoenix Connector)	0°C ~ 60°C	SIM x 1
EPIC-BT07-A13-00A7	N2807	DDR3L SODIMM x 1	LVDS x 1, VGA x 1, HDMI x 1	SATA 3.0 Gbps x 1	GbE x 2	USB3.2 Gen1 x 1, USB2.0 x 5	RS232/422/485 x 2 RS232 x 4	Mini Card (Full Size) x 1 mSATA (Full Size) x 1	Optional	+9V to +24V (2 Pin Phoenix Connector)	0°C ~ 60°C	SIM x 1 GPIO 16 bits
EPIC-BT07W2-A13-00A2	E3845	DDR3L SODIMM x 1	LVDS x 1, VGA x 1, HDMI x 1	SATA 3.0 Gbps x 1	GbE x 2	USB3.2 Gen1 x 1, USB2.0 x 5	RS232/422/485 x 2 RS232 x 4	Mini Card (Full Size) x 1 mSATA (Full Size) x 1	Optional	+9V to +24V (4 Pin ATX Connector)	-40°C ~ 85°C	SIM x 1 PCI-104 x 1 Micro-SD x 1 GPIO 16 bits

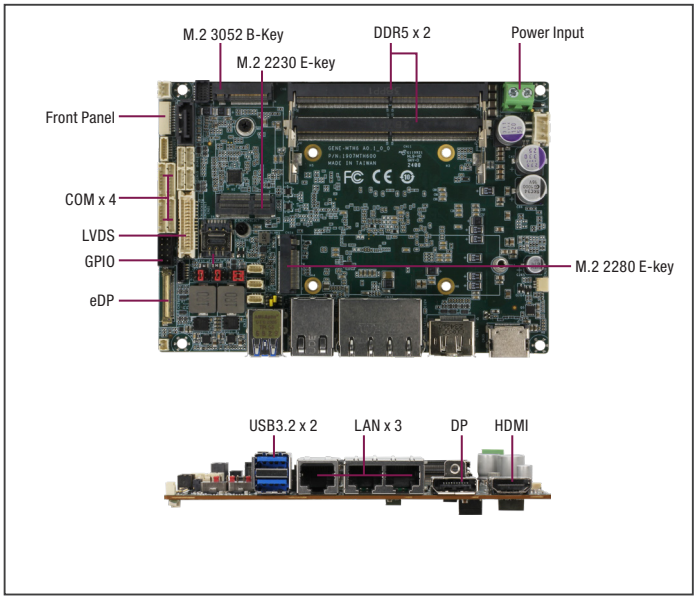
06

06
SubCompact Boards



GENE-MTH6

3.5" SubCompact Board with Intel® Core™ Ultra SoC



Features

- **Intel® Core™ Ultra processors (Series 1)**
- **DDR5 5600 MHz, Dual Channel SODIMM x 2, up to 96GB**
- **LVDS x 1, eDP x 1, DP x 1, HDMI x 1**
- **LAN x 3, SATA 6Gb/s x 1, 8-bit GPIO**
- **USB 3.2 Gen 2 x 2, USB 2.0 x 4**
- **M.2 2280 M-Key x 1, M.2 3052 B-Key x 1, M.2 2230 E-Key x 1**
- **DC Input 9 ~ 36V**

2.5Giga LAN · DDR5 · Audio · LVDS · USB 3.2 Gen 2 · HDMI · CE · FC

Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	Intel® Core™ Ultra Processors: Intel® Core™ Ultra 7 Processor 155H (16C/22T, up to 4.8 GHz, 28W) Intel® Core™ Ultra 5 Processor 125H (14C/18T, up to 4.5 GHz, 28W) Intel® Core™ Ultra 7 Processor 155U (12C/14T, up to 4.8 GHz, 15W) Intel® Core™ Ultra 5 Processor 125U (12C/14T, up to 4.3 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 5600, Dual Channel SODIMM x 2 Max. 96GB, Non-ECC
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM2.0
RTC Battery	Lithium Battery 3V/240mAH
Dimensions	5.75" x 4" (146mm x 101.7mm), 0.88 lb. (0.4Kg)
OS Support	Windows® 10 (64-bit) Windows® 11 (64-bit) Linux Ubuntu 22.04.3 (kernel 6.2.0-26-generic)
Power	
Power Requirement	+9-36V (Optional: +12V), support ERP
Power Supply Type	AT/ATX, support 3pin ATX
Connector	Phoenix 2-pin Connector (Colay 4 pin connector)
Power Consumption	Intel® Core™ Ultra 7, DDR5 32GB x 2, 5.78A @+12V (Typical) Intel® Core™ Ultra 7, DDR5 32GB x 1, 8.42A @+12V (Max)
Display	
Controller	Intel® Arc™ Graphics Intel® Graphics
LVDS/eDP	LVDS x 1, Dual-Channel 18/24-bit, up to 1920 x 1080 eDP 1.4b HBR3 x 1, up to 3840 x 2160 @60Hz
Display Interface	HDMI 2.1 x 1, up to 8K x 4K@60Hz or 4K x 2K@120Hz DP 2.0 x 1, up to 7680 x 4320@60Hz 30bpp (support DP++)
Multiple Display	Up to 4 Simultaneous Displays
Audio	
Codec	Realtek ALC897
Audio Interface	Line-in/Line-out/MIC (Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® I219 1GbE, RJ-45 x 1 Intel® I226 2.5GbE, RJ-45 x 2, support PEX (Support Vpro only with ULTRA 7 165U/165H, ULTRA 5 135U/135H)
USB	USB3.2 Gen 2 x 2 port
Serial Port	—
Video	HDMI 2.1 x 1 DP 2.0++ x 1
Internal I/O	
USB	USB 2.0 x 4
Serial Port	COM 1, COM 2 (RS-232/422/485, supports 5V/12V/RI) COM 3, COM 4 (RS-232)
Video	LVDS x 1 Inverter x 1 (12V/2A) eDP x 1
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Optional, Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus/I2C x 1 (Default: SMBus)
Touch	—
Fan	4 wire Smart Fan x 1
Sim	Nano SIM x 1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	—
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4]/SATA) Default: PCIe 4.0 [x4] (selected by BOM) M.2 3052 B-Key x 1 (PCIe 3.0 [x1] + USB 3.2/PCIe 3.0 [x2]) Default: PCIe 3.0 [x1] (selected by BOM) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0), supports Wi-Fi 6E CNVi (RAID 0, RAID 1 support on PCIe storage)
Others	FPC2 x 1 (PCIe Gen4 [x4] x 2), Support RAID 0, RAID 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)	753,493
EMC	CE/FCC Class A

Packing List

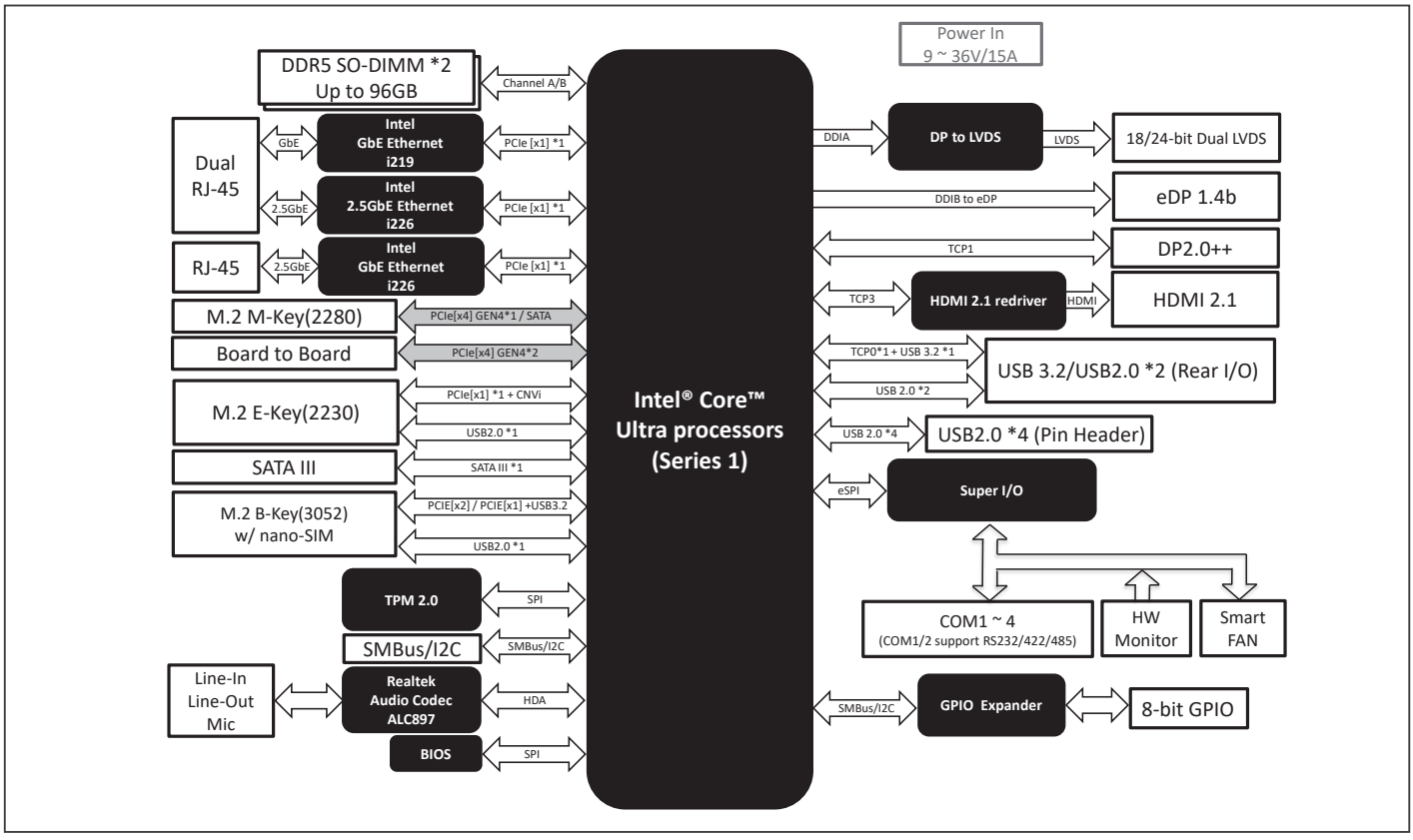
Part Number	Description	QTY
GENE-MTH6	GENE-MTH6 MB	1

Optional Accessories

Part Number	Description	QTY
GENE-MTH6-FAN01	CPU Cooler.12V.Smart FAN	1
PER-SB2B-A01-0001	FPC2.M.2 2282 M key x2.PCIe[x4]	1
1702150155	SATA HDD Power Cable, 15cm	1
170204010R	Power Cable.Double 4P , 10cm	1
170X000398	Power Cable, DC JACK, 30cm	1
170X000603	Front Panel Cable , 10cm	1
170X000156	Audio Cable, 25cm	1
1701090150	COM Port Cable, 15cm	4
1700050207	USB 2.0 Cable, 20cm	4

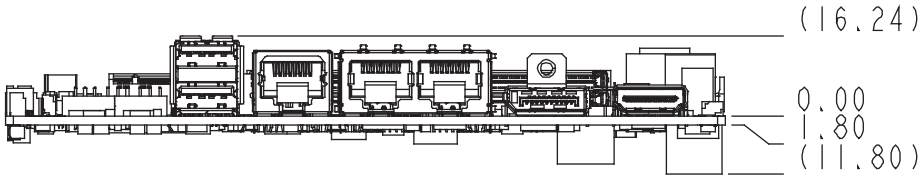
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

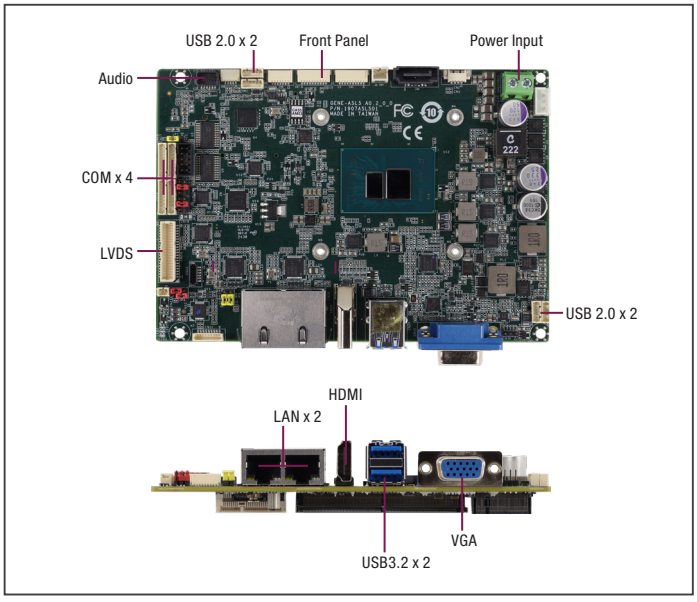


Ordering Information

Part Number	CPU	Display	LAN	USB	Audio	COM	Storage	Expansion Slot	TPM	Power	TEMP	Others
GENE-MTH6-A10-0001	Intel® Core™ Ultra 7 Processor 155H	HDMI x 1 DP x 1 LVDS x 1 eDP x 1	GbE x 1 2.5GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	Line-in/Line-out/MIC	4	SATA x 1	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1 FPC2 x 1	2.0	9~36V	0°C ~ 60°C	Nano SIM, GPIO x 8, SMBUS
GENE-MTH6-A10-0002	Intel® Core™ Ultra 5 Processor 125H	HDMI x 1 DP x 1 LVDS x 1 eDP x 1	GbE x 1 2.5GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	Line-in/Line-out/MIC	4	SATA x 1	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1 FPC2 x 1	2.0	9~36V	0°C ~ 60°C	Nano SIM, GPIO x 8, SMBUS
GENE-MTH6-A10-0003	Intel® Core™ Ultra 7 Processor 155U	HDMI x 1 DP x 1 LVDS x 1 eDP x 1	GbE x 1 2.5GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	Line-in/Line-out/MIC	4	SATA x 1	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1 FPC2 x 1	2.0	9~36V	0°C ~ 60°C	Nano SIM, GPIO x 8, SMBUS,

GENE-ADN5

3.5" SubCompact Board with Intel® Processor N Series



Features

- DDR5 4800 MHz, Dual Channel SODIMM x 1, Up to 16GB
- LVDS Dual Channel 18/24 bit x 1, VGA x 1, HDMI x 1
- Intel® 2.5GbE x 2 , SATA 6Gb/s x 1, GPIO x 8bit
- USB 3.2 Gen 2 x 2 port , USB 2.0 x 4
- Full size mPCIe/mSATA
- M.2 3052 B-Key x 1, M.2 2230 E-Key x 1
- DC Input 9-36V

2.5Giga LAN · DDR 5 · Audio · LVDS · USB 3.2 Gen 2 · HDMI · CE · FC

Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	Intel® Processor N-series: Intel® Core™ i3-N305 (8C/8T, 3.8 GHz, 15W) Intel® Processor N97 (4C/4T, 3.6 GHz, 12W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 4800, Single Channel SODIMM x 1, Max.16GB, Non-ECC
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0
RTC Battery	Lithium Battery 3V/240mAH
Dimensions	5.75" x 4" (146mm x 101.7mm), 1.1 lb. (0.5Kg)
OS Support	Windows 10 (64bit), Windows 11 (64bit), Ubuntu 22.04 / Kernel 5.15.0-25-generic
Power	
Power Requirement	+9V~36V (Optional: +12V), support ERP
Power Supply Type	AT/ATX, support 3pin ATX
Connector	Phoenix 2-pin Connector (Colay 4 pin connector)
Power Consumption	Intel Atom® Core™ i3-N305, DDR5 16GB x 1, 4.05A @+12V (Typical) Intel Atom® Core™ i3-N305, DDR5 16GB x 1, 5.05A@+12V (Max)
Display	
Controller	Intel® UHD Graphics
LVDS/eDP	LVDS x 1, Dual-Channel 18/24-bit, up to 1920 x 1080 eDP HBR3 x 1, up to 1920 x 1200 (Optional)
Display Interface	HDMI 1.4 x 1, up to 3840 x 2160 @30Hz VGA x 1, up to 1920 x 1080
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	Realtek ALC897
Audio Interface	Line-In / Line-Out / Mic, (Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® Ethernet Controller I226, 2.5GbE x 2
USB	USB 3.2 Gen 2 x 2 port
Serial Port	—
Video	HDMI 1.4 x 1, VGA x 1
Internal I/O	
USB	USB 2.0 x 4
Serial Port	COM 1, COM 2 (RS-232/422/485, supports 5V/12V/RI) COM 3, COM 4 (RS-232)
Video	LVDS x 1 eDP x 1 Inverter x 1 (12V/2A)
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus / I2C x 1 (Default: SMBus)
Touch	4/5/8 wire Touch Controller x 1
Fan	4pins Smart Fan x 1
Sim	Nano SIM x 1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-size mSATA / mPCIe x 1 (Default: mPCIe, select by BIOS)
M.2	M.2 3052 B-Key x 1 (PCIe 3.0 [x1] + USB 3.2 Gen 2/PCIe 3.0 [x2] + USB 2.0, default: PCIe [x1] + USB 3.2 Gen 2, selected by BIOS) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0, support CNVi)
Others	—
Environment & Certification	
Operating Temp.	32°F ~ 140°F (0°C ~ 60°C) or -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)	1,284,701
EMC	CE/FCC Class A

Packing List

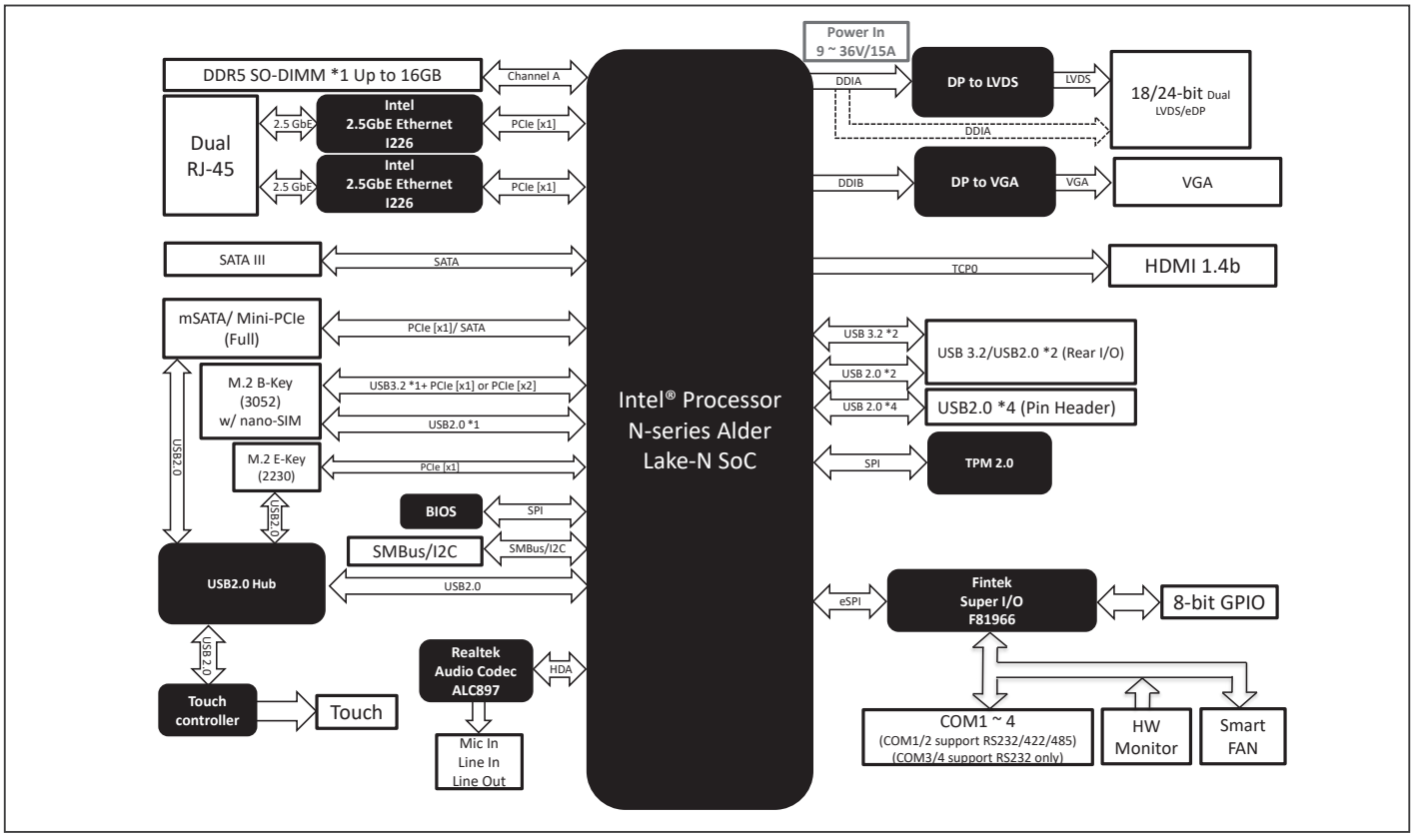
Part Number	Description	QTY
GENE-ADN5	GENE-ADN5 MB	1
M16BT07020	Heat Sink	1

Optional Accessories

Part Number	Description	QTY
1702150155	SATA HDD Power Cable, 15cm	1
170204010R	Power Cable.Double 4P , 10cm	1
170X000398	Power Cable, DC JACK, 30cm	1
170X000287	Front Panel Cable , 10cm	1
170X000156	Audio Cable, 25cm	1
1700050207	USB 2.0 Cable, 20cm	4
1701090150	COM Port Cable, 15cm	4
170220020B	ATX Power Cable, 20cm	1

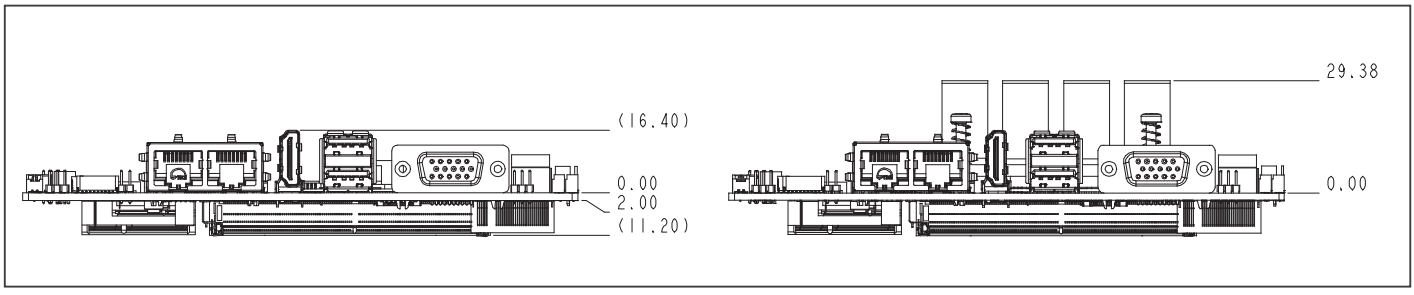
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

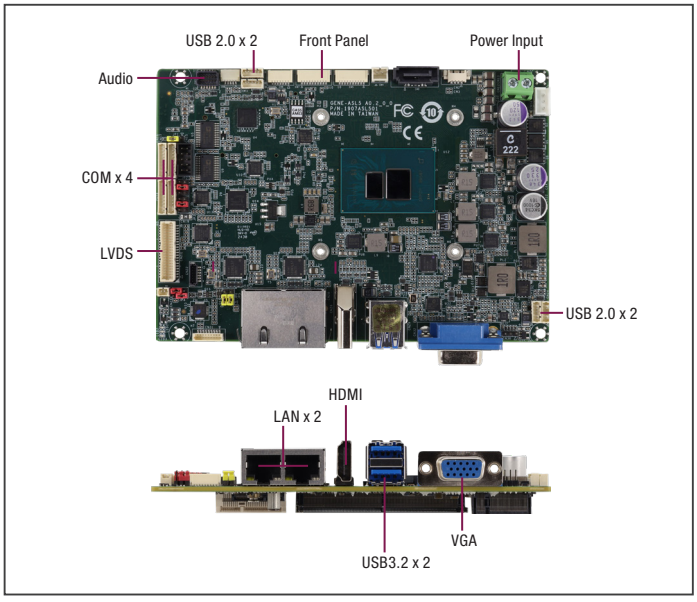


Ordering Information

Part Number	CPU	Display	LAN	USB	Audio	COM	Storage	Expansion Slot	TPM	Power	Temp	Others
GENE-ADN5-A10-0001	Intel® Processor N97	VGA x 1 HDMI x 1 LVDS x 1	2.5GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	Line-in/Line-out/MIC	4	SATA x 1	M.2 B-Key 3052 x 1 M.2 E-Key 2230 x 1 MiniCard x1	2.0	9~36V	-20°C ~ 70°C	GPIO x 8, Touch Controller, SMBUS
GENE-ADN5-A10-0002	Intel® Core™ i3-N305	VGA x 1 HDMI x 1 LVDS x 1	2.5GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	Line-in/Line-out/MIC	4	SATA x 1	M.2 B-Key 3052 x 1 M.2 E-Key 2230 x 1 MiniCard x1	2.0	9~36V	0°C ~ 60°C	GPIO x 8, Touch Controller, SMBUS

GENE-ASL5

3.5" SubCompact Board with Intel Atom® Processors x7000RE Series Processors



Features

- Intel Atom® Processors x7000RE Series Processors
- DDR5 4800 MHz, Dual Channel SODIMM x 1, Up to 16GB
- LVDS Dual Channel 18/24 bit x 1, VGA x 1, HDMI x 1
- Intel® 2.5GbE x 2 , SATA III x 1, GPIO x 8bit
- USB 3.2 Gen2 x 2 , USB2.0 x 4
- Full size mPCIe/mSATA
- M.2 3052 B-Key x 1, M.2 2230 E-Key x 1
- DC Input 9-36V
- Supports WiTAS

2.5Giga LAN · DDR 5 · Audio · LVDS · USB 3.2 Gen 2 · HDMI · CE · FC

Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	Intel Atom® Processors x7000RE Series for the Edge: Intel Atom® x7213RE (2C, 2.0 GHz, 9W) Intel Atom® x7433RE (4C, 1.5 GHz, 9W) Intel Atom® x7835RE (8C, 1.3 GHz, 12W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 4800, Single Channel SODIMM x 1, Max.16GB, Non-ECC
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0
RTC Battery	Lithium Battery 3V/240mAH
Dimensions	5.75" x 4" (146mm x 101.7mm), 1.1 lb. (0.5Kg)
OS Support	Windows 10 (64bit), Windows 11 (64bit), Ubuntu 22.04 / Kernel 5.15.0-25-generic
Power	
Power Requirement	+9V~36V (Optional: +12V), support ERP
Power Supply Type	AT/ATX, support 3pin ATX
Connector	Phoenix 2-pin Connector (Colay 4 pin connector)
Power Consumption	Intel Atom® x7835RE, DDR5 16GB x 1, 3.23A @+12V (Typical) Intel Atom® x7835RE, DDR5 16GB x 1, 4.76A @+12V (Max)
Display	
Controller	Intel® UHD Graphics
LVDS/eDP	LVDS x 1, Dual-Channel 18/24-bit, up to 1920 x 1080 eDP HBR3 x 1, up to 1920 x 1200 (Optional)
Display Interface	HDMI 1.4 x 1, up to 3840 x 2160 @30Hz VGA x 1, up to 1920 x 1080
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	Realtek ALC897
Audio Interface	Line-In / Line-Out / Mic, (Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® Ethernet Controller I226, 2.5GbE x 2
USB	USB 3.2 Gen 2 x 2
Serial Port	—
Video	HDMI 1.4 x 1, VGA x 1
Internal I/O	
USB	USB 2.0 x 4
Serial Port	COM 1, COM 2 (RS-232/422/485, supports 5V/12V/RI) COM 3, COM 4 (RS-232)
Video	LVDS x 1 eDP x 1 Inverter x 1 (12V/2A)
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Optional, Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus / I2C x 1 (Default: SMBus)
Touch	4/5/8 wire Touch Controller x 1
Fan	4pins Smart Fan x 1
Sim	Nano SIM x 1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-size mSATA / mPCIe x 1 (Default: mPCIe, select by BIOS)
M.2	M.2 3052 B-Key x 1 (PCIe 3.0 [x1] + USB 3.2 Gen 2/PCIe 3.0 [x2] + USB 2.0, default: PCIe [x1] + USB 3.2 Gen 2, selected by BIOS) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0, support CNVi)
Others	—
Environment & Certification	
Operating Temp.	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)	1,284,701
EMC	CE/FCC Class A

Packing List

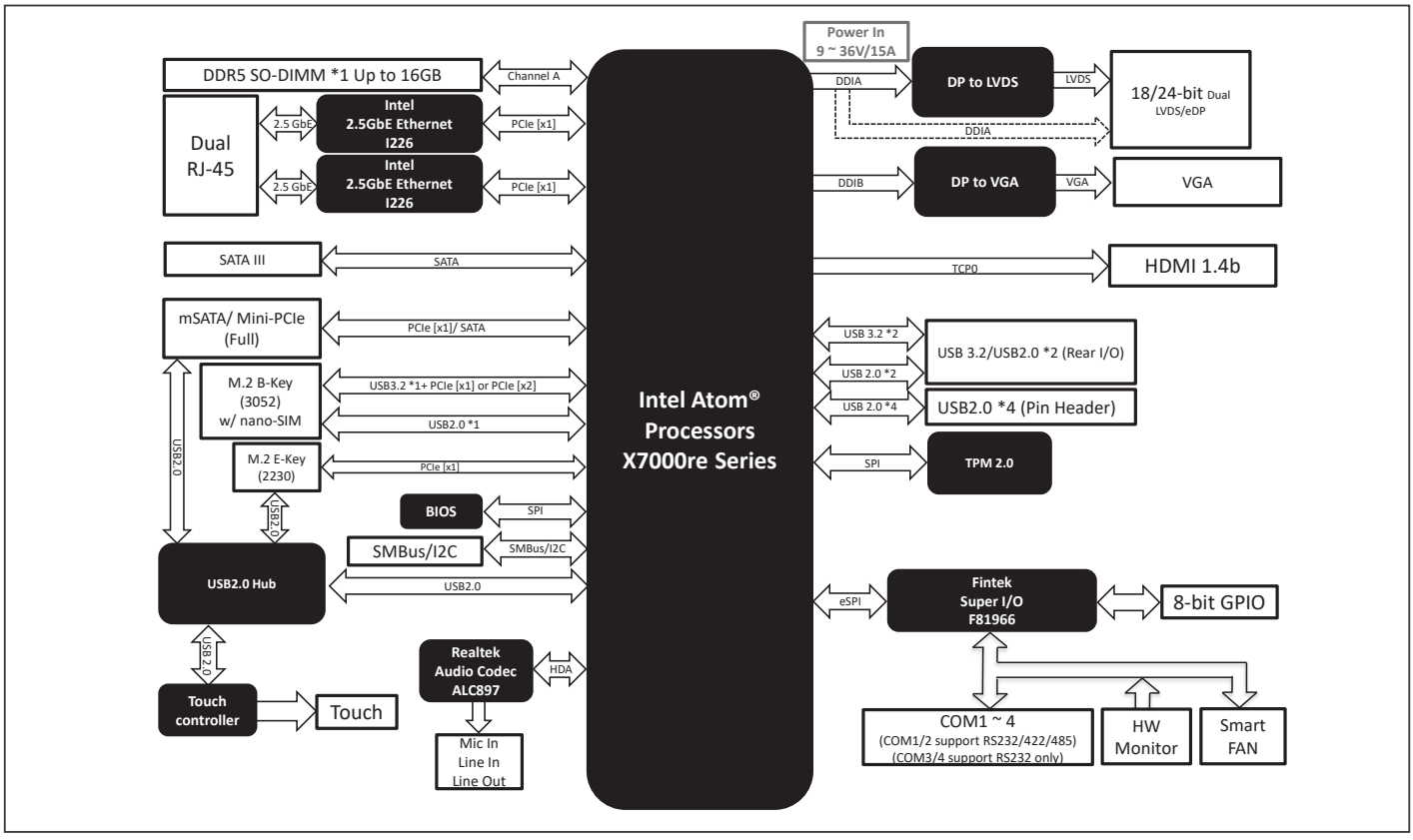
Part Number	Description	QTY
GENE-ASL5	GENE-ASL5 MB	1
M16BT07020	Heat Sink	1

Optional Accessories

Part Number	Description	QTY
1702150155	SATA HDD Power Cable, 15cm	1
170204010R	Power Cable.Double 4P , 10cm	1
170X000398	Power Cable, DC JACK, 30cm	1
170X000287	Front Panel Cable , 10cm	1
170X000156	Audio Cable, 25cm	1
1700050207	USB 2.0 Cable, 20cm	4
1701090150	COM Port Cable, 15cm	4
170220020B	ATX Power Cable, 20cm	1

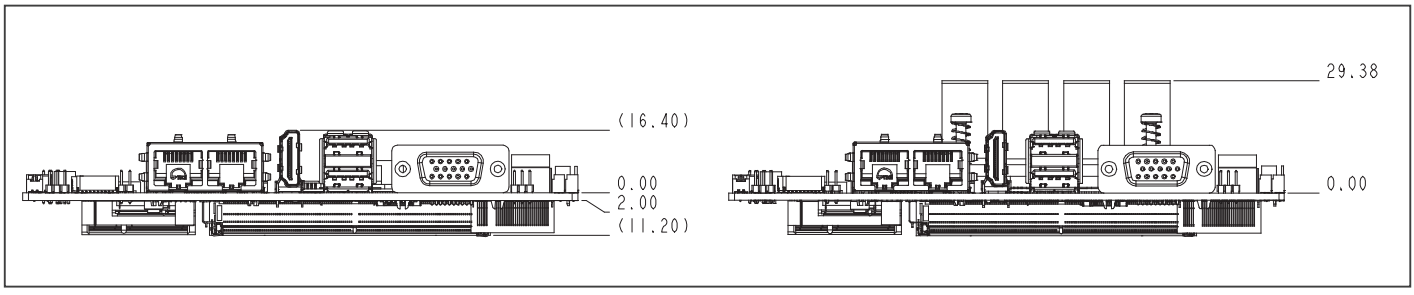
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

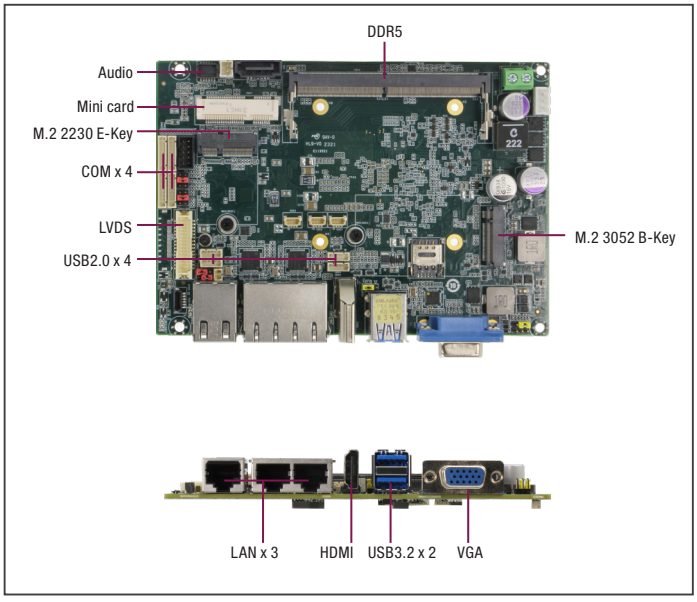


Ordering Information

Part Number	CPU	Display	LAN	COM	Storage	Expansion Slot	TPM	Power	Temp	Others
GENE-ASL5W2-A10-0001	Intel Atom® x7433RE	VGA x 1 HDMI x 1 LVDS x 1	2.5GbE x 2	4	SATA x 1	M.2 B-Key 3052 x 1 M.2 E-Key 2230 x 1 MiniCard x1	2.0	9~36V	-40°C ~ 85°C	GPIO x 8, Touch Controller, SMBUS
GENE-ASL5W2-A10-0002	Intel Atom® x7213RE	VGA x 1 HDMI x 1 LVDS x 1	2.5GbE x 2	4	SATA x 1	M.2 B-Key 3052 x 1 M.2 E-Key 2230 x 1 MiniCard x1	2.0	9~36V	-40°C ~ 85°C	GPIO x 8, Touch Controller, SMBUS
GENE-ASL5W2-A10-0003	Intel Atom® x7835RE	VGA x 1 HDMI x 1 LVDS x 1	2.5GbE x 2	4	SATA x 1	M.2 B-Key 3052 x 1 M.2 E-Key 2230 x 1 MiniCard x1	2.0	9~36V	-40°C ~ 85°C	GPIO x 8, Touch Controller, SMBUS

GENE-ADN6

3.5” SubCompact Board with Intel Atom® x7000E Series, Intel® Processor N Series, Intel® Core™ i3-N305 Processors



Features

- **Intel Atom® x7000E Series, Intel® N series, and Intel® CoreTM i3-N305 Processors**
- **DDR5 4800 MHz, SODIMM x 1, Up to 16GB**
- **HDMI 1.4, VGA, LVDS x 1**
- **Intel 2.5GbE x 3, SATA 6.0 Gb/s x 1, GPIO x 8bit**
- **USB3.2 Gen2 x 2, USB2.0 x 4, RS-232/422/485 x 2, RS-232 x 2**
- **Mini PCIe card x 1, M.2 E-Key 2230 x 1, M.2 B-Key 3052 x 1**
- **Wide DC Input 9-36V**

2.5Giga LAN · DDR5 · Audio · LVDS · USB 3.2 Gen 2

Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	Intel Atom® x7000E Series, Intel® Processor N Series, Intel® Core™ i3-N305 Processors: Intel® Core™ i3-N305 (8C/8T, up to 3.8 GHz, 15W) Intel Atom® x7425E (4C/4T, up to 3.4 GHz, 12W) Intel® Processor N97 (4C/4T, up to 3.6 GHz, 12W) Intel® Processor N50 (2C/2T, up to 3.4 GHz, 6W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 4800, Single Channel SODIMM x 1, Max.16GB, Non-ECC
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAH
Dimensions	5.75" x 4" (146mm x 101.7mm), 0.94 lbs (0.43 kg)
OS Support	Windows 10 (64bit) Ubuntu 22.04 / Kernel 5.15.0-25-generic
Power	
Power Requirement	+9V~36V (Optional: +12V)
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector
Power Consumption	Intel® Core™ i3-N305,16GB x 1, 3.80A@ +12V (TYPICAL) Intel® Core™ i3-N305, 16GB x 1, 5.48A@ +12V (MAX)
Display	
Controller	Intel® UHD Graphics
LVDS/eDP	LVDS x 1, Dual Channel 18/24bit, up to 1920 x1080
Display Interface	HDMI 1.4 x 1, up to 3840 x2160 @30Hz VGA x 1, up to 1920 x1080
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	Realtek ALC897
Audio Interface	Line-In / Line-Out / Mic (Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® i226 2.5G, RJ-45 x 3
USB	USB3.2 Gen 2 x 2
Serial Port	—
Video	HDMI 1.4 x 1, VGA x 1
Internal I/O	
USB	USB2.0 x 4
Serial Port	COM1 , COM2 (RS232/422/485,supports 5V/12V/RI) COM3 , COM4 (RS232)
Video	LVDS x 1, Inverter x 1 (12V/2A)
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Optional, Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus / I2C x 1 (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 PCIe/mSATA	Full-size mSATA / mPCIe x 1 (Default: mSATA, select by BIOS)
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0) M.2 3052 B-Key x 1 (USB3.2 Gen2 + USB2.0)
Others	—
Environment & Certification	
Operating Temp.	-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)	337,963
EMC	CE/FCC Class A

Packing List

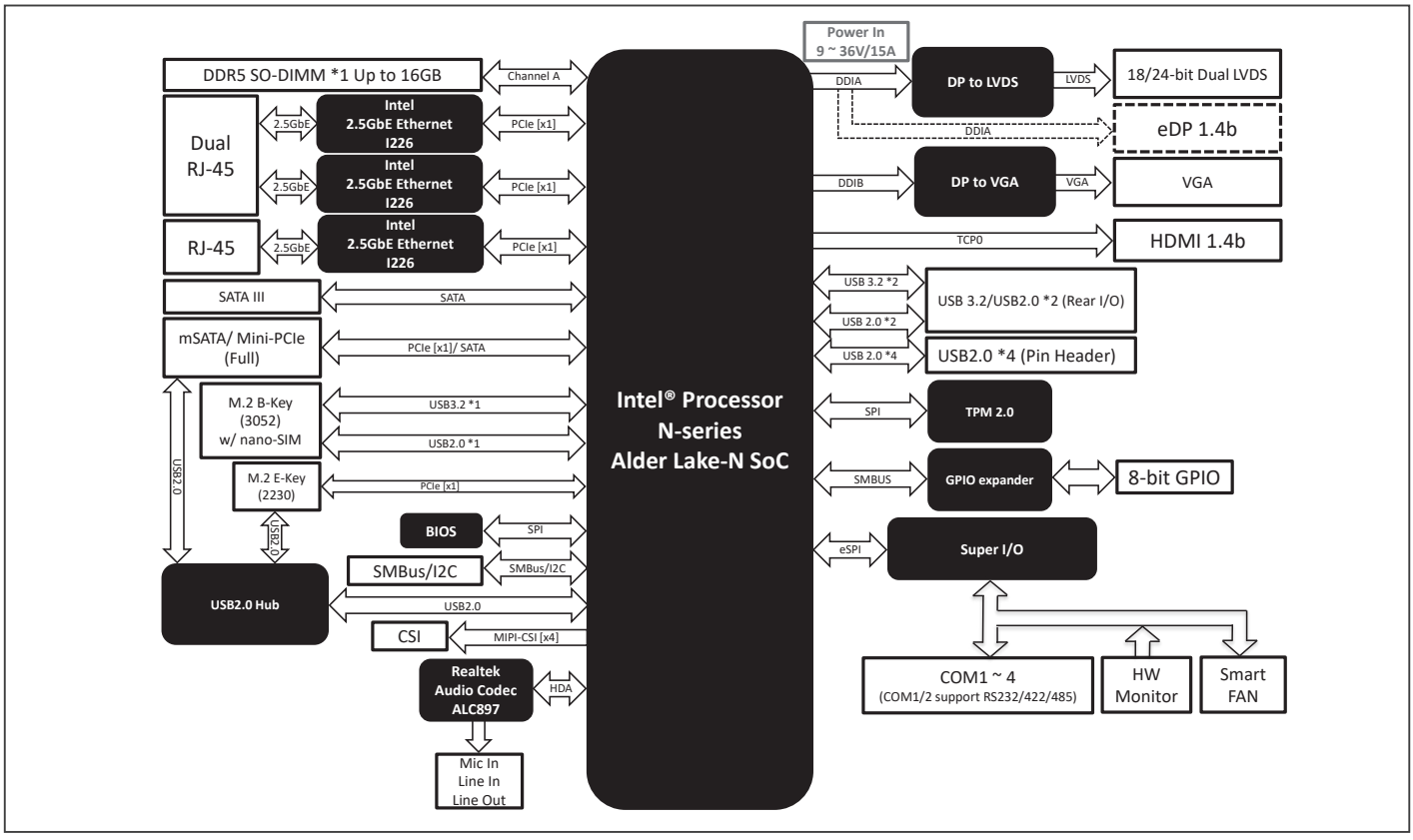
Part Number	Description	QTY
GENE-ADN6	GENE-ADN6 MB	1

Optional Accessories

Part Number	Description	QTY
GENE-ADN6-HSP01	Heat Spreader.100*72*8mm	1
GENE-ADN6-HSK01	Heat Sink.100*72*15.5mm.used with HSP	1
GENE-ADN6-HSK02	Heat Sink.146*78.6*18mm	1
1702150155	SATA HDD Power Cable, 15cm	1
170X000398	Power Cable, DC JACK, 30cm	1
170204010R	Power Cable, Double 4P, 10cm	1
170X000156	Audio Cable, 25cm	1
170X000287	Front Panel Cable, 10cm	1
1701090150	COM Port Cable, 15cm	4
1700050207	USB 2.0 Cable, 20cm	4

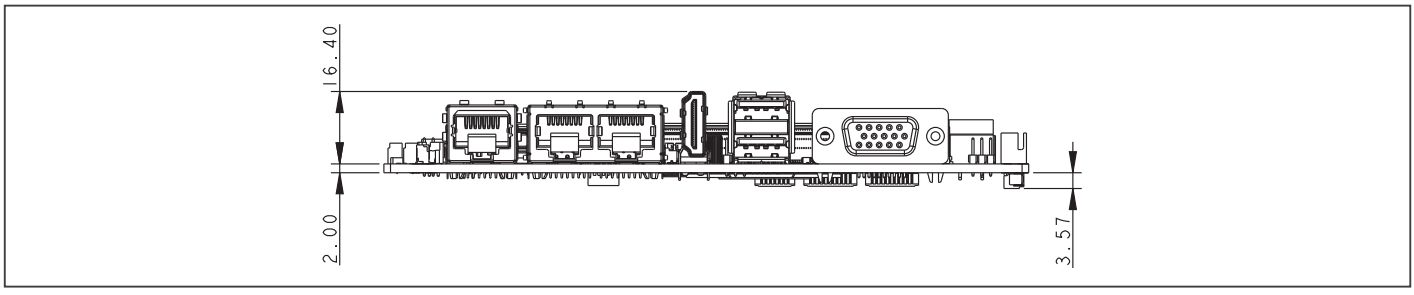
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

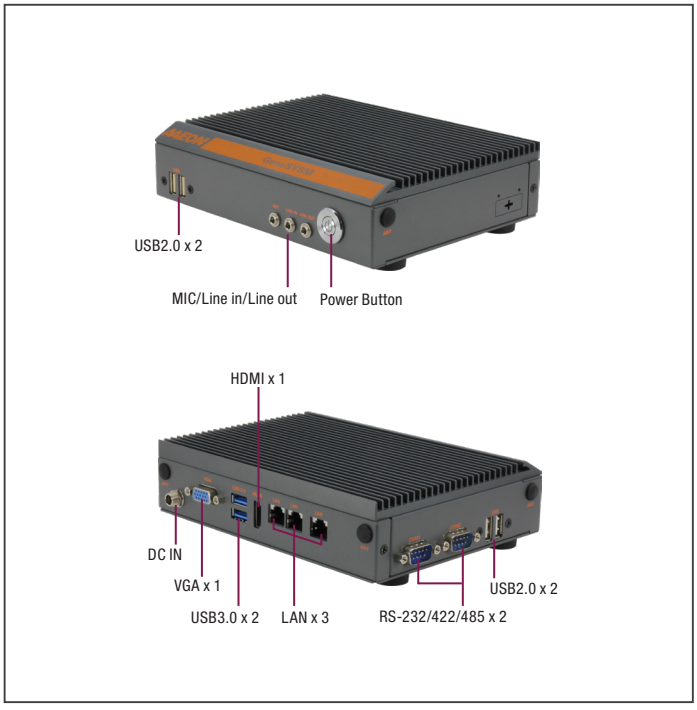


Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232	RS-232/422/485	Storage	Expansion Slot	TPM	Power	Temp	Others
GENE-ADN6-A10-0001	N50	HDMI x1 VGA x1 LVDS x1	2.5GbE x 3	USB 3.2 Gen 2 x 2 USB 2.0 x 4	2	2	SATA x 1	M.2 3052 B-Key x 1 M.2 2230 E-Key x 1 MiniCard x 1	2.0	9~36V	-20°C ~ 70°C	Audio, Nano SIM, GPIO x 8, SMBUS
GENE-ADN6-A10-0002	N97	HDMI x1 VGA x1 LVDS x1	2.5GbE x 3	USB 3.2 Gen 2 x 2 USB 2.0 x 4	2	2	SATA x 1	M.2 3052 B-Key x 1 M.2 2230 E-Key x 1 MiniCard x 1	2.0	9~36V	-20°C ~ 70°C	Audio, Nano SIM, GPIO x 8, SMBUS
GENE-ADN6-A10-0003	N97	HDMI x1 VGA x1 LVDS x1	2.5GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	2	2	SATA x 1	M.2 3052 B-Key x 1 M.2 2230 E-Key x 1 MiniCard x 1	—	12V	-20°C ~ 70°C	Audio, Nano SIM, GPIO x 8, SMBUS
GENE-ADN6-A10-0004	i3-N305	HDMI x1 VGA x1 LVDS x1	2.5GbE x 3	USB 3.2 Gen 2 x 2 USB 2.0 x 4	2	2	SATA x 1	M.2 3052 B-Key x 1 M.2 2230 E-Key x 1 MiniCard x 1	2.0	9~36V	-20°C ~ 70°C	Audio, Nano SIM, GPIO x 8, SMBUS

GENESYSM-ADN6

GENE System with Intel Atom® x7000E Series, Intel® Processor N Series, Intel® Core™ i3-N305 Processors



Features

- **Intel® N series, and Intel® Core™ i3-N305 Processors**
- **DDR5 4800 MHz, SODIMM x 1, Up to 16GB**
- **HDMI 1.4, VGA**
- **Intel 2.5GbE x 3, SATA 6.0 Gb/s x 1, GPIO x 8bit**
- **USB3.2 Gen2 x 2 ports, USB2.0 x 4, RS-232/422/485 x 2**
- **Mini PCIe card x 1, M.2 E-Key 2230 x 1, M.2 B-Key 3052 x 1**
- **Wide DC Input 9-36V**

2.5Giga LAN · DDR 5 · Audio · LVDS · USB 3.2 Gen 2

Specifications

System	
Form Factor	3.5" SubCompact Board System
CPU	Intel® Processor N Series, Intel® Core™ i3-N305 Processors: Intel® Core™ i3-N305 (8C/8T, up to 3.8 GHz, 15W) Intel® Processor N97 (4C/4T, up to 3.6 GHz, 12W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 4800, Single Channel SODIMM x 1, Max.16GB, Non-ECC
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimensions	7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)
OS Support	Windows 10 (64bit) Ubuntu 22.04 / Kernel 5.15.0-25-generic
Power	
Power Requirement	+9-36V
Power Supply Type	ATX
Connector	DC Jack Connector
Power Consumption	Intel® Core™ i3-N305, DDR5 16GB x 1, 3.4A @+12V(Typical) Intel® Core™ i3-N305, DDR5 16GB x 1, 5.24A @+12V(Max)
Display	
Controller	Intel® UHD Graphics
LVDS/eDP	—
Display Interface	HDMI 1.4 x 1, up to 3840 x 2160 @30Hz VGA x 1, up to 1920 x1080
Multiple Display	Up to 2 Simultaneous Displays
Audio	
Codec	Realtek ALC897
Audio Interface	Line-In/Line-Out/MIC
Speaker	—
External I/O	
Ethernet	Intel® i226 2.5G, RJ-45 x 3
USB	USB3.2 Gen 2 x 2 ports USB2.0 x 4
Serial Port	COM1, COM2 (RS232/422/485,supports 5V/12V/RI) COM3, COM4 (RS-232 x 2, optional)
Video	HDMI 1.4 x 1, VGA x 1

Internal I/O	
USB	—
Serial Port	—
Video	—
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus/I2C x1 (Default: SMBus)
Touch	—
Fan	—
Sim	Nano SIM x 1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-size mSATA / mPCIe x 1 (Default: mSATA, select by BIOS)
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0) M.2 3052 B-Key x 1 (USB3.2 Gen2 + USB2.0)
Others	—
Environment & Certification	
Operating Temp.	14°F ~ 140°F (-10°C ~ 60°C) 0.5m/s air flow
Storage Temp.	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	337,963
EMC	CE/FCC Class A

Packing List

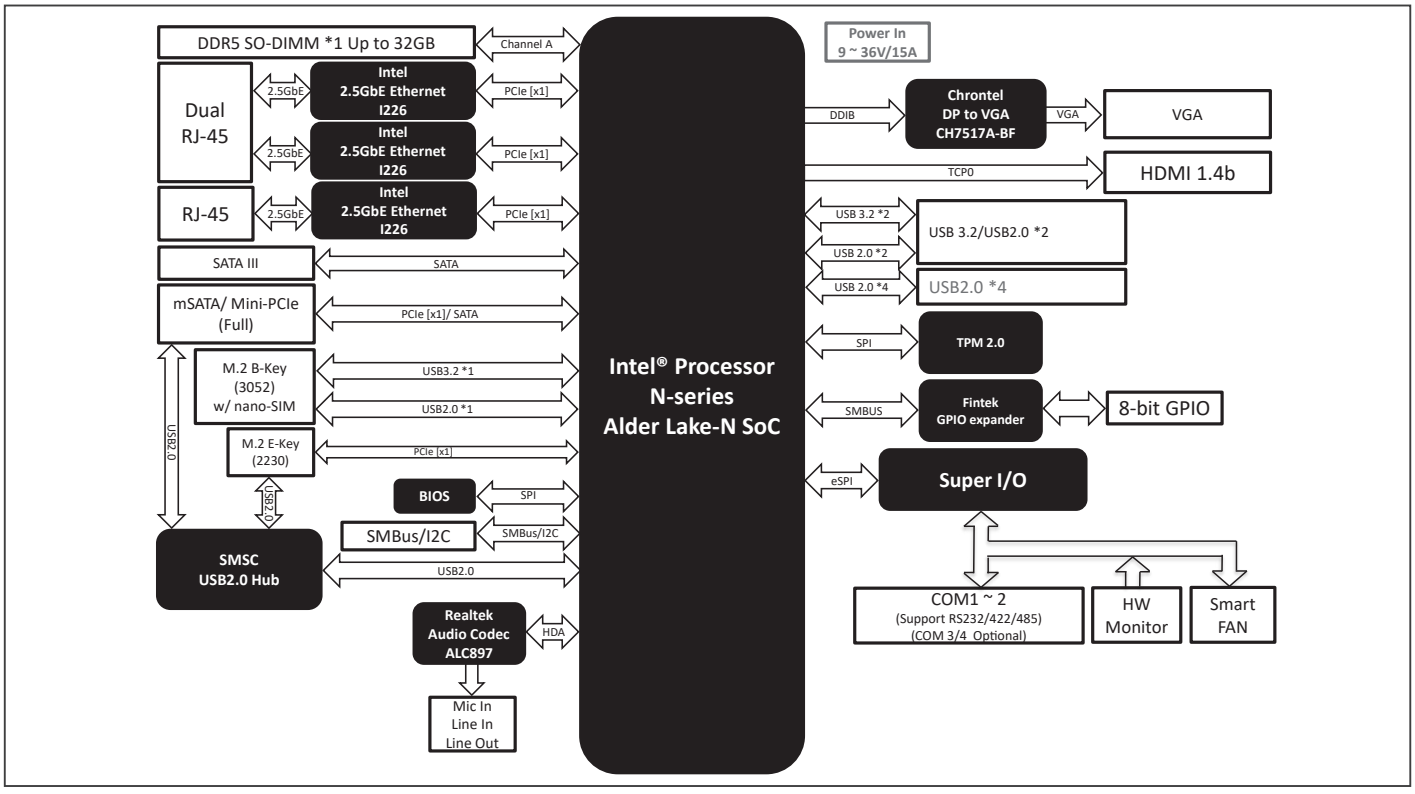
Part Number	Description	QTY
GENESYSM-ADN6	GENESYSM-ADN6 System	1

Optional Accessories

Part Number	Description	QTY
1702031802	Power Cord (US Type)	1
1702031803	Power Cord (Europe Type)	1
170203180E	Power Cord (Japan)	1
1255300960	Power Adapter 12V/8A 96W W/lock.FSP096-AHAN3/9NA0961403	1
1255X00063	Power Adapter 12V/12.5A 150W w/Lock 180D.DELTA.DPS-150AB-15 J	1
GENESYSM-ALL-VESA1	VESA Mount Kit.For GENESYSM series	1
GENESYSM-ALL-WMT1	Wall Mount Kit.For GENESYSM series	1
GENESYSM-ADN6-DIN1	Din Rail Kit. For GENESYSM-ADN6	1

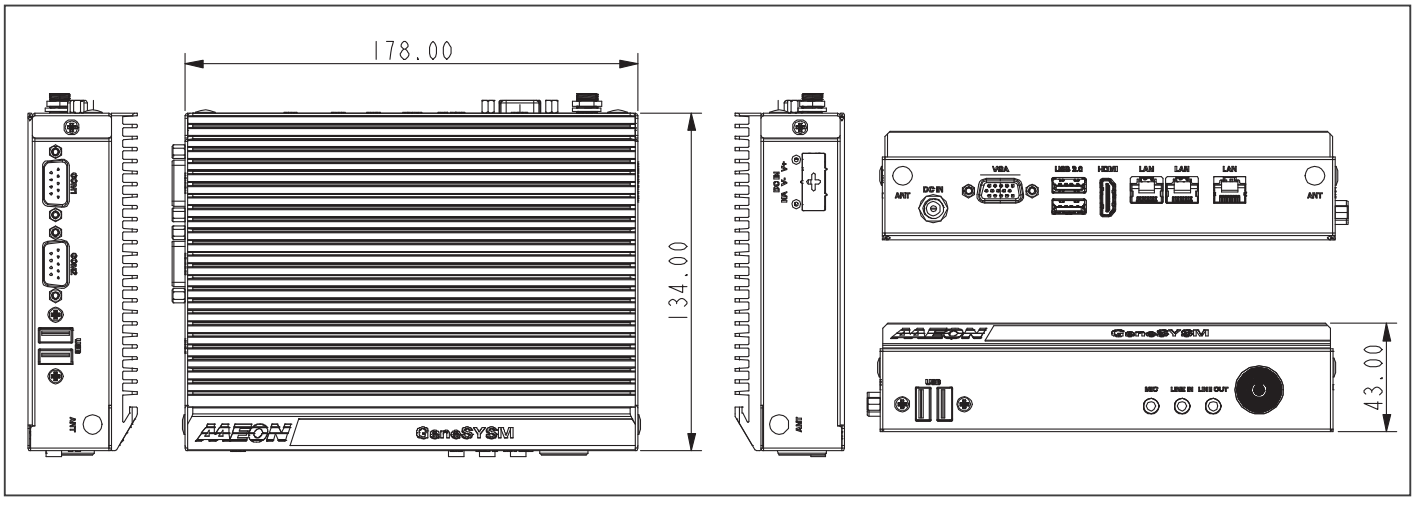
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

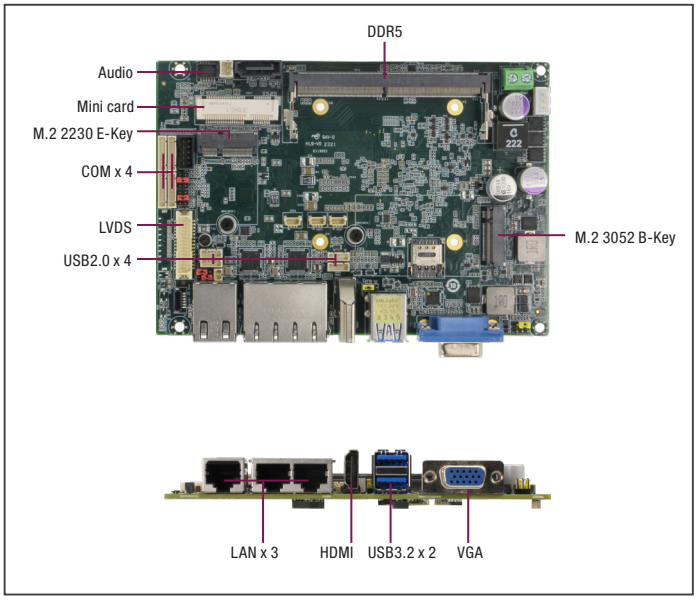


Ordering Information

Part Number	CPU	Fan/Fanless	Display	Storage	LAN	USB	RS-232/422/485	Expansion slot	TPM	Power	Operating Temp	Others
GENESYSM-ADN6-A10-P001	N97	Fanless	HDMI x 1 VGA x 1	SATA x 1	2.5GbE x 3	USB 3.2 Gen 2 x 2 USB 2.0 x 4	2	M.2 3052 B-Key x 1 M.2 2230 E-Key x 1 MiniCard x 1	2.0	9~36V	-10~60°C	Audio, Nano SIM, GPIO x 8, SMBUS
GENESYSM-ADN6-A10-P002	i3-N305	Fanless	HDMI x 1 VGA x 1	SATA x 1	2.5GbE x 3	USB 3.2 Gen 2 x 2 USB 2.0 x 4	2	M.2 3052 B-Key x 1 M.2 2230 E-Key x 1 MiniCard x 1	2.0	9~36V	-10~60°C	Audio, Nano SIM, GPIO x 8, SMBUS

GENE-ASL6

3.5” SubCompact Board with Intel Atom® Processors x7000RE Series Processors



Features

- **Intel Atom® Processors x7000RE Series Processors**
- **DDR5 4800 MHz, SODIMM x 1, Up to 16GB**
- **HDMI 1.4, VGA, LVDS x 1**
- **Intel 2.5GbE x 3, SATA 6.0 Gb/s x 1, GPIO x 8bit**
- **USB3.2 Gen2 x 2, USB2.0 x 4, RS-232/422/485 x 2, RS-232 x 2**
- **Mini PCIe card x 1, M.2 E-Key 2230 x 1, M.2 B-Key 3052 x 1**

2.5Giga LAN · DDR 5 · Audio · LVDS · USB 3.2 Gen 2

Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	Intel Atom® Processors x7000RE Series Processors: x7213RE (2C, 2.0 GHz, 9W) x7433RE (4C, 1.5 GHz, 9W) x7835RE (8C, 1.3 GHz, 12W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 4800, Single Channel SODIMM x 1, Max.16GB, Non-ECC
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAH
Dimensions	5.75" x 4" (146mm x 101.7mm), 0.94 lbs (0.43 kg)
OS Support	Windows 10 (64bit) Ubuntu 22.04 / Kernel 5.15.0-25-generic
Power	
Power Requirement	+12V (Optional: +9V~36V)
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector
Power Consumption	Intel® Atom x7835RE, DDR5 16GB x1, 3.20A@ +12V (TYPICAL) Intel® Atom x7835RE, DDR5 16GB x1, 4.80A@ +12V (MAX)
Display	
Controller	Intel® UHD Graphics
LVDS/eDP	LVDS x 1, Dual Channel 18/24bit, up to 1920 x1080
Display Interface	HDMI 1.4 x 1, up to 3840 x2160 @30Hz VGA x 1, up to 1920 x1080
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	Realtek ALC897
Audio Interface	Line-In / Line-Out / Mic (Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® I226 2.5G, RJ-45 x 3
USB	USB3.2 Gen 2 x 2
Serial Port	—
Video	HDMI 1.4 x 1, VGA x 1
Internal I/O	
USB	USB 2.0 x 4
Serial Port	COM1 , COM2 (RS232/422/485, supports 5V/12V/RI) COM3 , COM4 (RS232)
Video	LVDS x 1 Inverter x 1 (12V/2A)
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Optional, Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus / I2C x 1 (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 PCIe/mSATA	Full-size mSATA / mPCIe x 1 (Default: mSATA, select by BIOS)
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0) M.2 3052 B-Key x 1 (USB3.2 Gen2 + USB2.0)
Others	—
Environment & Certification	
Operating Temp.	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)	333,008
EMC	CE/FCC Class A

Packing List

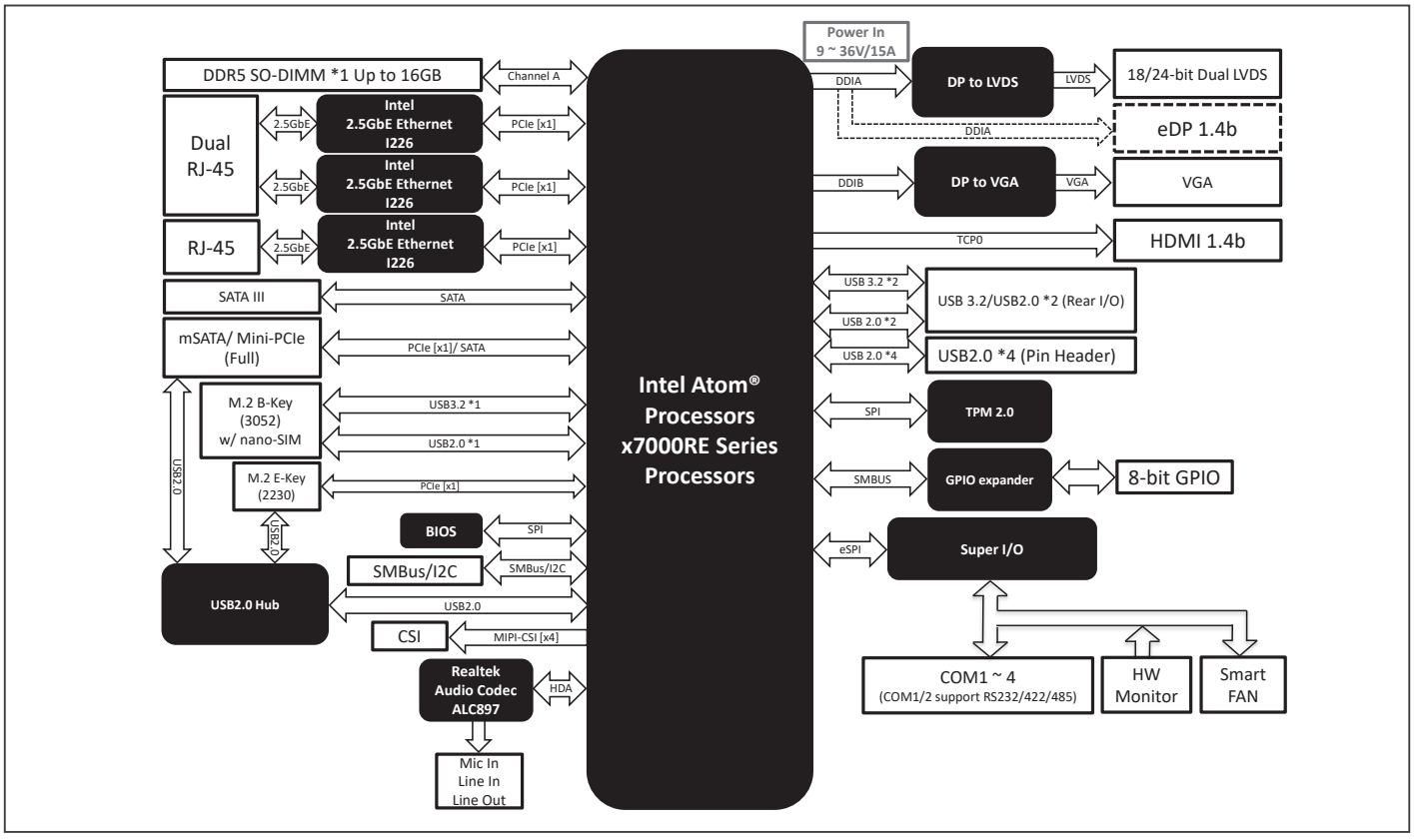
Part Number	Description	QTY
GENE-ASL6	GENE-ASL6 MB	1

Optional Accessories

Part Number	Description	QTY
GENE-ADN6-HSP01	Heat Spreader.100*72*8mm	1
GENE-ADN6-HSK01	Heat Sink.100*72*15.5mm.used with HSP	1
GENE-ADN6-HSK02	Heat Sink.146*78.6*18mm	1
1702150155	SATA HDD Power Cable, 15cm	1
170X000398	Power Cable, DC JACK, 30cm	1
170204010R	Power Cable, Double 4P, 10cm	1
170X000156	Audio Cable, 25cm	1
170X000287	Front Panel Cable, 10cm	1
1701090150	COM Port Cable, 15cm	4
1700050207	USB 2.0 Cable, 20cm	4

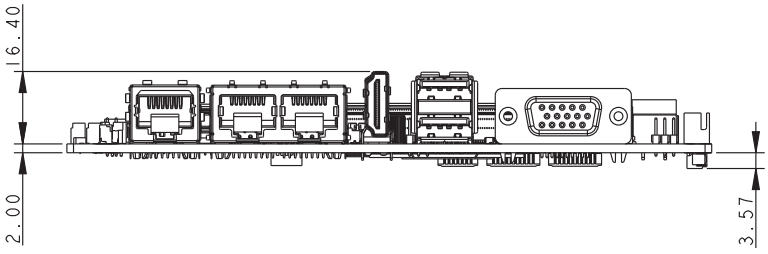
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

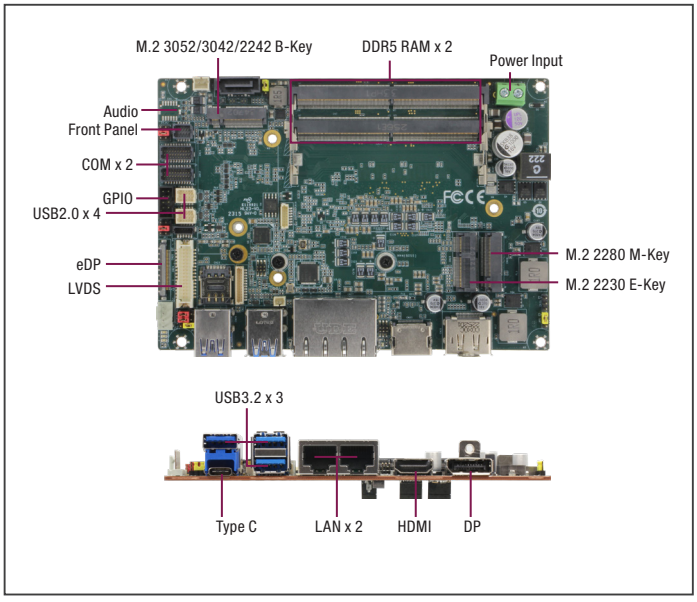


Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232	RS-232/422/485	Storage	Expansion Slot	TPM	Power	Temp	Others
GENE-ASL6W2-A10-0001	x7433RE	HDMI x1 VGA x1 LVDS x1	2.5GbE x 3	USB 3.2 Gen 2 x 2 USB 2.0 x 4	2	2	SATA x 1	M.2 3052 B-Key x 1 M.2 2230 E-Key x 1 MiniCard x 1	2.0	12V	-40°C ~ 85°C	Nano SIM, GPIO x 8, SMBUS
GENE-ASL6W2-A10-0002	x7213RE	HDMI x1 VGA x1 LVDS x1	2.5GbE x 3	USB 3.2 Gen 2 x 2 USB 2.0 x 4	2	2	SATA x 1	M.2 3052 B-Key x 1 M.2 2230 E-Key x 1 MiniCard x 1	2.0	12V	-40°C ~ 85°C	Nano SIM, GPIO x 8, SMBUS
GENE-ASL6W2-A10-0003	x7835RE	HDMI x1 VGA x1 LVDS x1	2.5GbE x 3	USB 3.2 Gen 2 x 2 USB 2.0 x 4	2	2	SATA x 1	M.2 3052 B-Key x 1 M.2 2230 E-Key x 1 MiniCard x 1	2.0	12V	-40°C ~ 85°C	Nano SIM, GPIO x 8, SMBUS

GENE-RAP6

3.5” SubCompact Board with 13th Generation Intel® Core™ i7/i5/i3 Processor SoC



Features

- 13th Generation Intel® Core™ i7/i5/i3/U-series Processor SoC
- DDR5 4800, Dual Channel SODIMM x 2, up to 64GB
- LVDS x 1, eDP x1, DP x 1, HDMI x 1
- 2.5GbE x 1, GbE x 1, SATA 6Gb/s x 1, GPIO x 8-bit
- USB 3.2 Gen 2 x 3, USB 2.0 x 4, USB Type C x 1, RS-232/422/485 x 4
- M.2 2280 M-Key x 1, M.2 2230 E-Key x 1, M.2 3052/3042/2242 B-Key x 1
- Wide DC Input 9-36V

2.5Giga LAN · DDR5 · Audio · LVDS · USB 3.2 Gen 2 · HDMI · CE · FC

Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	13th Generation Intel® Core™/U-series Processors: Intel® Core™ i7-1370PE (6PC+8EC/20T, 1.90 GHz, 28W) Intel® Core™ i7-1370PRE (6PC+8EC/20T, 1.90 GHz, 28W) Intel® Core™ i5-1340PE (4PC+8EC/16T, 1.80 GHz, 28W) Intel® Core™ i5-1335UE (2PC+8EC/12T, 1.30 GHz, 15W) Intel® Core™ i3-1320PE (4PC+4EC/12T, 1.70 GHz, 28W) Intel® Processor U300E (1PC+4EC/6T, 1.10 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 4800, Dual Channel SODIMM x 2, Max. 64GB, Non-ECC
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAH
Dimensions	5.75" x 4" (146mm x 101.7mm), 0.94 lbs (0.43 kg)
OS Support	Windows 10/11 (64bit) Ubuntu 22.04.2/5.19.0-32-generic
Power	
Power Requirement	+9V~36V (Optional: +12V)
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector
Power Consumption	Intel® Core™ i7-1370PE, DDR5 32GB x 2, 5.33A@ +12V (TYPICAL) Intel® Core™ i7-1370PE, DDR5 32GB x 2, 8.55A@ +12V (MAX)
Display	
Controller	Intel® Iris® Xe Graphics Intel® UHD Graphics
LVDS/eDP	LVDS x 1, Dual Channel 18/24bit, up to 1920 x 1080 eDP 1.4 x 1, up to 3840 x 2160 (Optional)
Display Interface	HDMI 2.1 x 1, up to 8K x 4K@60Hz or 4K x 2K@120Hz DP 1.4 x 1, up to 7680 x 4320@60Hz 30bpp (support DP++)
Multiple Display	Up to 4 Simultaneous Displays
Audio	
Codec	Realtek ALC897
Audio Interface	Line-In/Line-Out/Mic (Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® I219 1GbE, RJ-45 x 1 Intel® I226 2.5GbE, RJ-45 x 1
USB	USB 3.2 Gen 2 x 3 USB Type-C x 1 (USB 3.2 Gen 2, DP 1.4, PD 5V/3A)
Serial Port	—
Video	HDMI 2.1 x 1, DP 1.4 x 1
Internal I/O	
USB	USB 2.0 x 4
Serial Port	COM 1, COM 2 (RS-232/422/485, supports 5V/12V/RI) COM 3, COM 4 (RS-232/422/485)
Video	LVDS x 1 eDP x 1 Inverter x 1 (12V/2A)
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Optional, Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus/I2C x 1 (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 PCIe/mSATA	—
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1) M.2 3052/3042/2242 B-Key x 1 (PCIe 3.0 [x2]/SATA + USB3.2), Default: SATA (selected by BOM) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0)
Others	FPC x 1 (PCIe 4.0 [x4] x1), Only support Graphic or NVME
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)	338,172
EMC	CE/FCC Class A

Packing List

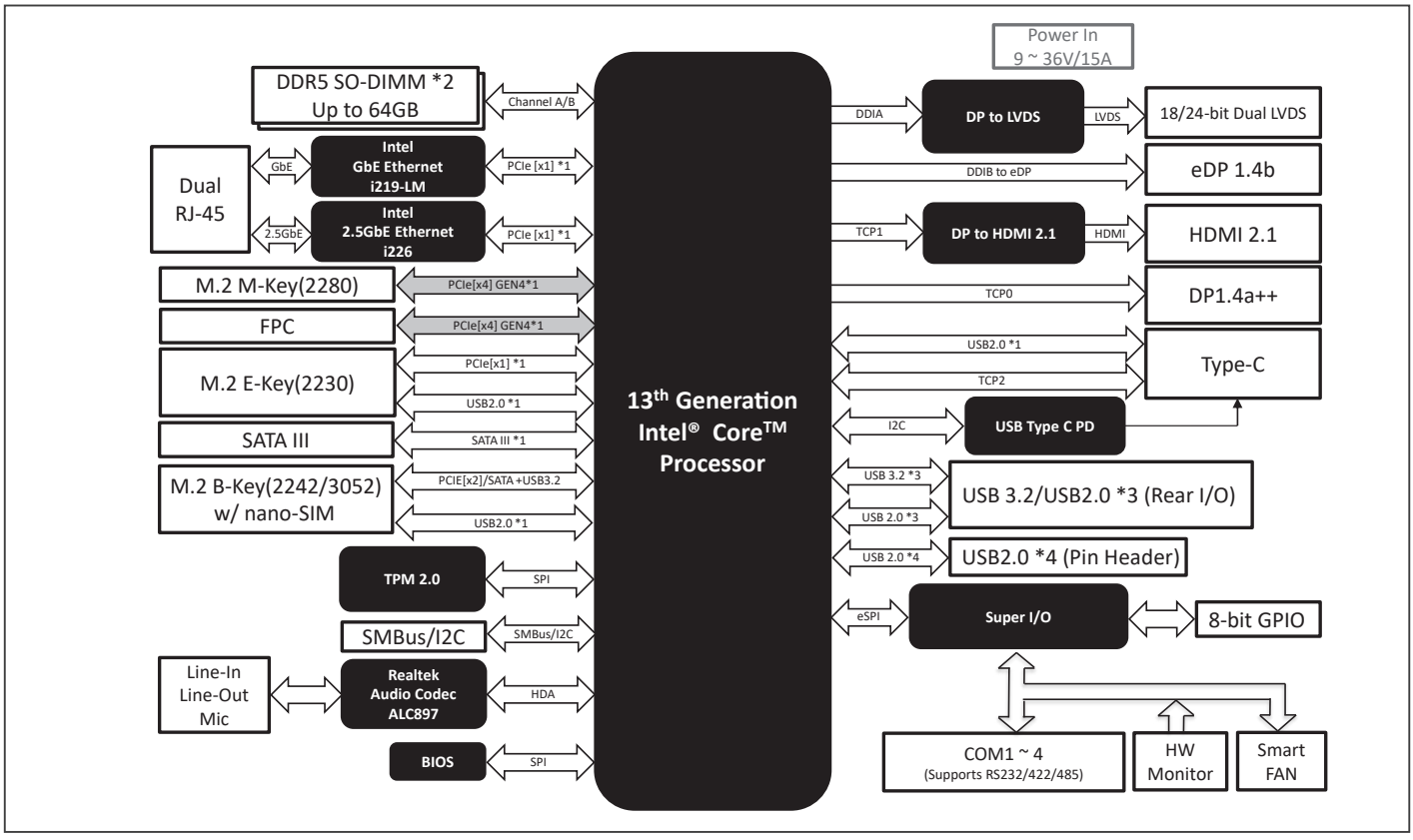
Part Number	Description	QTY
GENE-RAP6	GENE-RAP6 MB	1

Optional Accessories

Part Number	Description	QTY
GENE-ADP6-FAN01	CPU Cooler.12V.4800RPM.Smart FAN	1
GENE-ADP6-HSP01	Heatspreader.146*80*11mm	1
GENE-ADP6-HSK01	Heatsink. 146*101.6*25mm	1
1702150155	SATA HDD Power, Cable 15cm	1
170X000398	Power Cable, DC JACK, 30cm	1
170204010R	Power Cable, Double 4P, 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

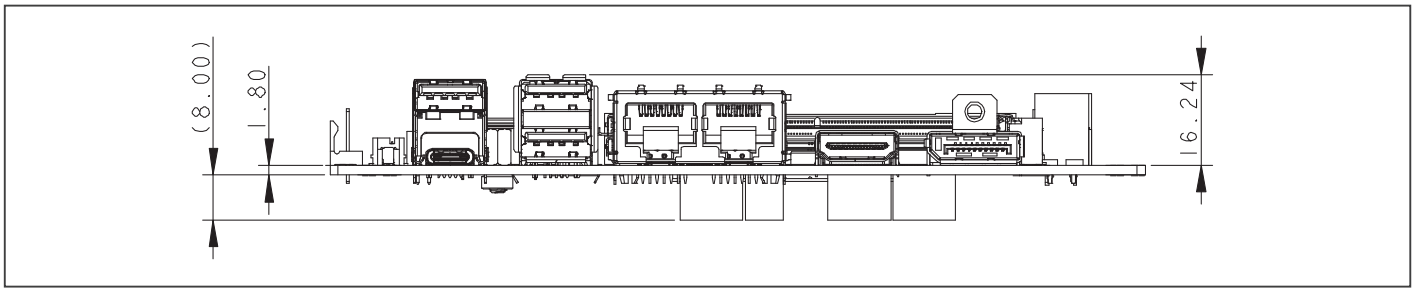
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

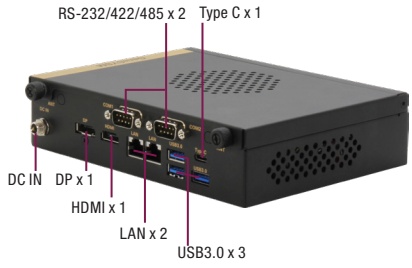
Part Number	CPU	Display	LAN	USB	COM	Storage	Expansion Slot	TPM	Power	Temp	Others
GENE-RAP6-A10-0001	Intel® Core™ i7-1370PE	HDMI x 1 DP++ x 1 LVDS x 1 eDP x 1 Type-c DP x 1	GbE x 1 2.5GbE x 1	USB 3.2 Gen 2 x 3 USB Type-C x 1 USB 2.0 x 4	4	SATA x 1	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	2.0	9~36V	0°C ~ 60°C	Audio, Nano SIM, GPIO x 8, SMBUS
GENE-RAP6-A10-0002	Intel® Core™ i5-1340PE	HDMI x1 DP++ x1 LVDS x1 eDP x1 Type-c DP 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 4	4	SATA x 1	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	2.0	9~36V	0°C ~ 60°C	Audio, Nano SIM, GPIO x 8, SMBUS
GENE-RAP6-A10-0003	Intel® Core™ i5-1335UE	HDMI x1 DP++ x1 LVDS x1 Type-c DP 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 4	4	SATA x 1	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	—	12V	0°C ~ 60°C	Audio, Nano SIM, GPIO x 8, SMBUS
GENE-RAP6-A10-0004	Intel® Core™ i3-1320PE	HDMI x1 DP++ x1 LVDS x1 eDP x1 Type-c DP 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 4	4	SATA x 1	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	2.0	9~36V	0°C ~ 60°C	Audio, Nano SIM, GPIO x 8, SMBUS
GENE-RAP6-A10-0005	Intel® Processor U300E	HDMI x1 DP++ x1 LVDS x1 Type-c DP 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 4	4	SATA x 1	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	—	12V	0°C ~ 60°C	Audio, Nano SIM, GPIO x 8, SMBUS
GENE-RAP6W2-A10-0006	Intel® Core™ i7-1370PRE	HDMI x1 DP++ x1 LVDS x1 Type-c DP 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 4	4	SATA x 1	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	2.0	12V	-40°C ~ 85°C	Nano SIM, GPIO x 8, SMBUS

Note: All specifications are subject to change without notice.

GENESYSM-RAP6

GENE System with 13th Generation Intel® Core™ i7/i5/i3 Processor SoC





Features

- 13th Generation Intel® Core™ i7/i5/i3/U-series Processor SoC
- DDR5 4800, Dual Channel SODIMM x 2, up to 64GB
- 2.5GbE x 1, GbE x 1, SATA 6Gb/s x 1, GPIO x 8-bit
- USB 3.2 Gen 2 x 3, USB 2.0 x 2, USB Type C x 1, RS-232/422/485 x 2
- M.2 2280 M-Key x 1, M.2 2230 E-Key x 1, M.2 3052/3042/2242 B-Key x 1
- Wide DC Input 9-36V

Giga LAN · USB 2.0 · USB 3.2 Gen 1 · SATA 3

Specifications

System	
Form Factor	3.5" SubCompact Board System
CPU	13th Generation Intel® Core™/U-series Processors: Intel® Core™ i7-1370PE (6PC+8EC/20T, 1.90 GHz, 28W) Intel® Core™ i5-1340PE (4PC+8EC/16T, 1.80 GHz, 28W) Intel® Core™ i3-1320PE (4PC+4EC/12T, 1.70 GHz, 28W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 4800, Dual Channel SODIMM x 2, Max. 64GB, Non-ECC
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimensions	7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)
OS Support	Windows 10/11 (64bit) Ubuntu 22.04.2/5.19.0-32-generic
Power	
Power Requirement	+9-36V
Power Supply Type	ATX
Connector	DC Jack Connector
Power Consumption	Intel® Core™ i7-1370PE, DDR5 32GB x 2, 5.33A@ +12V (TYPICAL) Intel® Core™ i7-1370PE, DDR5 32GB x 2, 8.55A@ +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 4K x 2K@120Hz DP 1.4 x 1, up to 7680 x 4320@60Hz 30bpp (support DP++) Type-C x 1 (USB 3.2 Gen 2, DP 1.4, PD 5V/3A)
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 1GbE, RJ-45 x 1 Intel® I226 2.5GbE, RJ-45 x 1
USB	USB 3.2 Gen 2 x 3 USB Type-C x 1 (USB 3.2 Gen 2, DP 1.4, PD 5V/3A) USB2.0 x 2
Serial Port	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)
Video	HDMI 2.1 x 1, DP 1.4 x 1
Internal I/O	
USB	—
Serial Port	—
Video	—
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus/I2C x1 (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 PCIe/mSATA	—
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1) M.2 3052/3042/2242 B-Key x 1 (PCIe 3.0 [x2]/SATA + USB3.2), Default: SATA(selected by BOM) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + 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)	338,172
EMC	CE/FCC Class A

Packing List

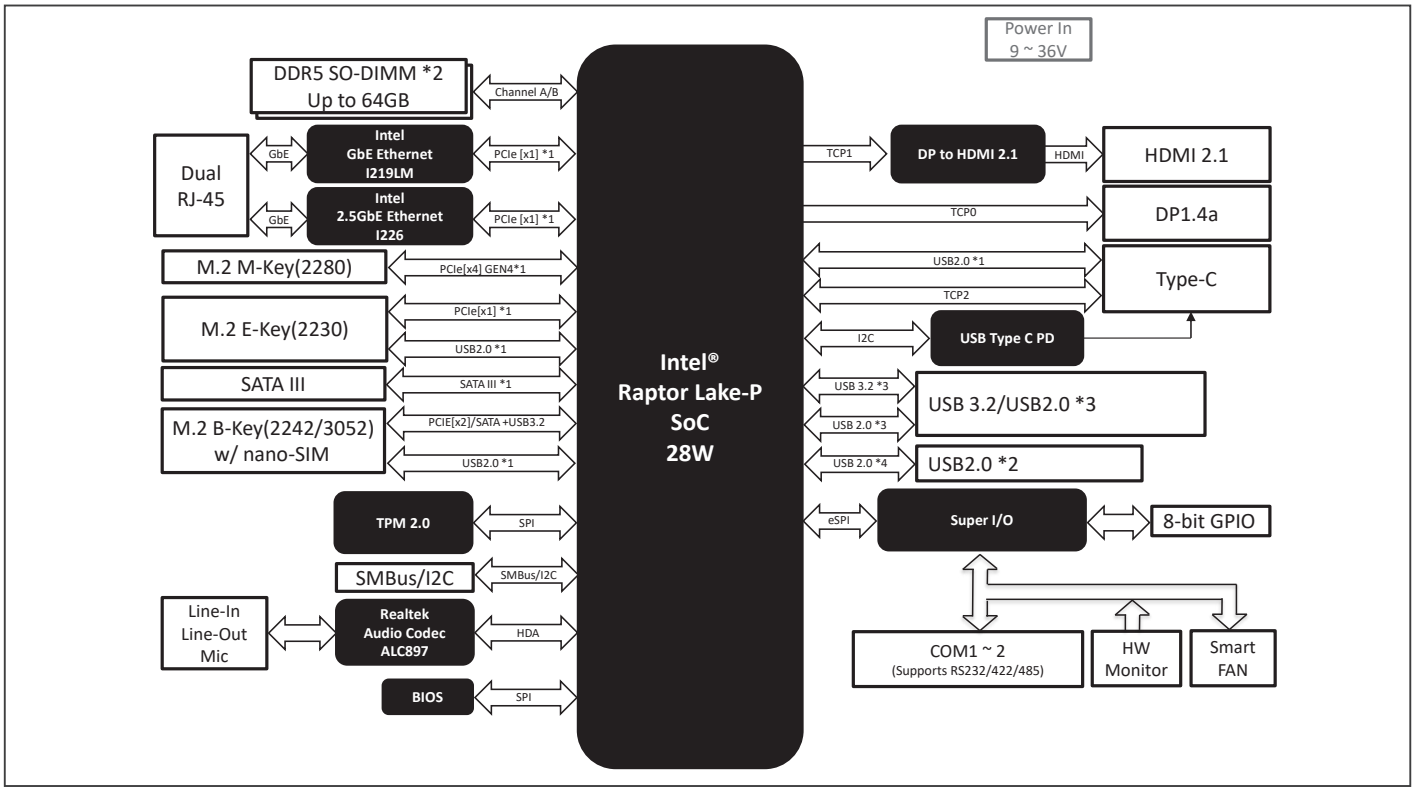
Part Number	Description	QTY
GENESYSM-RAP6	GENESYSM-RAP6 GENE System	1

Optional Accessories

Part Number	Description	QTY
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-ALL-VESA1	VESA Mount Kit. For GENESYSM-ADP6	1
GENESYSM-ALL-WMT1	Wall Mount Kit. For GENESYSM-ADP6	1

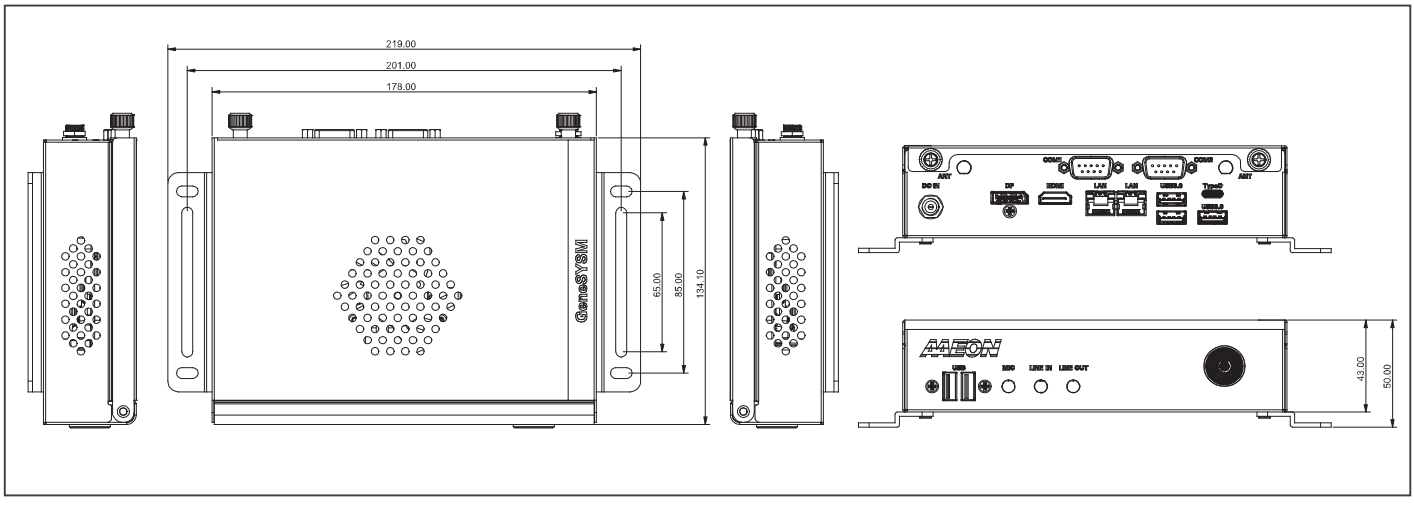
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

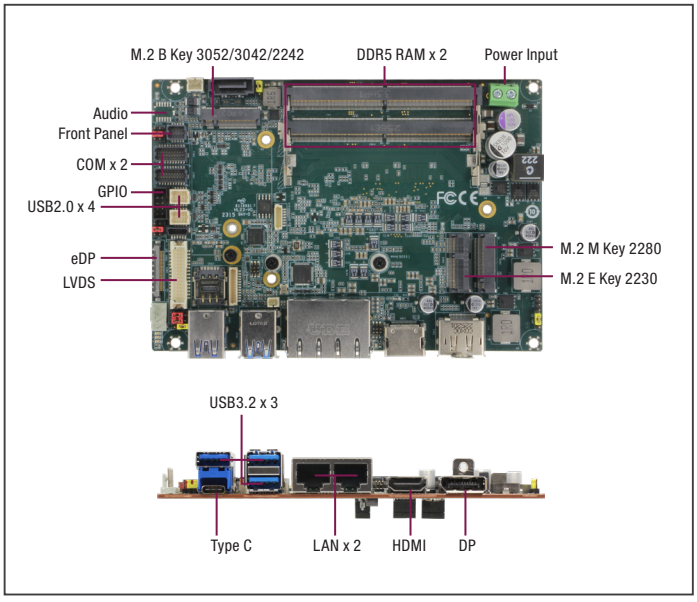


Ordering Information

Part Number	CPU	Fan/Fanless	Display	Storage	LAN	USB	RS-232/422/485	Expansion slot	TPM	Power	Operating Temp	Others
GENESYSM-RAP6-A10-A001	i7-1370PE	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	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	2.0	9~36V	0~50°C	Nano SIM, GPIO, SMBUS, Audio
GENESYSM-RAP6-A10-A002	i5-1340PE	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	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	2.0	9~36V	0~50°C	Nano SIM, GPIO, SMBUS, Audio
GENESYSM-RAP6-A10-A003	i3-1320PE	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	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	2.0	9~36V	0~50°C	Nano SIM, GPIO, SMBUS, Audio

GENE-ADP6

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



Features

- 12th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC
- DDR5 4800, Dual Channel SODIMM x 2, up to 64GB
- LVDS x 1, eDP x 1, DP x 1, HDMI x 1
- 2.5GbE x 1, GbE x 1, SATA 6Gb/s x 1, GPIO 8-bit
- USB 3.2 Gen 2 x 3, USB 2.0 x 4, USB Type C x 1, RS-232/422/485 x 4
- M.2 2280 M-Key x 1, M.2 2230 E-Key x 1, M.2 3052/3042/2242 B-Key x 1
- Wide DC Input 9~36V

2.5Giga LAN · DDR5 · Audio · LVDS · USB 3.2 Gen 2 · HDMI · CE · FC

Internal I/O	
USB	USB 2.0 x 4
Serial Port	COM 1, COM 2 (RS-232/422/485, supports 5V/12V/RI) COM 3, COM 4 (RS-232/422/485)
Video	LVDS x 1 eDP x 1 Inverter x 1 (12V/2A)
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Optional, Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus/I2C x 1 (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 PCIe/mSATA	—
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1) M.2 3052/3042/2242 B-Key x 1 (PCIe 3.0 [x2]/SATA + USB 3.2), Default: SATA (selected by BOM) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0)
Others	FPC x 1 (PCIe 4.0 [x4] x 1), Only support Graphic or NVME
Environment & Certification	
Operating Temp.	32°F ~ 140°F (0°C ~ 60°C) WiTAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
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

Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	12th Generation Intel® Core™/Celeron® Processors: Intel® Core™ i7-1270PE (4PC+8EC/16T, 1.80 GHz, 28W) Intel® Core™ i7-1265UE (2PC+8EC/12T, 1.70 GHz, 15W) Intel® Core™ i5-1250PE (4PC+8EC/16T, 1.70 GHz, 28W) Intel® Core™ i3-1220PE (4PC+4EC/12T, 1.50 GHz, 28W) Intel® Celeron® Processor 7305E (1PC+4EC/5T, 1.00 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 4800, Dual Channel SODIMM x 2, Max.64GB, Non-ECC
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAH
Dimensions	5.75" x 4" (146mm x 101.7mm), 0.94 lbs (0.43 kg)
OS Support	Windows 10/11 (64bit) Ubuntu 22.04/Kernel 5.15.0–25-generic
Power	
Power Requirement	+9V~36V (Optional: +12V)
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector
Power Consumption	Intel® Core™ i7-1270PE, DDR5 32GB x 2, 5.72A @+12V (Typical) Intel® Core™ i7-1270PE, DDR5 32GB x 2, 7.95A @+12V (Max)
Display	
Controller	Intel® Iris® Xe Graphics Intel® UHD Graphics
LVDS/eDP	LVDS x 1, Dual Channel 18/24bit, up to 1920 x 1080 eDP 1.4 x 1, up to 3840 x 2160 (Optional)
Display Interface	HDMI 2.1 x 1, up to 8K x 4K@60Hz or 4K x 2K@120Hz DP 1.4 x 1, up to 7680 x 4320@60Hz 30bpp (support DP++)
Multiple Display	Up to 4 Simultaneous Displays
Audio	
Codec	Realtek ALC897
Audio Interface	Line-In / Line-Out / Mic (Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® I219 1GbE, RJ-45 x 1 Intel® I226 2.5GbE, RJ-45 x 1
USB	USB 3.2 Gen 2 x 3 USB Type-C x 1 (USB 3.2 Gen 2, DP 1.4, PD 5V/3A)
Serial Port	—
Video	HDMI 2.1 x 1, DP 1.4 x 1

Packing List

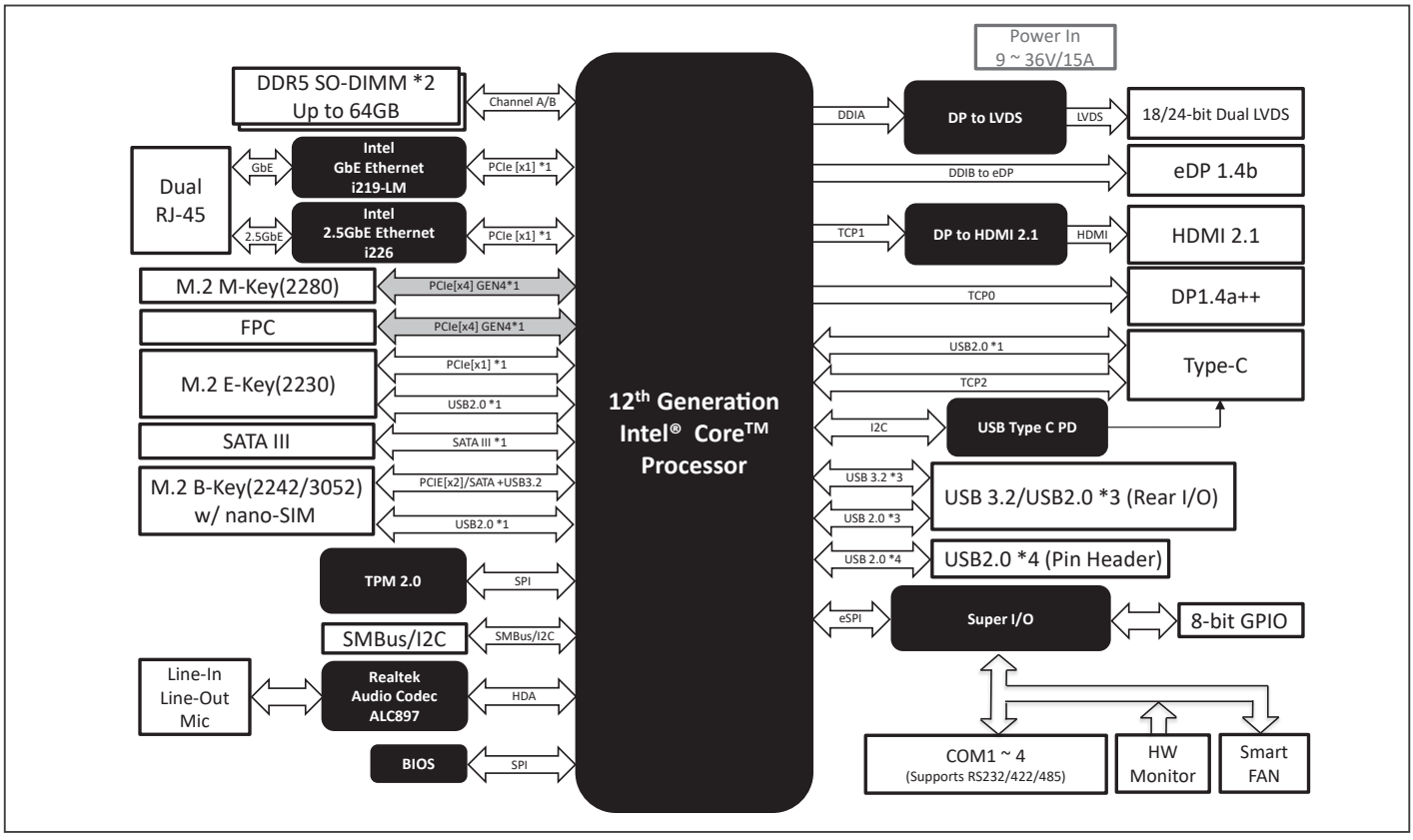
Part Number	Description	QTY
GENE-ADP6	GENE-ADP6 MB	1

Optional Accessories

Part Number	Description	QTY
GENE-ADP6-FAN01	CPU Cooler.12V.4800RPM.Smart FAN	1
GENE-ADP6-HSP01	Heatspreader.146*80*11mm	1
GENE-ADP6-HSK01	Heatsink. 146*101.6*25mm	1
1702150155	SATA HDD Power, Cable 15cm	1
170X000398	Power Cable, DC JACK, 30cm	1
170204010R	Power Cable,10cm	1
170X000156	Audio Cable, 25cm	1
1709100108	Front Panel Cable, 10cm	1
170X000231	Dual COM Port Cable, 30cm	2
170010010D	Dual USB 2.0 Cable, 10cm	2
PER-R41P-A02-0001	PCIe[x4] Adapter Kit.104*24mm.w/FPC Cable.40P.to 40P.80mm	1

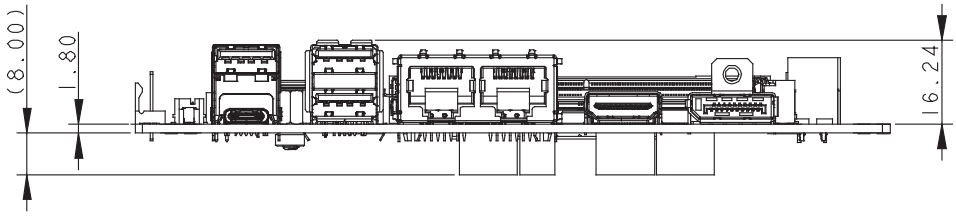
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



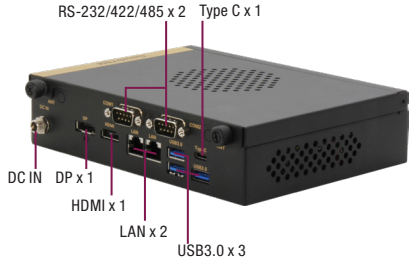
Ordering Information

Part Number	CPU	Display	LAN	USB	COM	Storage	Expansion Slot	TPM	Power	Temp	Others
GENE-ADP6-A10-0001	Intel® Core™ i7-1270PE	HDMI x 1 DP++ x 1 LVDS x 1 eDP x 1 Type-c DP 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 4	4	SATA x 1	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	2.0	9~36V	0°C ~ 60°C	Audio, Nano SIM, GPIO x 8, SMBUS
GENE-ADP6-A10-0003	Intel® Core™ i5-1250PE	HDMI x 1 DP x 1 LVDS x 1 eDP x 1 Type-c DP 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 4	4	SATA x 1	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	2.0	9~36V	0°C ~ 60°C	Audio, Nano SIM, GPIO x 8, SMBUS
GENE-ADP6-A10-0004	Intel® Core™ i3-1220PE	HDMI x 1 DP x 1 LVDS x 1 eDP x 1 Type-c DP 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 4	4	SATA x 1	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	2.0	9~36V	0°C ~ 60°C	Audio, Nano SIM, GPIO x 8, SMBUS
GENE-ADP6-A10-0005	Intel® Celeron® Processor 7305E	HDMI x 1 DP x 1 LVDS x 1 Type-c DP 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 4	4	SATA x 1	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	—	12V	0°C ~ 60°C	Audio, Nano SIM, GPIO x 8, SMBUS

GENESYSM-ADP6

GENE System with 12th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC





Features

- 12th Gen Intel® Core™ i7/i5/i3/Celeron Processor
- DDR5 4800, Dual Channel 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, GPIO 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 3052/3042/2242 B-Key x 1
- Wide DC Input 9-36V

Gigo 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 Intel® Core™ i7-1270PE (4PC+8EC/16T, 1.80 GHz, 28W) Intel® Core™ i5-1250PE (4PC+8EC/16T, 1.70 GHz, 28W) Intel® Core™ i3-1220PE (4PC+4EC/12T, 1.50 GHz, 28W)
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
Dimensions	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 DP 1.4 x 1, up to 7680 x 4320@60Hz 30bpp (support DP++) Type-C x 1 (USB 3.2 Gen 2, DP 1.4, PD 5V/3A)
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 (USB 3.2 Gen 2, DP 1.4, PD 5V/3A) USB2.0 x 2
Serial Port	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)
Video	HDMI 2.1 x 1 DP 1.4 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	GPIO 8-bit
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 PCIe/mSATA	—
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1) M.2 3052/3042/2242 B-Key x 1 (PCIe 3.0 [x2]/SATA + USB 3.2), Default: SATA (selected by BOM) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0)
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

Packing List

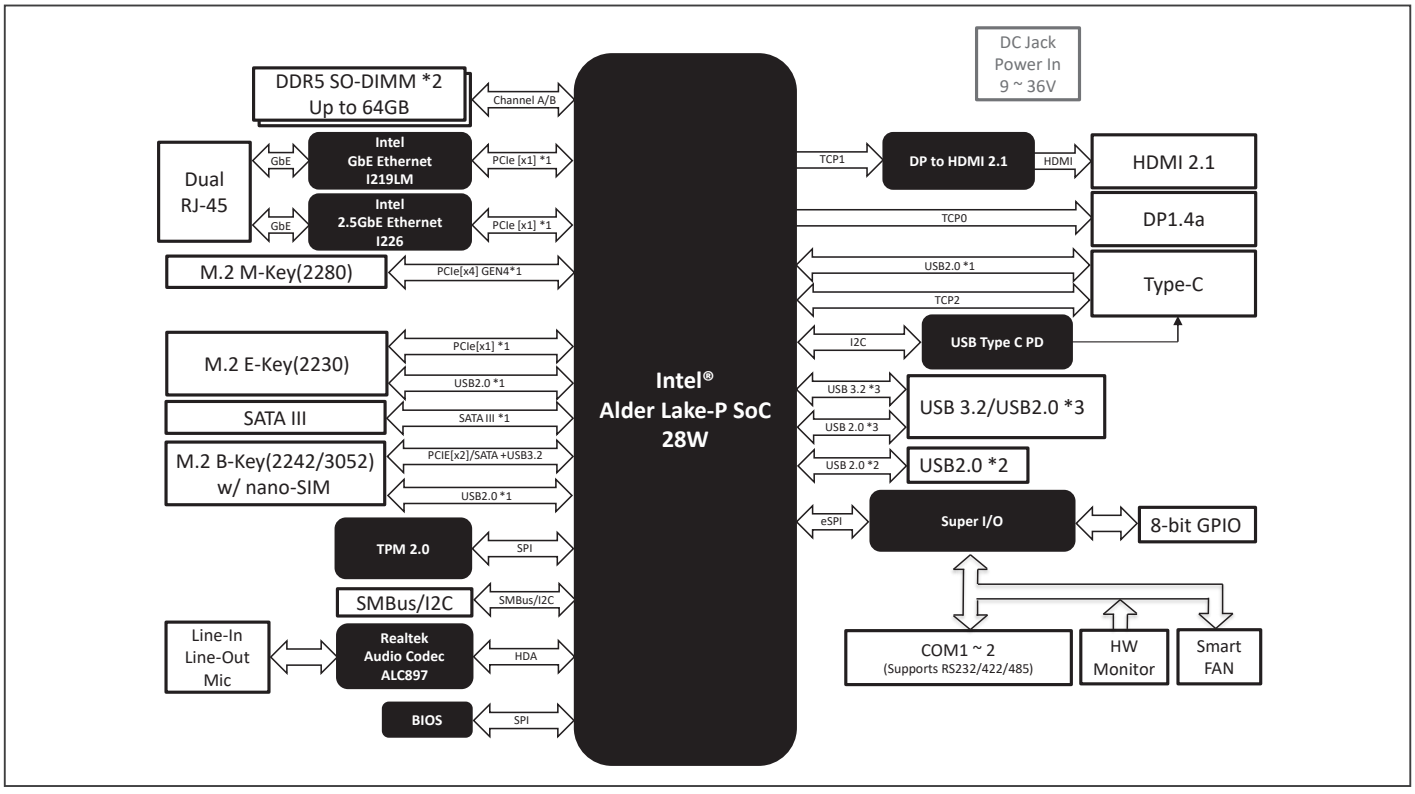
Part Number	Description	QTY
GENESYSM-ADP6	GENESYSM-ADP6 GENE System	1

Optional Accessories

Part Number	Description	QTY
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-ALL-VESA1	VESA Mount Kit. For GENESYSM-ADP6	1
GENESYSM-ALL-WMT1	Wall Mount Kit. For GENESYSM-ADP6	1

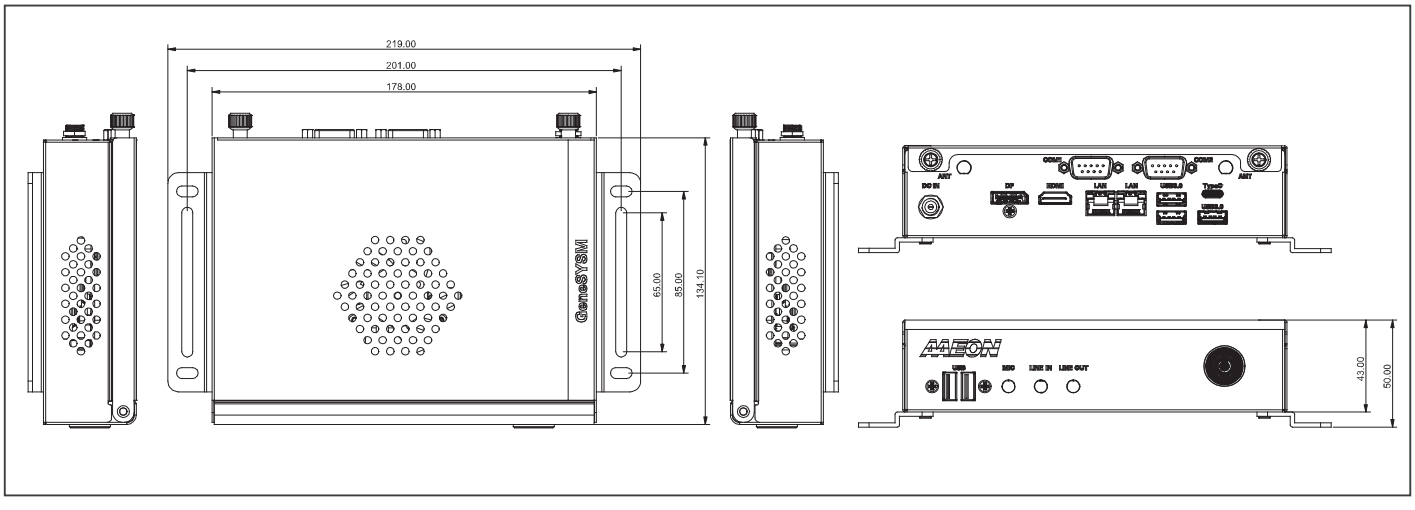
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

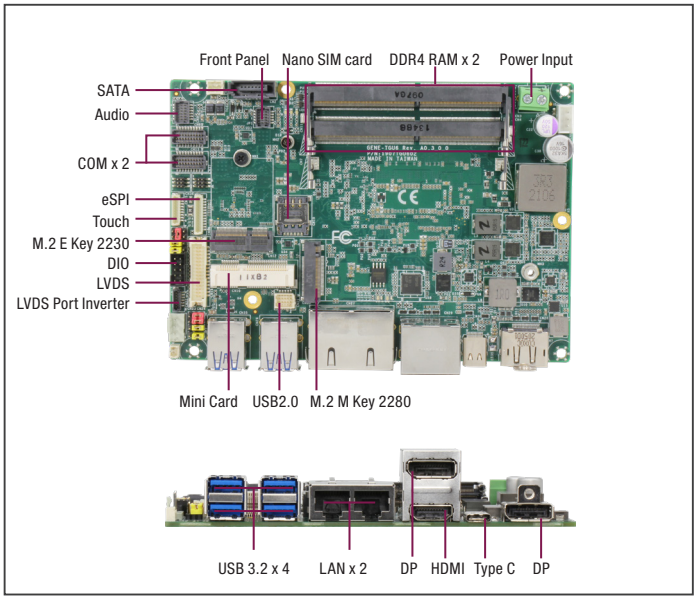


Ordering Information

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	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	2.0	9~36V	0~50°C	Nano SIM, GPIO, 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 3 USB Type C x 1 USB 2.0 x 2	2	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	2.0	9~36V	0~50°C	Nano SIM, GPIO, 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 3 USB Type C x 1 USB 2.0 x 2	2	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1	2.0	9~36V	0~50°C	Nano SIM, GPIO, SMBUS, Audio

GENE-TGU6

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



Features

- DDR4 SODIMM Slot x 2, up to 64GB, support IBECC
- HDMI 2.0 x 1, DP 1.4 x 2, Type-C DP x 1, LVDS/eDP x 1
- 2.5GbE x 1, GbE x 1
- USB 3.2 Gen 2 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
- Wide DC Input 9~36V (Optional: 12V Only)

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

Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	11th Generation Intel® Core™/Celeron® Processors: Intel® Core™ i7-1185G7E (4C/8T, 1.80 GHz, 15W) Intel® Core™ i5-1145G7E (4C/8T, 1.5 GHz, 15W) Intel® Core™ i3-1115G4E (2C/4T, 2.20 GHz, 15W) Intel® Celeron® 6305E (2C/2T, 1.80 GHz, 15W) Intel® Core™ i7-1185GRE (4C/8T, 1.80 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR4 3200, Dual Channel SODIMM x 2, Max.64GB, Non-ECC
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimensions	5.75" x 4" (146mm x 101.7mm)
OS Support	Windows 10 (64bit) Linux Ubuntu 20.04.2/Kernel 5.8
Power	
Power Requirement	+9V~36V (Optional: +12V)
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector
Power Consumption	Intel® Core™ i7-1185G7E, DDR4 3200MHz 32GB x 2, 4.96A @+12V (Typical) Intel® Core™ i7-1185G7E, DDR4 3200MHz 32GB x 2, 7.32A @+12V (Max)
Display	
Controller	Intel® Iris® Xe Graphics Intel® UHD Graphics
LVDS/eDP	LVDS x 1, Dual Channel 18/24bit, up to 1920 x 1080 eDP 1.4 x 1, up to 3840 x 2160 (Optional)
Display Interface	HDMI 2.0 x 1, up to 4K x 2K@60Hz DP 1.4 x 2, up to 4K x 2K@60Hz DP 1.4 x 1 (via USB Type-C), up to 4K x 2K@60Hz
Multiple Display	Up to 4 Simultaneous Displays
Audio	
Codec	Realtek ALC897
Audio Interface	Line-In / Line-Out / Mic (Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® I219 1GbE, RJ-45 x1 Intel® I225/I226 2.5GbE, RJ-45 x 1
USB	USB 3.2 Gen 2 x 4 USB Type-C x 1 (USB 3.2 Gen 2, DP 1.4, PD 5V/3A)
Serial Port	—
Video	HDMI 2.0 x 1, DP 1.4 x 2, Type-C DP 1.4 x 1

Internal I/O	
USB	USB 2.0 x 2
Serial Port	COM 1, COM 3, COM 4 (RS-232/422/485) COM 2 (RS-232/422/485, supports 5V/12V/RI)
Video	LVDS/eDP x 1 (Default: LVDS) Inverter x 1 (12V/2A)
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Optional, Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus/I2C x 1 (Default: SMBus)
Touch	4/5/8-wire Touch Controller x 1 (Optional)
Fan	4pins Smart Fan x 1
Sim	Nano SIM x 1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-size mSATA / mPCIe x 1 (Default: mSATA, select by BIOS)
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1) M.2 2230 E-Key x 1 (PCIe 3.0 [x1], USB 2.0)
Others	—
Environment & Certification	
Operating Temp.	32°F ~ 140°F (0°C ~ 60°C) WiTAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
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

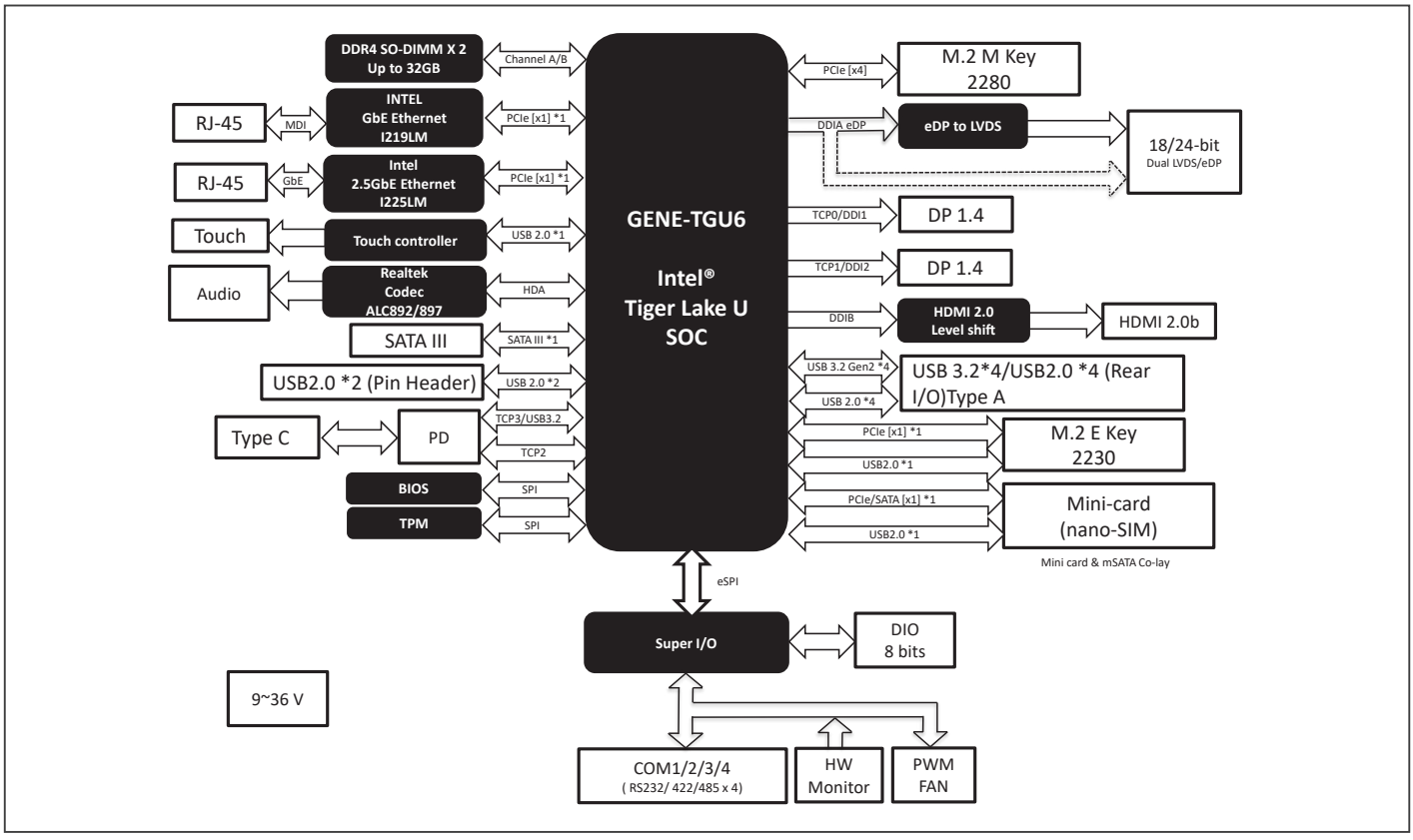
Part Number	Description	QTY
GENE-TGU6	GENE-TGU6 MB	1

Optional Accessories

Part Number	Description	QTY per Board
GENE-TGU6-FAN01	CPU Cooler.3600RPM	1
GENE-TGU6-HSK01	Heatsink	1
GENE-TGU6-HSP01	HeatSpreader	1
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

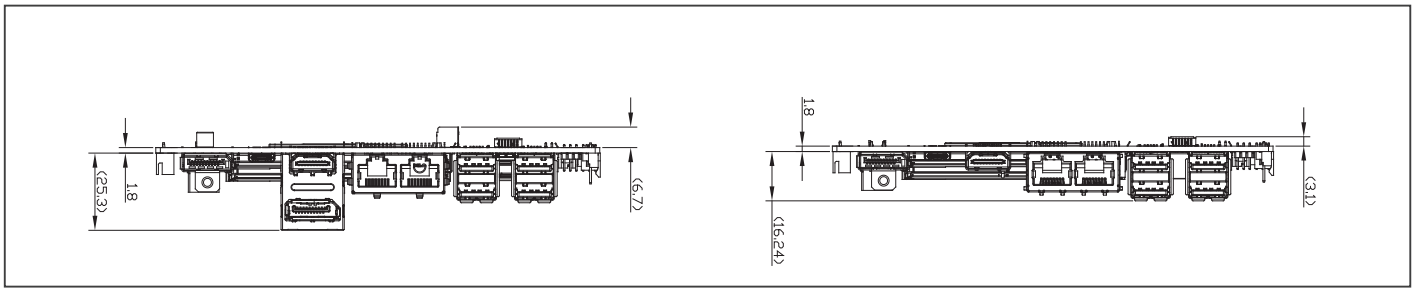
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



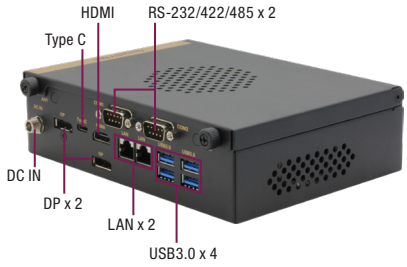
Ordering Information

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

GENESYSM-TGU6

GENE System with 11th Generation Intel® Core™ i7/i5/i3/Celeron Processor





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
- 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)

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

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 PCIe/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

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
Dimensions	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

Packing List

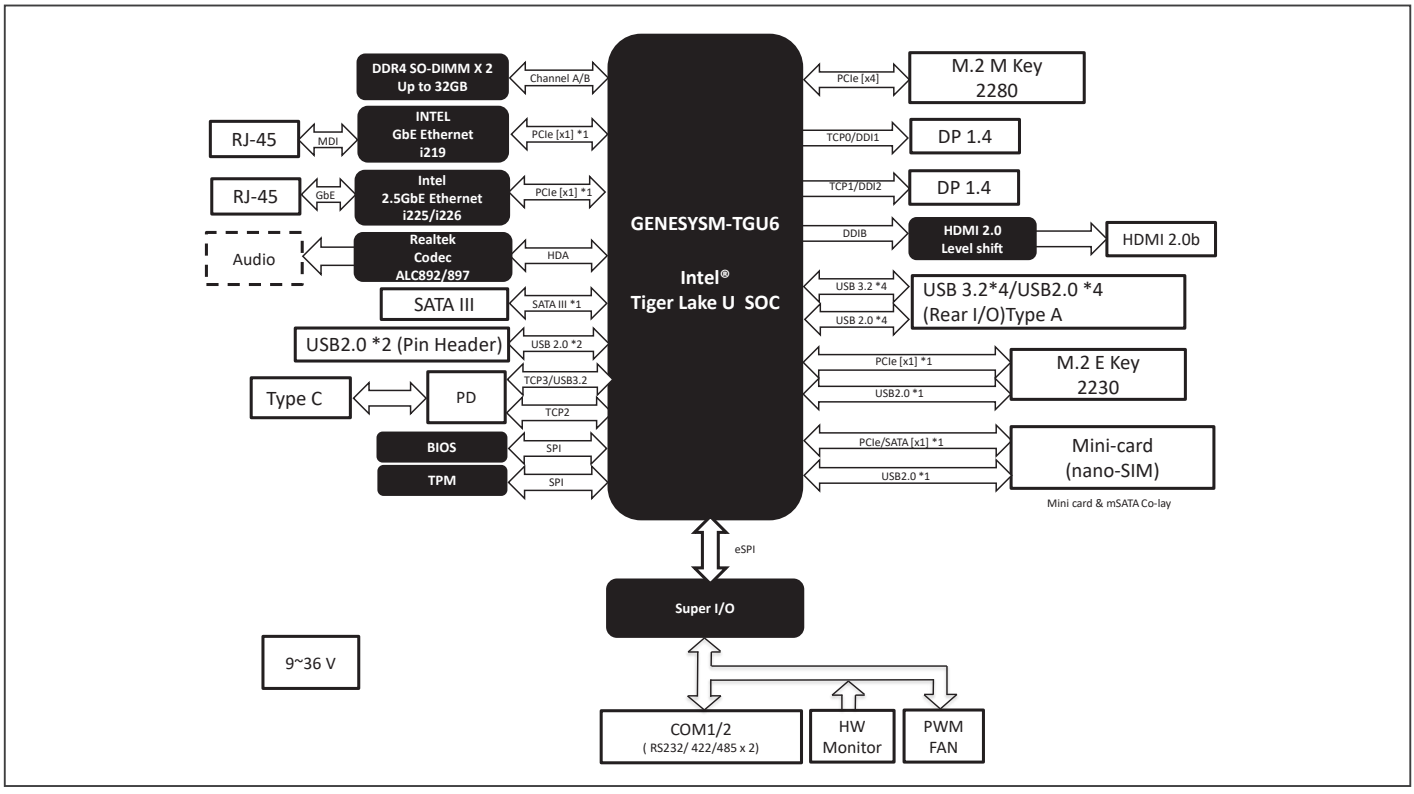
Part Number	Description	QTY
GENESYSM-TGU6	GENESYSM-TGU6 GENE System	1

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
1255X00063	Power Adapter 12V/12.5A 150W w/Lock 180D.DELTA.DPS150AB-15 J	1
GENESYSM-TGU6-HDD1	HDD Kit. For GENESYSM-TGU6	1
GENESYSM-ALL-VESA1	VESA Mount Kit. For GENESYSM-TGU6	1
GENESYSM-ALL-WMT1	Wall Mount Kit. For GENESYSM-TGU6	1

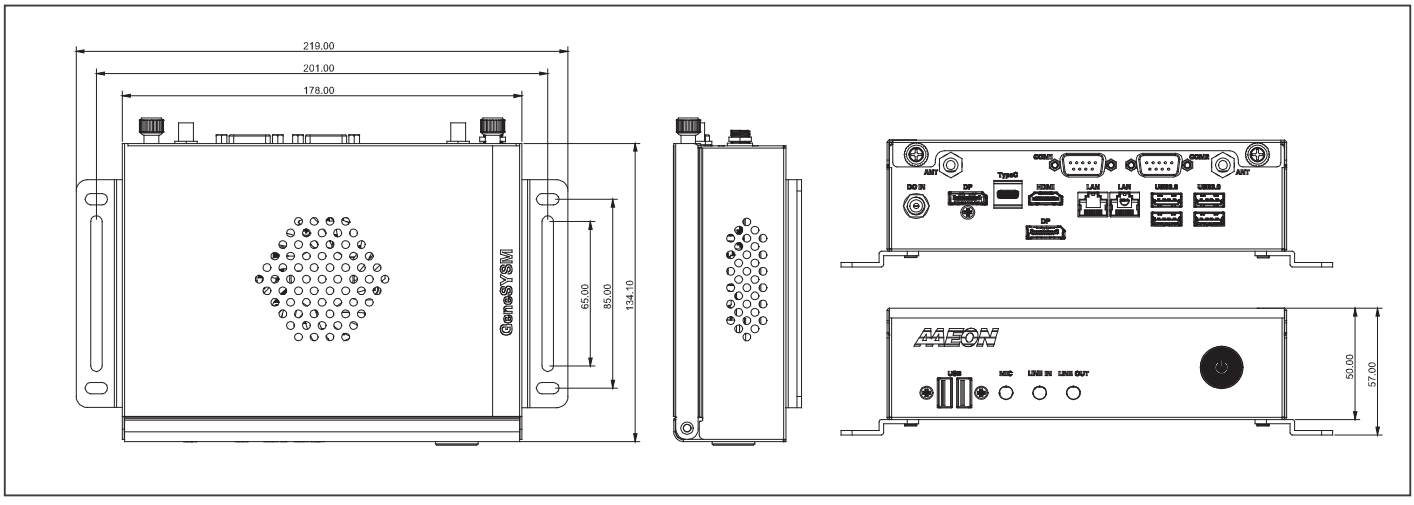
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

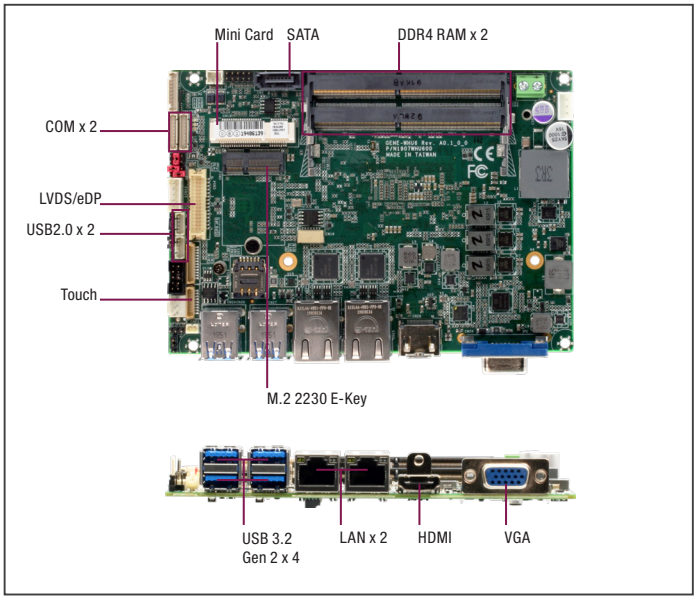


Ordering Information

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-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, GPIO 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)

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

Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	Intel® 8th Generation Core™ / Celeron® Processors: i7-8665UE (4C/8T, 1.70GHz, 15W) i5-8365UE (4C/8T, 1.60GHz, 15W) i3-8145UE (2C/4T, 2.20GHz, 15W) 4305UE (2C/2T, 2.00GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR4 2400, Dual Channel SODIMM x 2, Max.64GB, Non-ECC
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	—
RTC Battery	Lithium Battery 3V/240mAh
Dimensions	5.75" x 4" (146mm x 101.7mm)
OS Support	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10
Power	
Power Requirement	+9V~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 x 1, Dual Channel 18/24bit, up to 1920 x 1080 eDP 1.4 x 1, , up to 1920 X 1200 (Optional)
Display Interface	HDMI 2.0 x 1, up to 3840 x 2160 VGA x 1, up to 2560 x 1440
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	Realtek ALC897
Audio Interface	Line-In / Line-Out / Mic (Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® I210 1GbE, RJ45 x1 Intel® I219, 1GbE, RJ45 x1
USB	USB 3.2 Gen2 x 4
Serial Port	—
Video	HDMI 2.0 x 1, VGA x 1
Internal I/O	
USB	USB 2.0 x 2
Serial Port	COM1 (RS232/422/485, support RI) COM2 (RS232/422/485, support 5V/12V/RI)
Video	LVDS / eDP x 1 (Default: LVDS)
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Optional, Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus / I2C x 1 (Default: I2C)
Touch	4/5/8 wire Touch Controller x 1 (Optional)
Fan	DC Fan x 1 (Option: Smart Fan x 1)
Sim	Nano SIM x 1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-size mSATA / mPCIe x 1 (Default: mSATA, select by BIOS)
M.2	M.2 2280 B-Key x1 (PCIe 3.0 [x2], SATA, USB2.0), Default: selected by BIOS) M.2 2230 E-Key x 1 (PCIe 3.0 [x1], USB2.0)
Others	—
Environment & Certification	
Operating Temp.	32°F ~ 140°F (0°C ~ 60°C) WiTAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
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

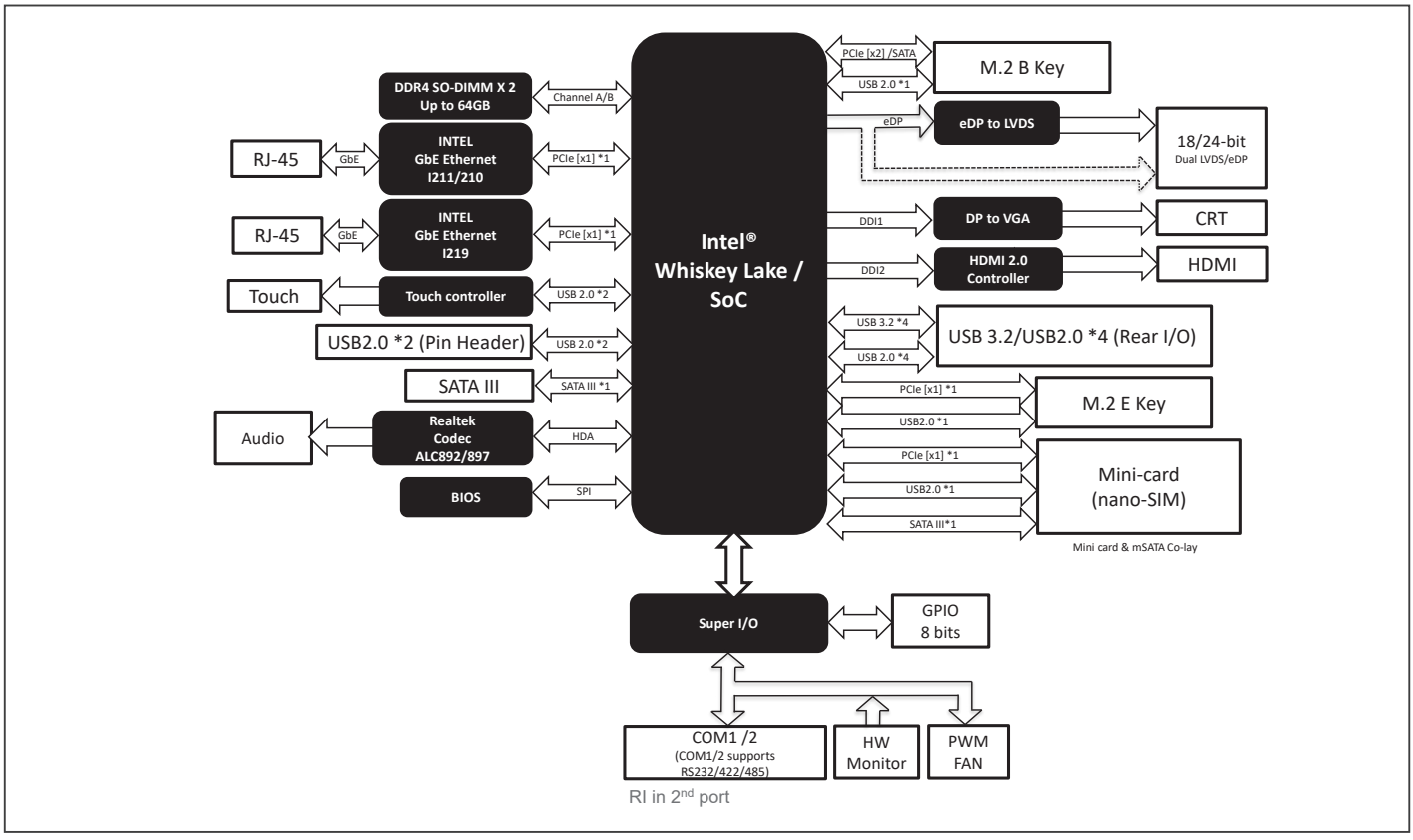
Part Number	Description	QTY
GENE-WHU6	GENE-WHU6 MB	1
M10WHU6000	Heat spreader	1

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

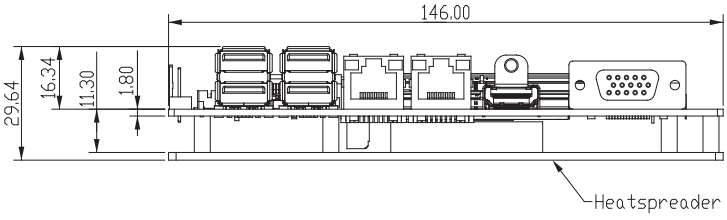
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



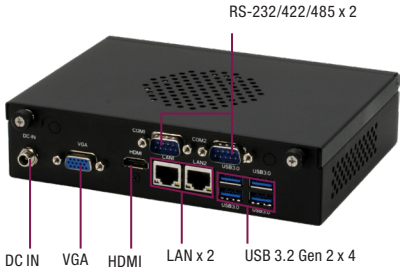
Ordering Information

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	Audio, GPIO 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	Audio, GPIO 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	Audio, GPIO 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	Audio, GPIO 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)	GPIO x 8, nano SIM, Touch Controller

GENESYS-WHU6

GENE 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 2280 B-Key x 1, M.2 2230 E-Key x 1**
- **Wide DC Input 9-36V (Optional: 12V Only)**

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

Internal I/O	
USB	USB 2.0 x 2
Serial Port	COM1(RS232/422/485, supports RI) (Optional) 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 (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 PCIe/mSATA	Full-size mSATA/mPCIe x 1 (Default mSATA, select by BIOS)
M.2	M.2 2280 B-Key x1 (PCIe x 2, SATA, USB2.0, selected by BIOS) M.2 2230 E-Key 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

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
Dimensions	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

Packing List

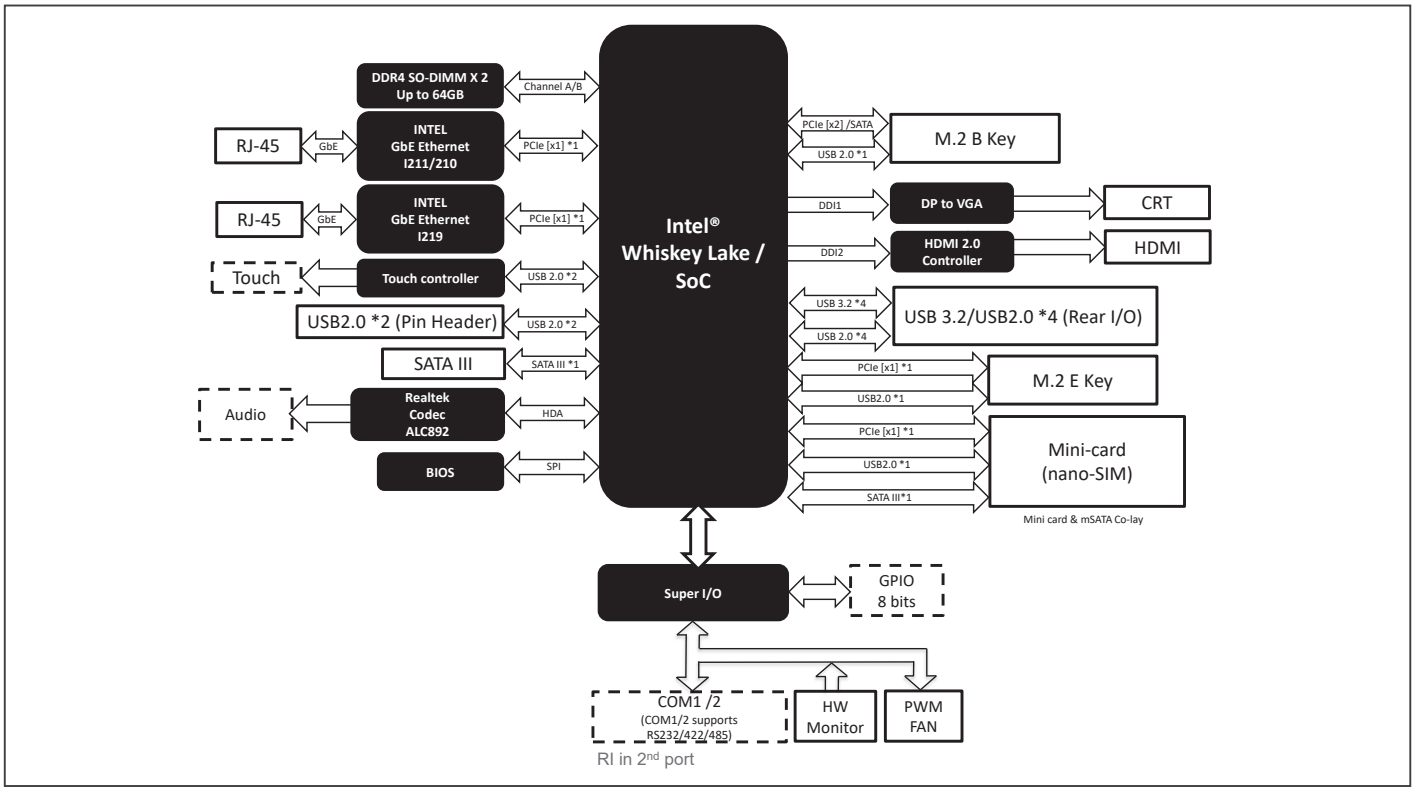
Part Number	Description	QTY
GENESYS-WHU6	GENESYS-WHU6 GENE System	1

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
GENESYSM-ALL-WMT1	Wall Mount Kit. For GENESYS-WHU6	1
GENESYSM-ALL-VESA1	VESA Mount Kit. For GENESYS-WHU6	1

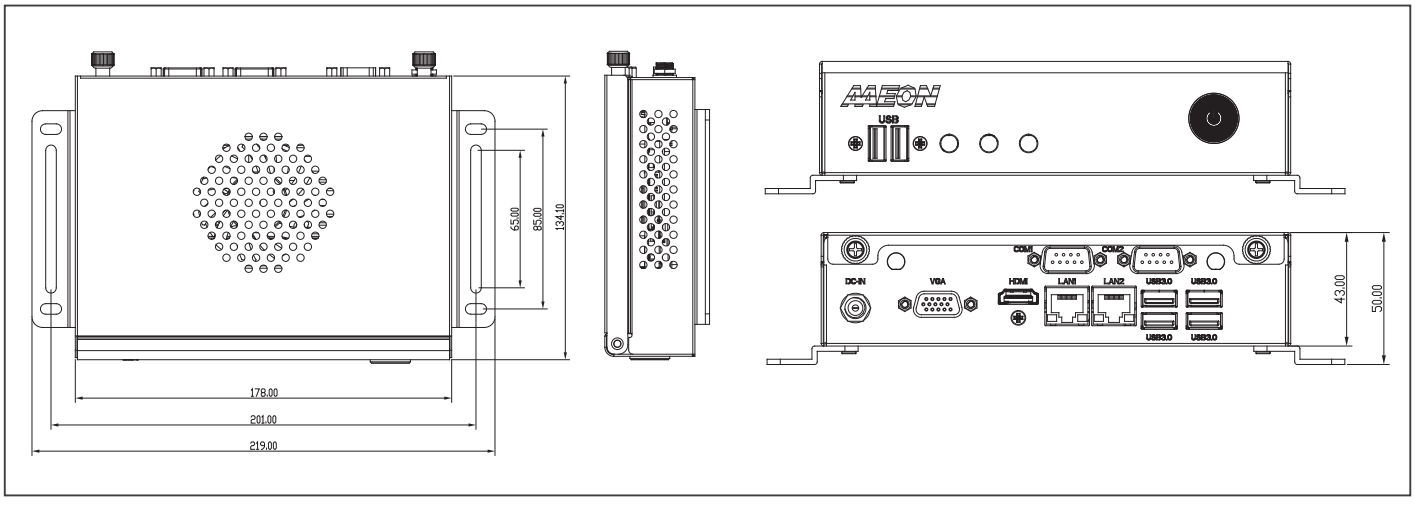
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

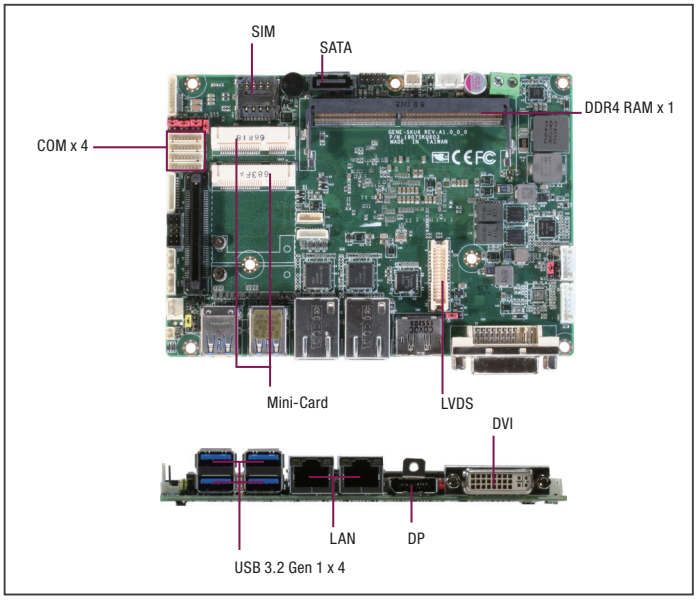


Ordering Information

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

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
Dimensions	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 (Audio function not available for WiTAS SKU)
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(Audio function not available for WiTAS SKU)
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 PCIe/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

Packing List

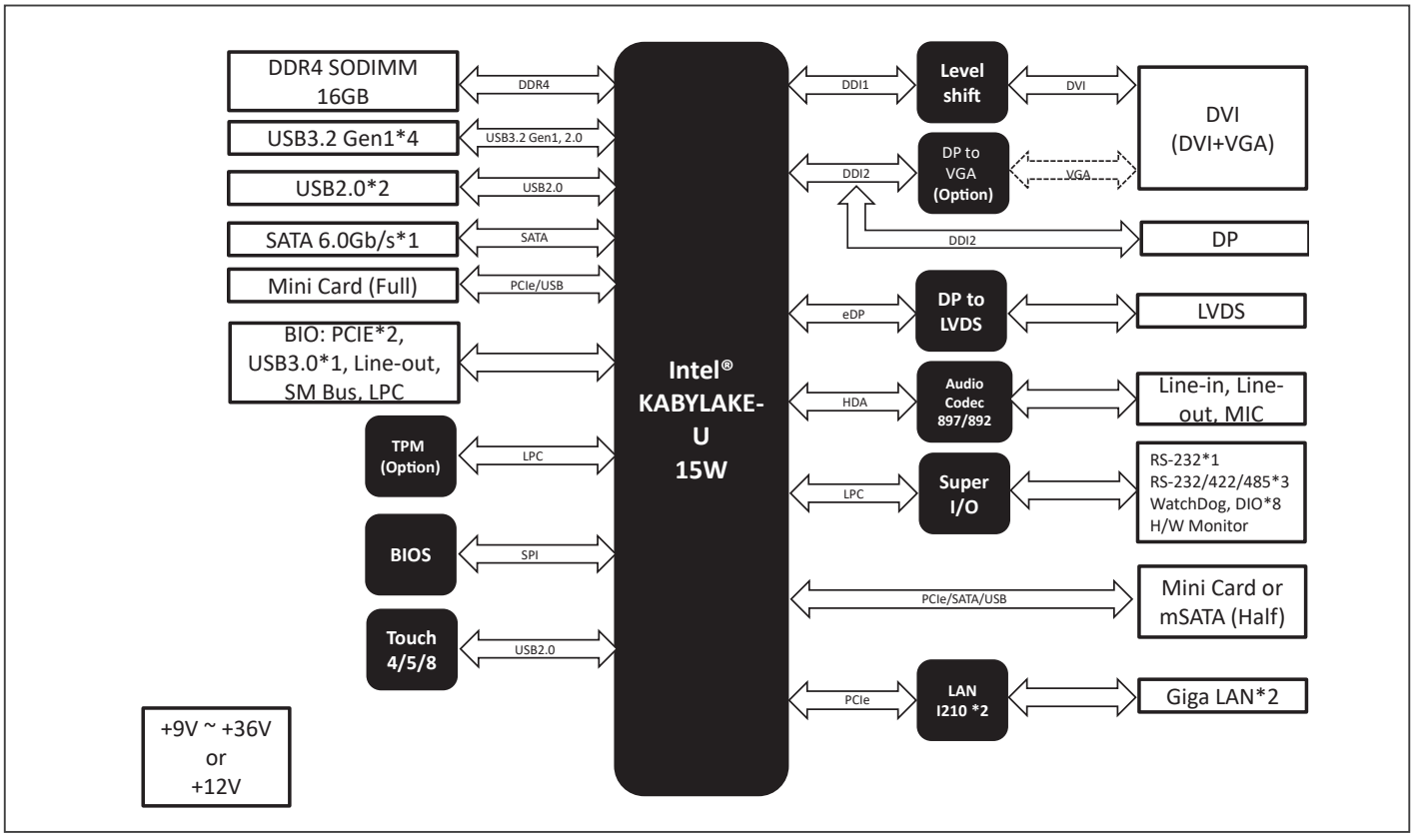
Part Number	Description	QTY
GENE-KBU6	GENE-KBU6 MB	1
M10SKU6000	Heat Spreader	1

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

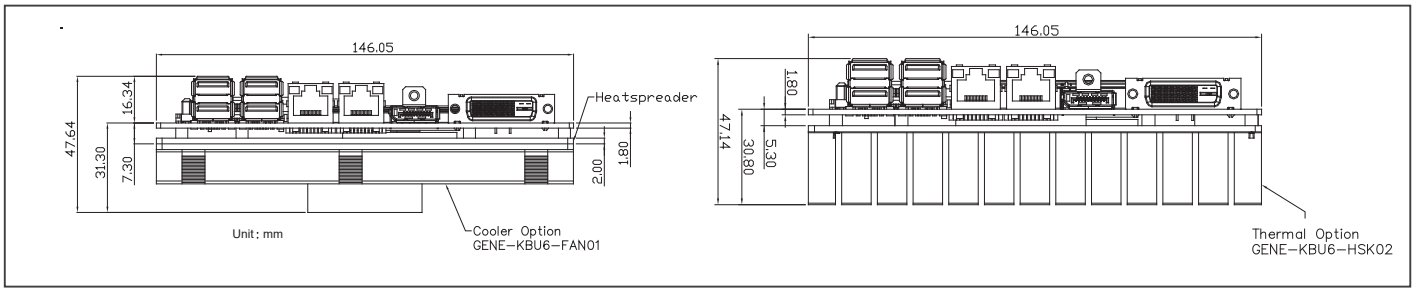
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



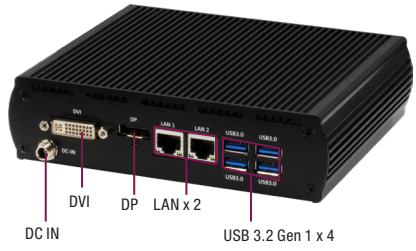
Ordering Information

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

GENE 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

Gigo LAN · DDR 4 · USB 2.0 · USB 3.2 Gen 1 · SATA 3

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 PCIe/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

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
Dimensions	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

Packing List

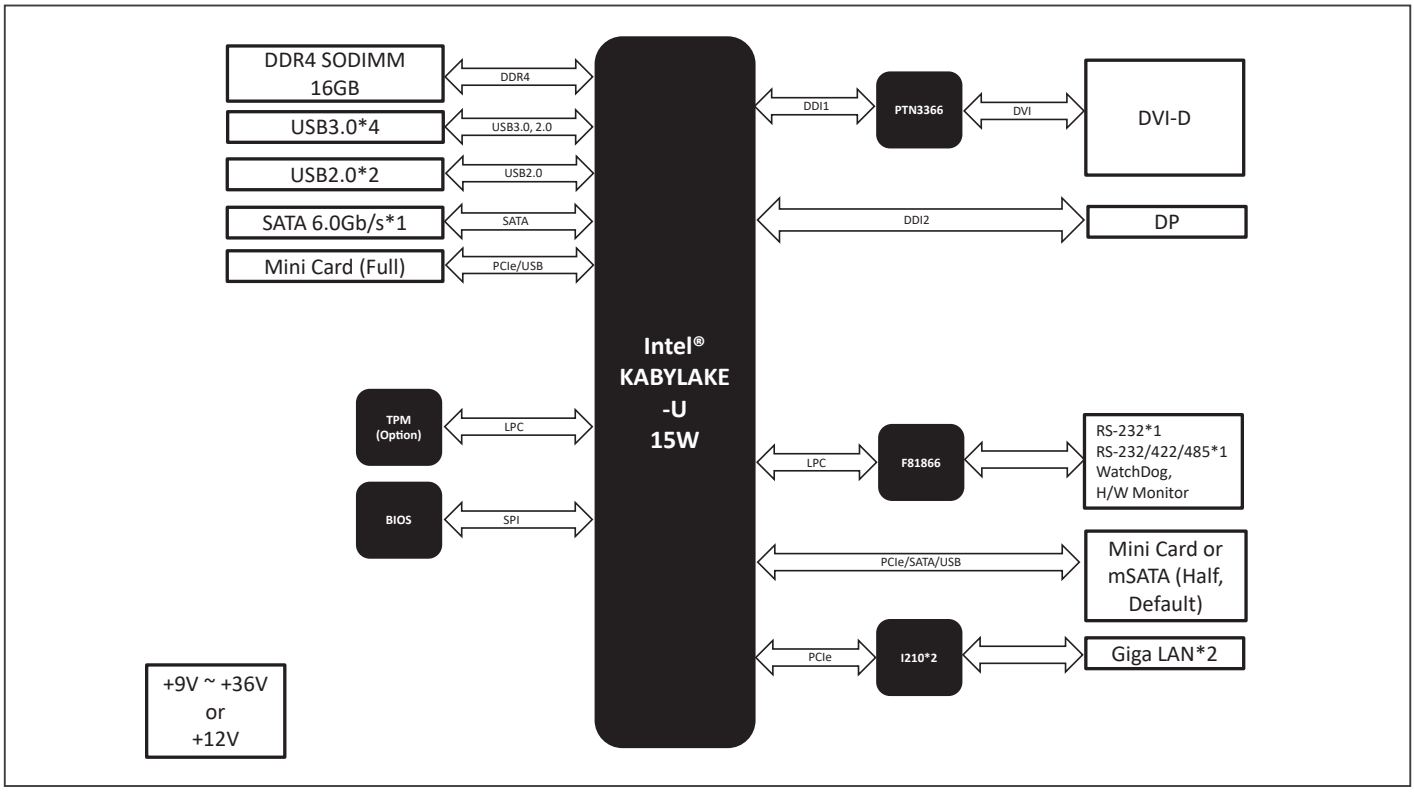
Part Number	Description	QTY
GENESYS-KBU6	GENESYS-KBU6 GENE System	1

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
1255300602	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
GENESYSM-ALL-WMT1	Wall Mount Kit. For GENESYS-KBU6	1
GENESYSM-ALL-VESA1	VESA Mount Kit. For GENESYS-KBU6	1

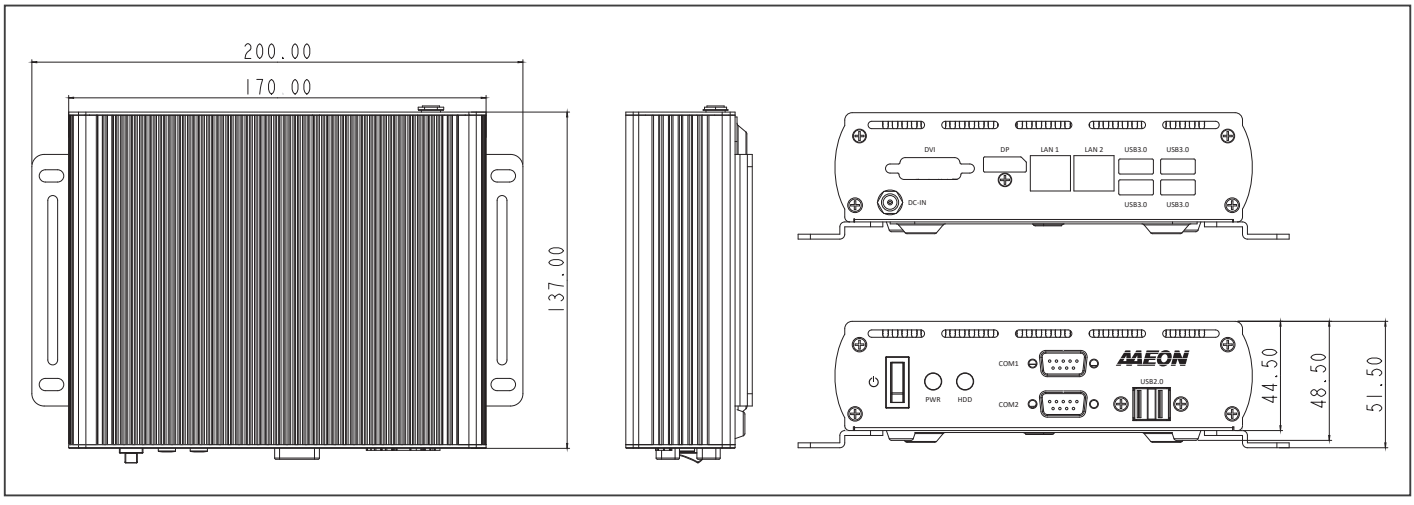
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

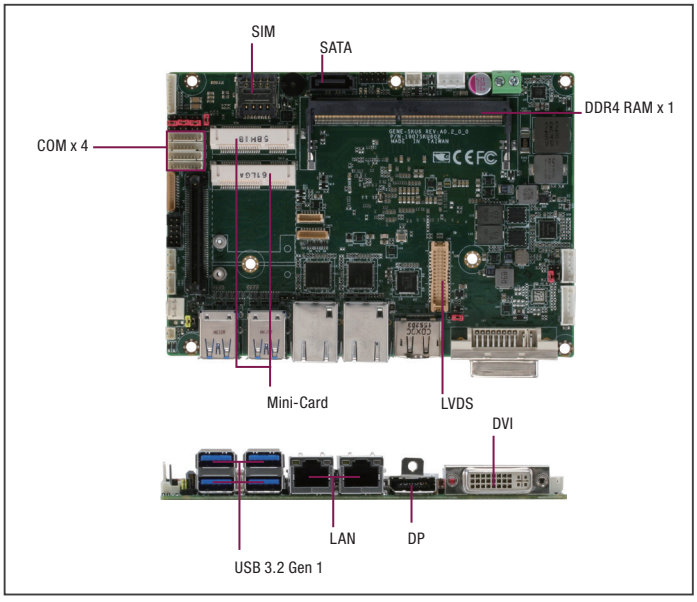


Ordering Information

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**

Gigo 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
Dimensions	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 (Audio function not available for WiTAS SKU)
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 (Audio function not available for WiTAS SKU)
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 PCIe/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

Packing List

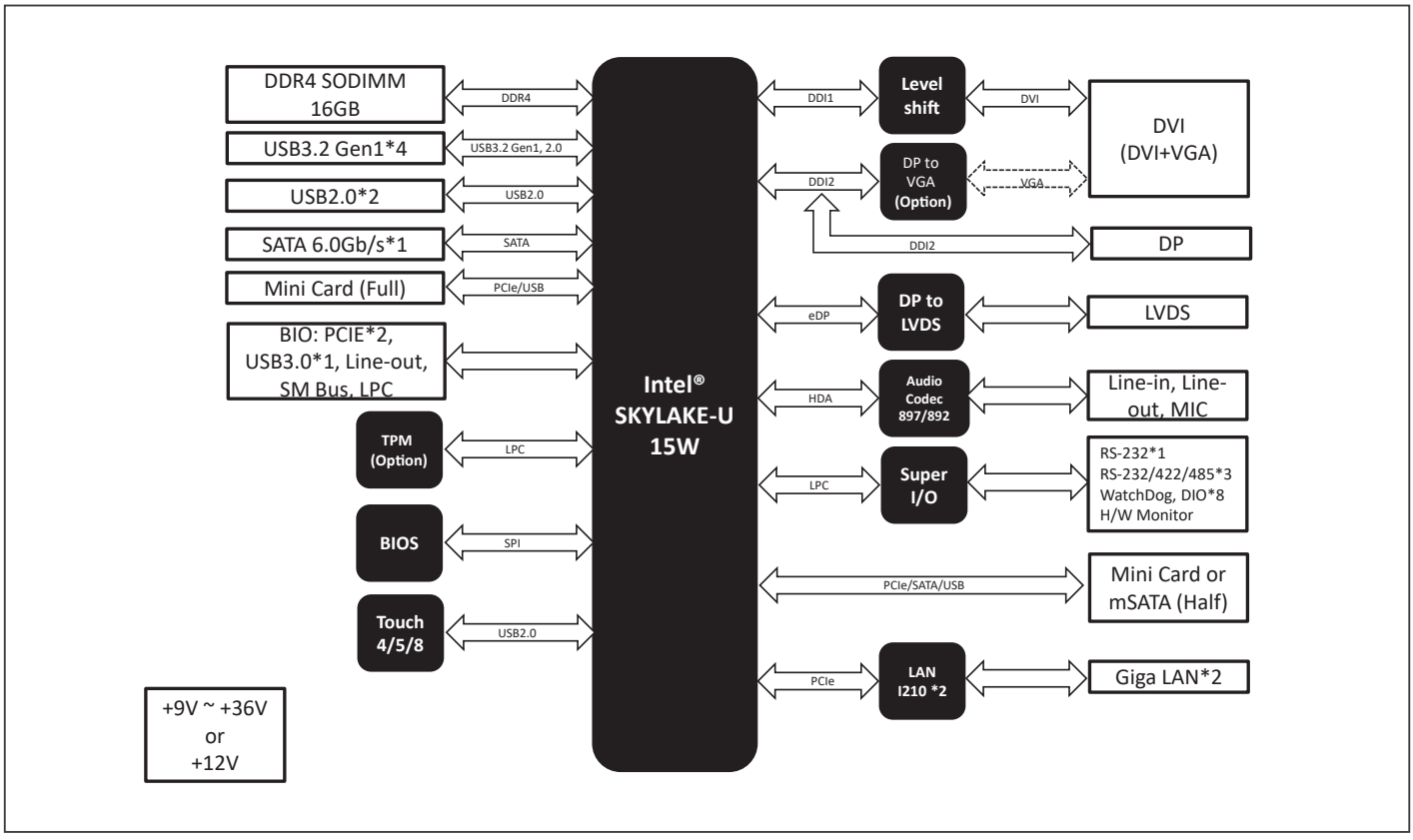
Part Number	Description	QTY
GENE-SKU6	GENE-SKU6 MB	1
M10SKU6000	Heat Spreader	1

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

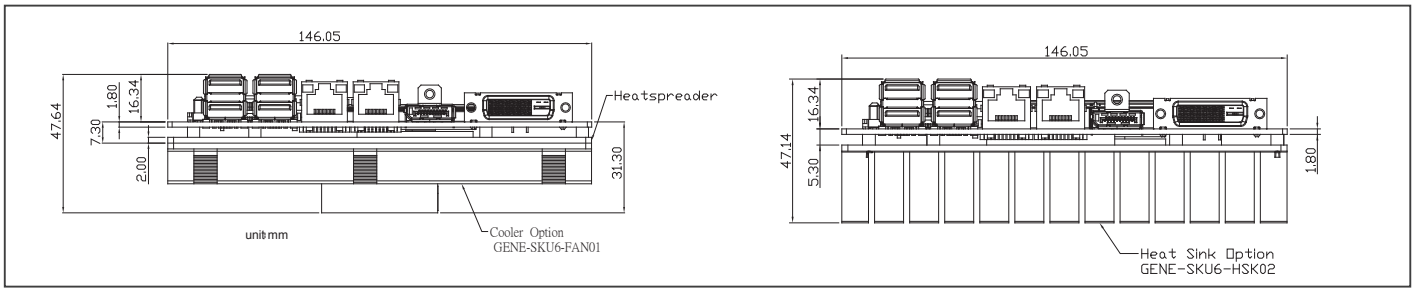
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

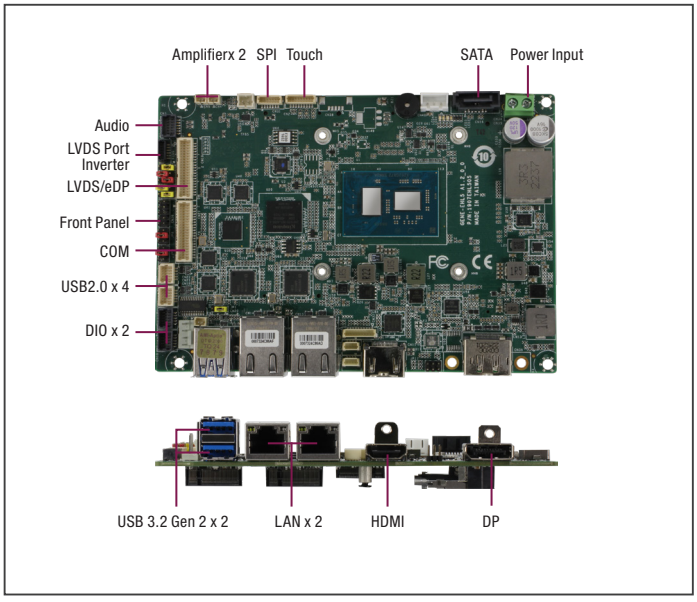


Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232	RS-232/422/485	Storage	Expansion Slot	TPM	Power	Operating Temp	Others
GENE-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-EHL5

3.5" 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), DP 1.4 x 1 (Optional VGA x 1), HDMI 2.0b x 1**
- **SATA 6Gb/s x 1, eMMC x 1**
- **USB 3.2 Gen 2 x 2 (Rear I/O), USB 2.0 x 4 (Pin header)**
- **M.2 2280 B-Key (PCIe [x1]), M.2 2242 B-Key (PCIe [x1]), M.2 2230 E-Key x 1, M.2 3052 B-Key x 1**
- **Wide DC Input 9~36V (Optional: 12V Only)**

Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	Intel Atom® x6000E series, Pentium®, and Celeron® N and J series Processors: Intel Atom® x6425RE (4C/4T, 1.90 GHz, 12W) Intel Atom® x6425E (4C/4T, 2.00 GHz, 12W) Intel Atom® x6211E (2C/2T, 1.30 GHz, 6W) Intel® Pentium® Processor J6426 (4C/4T, 2.00 GHz, 10W) Intel® Celeron® Processor J6412 (4C/4T, 2.00 GHz, 10W) Intel® Celeron® Processor N6210 (2C/2T, 1.20 GHz, 6.5W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR4 3200, Single Channel SODIMM x 1, Max. 32GB, Non-ECC *IBECC supported by selected CPU SKU
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimensions	5.75" x 4" (146mm x 101.7mm), 1.10 lbs (0.50 kg)
OS Support	Windows 10 (64bit) Linux Ubuntu 20.04.3(IOT)/Kernel 5.13
Power	
Power Requirement	+9V~36V (Optional: +12V)
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector
Power Consumption	Intel Atom® x6425E, DDR4 32GB, 3.26A @+12V (Typical) Intel Atom® x6425E, DDR4 32GB, 3.42A @+12V (Max)
Display	
Controller	Intel® UHD Graphics for 10th Gen Intel® Processors
LVDS/eDP	LVDS x 1, Dual Channel 18/24bit, up to 1920 x 1080 eDP 1.3 x 1, up to 1920 x 1200 (Optional)
Display Interface	HDMI 2.0 x 1, up to 3840 x 2160@60Hz DP 1.4 x 1, up to 3840 x 2160@120Hz (support DP++) VGA x 1, up to 2560 x 1440 (Optional)
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	Realtek ALC256
Audio Interface	Line-In / Line-Out / Mic (Audio function not available for WiTAS SKU)
Speaker	2W Speaker (Audio function not available for WiTAS SKU)
External I/O	
Ethernet	Intel® I210 1GbE, RJ45 x 2
USB	USB 3.2 Gen 2 x 2
Serial Port	—
Video	HDMI 2.0 x 1 DP 1.4 x 1 (Optional:VGA x 1)

Internal I/O	
USB	USB2.0 x 4
Serial Port	COM 1, COM 4 (RS-232/422/485) COM 2, COM 3 (RS-232/422/485, supports 5V/12V/RI)
Video	LVDS/eDP x 1 (Default: LVDS) Inverter x 1 (12V/2A)
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Optional, Audio function not available for WiTAS SKU) Speaker Header x 2 (Optional, Audio function not available for WiTAS SKU)
DIO/GPIO	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	4pins 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 PCIe/mSATA	—
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1], USB 2.0) M.2 2242 B-Key x 1 (PCIe 3.0 [x2]/SATA, Default: PCIe [x2]) M.2 2280 B-Key x 1 (PCIe 3.0 [x1], USB 2.0, PCIe 3.0 [x2] select by BIOS) M.2 3052 B-Key x 1 (USB 3.2 Gen 2, USB2.0)
Others	—
Environment & Certification	
Operating Temp.	32°F ~ 140°F (0°C ~ 60°C) WiTAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
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

Packing List

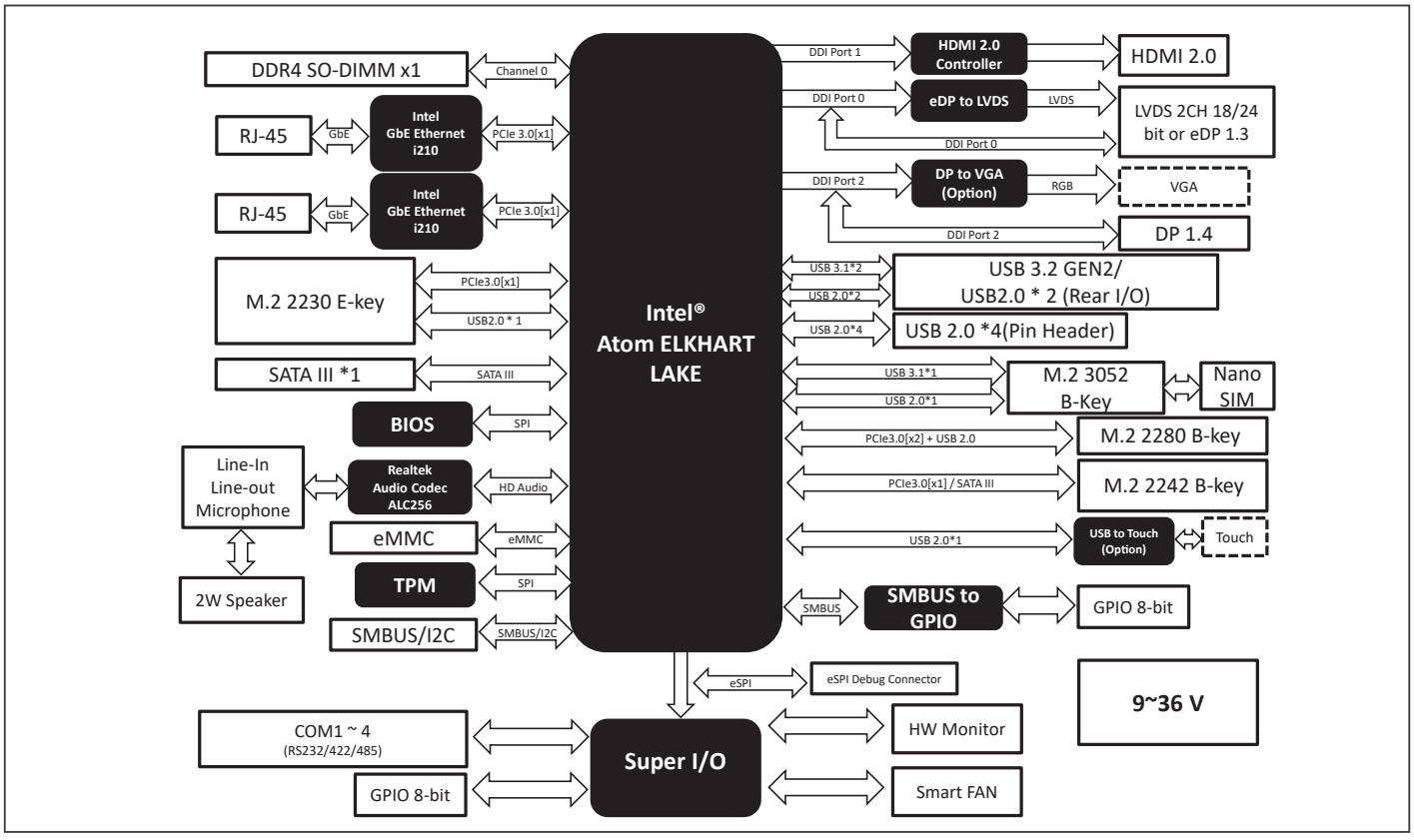
Part Number	Description	QTY
GENE-EHL5	GENE-EHL5 MB	1
M16BT07020	Heat Sink	1

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

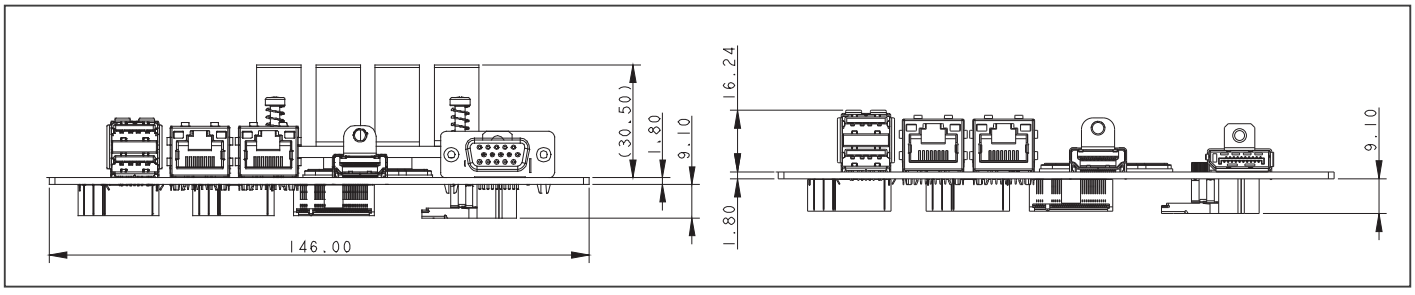
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



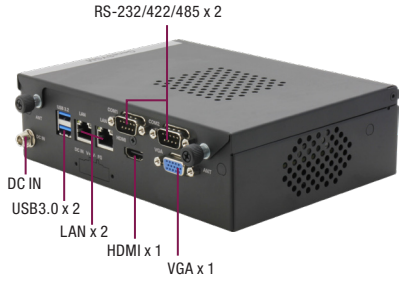
Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232/422/485	Storage	Expansion Slot	TPM	Power	Temp	Others
GENE-EHL5-A12-0003	Intel® Celeron® Processor 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	GPIO x 16, nano SIM, Touch Controller, SMBUS, Audio
GENE-EHL5-A12-0004	Intel® Celeron® Processor 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	GPIO x 16, nano SIM, SMBUS, Audio
GENE-EHL5-A12-0005	Intel® Pentium® Processor 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	GPIO x 16, nano SIM, Touch Controller, SMBUS, CANBUS x 2, Audio
GENE-EHL5-A12-0007	Intel 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	GPIO x 16, nano SIM, Touch Controller, SMBUS, CANBUS x 2, Audio
GENE-EHL5W2-A12-0008	Intel 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	GPIO x 16, nano SIM, SMBUS

GENESYSM-EHL5

GENE 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 6.0Gbp x 1, eMMC 32GB x 1
- USB 3.2 Gen2 x 2, USB2.0 x 2
- M.2 2280 B-Key x 1, M.2 2242 B-Key x 1, M.2 2230 E-Key x 1, M.2 3052 B-Key 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, Pentium®, and Celeron® N and J series Processors: ntel Atom® x6425E (4C/4T, 2.00 GHz, 12W) Intel® Celeron® Processor J6412 (4C/4T, 2.00 GHz, 10W) Intel® Celeron® Processor N6210 (2C/2T, 1.20 GHz, 6.5W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR4 up to 3200, Single Channel SODIMM x 1, Max. 32GB, Non-ECC *IBECC supported by selected SOC
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0
RTC Battery	Lithium Battery 3V/240mAh
Dimensions	7.00" x 5.28" x 2.08" (178mm x 134.1mm x 53mm), Weight 1 kg
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 Atom® x6425E, DDR4 32GB, 3.26A @+12V (Typical) Intel Atom® x6425E, DDR4 32GB, 3.42A @+12V (Max)
Display	
Controller	Intel® UHD Graphics for 10th Gen Intel® Processors
LVDS/eDP	—
Display Interface	HDMI 2.0 x 1, up to 4K@60Hz VGA x 1, up to 2560 x 1440
Multiple Display	Up to 2 Simultaneous Displays
Audio	
Codec	—
Audio Interface	—
Speaker	—
External I/O	
Ethernet	Intel® I210 1GbE, RJ45 x 2
USB	USB 3.2 Gen 2 x 2 USB 2.0 x 2
Serial Port	COM 1 (RS-232/422/485) COM 2 (RS-232/422/485, supports 5V/12V/RI)
Video	HDMI 2.0 x 1 VGA x 1
Internal I/O	
USB	—
Serial Port	—
Video	—
SATA	SATA 6Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1
DIO/GPIO	GPIO 16-bit (Optional: with E-Base)
SMBus/I2C	SMBus/I2C x 1 (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	eMMC5.1 32GB
Expansion	
Mini PCIe/mSATA	—
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0) M.2 2242 B-Key x 1 (PCIe 3.0 [x2]/SATA), Default: PCIe [x2] M.2 2280 B-Key x 1 (PCIe 3.0 [x1] + USB 2.0) M.2 3052 B-Key x 1 (USB 3.2 Gen 2)
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

Packing List

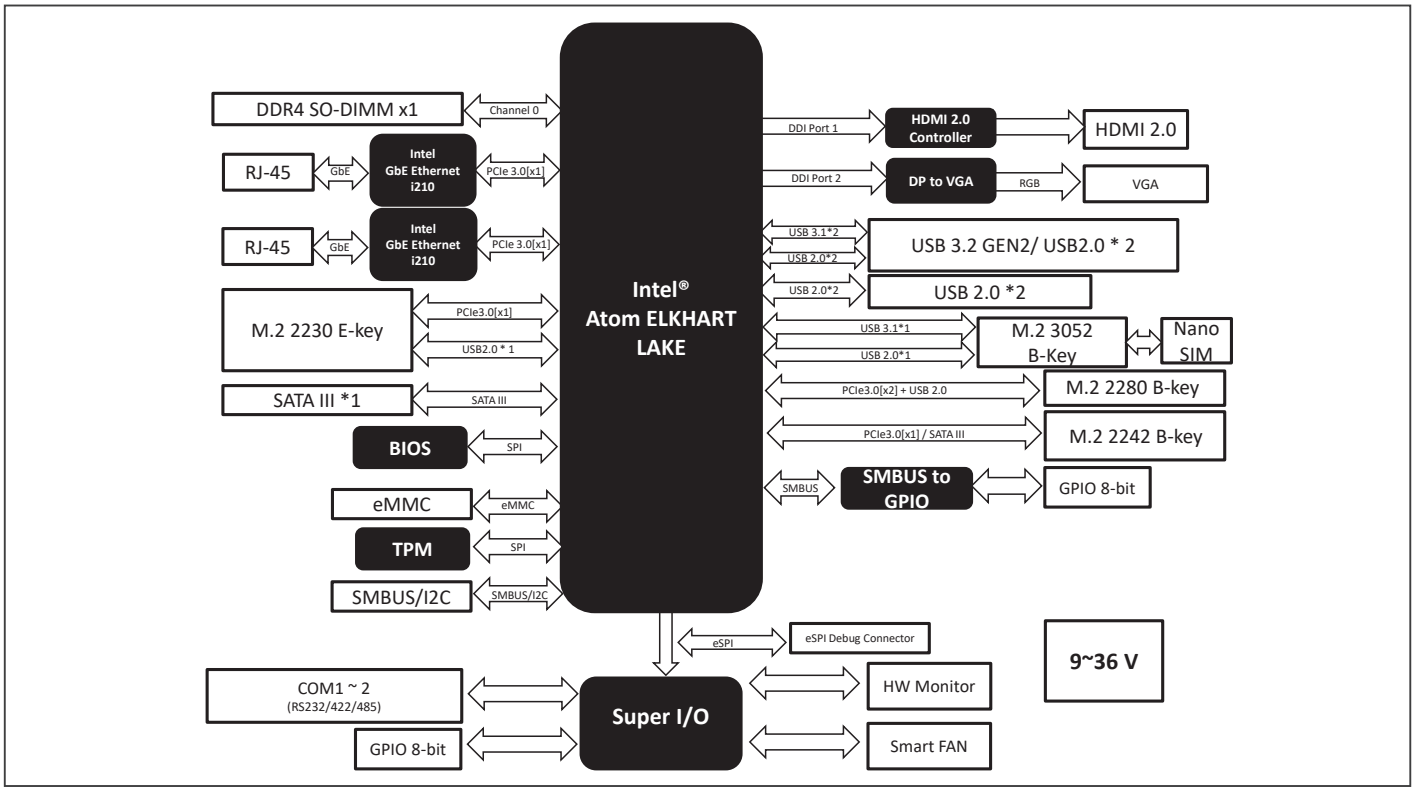
Part Number	Description	QTY
GENESYSM-EHL5	GENESYSM-EHL5 GENE System	1
TH2EHL5010	Heatsink	1
TH5EHL5010	Thermal Pad	4

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
125530060Z	Power Adapter. 12V.5A.60W. FSP060-DHAN3	1
GENESYSM-EHL5-HDD1	HDD Kit. For GENESYSM-EHL5	1
GENESYSM-ALL-VESA1	VESA Mount Kit. For GENESYSM-EHL5	1
GENESYSM-ALL-WMT1	Wall Mount Kit. For GENESYSM-EHL5	1

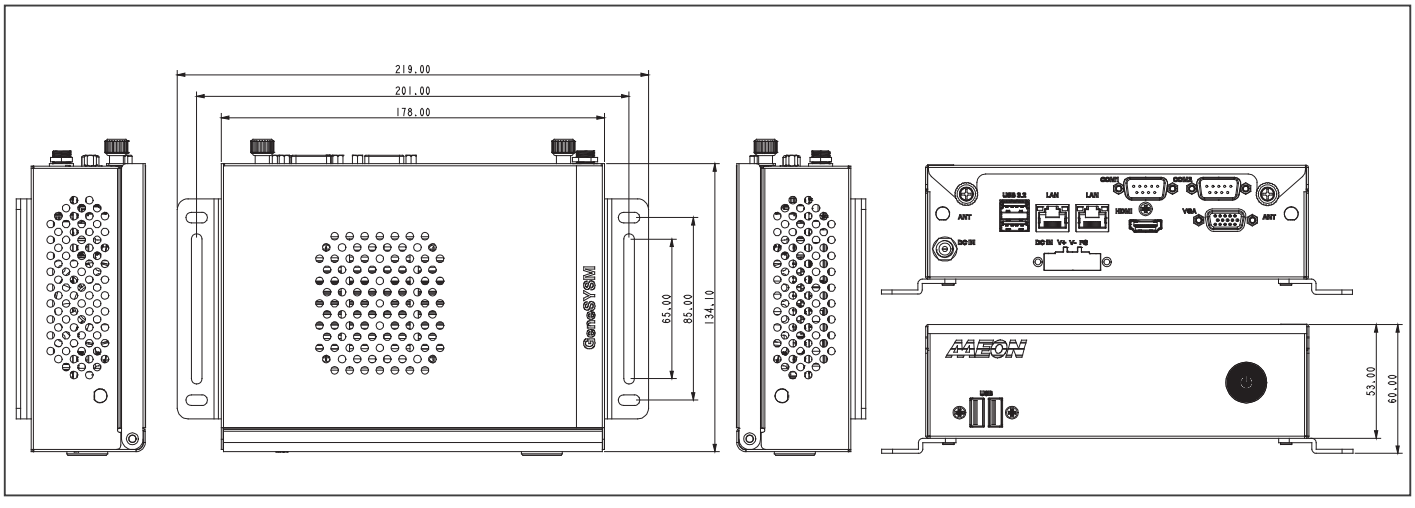
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

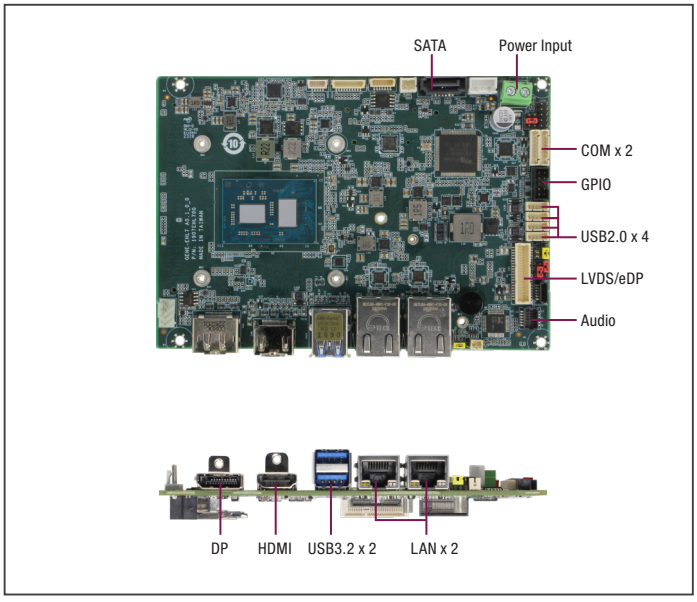


Ordering Information

Part Number	CPU	Fan/Fanless	Display	Storage	LAN	USB	RS-232/422/485	Expansion slot	TPM	Power	Operating Temp	Others
GENESYSM-EHL5-A10-0001	Intel® Celeron® Processor N6210	Heatsink System Fan	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, GPIO, SMBUS, TPM
GENESYSM-EHL5-A10-0002	Intel® Celeron® Processor J6412	Heatsink System Fan	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, GPIO, SMBUS, TPM
GENESYSM-EHL5-A10-0003	Intel Atom® x6425E	Heatsink System Fan	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, GPIO, SMBUS, TPM

GENE-EHL7

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



Features

- DDR4 3200MHz SODIMM x 1, up to 32GB
- HDMI 1.4 x 1, DP 1.4 x 1, LVDS/eDP x 1
- GbE x 2, SATA 6.0 Gb/s x 1, GPIO x 8-bit
- USB 3.2 Gen 2 x 2, USB 2.0 x 4, RS-232/422/485 x 1, RS-232 x 1
- Mini PCIe Card x 1, M.2 2230 E-Key x 1, M.2 2280 M-Key x 1

Giga LAN · DDR 4 · Audio · LVDS · USB 3.2 Gen 2

Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	Intel Atom® x6000E series, Pentium®, and Celeron® N and J series Processors: x6413E (4C/4T, 1.50GHz, 9W) J6412 (4C/4T, 2.00GHz, 10W) N6210 (2C/2T, 1.20GHz, 6.5W)
Chipset	Integrated with Intel® SoC
Memory Type	Single-Channel DDR4 3200MHz SODIMM x 1, Max. 32GB, Non-ECC *IBECC supported by selected CPU SKU
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimensions	5.75" x 4" (146mm x 101.7mm), 0.83 lbs (0.38 kg)
OS Support	Windows 10 (64bit) Linux Ubuntu 20.04.5 / 5.15.0-46-generic
Power	
Power Requirement	+12V
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector
Power Consumption	Intel Atom® x6413E, DDR4 32GB, 2.17A @+12V (Typical) Intel Atom® x6413E, DDR4 32GB, 2.72A @+12V (Max)
Display	
Controller	Intel® UHD Graphics for 10th Gen Intel® Processors
LVDS/eDP	Dual-Channel 18/24-bit LVDS x 1, up to 1920 x 1080 eDP 1.3 x 1, up to 1920 x 1200 (Optional)
Display Interface	HDMI 1.4 x 1, up to 3840 x 2160 @ 30Hz DP 1.4 x 1, up to 3840 x 2160 @ 120Hz
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	Realtek ALC897
Audio Interface	Line-In / Line-Out / Mic
Speaker	—
External I/O	
Ethernet	Realtek RTL8111H 1GbE, RJ-45 x 2
USB	USB 3.2 Gen2 x 2
Serial Port	—
Video	HDMI 1.4 x 1 DP 1.4 x 1
Internal I/O	
USB	USB 2.0 x 4
Serial Port	COM1 (RS232/422/485, supports 5V/12V/RI) COM2 (RS232)
Video	LVDS / eDP x 1 (Default: LVDS) Inverter x 1 (12V/2A)
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1
DIO/GPIO	GPIO 8-bits
SMBus/I2C	SMBus / I2C x 1 (Default: SMBus)
Touch	—
Fan	4pins Smart Fan x 1
Sim	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-size mPCIe x 1
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1], USB2.0) M.2 2280 M-Key x 1 (PCIe 3.0 [x2] / SATA), SATA select by BOM
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)	484,355
EMC	CE/FCC Class A

Packing List

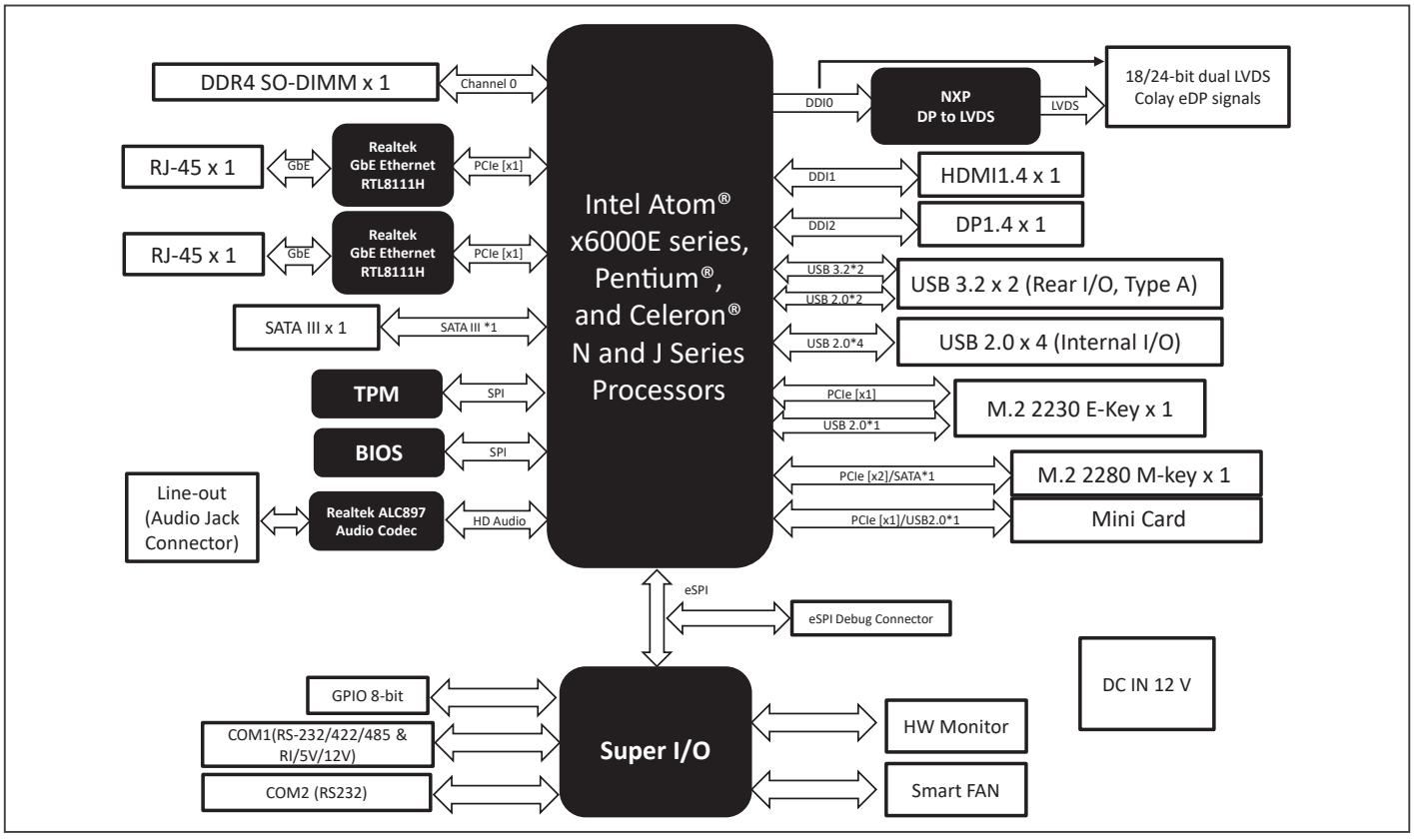
Part Number	Description	QTY
GENE-EHL7	GENE-EHL7 MB	1

Optional Accessories

Part Number	Description	QTY
GENE-EHL7-HSK01	Heat Sink.60*60*25mm	1
1702150155	SATA HDD Power Cable, 15cm	1
170X000398	Power Cable, DC JACK, 30cm	1
170204010R	Power Cable, Double 4P, 10cm	1
170X000156	Audio Cable, 25cm	1
1701090150	COM Port Cable, 15cm	2
1700050207	USB 2.0 Cable, 20cm	4

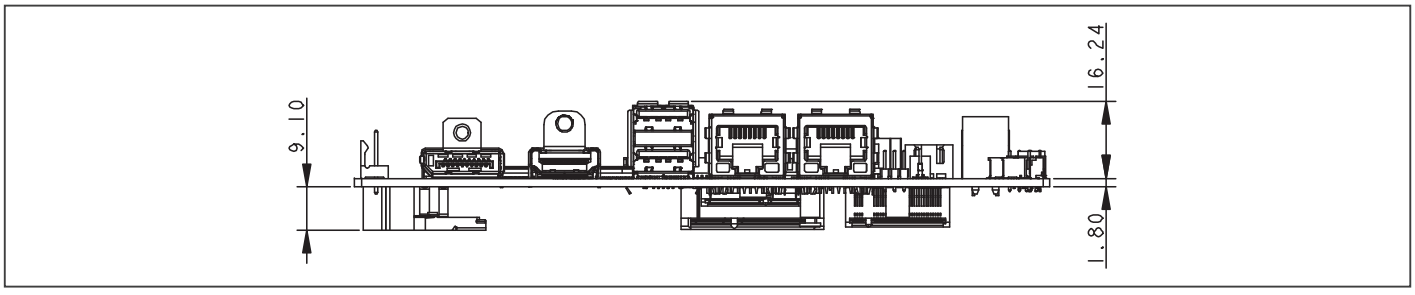
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

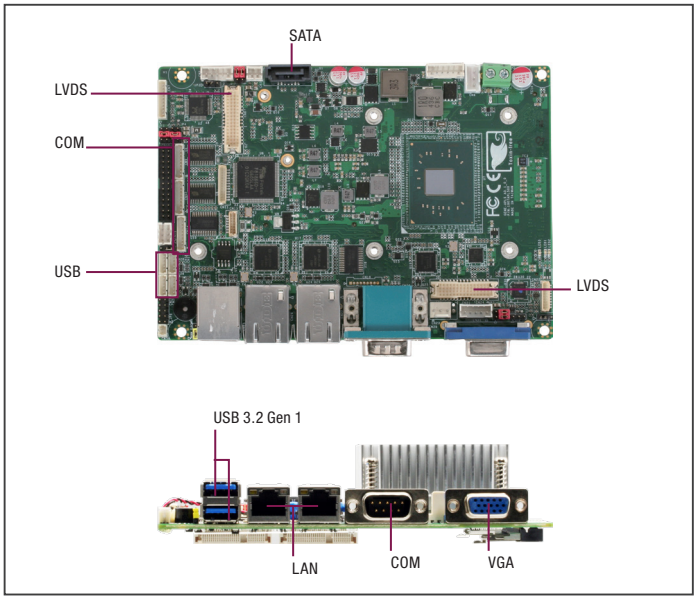


Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232	RS-232/422/485	Storage	Expansion Slot	TPM	POWER	TEMP	Others
GENE-EHL7-A10-0001	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	1	1	SATA x 1	M.2 2280 M-Key x 1, M.2 2230 E-Key x 1, mPCIe (Full size)x 1	2.0	12V	0°C ~ 60°C	Audio, DIO, SMBUS
GENE-EHL7-A10-0002	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	1	1	SATA x 1	M.2 2280 M-Key x 1, M.2 2230 E-Key x 1, mPCIe (Full size)x 1	2.0	12V	0°C ~ 60°C	Audio, DIO, SMBUS
GENE-EHL7-A10-0003	x6413E	DP x 1, HDMI x 1, LVDS x 1	GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	1	1	SATA x 1	M.2 2280 M-Key x 1, M.2 2230 E-Key x 1, mPCIe (Full size)x 1	2.0	12V	0°C ~ 60°C	Audio, DIO, SMBUS

GENE-APL5

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



Features

- Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
- DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
- 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)

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 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimensions	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 (Audio function not available for WiTAS SKU)
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 (Audio function not available for WiTAS SKU)
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 PCIe/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

Packing List

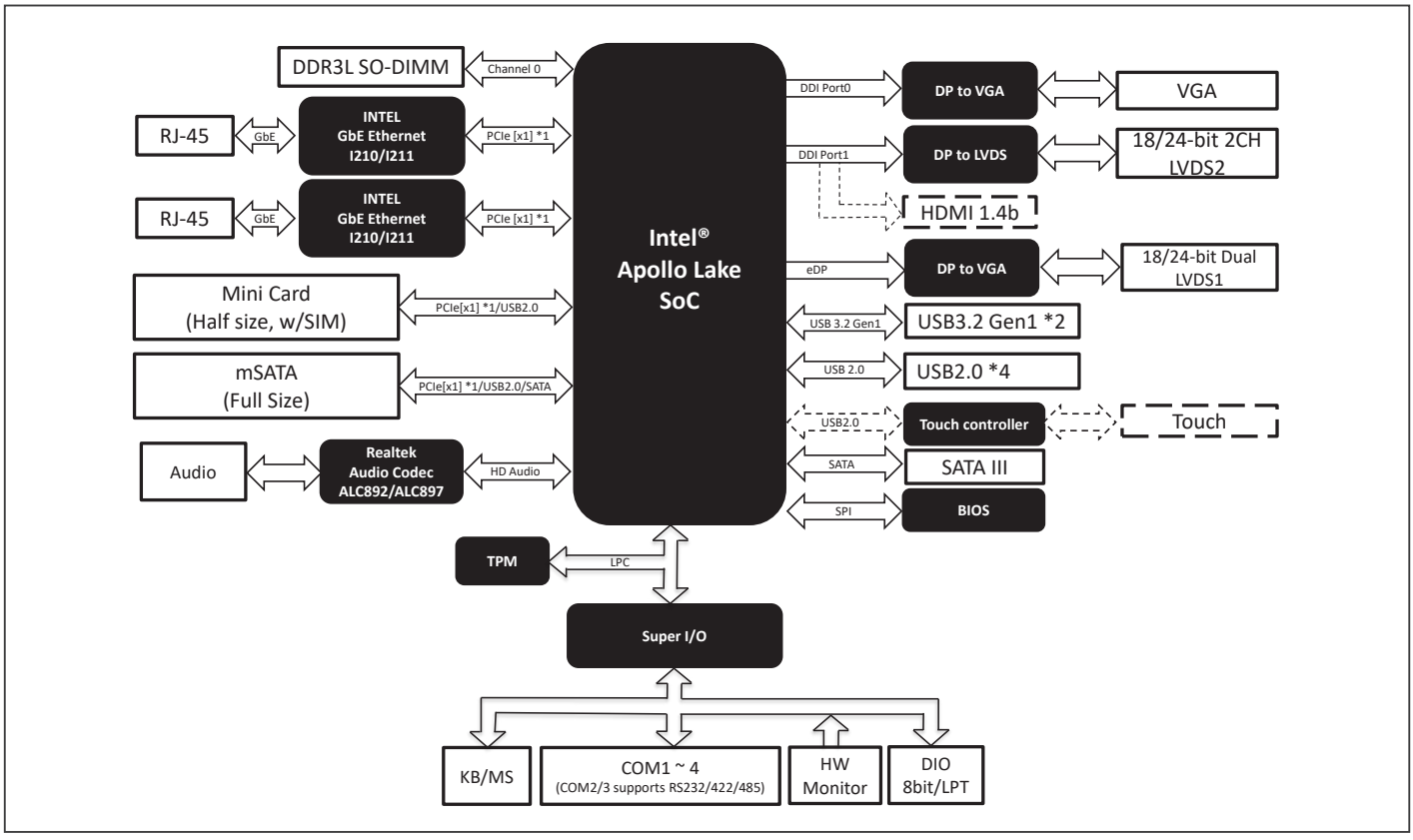
Part Number	Description	QTY
GENE-APL5	GENE-APL5 MB	1
M16BT07020	Heatsink	1

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

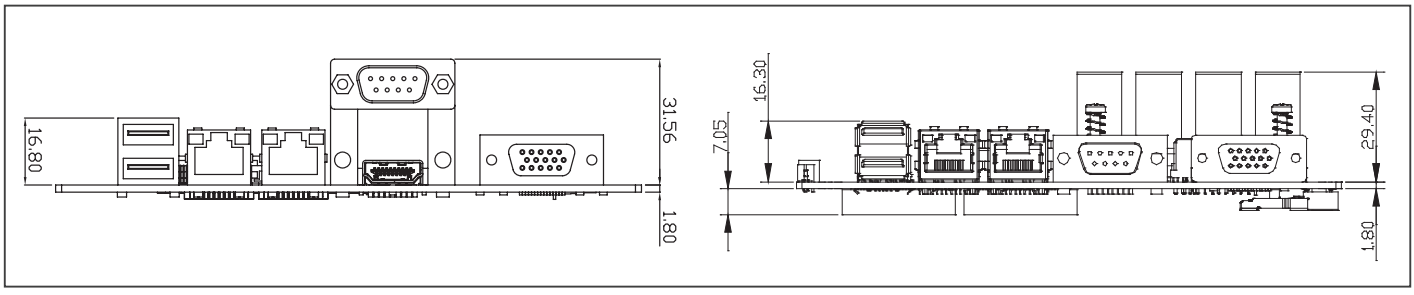
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

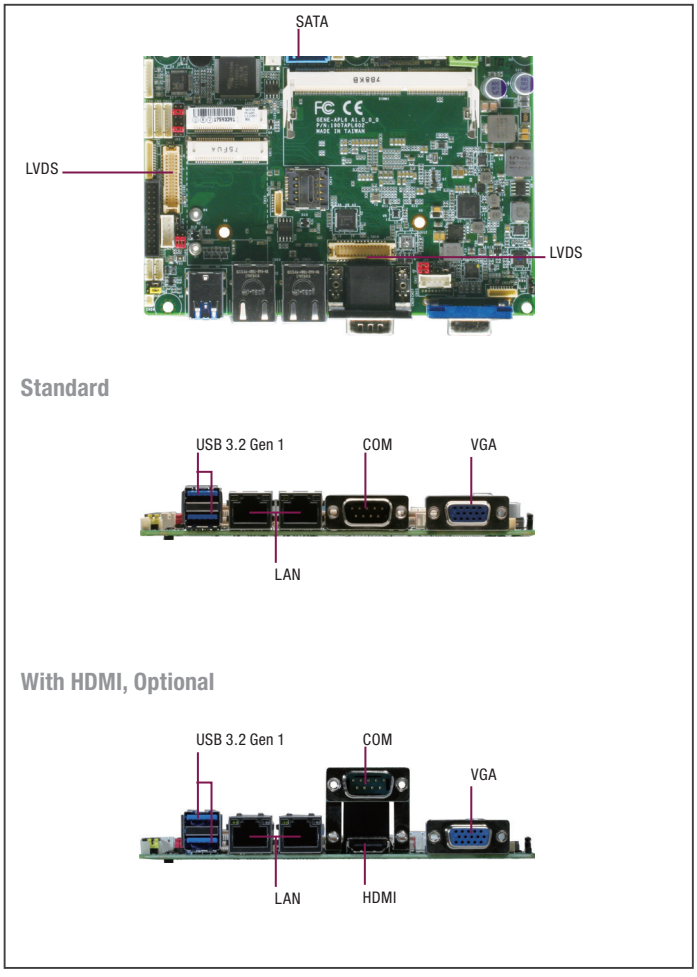


Ordering Information

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



Features

- DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
- 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

Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	Realtek ALC897/892
Audio Interface	Line-In / Line-Out / Mic (Audio function not available for WiTAS SKU)
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 (Audio function not available for WiTAS SKU)
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 PCIe/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

Specifications

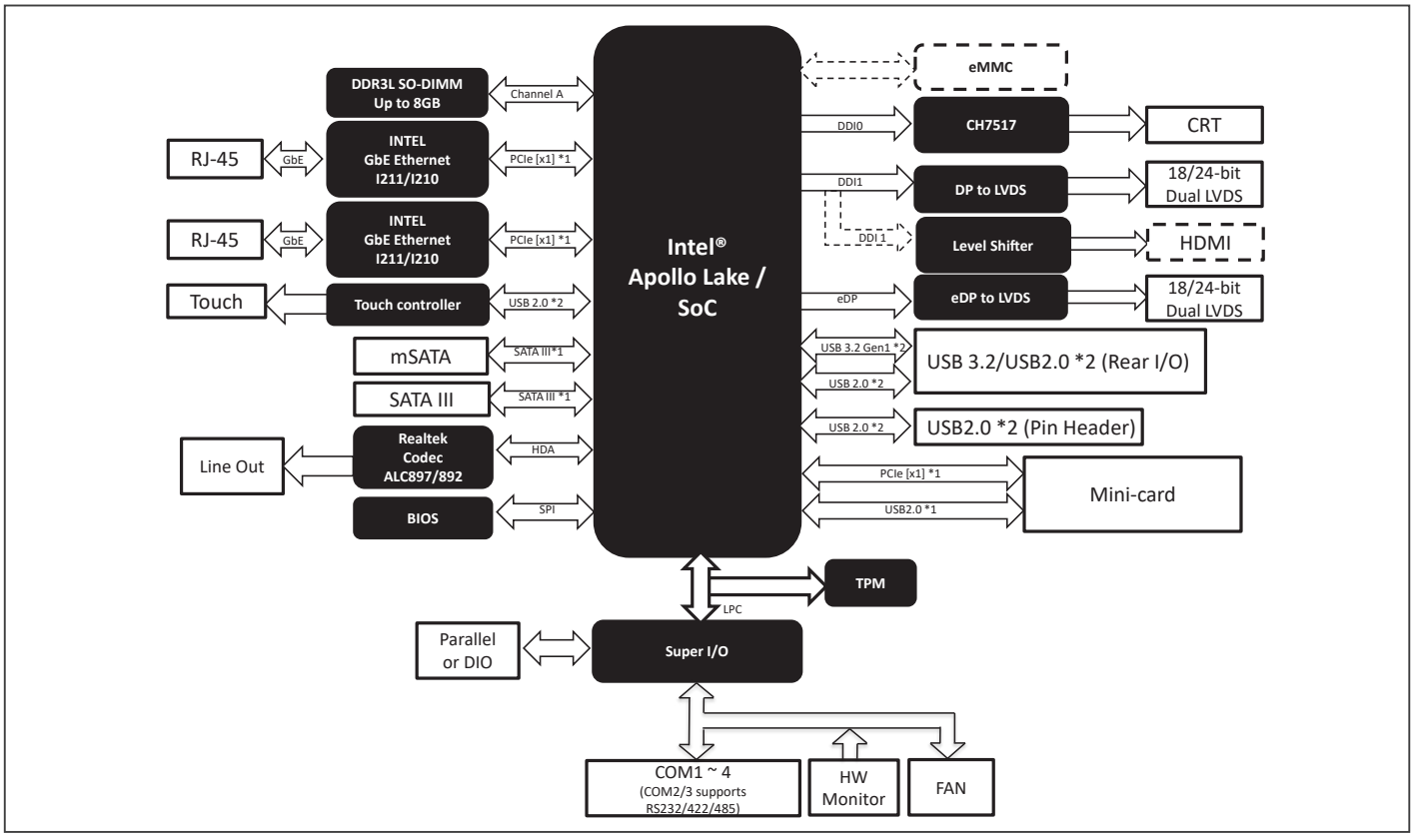
System	
Form Factor	3.5" SubCompact Board
CPU	Intel® Atom®/Celeron®/Pentium® Processor: Pentium N4200 (4C/4T,1.10GHz,up to 2.50GHz, 6W) Celeron N3350 (2C/2T,1.10GHz,up to 2.40GHz, 6W) Atom E3950 (4C/4T,1.60GHz, up to 2.00GHz, 9.5W) Atom E3940 (4C/4T,1.60GHz,up to 1.80GHz, 9.5W) Atom E3930 (2C/2T,1.30GHz,up to 1.80GHz, 6.5W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAH
Dimensions	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

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

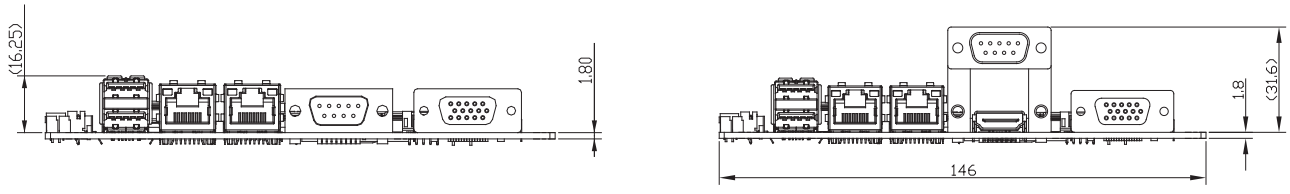
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Standard

With HDMI, Optional

Packing List

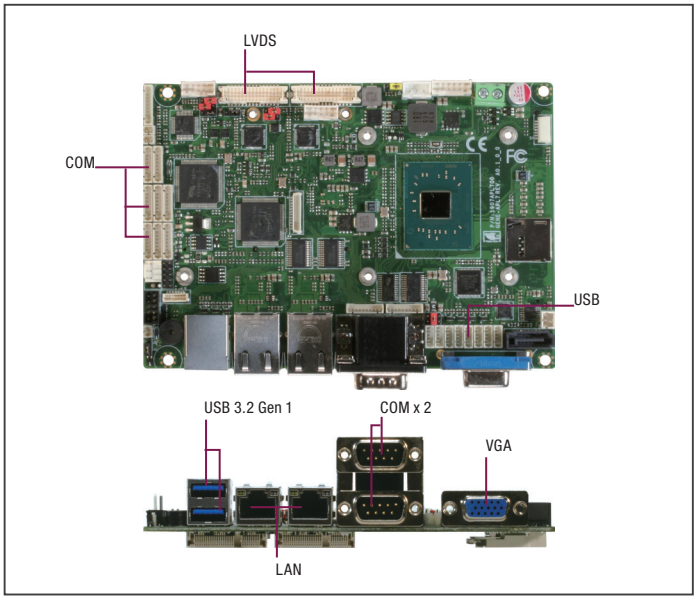
Part Number	Description	QTY
GENE-APL6	GENE-APL6 MB	1
TH3APL6010	Heat spreader for CPU N Series	1
M16APL6001	Heat spreader for CPU E Series	1

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, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
- 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

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 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	—
RTC Battery	Lithium Battery 3V/240mAh
Dimensions	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 PCIe/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

Packing List

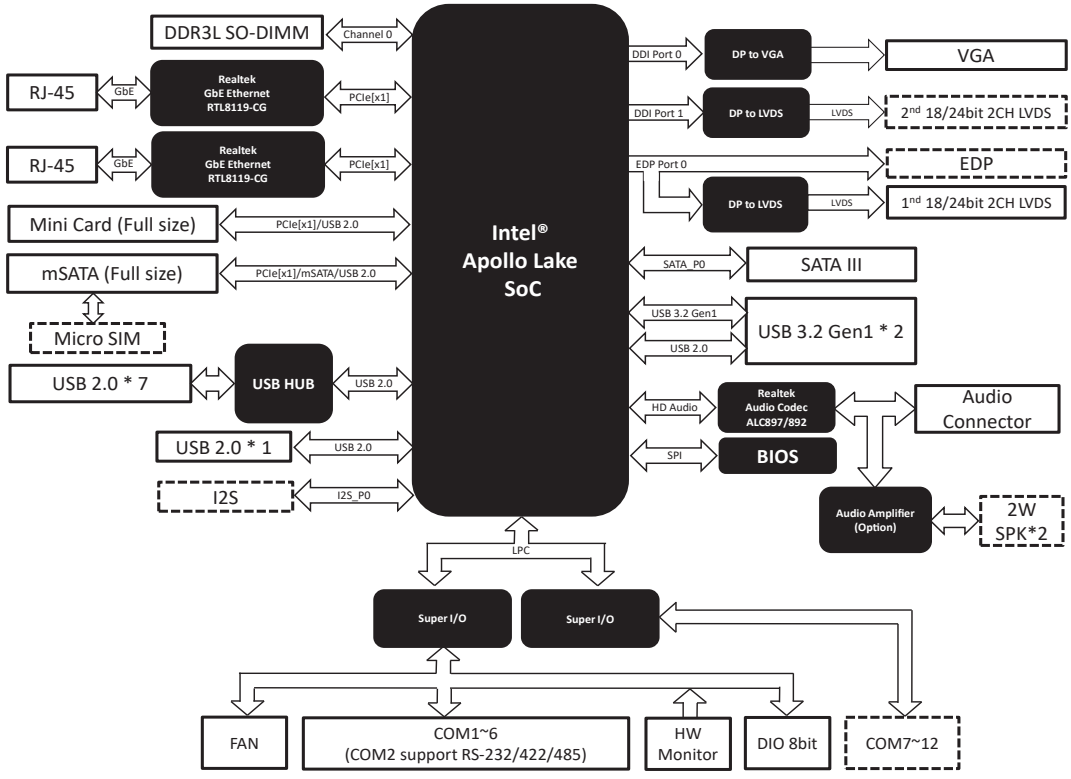
Part Number	Description	QTY
GENE-APL7	GENE-APL7 MB	1

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

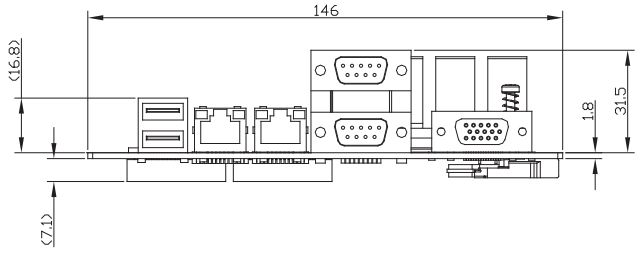
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



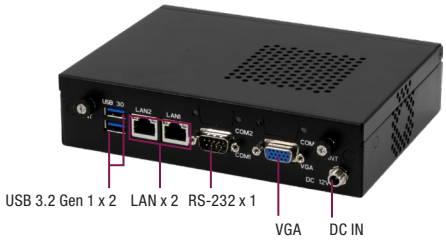
Ordering Information

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

GENE System with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC





Features

- **Intel® Pentium® N4200/ Celeron® N3350 Processor SoC**
- **DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)**
- **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**

Gigo LAN | DDR 3L | USB 2.0 | USB 3.2 Gen 1 | SATA 3

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 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	—
RTC Battery	Lithium Battery 3V/240mAh
Dimensions	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 PCIe/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

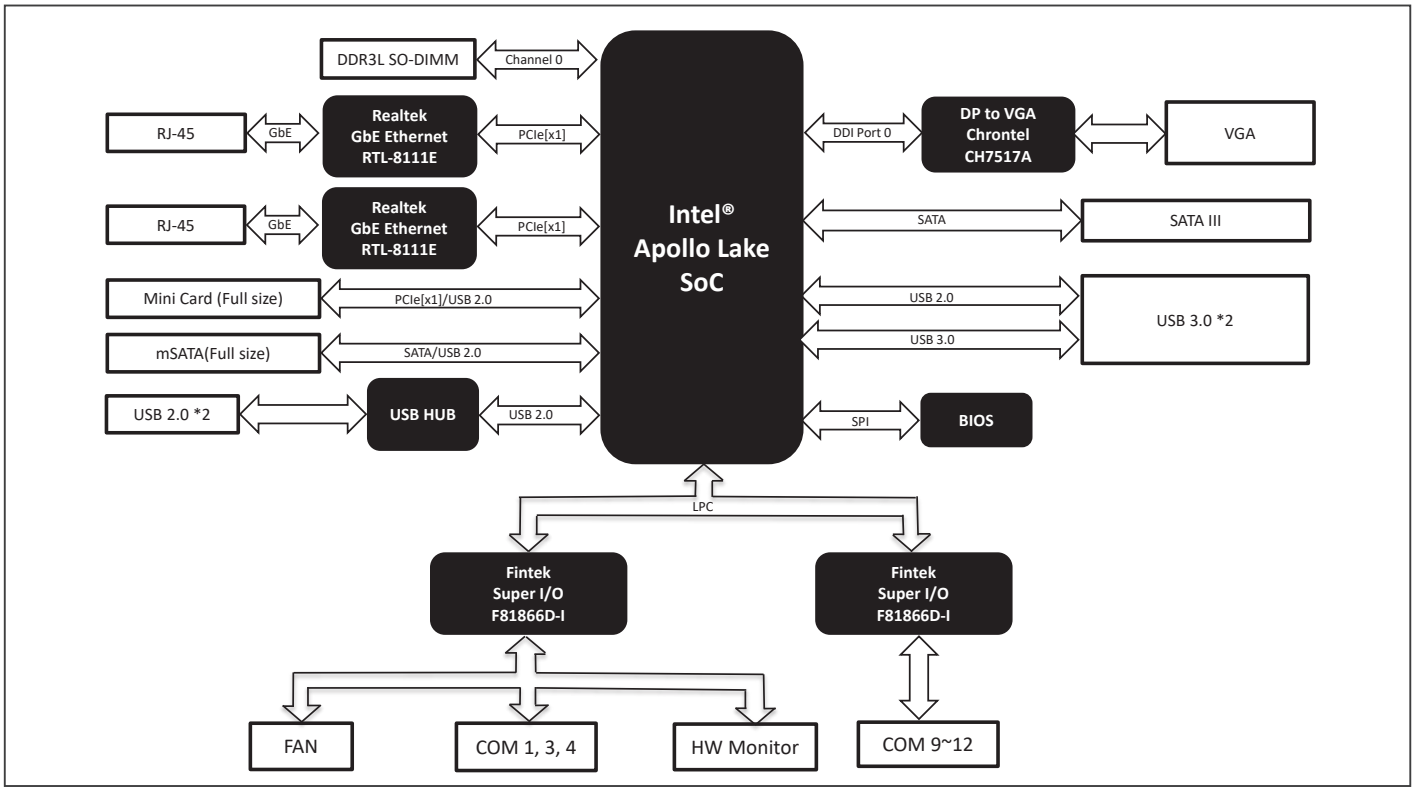
Part Number	Description	QTY
GENESYS-APL7	GENESYS-APL7 GENE System	1

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
12553060Z	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
GENESYSM-ALL-WMT1	Wall Mount Kit. For GENESYS-APL7	1
GENESYSM-ALL-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

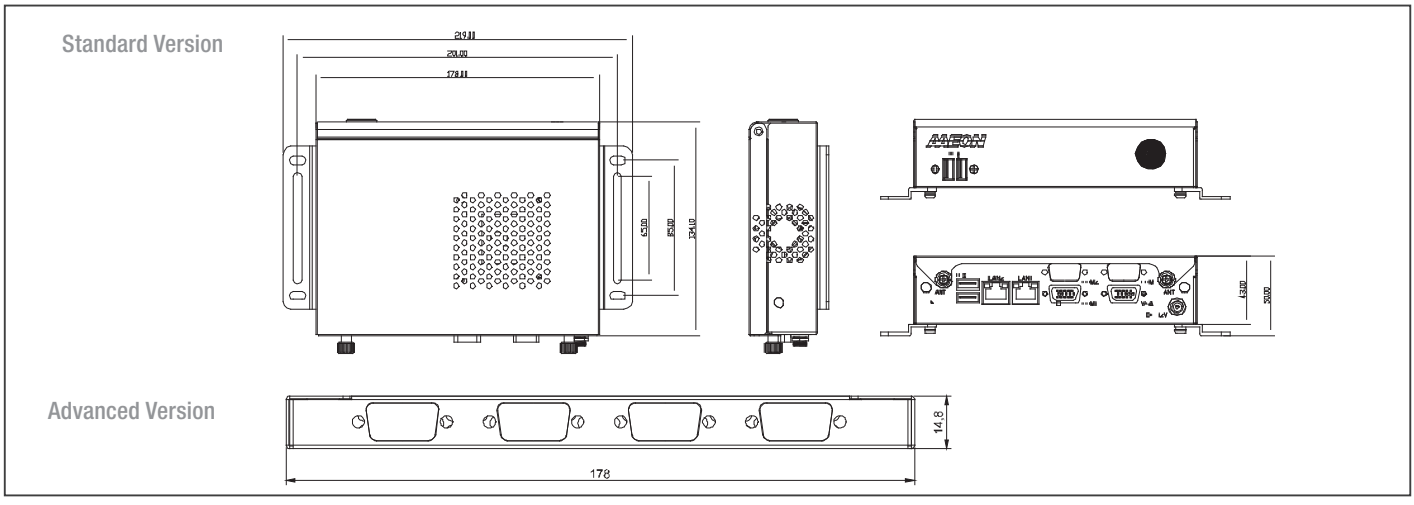
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

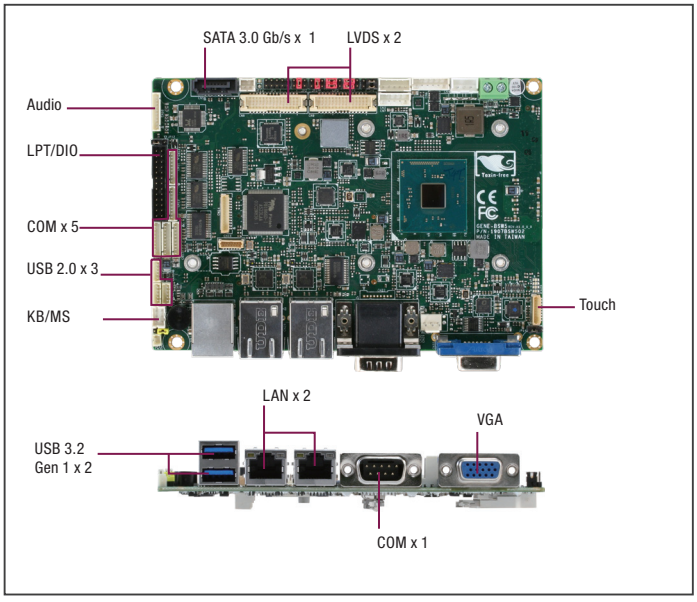


Ordering Information

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	—

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

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

SATA	SATA III x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Audio function not available for WiTAS SKU)
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 PCIe/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

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
Dimensions	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 (Audio function not available for WiTAS SKU)
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)

Packing List

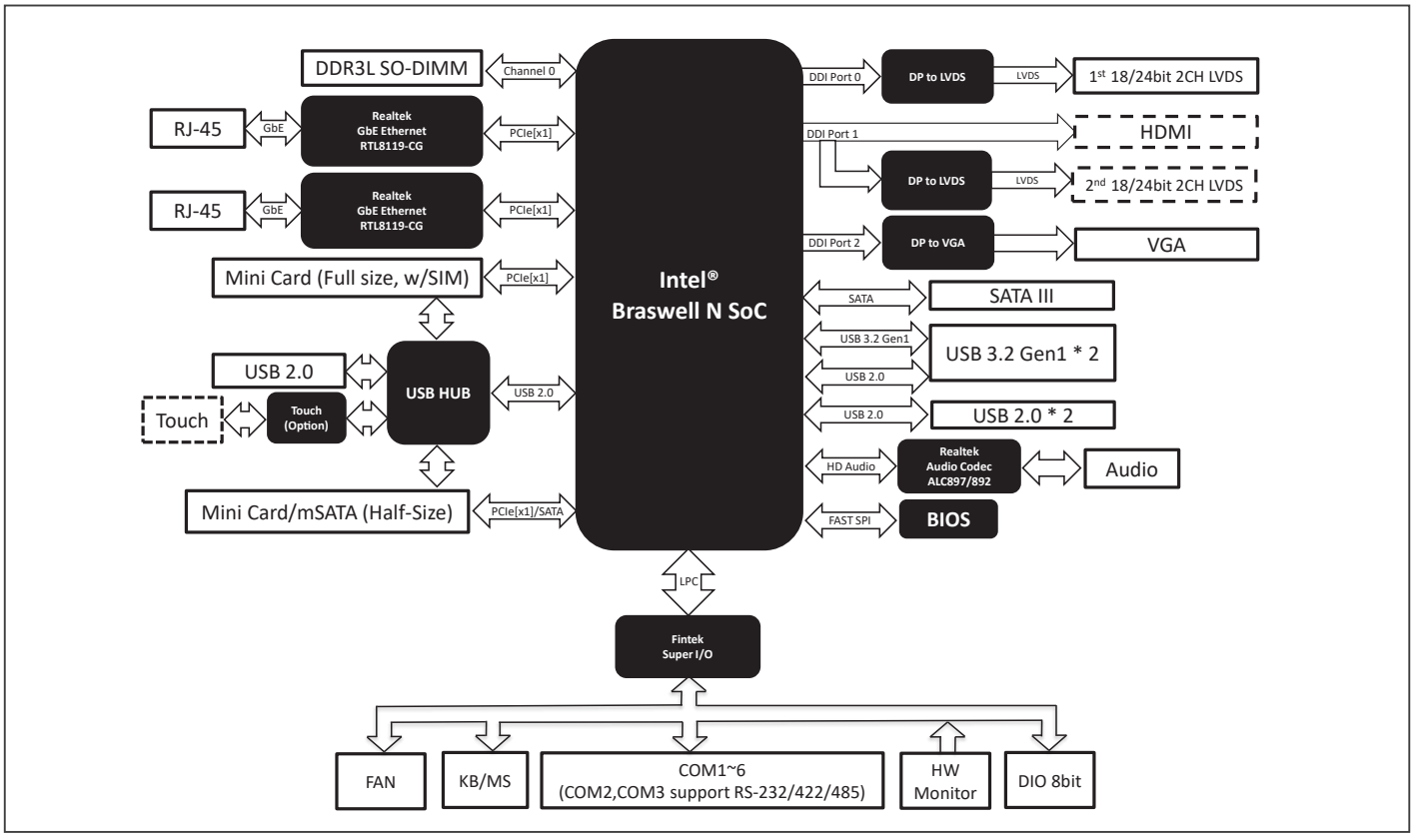
Part Number	Description	QTY
GENE-BSW5	GENE-BSW5 MB	1
M16BT05000	Heatsink	1

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

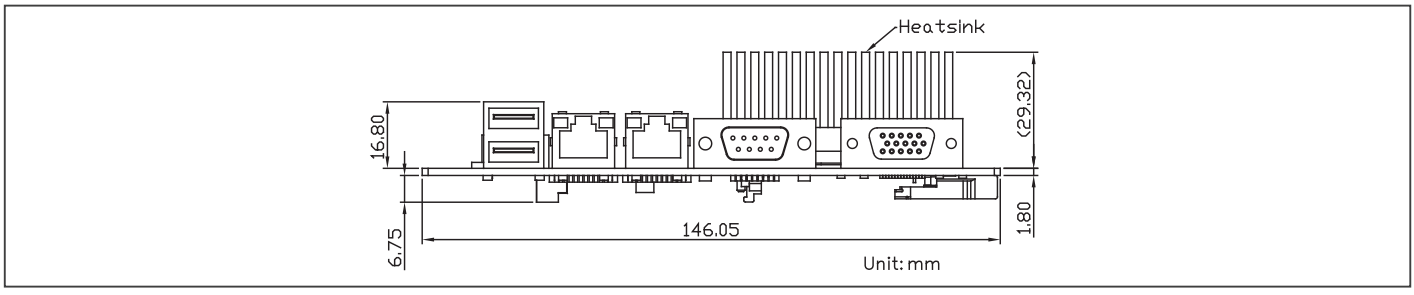
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

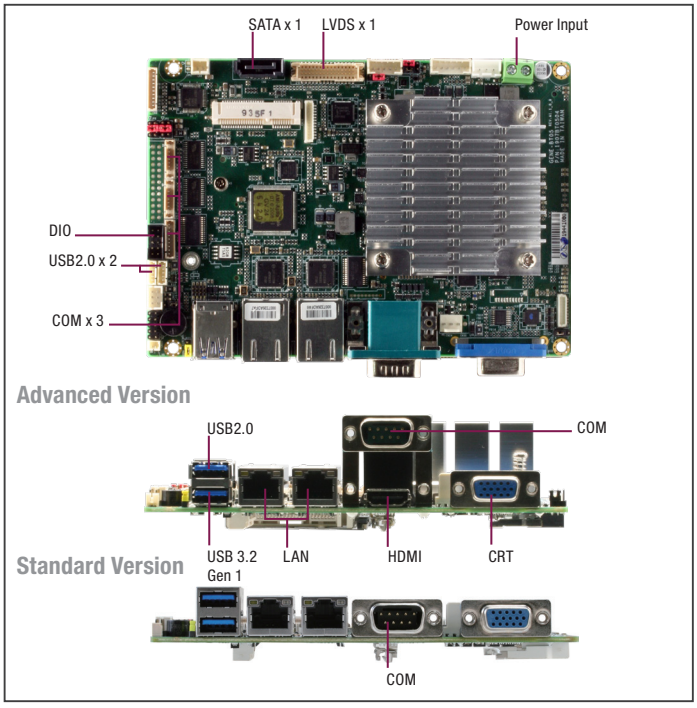


Ordering Information

Part Number	CPU	Display	LAN	USB	RS-232	RS-232/422/485	Storage	Expansion Slot	Power	Operating Temp	Others
GENE-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-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)

Gigo LAN · DDR 3L · Audio · LVDS · USB 2.0 · USB 3.2 Gen 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 (Audio function not available for WiTAS SKU)
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 PCIe/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

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
Dimensions	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 (Audio function not available for WiTAS SKU)
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

Packing List

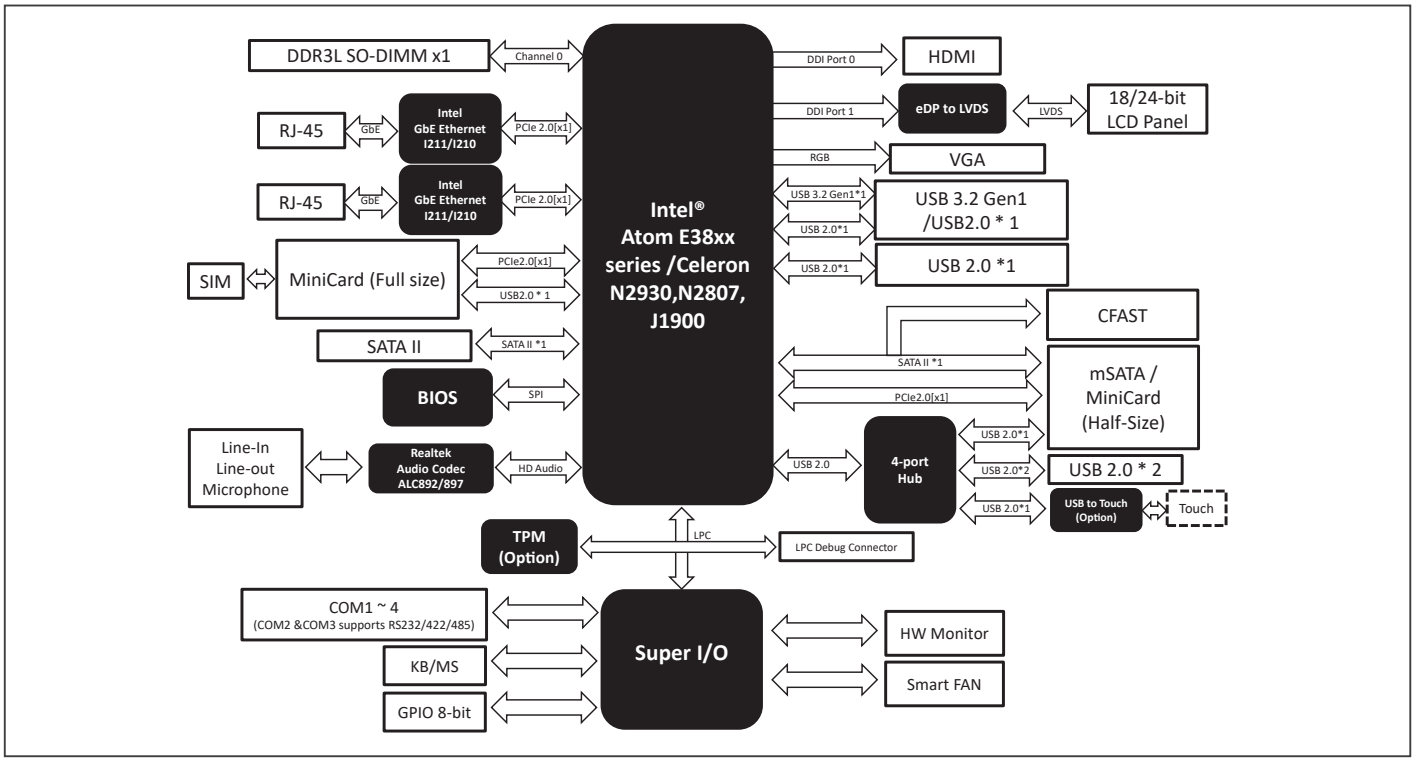
Part Number	Description	QTY
GENE-BT05	GENE-BT05 MB	1
M16BT07020	Heatsink	1

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

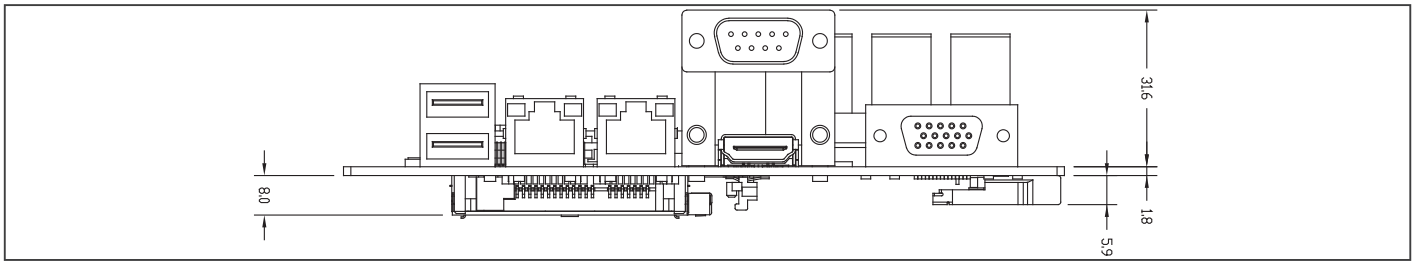
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

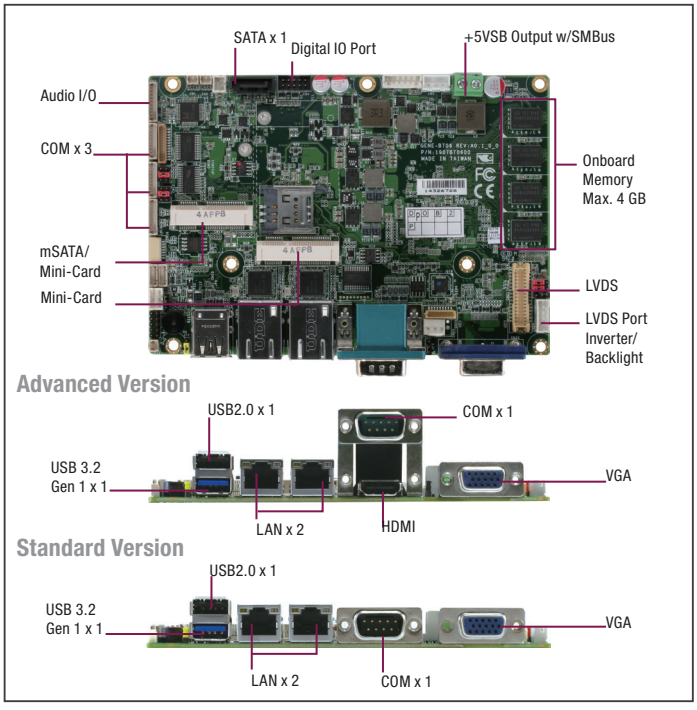


Ordering Information

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	Audio, Touch, SIM, GPIO 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	Audio, GPIO 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	Audio, Touch, SIM, GPIO 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	Audio, GPIO 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	Audio, Touch, SIM, GPIO 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	Audio, GPIO 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	Audio, Touch, SIM, GPIO 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	Audio, GPIO 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	Audio, Touch, SIM, GPIO 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	Audio, GPIO 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)	GPIO 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)	GPIO x 8

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

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
Dimensions	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 (Audio function not available for WiTAS SKU)
Speaker	2W Amplifier (Optional, audio function not available for WiTAS SKU)
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 (Audio function not available for WiTAS SKU)
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 PCIe/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

Packing List

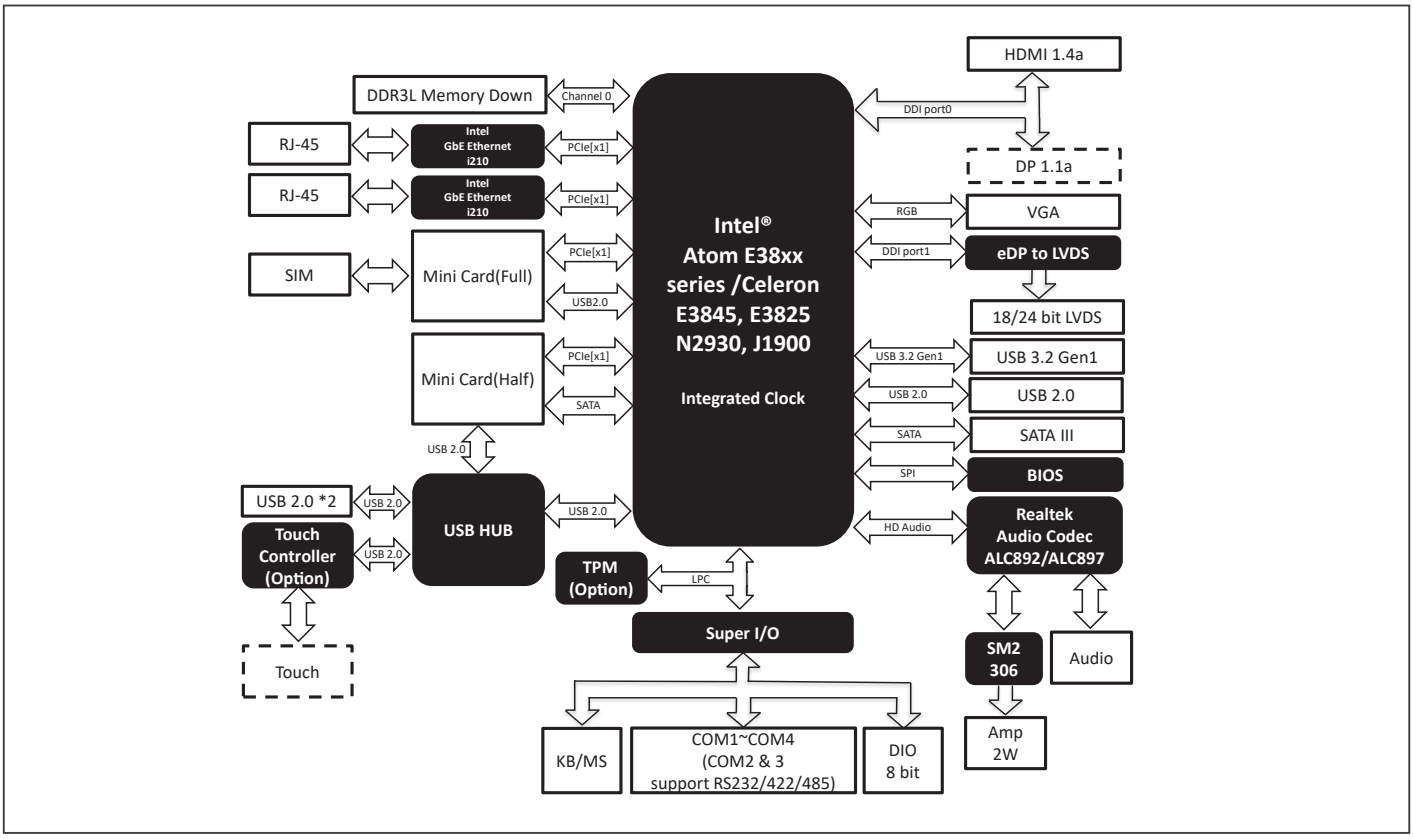
Part Number	Description	QTY
GENE-BT06	GENE-BT06 MB	1
M10BT06010	Heat spreader	1

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

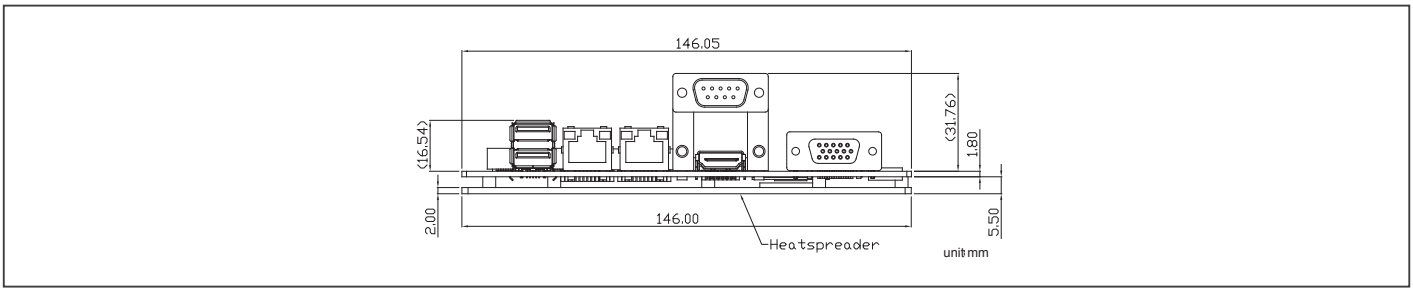
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

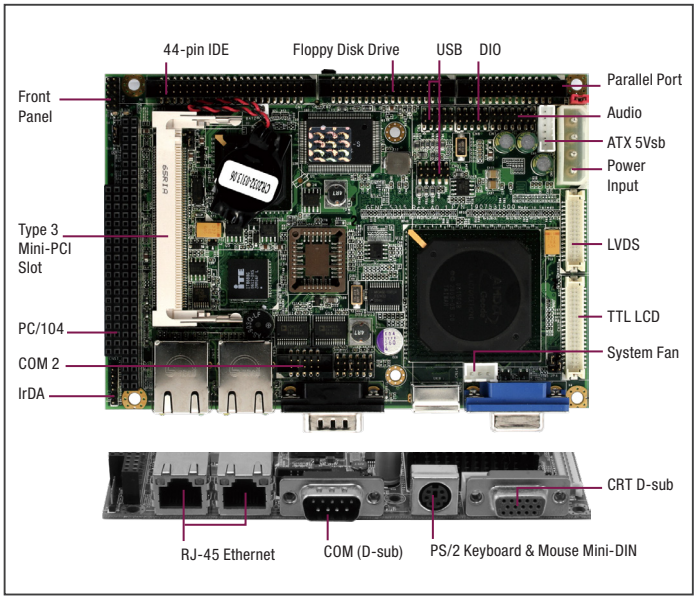


Ordering Information

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)	–	9~24V	0°C ~ 60°C	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

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
Dimensions	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 (Audio function not available for WiTAS SKU)
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(Audio function not available for WiTAS SKU)
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 PCIe/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

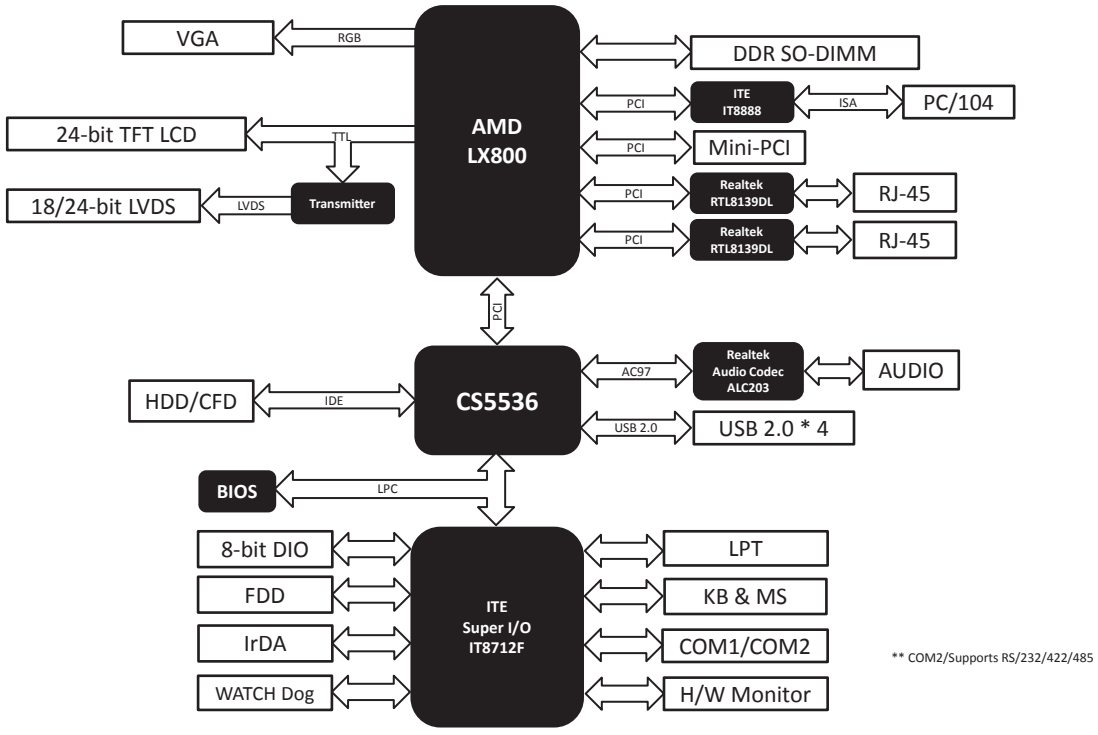
Part Number	Description	QTY
GENE-5315	GENE-5315 Rev. A MB	1
9681Y00006	Cable Kit for GENE-5315	1
170X000917	Keyboard & Mouse Cable	1
170X000916	USB Cable	1
170X000918	IDE Cable	1
9657666600	Jumper Cap	1

Optional Accessories

Part Number	Description	QTY
1702200205	Conversion Cable for ATX Power Supply, Length 20cm	1
170X000834	Audio Cable, Length 18cm	1
1709100208	USB Cable, Length 20cm	1
1701100206	COM Port Cable, 9P DB Male, Length 20cm	1
170X000925	Parallel Port Cable, Length 20 cm	1
1701340600	Floppy Cable, Length 60 cm	1

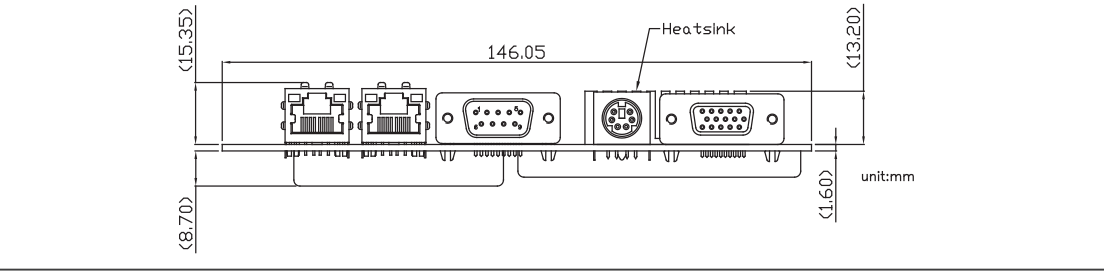
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

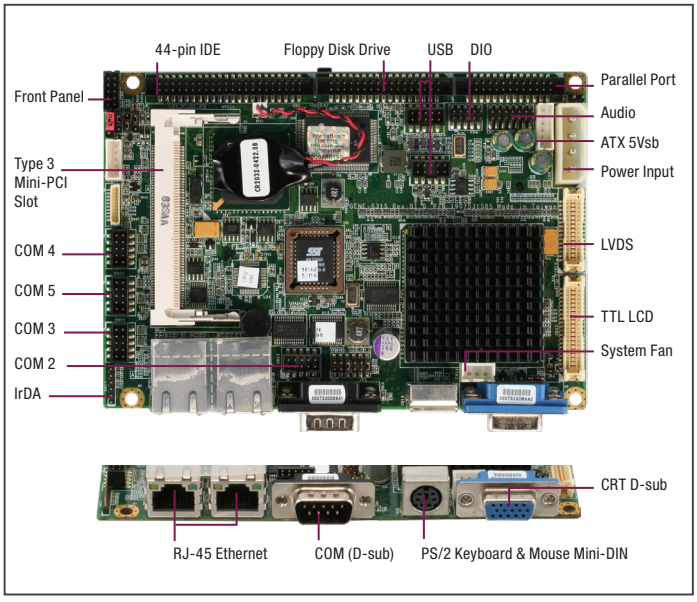


Ordering Information

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



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
Dimensions	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 (Audio function not available for WiTAS SKU)
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(Audio function not available for WiTAS SKU)
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 PCIe/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

Packing List

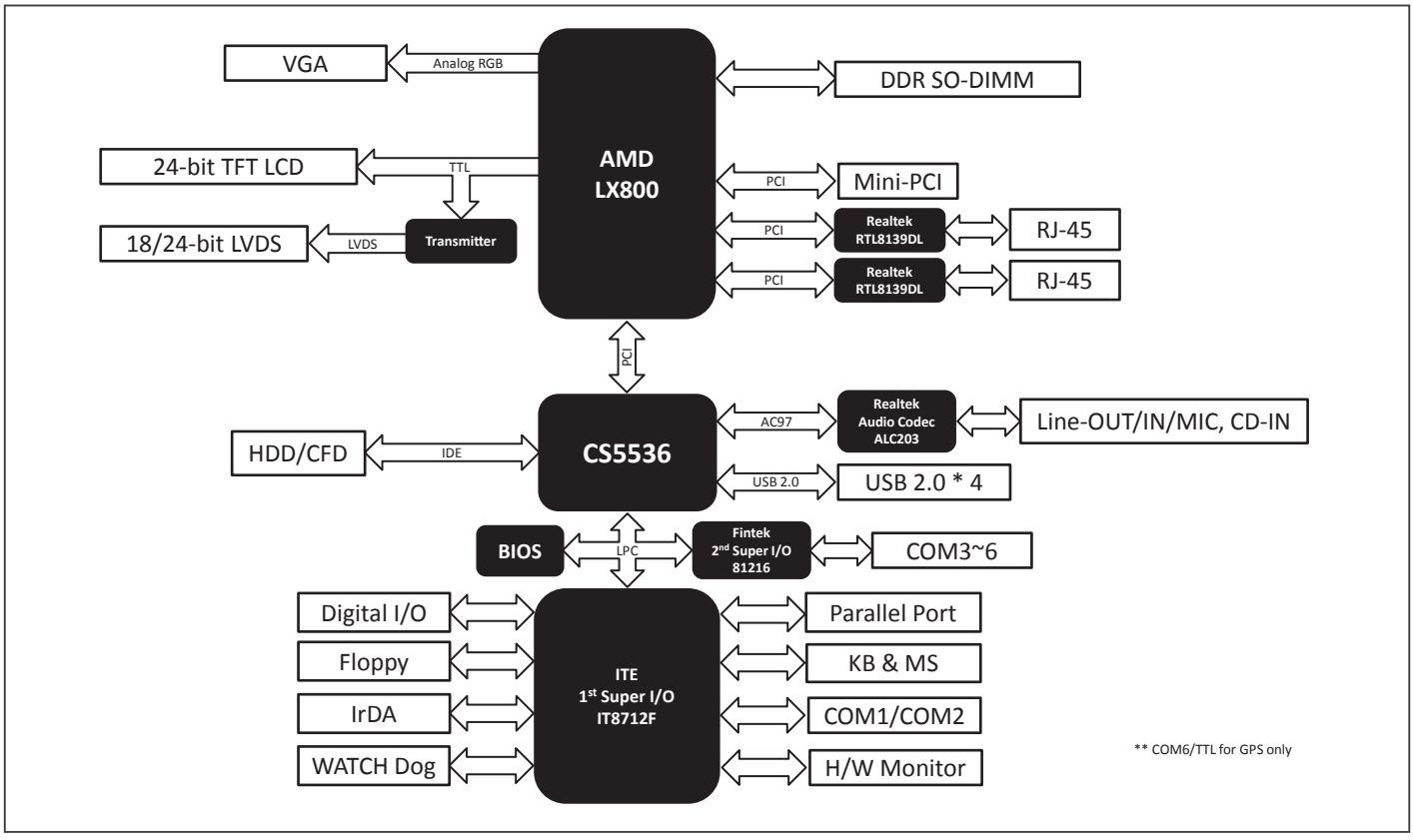
Part Number	Description	QTY per Board
GENE-5315	GENE-5315 Rev. B MB	1
9681Y00006	Cable Kit for GENE-5315(Keyboard & Mouse Cable, USB Cable, IDE Cable)	1
9657666600	Jumper Cap	1

Optional Accessories

Part Number	Description	QTY
1702200205	Conversion Cable for ATX Power Supply, Length 20cm	1
170X000834	Audio Cable, Length 18cm	1
1709100208	USB Cable, Length 20cm	1
1701100206	COM Port Cable, 9P DB Male, Length 20cm	1
170X000925	Parallel Port Cable, Length 20 cm	1
1701340600	Floppy Cable, Length 60 cm	1

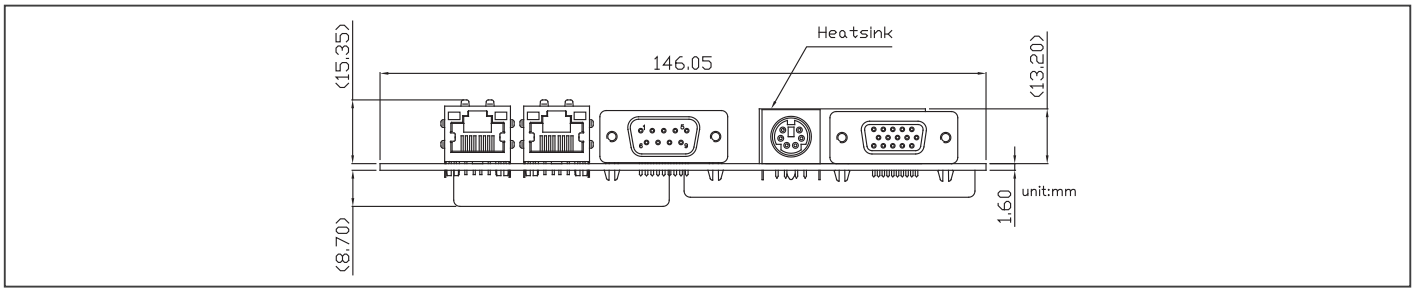
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

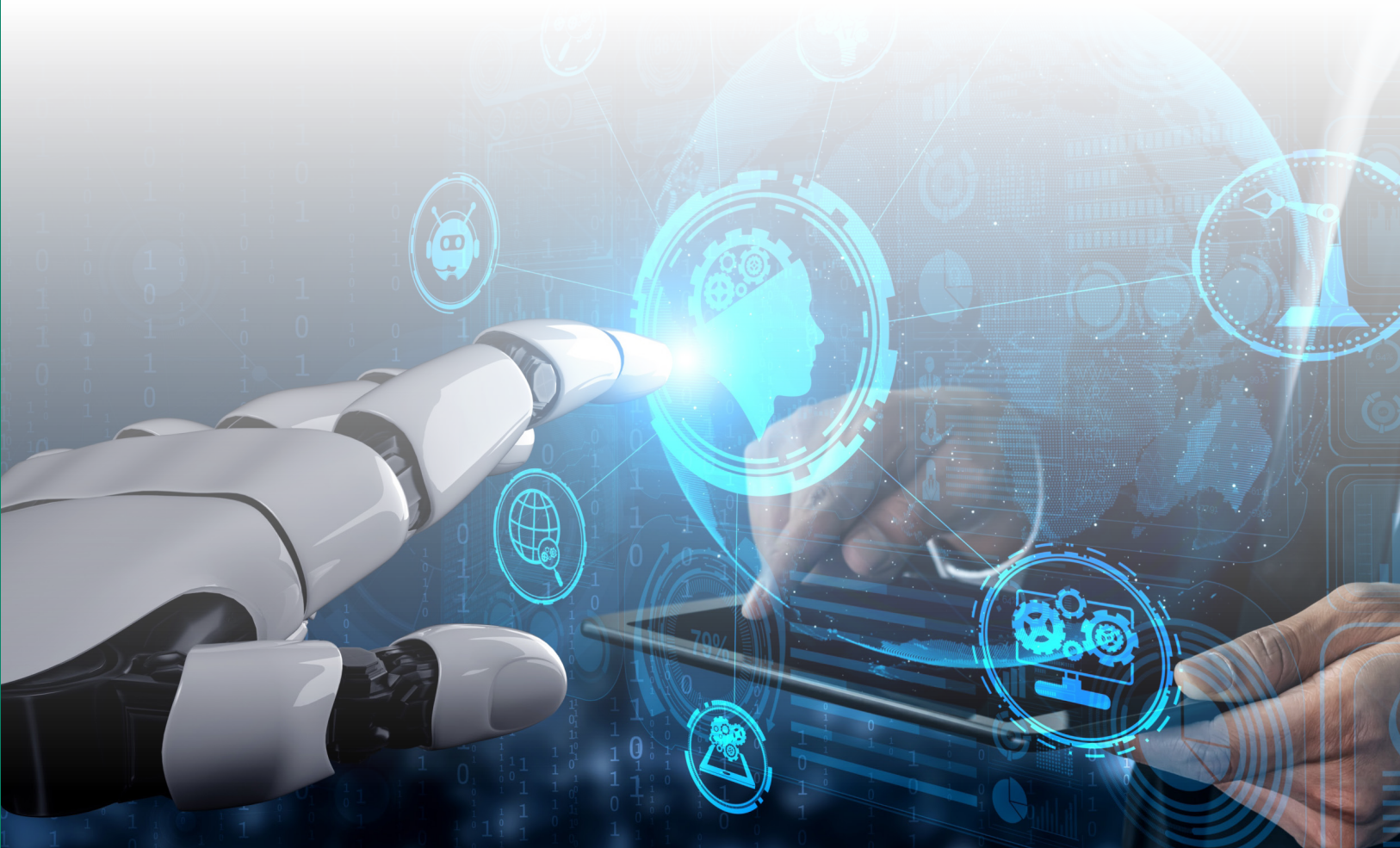


Ordering Information

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

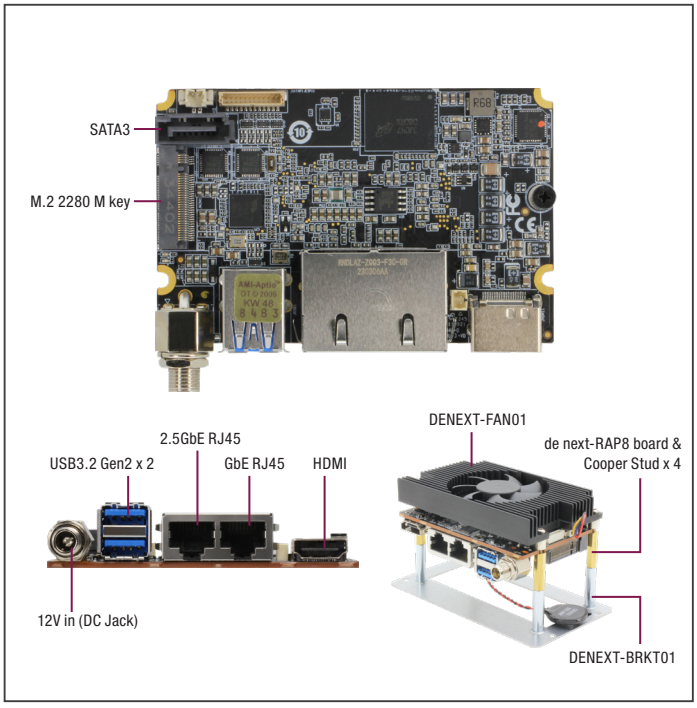
07

07
de next



de next-RAP8 PRELIMINARY

86mm x 55mm Single Board with 13th Generation Intel® Core™ i7/i5/i3 Processor



Features

- **Onboard 13th Gen. Intel® Core™ Series Processor, TDP 15W**
- **Onboard LPDDR5x up to 16GB**
- **HDMI 1.4b x 1**
- **2.5GbE RJ45 x 1, GbE RJ45 x 1**
- **USB 3.2 Gen 2 x 2**
- **M.2 2280 M-Key x 1 (PCIe [x2] x 1)**
- **DC 12Vin**
- **Multiple Dissipation Solutions : with CPU Cooler Version / with Heatsink Version**

Specifications

System	
Form Factor	86mm x 55mm, Single board computer
CPU	Onboard 13th Gen. Intel® Core™ i7/i5/i3/Celeron Processor
Chipset	Integrated with Intel® SoC
Memory Type	Onboard LPDDR5x , up to 16GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	fTPM
RTC Battery	Lithium Battery 3V/240mAh
Dimensions	3.38" x 2.17" (86 mm x 55 mm)
OS Support	Windows 10 (64bit) Ubuntu 22.04.2 (Kernel 5.19)
Power	
Power Requirement	+12V
Power Supply Type	AT/ATX (Default : AT mode)
Connector	DC Jack Connector
Power Consumption	TBD
Display	
Controller	Intel® Iris® Xe Graphic Engine
LVDS/eDP	—
Display Interface	HDMI 1.4b x 1 , eDP x 1
Multiple Display	Up to Dual Displays
Audio	
Codec	—
Audio Interface	—
Speaker	—
External I/O	
Ethernet	Intel® i219LM, 10/100/1000Base,RJ-45 x1 , Intel® i226LM, 10/100/2500Base,RJ-45 x1
USB	Rear I/O : USB3.2 Gen2 Type A x 2
Serial Port	—
Video	HDMI 1.4b x 1

Internal I/O	
USB	USB2.0 x 4 (Pin Header)
Serial Port	RS 232/422/285 x 2 (Pin Header)
Video	eDP x 1
SATA	SATA 3 x 1 , +5V SATA Power Connector x 1
Audio	—
DIO/GPIO	8-Bit
SMBus/I2C	SMBus/I2C x1 (Optional)
Touch	—
Fan	4 Pin Smart Fan (with Cooler version only)
Sim	—
Front Panel	PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	—
M.2	M.2 2280 M key (PCIe[x2]) x 1 , PCIe[x4] Gen3 (via FPC) x 1
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)	—
EMC	CE/FCC Class A

Packing List

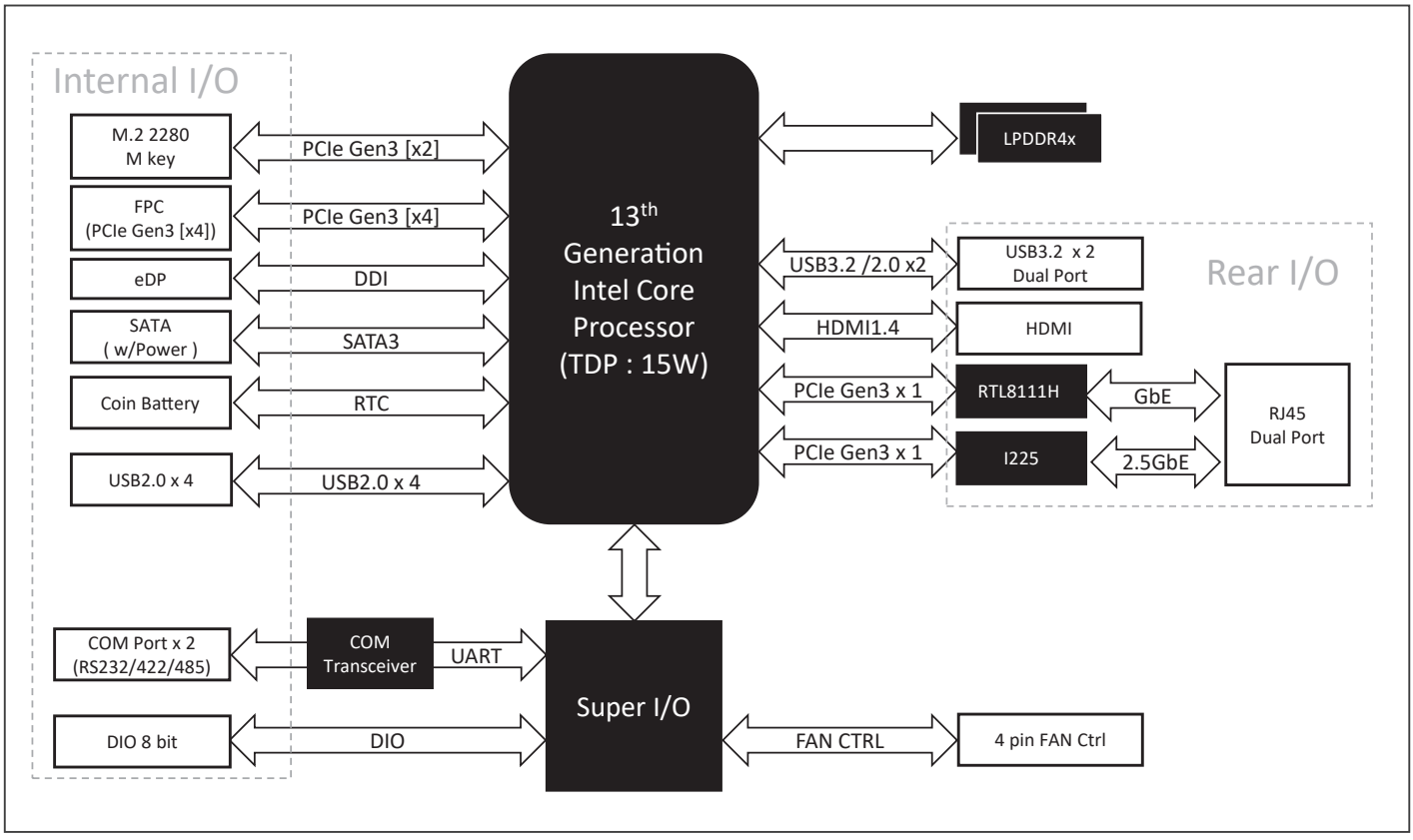
- **de next-RAP8 x 1**
- **Copper stud.M2.5mm x 4**

Optional Accessories

Part Number	Description	QTY
170X000512	de next cable for USB2.0 x 4, COM Port x 2, DIO 8 bit	1
170X000577	de next cable for USB 2.0 x 2, COM Port x 2, DIO 8 bit, adapter card connector	1
1709070200	SATA Cable,180D.Length 20cm	1
170X000322	SATA Power Cable.Length 6cm	1
DENEXT-FAN01	CPU cooler for de next-TGU8	1
DENEXT-BRKT01	Easy bracket for de next series use	1
DENEXT-HSP01	Heatspreader for de next-TGU8	1
PER-T642-A03-0001	M.2 M 2280 adaptor card to M.2 B key 2242 & M.2 E key 2230	1
PER-T643-A01-0001	M.2 M 2280 adaptor card to M.2 B key 2242 & M.2 B key 3052	1
PER-R41P-A02-0001	PCIe[x4] adapter card with FPC cable kit	1

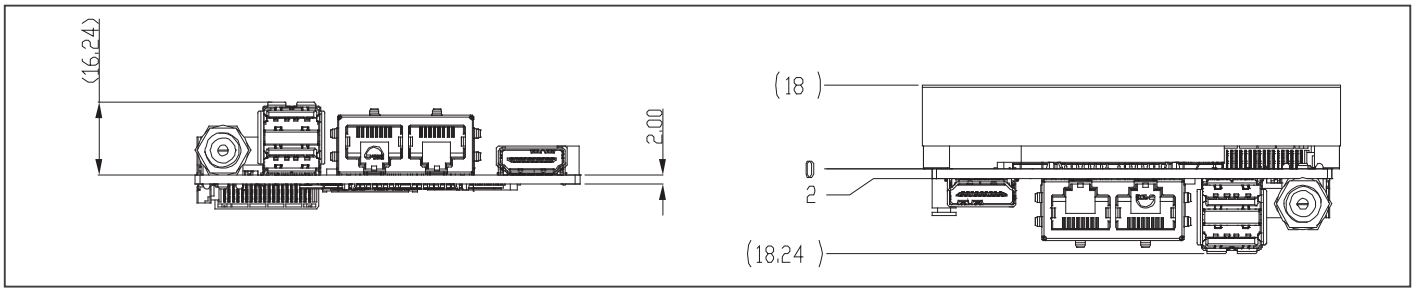
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

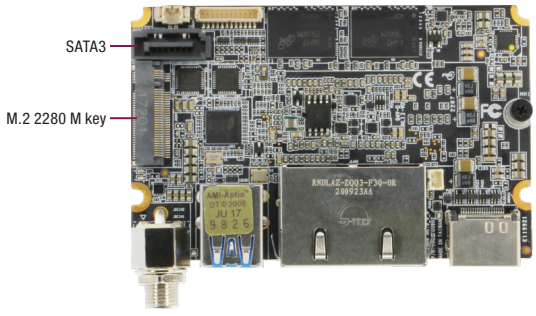


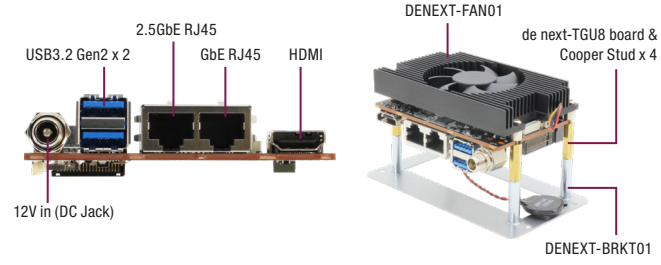
Ordering Information

- TBD

de next-TGU8

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





Features

- **Onboard 11th Gen. Intel® Core™ Series Processor**
- **Onboard LPDDR4x 3733 up to 16GB**
- **HDMI 1.4b x 1, eDP x 1**
- **2.5GbE RJ45 x 1, 1GbE RJ45 x 1**
- **USB 3.2 Gen 2 x 2, USB 2.0 x 4**
- **M.2 2280 M-Key x 1 (PCIe [x2]), PCIe Gen 3 [x4] x 1 (by FPC)**
- **COM Port x 2, GPIO 8-bit, SATA 6 Gb/s x 1**
- **12V-in DC Jack/2 Pin Phoenix Connector**

Specifications

System	
Form Factor	86mm x 55mm, Single Board Computer
CPU	Onboard 11th Gen. Intel® Core™ Processor i7-1185G7E (4C/8T, 1.80GHz,15W) i5-1145G7E (4C/8T, 1.50GHz,15W) i3-1115G4E (2C/4T, 2.20GHz, 15W)
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
Dimensions	3.38" x 2.17" (86mm x 55mm)
OS Support	Windows 10 (64bit) Ubuntu 20.04.4 (Kernel 5.13)
Power	
Power Requirement	+12V
Power Supply Type	AT/ATX
Connector	DC Jack Connector (Optional : Phoenix 2-Pin Connector)
Power Consumption	i7-1185G7E, LPDDR4x 16GB, 4.58A@12V, 55W (TYPICAL) i7-1185G7E, LPDDR4x 16GB, 7A@12V, 84W (MAX)
Display	
Controller	Intel® UHD Graphics for 11th Gen Intel® Processors
LVDS/eDP	eDP 1.4 x 1 , up to 3840 x 2160
Display Interface	HDMI 1.4 x 1 , up to 3840 x 2160@30Hz
Multiple Display	2 Simultaneous Displays
Audio	
Codec	—
Audio Interface	—
Speaker	—
External I/O	
Ethernet	Intel® i225, 2.5GbE RJ-45 x 1 Intel® i219, 1GbE RJ-45 x 1
USB	USB 3.2 Gen 2 x 2
Serial Port	—
Video	HDMI 1.4b x 1

Internal I/O	
USB	USB 2.0 x 4 Note : USB2.0 x 2 shared with adapter card PER-T642 / PER-T643
Serial Port	COM1 , COM2 (RS232/422/485, support 5V/RI)
Video	eDP 1.4 x 1
SATA	SATA 6.0 Gbps x 1 with +5V SATA Power Connector x 1
Audio	—
DIO/GPIO	GPIO 8 bits
SMBus/I2C	Optional
Touch	—
Fan	4 Pin Smart Fan
Sim	—
Front Panel	Power Button, Reset Button, Power LED, SATA LED, Buzzer
Others	—
Expansion	
Mini PCIe/mSATA	—
M.2	M.2 2280 M-key x 1 (PCIe[x2] x 1 or PCIe[x1] x 2, selected by BIOS)
Others	FPC Connector x 1 (PCIe 3.0 [x4] x 1)
Environment & Certification	
Operating Temp.	32°F ~ 140°F (0°C ~ 60°C), -40°F ~ 185°F (-40°C ~ 85°C) by sku support
Storage Temp.	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	609,263
EMC	CE/FCC Class A

Packing List

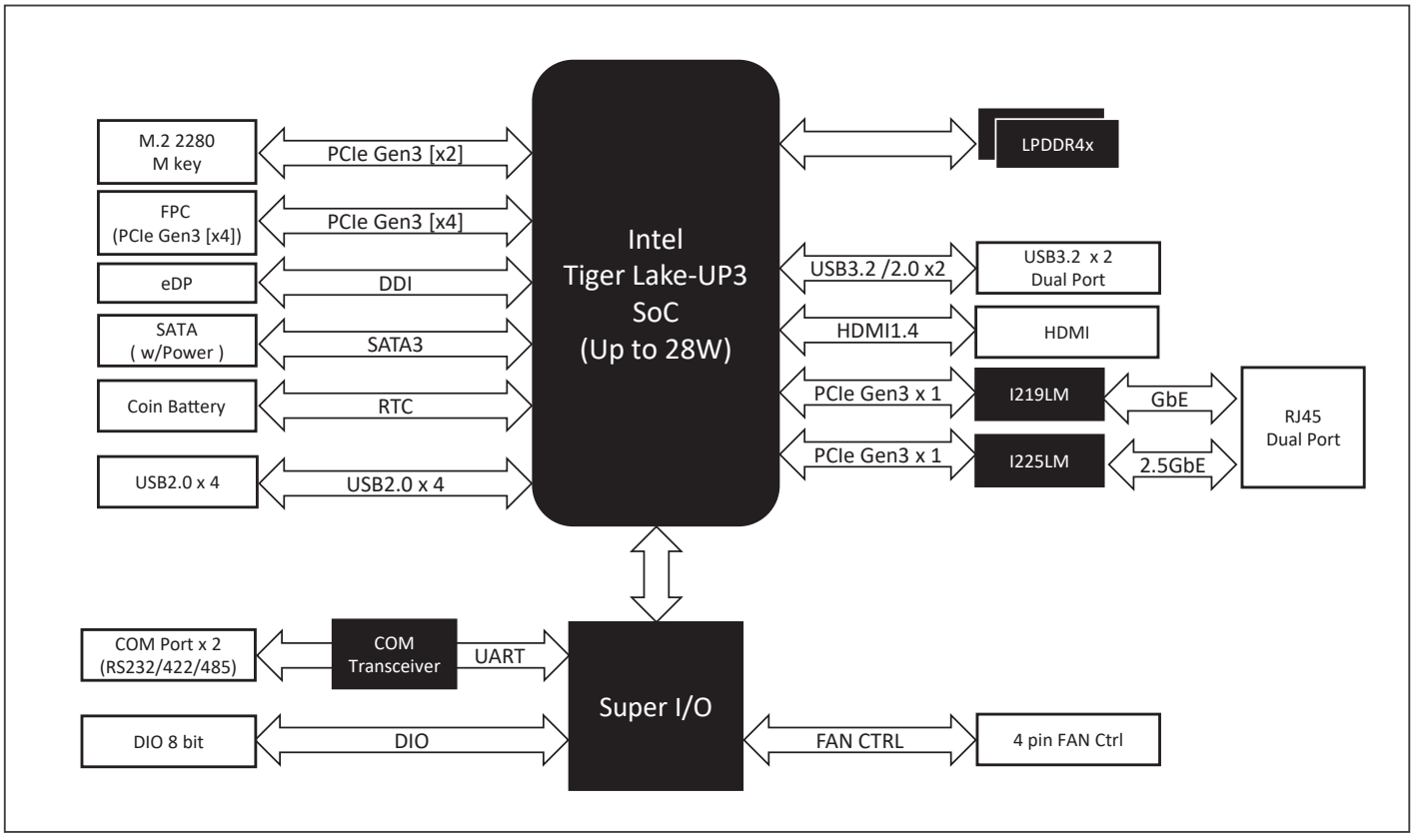
- **de next-TGU8 x 1**
- **Copper stud.M2.5mm x 4**

Optional Accessories

Part Number	Description	QTY
170X000512	de next cable for USB2.0 x 4, COM Port x 2, DIO 8 bit	1
170X000577	de next cable for USB 2.0 x 2, COM Port x 2, DIO 8 bit, adapter card connector	1
1709070200	SATA Cable,180D.Length 20cm	1
170X000322	SATA Power Cable.Length 6cm	1
DENEXT-FAN01	CPU cooler for de next-TGU8	1
DENEXT-BRKT01	Easy bracket for de next series use	1
DENEXT-HSP01	Heatspreader for de next-TGU8	1
PER-T642-A03-0001	M.2 M 2280 adaptor card to M.2 B key 2242 & M.2 E key 2230	1
PER-T643-A01-0001	M.2 M 2280 adaptor card to M.2 B key 2242 & M.2 B key 3052	1
PER-R41P-A02-0001	PCIe[x4] adapter card with FPC cable kit	1

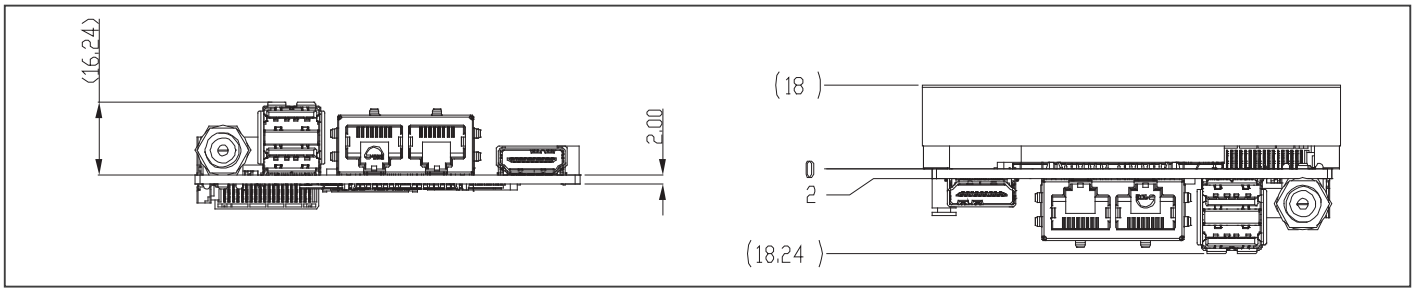
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

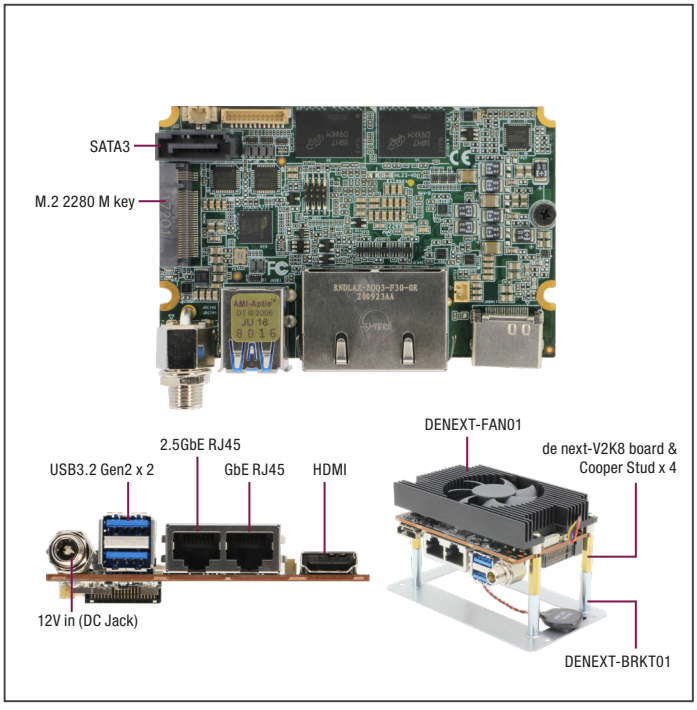


Ordering Information

Part Number	CPU	Memory	Display	Storage	LAN	USB	COM Port	Expansion	TPM	Power	Operating Temperature	Others
DENEXT-TGU8-A10-0001	i7-1185G7E	Onboard LPDDR4x 16GB	eDP x 1 , HDMI x 1	SATA 6.0 Gbps x 1	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 2 , USB 2.0 x 4	RS232/422/485 x 2	M.2 2280 M-key x 1 , FPC Connector x 1	fTPM	+12V in (DC Jack)	0°C ~ 60°C	GPIO 8 bits
DENEXT-TGU8-A10-0002	i5-1145G7E	Onboard LPDDR4x 16GB	eDP x 1 , HDMI x 1	SATA 6.0 Gbps x 1	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 2 , USB 2.0 x 4	RS232/422/485 x 2	M.2 2280 M-key x 1 , FPC Connector x 1	fTPM	+12V in (DC Jack)	0°C ~ 60°C	GPIO 8 bits
DENEXT-TGU8-A10-0003	i3-1115G4E	Onboard LPDDR4x 16GB	eDP x 1 , HDMI x 1	SATA 6.0 Gbps x 1	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 2 , USB 2.0 x 4	RS232/422/485 x 2	M.2 2280 M-key x 1 , FPC Connector x 1	fTPM	+12V in (DC Jack)	0°C ~ 60°C	GPIO 8 bits
DENEXT-TGU8-A10-0004	i7-1185G7E	Onboard LPDDR4x 16GB	eDP x 1 , HDMI x 1	SATA 6.0 Gbps x 1	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 2 , USB 2.0 x 4	RS232/422/485 x 2	M.2 2280 M-key x 1 , FPC Connector x 1	fTPM	+12V in (2 Pin Phoenix Connector)	0°C ~ 60°C	GPIO 8 bits
DENEXT-TGU8-A10-0005	i3-1115G4E	Onboard LPDDR4x 16GB	eDP x 1 , HDMI x 1	SATA 6.0 Gbps x 1	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 2 , USB 2.0 x 4	RS232/422/485 x 2	M.2 2280 M-key x 1 , FPC Connector x 1	fTPM	+12V in (2 Pin Phoenix Connector)	0°C ~ 60°C	GPIO 8 bits
DENEXT-TGU8W2-A10-0001	i7-1185G7E	Onboard LPDDR4x 16GB	eDP x 1 , HDMI x 1	SATA 6.0 Gbps x 1	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 2 , USB 2.0 x 4	RS232/422/485 x 2	M.2 2280 M-key x 1 , FPC Connector x 1	fTPM	+12V in (DC Jack)	-40°C ~ 85°C	GPIO 8 bits

de next-V2K8

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



Features

- **Onboard AMD Ryzen™ Embedded V2718/V2516 Processor**
- **Onboard LPDDR4x 3200MHz, up to 16GB**
- **HDMI 1.4b x 1, eDP x 1**
- **2.5GbE x 1, GbE x 1**
- **USB 3.2 Gen 2 x 2, USB 2.0 x 4**
- **M.2 2280 M-Key x 1 (PCIe [x2]), FPC (PCIe [x4] x 1)**
- **COM Port x 2, DIO 8-bit, SATA III x 1**
- **12V-In DC Jack**

Specifications

System	
Form Factor	86mm x 55mm, Single Board Computer
CPU	AMD Ryzen™ Embedded V2000 Series Processor AMD Ryzen™ Embedded V2718 with Radeon™ Graphics (8C/16T, 1.7GHz, 25W) AMD Ryzen™ Embedded V2516 with Radeon™ Graphics (6C/16T, 2.1GHz, 25W)
Chipset	Integrated with AMD 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
Dimensions	3.38" x 2.17" (86mm x 55mm)
OS Support	Windows 10 (64bit) Ubuntu 22.04 (kernel 5.15)
Power	
Power Requirement	+12V
Power Supply Type	AT/ATX
Connector	DC Jack Connector (Optional : Phoenix 2-Pin Connector)
Power Consumption	V2718 , LPDDR4 16GB, 3.07A @12V, 36.84W (TYPICAL) V2718 , LPDDR4 16GB, 3.92A @12V, 47.04W (MAX)
Display	
Controller	AMD V-Series V2000 with Radeon™ Graphics
LVDS/eDP	eDP 1.4 x 1 , up to 3840 x 2160
Display Interface	HDMI 1.4 x 1 , up to 3840 x 2160@30Hz
Multiple Display	2 Simultaneous Displays
Audio	
Codec	—
Audio Interface	—
Speaker	—
External I/O	
Ethernet	Realtek RTL8111, 1GbE RJ-45 x 1 Intel® i226, 2.5GbE RJ-45 x 1
USB	USB 3.2 Gen 2 x 2
Serial Port	—
Video	HDMI 1.4b x 1
Internal I/O	
USB	USB 2.0 x 4 Note : USB2.0 x 2 shared with adapter card PER-T642 / PER-T643. (de next-V2K8-A11 only)
Serial Port	COM1 , COM2 (RS232/422/485, support 5V/RI)
Video	eDP 1.4 x 1
SATA	SATA 6.0 Gbps x 1 with +5V SATA Power Connector x 1
Audio	—
DIO/GPIO	GPIO 8 bits
SMBus/I2C	Optional
Touch	—
Fan	4 Pin Smart Fan
Sim	—
Front Panel	Power Button, Reset Button, Power LED, SATA LED, Buzzer
Others	—
Expansion	
Mini PCIe/mSATA	—
M.2	M.2 2280 M-key x 1 (PCIe[x2] x 1 or PCIe[x1] x 2, selected by BIOS)
Others	FPC Connector x 1 (PCIe 3.0 [x4] 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)	609,263
EMC	CE/FCC Class A

Packing List

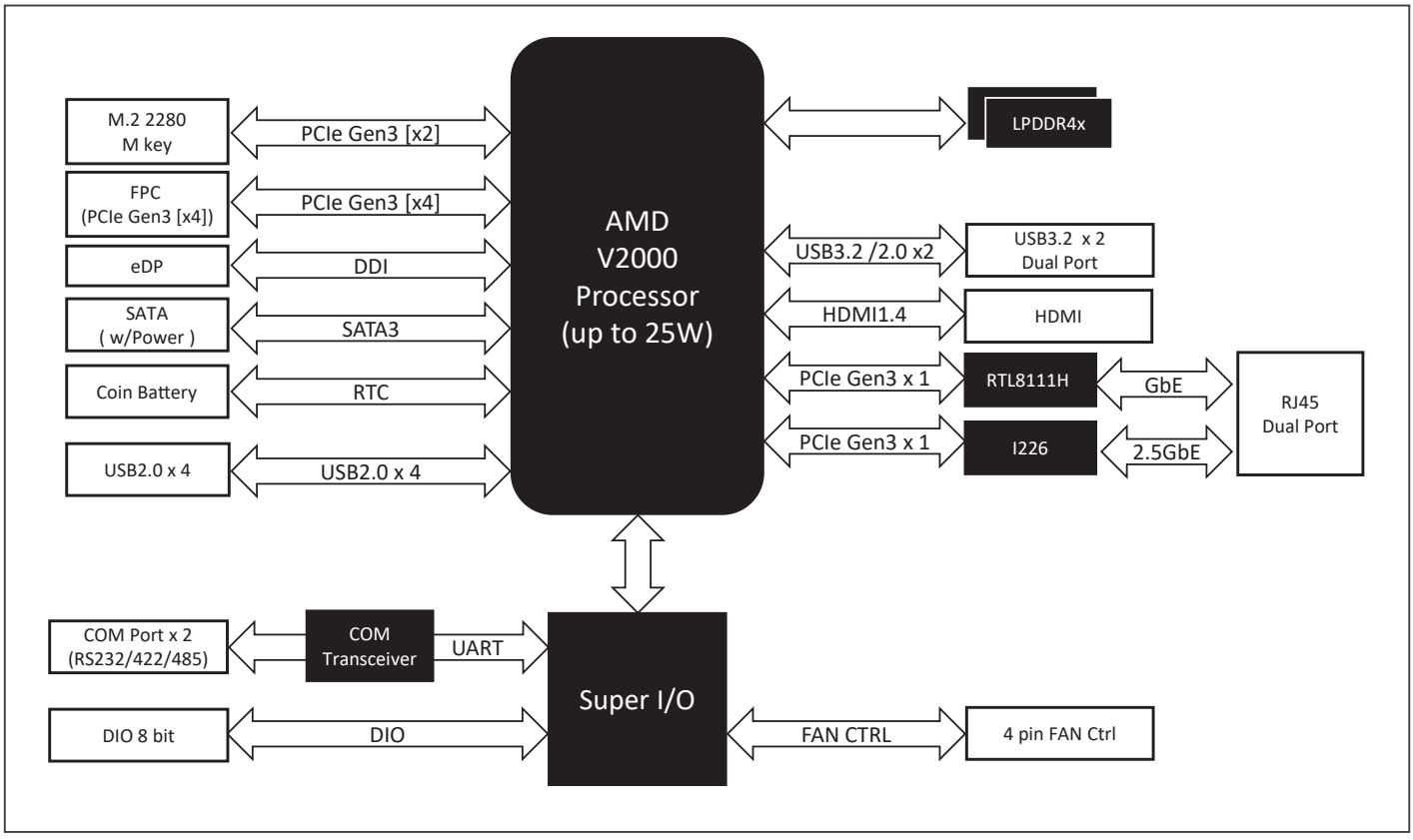
- **de next-V2K8 x 1**
- **Copper Stud.M2.5 x 4**

Optional Accessories

Part Number	Description	QTY
170X000512	de next 40 pin cable for USB2.0 x 4, COM Port x 2, DIO 8 bit	1
170X000603	Front Panel Cable for de next use.Length 10 cm	1
1709070200	SATA Cable,180D.Length 20cm	1
170X000322	SATA Power Cable.Length 6cm	1
170X000577	de next cable for USB 2.0 x 2, COM Port x 2, DIO 8 bit, adapter card connector	1
DENEXT-FAN01	CPU cooler for de next-TGU8 / de next-V2K8	1
DENEXT-BRKT01	Easy bracket for de next series use	1
DENEXT-HSP01	Heatspreader for de next-TGU8/V2K8	1
PER-T642-A03-0001	M.2 M 2280 adaptor card to M.2 B key 2242 & M.2 E key 2230 (Only support DENEXT-V2K8-A11)	1
PER-T643-A01-0001	M.2 M 2280 adaptor card to M.2 B key 2242 & M.2 B key 3052 (Only support DENEXT-V2K8-A11)	1

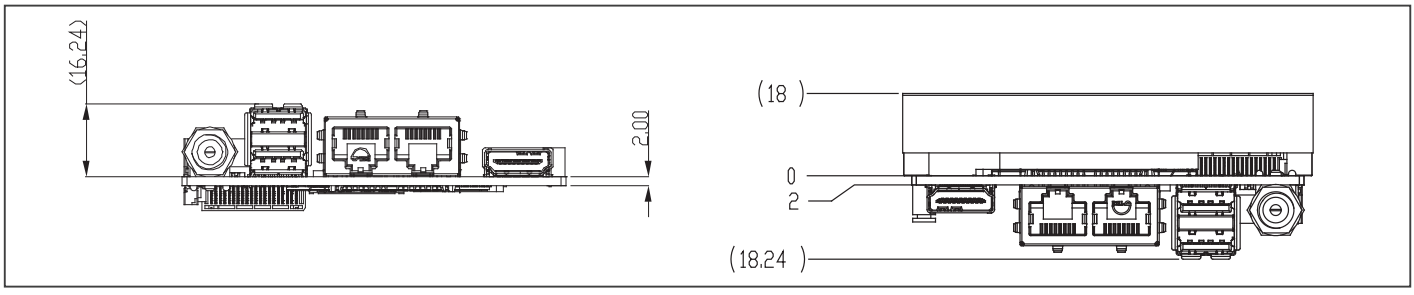
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



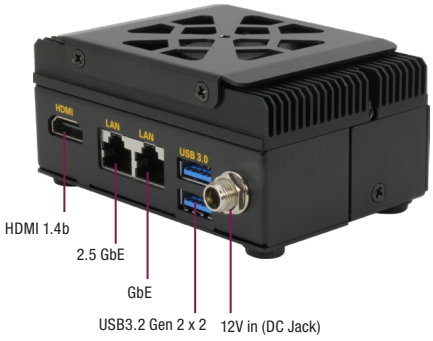
Ordering Information

Part Number	CPU	Memory	Display	Storage	LAN	USB	COM Port	Expansion	TPM	Power	Operating Temperature	Others
DENEXT-V2K8-A11-0001	V2718	Onboard LPDDR4x 16GB	eDP x 1 , HDMI x 1	SATA 6.0 Gbps x 1	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 2 , USB 2.0 x 4	RS232/422/485 x 2	M.2 2280 M-key x 1 , FPC Connector x 1	fTPM	+12V in (DC Jack)	0°C ~ 60°C	GPIO 8 bits
DENEXT-V2K8-A11-0002	V2516	Onboard LPDDR4x 16GB	eDP x 1 , HDMI x 1	SATA 6.0 Gbps x 1	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 2 , USB 2.0 x 4	RS232/422/485 x 2	M.2 2280 M-key x 1 , FPC Connector x 1	fTPM	+12V in (DC Jack)	0°C ~ 60°C	GPIO 8 bits
DENEXT-V2K8-A11-0003	V2718	Onboard LPDDR4x 16GB	eDP x 1 , HDMI x 1	SATA 6.0 Gbps x 1	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 2 , USB 2.0 x 4	RS232/422/485 x 2	M.2 2280 M-key x 1 , FPC Connector x 1	fTPM	+12V in (2 Pin Phoenix Connector)	0°C ~ 60°C	GPIO 8 bits
DENEXT-V2K8-A11-0004	V2516	Onboard LPDDR4x 16GB	eDP x 1 , HDMI x 1	SATA 6.0 Gbps x 1	2.5GbE x 1, GbE x 1	USB 3.2 Gen 2 x 2 , USB 2.0 x 4	RS232/422/485 x 2	M.2 2280 M-key x 1 , FPC Connector x 1	fTPM	+12V in (2 Pin Phoenix Connector)	0°C ~ 60°C	GPIO 8 bits

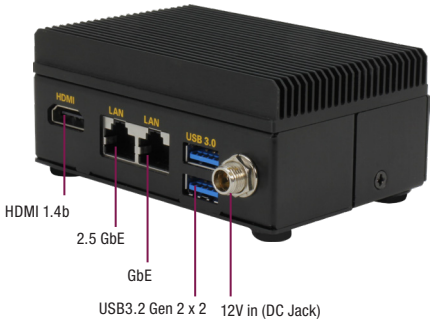
de next-TGU8-EZBOX

de next system with onboard 11th Gen. Intel® Core™ Series Processor

With Cooler



With Heatsink



Features

- **Onboard 11th Gen. Intel® Core™ Series Processor, TDP 15W**
- **Onboard LPDDR4x 3733 up to 16GB**
- **HDMI 1.4b x 1**
- **2.5GbE RJ45 x 1, GbE RJ45 x 1**
- **USB 3.2 Gen 2 x 2**
- **M.2 2280 M-Key x 1 (PCIe [x2] x 1)**
- **DC 12V in**
- **Multiple Dissipation Solutions: with CPU Cooler/Heatsink**

Specifications

System	
Form Factor	de next System
CPU	Onboard 11th Gen Intel® Core™ Processors Intel® Core™ i7-1185G7E (4C/8T, 1.80 GHz, 15W), with Cooler Version Only Intel® Core™ i5-1145G7E (4C/8T, 1.50 GHz, 15W), with Cooler Version Only Intel® Core™ i3-1115G4E (2C/4T, 2.20 GHz, 15W), with Cooler Version & Heatsink Version
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
Dimensions	3.75" x 2.73" x 1.78" (95.5mm x 69.5mm x 45.4mm), with Cooler Version 3.75" x 2.73" x 1.67" (95.5mm x 69.5mm x 42.5mm), with Heatsink Version
OS Support	Windows 10 (64bit) Ubuntu 20.04.4 (Kernel 5.13)
Power	
Power Requirement	+12V
Power Supply Type	AT/ATX
Connector	DC Jack Connector
Power Consumption	Intel® Core™ i7-1185G7E, LPDDR4x 16GB, 4.58A@12V, 55W (Typical) Intel® Core™ i7-1185G7E, LPDDR4x 16GB, 7A@12V, 84W (Max)
Display	
Controller	Intel® UHD Graphics for 11th Gen Intel® Processors
LVDS/eDP	—
Display Interface	HDMI 1.4b x 1, up to 3840 x 2160 @30Hz
Multiple Display	Single Display
Audio	
Codec	—
Audio Interface	—
Speaker	—
External I/O	
Ethernet	Intel® Ethernet Controller I225/I226, 2.5GbE RJ-45 x 1 Intel® Ethernet Connection I219, 1GbE RJ-45 x 1
USB	USB 3.2 Gen 2 x 2
Serial Port	—
Video	HDMI 1.4b x 1, up to 3840 x 2160 @30Hz
Internal I/O	
USB	—
Serial Port	—
Video	—
SATA	—
Audio	—
DIO/GPIO	—
SMBus/I2C	—
Touch	—
Fan	4 Pin Smart Fan (with Cooler version only)
Sim	—
Front Panel	—
Others	—
Expansion	
Mini PCIe/mSATA	—
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x2] x 1)
Others	—
Environment & Certification	
Operating Temp.	14°F ~122°F (-10°C~50°C) with 0.7m/sec air flow
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

Packing List

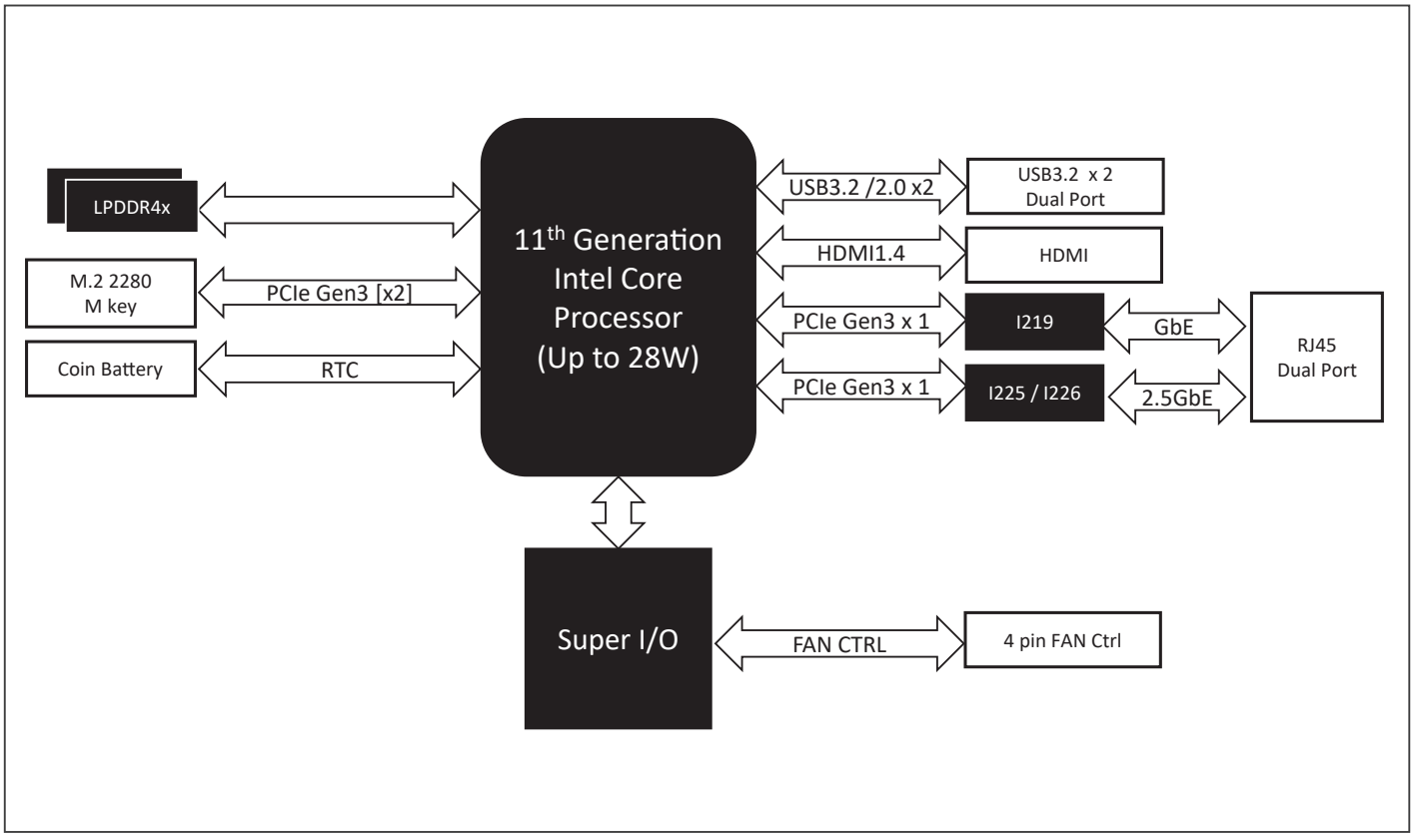
- **de next-TGU8-EZBOX x 1**
- **Wall Mount Bracket & Screw x 1**
- **Thermal Pad x 1**

Optional Accessories

Part Number	Description	QTY
1255900903	(TF)Power Adapter.100/240V.50/60Hz.12V/7.5A.90W.DELTA.DPS-90AB-3 A	1

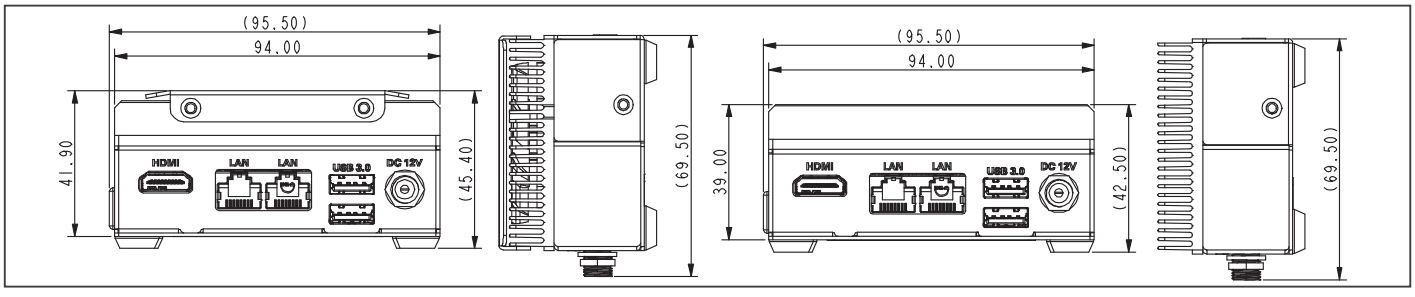
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	Memory	Display	Storage	LAN	USB	COM Port	Expansion	Power	Operating Temperature	Others
DENEXT-TGU8-EBX-A10-A001	Intel® Core™ i7-1185G7E	Onboard LPDDR4x 16GB	HDMI 1.4 x 1	M.2 2280 M key (PCIe[x2] x 1)	2.5 GbE x 1 , GbE x 1	USB 3.2 Gen 2 x 2	—	M.2 2280 M key (PCIe[x2] x 1)	+12V	-10°C ~ 50°C	with CPU Cooler Version
DENEXT-TGU8-EBX-A10-A002	Intel® Core™ i5-1145G7E	Onboard LPDDR4x 16GB	HDMI 1.4 x 1	M.2 2280 M key (PCIe[x2] x 1)	2.5 GbE x 1 , GbE x 1	USB 3.2 Gen 2 x 2	—	M.2 2280 M key (PCIe[x2] x 1)	+12V	-10°C ~ 50°C	with CPU Cooler Version
DENEXT-TGU8-EBX-A10-A003	Intel® Core™ i3-1115G4E	Onboard LPDDR4x 16GB	HDMI 1.4 x 1	M.2 2280 M key (PCIe[x2] x 1)	2.5 GbE x 1 , GbE x 1	USB 3.2 Gen 2 x 2	—	M.2 2280 M key (PCIe[x2] x 1)	+12V	-10°C ~ 50°C	with CPU Cooler Version
DENEXT-TGU8-EBX-A10-P001	Intel® Core™ i3-1115G4E	Onboard LPDDR4x 16GB	HDMI 1.4 x 1	M.2 2280 M key (PCIe[x2] x 1)	2.5 GbE x 1 , GbE x 1	USB 3.2 Gen 2 x 2	—	M.2 2280 M key (PCIe[x2] x 1)	+12V	-10°C ~ 50°C	with Heatsink Version

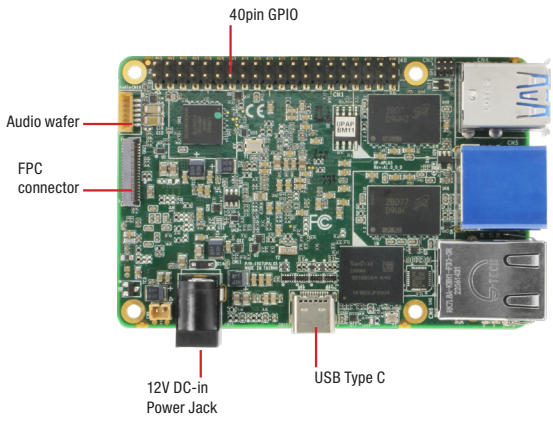
08

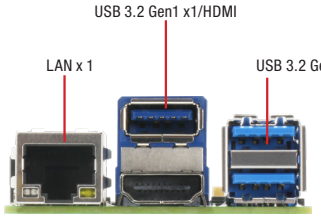
08
UP Boards

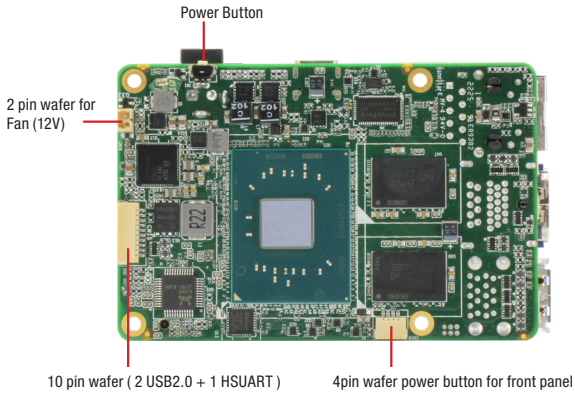

ROBOTICS
R - Robotics
O - Automation
B - Artificial intelligence
O - Object recognition
T - Teleoperation
I - Industrial robots

UP 4000

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







UP-APL03C2FLH SKU:



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**

DDR 4 · USB 3.2 Gen 1 · HDMI · Audio · CE · FC

Specifications

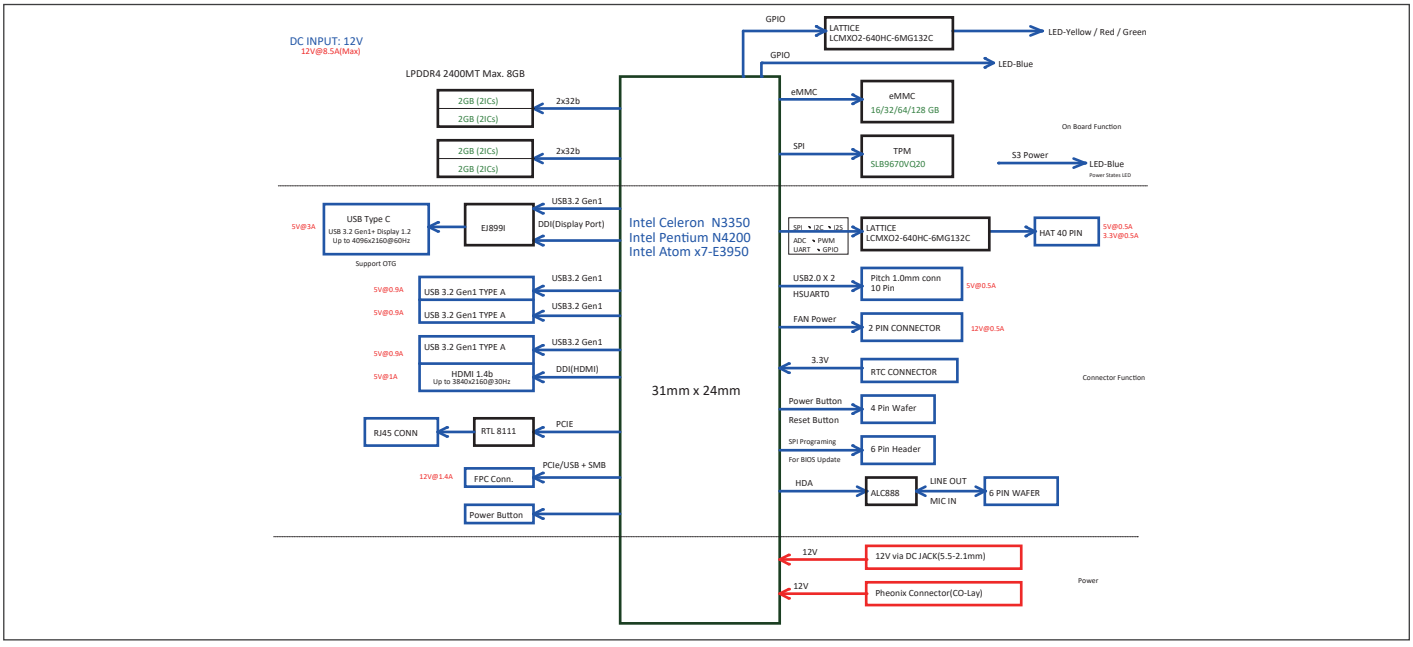
System	
Processor	Intel® Celeron® Processor N3350 Intel® Pentium® Processor N4200 Intel Atom® x7-E3950
Graphics	Intel® HD Graphics
Memory	Up to 8GB onboard LPDDR4
Storage	Up to 64GB onboard eMMC
I/O	HDMI 1.4b x 1 DP 1.4a x 1 (via USB Type-C) 41-pin FPC connector for high speed expend x 1 6-pin Audio wafer x 1 (Mic-in+Line-out)
Camera	—
USB	USB 2.0 x 2 (from 10-pin header x 1) USB 3.2 Gen 1 (Type A) x 3 USB 3.2 Gen 1 OTG (USB Type-C) x 1
Expansion	40-pin GPIO x 1 Via carrier board: M.2 2230 E-Key x 1 M.2 2280 M-Key x 1 M.2 3052/3042 B-Key x 1
Display Interface	HDMI 1.4b x 1 DP 1.4a x 1 (via USB Type-C)
Ethernet	1GbE RJ-45 x 1 (Realtek RTL8111H CG)
Security	Onboard TPM 2.0
RTC	Yes
OS Support	Microsoft Windows 10 and Windows IoT Linux Ubuntu 22.04 Linux Yocto 4.0
Power Requirement	
Power	12V DC-in
Power Supply Type	AT/ATX (AT as default)
Power Consumption (Typical)	19W~25W
Mechanical	
Dimension	3.34" x 2.20" (85mm x 56mm)
Net Weight	4.63 lbs (2.10kg)
Gross Weight	6.39 lbs (2.90kg)
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
Operation Humidity	10% ~ 80% relative humidity, non-condensing
MTBF	538,629 Hours
Certification	CE/FCC Class A, RoHS Compliant, REACH

Packing List

- **UP 4000 with Heatsink**

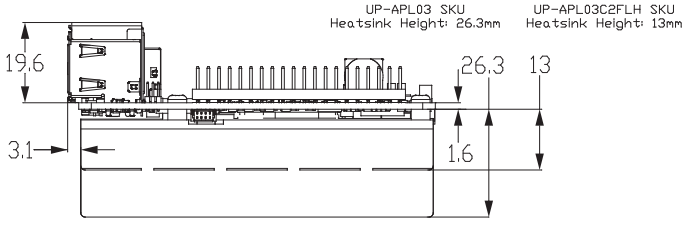
Note: All specifications are subject to change without notice.

Block Diagram

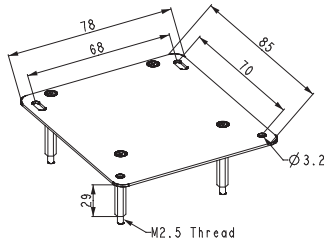


Dimension

Unit: mm



UP-BRKIT-A10-0001 (Optional):



Ordering Information

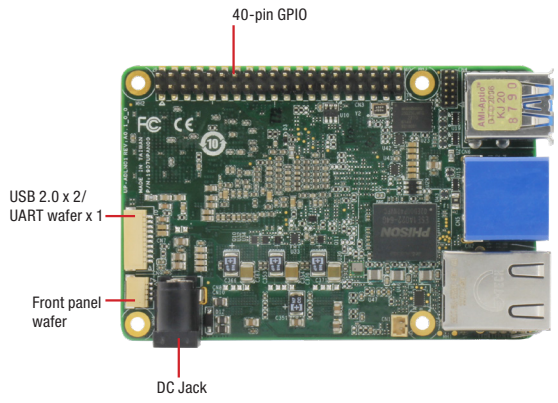
Part number	CPU	MEMORY	STORAGE	HEATSINK
UP-APL03C2F-A10-0216	Intel® Celeron® Processor N3350	2GB	16GB	FANLESS
UP-APL03C2F-A10-0232	Intel® Celeron® Processor N3350	2GB	32GB	FANLESS
UP-APL03C2F-A10-0432	Intel® Celeron® Processor N3350	4GB	32GB	FANLESS
UP-APL03C2FLH-A10-0216	Intel® Celeron® Processor N3350	2GB	16GB	FANLESS, LOWER Heatsink
UP-APL03C2FLH-A10-0232	Intel® Celeron® Processor N3350	2GB	32GB	FANLESS, LOWER Heatsink
UP-APL03C2FLH-A10-0432	Intel® Celeron® Processor N3350	4GB	32GB	FANLESS, LOWER Heatsink
UP-APL03C2FLH-A10-0464	Intel® Celeron® Processor N3350	4GB	64GB	FANLESS, LOWER Heatsink
UP-APL03P4F-A10-0432	Intel® Pentium® Processor N4200	4GB	32GB	FANLESS
UP-APL03P4F-A10-0864	Intel® Pentium® Processor N4200	8GB	64GB	FANLESS
UP-APL03X7F-A10-0464	Intel Atom® x7-E3950	4GB	64GB	FANLESS

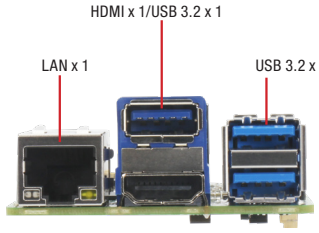
Optional Accessories

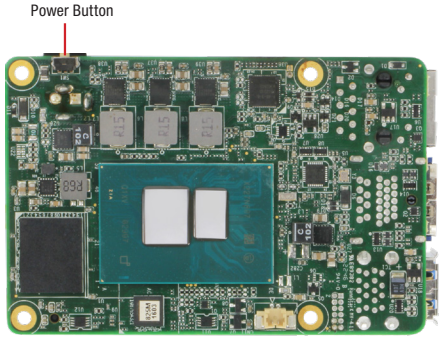
Part Number	Description
125530060L	(TF)Power Adapter.DC.100/240V.12V.5A.60W.Powertron.PS1065-120IB500.For UPC-PLUS
9741364A00	(TF).M.2 2230 Wireless.802.11 ac/a/b/g/n + BT 5.0.2T2R,Enli QCNFA364A.w/2 sets of cable and antenna (via carrier board)
9651926001	(TF).M.2 2230 WiFi Kit.802.11ac.2.4G/5G,W/BT Intel.9260.NGWG. NV,958867 w/2 cable & antenna (via carrier board)
170X000382	(TF)Cable.6P.Pitch=1.0mm.150mm.FLYINGWAY.FWAA-1473.Audio Jack Cable
170X000542	FPC Cable.41P.Pitch=0.3mm.43. 5*12.6*0.2mm.for UP-APL03
170X000543	Cable.4P.SWITCH CABLE.200mm.FLYINGWAY. FWAA-1561
170010015G	USB Cable.10P 1.0mm Housing.USB A(F).15cm
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
UP-POEV2-30W-A10-0001	POE 25W Carrier board for UP 4000
UPCR-CAN1-A10-0001	UP CAN Bus Carrier Board with USB/UART interface for UP product line
UP-BRKIT-A10-0001	Bracket KIT of board fixture for all UP series

UP 7000

UP 7000 Developer Board with Intel® Processor N-series Processor (formerly Alder Lake-N)









Features

- **Intel® Processor N-series**
- **Onboard LPDDR5 Memory, up to 8GB**
- **Onboard eMMC Storage, up to 64GB**
- **1Gigabit LAN x 1**
- **HDMI 1.4b x 1**
- **USB 3.2 Gen 2 (Type-A) x 3, 10-pin USB 2.0 x 2/UART x 1**
- **40-pin GPIO x 1**
- **12V DC-in, 5A**
- **TPM 2.0**

HDMI LPDDR5 USB 3.2 Gen 2 CE FC

Specifications

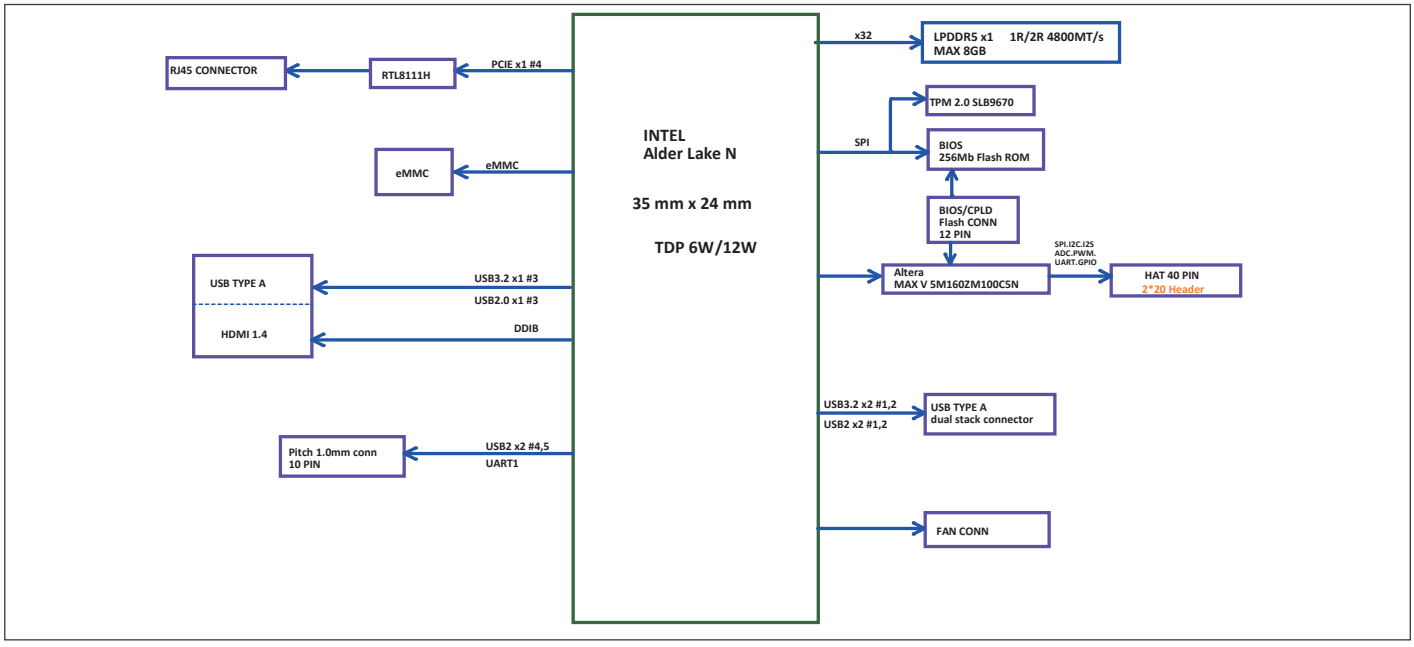
System	
Processor	Intel® Processor N200 Intel® Processor N97 Intel® Processor N100 Intel® Processor N50 Intel Atom® x7433RE Intel Atom® x7835RE
Graphics	Intel® UHD Graphics
Memory	Dual-Channel LPDDR5, up to 8GB
Storage	Up to 64GB eMMC
I/O	HDMI 1.4b/USB 3.2 Gen 2 STACK Connector x 1 (Type-A) 4-pin Front Panel x 1 2-pin Fan Wafer x 1 (12V) 2-pin RTC Battery Wafer x 1
Camera	—
USB	USB 3.2 Gen 2 (Type-A) x 3 10-pin USB 2.0 x 2/UART x 1
Expansion	40-pin GPIO x 1
Display Interface	HDMI 1.4b x 1
Ethernet	1GbE RJ-45 x 1 (Realtek RTL8111H CG)
Security	Onboard TPM 2.0
RTC	Yes
OS Support	Windows® 10 Enterprise LTSC 2021 Linux: Ubuntu 22.04 LTS/Kernel 5.15, Yocto 4.0
Power Requirement	
Power	12V DC-in, 5A
Power Supply Type	AT (default) /ATX
Power Consumption (Typical)	30~36W
Mechanical	
Dimension	3.34" x 2.20" (85mm x 56mm)
Net Weight	0.33 lb. (0.15Kg)
Gross Weight	0.44 lb. (0.20Kg)
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow, WiTAS1 -4°F ~ 158°F (-20°C ~ 70°C) with active cooler
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	685,218 Hours
Certification	CE/FCC Class A, RoHS Compliant, REACH

Packing List

- **UP 7000 with Passive Heatsink**

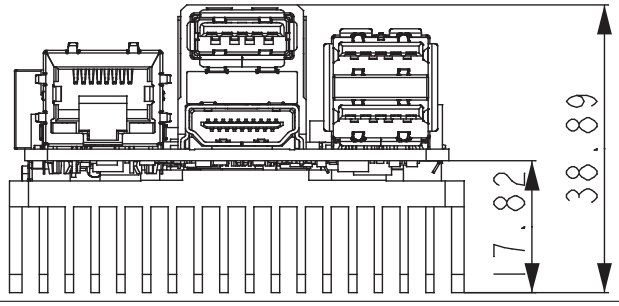
Note: All specifications are subject to change without notice.

Block Diagram

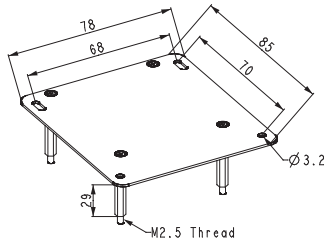


Dimension

Unit: mm



UP-BRKIT-A10-0001 (Optional):



Ordering Information

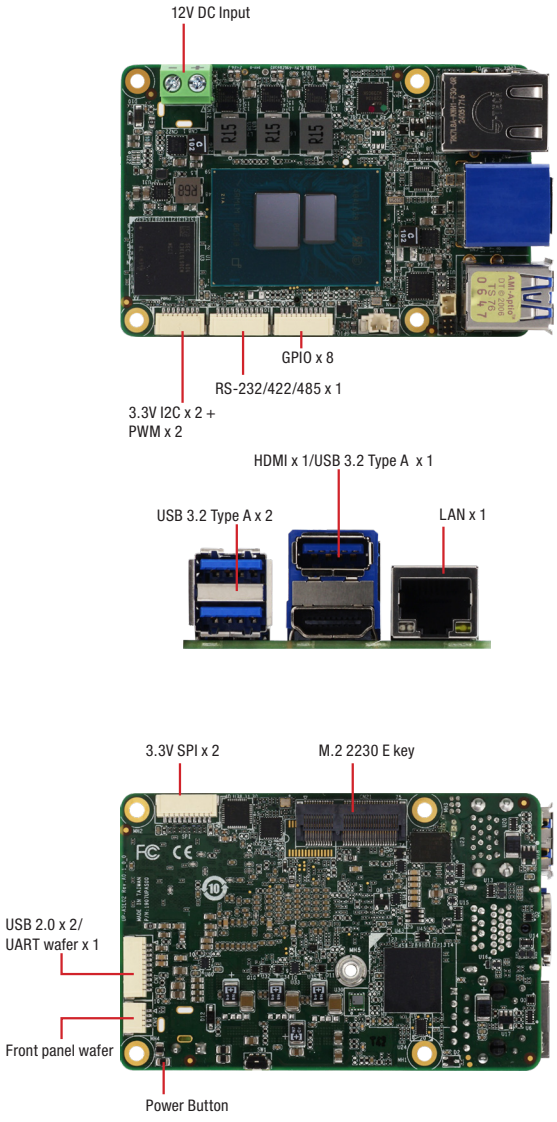
Part Number	CPU	Core	TDP	Memory	Storage
UP-ADLN50-A10-0432	N50	2	6W	4GB	32GB
UP-ADLN100-A10-0432	N100	4	6W	4GB	32GB
UP-ADLN100-A10-0864	N100	4	6W	8GB	64GB
UP-ADLN97-A10-0432	N97	4	12W	4GB	32GB
UP-ADLN97-A10-0864	N97	4	12W	8GB	64GB
UP-ADLN200-A10-0864	N200	4	6W	8GB	64GB

Optional Accessories

Part Number	Description
125530060L	Power Adapter (TF)PowerAdapter.DC.100/240V.12V.5A.60W.Powertron.PS1065-120IB500.

UP 710S

UP 710S Developer Board with Intel® Processor N-series Processor



Features

- **Intel® Processor N-series**
- **Onboard LPDDR5 Memory, up to 8GB**
- **Onboard eMMC Storage, up to 128GB**
- **GbE x 1**
- **HDMI 1.4b x 1**
- **USB 3.2 (Type-A) x 3**
- **M.2 2230 E-Key x 1**
- **12V DC-in, 5A**
- **TPM 2.0**

HDMI LPDDR5 USB 3.2 Gen 2

Specifications

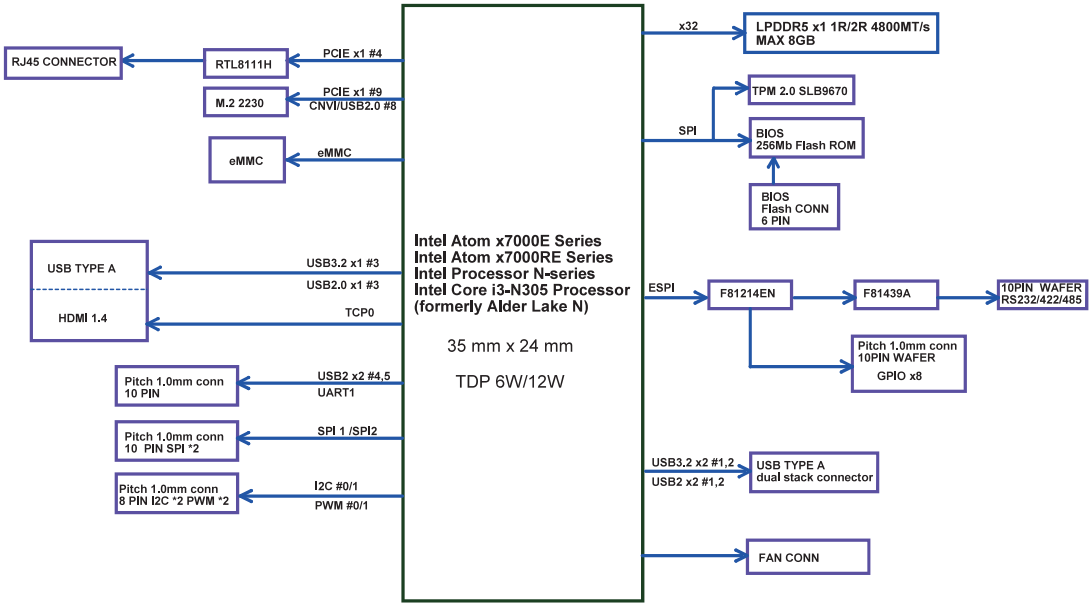
System	
Processor	Intel® Processor N200 Intel® Processor N97 Intel® Processor N100 Intel® Processor N50
Graphics	Intel® UHD Graphics for 12th Gen Intel® Processors
Memory	Up to 8GB LPDDR5
Storage	Up to 128GB eMMC
I/O	HDMI 1.4b 3.3V I2C x 2 + PWM x 2 via 8-Pin Wafer 3.3V SPI x 2 via 10-Pin Wafer GPIO x 8 via 10-Pin wafer RS-232/422/485 x 1 via 10-Pin Wafer
Camera	—
USB	USB 2.0 x 2 (from 10 pin wafer x 1) USB 3.2 Gen 2 Type A x 3
Expansion	M.2 2230 E-Key x 1
Display Interface	HDMI 1.4b x 1
Ethernet	GbE, RJ-45 x 1
Security	Onboard TPM 2.0
RTC	Yes
OS Support	Microsoft Windows 10/11 Ubuntu 22.04 LTS Yocto 5.1
Power Requirement	
Power	12V DC-in, 5A
Power Supply Type	AT/ATX
Power Consumption (Typical)	30~36W
Mechanical	
Dimension	3.34" x 2.20" (85mm x 56mm)
Net Weight	0.33 lb. (0.15Kg)
Gross Weight	0.44 lb. (0.20Kg)
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	685,218 Hours
Certification	CE/FCC Class A, RoHS Compliant, REACH

Packing List

- **UP 710S with Passive Heatsink**

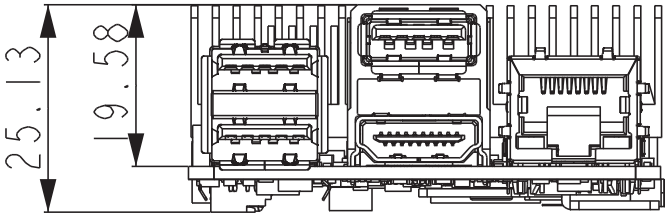
Note: All specifications are subject to change without notice.

Block Diagram

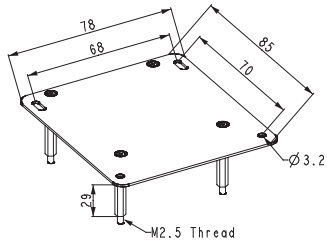


Dimension

Unit: mm



UP-BRKIT-A10-0001 (Optional):



Ordering Information

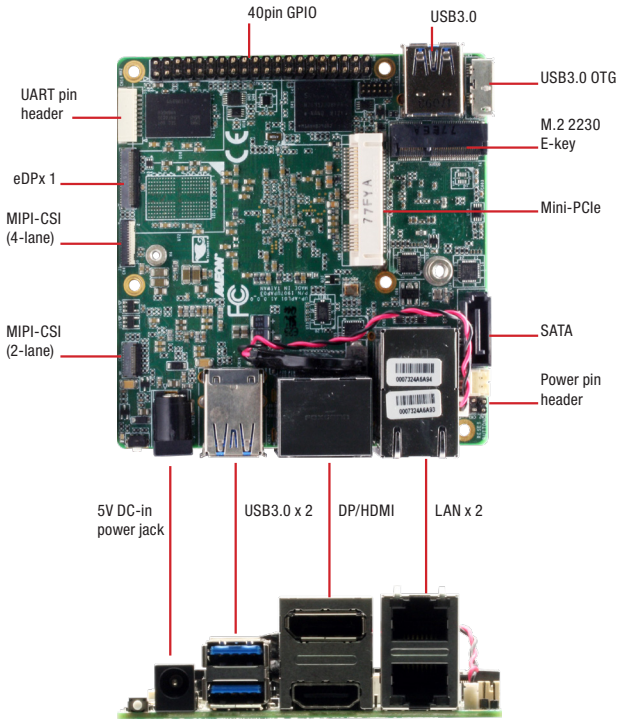
Part Number	CPU	Core	TDP	Memory	Storage
UP-ASL02N100-A10-0432	Intel® Processor N100	4	6W	4GB	32GB
UP-ASL02N100-A10-0864	Intel® Processor N100	4	6W	8GB	64GB
UP-ASL02N97-A10-0864	Intel® Processor N97	4	12W	8GB	64GB

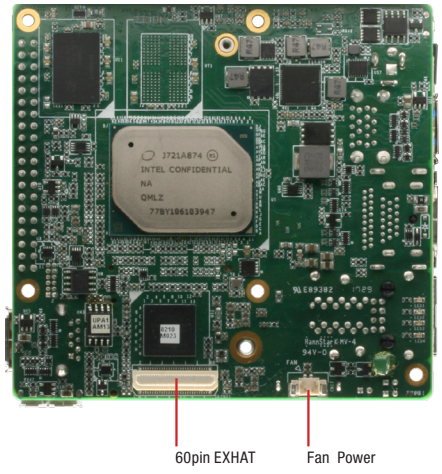
Optional Accessories

Part Number	Description
1701100180	COM Cable
170010015G	UART to USB cable

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

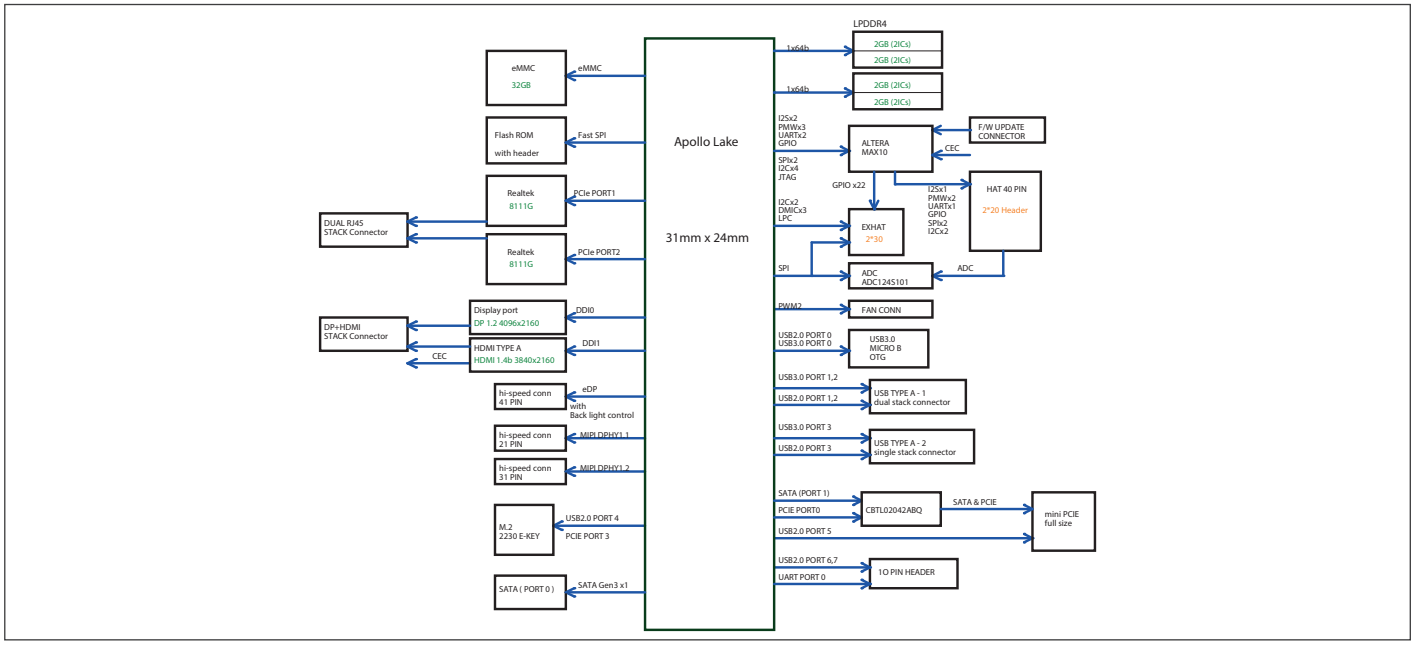
System	
Processor	Intel® Celeron® Processor N3350 Intel® Pentium® Processor N4200 Intel Atom® x7-E3950 Intel Atom® x5-E3940
Graphics	Intel® HD Graphics
Memory	Up to 8GB onboard LPDDR4
Storage	Up to 128GB onboard eMMC
I/O	HDMI 1.4b x 1 DP 1.2 x 1
Camera	MIPI-CSI via 21 Pin FPC connector x 1 MIPI-CSI via 31 Pin FPC connector x 1
USB	USB 2.0 x 2 (via 10 Pin Header x 1) USB 3.2 Gen 1 x 3 (Type-A) USB 3.2 Gen 1 OTG x 1 (Micro B)
Expansion	40-pin GPIO x 1 Full-sized mPCIe x 1 (PCIe & SATA [x1] , USB2.0 [x1]) M.2 2230 E-Key x 1 (PCIe [x1], USB2.0 [x1]) SATA III x 1 60 Pin EXHAT x 1
Display Interface	HDMI 1.4b x 1 DP 1.2 x 1 eDP 1.3 x 1
Ethernet	GbE x 2 (Realtek 8111H CG)
Security	fTPM
RTC	Yes
OS Support	Windows® 10 IoT Enterprise LTSC 2021 Windows IoT Core Linux Ubuntu 20.04 LTS Linux Yocto 3.1
Power Requirement	
Power	5V DC-in
Power Supply Type	AT/ATX (AT as default)
Power Consumption (Typical)	15.05W
Mechanical	
Dimension	3.37" x 3.54" (85.6 mm × 90 mm)
Net Weight	0.463 lbs (0.21kg)
Gross Weight	0.639 lbs (0.29kg)
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°) / 0.5 airflow
Operation Humidity	0%~90% relative humidity, non-condensing
MTBF	173,446 Hours
Certification	CE/FCC Class A, RoHS complaint, REACH

Packing List

- **UP Squared with Heatsink**

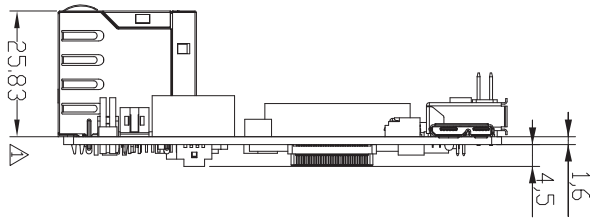
Note: All specifications are subject to change without notice.

Block Diagram

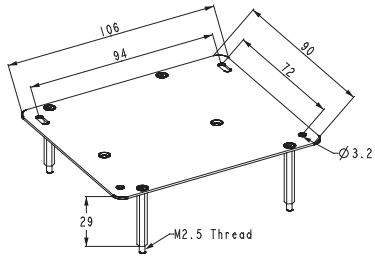


Dimension

Unit: mm



UPS-BRKIT-A10-0001 (Optional):



Optional Accessories

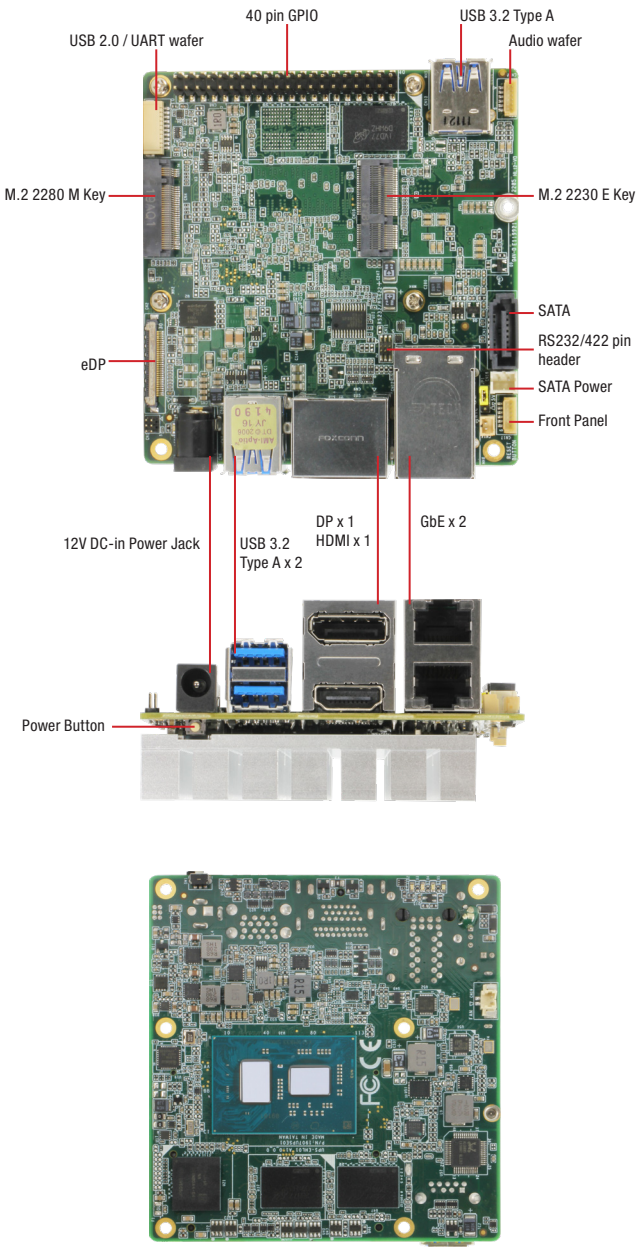
Part Number	Description
1255300362	(TF)AC/DC Adapter.5VDC.30W.6A.SUNWARD.AD36AM050600
170X000799	(TF)POWER CORD.SP12N 2P.C8 2P.91cm.NISPT-2 for US
1709070500	SATA cable
1702150155	SATA power cable(15cm)
1702150306	SATA power cable(30cm)
170010015G	UART to USB cable
9651926001	(TF).M.2 2230 WiFi Kit.802.11ac.2.4G/5G,W/BT Intel.9260.NGWG.NV,958867 w/2 cable & antenna
9741364A00	(TF).M.2 2230 Wireless.802.11 ac/a/b/g/n + BT 5.0.2T2R,Enli QCNFA364A.w/2 sets of cable and antenna
UPS-BRKIT-A10-0001	Bracket KIT of board fixture for all UP series

Ordering Information

Part number	CPU	CORE	MEMORY	STORAGE	HEATSINK
UPS-APLC2F-A20-0232	Intel® Celeron® Processor N3350	2 Core	2GB	32GB	FANLESS
UPS-APLC2F-A20-0432	Intel® Celeron® Processor N3350	2 Core	4GB	32GB	FANLESS
UPS-APLP4F-A20-0432	Intel® Pentium® Processor N4200	4 Core	4GB	32GB	FANLESS
UPS-APLP4F-A20-08128	Intel® Pentium® Processor N4200	4 Core	8GB	128GB	FANLESS
UPS-APLP4F-A20-0864	Intel® Pentium® Processor N4200	4 Core	8GB	64GB	FANLESS
UPS-APLX5F-A20-0432	Intel Atom® x5-E3940	4 Core	4GB	32GB	FANLESS
UPS-APLX7F-A20-0464	Intel Atom® x7-E3950	4 Core	4GB	64GB	FANLESS
UPS-APLX7F-A20-0864	Intel Atom® x7-E3950	4 Core	8GB	64GB	FANLESS

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**

Specifications

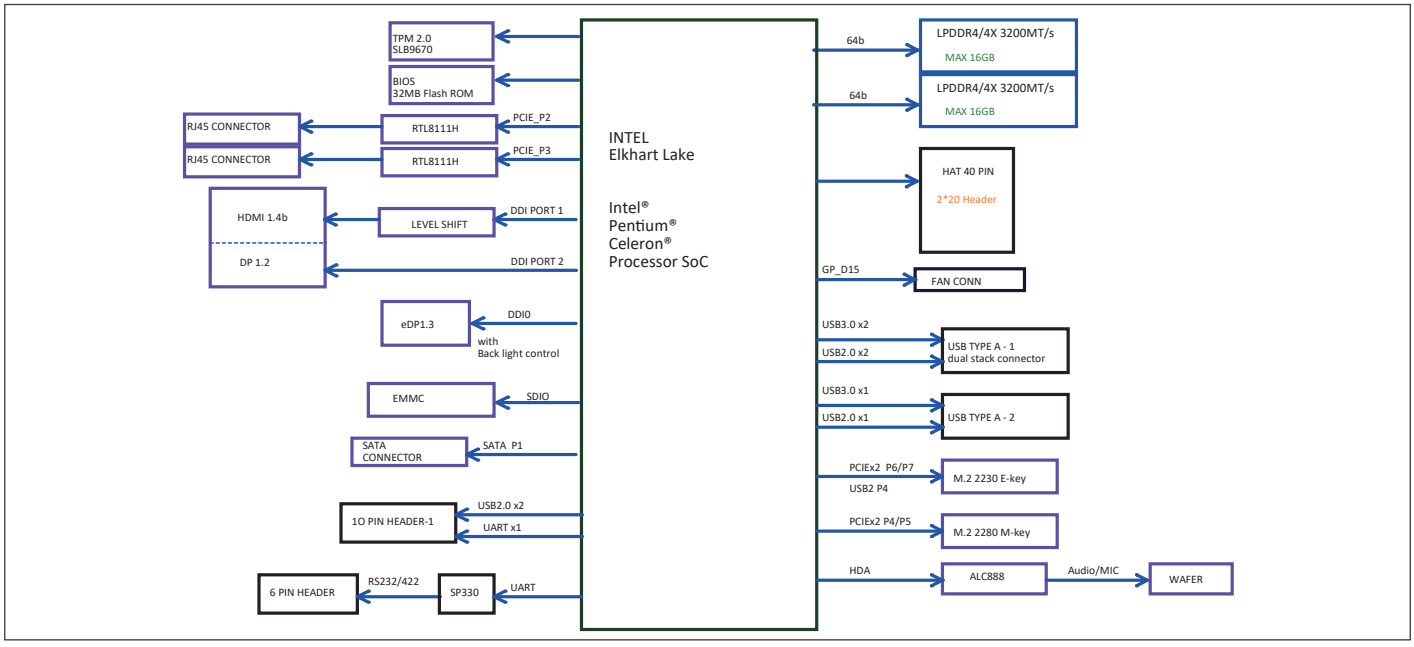
System	
Processor	Intel® Celeron® N6210 Processor SoC Intel® Celeron® J6412 Processor SoC Intel® Pentium® J6426 Processor SoC
Graphics	Intel® UHD Graphics
Memory	Up to 16GB LPDDR4
Storage	Up to 64GB eMMC
I/O	HDMI 1.4b x 1 DP 1.2 x 1 eDP 1.3 x 1 Audio 6 pin wafer (Line out + MIC in) x 1 RS-232/422 6 pin 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	0.41 lbs (0.19kg)
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

Packing List

- **UP Squared V2 with heatsink**

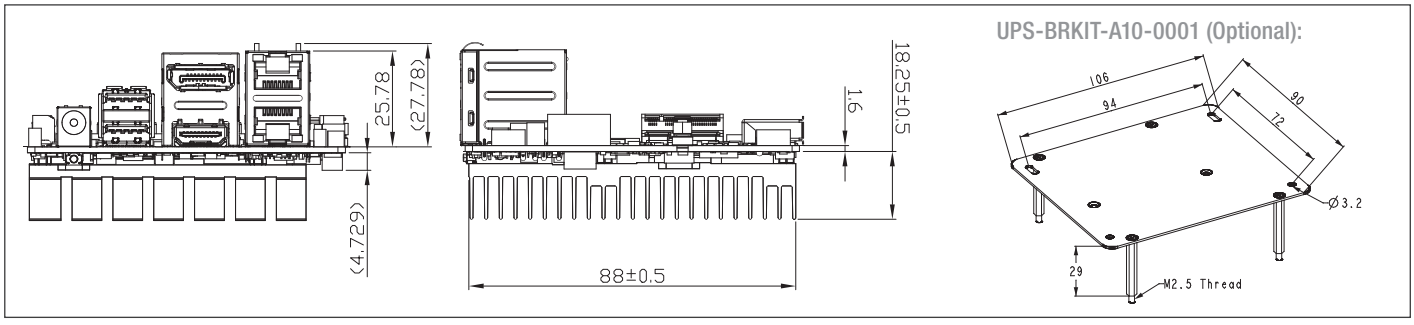
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

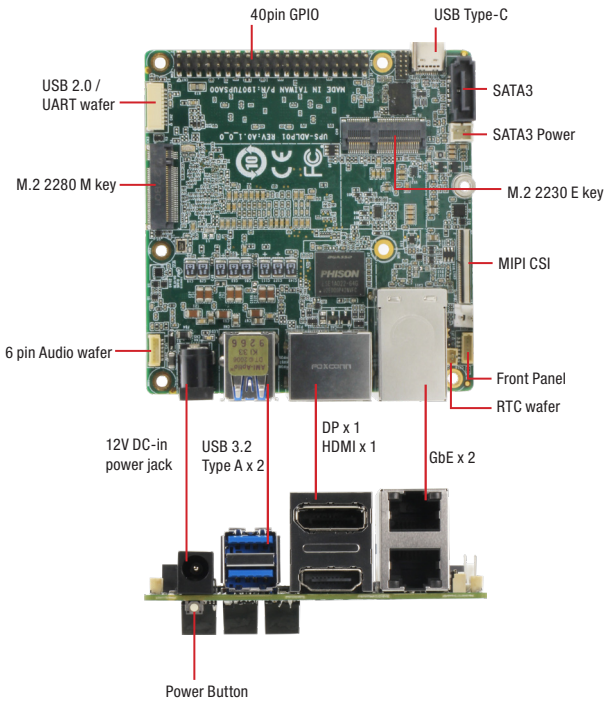
Part number	CPU	Memory	Storage
UPS-EHLCN2-A10-0232	Intel® Celeron® N6210 Processor SoC	2GB	32GB
UPS-EHLCN2-A10-0432	Intel® Celeron® N6210 Processor SoC	4GB	32GB
UPS-EHLCJ4-A10-0432	Intel® Celeron® J6412 Processor SoC	4GB	32GB
UPS-EHLPJ4-A10-0432	Intel® Pentium® J6426 Processor SoC	4GB	32GB
UPS-EHLPJ4-A10-0864	Intel® Pentium® J6426 Processor SoC	8GB	64GB
UPS-EHLPJ4-A10-1664	Intel® Pentium® J6426 Processor SoC	16GB	64GB

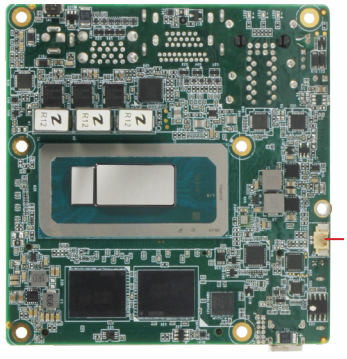
Optional Accessories

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

UP Squared i12

UP Squared i12 Developer Board with 12th/13th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC







Features

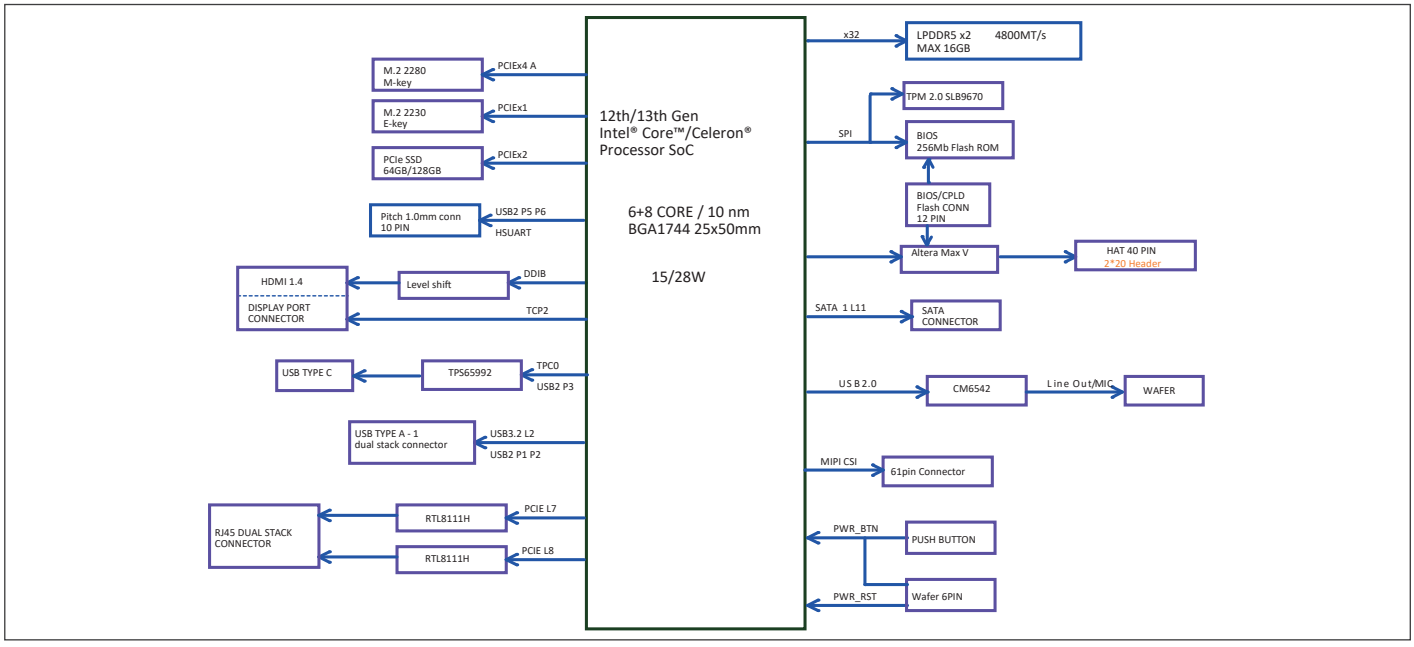
- 12th/13th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC
- Up to 16GB Onboard LPDDR5
- Up to 128GB Onboard SSD
- M.2 2230 E-Key/M.2 2280 M-Key/SATA 6Gb/s x 1
- 1GbE x 2
- HDMI 1.4b/DP 1.2 Connector x 1, DP 1.4a via USB Type-C x 1
- USB 3.2 Gen 2 (Type-A) x 2, USB 3.2 Gen 2 (Type-C) x 1, 10-pin USB 2.0 x 2/UART x 1
- Audio Jack x 1 (Line out + Mic in)
- 40-pin GPIO x 1
- 12V DC-in
- TPM 2.0

Specifications

System	
Processor	12th Gen Intel® Core™ Processor SoC Intel® Core i7-1270PE Intel® Core i7-1260P Intel® Core i5-1250PE Intel® Core i5-1240P Intel® Core i3-1220PE Intel® Celeron® 7305E 13th Gen Intel® Core™ Processor SoC Intel® Core™ i7-1370PE Intel® Core™ i7-1360P Intel® Core™ i5-1340PE Intel® Core™ i3-1320PE
Graphics	Intel® UHD Graphics
Memory	Up to 16GB Onboard LPDDR5
Storage	Up to 128GB Onboard SSD M.2 2280 M-Key NVMe x 1 (PCIe Gen 4.0 [x4]) SATA 6Gb/s x 1
I/O	HDMI 1.4b/DP 1.2 STACK Connector x 1 DP 1.4a x 1 (via USB Type-C) 6-pin Audio Wafer x 1 (Line out + MIC in) 6-pin Front Panel x 1 2-pin Fan Wafer x 1 (12V) 2-pin RTC Battery Wafer x 1
Camera	MIPI CSI camera via 61pin wafer w/carrier board HDMI-in via 61pin wafer w/carrier board
USB	10-pin USB 2.0 x 2/UART x 1 USB 3.2 Gen 2 (Type-A) x 2 USB 3.2 Gen 2 (Type-C for DP 1.4) x 1
Expansion	40-pin GPIO x 1 M.2 2230 E-Key x 1 (CNVI & PCIe Gen 3.0 [x1]) M.2 2280 M-Key NVMe x 1 (PCIe Gen 4.0 [x4]) SATA 6Gb/s x 1
Display Interface	HDMI 1.4b/DP 1.2 STACK Connector x 1 DP 1.4a x 1 (via USB Type-C)
Ethernet	1GbE RJ45 x 2 (Dual Stacked) (Realtek 8111H CG)
Security	Onboard TPM 2.0
RTC	Yes
OS Support	Windows®10 IoT Enterprise LTSC 2021, Ubuntu 22.04, Yocto 4.0
Power Requirement	
Power	12V DC-in
Power Supply Type	AT/ATX (AT as default)
Power Consumption (Typical)	26W~39W
Mechanical	
Dimension	3.37" x 3.54" (85.6mm × 90mm)
Net Weight	0.59 lbs (0.27kg)
Gross Weight	0.84 lbs (0.38kg)
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	522,716 Hours
Certification	CE/FCC Class A, RoHS Compliant, REACH

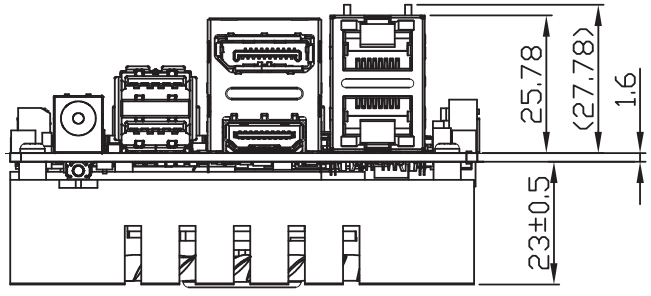
Note: All specifications are subject to change without notice.

Block Diagram

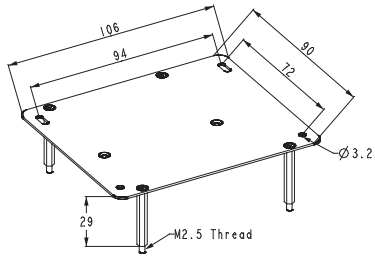


Dimension

Unit: mm



UPS-BRKIT-A10-0001 (Optional):



Optional Accessories

Part Number	Description
1255X00088	(TF)AC/DC Adapter.100-240VAC.120W.12VDC/10A.W/O Lock.DC plug 2.1*5.5*12mm.FSP.FSP120-AHAN3/9NA1206756
170X000800	Power cord for EU.(TF)POWER CORD.3P-250V 10A 180D.1.8M.VDE.FAN-JET.YP-22/YC-12
170X000799	Power cord for US.(TF)POWER CORD.3P-125V 10A 180D.1.8M.USA.FANJET.YP12/YC-12
170203180J	Power cord for UK.(TF)Power Cord.3P.250V 10A.UK type.1830mm
170X000803	Power cord for Japan.(TF)Power cord.3P.125V/7A.1.8M.PSE YP12/YC12 Certificat
170X000815	Power cord for China.(TF)POWER CORD.3P(M).3P(F).1.8m.250V 10A 180D.CHINA.FAN-JET.YP-03/YC-12
170X000806	Power cord for Taiwan.(TF)Power Cord.3P-125VP.7A.180D.1.8M.TWN/BSMI.FANJET.YP-12/YC-12
1709070500	SATA cable.(TF)SATA CABLE.7P Pitch 1.27mm.50cm
1702150155	SATA power cable(15cm).(TF)Power Cable.15P SATA(F).2P 2.0mm Housing(PH).15cm
1702150306	SATA power cable(30cm).(TF)Power Cable.15P SATA(F).2P 2.0mm Housing(PH).30cm
170010015G	UART to USB cable.(TF)USB Cable.10P 1.0mm Housing.USB A(F
9741364A00	(TF).M.2 2230 Wireless.802.11 ac/a/b/g/n + BT 5.0.2T2R,Enli QCNFA364A.w/2 sets of cable and antenna
9651926001	Wireless BT Kit (TF).M.2 2230 WiFi Kit.802.11ac.2.4G/5G,W/BT Intel.9260.NGWG.NV,958867w/2 cable & antenna
UPCR-CAN1-A10-0001	UP CAN Bus Carrier Board with USB/UART interface for UP product line
UPCR-CAMB-A10-0001	MIPI-CSI Camera RVP Converter Kit for UP Squared Pro 7000/UP Squared i12
UPCR-HDMI-A10-0001	HDMI IN carrier board for UPS i12, UPN 7000, UPX i12.REV.A1.0
UPS-BRKIT-A10-0001	Bracket KIT of board fixture for all UP series

Packing List

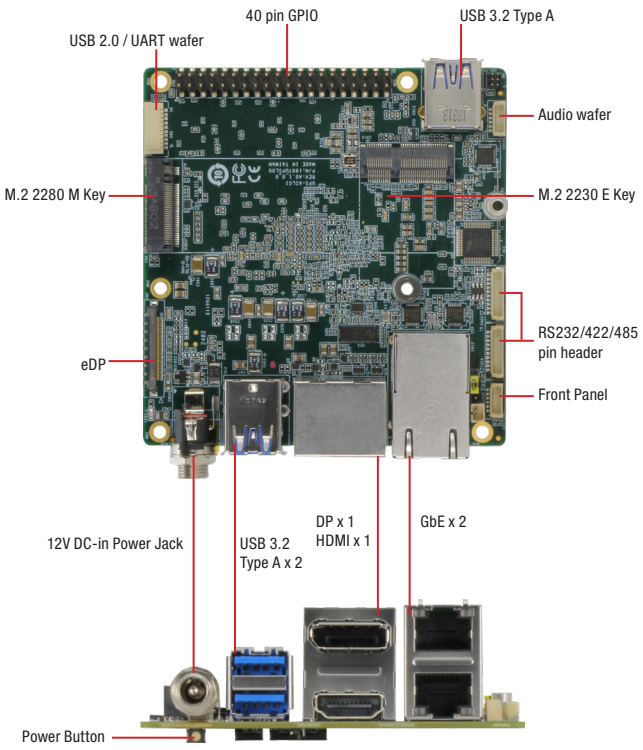
- **UP Squared i12 with Active Heatsink**

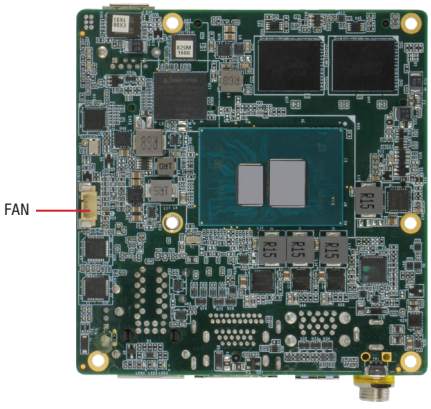
Ordering Information

Part Number	CPU	Core	Memory	Storage	Heatsink
UPS-ADLPCR-A10-0800	Intel® Celeron® 7305E	1P+4E	8GB	—	FAN
UPS-ADLPI3-A10-0800	Intel® Core™ i3-1220PE	4P+4E	8GB	—	FAN
UPS-ADLPI5-A10-0800	Intel® Core™ i5-1250PE	4P+8E	8GB	—	FAN
UPS-ADLPI5-A10-08128	Intel® Core™ i5-1250PE	4P+8E	8GB	128GB	FAN
UPS-ADLPI5C-A10-0800	Intel® Core™ i5-1240P	4P+8E	8GB	—	FAN
UPS-ADLPI7-A10-0800	Intel® Core™ i7-1270PE	4P+8E	8GB	—	FAN
UPS-ADLPI7-A10-16128	Intel® Core™ i7-1270PE	4P+8E	16GB	128GB	FAN
UPS-ADLPI7C-A10-1600	Intel® Core™ i7-1260P	4P+8E	16GB	—	FAN
UPS-RAPI3-A10-0800	Intel® Core™ i3-1320PE	4P+4E	8GB	—	FAN
UPS-RAPI5-A10-0800	Intel® Core™ i5-1340PE	4P+8E	8GB	—	FAN
UPS-RAPI7-A10-0800	Intel® Core™ i7-1370PE	4P+8E	8GB	—	FAN
UPS-RAPI7C-A10-1600	Intel® Core™ i7-1360P	4P+8E	16GB	—	FAN

UP Squared 7100

UP Squared 7100 Developer Board with Intel® Processor N-series SoC





Features

- **Intel® Processor N-series SoC**
- **Onboard LPDDR5 Memory up to 16GB**
- **Onboard eMMC Storage up to 128GB**
- **Gb Ethernet (full speed) RJ-45 x 2**
- **USB 3.2 Type A x 3**
- **40 pin GPIO x 1**
- **DP 1.2 / HDMI 2.0b / eDP 1.3**
- **RS232/422/485 x 2**
- **M.2 2230 E-Key x 1**
- **M.2 2280 M-Key x 1**
- **TPM 2.0**
- **12V DC-in**

Specifications

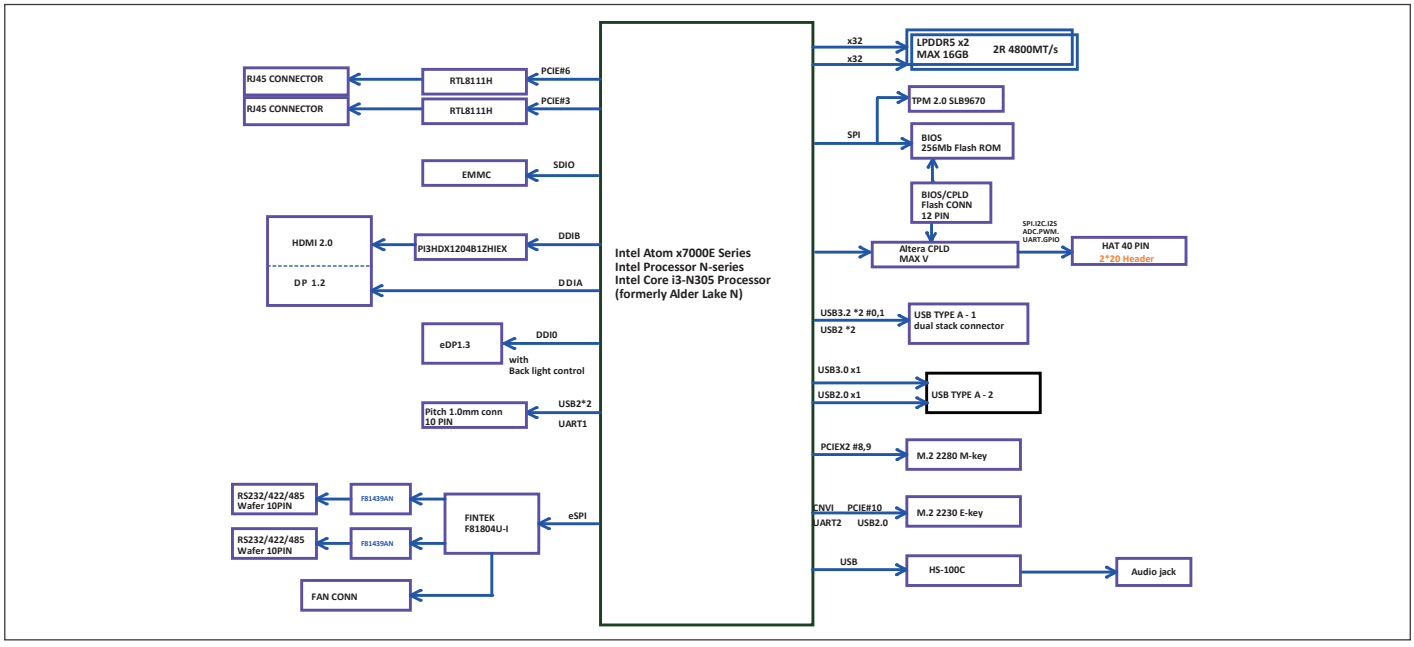
System	
Processor	Intel® Processor N97 Intel® Processor N100 Intel Atom® x7433RE Intel Atom® x7835RE
Graphics	Intel® UHD Graphics for 12th Gen Intel® Processors
Memory	Up to 16GB LPDDR5
Storage	Up to 128GB eMMC
I/O	HDMI 2.0b x 1 DP 1.2 x 1 eDP 1.3 x 1 Audio wafer (Line out + MIC in) x 1 RS-232/422/485 via wafer x 2
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 x1, USB2.0 x1) M.2 2280 M-key x 1 (PCIe x2)
Display Interface	HDMI 2.0b 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 10/11 Ubuntu 22.04 LTS Yocto 5.1
Power Requirement	
Power	12V DC-in
Power Supply Type	AT/ ATX (ATX as default)
Power Consumption (Typical)	15W~37W
Mechanical	
Dimension	3.37" x 3.54" (85.6 mm × 90 mm)
Net Weight	0.41 lbs (0.19kg)
Gross Weight	0.66 lbs (0.3kg)
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow, WiTAS1 -4°F ~ 158°F (-20°C ~ 70°C) with active cooler
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	1,224,238
Certification	CE/FCC Class A, RoHS Compliant, REACH

Packing List

- **UP Squared 7100 with heatsink**

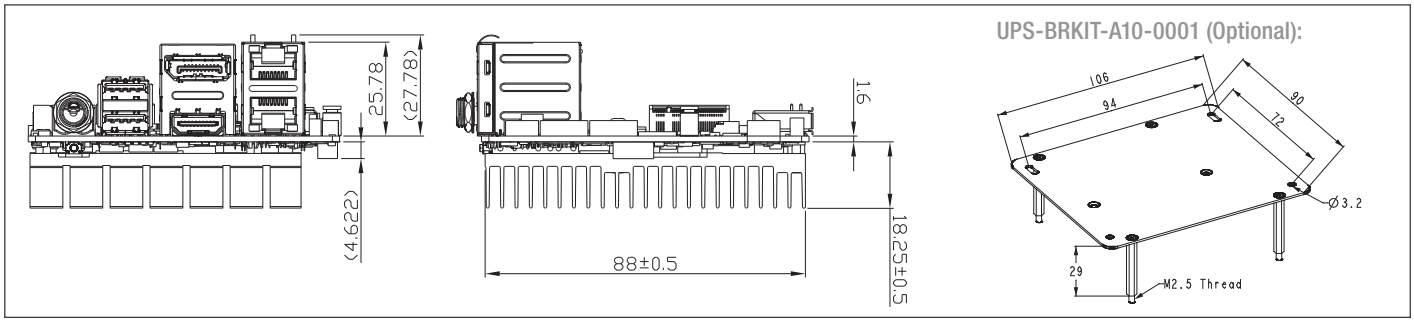
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

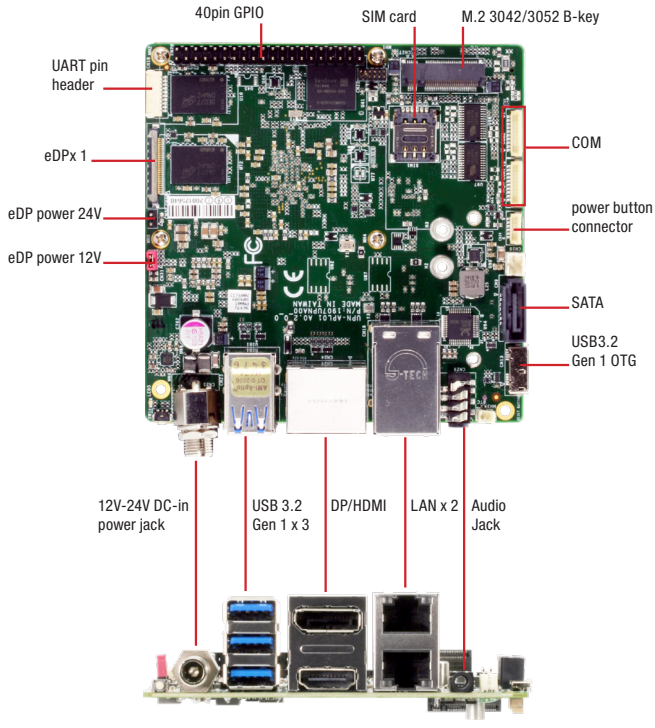
Part number	CPU	Memory	Storage
UPS-ASLN100-A10-0432	Intel® Processor N100	4GB	32GB
UPS-ASLN100-A10-0864	Intel® Processor N100	8GB	64GB
UPS-ASLN97-A10-0432	Intel® Processor N97	4GB	32GB
UPS-ASLN97-A10-0864	Intel® Processor N97	8GB	64GB
UPS-ASLN97-A10-16128	Intel® Processor N97	16GB	128GB

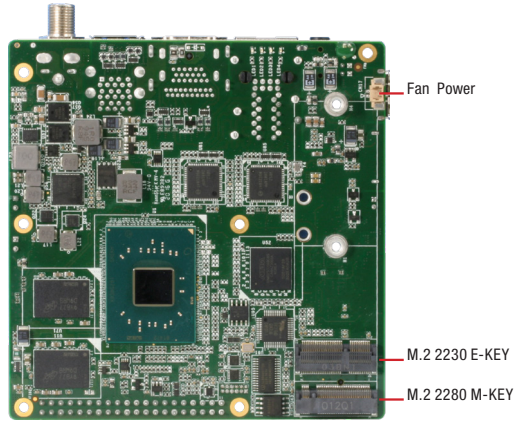
Optional Accessories

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)
170X000799	(TF)Power Cord. 3P. 125V. 10A. 180D. USA. 1. 8M. I-SHENG. SP305B/IS-14N SVT 18/3 60C CT-12 Black
170X000800	(TF)Power Cord. 3P. 250V. 10A. VDE. 1. 8M. I-SHENG. SP23/IS-14N H05VV-F 3G 0. 75 CT-12 Black
170X000815	(TF)Power Cord. 3P. 250V. 10A. 180D. CHINA. 1. 8M. I-SHENG. SP506A/IS-14N RVV 300/500V 3X0. 75 CT-12 Black
170X000806	(TF)Power Cord. 3P. 125V. 7A. 1. 8M. I-SHENG. U4NCB3T6B1218002. SP305B/IS-14N VCTF. Black. BSMI
170X000803	(TF)Power Cord.3P.125V/7A.PSE Certificate.1.8M.I-SHENG.U4NCB3P6C1218002.SP305B/IS-14N VCTF 0.75/3 Black 1.8M
170X000810	(TF)Power Cord.3P.250V.16A.Korea.1.8M.I-SHENG.SP23/IS-14N H05VV-F 3G 0.75 CT-12 Black
170X000805	(TF)Power Cord.3P.250V.10A.SWISS.1.8M.I-SHENG.SP-027C/IS-14N H05VV-F 3G 0.75mm CT-12 Black
1701100180	COM Cable
170010015G	UART to USB cable
9651210000	Wireless LAN Kit M.2 2230 802.11ax/ac/a/b/g/n + BT5.2,2.4G/5G/6G,with 2 sets of cable & antenna (Intel AX210)
9651885200	Wireless LAN Kit M.2 2230 802.11ax/ac/a/b/g/n + BT5.2,2T2R,with 2 sets of cable & antenna (Enli,ENL-8852CE)

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

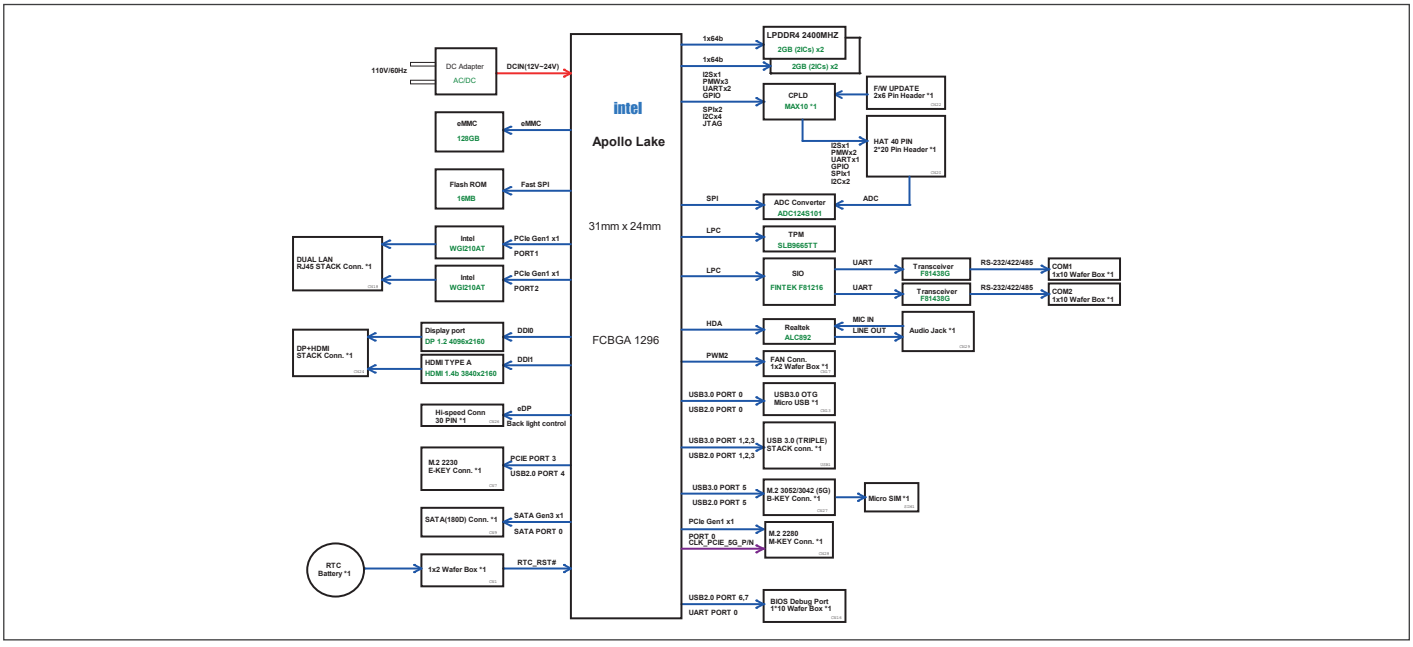
System	
Processor	Intel® Pentium® N4200/ Celeron® N3350/ Atom® E3950 Processor SoC
Graphics	Intel® Gen 9 HD, supporting 4K Codec Decode and Encode for HEVC4, H.264, VP8
I/O	HDMI x 1 DP x 1 COM port (RS422/RS232/RS485) x 2 Audio Jack x 1
Camera	—
USB	USB 2.0 x 2 USB 3.2 Gen 1 OTG x 1 USB 3.2 Gen 1 (Type 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

Packing List

- **UP Squared Pro with heatsink**

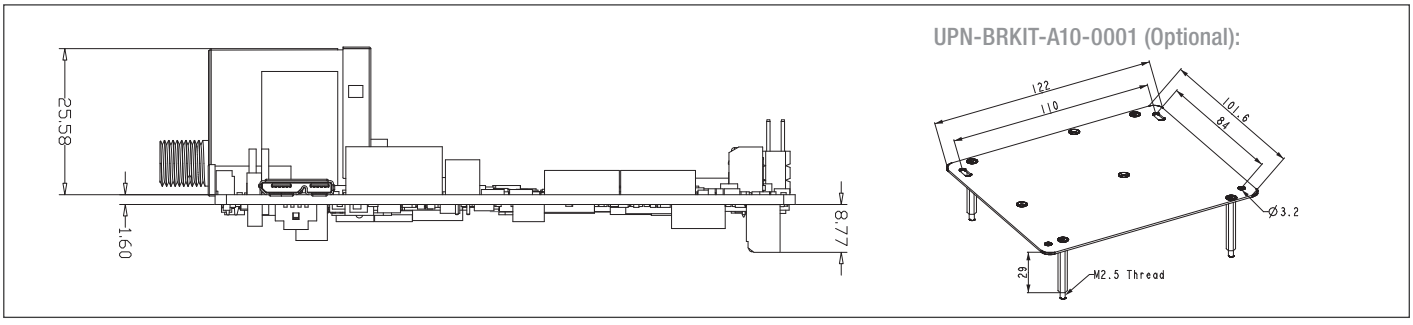
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

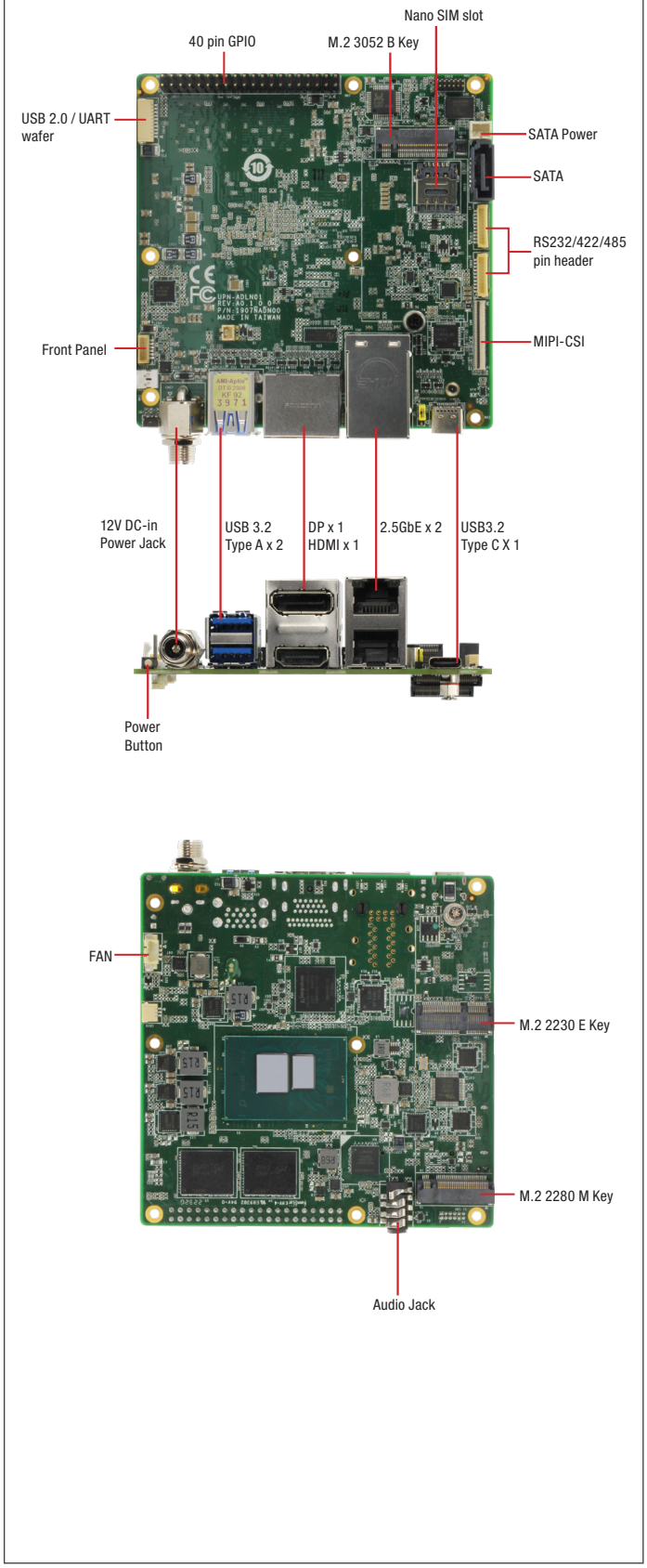
Part number	Description
UPN-APLC2F-A10-0232	UPN-APL01.CPU N3350(F1).Memory 2GB.eMMC 32GB.REV.A1.0
UPN-APLC2F-A10-0432	UPN-APL01.CPU N3350(F1).Memory 4GB.eMMC 32GB.REV.A1.0
UPN-APLP4F-A10-0432	UPN-APL01.CPU N4200(F1).Memory 4GB.eMMC 32GB.REV.A1.0
UPN-APLP4F-A10-0864	UPN-APL01.CPU N4200(F1).Memory 8GB.eMMC 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
170X000800	Power cord for EU
170X000799	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

UP Squared Pro 7000

UP Squared Pro 7000 Developer Board with Intel Atom® x7000E/x7000RE Series, Intel® Processor N-series, and Intel® Core™ i3-N305 Processor



Features

- **Intel Atom® x7000E/x7000RE Series, Intel® Processor N-series, and Intel® Core™ i3-N305 Processor**
- **Onboard LPDDR5 Memory up to 16GB**
- **Onboard eMMC Storage up to 64GB**
- **2.5GbE x 2 (Intel® I226-IT)**
- **USB 3.2 x 3 (Type A x 2, Type C x 1)**
- **40 Pin GPIO x 1**
- **DP 1.2 x 1/DP 1.4a x 1/HDMI 2.0b x 1**
- **RS232/422/485 Wafer x 2**
- **M.2 2230 E-Key/M.2 2280 M-Key/M.2 3052 B-Key x 1**
- **SATA 6Gb/s x 1**
- **TPM 2.0**
- **12V DC-in, 6A**

Specifications

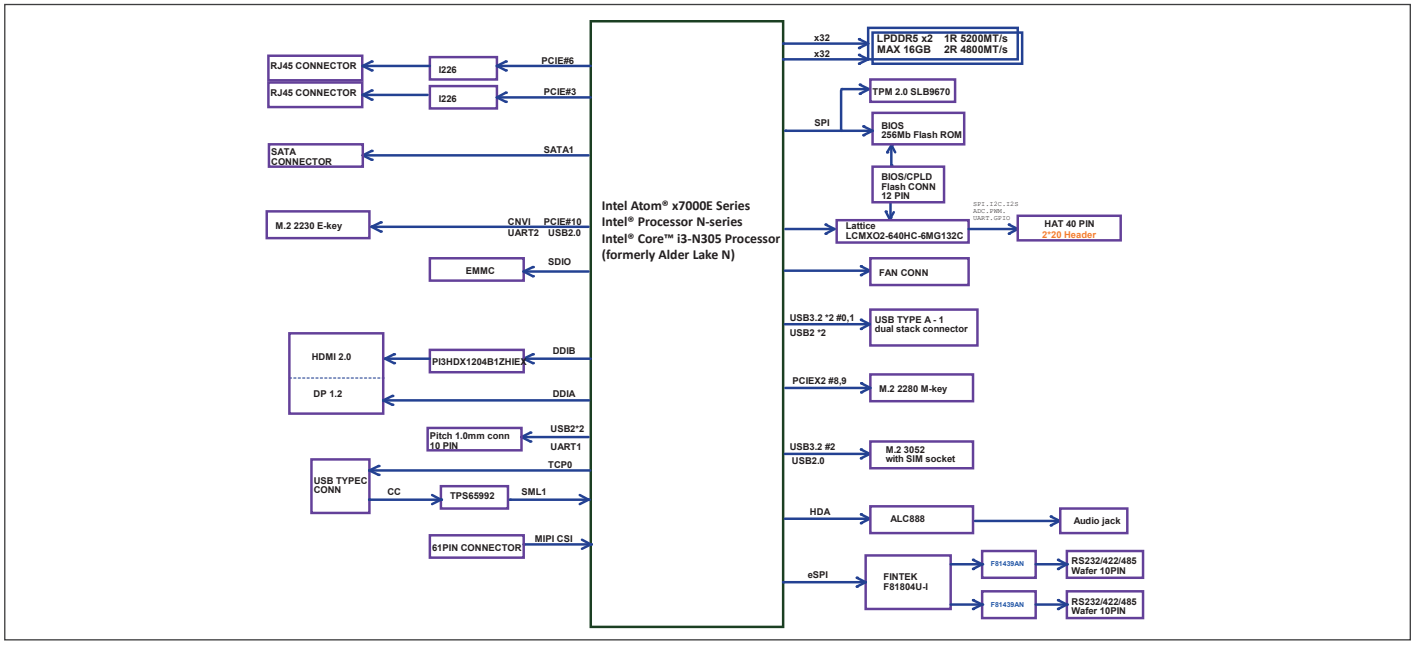
System	
Processor	Intel® Core™ i3-N305 Intel Atom® x7425E Intel Atom® x7433RE Intel Atom® x7835RE Intel® Processor N97 Intel® Processor N50
Graphics	Intel® UHD Graphics for 12th Gen Intel® Processors
Memory	Up to 16GB onboard LPDDR5
Storage	Up to 64GB onboard eMMC
I/O	HDMI 2.0b x 1 DP 1.2 x 1 DP 1.4a via USB Type C Audio Jack x 1 (Mic-in+Line-out) RS-232/422/485 via 10 Pin header x 2
Camera	MIPI-CSI via 61-Pin FPC Connector x 1
USB	USB 2.0 x 2 (via 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 Gen 3 [x1], USB 2.0) M.2 2280 M-Key x 1 (PCIe Gen 3 [x2]) M.2 3052 B-Key x 1 (USB 3.2 Gen 2 only) with Nano SIM slot (USB 3.0) SATA 6Gb/s x 1
Display Interface	HDMI 2.0b x 1 DP 1.2 x 1 DP 1.4a via USB Type C
Ethernet	2.5GbE x 2 (Intel® I226-IT)
Security	Onboard TPM 2.0
RTC	Yes
OS Support	Windows 10 IoT Enterprise Ubuntu 22.04 LTS Yocto 4.0
Power Requirement	
Power	12V DC-in
Power Supply Type	AT/ATX (ATX as default)
Power Consumption (Typical)	26W~35W
Mechanical	
Dimension	4" x 4" (101.6mm × 101.6mm)
Net Weight	0.44 lbs (0.20kg)
Gross Weight	0.77 lbs (0.35kg)
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow, WiTAS1 -4°F ~ 158°F (-20°C ~ 70°C)
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	422,053 Hours
Certification	CE/FCC Class A, RoHS Compliant, REACH

Packing List

- **UP Squared Pro 7000 with heatsink**

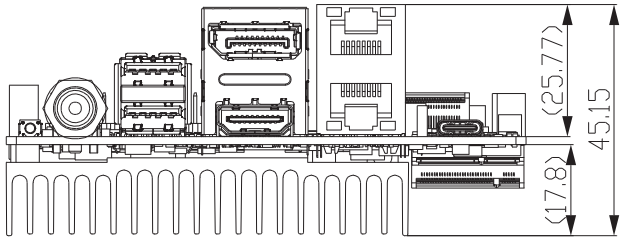
Note: All specifications are subject to change without notice.

Block Diagram

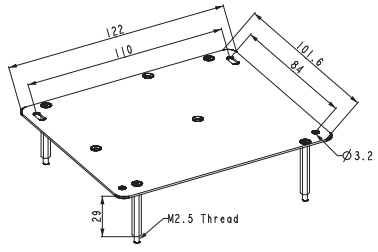


Dimension

Unit: mm



UPN-BRKIT-A10-0001 (Optional):



Ordering Information

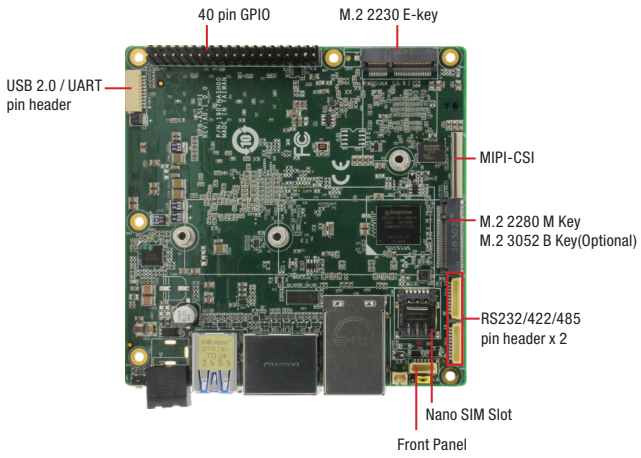
Part number	CPU	Memory	Storage	Operating Temp
UPN-ADLN50-A10-0432	Intel® Processor N50	4GB	32GB	0°C ~ 60°C
UPN-ADLN97-A10-0432	Intel® Processor N97	4GB	32GB	0°C ~ 60°C
UPN-ADLN97W1-A10-0432	Intel® Processor N97	4GB	32GB	-20°C ~ 70°C
UPN-ADLN97-A10-0864	Intel® Processor N97	8GB	64GB	0°C ~ 60°C
UPN-ADLNX25E-A10-0864	Intel Atom® x7425E	8GB	64GB	0°C ~ 60°C
UPN-ADLN33REW1-A10-0864	Intel Atom® x7433RE	8GB	64GB	-20°C ~ 70°C
UPN-ADLN35REW1-A10-16128	Intel Atom® x7835RE	16GB	128GB	-20°C ~ 70°C
UPN-ADLNI3-A10-1664	Intel® Core™ i3-N305	16GB	64GB	0°C ~ 60°C

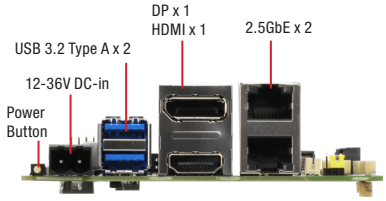
Optional Accessories

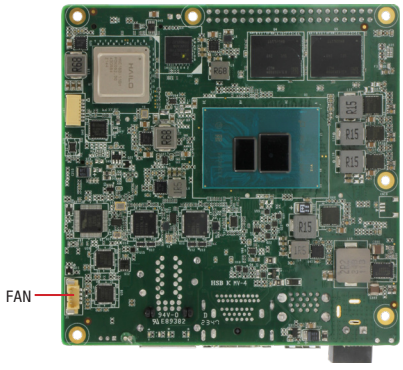
Part Number	Description
1255X00032	(TF)AC/DC Adapter.Input AC.100~240V.Output DC.12V.MAX 72W.6.0A.180D.W/ LOCK.EDAC. EA10681U(120)
170X000799	(TF)Power Cord. 3P. 125V. 10A. 180D. USA. 1. 8M. I-SHENG. SP305B/IS-14N SVT 18/3 60C CT-12 Black
170X000800	(TF)Power Cord. 3P. 250V. 10A. VDE. 1. 8M. I-SHENG. SP23/IS-14N H05VV-F 3G 0. 75 CT-12 Black
170X000815	(TF)Power Cord. 3P. 250V. 10A. 180D. CHINA. 1. 8M. I-SHENG. SP506A/IS-14N RVV 300/500V 3X0. 75 CT-12 Black
170X000806	(TF)Power Cord. 3P. 125V. 7A. 1. 8M. I-SHENG. U4NCB3T6B1218002. SP305B/IS-14N VCTF. Black. BSMI
170X000806	(TF)Power Cord.3P.125V/7A.PSE Certificate.1.8M.I-SHENG.U4NCB3P6C1218002.SP305B/IS-14N VCTF 0.75/3 Black 1.8M
170X000810	(TF)Power Cord.3P.250V.16A.Korea.1.8M.I-SHENG.SP23/IS-14N H05VV-F 3G 0.75 CT-12 Black
170X000805	(TF)Power Cord.3P.250V.10A.SWISS.1.8M.I-SHENG.SP-027C/IS-14N H05VV-F 3G 0.75mm CT-12 Black
1709070500	SATA cable
1702150155	SATA power cable (15cm)
1702150306	SATA power cable (30cm)
1701100180	COM Cable
UPCR-CAMB-A10-0001	MIPI-CSI Camera RVP Converter Kit for UP Squared Pro 7000/UP Squared i12/UP Xtreme i12
UPCR-HDMI-A10-0001	HDMI IN carrier board for for UP Squared Pro 7000/UP Squared i12/UP Xtreme i12
UPCR-CAN1-A10-0001	UP CAN Bus Carrier Board with USB/UART interface for UP product line
UPN-BRKIT-A10-0001	Bracket KIT of board fixture for all UP series

UP Squared Pro 710H

UP Squared Pro 710H Developer Board with Intel Atom® x7000RE Series, Intel® Processor N Series, and Intel® Core™ i3-N305 Processors







Features

- **Intel Atom® x7000RE Series, Intel® Processor N-series, and Intel® Core™ i3-N305 Processors**
- **Onboard Hailo-8™ edge AI processor**
- **Onboard LPDDR5 Memory, up to 16GB**
- **Onboard eMMC Storage, up to 128GB**
- **2.5GbE x 2 (Intel® Ethernet Controller I226-IT)**
- **USB 3.2 (Type-A) x 2**
- **40-pin GPIO x 1**
- **DP 1.4 x 1/HDMI 2.0b x 1**
- **RS-232/422/485 x 2 via pin header**
- **M.2 2230 E-Key/M.2 2280 M-Key (Optional: M.2 3052 B-Key x 1)**
- **Onboard TPM 2.0**
- **12V ~ 36V DC-in with Phoenix Connector**

Specifications

System	
Processor	Intel® Core™ i3-N305 (8C, 1.80 GHz, 15W) Intel® Processor N97 (4C, 2.00 GHz, 12W) Onboard Hailo-8™ edge AI processor
Graphics	Intel® UHD Graphics for 12th Gen Intel® Processors
Memory	Up to 16GB onboard LPDDR5
Storage	Up to 128GB onboard eMMC
I/O	HDMI 2.0b x 1 DP 1.4 x 1 RS-232/422/485 from 10 pin header x 2
Camera	MIPI-CSI via 61-Pin FPC Connector x 1
USB	USB 2.0 x 2 (from 10 pin header x 1) USB 3.2 Gen 2 (Type-A) x 2
Expansion	40-pin GPIO x 1 M.2 2230 E-Key x 1 (CNVI, PCIe Gen 3 [x1], USB 2.0) M.2 2280 M-Key x 1 (PCIe Gen 3 [x2], colay with M.2 3052 B-Key x 1) M.2 3052 B-Key x 1 (USB 3.2 Gen 2 only) (Optional)
Display Interface	HDMI 2.0b x 1 DP 1.4 x 1
Ethernet	2.5GbE x 2 (Intel® Ethernet Controller I226-IT)
Security	Onboard TPM 2.0
RTC	Yes
OS Support	Windows 10 IoT Enterprise Ubuntu 22.04 LTS Yocto 4.0
Power Requirement	
Power	12V-36V DC-in Phoenix connector (Optional: Lockable plug)
Power Supply Type	AT/ATX
Power Consumption (Typical)	50W~55W
Mechanical	
Dimension	4" x 4" (101.6mm x 101.6mm)
Net Weight	0.44 lbs (0.20kg)
Gross Weight	0.77 lbs (0.35kg)
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	422,053 Hours
Certification	CE/FCC Class A, RoHS Compliant, REACH

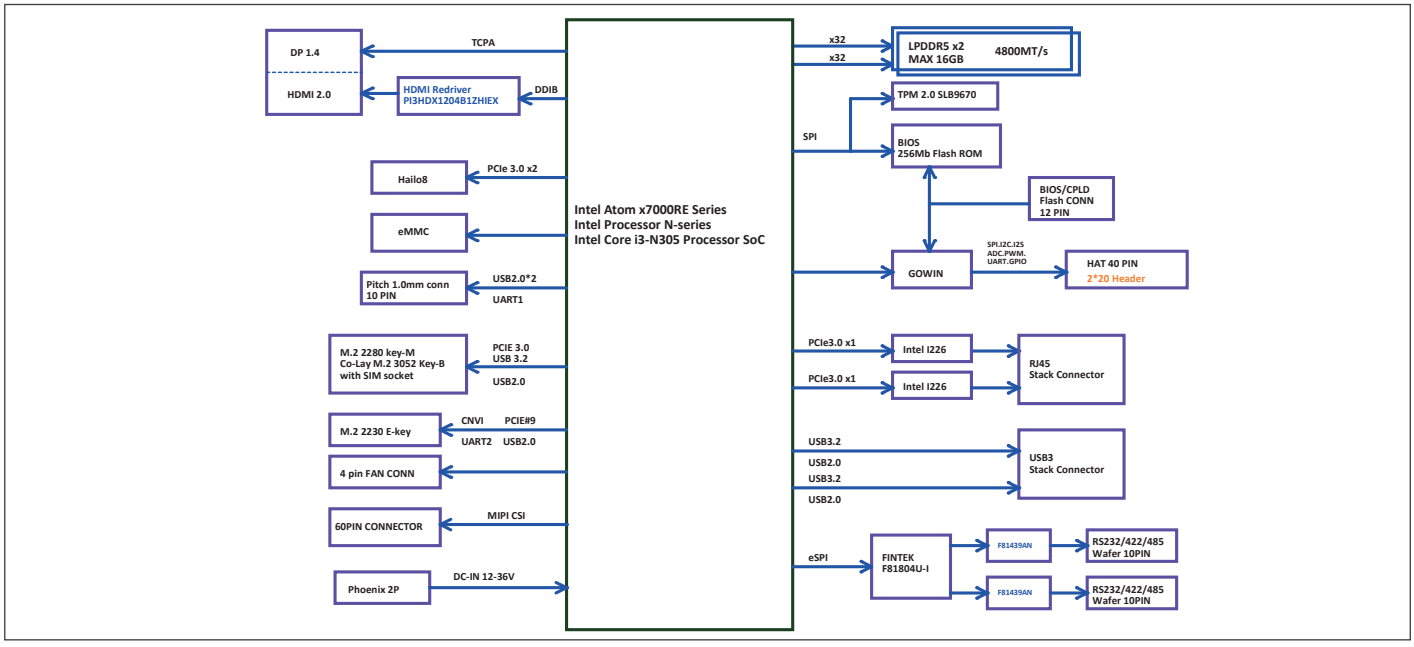
Packing List

- **UP Squared Pro 710H x 1**
- **DC in Phoenix Connector x 1**

Note: All specifications are subject to change without notice.

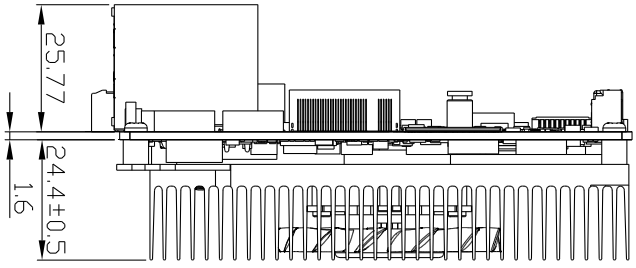
UP Squared Pro 710H

Block Diagram

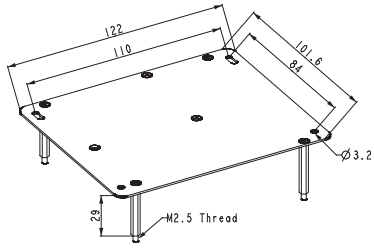


Dimension

Unit: mm



UPN-BRKIT-A10-0001 (Optional):



Ordering Information

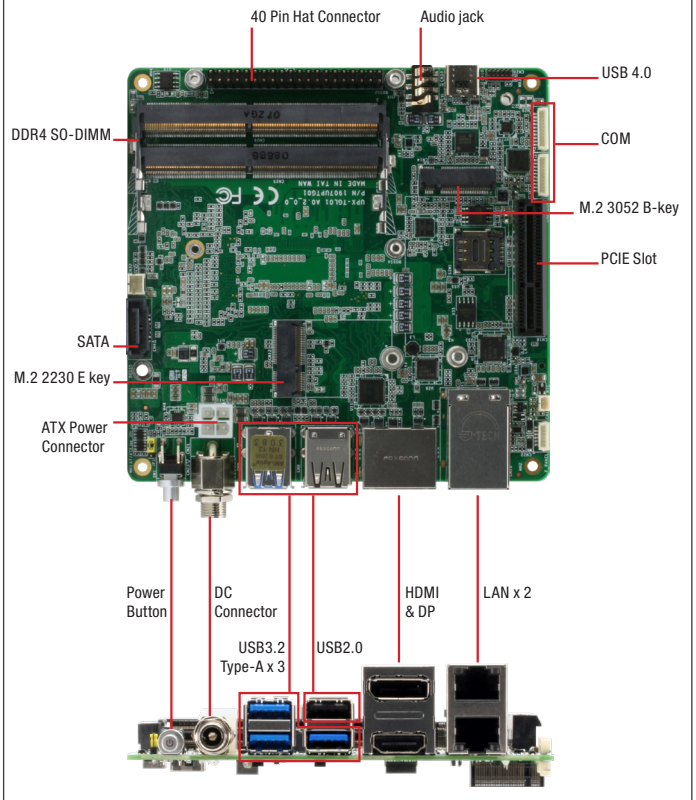
Part Number	CPU	Core	Memory	Storage	Heatsink	VPU	Operating Temperature
UPN-ASLHN97-A10-0864	Intel® Processor N97	4 Core	8GB	64GB	Active cooler	Onboard Hailo-8™ edge AI processor	32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow
UPN-ASLHI3-A10-16128	Intel® Core™ i3-N305	8 Core	16GB	128GB	Active cooler	Onboard Hailo-8™ edge AI processor	32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow

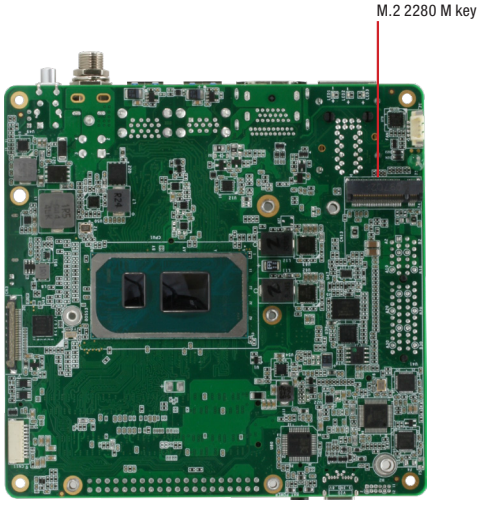
Optional Accessories

Part Number	Description
1255X00091	(TF)AC/DC Adapter.Input AC.100~240V.Output DC.12V.MAX 72W.6.0A.Wire Stripping and Tinning. EDAC.EA10681U(T19)
170203180J	Power Cord for UK
170X000799	Power Cord for USA
170X000800	Power Cord for EU
170X000815	Power Cord for China
170X000806	Power Cord for Taiwan
170X000803	Power Cord for Japan
170X000810	Power Cord for South Korea
170X000805	Power Cord for Switzerland
1701100180	COM Cable

UP Xtreme i11

UP Xtreme i11 Developer Board with 11th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC





Features

- **11th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC**
- **DDR4 SODIMM Slot x 2, up to 64GB**
- **40-pin HAT Connector**
- **4 Independent Displays**
- **5G Module support via M.2 3052 B-Key**
- **AI module support via M.2 2280 M-Key**
- **Supports Intel® Wi-Fi 6E AX210 via M.2 2230 E-Key**
- **USB 4.0 (Type-C)**
- **PCIe [x4] slot**

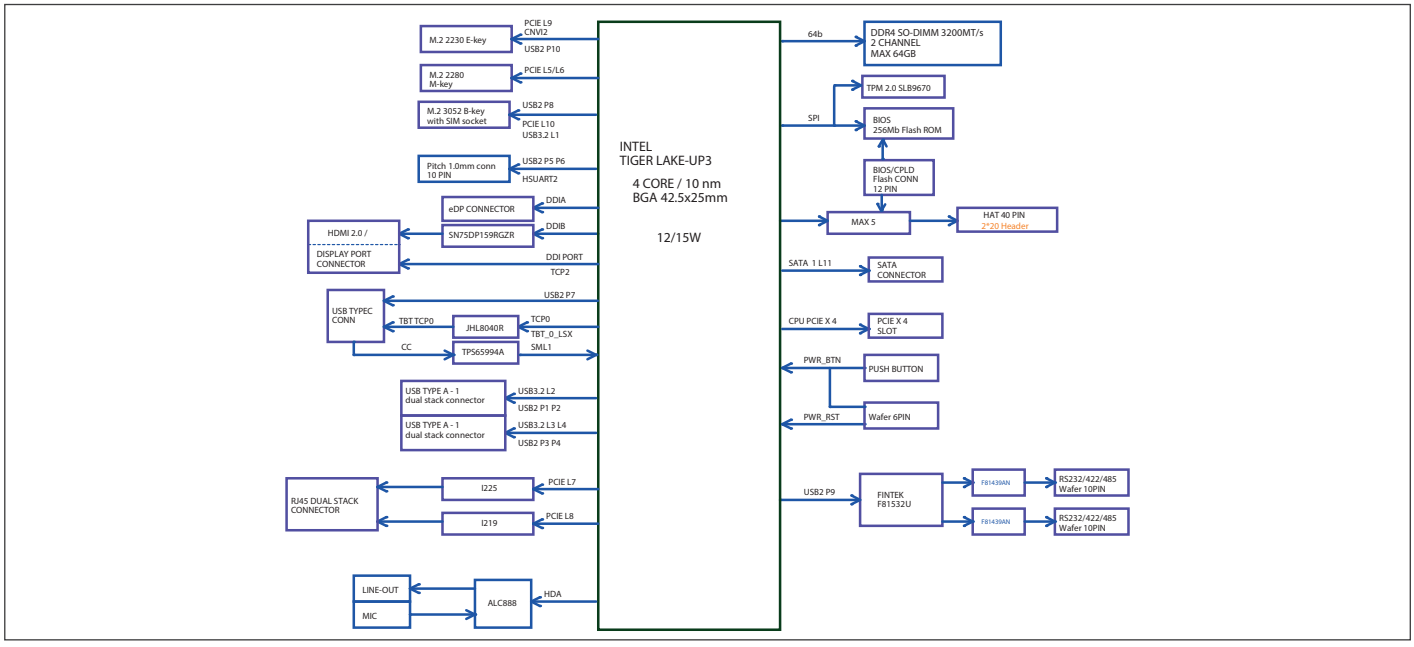
HDMI · DDR 4 · USB 3.2 Gen 2 · PCI Express · Audio

Specifications

System	
Processor	11th Gen Intel® Core™ Processor SoC Intel® Core™ i7-1185G7E Intel® Core™ i7-1185GRE Intel® Core™ i5-1145 G7E Intel® Core™ i5-1145GRE Intel® Core™ i3-1115GRE Intel® Celeron® 6305E
Graphics	Intel® Iris® Xe graphics
Memory	DDR4 SODIMM Slot x 2, up to 64GB
Storage	M.2 2280 M-Key x 1 for NVMe (PCIe [x2]) SATA 6Gb/s x 1
I/O	HDMI 2.0 x 1 DP 1.4x 1 eDP x 1 Audio Jack x 1 (Mic-in+Line-out) RS-232/422 10-pin header x 2
Camera	—
USB	USB 2.0 x 2 (from wafer x 1) USB 2.0 (Type-A) x 1 USB 3.2 Gen 2 (Type-A) x 3 USB 4.0 (Type-C) x 1
Expansion	40-pin GPIO x 1 M.2 2230 E-Key x 1 M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 SATA 6Gb/s x 1 PCIe [x4] Slot
Display Interface	HDMI 2.0 x 1 DP 1.4 x 1 eDP x 1
Ethernet	Intel® I225-IT x 1 Intel® I219 (vPRO) x 1
Security	—
RTC	Yes
OS Support	Microsoft Windows 10 and Windows IoT Linux Ubuntu 22.04 Linux Yocto 3.1
Power Requirement	
Power	12V (Lockable plug)
Power Supply Type	AT/ATX (ATX as default)
Power Consumption (Typical)	Balance: 32.4W Max current: 66W
Mechanical	
Dimension	4.74" x 4.82" (120.35mm x 122.5mm)
Net Weight	0.57 lbs (0.26kg)
Gross Weight	1.15 lbs (0.52kg)
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°) / 0.5 airflow
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	372,419 Hours
Certification	CE/FCC Class A, RoHS Compliant, REACH

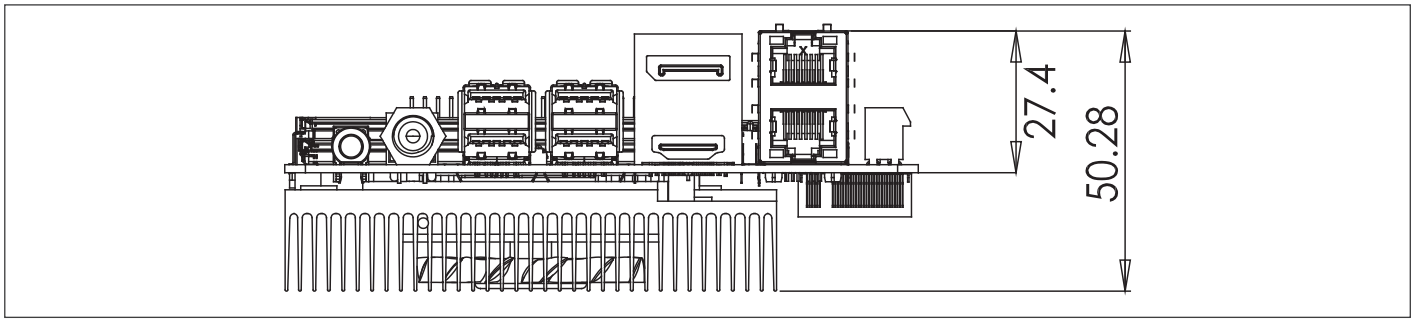
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part Number	CPU	CORE	MEMORY	HEATSINK
UPX-TGLCR-A10-0000	Intel®Celeron® 6305E	2	SO-DIMM	FAN
UPX-TGLI3-A10-0000	Intel®Core™ i3-1115GRE	2	SO-DIMM	FAN
UPX-TGLI5-A10-0000	Intel®Core™ i5-1145GRE	4	SO-DIMM	FAN
UPX-TGLI5G7E-A10-0000	Intel®Core™ i5-1145G7E	4	SO-DIMM	FAN
UPX-TGLI7-A10-0000	Intel®Core™ i7-1185GRE	4	SO-DIMM	FAN
UPX-TGLI7G7E-A10-0000	Intel®Core™ i7-1185G7E	4	SO-DIMM	FAN

Optional Accessories

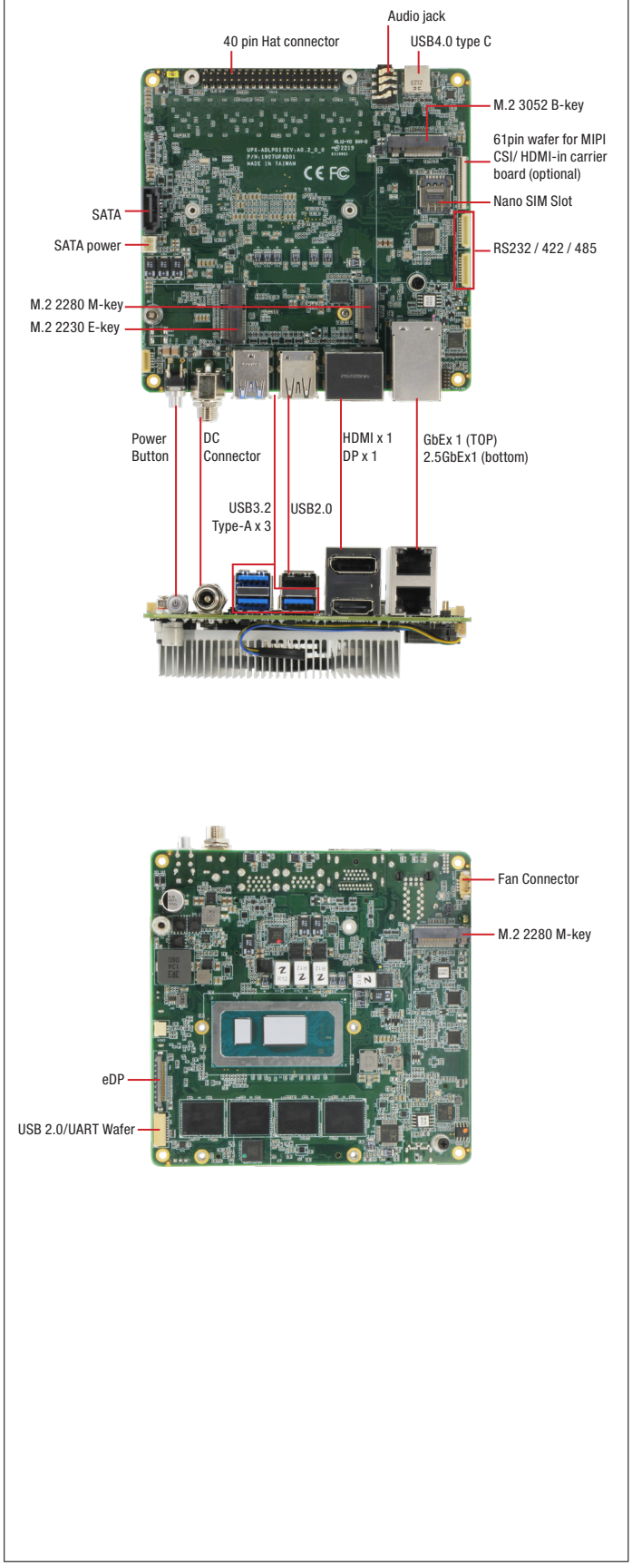
Part Number	Description
1255X00032	(TF)AC/DC Adapter.Input AC.100~240V.Output DC.12V.MAX 72W.6.0A.180D.W/ LOCK.EDAC. EA10681U(120)
1255300960	(TF)Power Adapter.100-240VAC~50/60Hz.12V/8A.96W.DC jack W/lock.FSP. FSP096-AHAN3/9NA0961403 *Use this adapter if select AI Core XM
170X000799	(TF)POWER CORD.3P-125V 10A 180D.1.8M.USA.FANJET.YP12/YC-12 (for USA)
170X000800	(TF)POWER CORD.3P-250V 10A 180D.1.8M.VDE.FAN-JET.YP-22/YC-12 (for EU)
170X000803	(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
UPCR-CAN1-A10-0001	UP CAN Bus Carrier Board with USB/UART interface for UP product line

Packing List

- **UP Xtreme i11 with heatsink + cooler**

UP Xtreme i12

UP Xtreme i12 Developer Board with 12th/13th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC



Features

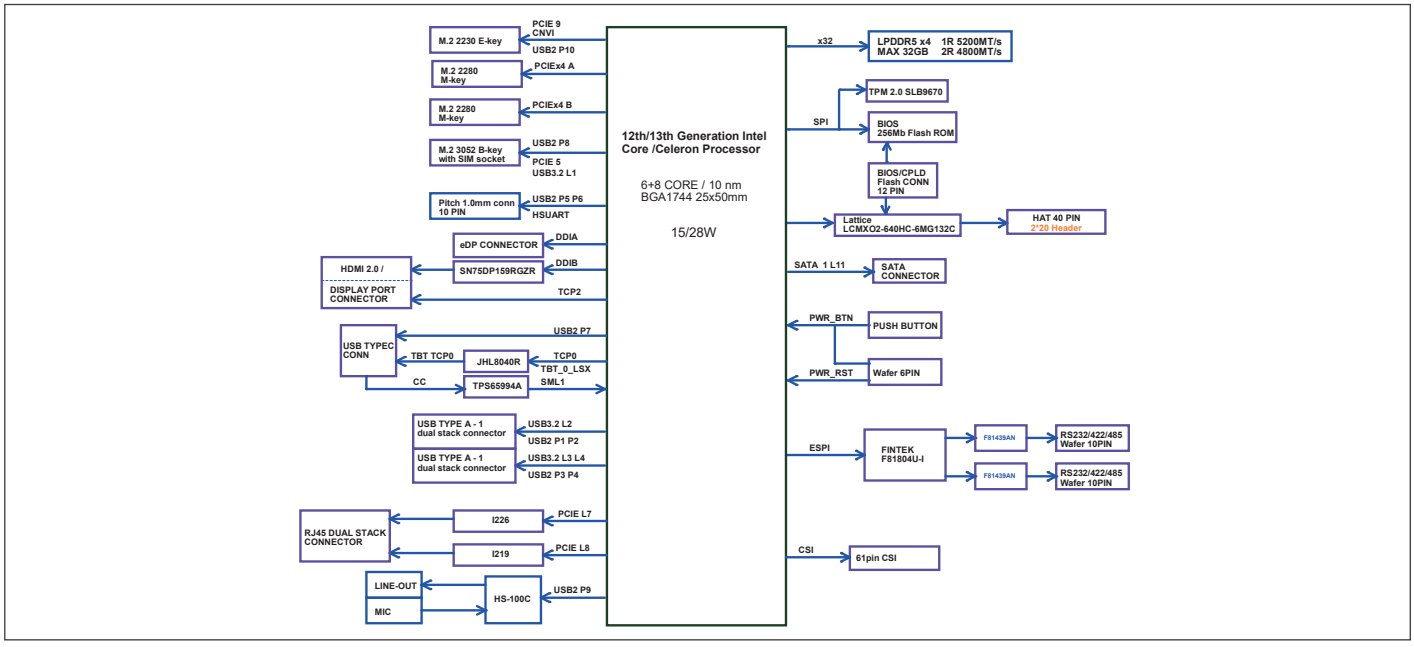
- 12th/13th Gen Intel® Core™ i7/i5/i3/Celeron® Processor SoC
- Onboard Dual Channel LPDDR5, up to 32GB
- 4 Independent Displays up to 4K at 60Ghz
- M.2 2280 M-Key x 2 (PCIe Gen 4 [x4])
- M.2 3052 B-Key (5G)
- Intel® Wi-Fi 6E AX210 Support
- TPM 2.0
- 40-pin HAT Connector
- USB 4.0 (Type-C)
- LAN x 2 (2.5GbE x 1, GbE x 1)
- Support for MIPI CSI/HDMI-in via 61-pin wafer (optional for 13th Gen SKUs)

Specifications

System	
Processor	12th Gen Intel® Core™ Processor SoC Intel® Core™ i7-1270PE Intel® Core™ i7-1260P Intel® Core™ i5-1250PE Intel® Core™ i5-1240P Intel® Core™ i3-1220PE Intel® Celeron® Processor 7305E 13th Gen Intel® Core™ Processor SoC Intel® Core™ i7-1370PE Intel® Core™ i7-1360P Intel® Core™ i5-1340PE Intel® Core™ i3-1320PE
Graphics	Intel® Iris® Xe graphics
Memory	Up to 32GB onboard LPDDR5
Storage	M.2 2280 M-Key x 2 (PCIe Gen 4.0 [x4]), SATA 6Gb/s x 1
I/O	HDMI 2.0b x 1 DP 1.4a x 1 DP 1.4a x 1 (via USB Type-C) eDP 1.4b x 1 Audio Jack x 1 (Mic-in+Line-out) RS-232/422/485 10-pin header x 2
Camera	MIPI CSI camera via 61pin wafer w/carrier board (optional for 13th Gen) HDMI-in via 61pin wafer w/carrier board (optional for 13th Gen)
USB	USB 2.0 x 2 (from 10 pin header x 1) USB 2.0 (Type-A) x 1 USB 3.2 Gen 2 (Type-A) x 3 USB 4.0 (Type-C) x 1
Expansion	40-pin GPIO x 1 M.2 2230 E-Key x 1 M.2 2280 M-Key x 2 (PCIe Gen 4.0 [x4]) SATA 6Gb/s 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 1.4a x 1 (via USB Type-C), eDP 1.4b x 1
Ethernet	Intel® I226-IT x 1 (TSN), Intel® I219 x 1 (vPRO)
Security	Onboard TPM 2.0
RTC	Yes
OS Support	Windows* 10 Enterprise 2021 LTSC, Ubuntu 22.04, Yocto 4.0
Power Requirement	
Power	12-36V DC-in (Lockable plug)
Power Supply Type	AT/ATX (ATX as default)
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" (120.35mm x 122.5mm)
Net Weight	0.88lb (0.4kg)
Gross Weight	1.32lb (0.6kg)
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow, WiTAS1 -4°F ~ 140 °F (-20°C ~ 60°C)
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	362,068 Hours
Certification	CE/FCC Class A, RoHS Compliant, REACH

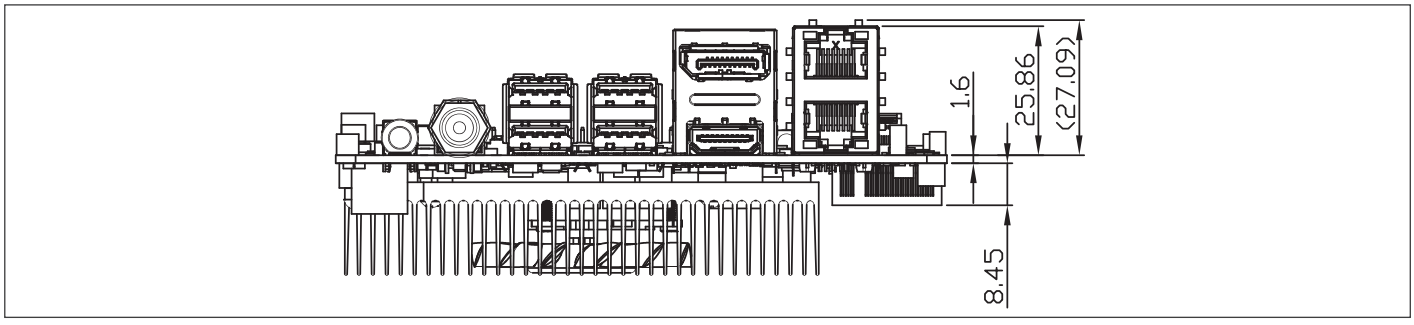
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Packing List

- **UP Xtreme i12 with active heatsink**

Optional Accessories

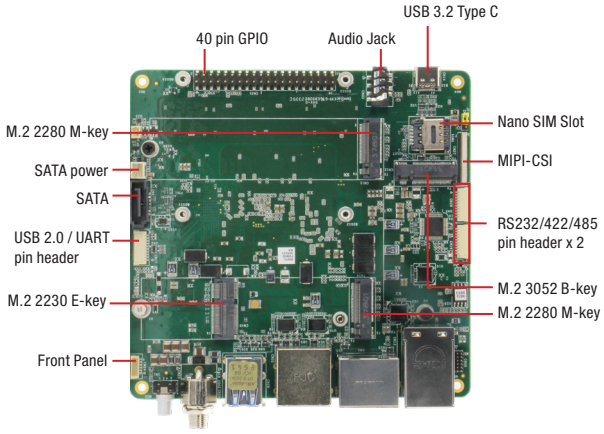
Part Number	Description
9741364A00	Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT4.0,2T2R,with 2 sets of cable & antenna (Enli,QCNFA364A)
9651926001	(TF).M.2 2230 WiFi Kit.802.11ac.2.4G/5G,W/BT Intel.9260.NGWG.NV,958867 w/2 cable & antenna
1702150155	Power Cable.15P SATA(F).2P 2.0mm, Housing(PH).15cm
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
170X000799	(TF)POWER CORD.3P-125V 10A 180D.1.8M.USA.FANJET.YP12/YC-12
170X000800	(TF)POWER CORD.3P-250V 10A 180D.1.8M.VDE.FAN-JET.YP-22/YC-12
170X000803	(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)
UPCR-CAMB-A10-0001	MIPICSI Camera RVP Converter kit.for UP Squared Pro 7000/UP Squared i12.REV.A1.0
UPCR-HDMI-A10-0001	HDMI IN carrier board for UPS i12, UPN 7000, UPX i12.REV.A1.0

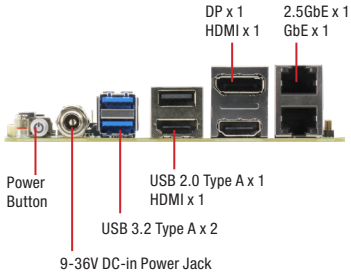
Ordering Information

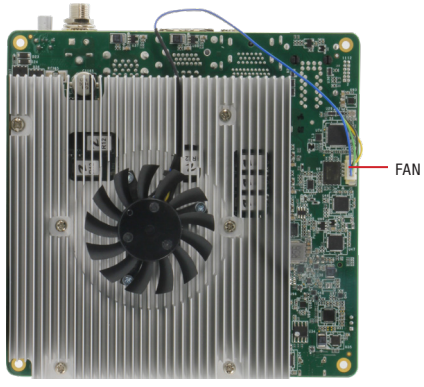
Part Number	CPU	CORE	MEMORY	HEATSINK
UPX-ADLPCR-A10-0800	Intel® Celeron® Processor 7305E	1P+4E	8GB	FAN
UPX-ADLPI3-A10-0800	Intel® Core™ i3-1220PE	4P+4E	8GB	FAN
UPX-ADLPI5-A10-1600	Intel® Core™ i5-1250PE	4P+8E	16GB	FAN
UPX-ADLPI7-A10-1600	Intel® Core™ i7-1270PE	4P+8E	16GB	FAN
UPX-ADLPI5C-A10-1600	Intel® Core™ i5-1240P	4P+8E	16GB	FAN
UPX-ADLPI7C-A10-1600	Intel® Core™ i7-1260P	4P+8E	16GB	FAN
UPX-RAPI3-A11-0800	Intel® Core™ i3-1320PE	4P+4E	8GB	FAN
UPX-RAPI5-A11-1600	Intel® Core™ i5-1340PE	4P+8E	16GB	FAN
UPX-RAPI7-A11-1600	Intel® Core™ i7-1370PE	4P+8E	16GB	FAN
UPX-RAPI7C-A11-1600	Intel® Core™ i7-1360P	4P+8E	16GB	FAN

UP Xtreme i14

UP Xtreme i14 Developer Board with Intel® Core™ Ultra 5/7 Processors







Features

- **Intel® Core™ Ultra 5/7 Processors**
- **Onboard Dual Channel LPDDR5 6400, up to 64GB**
- **Up to 4 Simultaneous Displays**
- **M.2 2280 M-Key x 2**
- **M.2 3052 B-Key x 1 (5G)**
- **M.2 2230 E-Key x 1 (Wi-Fi/BT)**
- **2.5GbE x 1, GbE x 1**
- **USB 3.2 Gen 2 (Type A x 2, Type C x 1)**
- **Onboard TPM 2.0**
- **Wide DC Input 9-36V**

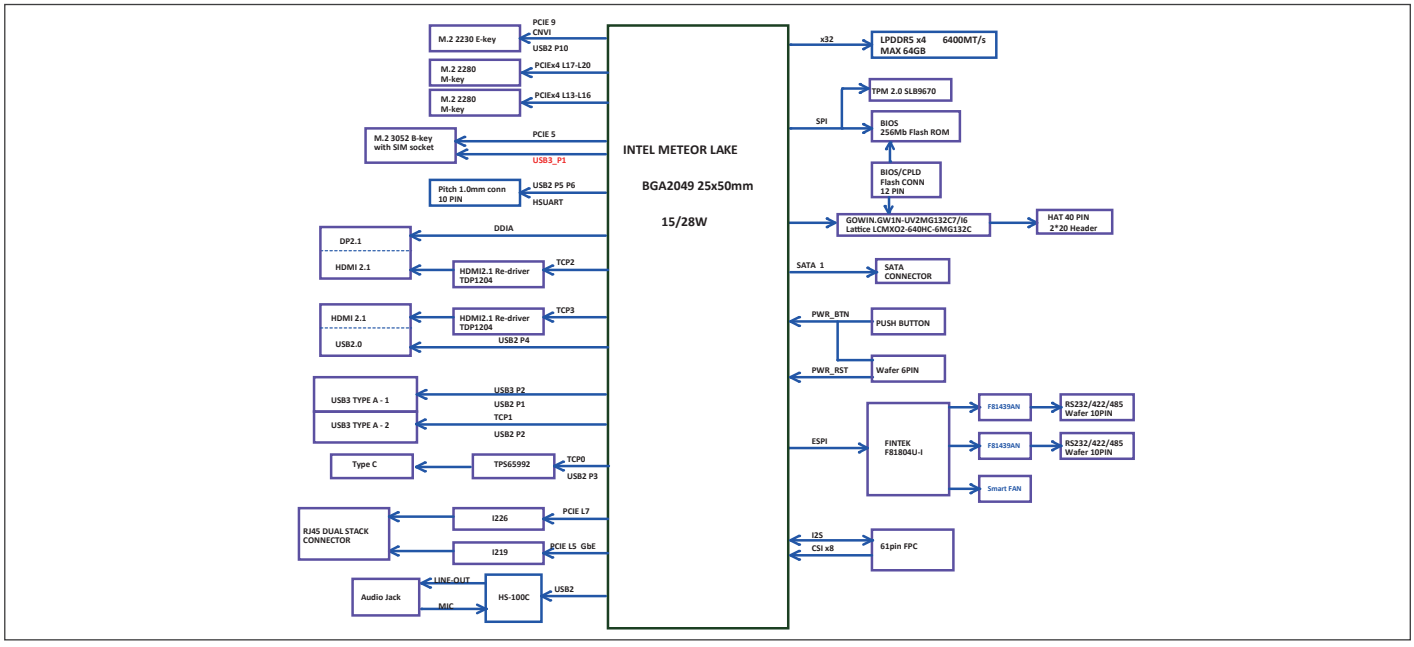
LPDDR 5 USB 3.2 Gen 2

Specifications

System	
Processor	Intel® Core™ Ultra 5 processor 125U (12M Cache, up to 4.30 GHz) Intel® Core™ Ultra 5 processor 125H (18M Cache, up to 4.50 GHz) Intel® Core™ Ultra 7 processor 155H (24M Cache, up to 4.80 GHz) Intel® Core™ Ultra 7 processor 165H (24M Cache, up to 5.00 GHz)
Graphics	Intel® Arc™ graphics
Memory	Up to 64GB onboard LPDDR5 (Dual-Channel)
Storage	M.2 2280 M-Key x 2 SATA 6Gb/s x 1
I/O	HDMI 2.1 x 2 DP 2.1 x 1 DP 1.4 via USB Type-C x 1 Audio Jack x 1 (Mic-in+Line-out) RS-232/422/485 10-pin header x 2
Camera	MIPI-CSI via 61-Pin FPC Connector x 1
USB	USB 2.0 x 2 (from 10 pin header x 1) USB 2.0 (Type-A) 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 (PCIe Gen 3 [x1], USB 2.0) M.2 2280 M-Key x 2 (PCIe Gen 4 [x4]) M.2 3052 B-Key x 1 (PCIe Gen 3 [x1], USB 3.2 Gen 2 [x1]) with Nano SIM slot (USB 3.0) SATA 6Gb/s x 1
Display Interface	HDMI 2.1 x 2 DP 2.1 x 1 DP 1.4 via USB Type-C x 1
Ethernet	2.5GbE x 1 (via Intel® Ethernet Controller I226-IT), GbE x 1 (Intel® Ethernet Connection I219)
Security	Onboard TPM 2.0
RTC	Yes
OS Support	Windows 10/11 (64bit) Ubuntu 22.04/Kernel 6.5 up
Power Requirement	
Power	9-36V DC-in (Lockable plug)
Power Supply Type	AT/ATX (ATX as default)
Power Consumption (Typical)	67-80W
Mechanical	
Dimension	4.74" x 4.82" (120.35mm x 122.5mm)
Net Weight	12.7 lb. (0.36Kg)
Gross Weight	1.32lb (0.6kg)
Environment	
Operating Temperature	With Cooler: 32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	1,014,016
Certification	CE/FCC Class A, RoHS Compliant, REACH

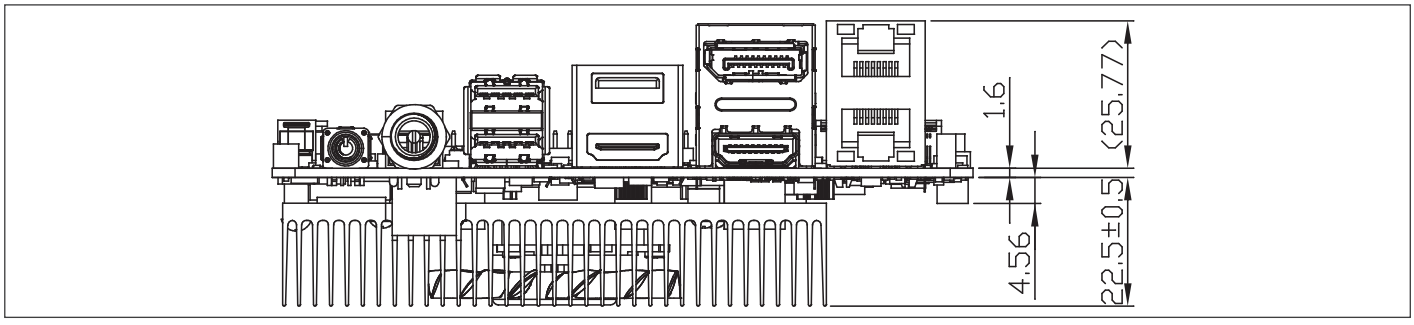
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Packing List

- **UP Xtreme i14 with active cooler**

Optional Accessories

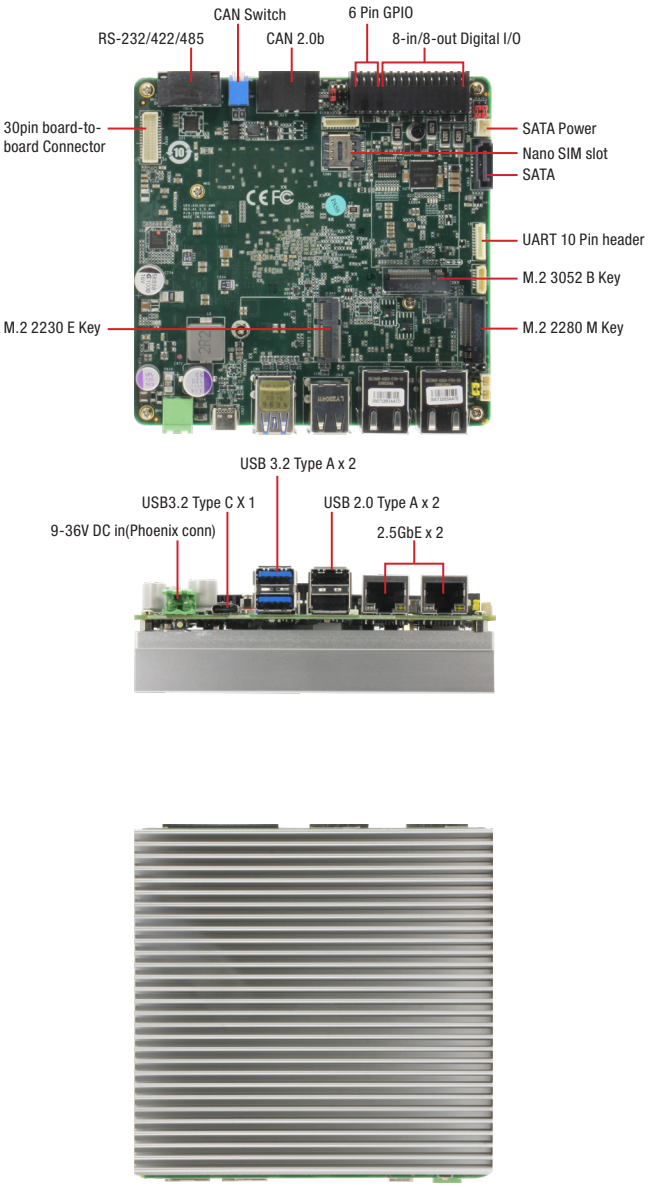
Part Number	Description
1255X00071	(TF)AC/DC Adapter.Input 100V~240V.output DC 19V.120W.6.32A.DC JACK w/Lock.FSP.FSP120-ABAN3/9NA1208548
170203180J	Power Cord for UK
170X000799	Power Cord for USA
170X000800	Power Cord for EU
170X000815	Power Cord for China
170X000806	Power Cord for Taiwan
170X000803	Power Cord for Japan
170X000810	Power Cord for South Korea
170X000805	Power Cord for Switzerland
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
9651210000	Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT5.2,2.4G/5G/6G,with 2 sets ofcable & antenna (Intel AX210)

Ordering Information

Part Number	CPU	Core	Memory	Thermal Solution
UPX-MTL125H-A10-1600	Intel® Core™ Ultra 5 processor 125H (18M Cache, up to 4.50 GHz)	4P+8E+2LPE	16G	Active Cooler
UPX-MTL125U-A10-3200	Intel® Core™ Ultra 5 processor 125U (12M Cache, up to 4.30 GHz)	2P+8E+2LPE	32G	Active Cooler
UPX-MTL125H-A10-3200	Intel® Core™ Ultra 5 processor 125H (18M Cache, up to 4.50 GHz)	4P+8E+2LPE	32G	Active Cooler
UPX-MTL155H-A10-3200	Intel® Core™ Ultra 7 processor 155H (24M Cache, up to 4.80 GHz)	6P+8E+2LPE	32G	Active Cooler
UPX-MTL165H-A10-6400	Intel® Core™ Ultra 7 processor 165H (24M Cache, up to 5.00 GHz)	6P+8E+2LPE	64G	Active Cooler

UP Xtreme 7100

UP Xtreme 7100 Developer Board with Intel® Processor N-series Processor



Features

- **Intel® Processor N-series, and Intel® Core™ i3-N305 Processor**
- **Low power consumption**
- **2.5GbE x 2 (Intel® I226-IT)**
- **2-channel CAN 2.0B x 1**
- **Watchdog timer, Onboard TPM 2.0**
- **DIO/GPIO via Terminal Block**
- **Cable-free design**
- **Wide 9V~36V power input**
- **Fanless design**

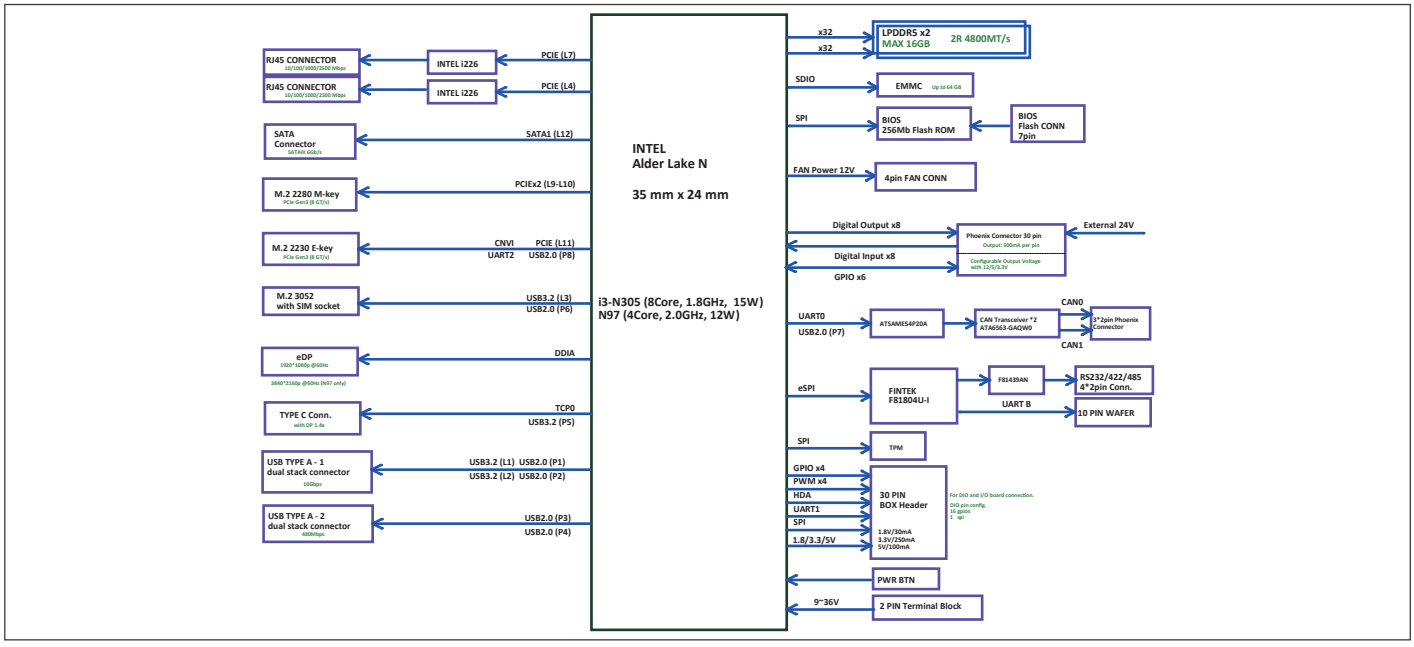
LPDDR 5 USB 3.2 Gen 2

Specifications

System	
Processor	Intel® Processor N97 Intel® Core™ i3-N305
Graphics	Intel® UHD Graphics Gen 12
Memory	Up to 16GB LPDDR5
Storage	Up to 64GB onboard eMMC M.2 2280 M-Key x 1 (PCIe Gen 3 [x2]) SATA 6Gb/s x 1
I/O	RS-232/422/485 x 1 (Terminal Block) (Default RS232) 30pin board-to-board Connector x 1 UART x 1 (via 10 Pin Header x 1)
Camera	—
USB	USB 2.0 (Type A) x 2 USB 3.2 Gen 2 (Type A) x 2 USB 3.2 Gen 2 (Type C) x 1 (Supports DP alt mode)
Expansion	M.2 3052 B-Key x 1 with Nano SIM slot (USB 3.0) M.2 2230 E-Key x 1 (USB 2.0/PCIe) M.2 2280 M-Key x 1 (PCIe Gen 3 [x2]) 24V 8-in/8-out Digital I/O x 1 via Terminal Block (Output current: 500mA per channel) 6 pin GPIO x 1 via Terminal Block 6 pin 2-channel CAN 2.0B x 1 via Terminal Block (10 ~ 1000 kbps) DIP Switch for CANBus function x 1 CAN LED indicator x 2 SATA 6Gb/s x 1
Display Interface	DP 1.4a x 1 (via USB Type-C) eDP 1.3 x 1
Ethernet	2.5GbE x 2 (Intel® I226-IT)
Security	Onboard TPM 2.0
RTC	Yes
OS Support	Ubuntu 22.04 LTS (kernel 5.15 and kernel 5.19)
Power Requirement	
Power	9-36V
Power Supply Type	AT/ATX (AT as default)
Power Consumption (Typical)	52W~55W
Mechanical	
Dimension	4.74" x 4.82" (120.35mm x 122.5mm)
Net Weight	1.11.lb (0.5kg)
Gross Weight	1.76 lb (0.8kg)
Environment	
Operating Temperature	With Heatsink: -4°F ~ 158°F (0°C ~ 60°C)/0.5m/s airflow
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	421,998
Certification	CE/FCC Class A, RoHS Compliant, REACH

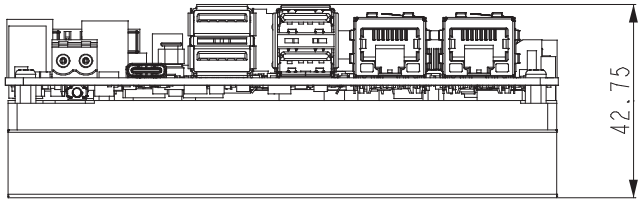
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Packing List

- UP Xtreme 7100 with heatsink
- DC in Phoenix Connector x 1
- RS232/422/485 Terminal Block x 1
- DIO/GPIO Terminal Block x 2
- CAN Terminal Block x 1
- Stud x 4

Ordering Information

Part number	CPU	Memory	Storage
UPX-ASLN97-A10-0864	N97	8GB	64GB
UPX-ASLNI3-A10-1664	I3-N305	16GB	64GB

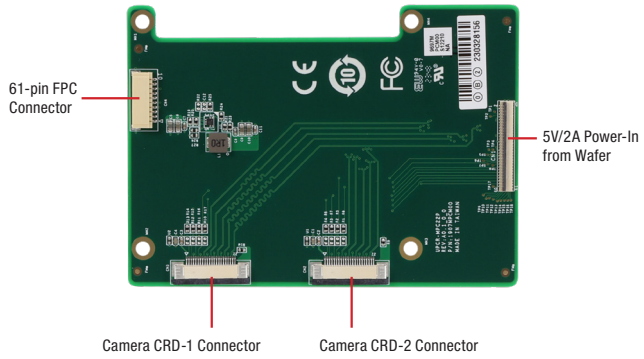
Optional Accessories

Part Number	Description
1255X00091	12VDC/6A Adapter
170X000800	Power cord for EU
170X000799	Power cord for US
170203180J	Power cord for UK
170X000803	Power cord for Japan
170X000815	Power cord for China
170X000806	Power cord for Taiwan
1709070500	SATA cable
1702150155	SATA power cable (15cm)
1702150306	SATA power cable (30cm)

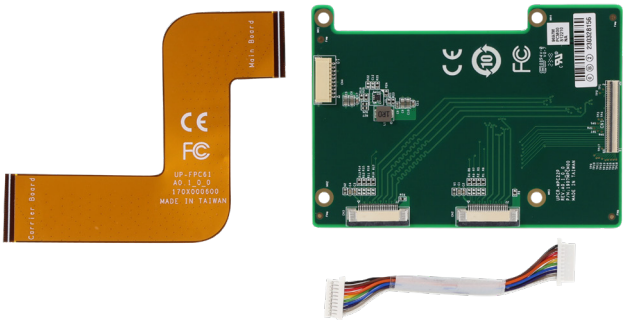
MIPICSI Camera RPI Converter Kit

MIPI-CSI Camera RPI Converter Kit for UP Squared Pro 7000/UP Squared i12/UP Xtreme i12/UP Xtreme i14/UP Squared Pro 710H

RPI Converter board



MIPICSI Camera RVP Converter Kit



Features

- **4-Lane + Clock from Camera Module Connector x 2**
- **5V/2A Power-In from Wafer**

Specifications

System	
I/O	Power: 5V/2A In from Wafer MIPI-CSI In: 4-Lane + Clock from Camera Module Connector x 2 MIPI-CSI Out: 61-pin FPC Connector x 1
Dimension	3.3" x 2.4" (85mm x 61mm)
Net Weight	0.1 lb. (0.04Kg)
Gross Weight	0.13 lb. (0.06Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
Operation Humidity	10% ~90% relative humidity, non-condensing
Certification	—

Packing List

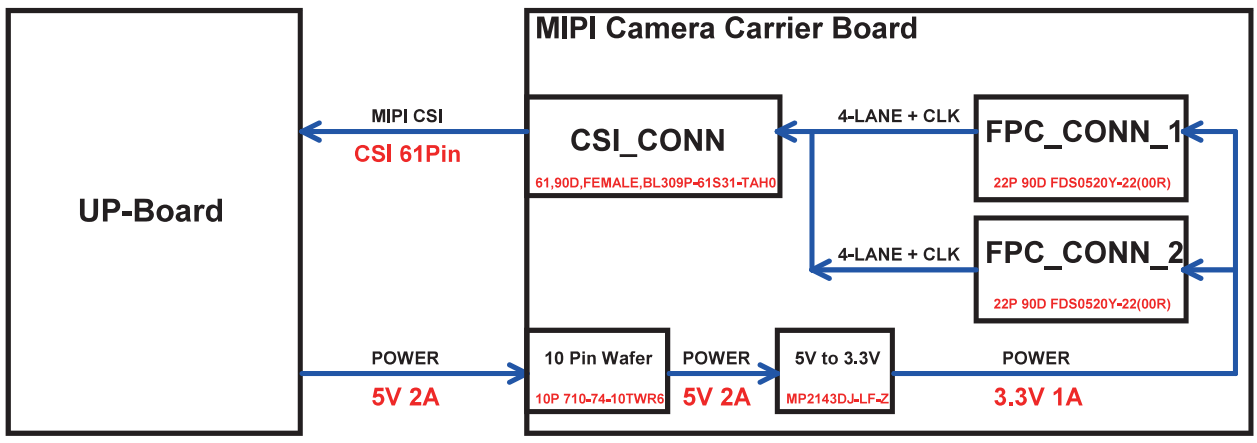
- **Converter board**
- **FPC Cable**
- **Power Cable**
- **Screws/Stud Pack**

Ordering Information

Part Number	Description
UPCR-CAMB-A10-0002	MIPI-CSI Camera RPI Converter Kit for UP Squared Pro 7000/UP Squared i12/UP Xtreme i12/UP Xtreme i14/UP Squared Pro 710H

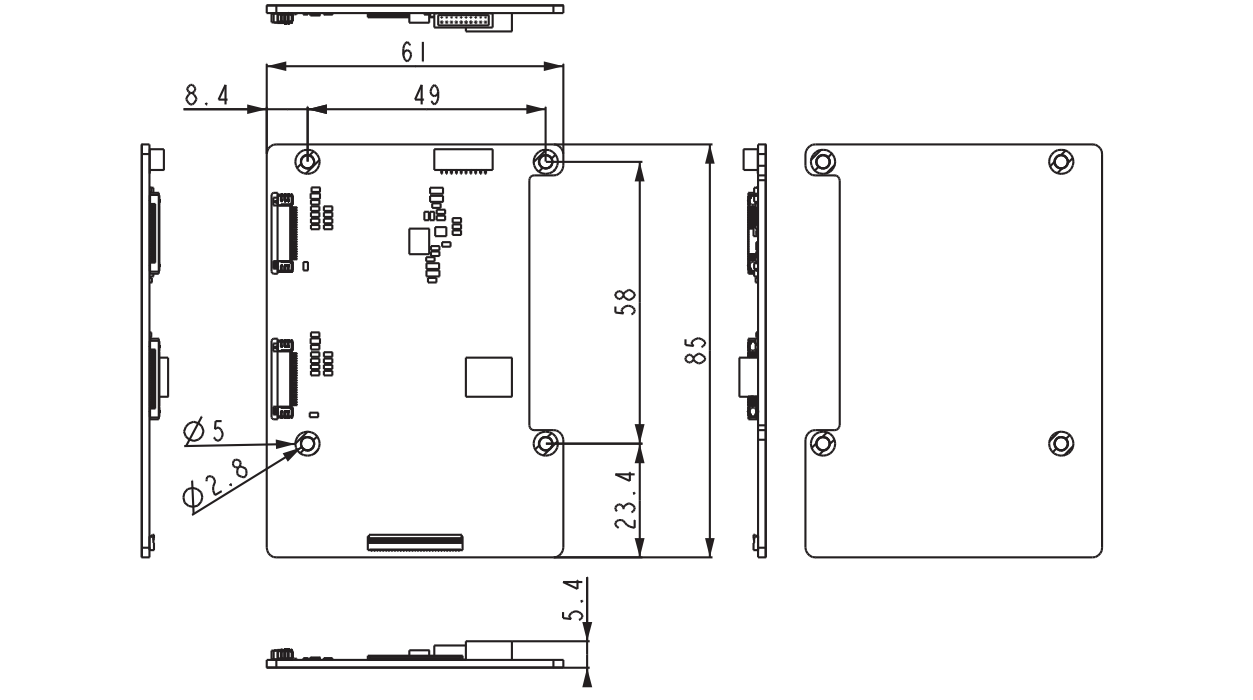
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

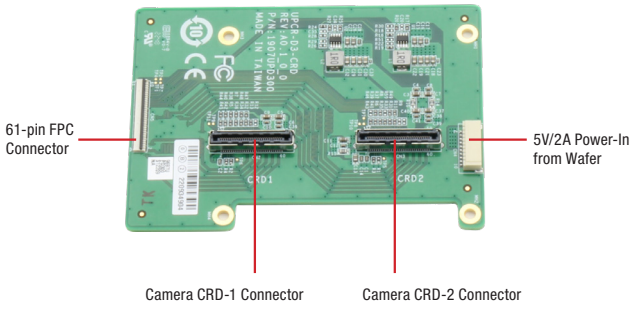
Unit: mm



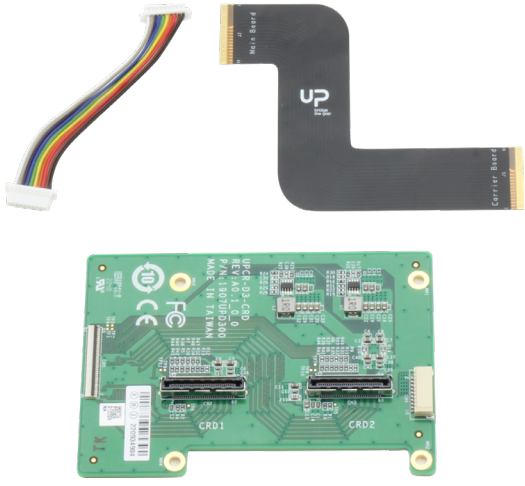
MIPICSI Camera RVP Converter Kit

MIPI-CSI Camera RVP Converter Kit for UP Squared Pro 7000/UP Squared i12

RVP Converter board



MIPICSI Camera RVP Converter Kit



Features

- **4-Lane + Clock from Camera Module Connector x 2**
- **5V/2A Power-In from Wafer**

Specifications

System	
I/O	Power: 5V/2A In from Wafer MIPI-CSI In: 4-Lane + Clock from Camera Module Connector x 2 MIPI-CSI Out: 61-pin FPC Connector x 1
Dimension	3.3" x 2.4" (85mm x 61mm)
Net Weight	0.1 lb. (0.04Kg)
Gross Weight	0.13 lb. (0.06Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
Operation Humidity	10% ~90% relative humidity, non-condensing
Certification	—

Packing List

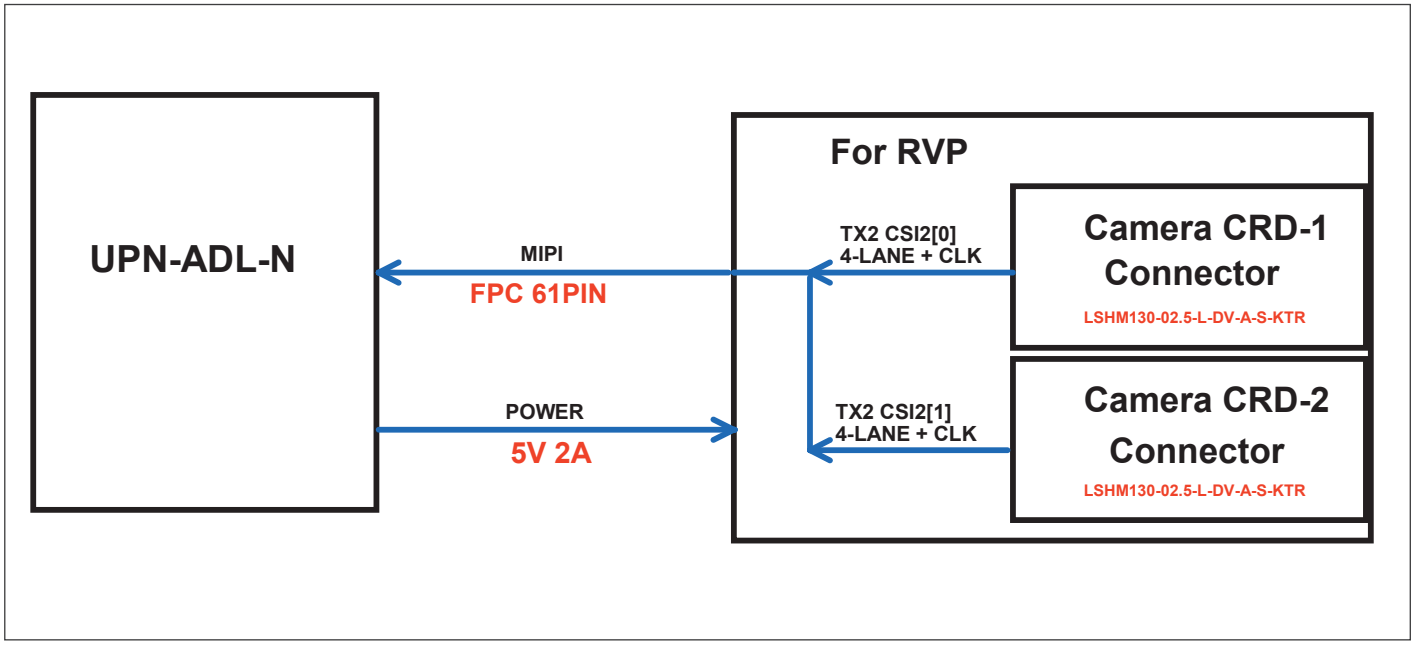
- **RVP Converter board**
- **FPC Cable**
- **Power Cable**
- **Screws/Stud Pack**

Ordering Information

Part Number	Description
UPCR-CAMB-A10-0001	MIPI-CSI Camera RVP Converter Kit for UP Squared Pro 7000/UP Squared i12

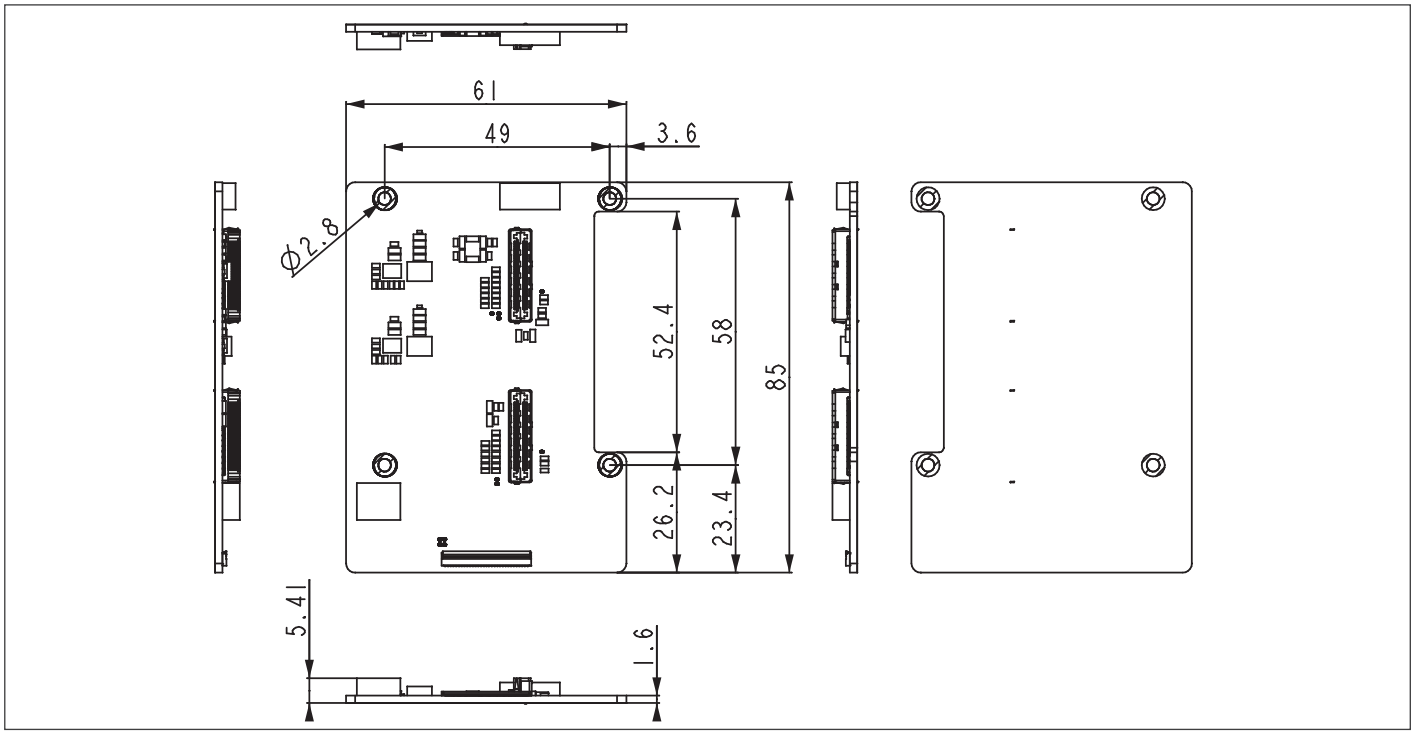
Note: All specifications are subject to change without notice.

Block Diagram



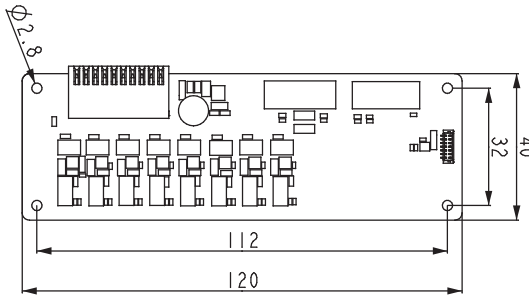
Dimension

Unit: mm



UP Xtreme 7100 DIO Carrier Board PRELIMINARY

UP Xtreme 7100 DIO Carrier Board



Features

- Support Isolated Digital Input x 8
- Support Isolated Digital Output x 8
- Support SPI

Specifications

System	
I/O	Digital Input: Channel: Isolated Digital Input x 8 Type: Dry contact (Source), Wet contact (Sink/Source) Digital Output: Channel: Isolated Digital Output x 8 Type: Sink (Max load current 500mA per channel) 7 pin SPI wafer x 1 20-pin DIO Phoenix Connector x 1 30-pin Wafer Box x 1
Dimension	4.72" x 1.57" (120mm x 40mm)
Net Weight	0.17 lb. (0.08Kg)
Gross Weight	0.3 lb. (0.14Kg)
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

- UP Xtreme 7100 DIO Carrier Board
- DIO Cable x 1
- DC Phoenix Connector x1
- Screws x 4

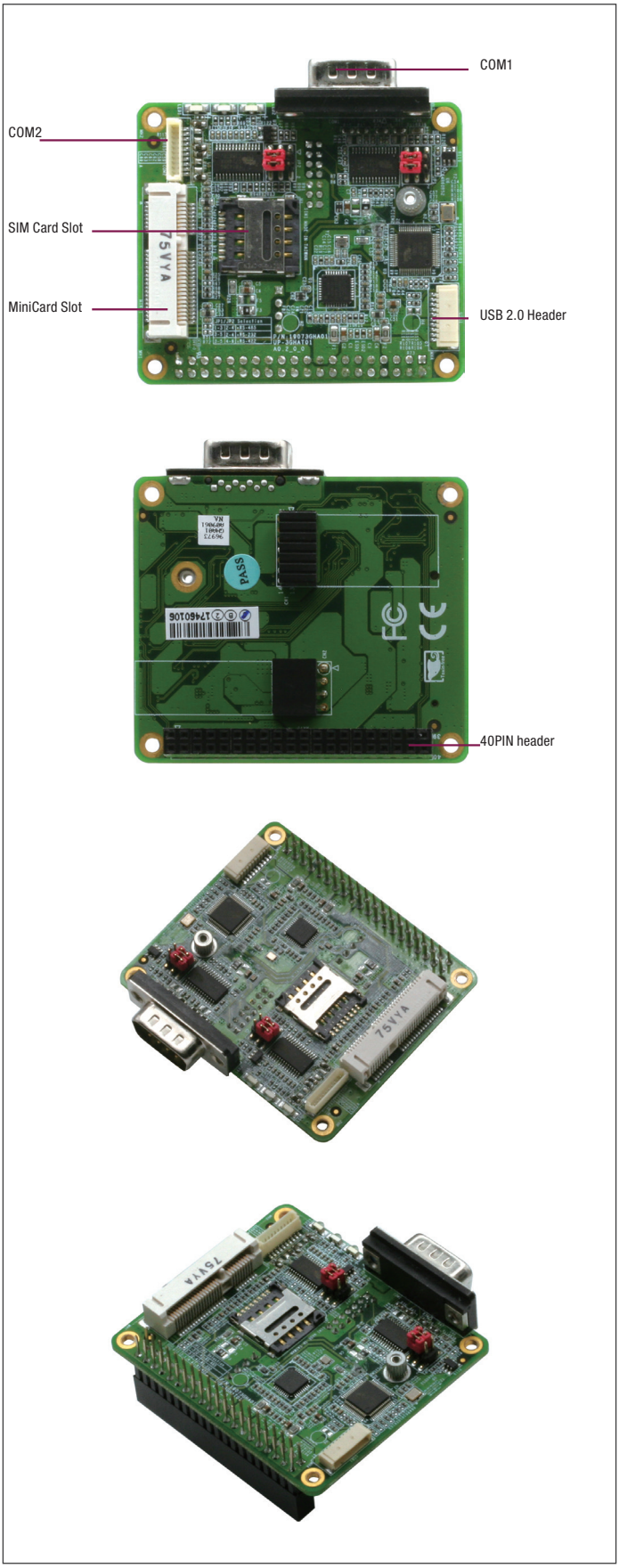
Ordering Information

Part Number	Description
UPCR-AMRDIO-A10-0001	UP Xtreme 7100 DIO Carrier Board

Note: All specifications are subject to change without notice.

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**

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	—
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

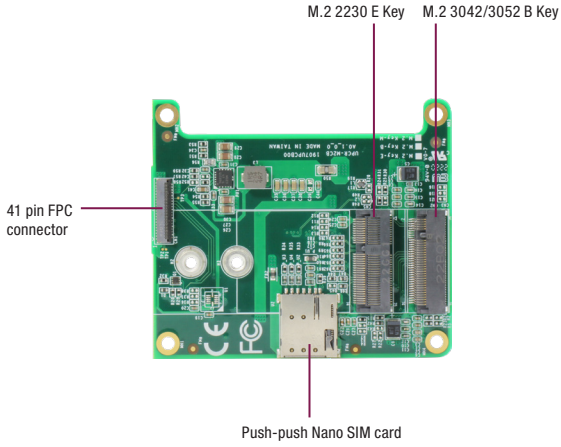
Ordering Information

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

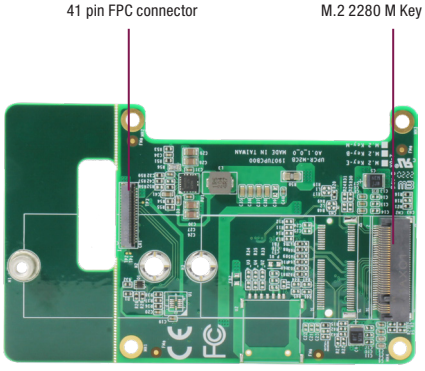
UP 4000 M.2 Plus

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

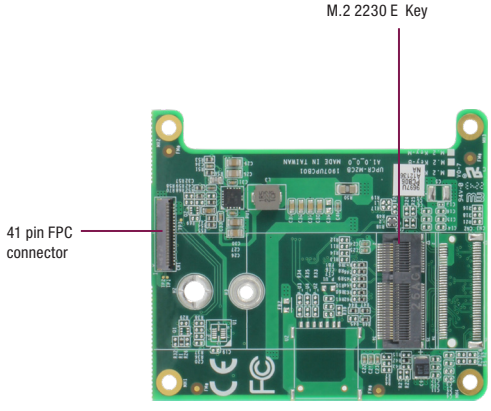
UP-APL03CB-A10-0001



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 M.2 Plus**
- **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

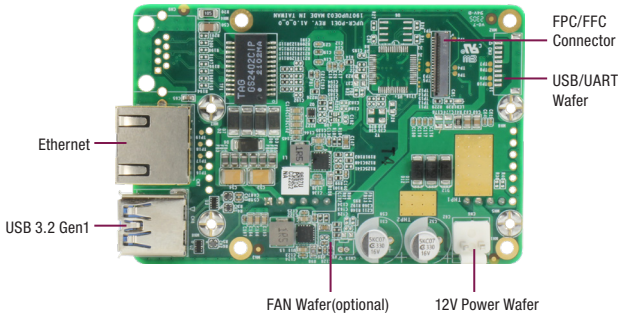
Part Number	Description
9741364A00	Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT4.0,2T2R,with 2 sets of cable & antenna (Enli,QCNFA364A)
9651926001	(TF).M.2 2230 WiFi Kit.802.11ac.2.4G/5G,W/BT Intel.9260.NGWG.NV,958867 w/2 cable & antenna

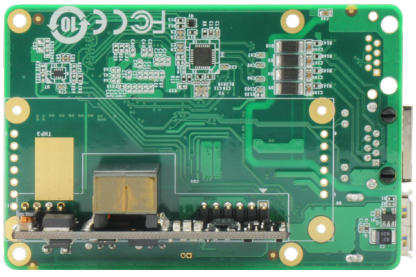
Note: All specifications are subject to change without notice.

UP POE V2 Expansion Board

UP POE V2 Expansion Board for UP 4000, UP 7000, UP Squared V2

UP-POEV2-30W-A10-0001





Features

- **POE+ (IEEE 802.3at Type 2)**
- **Max 25W Power Supply**

1000
Giga LAN

Specifications

System	
I/O	UP-POEV2-30W-A10-0001: RJ-45 Input x 1 (10/100/1000M Gigabit Ethernet) USB 3.2 Gen 1 x 1 41-Pin FPC Connector x 1 UP-POEV2-30W-A10-0002: RJ-45 Input x 1 (10/100M) 10-Pin Wafer x 1
Dimension	3.37" x 2.22" (85mm x 56mm)
Net Weight	0.1 lb. (0.04Kg)
Gross Weight	0.13 lb. (0.06Kg)
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, REACH

Packing List

- **UP POE V2 Expansion Board**
- **FPC Cable**
  UP-POEV2-30W-A10-0001:FPC cable; UP-POEV2-30W-A10-0002: 10-Pin wafer cable
- **Power Cable**
  DC Jack 5.5x2.1mm to 3.96mm 1*2P housing.200mm
- **Screws/Stud Pack**

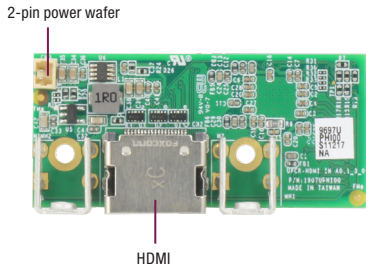
Ordering Information

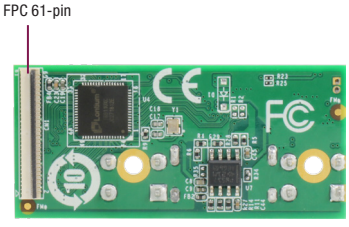
Part Number	Description
UP-POEV2-30W-A10-0001	POE 25W Carrier board for UP 4000
UP-POEV2-30W-A10-0002	POE 25W Carrier board for UP 7000 N50, UP Squared V2 N6210

HDMI In Carrier Board

HDMI In Carrier Board

UPCR-HDMI-A10-0001





Features

- **FPC 61-pin MIPI CSI**
- **HDMI 2.0**
- **Windows®10**

HDMI

Specifications

System	
I/O	FPC 61-pin MIPI CSI x 1 (Lontium.LT6911UXC) 2-pin Power Wafer x 2 HDMI 2.0 x 1 Color Format: CSC disabled: RGB565/666/888, YUV422 8/10-bit, Legacy YUV420 8-bit CSC enabled: RGB565/666/888, YUV422 8-bit Video Resolutions 3840×2160p@30fps 1920×1200@30fps 1920×1080@30fps 1680×1050@30fps 1440×900@30fps 1366×768p@30fps 1280x1024p@30fps 1280x960p@30fps 1280x800p@30fps 1280×768p@30fps 1280×720p@30fps 1280×600p@30fps 1152×864p@30fps 1024×768p@30fps 800×600p@30fps720×576i@60fps *Once change resolution or frequency please reboot or unplug and plug in HDMI In carrier board
Dimension	1.9" x 0.9" (49mm x 23mm)
Net Weight	0.44 lb. (0.2Kg)
Gross Weight	0.88 lb. (0.4Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
Operation Humidity	10% ~ 80% relative humidity, non-condensing
Certification	—

Packing List

- **HDMI In Carrier Board**
- **FPC cable**
- **Power cable**

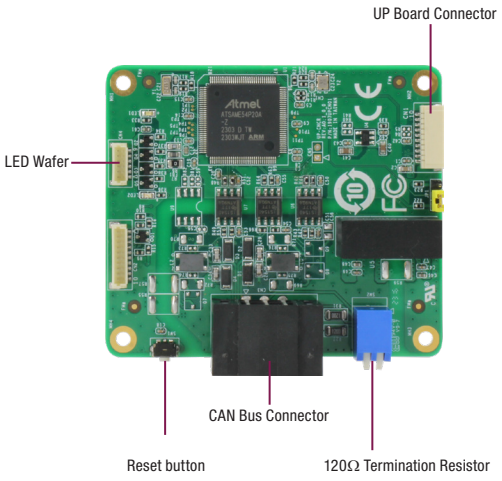
Ordering Information

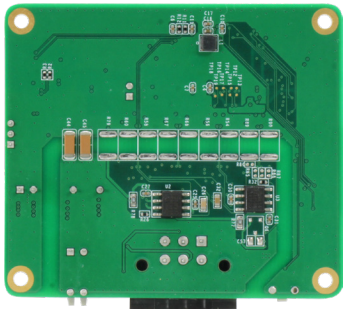
Part Number	Description
UPCR-HDMI-A10-0001	HDMI In carrier board for UP Squared i12, UP Squared Pro 7000, UP Xtreme i12
9651HDBK01	HDMI In bracket kit

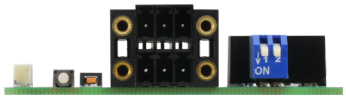
Note: All specifications are subject to change without notice.

CAN Bus Carrier Board

UP CAN Bus Carrier Board with USB/UART interface for UP product line







Features

- **USB/UART interface CAN Bus Carrier Board**
- **Transmission speed up to 1M bps**
- **2-channel CAN Bus compatible with CAN specification 2.0B**
- **Support firmware update via USB**
- **Ubuntu 22.04**

Specifications

System	
I/O	UP Board Connector x 1 6 pin terminal block x 1 6 pin LED Wafer x 1 Termination Resistor DIP Switch x 1 Reset Button x 1
Dimension	2.56" x 2.20" (65 mm x 56 mm)
Net Weight	0.066 lb. (0.03Kg)
Gross Weight	0.13 lb. (0.06Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°)
Operation Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A

Packing List

- **CAN Bus Carrier Board**
- **Connection cable**
- **CAN connector**
- **Screws/Stud Pack**

Ordering Information

Part Number	Description
UPCR-CAN1-A10-0001	UP CAN Bus Carrier Board with USB/UART interface for UP product line

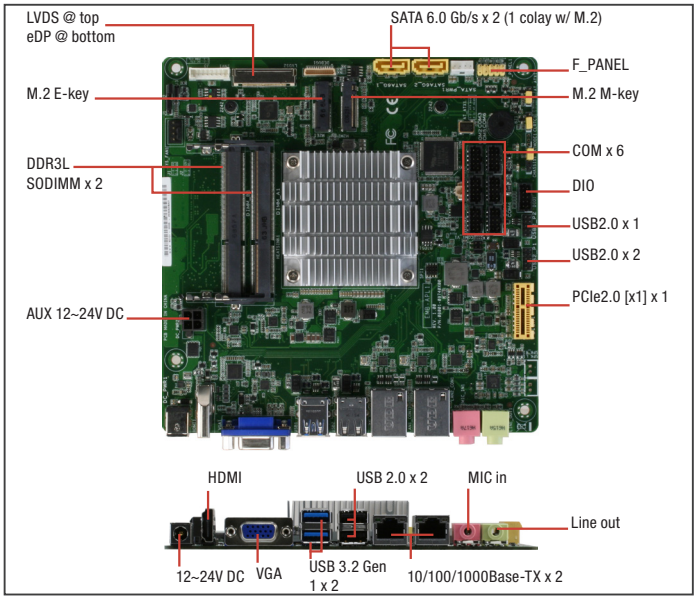
09

09
Industrial Motherboards



EMB-APL1

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



Features

- DDR3L 1866, Single Channel SODIMM x 2, Non-ECC (Max.8GB, up to 1600MHz)
- 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 · 1000 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 1866, Single Channel SODIMM x 2, Non-ECC (Max.8GB, up to 1600MHz)
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 Power consumption: 84W
Operation Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

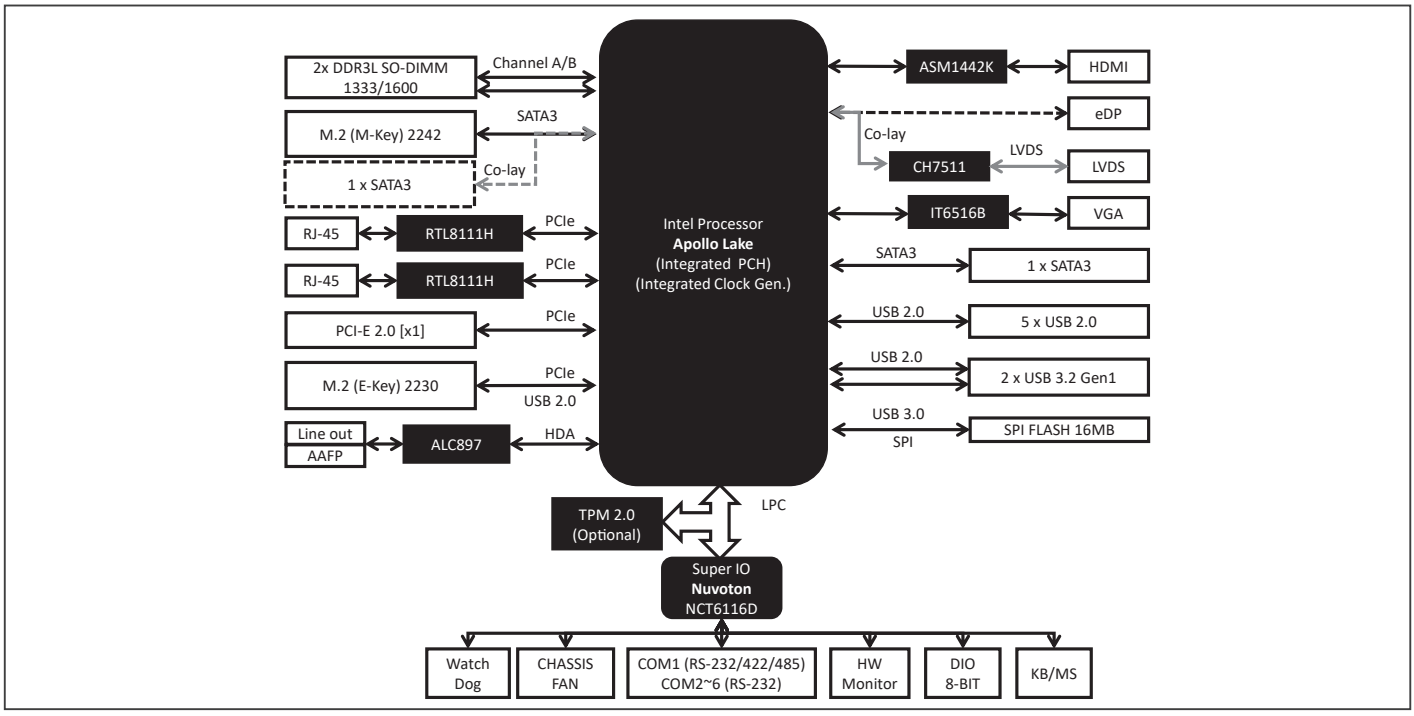
- Heatsink
- I/O Shield
- EMB-APL1

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

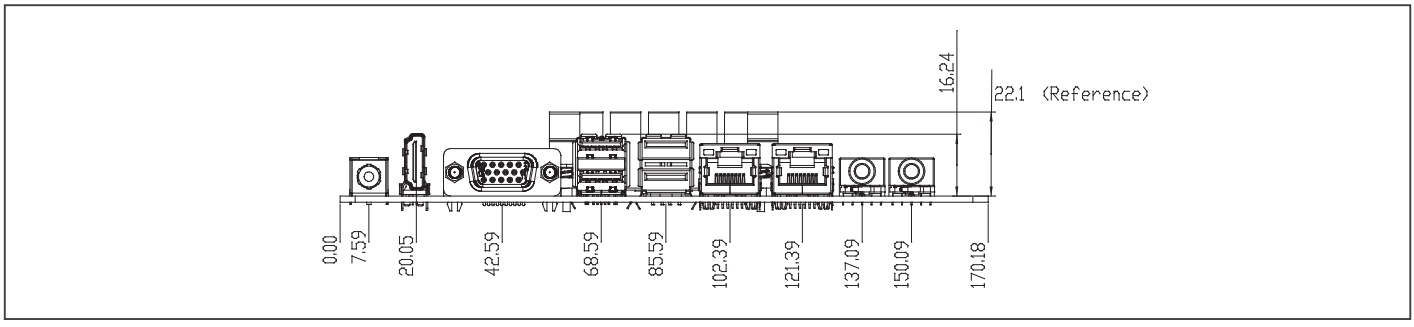
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

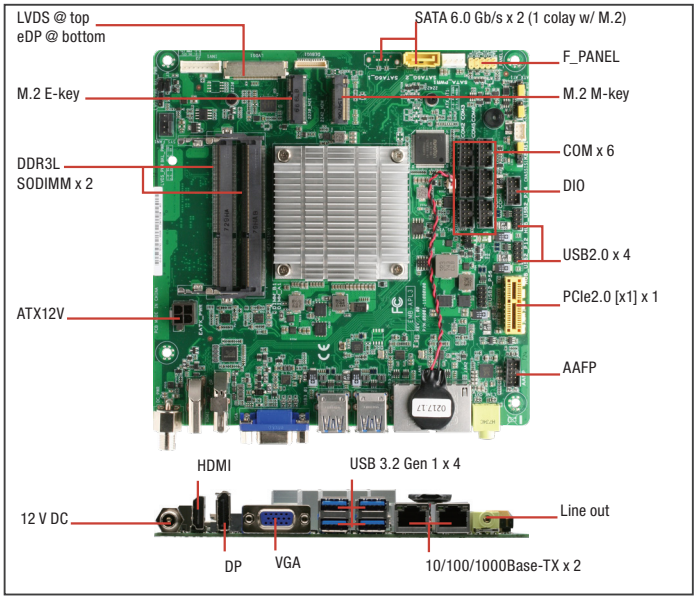


Ordering Information

Part Number	CPU	RAM	Fan/ Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-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 1866, Single Channel SODIMM x 2, Non-ECC (Max.8GB, up to 1600MHz)
- 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 · 1000 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 1866, Single Channel SODIMM x 2, Non-ECC (Max.8GB, up to 1600MHz)
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 Power consumption: 84W
Operation Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

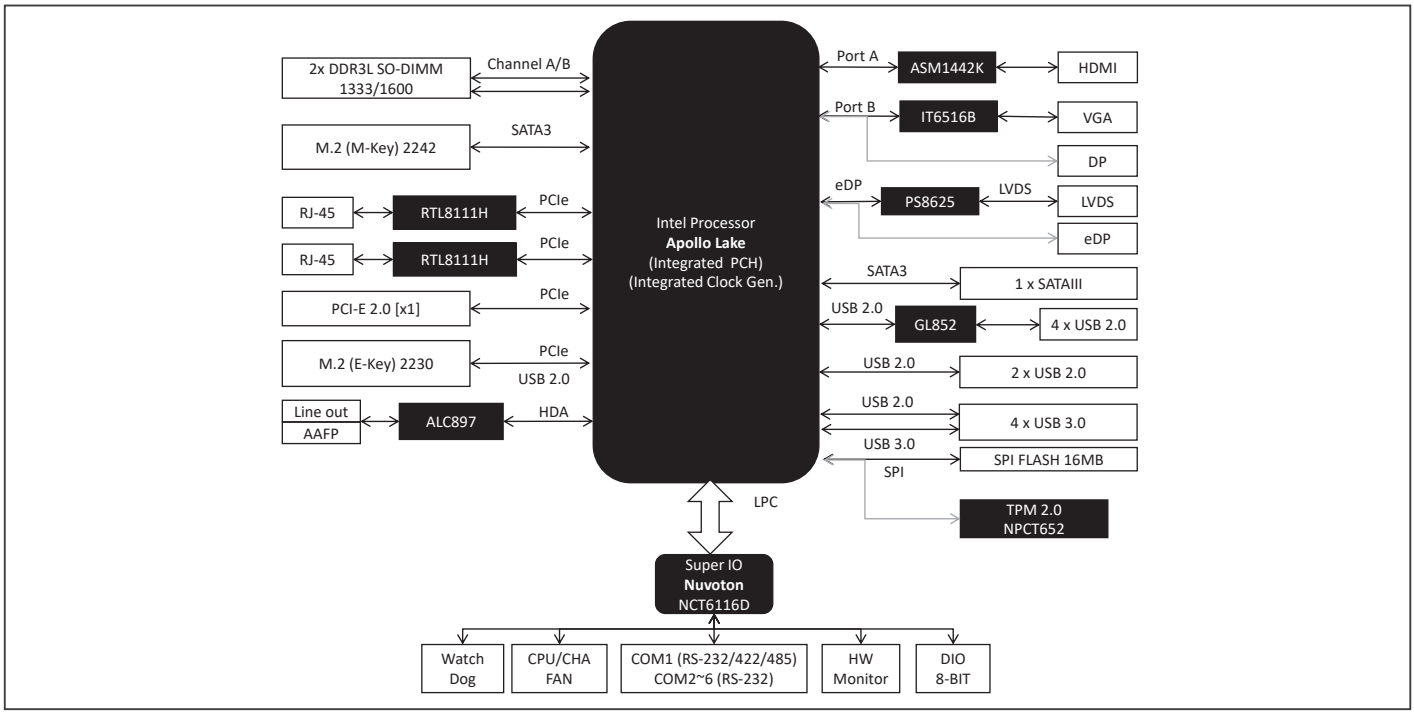
- Heatsink
- I/O Shield
- EMB-APL3

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)
1255306OZ	Adapter.60W.180D.W/Lock.FSP060-DHAN3

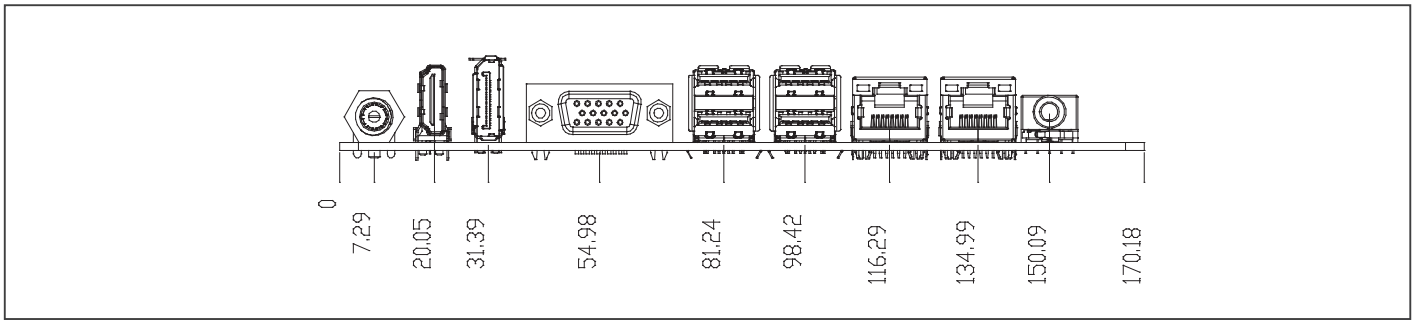
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

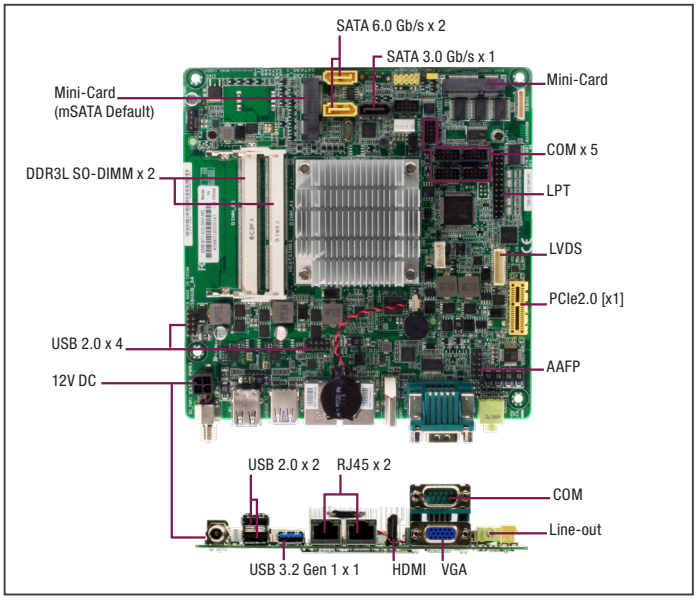


Ordering Information

Part Number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

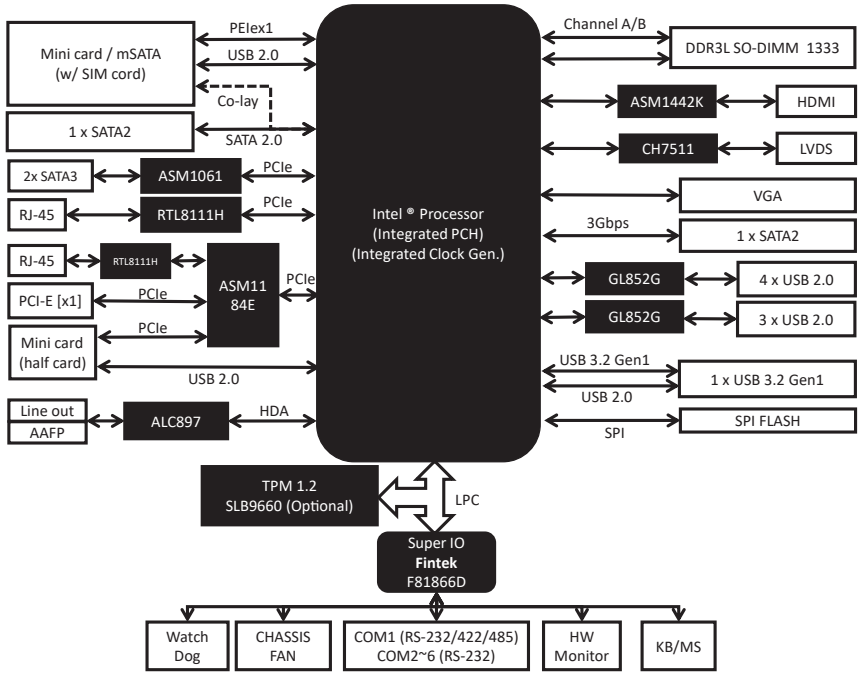
- **SATA Cable**
- **SATA Power Cable**
- **I/O Shield**
- **Heatsink**
- **EMB-BT1**

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

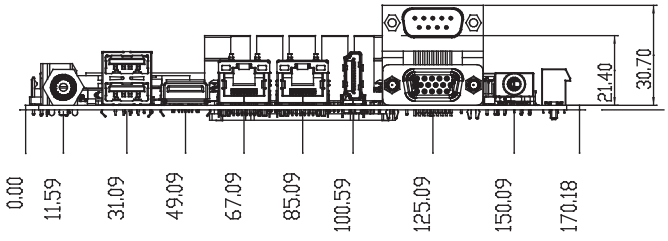
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

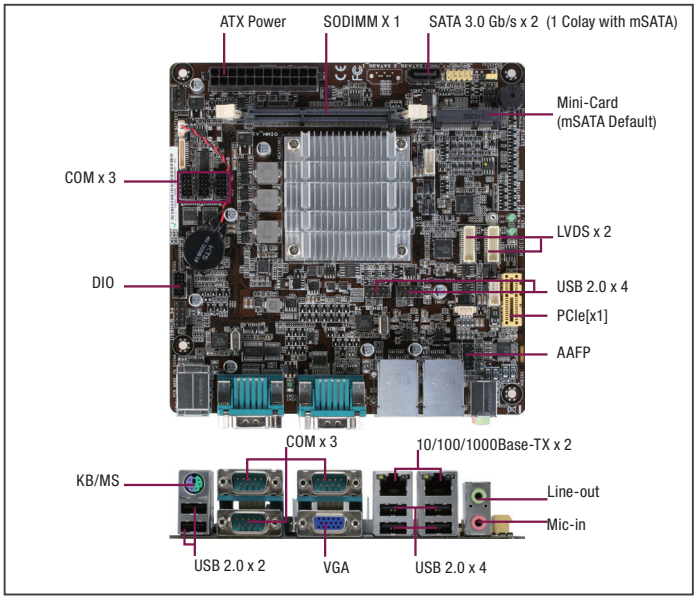


Ordering Information

Part Number	CPU	RAM	Fan/ Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-BT1-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**

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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

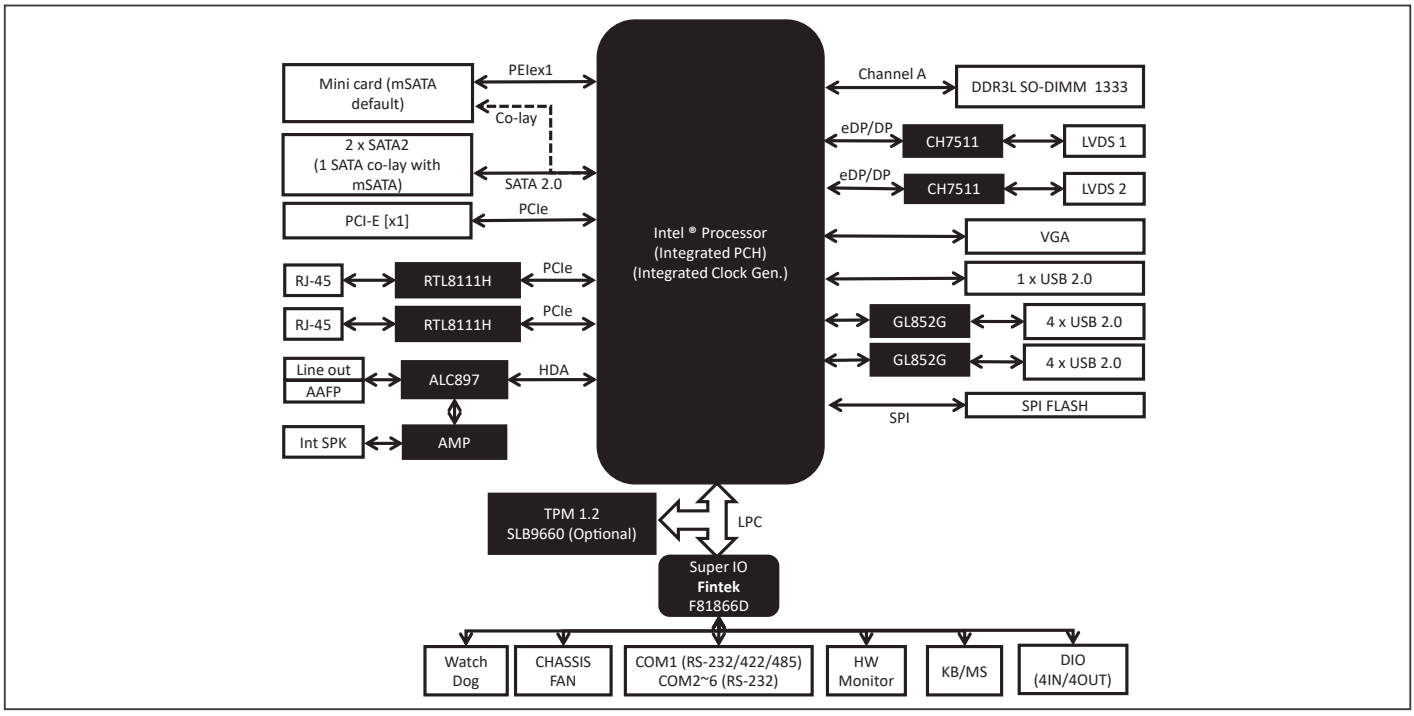
- **SATA 3G Cable**
- **Heatsink**
- **I/O Shield**
- **EMB-BT2**

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)

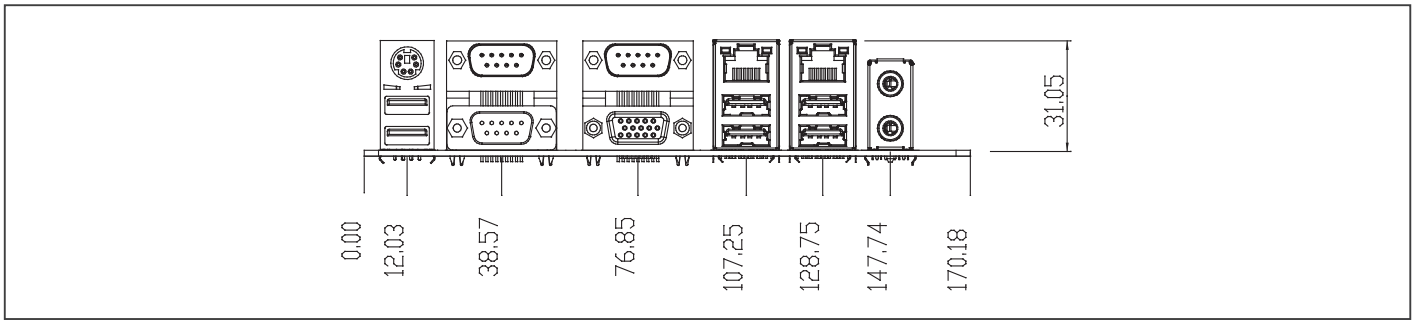
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

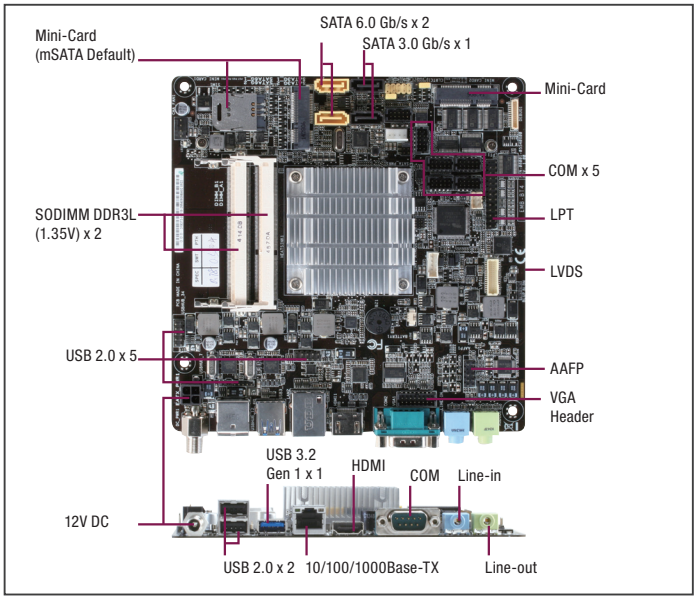


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-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**

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)
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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

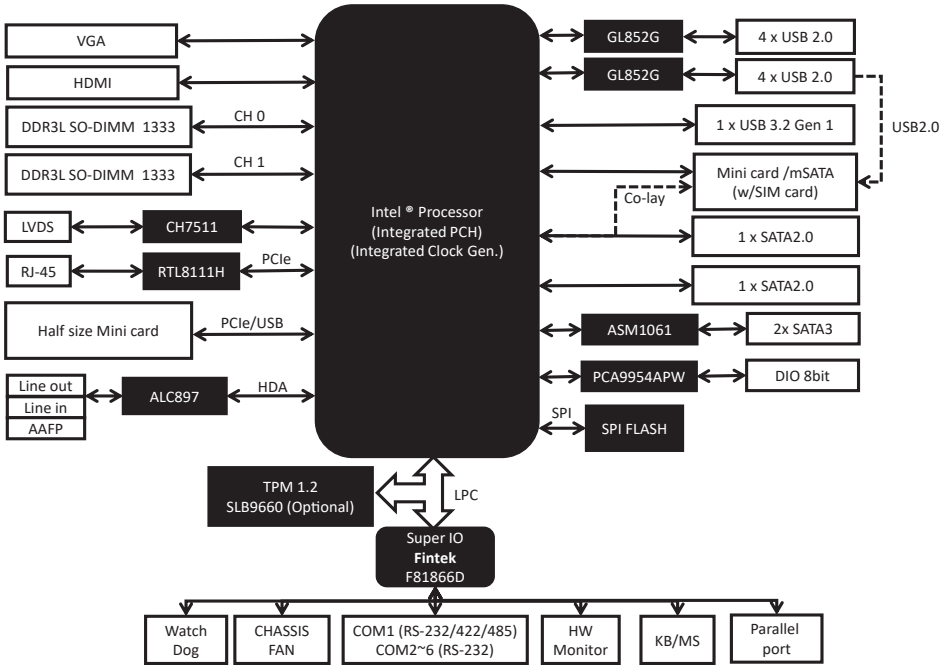
- **SATA Cable**
- **SATA Power Cable**
- **I/O Shield**
- **Heatsink**
- **EMB-BT4**

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

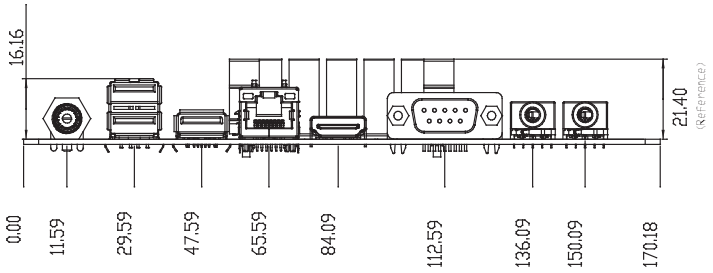
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

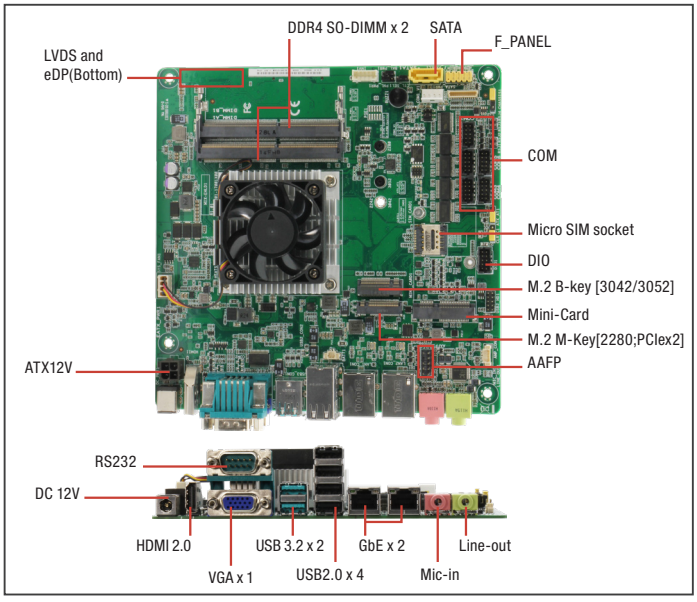


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-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 Series/Intel® Pentium®/Celeron® N & J Series Processors (12W)



Features

- **Intel Atom® x6000E Series/Intel® Pentium®/Celeron® N & J Series Processors (12W)**
- **DDR4 SODIMM x 2, Max 32GB**
- **M.2 2280 M-Key x 1, M.2 3042/3052 B-Key, Mini Card x 1**
- **USB 3.2 Gen 1 x 2, USB 2.0 x 4**
- **LAN x 2**
- **HDMI 2.0 x 1, VGA x 1, LVDS/eDP x 1**
- **Flexible rear I/O (Full I/O or Low-Profile)**
- **12V DC input**

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

Specifications

System	
Processor	Intel Atom® x6000E Series/Intel® Pentium®/Celeron® N & J Series Processors (12W)
Chipset	—
Memory	Dual-Channel DDR4 3200 SODIMM x 2, up to 32GB, Non-ECC
I/O Chipset	Nuvoton NCT6126D
Ethernet	Realtek RTL8111H, GbE x 2
Audio	Realtek® ALC897
TPM	TPM 2.0
Expansion Slots	M.2 3042/3052 B-Key x 1 Full/Half-size mPCIe x 1 SIM Socket x 1 (default: 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	DC 12V Power consumption 60W
Operating Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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)	399,940
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 x 2 USB 2.0 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 2280 M-Key x 1(PCIe [x2]) SATA 6Gb/s x 1 SATA Power Connector x 1 (5V/12V @1A)
USB	USB 2.0 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

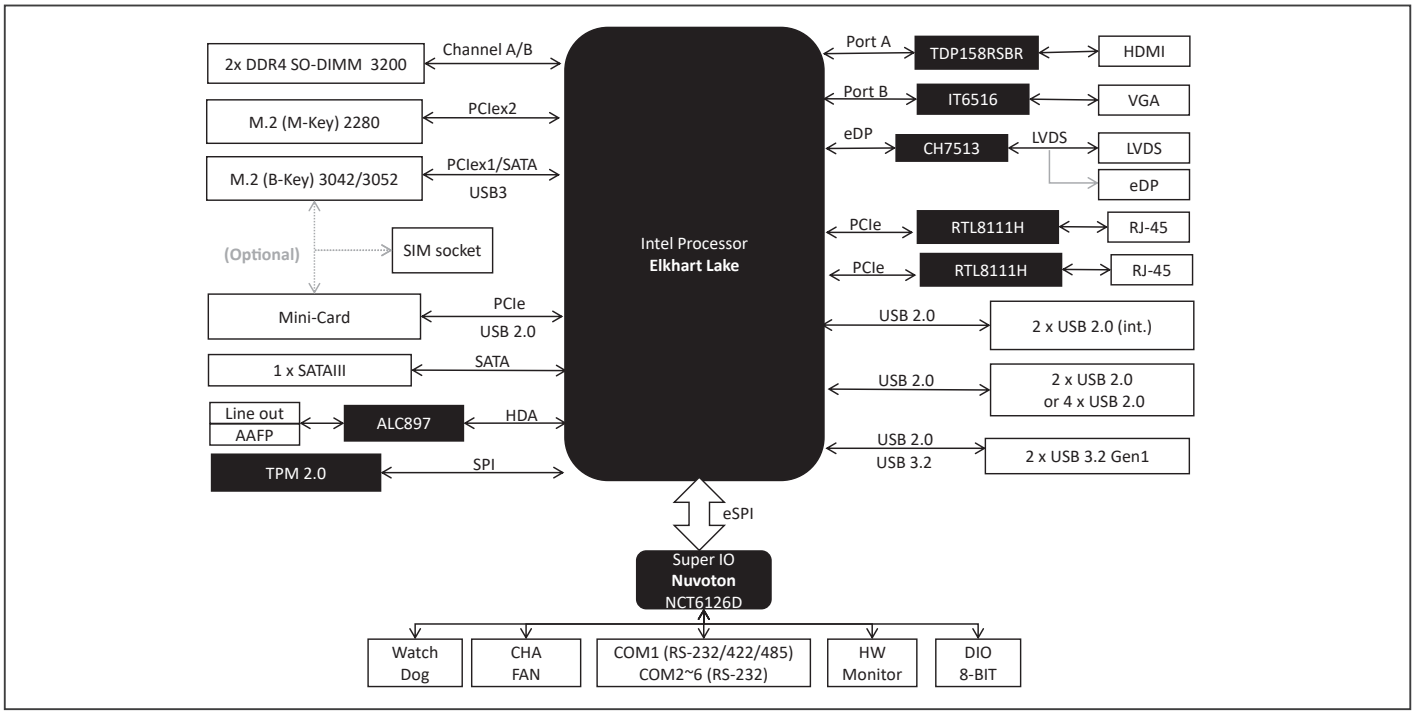
- **SATA Cable**
- **I/O Shield**
- **MIX-EHLD1**

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

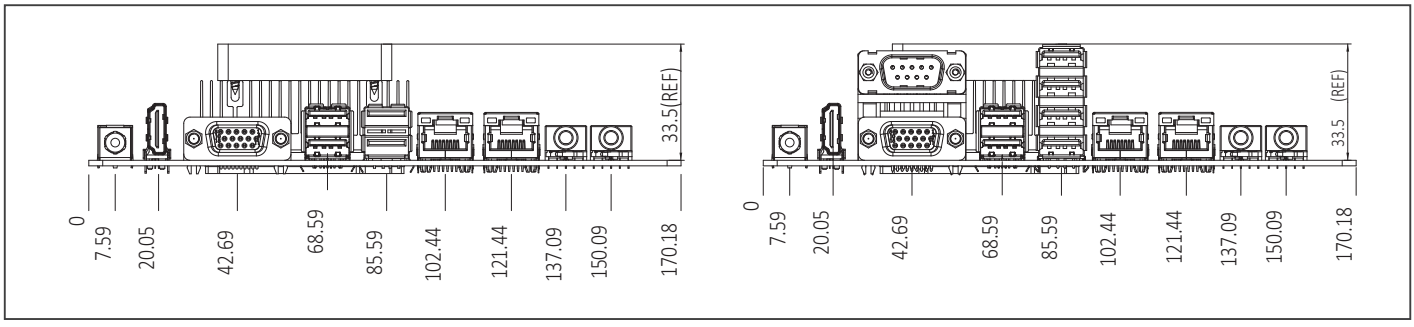
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

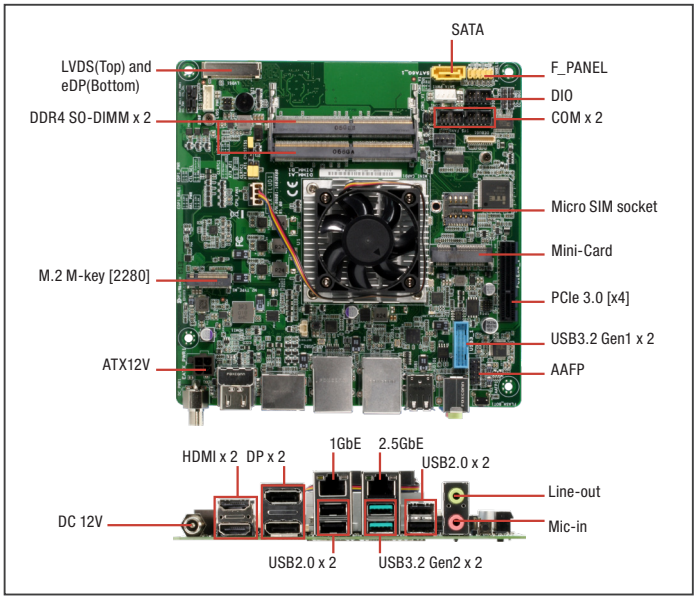


Ordering Information

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	Intel® Celeron® Processor 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	Intel Atom® 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-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

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 ~ 50°C) (Operational humidity: 50°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

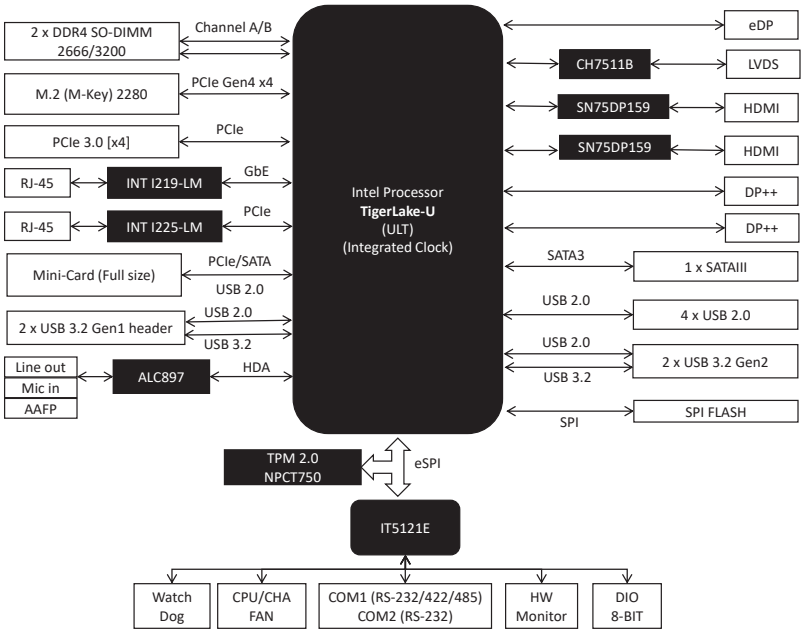
- SATA Cable
- I/O Shield
- MIX-TLUD1

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

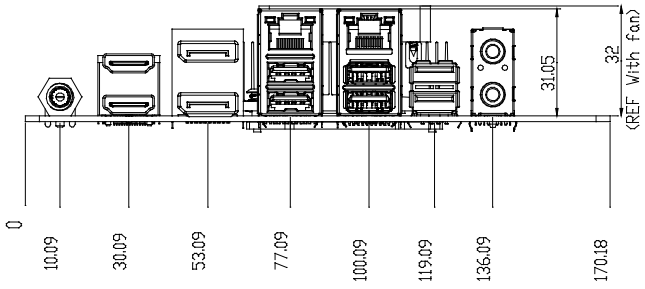
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

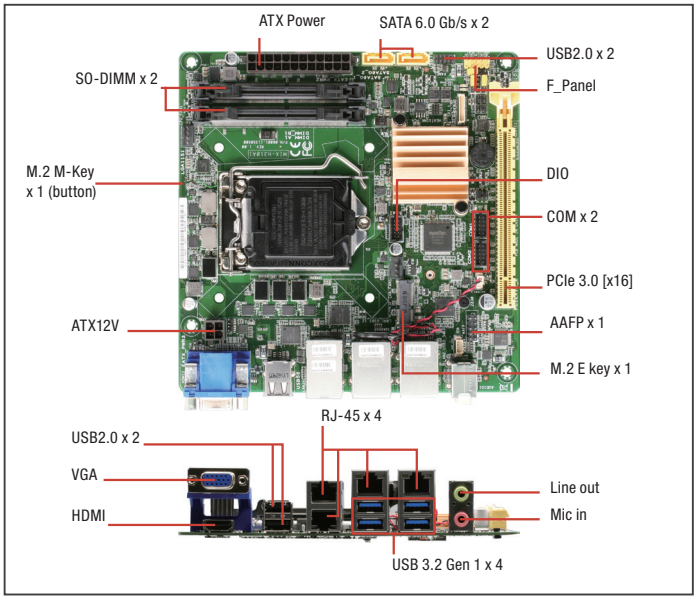


Ordering Information

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-A11-6305E	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-A11-1115G4E	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-A11-1145G7E	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

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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

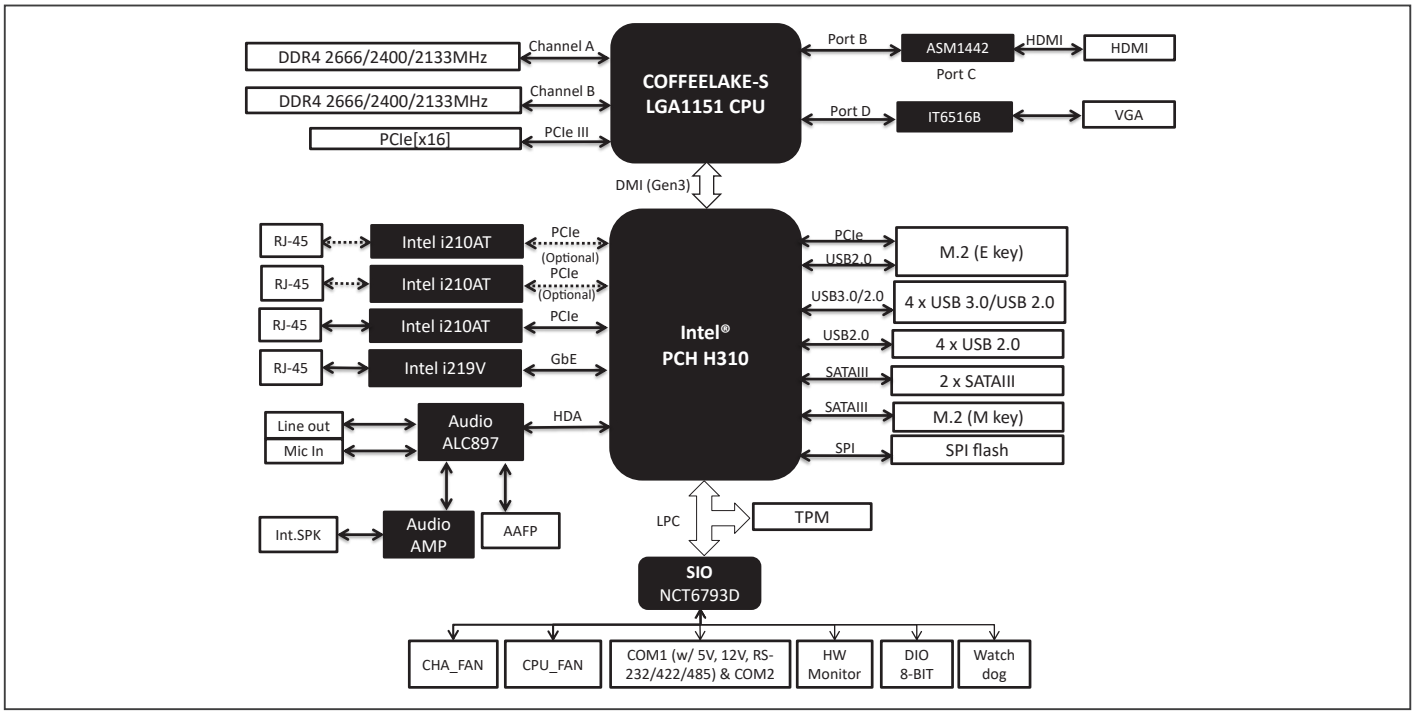
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 (5 Gbps) x 4, USB 2.0 x 2
Display I/O	VGA x 1, HDMI x 1
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 4
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) at bottom side x 1 (SATA only)
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

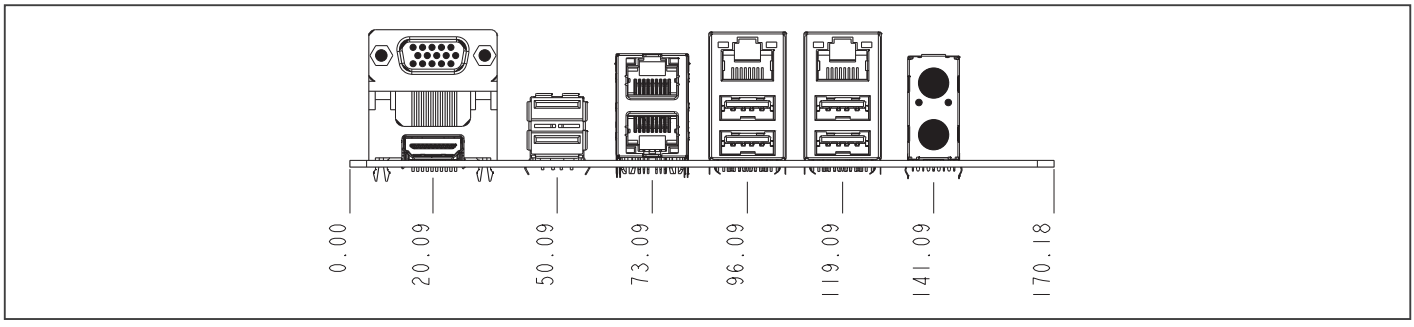
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

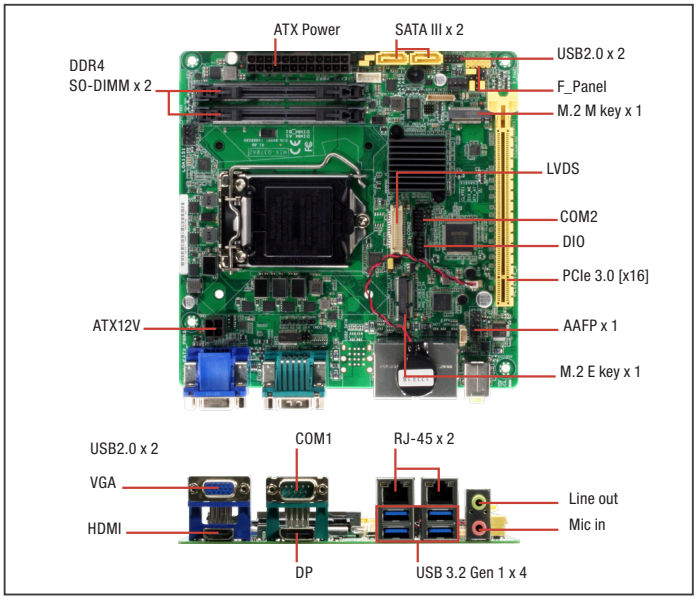
Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-H310A1-A11-2L-210FT	Socket	SODIMM x 2	Fan	VGA, HDMI	SATA3 x2, M.2(M-key)	—	GbE x 2	USB2.0 x 4 USB 3.2 Gen 1 x 4	1	1	PCIe3.0[x16] x 1, M.2(M-key) x1, M.2(E-Key) x 1	ATX	fTPM	0~60°C
MIX-H310A1-A11-4L-210FT	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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

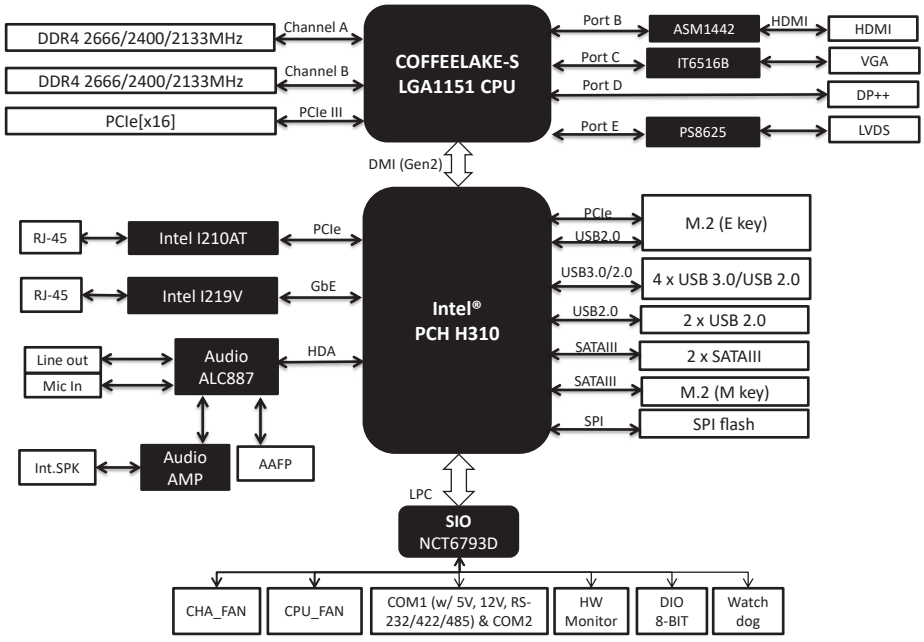
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 (5 Gbps) x 4
Display I/O	VGA x 1, HDMI x 1, DP x 1
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	1x COM(RS485/422/232)
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) x 1
USB	USB 2.0 (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

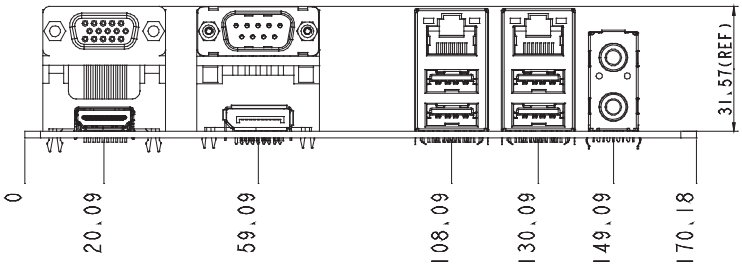
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

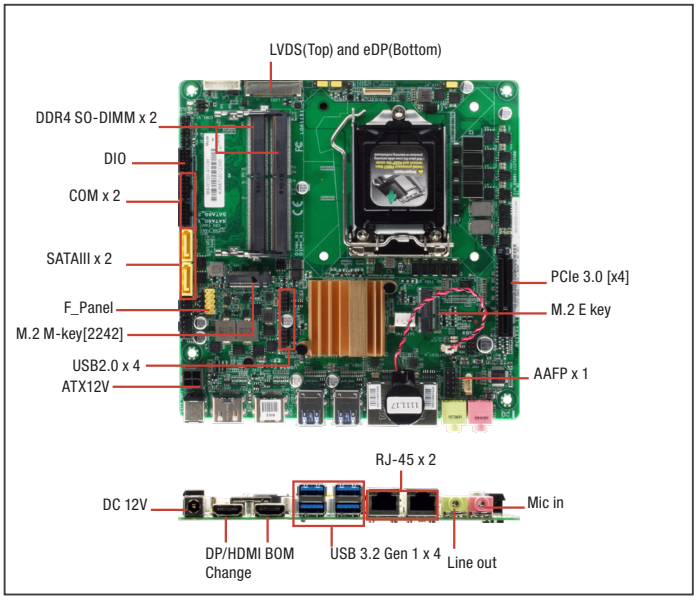
Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-H310A2-A12-210FT	Socket	SODIMM x 2	Fan	VGA, HDMI, LVDS, DP	SATA3 x2, M.2(M-key)	1	GbE x 2	USB2.0 x 2 USB 3.2 Gen 1 x 4	1	1	PCIe3.0[x16] x 1	ATX	fTPM	0~60°C

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

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 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 Power consumption: [Typical: 120W]
Operation Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

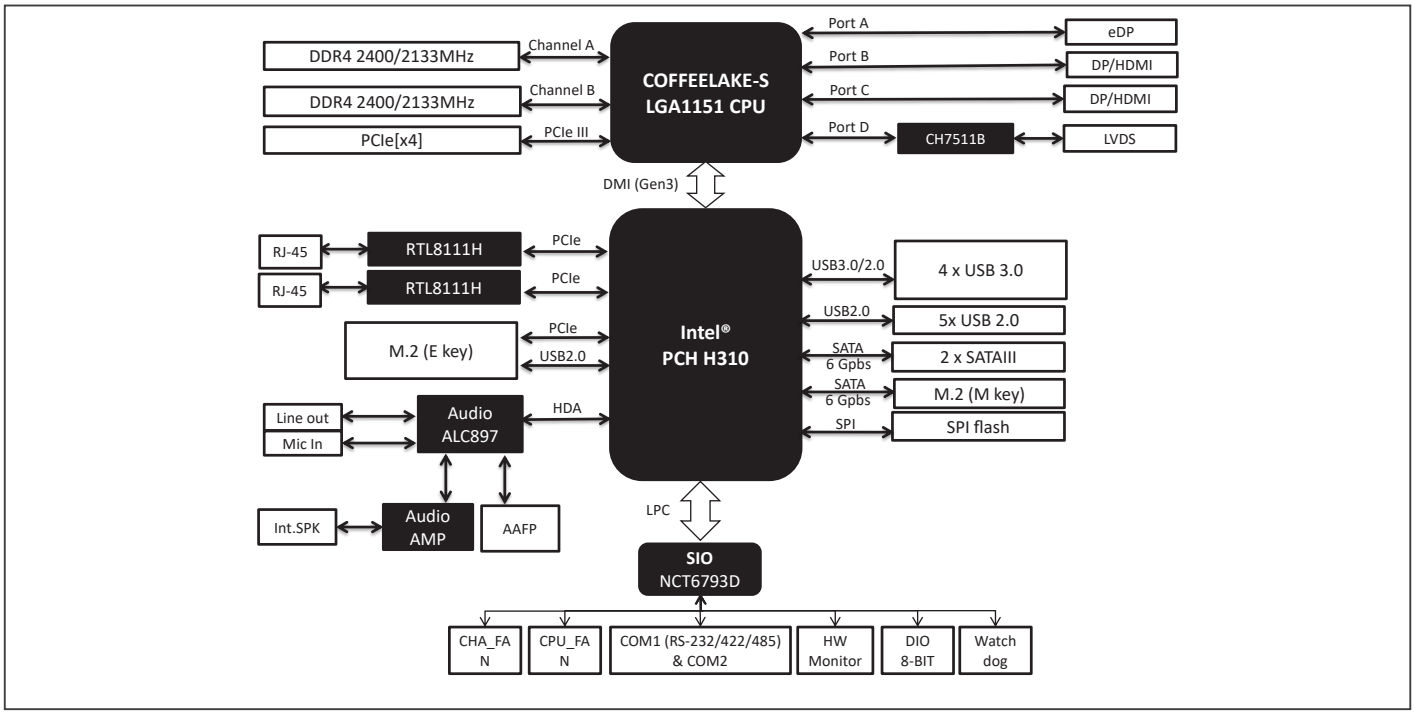
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 (5 Gbps) x 4
Display I/O	HDMI x 2, DP x 1 + HDMI x 1 (Optional), DP x 2 (Optional)
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC Jack
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2 M.2 M-key (SATA) (22 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

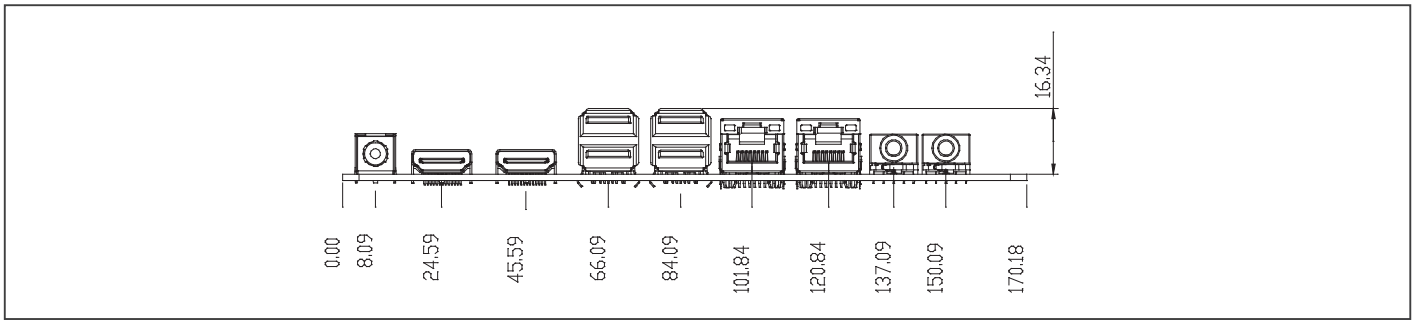
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

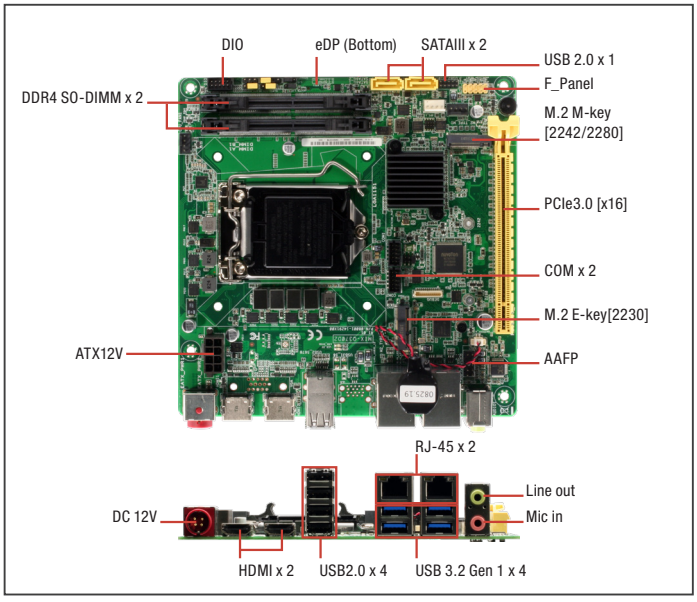
Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-H310D1-A13-HH-FTPM	Socket	SODIMM x 2	Fan	Daul HDMI, eDP, LVDS	SATA3 x 2, M.2 (M-key; SATA)	Daul Channel 18/24 bit	GbE x 2	USB2.0 x 5 USB 3.2 Gen 1 x 4	1	1	PCIe3.0[x4] x 1, M.2 (E-Key)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

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 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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

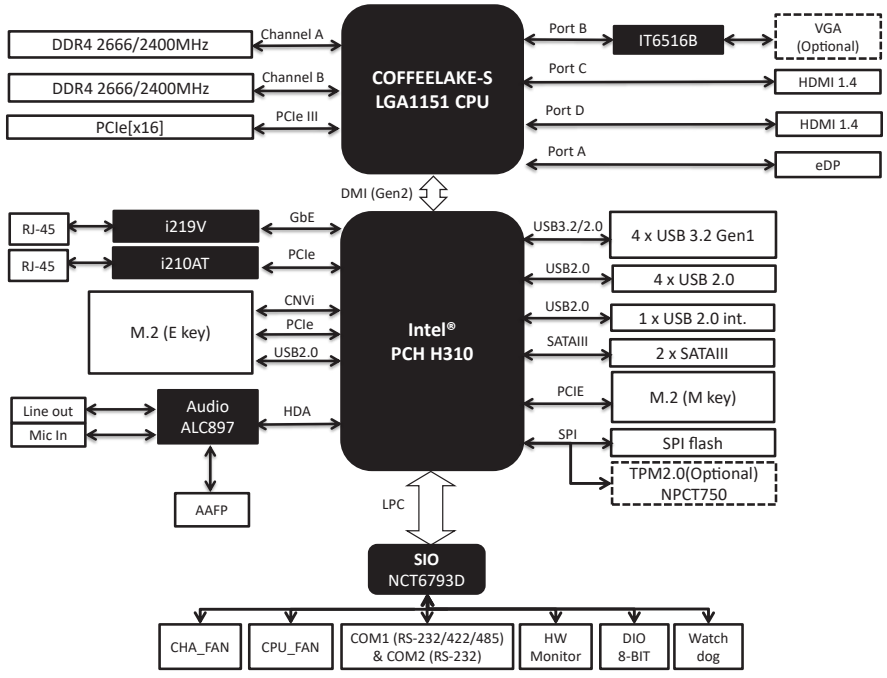
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 x 4, USB 2.0 x 4
Display I/O	HDMI x 2, VGA x 1 (Optional)
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	12V DC Jack (max:192W)
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2 M.2 M-key (22 x 42/80mm; PCIe) 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

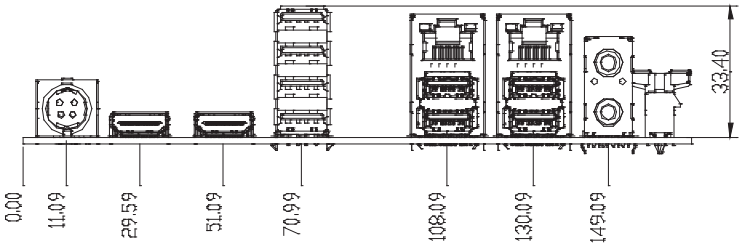
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

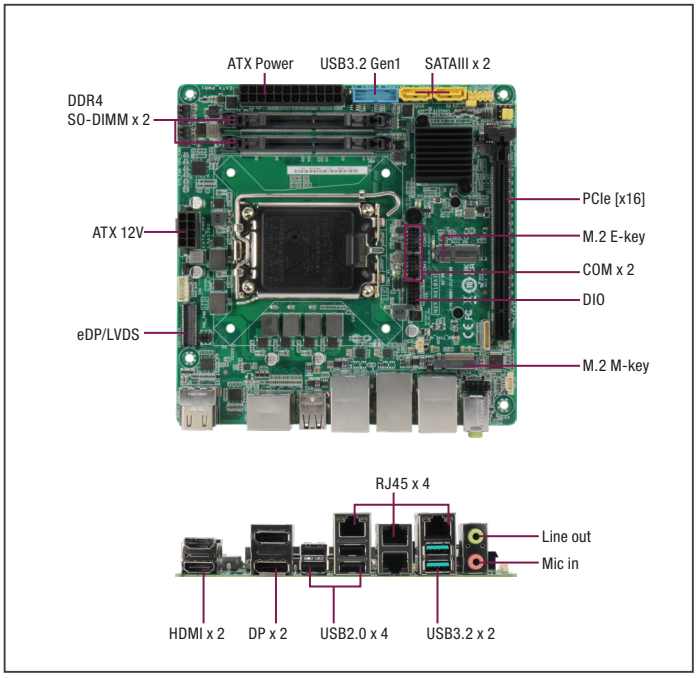
Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-H310D2-A11-210	Socket	SODIMM x 2	Fan	HDMI x 2 eDP	SATA3 x 2 M.2(M-key) x 1	—	GbE x 2	USB2.0 x 5, USB3.2 Gen 1 x 4	1	1	PCIe3.0[x16] x 1, M.2(E-Key) x 1	12V DC	—	32°F ~140°F (0°C ~ 60°C)

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-H610A1

Mini-ITX with 12th/13th/14th Generation Intel® Core™ LGA1700 Socket Processor, Max. 65W



Features

- 12th/13th/14th Gen Intel® Core™ LGA1700 Processor
- DDR4 DRAM Support, 3200MHz, Max 64GB
- M.2 2280 M-Key x 1, M.2 2232 E-Key x 1
- USB 3.2 x 4, USB 2.0 Port x 4
- Intel® Ethernet Connection I219-V x 1, Realtek RTL8111H x 3
- SATA 6Gb/s x 2
- PCIe Gen 3 [x16] x 1
- ATX Power

Giga LAN · HDMI · USB 3.2 Gen 2 · USB 2.0

Specifications

System	
Processor	12th/13th/14th Generation Intel® Core™ LGA1700 Socket Processor, Max. 65W
Chipset	Intel® H610E Chipset
Memory	Dual-Channel DDR4 3200MHz SODIMM x 2, Max 64GB
I/O Chipset	NCT6126D
Ethernet	Intel® Ethernet Connection I219-V x 1 Realtek RTL8111H x 3
Audio	Realtek® ALC897 with Amp.
TPM	TPM2.0 IC on board
Expansion Slots	PCIe Gen 3 [x16] x 1, M.2 2232 E-Key x 1 (PCIe [x1]/CNVi/USB)
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	HDMI x 2 + DP x 1, HDMI x 1 + DP x 2, HDMI x 1 + DP x 1 + LVDS x 1, HDMI x 1 + DP x 1 + eDP x 1
VGA	—
DVI	—
HDMI	HDMI 2.0, up to 3840 x 2160 @60Hz
Display Port	DP 1.2, up to 3840 x 2160 @60Hz
LVDS	18/24-bit Dual-Channel LVDS, up to 1920 x 1080 @60Hz (co-lay eDP, default LVDS)
eDP	eDP, Up to 1920 x 1080 @60Hz
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	ATX; [330 Watt or greater power supply] Voltage/Current(A) requirement:+3.3V/0.05A;+5V/6.07A;+12V/17.3A
Operating Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	357,180

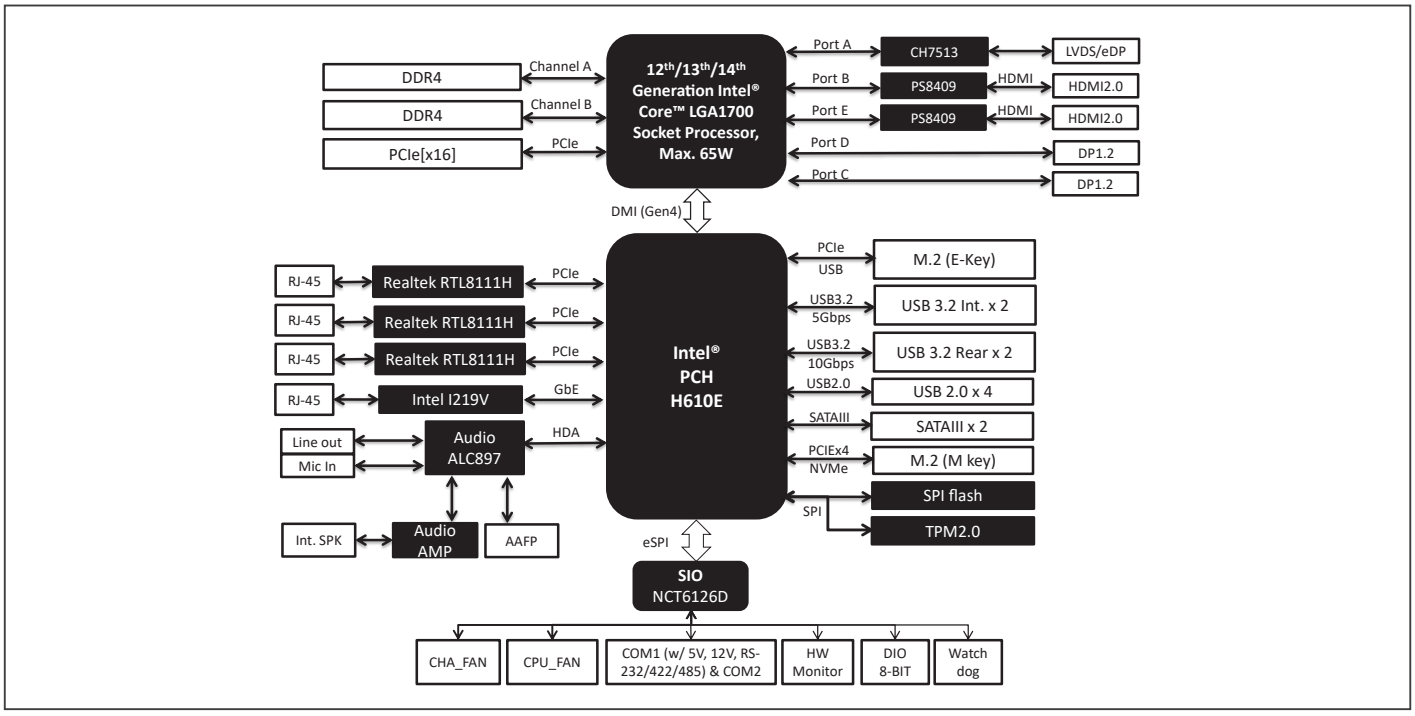
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 x 2, USB 2.0 x 4
Display I/O	HDMI 2.0 x 2, DP 1.2 x 2
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	RJ-45 LAN x 4
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA 6Gb/s x 2, M.2 2280 M-Key x 1
USB	USB 3.2 Pin Header x 1 (USB 3.2 Gen 1 x 2)
Display I/O	40-pin LVDs/eDP connector x 1 with Inverter
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	—
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	TBD
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

- MIX-H610A1
- I/O Shield
- SATA Cable

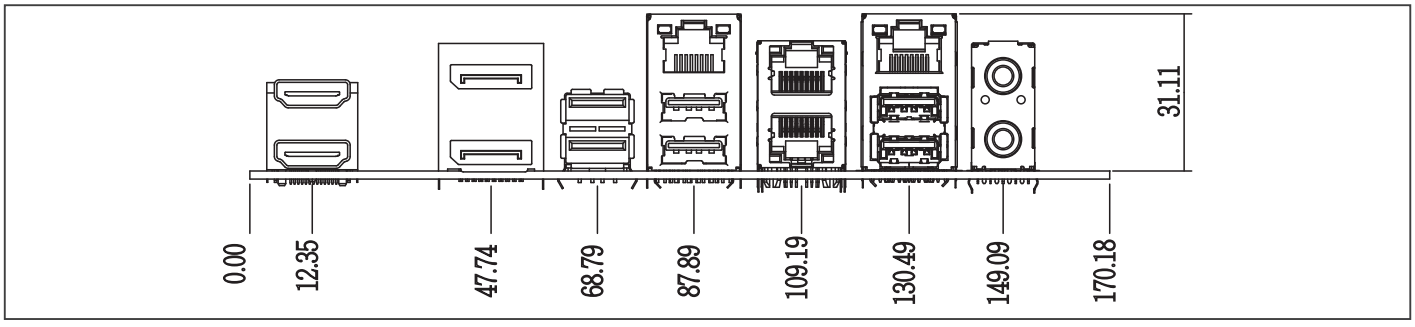
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

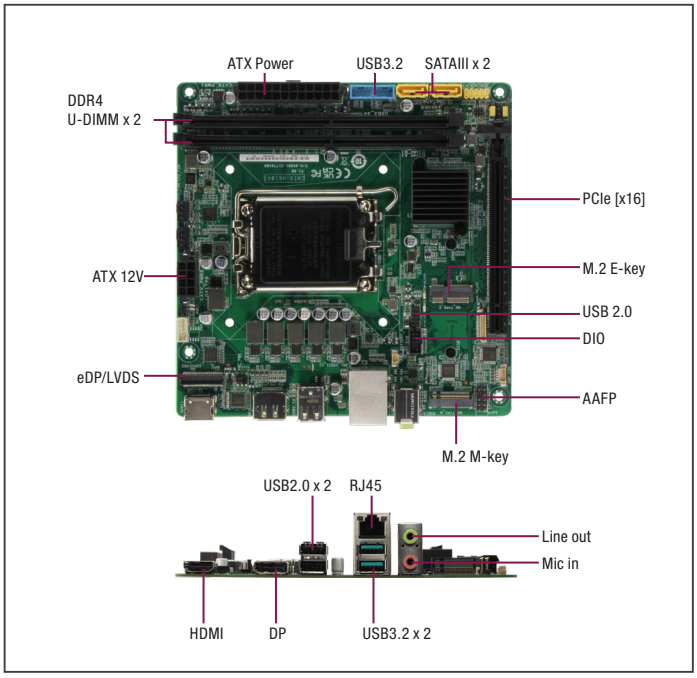
Part Number	CPU	RAM	Fan/Fanless	Display	LVDS/eDP	Storage	LAN	USB	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-H610A1-A10-4L	Socket	DDR4 x 2	Fan	HDMI x 2, DP x 2, LVDS/eDP x 1	1	SATA 6Gb/s x 2, M.2 2280 M-Key x 1	GbE x 4	USB 2.0 x 4 USB 3.2 x 4	1	PCIe Gen 3 [x16] x 1, M.2 2232 E-Key x 1	ATX	2.0	0~60°C

Optional Accessories

Part Number	Description
1701100206	COM Cable (200MM, p=2.00mm)
1709100201	USB 2.0 Cable (10P, 200mm, p=2.00mm, w/bracket)
1700100491	USB 2.0 Cable (10P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)
AP-FNTH11700020	(TF).1U CPU cooler for LGA1700,TDP up to 125W.12V.5400RPM.Smart FAN.90*90*25mm.Ablecom.ACL-D11122
AP-FNTH11700030	(TF).2U CPU cooler for LGA1700,TDP up to 125W.12V.8400RPM.Smart FAN.95*95*63.5mm.Ablecom.ACL-D21120
AP-FNTH11700010	(TF).2U CPU cooler for LGA1700,TDP up to 95W.12V.2500RPM.Smart FAN.91*91. Ablecom.ACL-S41120

MIX-H610A2

Mini-ITX with 12th/13th/14th Generation Intel® Core™ LGA 1700 Socket Processors, Max. 65W TDP



Features

- 12th/13th/14th Generation Intel® Core™ LGA1700 Socket Processor
- Dual Channel DDR4 Support, 3200MHz, Max. 32GB
- HDMI 1.4 x 1 + DP 1.4 x 1
- M.2 2280 M-Key x 1, M.2 2230 E-Key x 1
- USB 3.2 Gen 2 Port x 2, USB 2.0 Port x 2
- Realtek RTL8111H Ethernet x 1
- SATA 6Gb/s x 2
- PCIe [x16] slot x 1
- ATX power

Giga LAN · HDMI · USB 3.2 Gen 2 · USB 2.0

Specifications

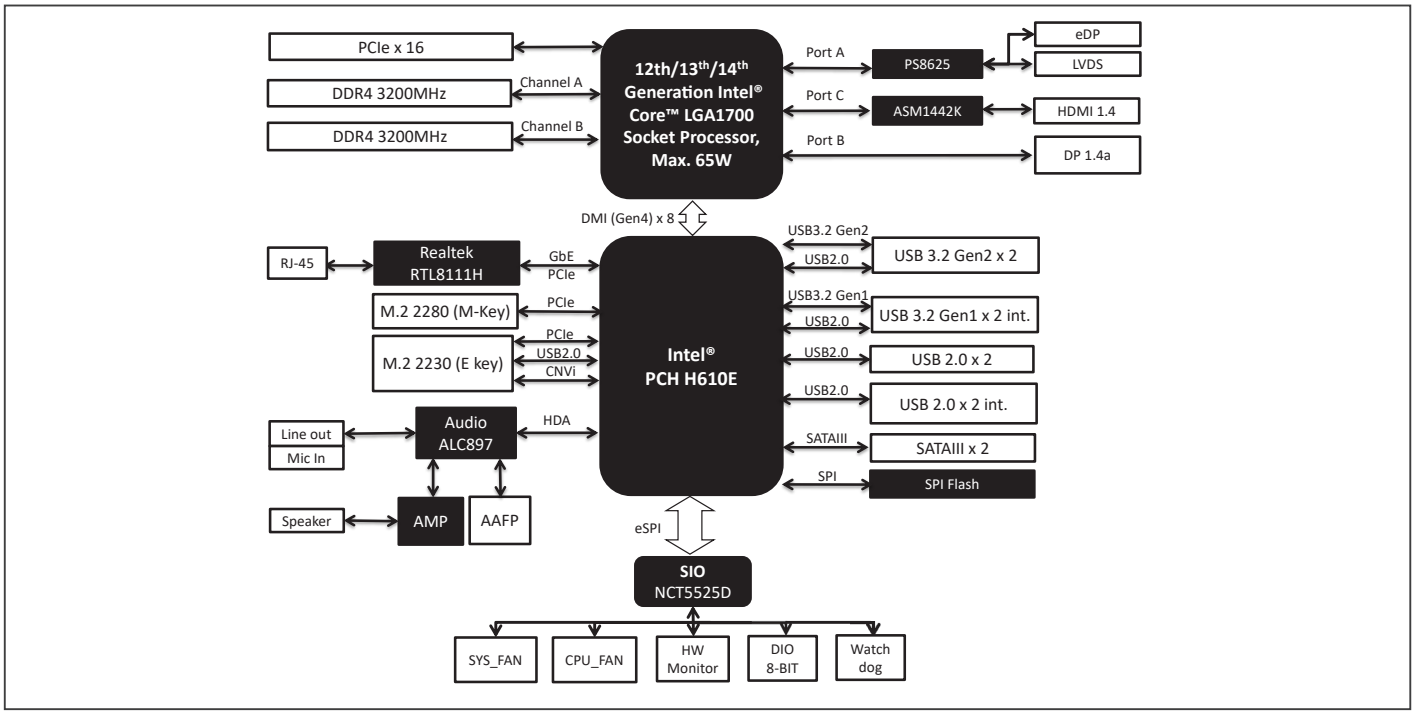
System	
Processor	12th/13th/14th Generation Intel® Core™ LGA1700 Socket Processors
Chipset	Intel® H610E Chipset
Memory	Dual Channel DDR4 3200MHz U-DIMM x 2 (Max. 32GB)
I/O Chipset	NCT5525D
Ethernet	Realtek® RTL8111H x 1
Audio	Realtek® ALC897
TPM	fTPM
Expansion Slots	M.2 2230 E-Key x 1 (PCIe [x1], USB 2.0) PCIe Gen 5 [x16] 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 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	Triple Independent Display
VGA	—
DVI	—
HDMI	HDMI 1.4, Up to 4096 x 2160 @30Hz/2560 x 1600 @60Hz, with Digital Audio
Display Port	DP 1.4a, up to 4096 x 2160 @60Hz
LVDS	Dual-Channel 18/24 bit, up to 1920 x 1080 @60Hz
eDP	Up to 4096 x 2340 @60Hz
Backlight Control	PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	ATX Voltage/Current(A) requirement:+3.3V/1.45A;+5V/7.63A;+12V/18.08A;+5VSB/0.24A
Operating Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Certificate	CE & FCC (Class A)
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb. (0.5Kg)
MTBF (Hours)	422,390
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 x 2 + USB 2.0 x 2
Display I/O	HDMI 1.4 x 1, DP 1.4 x 1
Audio I/O	Line-out x 1, MIC-in x 1
LAN I/O	RJ-45 LAN Port x1
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA 6Gb/s x 2 M.2 2280 M-Key x 1 (PCIe [x4]/NVMe)
USB	USB 2.0 x 2 via Pin Header x 1 USB 3.2 Gen 1 x 2 via Box Header x 1
Display I/O	40-pin LVDS/eDP Connector x 1 (Default: LVDS)
Audio I/O	HD Audio x 1 via Pin Header
Serial Port	—
PS/2 Port	—
Parallel Port	—
DIO	8-bit programmable (4-in/4-out) x 1
FAN	4-pin Chassis Fan connector x 1 4-pin CPU Fan connector x 1
Power	ATX
Others	Clear CMOS jumper x 1, Front Panel connector x 1, ATX/AT mode select x 1, ME disable x 1, eDP/LVDS Tcon IC voltage select x 1, Backlight Voltage Select x 1
OS	
OS Support	Windows® 10 64-bit, Windows® 11 64-bit

Packing List

- MIX-H610A2
- I/O Shield
- SATA Cable

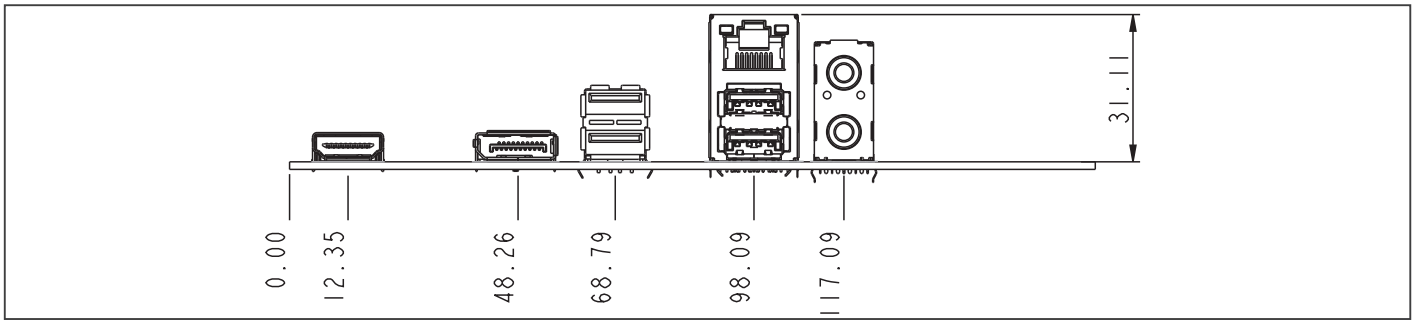
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

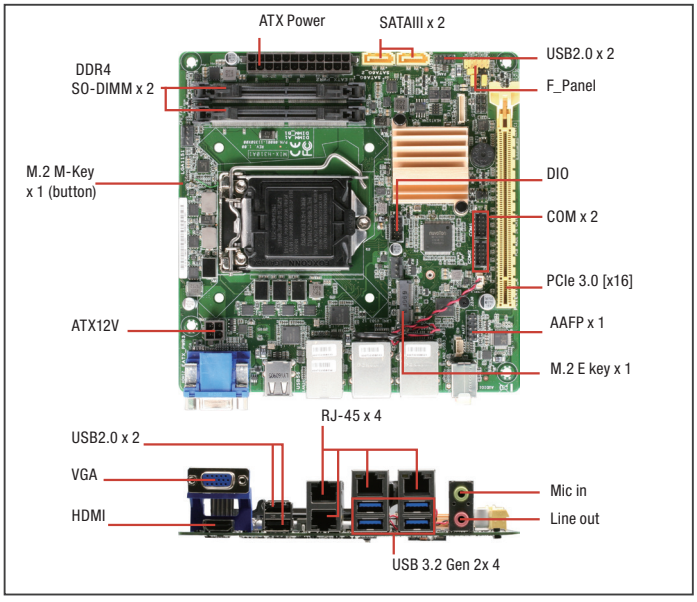
Part Number	CPU	RAM	Fan/Fanless	Display	LVDS/eDP	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-H610A2-A10	Socket	U-DIMM x 2	Fan	HDMI x 1, DP x 1	1	SATA 6Gb/s x 2, M.2 M-Key	GbE x 1	USB 2.0 x 2 USB 3.2 x 2	—	—	M.2 E-Key x 1, PCIe [x16] x 1	ATX	fTPM	0~60°C

Optional Accessories

Part Number	Description
1701100206	COM Cable (200MM, p=2.00mm)
AP-FNTH11700020	(TF).1U CPU cooler for LGA1700,TDP up to 125W.12V.5400RPM.Smart FAN.90*90*25mm.Ablecom.ACL-D11122
AP-FNTH11700030	(TF).2U CPU cooler for LGA1700,TDP up to 125W.12V.8400RPM.Smart FAN.95*95*63.5mm.Ablecom.ACL-D21120
AP-FNTH11700010	(TF).2U CPU cooler for LGA1700,TDP up to 95W.12V.2500RPM.Smart FAN.91*91. Ablecom.ACL-S41120

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

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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 kg)
MTBF (Hours)	—

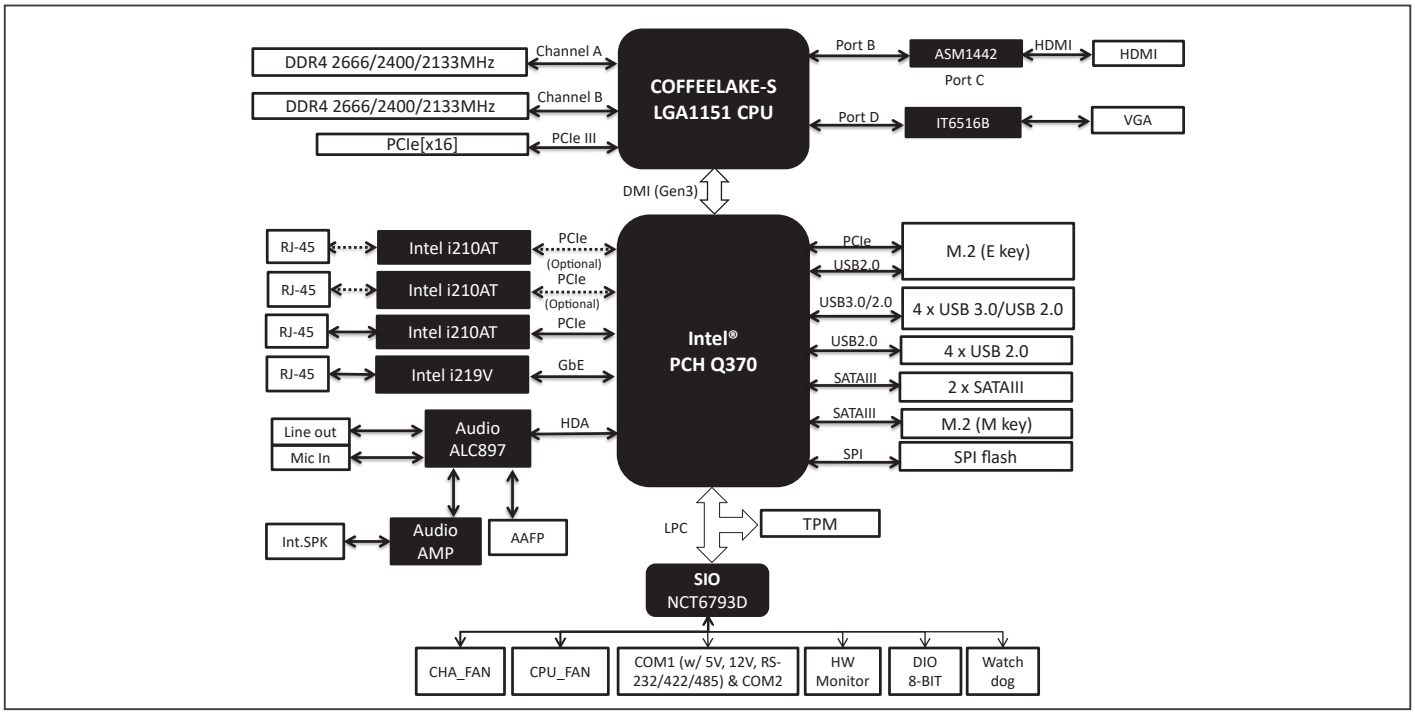
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 (10 Gbps) x 4, USB 2.0 x 2
Display I/O	VGA x 1, HDMI x 1
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 4
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) at bottom side x 1(SATA only)
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

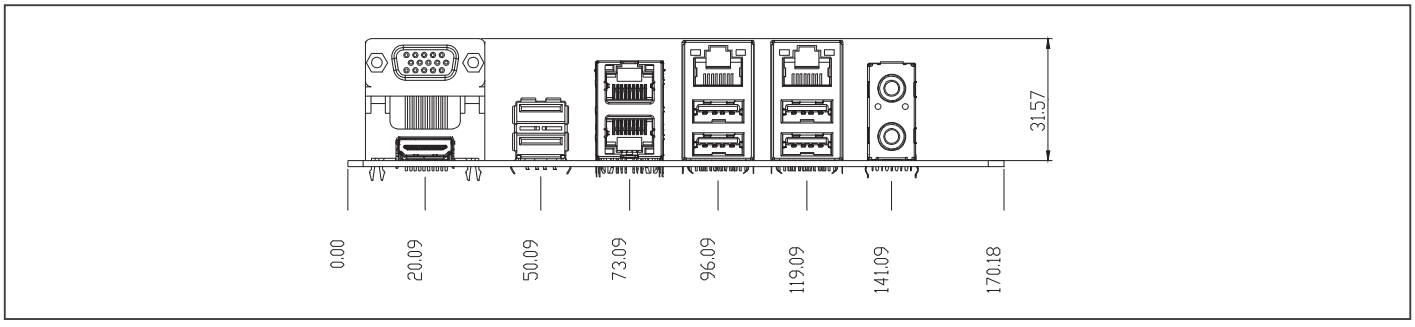
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

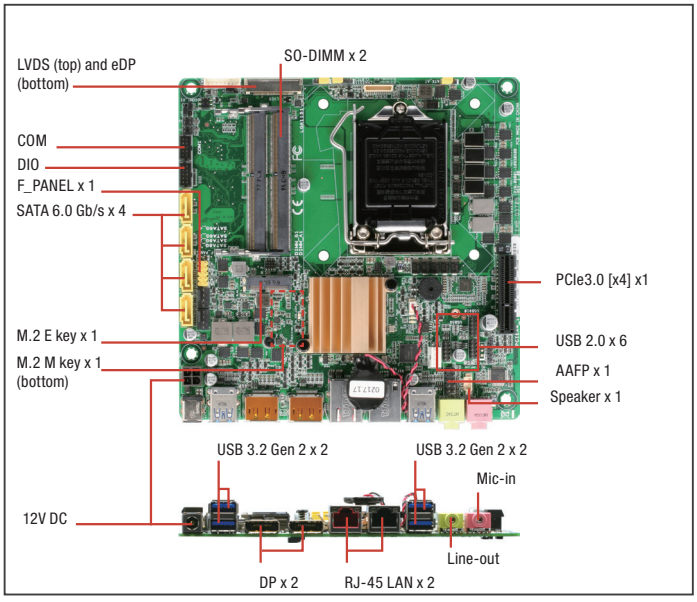
Part number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-Q370A1-A11-4L-210FT	Socket	SODIMM x 2	Fan	VGA, HDMI	SATA3 x2, M.2(M-key)	—	GbE x 4	USB2.0 x 4 USB 3.2 Gen 2 x 4	1	1	PCIe3.0[x16] x 1, M.2(E-Key) x 1	ATX	fTPM	0~60°C
MIX-Q370A1-A11-2L-210FT	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 i210AT x 1, i219LM 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

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

Specifications

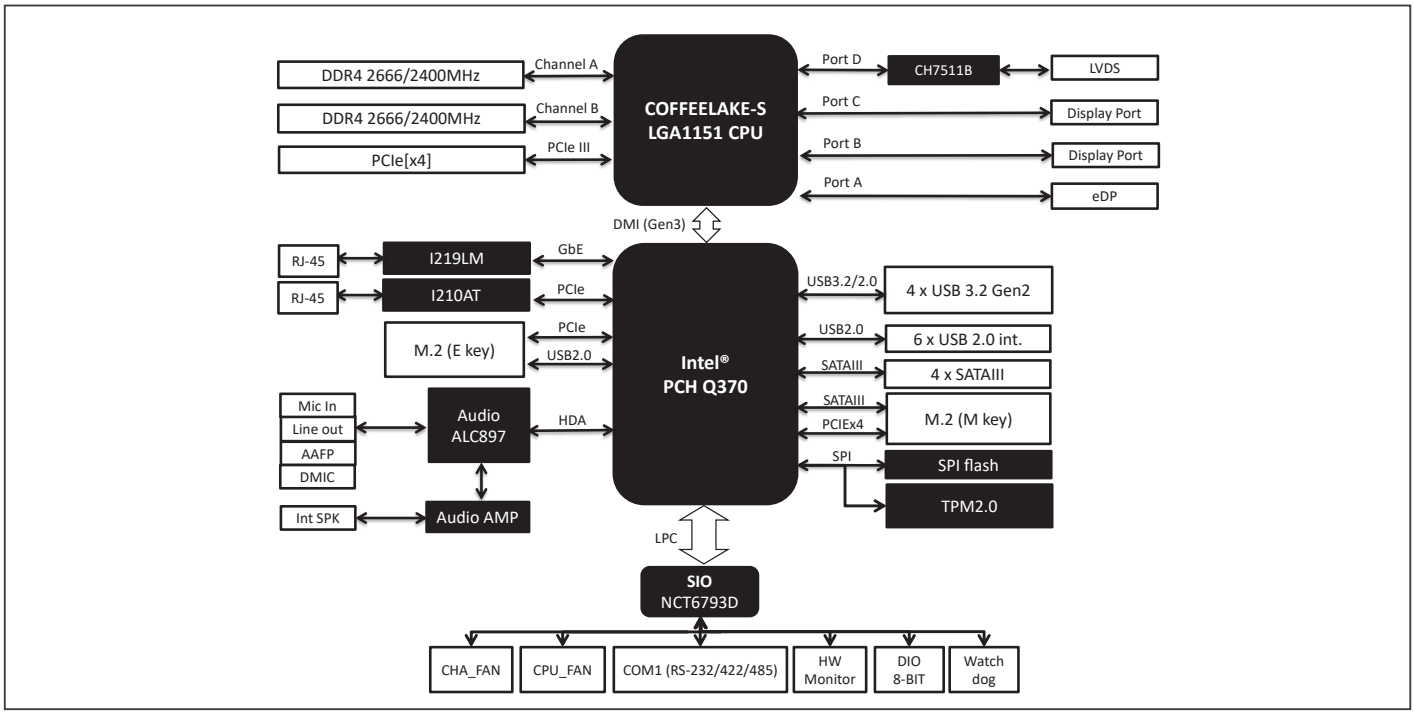
System	
Processor	8th/9th Generation Intel® Core™ i7/ i5 /i3, Pentium® LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
Chipset	Intel® Q370 Express Chipset
Memory	SODIMM x 2, Max. 32GB, DDR4 2666/2400 MHz, Non-ECC, Un-buffered Memory, Dual channel
I/O Chipset	NCT6793D
Ethernet	Intel® 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 Power consumption: [Typical:120W]
Operating Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
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

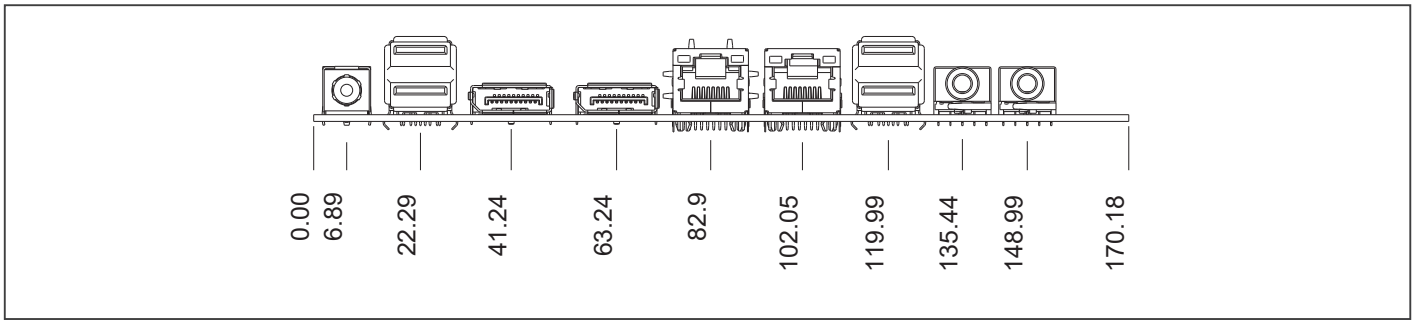
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

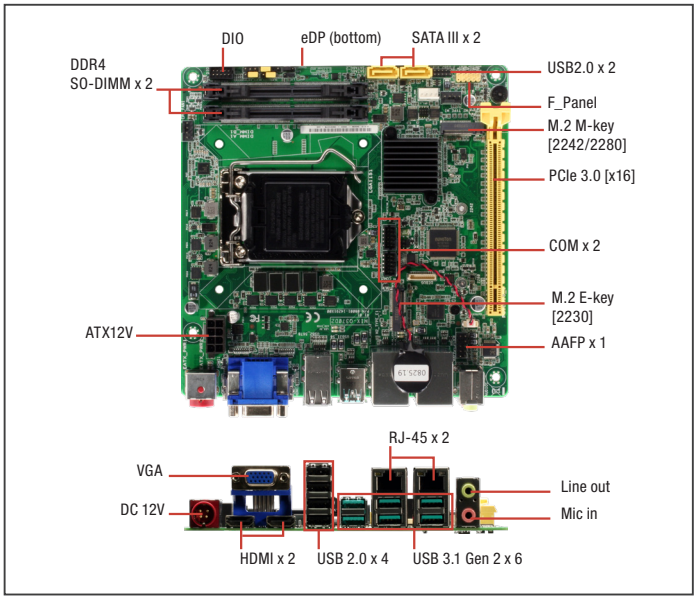
Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-Q370D1-A12	Socket	SODIMM x 2	Fan	DP x 2, LVDS, eDP	SATA3 x 4, M.2(M-key)	Daul Channel 18/24 bit	GbE x 2	USB2.0 x 6, USB 3.2 Gen 2 x 4	—	1	PCIe3.0[x4] x 1 M.2(E-Key) x 1	12V DC	2.0	32°F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

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

Specifications

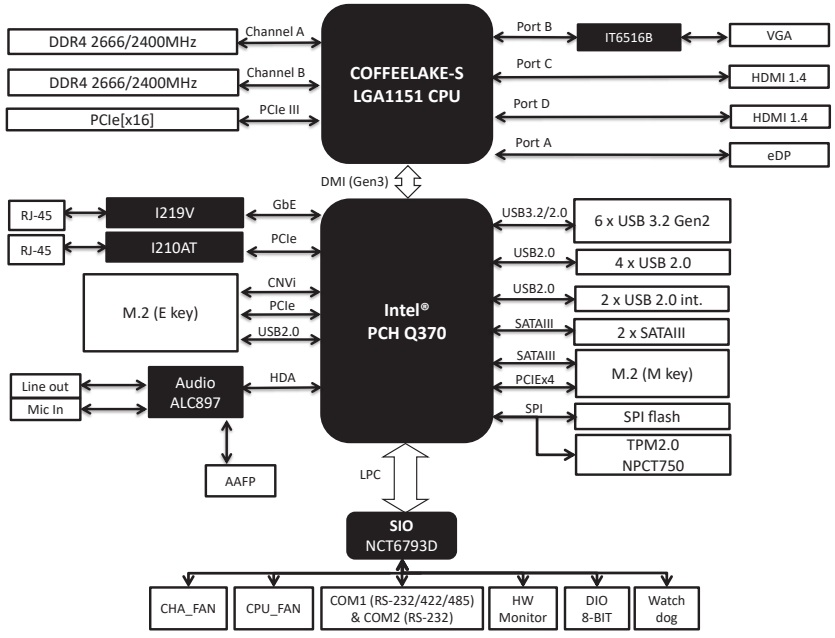
System	
Processor	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
Chipset	Intel® Q370 Express Chipset
Memory	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 64GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6793D
Ethernet	Intel® GbE 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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

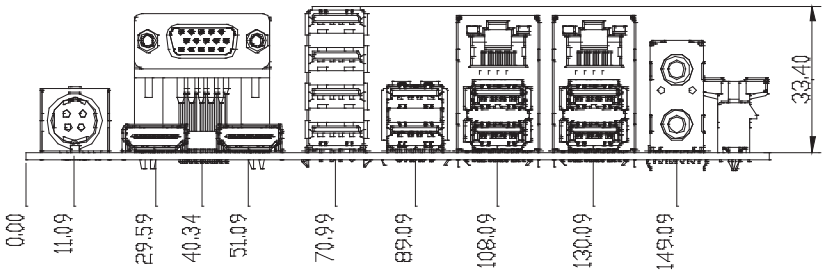
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

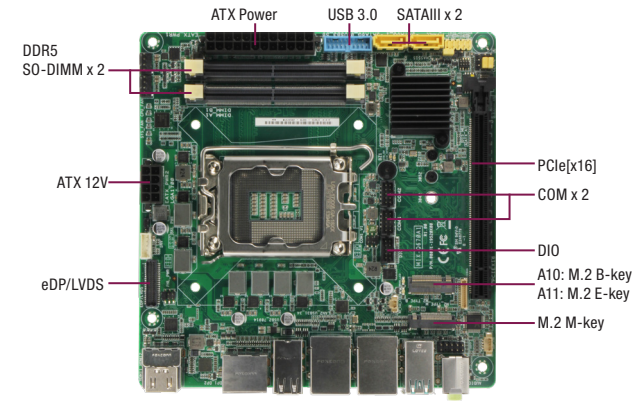
Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-Q370D2-A11-210	Socket	SODIMM x 2	Fan	VGA, HDMI x 2, eDP	SATA3 x2 M.2(M-key) x 1	—	GbE x 2	USB2.0 x 6 USB3.2 Gen 2 x 6	1	1	PCIe3.0[x16] x 1 M.2(E-Key) x 1	12V DC	2.0	32°F ~140°F (0°C ~ 60°C)

Optional Accessories

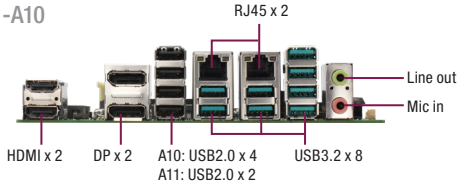
Part Number	Description
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
COOLER-65W-01	CPU Cooler, LGA 1156, 12V, 65W, 4P, Kingcooler, 0571-1463R
1709100201	USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)
1701100206	COM Cable (200MM, p=2.00mm)
1700100491	USB 2.0 Cable (10P, 490mm, p=2.00mm)
1255X00011	(TF)AC/DC Adapter.12V.192W.16A.FSP192-AHAN3.9NA1920100

MIX-Q670A1

MIX with 12th/13th/14th Gen Intel® Core™ Processors



MIX-Q670A1-A10



Features

- 12th/13th/14th Gen Intel® Core™ Processors
- DDR5 SODIMM, 4800MHz, Max. 64GB
- HDMI 2.0 x 2 + DP 1.2 x 2
- M.2 M-Key x 1, M.2 B-Key x 1 (A10/A13-AN), M.2 E-Key x 1 (A11-EK)
- USB 3.2 Port x 10, USB 2.0 Port x 4 (A10),
- USB 3.2 Port x 10, USB 2.0 Port x 2 (A11-EK),
- USB 3.2 Port x 6, USB 2.0 Port x 8 (A13-AN)
- Intel GbE LAN x 2
- SATA 6.0 Gb/s x 2
- PCIe Gen 5 [x16] x 1

PCI Express · Gigo LAN · HDMI · DP Port · USB 3.2 Gen 1 · USB 2.0

Specifications

System	
Processor	12th/13th/14th Gen Intel® Core™ Processors
Chipset	Intel® Q670E Chipset
Memory	Dual-Channel DDR5 4800MHz SODIMM x 2, Max. 64GB
I/O Chipset	Intel® UHD Graphics
Ethernet	Intel® Ethernet Connection I219-LM x 1 Intel® Ethernet Controller I210-AT x 1
Audio	Realtek® ALC897 with Amp
TPM	Onboard TPM 2.0 IC
Expansion Slots	PCIe Gen 5 [x16] x 1 A10/A13-AN: M.2 3042/3052 B-Key x 1 A11-EK: M.2 2230 E-Key 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	HDMI x 2 + DP x 2, HDMI x 2 + DP x 1 + LVDS x 1, HDMI x 2 + DP x 1 + eDP x 1, HDMI x 1 + DP x 2 + LVDS x 1, HDMI x 1 + DP x 2 + eDP x 1
VGA	—
DVI	—
HDMI	Up to 4096 x 2160 @60Hz (HDMI 2.0)
Display Port	Up to 4096 x 2160 @60Hz
LVDS	Up to 1920 x 1080 @60Hz, Dual-Channel 18/24 bit
eDP	Up to 1920 x 1080 @60Hz (via CH7513), co-layout LVDS
Backlight Control	PWM
Environment & Power & ME	
Battery	Lithium Battery
Power Requirement	ATX Voltage/Current(A) requirement:+3.3V/0.06A;+5V/11.65A;+12V/17.68A;+5VSB/0.14A
Operating Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb. (0.5Kg)

MTBF (Hours)	366,590
Rear Panel I/O Ports	
USB	A10: USB 3.2 Gen 2 x 8 + USB 2.0 x 4 A11-EK: USB 3.2 Gen 2 x 8 + USB 2.0 x 2 A13-AN: USB 3.2 Gen 2 x 4 (available by request)
Display I/O	HDMI x 2, DP x 2
Audio I/O	Mic-in x 1, Line-out x 1
LAN I/O	LAN Port x 2 (RJ-45)
Serial Port	—
PS/2 Port	—
Others	SIM Socket x 1 (A10 only)
Internal I/O Connectors	
Storage	SATA III x 2 (6.0Gb/s), M.2 2280 M-Key
USB	A10/A11-EK: USB 3.2 Gen 1 x 2 ports A13-AN: USB 3.2 Gen 1 x 2 ports + USB 2.0 x 8 ports (available by request)
Display I/O	—
Audio I/O	AAFP x 1, Speaker x 1
Serial Port	Box Header for COM x 1 (RS-232/422/485) Box Header for COM x 1 (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, Onboard Buzzer x 1, CMOS Jumper x 1
OS	
OS Support	Windows® 10 64-bit, Windows® 11 64-bit

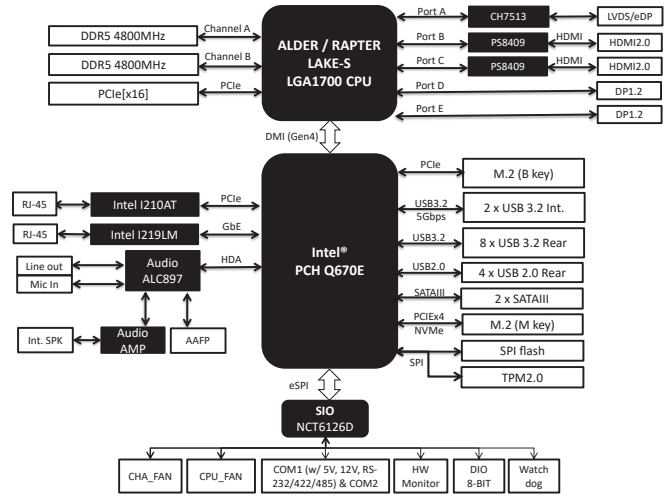
Packing List

- I/O Shield
- SATA Cable
- MIX-Q670A1

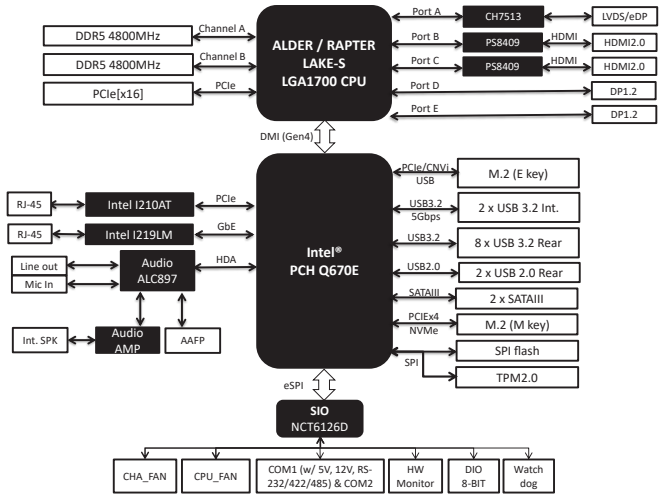
Note: All specifications are subject to change without notice.

Block Diagram

MIX-Q670A1-A10



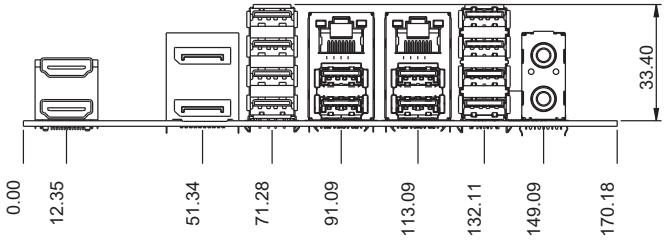
MIX-Q670A1-A11-EK



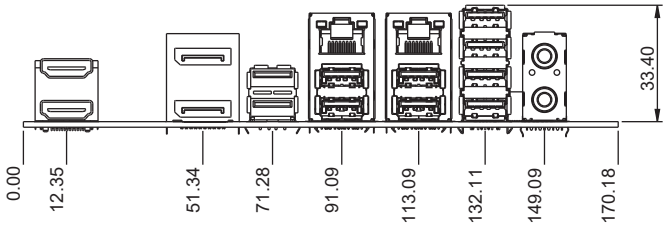
Dimension

Unit: mm

MIX-Q670A1-A10



MIX-Q670A1-A11-EK



Ordering Information

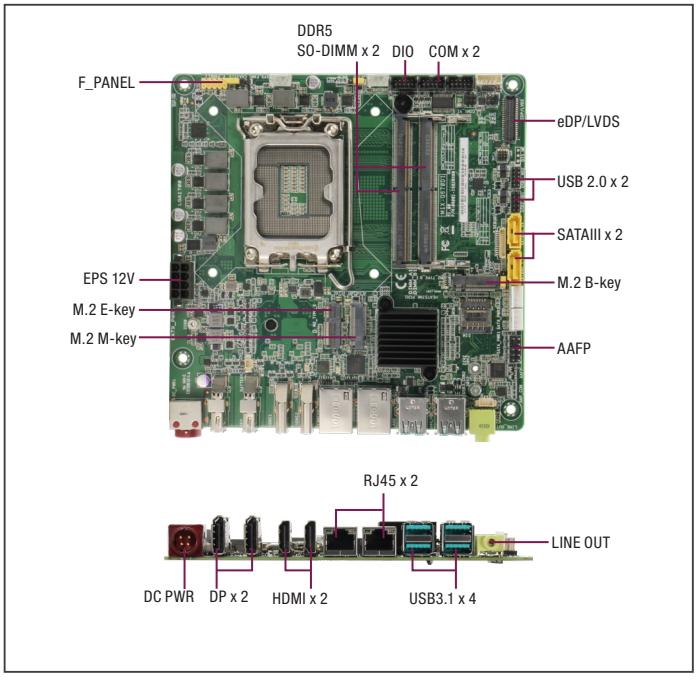
Part Number	CPU	RAM	Fan/Fanless	Display	LVDS/eDP	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-Q670A1-A10	Socket	SODIMM x 2	Fan	HDMIx2, DPx2, LVDS/ eDPx1	1	SATA3 x2, M.2(M-key)	GbE x 2	USB2.0 x 4, USB3.2 x 10	1	1	PCIe slot [x16] x 1, M.2(B-Key) x 1	ATX	2.0	0~60°C
MIX-Q670A1-A11-EK	Socket	SODIMM x 2	Fan	HDMIx2, DPx2, LVDS/ eDPx1	1	SATA3 x2, M.2(M-key)	GbE x 2	USB2.0 x 2, USB3.2 x 10	1	1	PCIe slot [x16] x 1, M.2(E-Key) x 1	ATX	2.0	0~60°C
MIX-Q670A1-A13-AN	Socket	SODIMM x 2	Fan	HDMIx2, DPx2, LVDS/ eDPx1	1	SATA3 x2, M.2(M-key)	GbE x 2	USB2.0 x 8, USB3.2 x 6	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)
AP-FNTH11700020	(TF).1U CPU cooler for LGA1700,TDP up to 125W.12V.5400RPM.Smart FAN.90*90*25mm.Ablecom.ACL-D11122
AP-FNTH11700030	(TF).2U CPU cooler for LGA1700,TDP up to 125W.12V.8400RPM.Smart FAN.95*95*63.5mm.Ablecom.ACL-D21120
AP-FNTH11700010	(TF).2U CPU cooler for LGA1700,TDP up to 95W.12V.2500RPM.Smart FAN.91*91. Ablecom.ACL-S41120
1709100201	USB 2.0 Cable (10P, 200mm, p=2.00mm, w/bracket)
1700100491	USB 2.0 Cable (10P, 490mm, p=2.00mm)
1709050201	USB 2.0 Cable (5P, 220mm, p=2.00mm)

MIX-Q670D1

Mini-ITX with 12th/13th/14th Generation Intel® Core™ LGA1700 Socket Processor, Max. 65W TDPs



Features

- 12th/13th/14th Gen Intel® Core™ LGA1700 Processors
- DDR5 4800MHz SODIMM x 2, Max. 64GB
- HDMI 2.0 x 2 + DP 1.2 x 2
- M.2 2280 M-Key x 1 (PCIe [x4], NVMe), M.2 2230 E-Key x 1, M.2 3042/52 B-Key x 1 w/ SIM slot
- USB 3.2 x 4, USB 2.0 x 4
- GbE LAN x 2
- SATA III x 2
- DC 12V Input

PCI Express · Giga LAN · HDMI · DP Port · USB 3.2 Gen 1 · USB 2.0

Specifications

System	
Processor	12th/13th/14th Gen Intel® Core™ Processors (Raptor Lake-S/Alder Lake-S)
Chipset	Intel® Q670E
Memory	Dual-Channel DDR5 4800MHz SODIMM x 2 (Non-ECC, Max. 64GB)
I/O Chipset	NCT6126D
Ethernet	Intel® I219-LM GbE LAN x 1 Intel® I210-AT GbE LAN x 1
Audio	Realtek® ALC897 with Amp.
TPM	Onboard TPM 2.0 IC
Expansion Slots	M.2 3042/3052 B-Key x 1 (PCIe [x1], USB 3.2 Gen 1/USB 2.0) M.2 2230 E-Key x 1 (PCIe [x1], Optional: dual PCIe [x1], USB 2.0)
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	HDMI x 2 + DP x 2, HDMI x 2 + DP x 1 + LVDS x 1, HDMI x 2 + DP x 1 + eDP x 1, HDMI x 1 + DP x 2 + LVDS x 1, HDMI x 1 + DP x 2 + eDP x 1
VGA	—
DVI	—
HDMI	HDMI 2.0, Up to 4096 x 2160 @60Hz
Display Port	DP 1.2, Up to 4096 x 2160 @60Hz
LVDS	Dual-Channel 18/24 bit LVDS via CH7513, up to 1920 x 1080 @60Hz, colay eDP
eDP	Up to 1920 x 1080 @60Hz
Backlight Control	PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	DC 12V Power consumption: Peak 330W; Typical 150W
Operating Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)

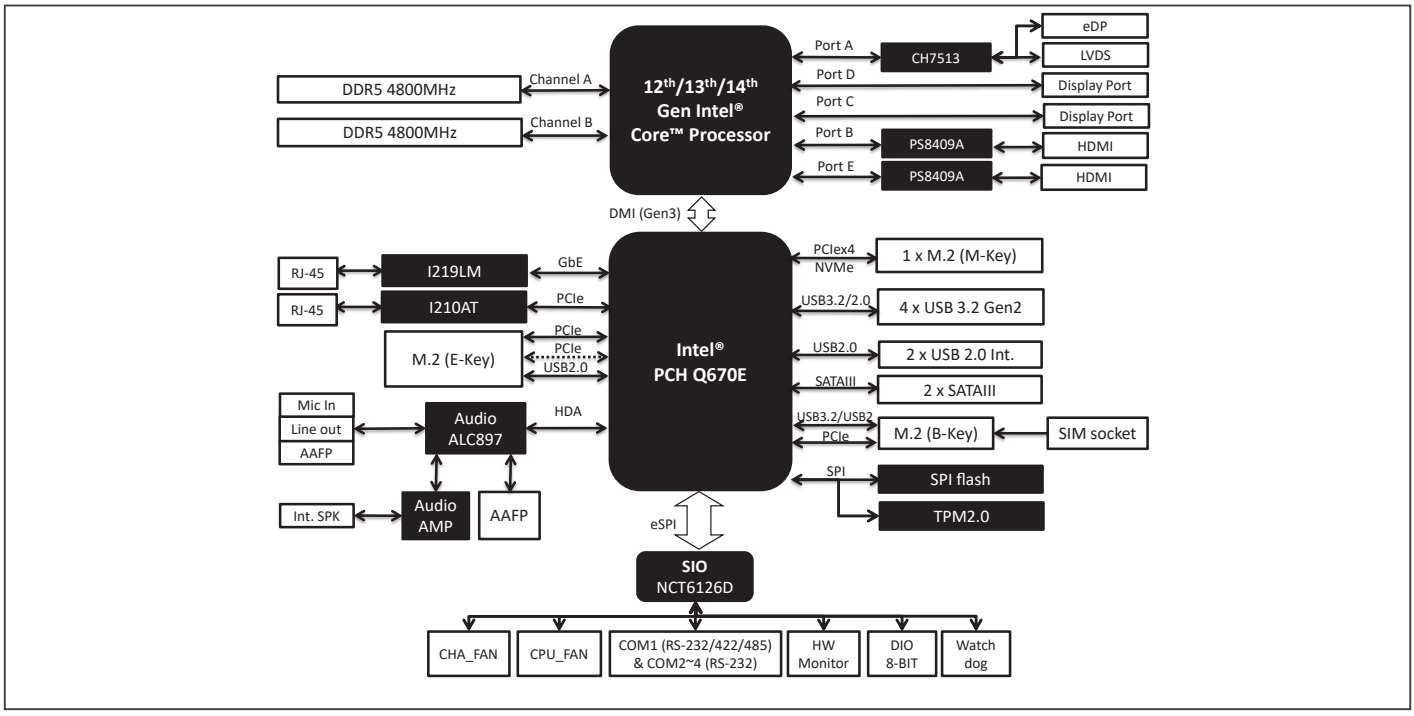
MTBF (Hours)	368,780
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 x 4
Display I/O	HDMI x 2, DP x 2
Audio I/O	Line-out x 1
LAN I/O	RJ-45 LAN Port x 2
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA III x 2 with SATA Power Connector x 2 (1A) M.2 2280 M-Key (PCIe [x4]/NVMe) x 1
USB	USB 2.0 x 4 via 2x5P Header x 2
Display I/O	40-pin LVDS/eDP connector x 1 with Inverter
Audio I/O	HD Audio x 1 (via AAFP Header), Internal Speaker x 1 (2W/4Ohm Ω)
Serial Port	COM Box Header x 1 (RS-232/422/485) COM Box Header x 1 (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 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

- Full High I/O Shield
- SATA Cable
- SATA Power Cable
- MIX-Q670D1

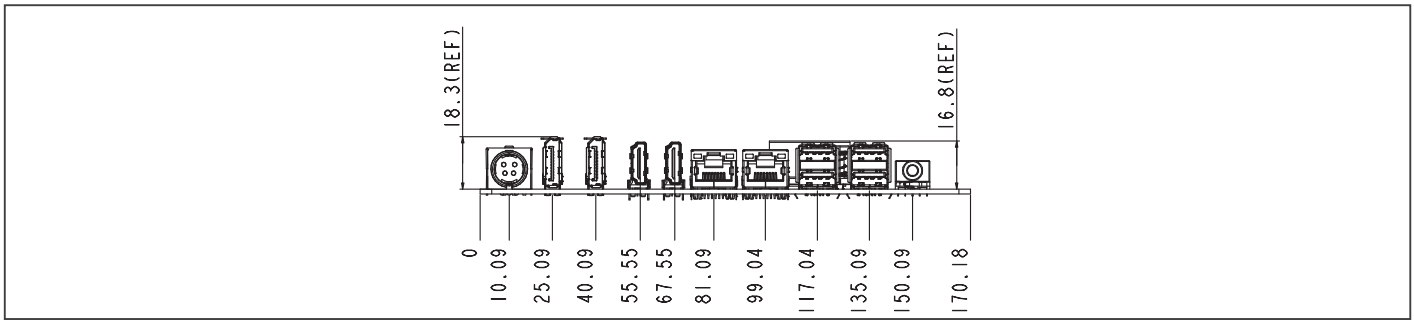
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

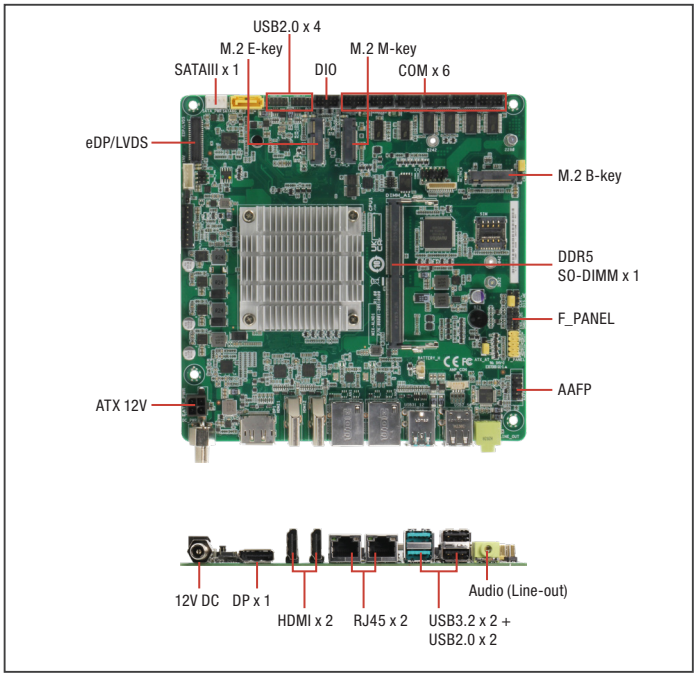
Part Number	CPU	RAM	Fan/Fanless	Display	LVDS/eDP	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-Q670D1-A10	Socket	SODIMM x 2	Fan	HDMI x 2, DP x 2, LVDS/eDP x 1	1	SATA III x 2, M.2 M-Key	GbE x 2	USB 2.0 x 4 USB 3.2 x 4	1	1	M.2 B-Key x 1 M.2 E-Key x 1	DC 12V	2.0	0~60°C

Optional Accessories

Part Number	Description
1701100206	COM Cable (200MM, p=2.00mm)
1255X00011	(TF)AC/DC Adapter.12V.192W.16A.FSP192-AHAN3.9NA1920100
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)
AP-FNTH11700020	(TF).1U CPU cooler for LGA1700,TDP up to 125W.12V.5400RPM.Smart FAN.90*90*25mm.Ablecom.ACL-D11122
AP-FNTH11700030	(TF).2U CPU cooler for LGA1700,TDP up to 125W.12V.8400RPM.Smart FAN.95*95*63.5mm.Ablecom.ACL-D21120
AP-FNTH11700010	(TF).2U CPU cooler for LGA1700,TDP up to 95W.12V.2500RPM.Smart FAN.91*91. Ablecom.ACL-S41120

MIX-ALND1

Mini-ITX with Intel Atom® x7000E Series and Intel® Processor N-series Processors



Features

- **Intel Atom® x7000E Series and Intel® Processor N-series Processors**
- **DDR5 4800MHz SODIMM, Max 16GB**
- **HDMI 2.0 x 2 + DP 1.2 x 1, LVDS/eDP x 1**
- **M.2 2280 M-Key x 1, M.2 2230 E-Key x 1, M.2 3042/52 B-Key x 1 with SIM socket**
- **USB 3.2 x 2, USB 2.0 x 6**
- **GbE x 2**
- **RS-232/422/485 Pin Header x 2, RS-232 Pin Header x 4**
- **SATA III x 1**
- **12V DC Input**

PCI Express · Gigo LAN · HDMI · DP Port · USB 3.2 Gen 1 · USB 2.0

Specifications

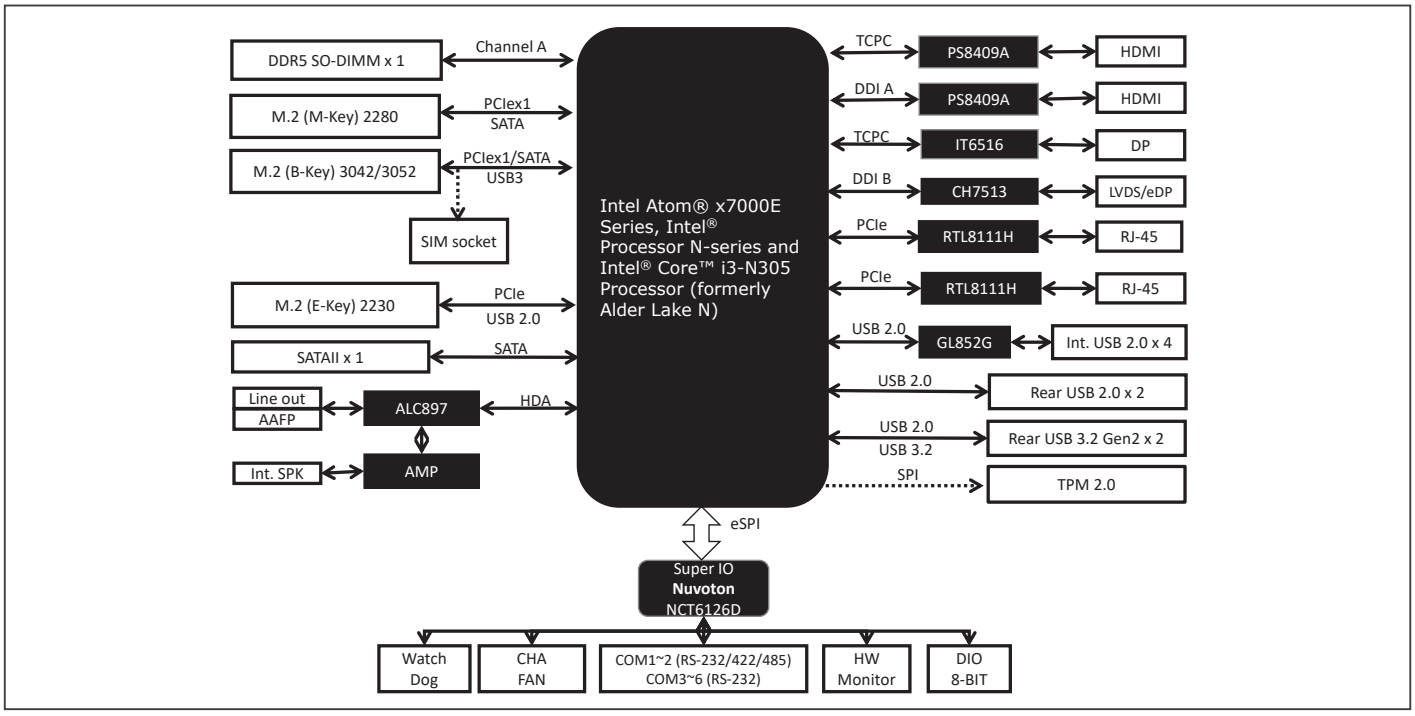
System	
Processor	Intel® Processor N-series: Intel® Processor N97 Intel® Processor N50 *For additional compatible CPUs, please contact regional sales
Chipset	SoC
Memory	Single-Channel DDR5 4800MHz SODIMM x 1 (Non-ECC, Max. 16GB)
I/O Chipset	NCT6126D
Ethernet	Realtek 8111H x 2
Audio	Realtek® ALC897 with Amp.
TPM	fTPM (TPM chip by BOM optional)
Expansion Slots	M.2 3042/3052 B-Key x 1 (PCIe [x1], SATA, USB 3.2 Gen 1/USB 2.0) with SIM socket M.2 2230 E-Key x 1 (PCIe [x1], USB 2.0)
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/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 + DP x 1, HDMI x 2 + LVDS x 1, HDMI x 2 + eDP x 1, HDMI x 1 + DP x 1 + LVDS x 1, HDMI x 1 + DP x 1 + eDP x 1
VGA	—
DVI	—
HDMI	HDMI 2.0, Up to 4096 x 2160 @60Hz
Display Port	DP 1.4, Up to 4096 x 2160 @60Hz
LVDS	18/24-bit Dual-Channel LVDS via CH7513, up to 1920 x 1080 @60Hz, colay eDP
eDP	Up to 1920 x 1080 @60Hz
Backlight Control	PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	DC 12V Power consumption: [Peak: 100W;Typical:60W]
Operating Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
Certificate	CE & FCC class A
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb. (0.5Kg)
MTBF (Hours)	—
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 x 2; USB 2.0 x 2
Display I/O	HDMI x 2, DP x 1
Audio I/O	Line-out x 1
LAN I/O	RJ-45 LAN Port x 2
Serial Port	—
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA III x 1 with SATA Power Connector (1A) M.2 2280 M-Key x 1 (PCIe [x1]/NVMe/SATA)
USB	USB 2.0 x 4 via 2x5P Headers x 2
Display I/O	40-pin LVDs/eDP Connector x 1 with Inverter
Audio I/O	HD Audio x 1 (via AAFP Header), Internal Speaker x 1 (2W/4Ω)
Serial Port	COM Box Header x 2 (RS-232/422/485) COM Box Header x 4 (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, Onboard Buzzer x 1, CMOS Jumper x 1
OS	
OS Support	Windows® 10 64-bit, Windows® 11 64-bit

Packing List

- **MIX-ALND1**
- **I/O Shield**
- **SATA Cable**
- **SATA Power Cable**

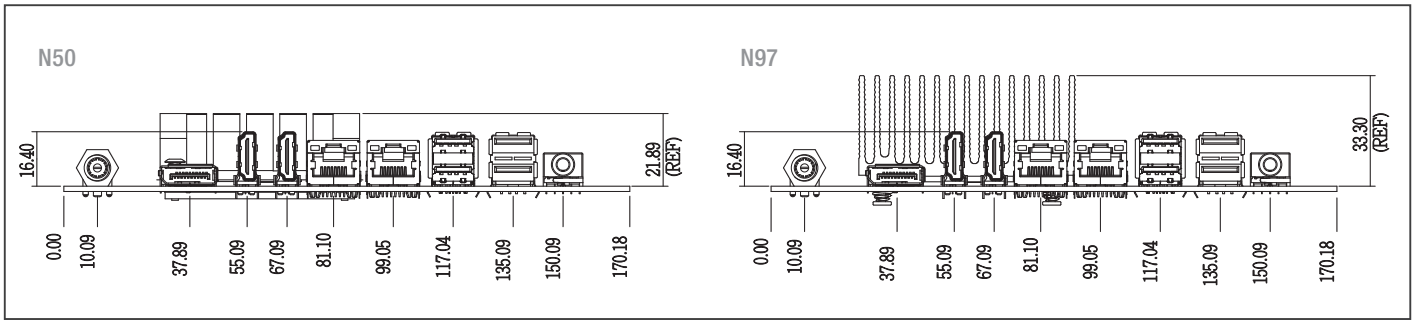
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

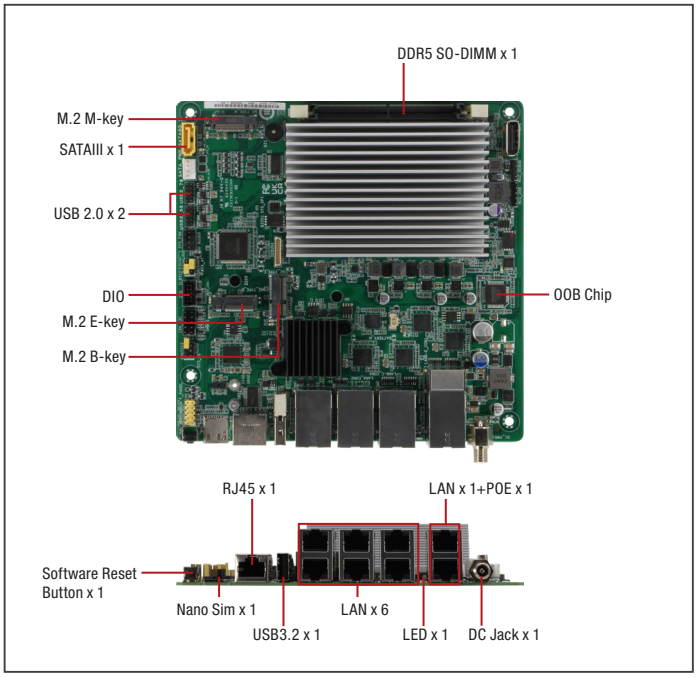
Part Number	CPU	RAM	Fan/Fanless	Display	LVDS/eDP	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-ALND1-A10-N97	Intel® Processor N97	DDR5 SODIMM x 1	Fanless	HDMI x 2, DP x 1	1	SATA III x 1, M.2 M-key x 1	GbE x 2	USB 2.0 x 6 USB 3.2 x 2	4	2	M.2 B-Key x 1, M.2 E-Key x 1	DC 12V	fTPM	0~60°C
MIX-ALND1-A10-N50	Intel® Processor N50	DDR5 SODIMM x 1	Fanless	HDMI x 2, DP x 1	1	SATA III x 1, M.2 M-key x 1	GbE x 2	USB 2.0 x 6 USB 3.2 x 2	4	2	M.2 B-Key x 1, M.2 E-Key x 1	DC 12V	fTPM	0~60°C

Optional Accessories

Part Number	Description
125530060Z	Adapter.60W.180D.W/Lock.FSP060-DHAN3
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)

MIX-ASLD1 PRELIMINARY

Mini-ITX with Intel® Processor N-series



Features

- **Intel® Processor N-series (Next Generation Compatible)**
- **DDR5, 4800MHz, Max 16GB**
- **M.2 2280 M-Key x 1, M.2 2230 E-Key x 1, M.2 3042/52 B-Key x 1 with SIM socket**
- **USB 3.2 x 1, USB 2.0 x 4**
- **SATA 6Gb/s x 1**
- **PoE x 1, 1GbE LAN x 7**
- **Console Port x 1**
- **12V DC-in power**
- **Software Reset Button x 1**
- **OOB Support (Onboard)**
- **DPDK Support**

Giga LAN · HDMI · USB 3.2 Gen 2 · USB 2.0

Specifications

System	
Processor	Intel® Processor N97, 4C, TDP: 12W (compatible with Amston Lake)
Chipset	—
Memory	DDR5 4800MHz SODIMM x 1, Max 16GB (Non-ECC, Un-buffered memory)
I/O Chipset	Nuvoton NCT6126D
Ethernet	PoE x 1 (Intel® Ethernet Controller I210-AT) 1GbE LAN x 7 (LAN Controller: Intel® Ethernet Controller I350-AM4 x 1 + Intel® Ethernet Controller I210-AT x 3)
Audio	—
TPM	Onboard TPM 2.0 (Infineon SLB9672)
Expansion Slots	M.2 3042/3052 B-Key x 1 (PCIe 3.0 x1, USB 3.2) for 5G/LTE M.2 2230 E-Key x 1 (PCIe 3.0 x1, USB 2.0, CNVi) for WiFi/Bluetooth Nano SIM Card x 1 (B-Key, push type)
BIOS	256Mbit Flash ROM, AMI BIOS, UEFI
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Chassis Fan
Wake On LAN/ PXE	Yes (WOL with i210 ports/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Integrated Graphics
Graphics Multi Display	—
VGA	—
DVI	—
HDMI	—
Display Port	Up to 4096 x 2160 @60/30Hz
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	DC 12V x 1, 10A
Operating Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
Certificate	CE & FCC (Class A)
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb. (0.5Kg)
MTBF (Hours)	—

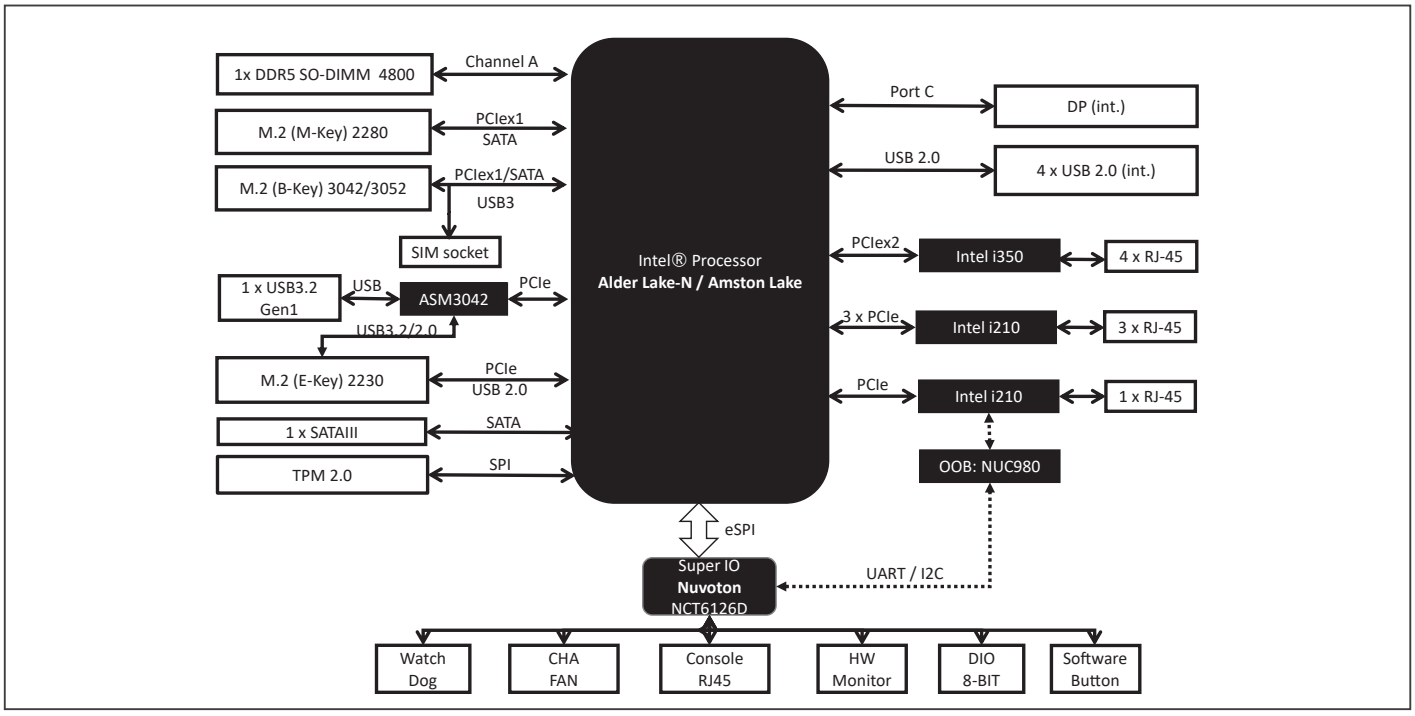
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 x 1 (Vertical)
Display I/O	—
Audio I/O	—
LAN I/O	PoE x 1 (Type 1 IEEE 802.3AT, 30W x 1, for 1G PoE/PSE) RJ-45 LAN x 7 (1G)
Serial Port	—
PS/2 Port	—
Others	Nano SIM Slot x 1, Software Reset Button x 1, Console Port x 1, DC Jack x1
Internal I/O Connectors	
Storage	SATA 6Gb/s x 1 M.2 2280 M-Key slot x 1 (Auto Detect, PCIe [x1] & SATA Mode)
USB	USB 2.0 x 2 (2.54mm pitch, 2x5-pin Header) support for 4 USB 2.0 ports
Display I/O	—
Audio I/O	—
Serial Port	—
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O interface x 1 (In/Out programmable)
FAN	Chassis Fan connectors (4-pin) x 1
Power	—
Others	Chassis Intrusion x 1 AT/ATX Mode Select Jumper x 1 Front Panel Header x 1 Clear CMOS Jumper x 1 Buzzer on Board x 1 1x3-pin ME Lock Header OOB Chip Onboard x 1 (by BOM optional) DP Connector x 1 (Vertical) (by BOM optional) 1x5-pin I2C Header (Reserve) 1x5-pin SMBus Header
OS	
OS Support	Windows® 10 64-bit, Windows® 11 64-bit, Linux Ubuntu 22.04

Packing List

- **MIX-ASLD1**
- **I/O Shield**
- **SATA Cable**
- **SATA Power Cable**

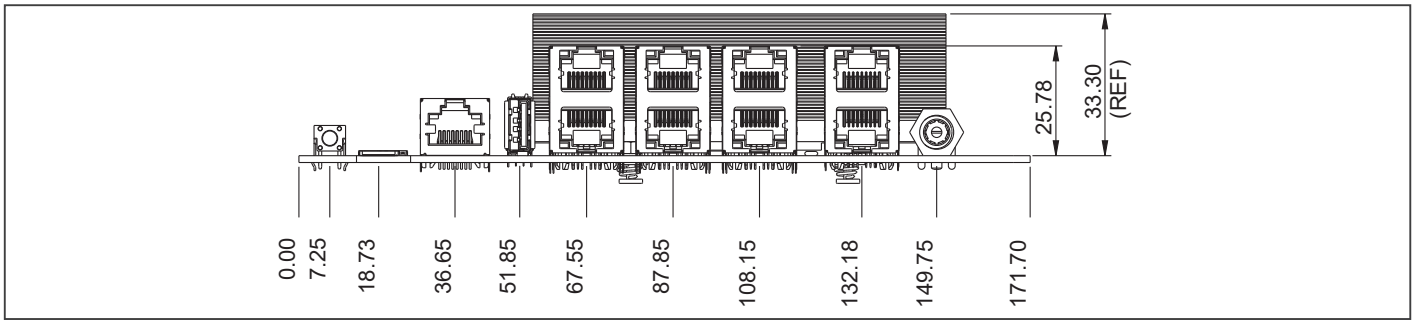
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

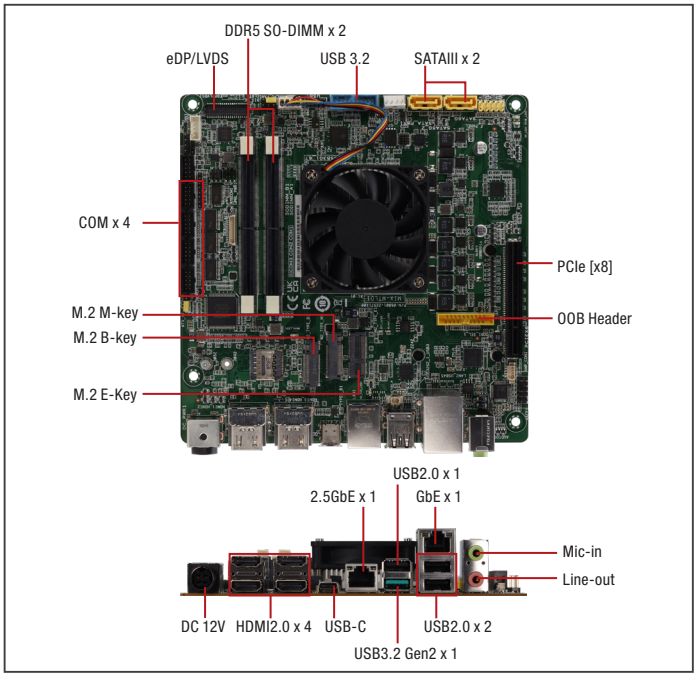
Part Number	CPU	RAM	Fan/Fanless	Display	LVDS/eDP	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-ASLD1-A10	Intel® Processor N97	SODIMM x 1	Fanless	—	—	SATA 6Gb/s x 1 M.2 M-Key x 1	PoE x 1 1GbE LAN x 7	USB 2.0 x 4 USB 3.2 x 1	—	—	M.2 B-Key x 1 M.2 E-Key x 1 Nano SIM Slot x 1	DC 12V	2.0	0°C ~60°C

Optional Accessories

Part Number	Description
1700091805	Console Cable.RJ45 8P(F).to D-SUB 9P(F).180cm

MIX-MTLD1 PRELIMINARY

Mini-ITX with Intel® Core™ Ultra Processor, TDP 15W (U-series)/28W (H-series)



Features

- **Intel® Core™ Ultra processors (H-series & U-series support)**
- **Dual Channel DDR5 Support, 5600MHz, Max 96GB**
- **HDMI 2.0 x 4**
- **M.2 3042/52 B-Key x 1, M.2 2230 E-Key x 1, M.2 2280 M-Key x 1**
- **USB 2.0 x 5, USB 3.2 x 3**
- **USB 3.2 Gen 1 (Type-C) x 1**
- **Intel® Ethernet Controller I210-AT x 1, Intel® Ethernet Controller I226-V x 1**
- **SATA 6Gb/s x 2**
- **12V DC-in power**
- **PCIe [x8] x 1 (SKU dependent)**
- **OOB Module Support: MOD-RMB (via i210-AT)**

Giga LAN · HDMI · USB 3.2 Gen 2 · USB 2.0

Specifications

System	
Processor	Intel® Core™ Ultra processors (H-series & U-series support) TDP: 15W (U-series)/28W (H-series)
Chipset	—
Memory	Dual Channel DDR5 5600MHz SODIMM x 2, Max 96GB
I/O Chipset	NCT6126D
Ethernet	Intel® Ethernet Controller I210-AT x 1 Intel® Ethernet Controller I226-V x 1
Audio	Realtek® ALC897
TPM	Onboard TPM 2.0
Expansion Slots	M.2 2230 E-Key x 1 (one pair PCIe [x1], USB 2.0, CNVi) M.2 3042/52 B-Key x 1 (PCIe [x1], USB 3.2 Gen 1) with Nano SIM socket (Default 3052 by BOM) PCIe Gen 5 [x8], H-series only; Open edge
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 Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S4, S5
Graphics	
Graphics Chipset	Intel® Xe-LPG Graphics
Graphics Multi Display	Quad Display
VGA	—
DVI	—
HDMI	HDMI 2.0, up to 4096 x 2160 @60Hz, with Digital Audio
Display Port	—
LVDS	Dual-Channel 18/24 bit, up to 1920 x 1080 @60Hxz (Co-layout eDP header; default: LVDS)
eDP	Up to 4096 x 2160 @60Hz (4ch; Co-layout LVDS by BOM optional)
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12V ±5%
Operating Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Certificate	CE & FCC (Class A)
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb. (0.5Kg)
MTBF (Hours)	—

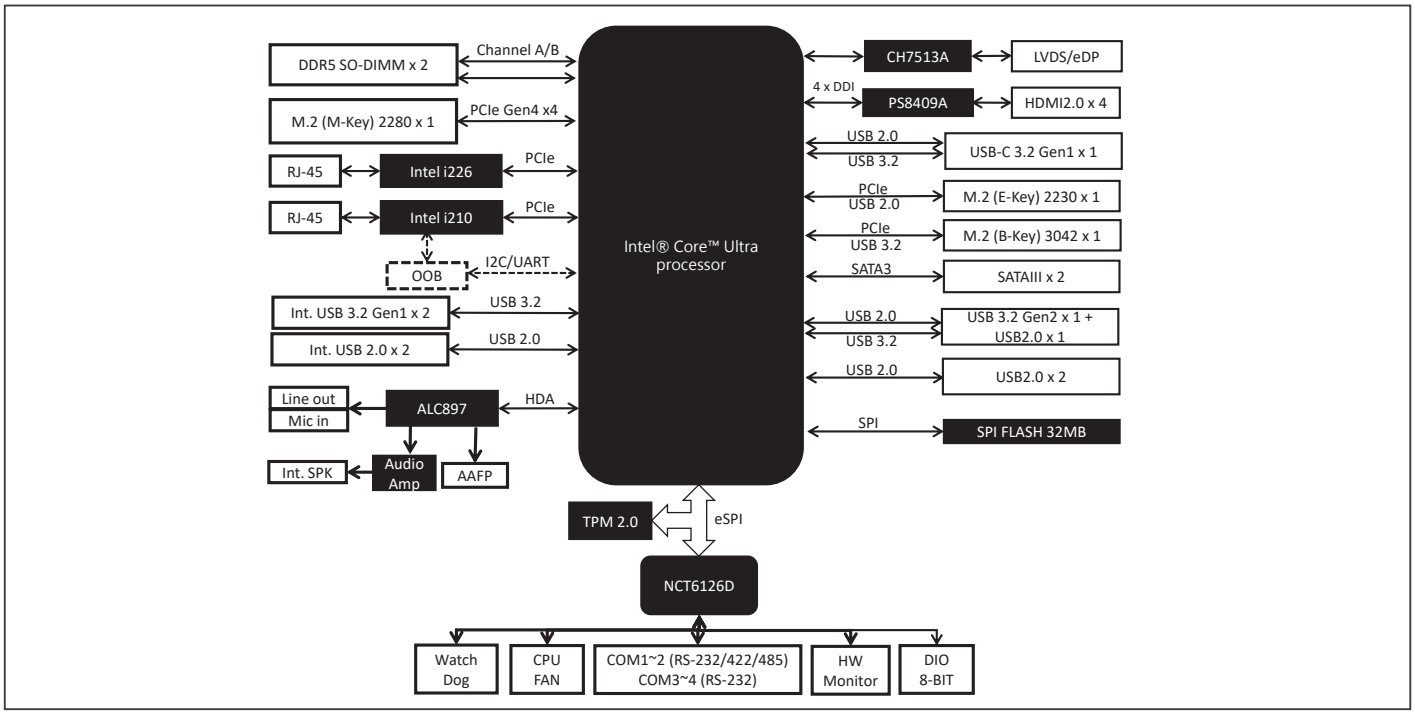
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 (Type-A) x 1 USB 2.0 x 3 USB 3.2 Gen 1 (Type-C) x 1 (5Gbps)
Display I/O	HDMI 2.0 x 4
Audio I/O	Line-out x 1, MIC-in x 1
LAN I/O	RJ-45 LAN Port x 2
Serial Port	—
PS/2 Port	—
Others	2x4-pin DC-in connector x 1
Internal I/O Connectors	
Storage	SATA 6Gb/s x 2 with SATA power Connector x 1 (2A), RAID 0,1 support M.2 2280 M-Key x 1 (PCIe Gen 4 [x4], NVMe)
USB	USB 3.2 Gen 1 x 1 (2x10-pin, 2.0mm Header) additional 2 USB port interface USB 2.0 x 1 (2x5-pin, 2.00mm Header) additional 2 USB port interface
Display I/O	LVDS/eDP Header x 1
Audio I/O	Pin header (1x4-pin) Support 2W/4ohm x 1
Serial Port	Box Header x 1 for RS-232/422/485 Box Header x 3 for RS-232
PS/2 Port	—
Parallel Port	—
DIO	8-bit programmable (4-in/4-out) x 1
FAN	4-pin CPU Fan connector x 1
Power	2x4-pin DC-in 12V (-5% ~ +5%) x 1
Others	Clear CMOS Jumper x 1 Front Panel Connector x 1 Buzzer Header x 1 ATX/AT Mode Select x 1 ME Disable x 1 eDP/LVDS Tcon IC Voltage Select x 1 eDP/LVDS Panel Backlight Voltage Select x 1 SATA PWR Connector x 1 LVDS Inverter Connector x 1 1x3-pin ME Lock Header NCSI Header x 1 for OOB Module: MOD-RMB (via Intel® Ethernet Controller I210-AT)
OS	
OS Support	Windows® 10 64-bit, Windows® 11 64-bit, Ubuntu 24.04, Kernel 6.8

Packing List

- **MIX-MTLD1**
- **I/O Shield**
- **SATA Cable**
- **SATA Power Cable**

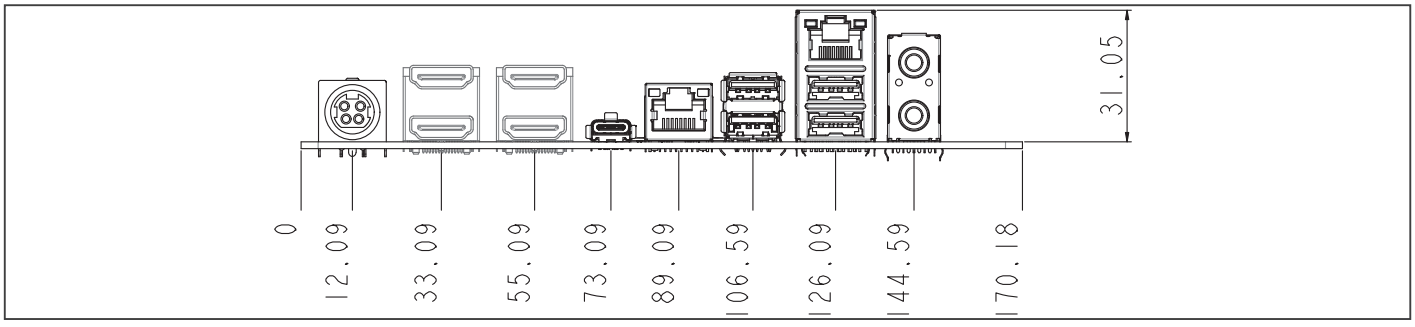
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

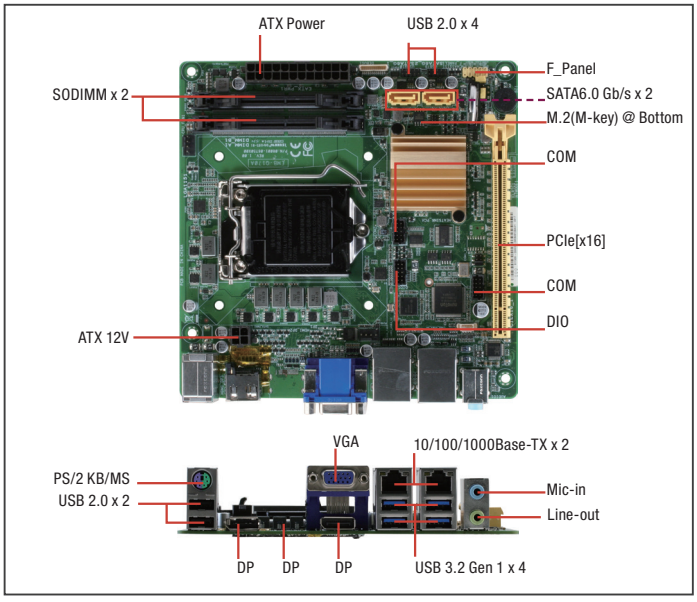
Part Number	CPU	RAM	Fan/Fanless	Display	LVDS/eDP	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MIX-MTLD1-A10-125H	125H	SODIMM x 2	Fan	HDMI x 4 LVDS/eDP x 1	1	SATA 6Gb/s x 2 M.2 M-Key	2.5GbE x 1 1GbE x 1	USB 2.0 x 5 USB 3.2 x 3 USB 3.2 Type-C x 1	3	1	M.2 E-Key x 1 M.2 B-Key x 1 PCIe[x8] x 1	12V	2.0	0°C ~60°C

Optional Accessories

Part Number	Description
1701100206	COM Cable (200MM, p=2.00mm)
1709100201	USB 2.0 Cable (10P, 200mm, p=2.00mm, w/bracket)
1700100491	USB 2.0 Cable (10P, 490mm, p=2.00mm)
AP-PS1255X00103	AC/DC Adapter (100~240V.150W.12.5A.output 12V,DIN 4 pin)

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 Typical Voltage/Current(A) requirement:+3.3V/2.57A;+5V/2.19A;+12V/5.93A;+5VSB/3.65A
Operating Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

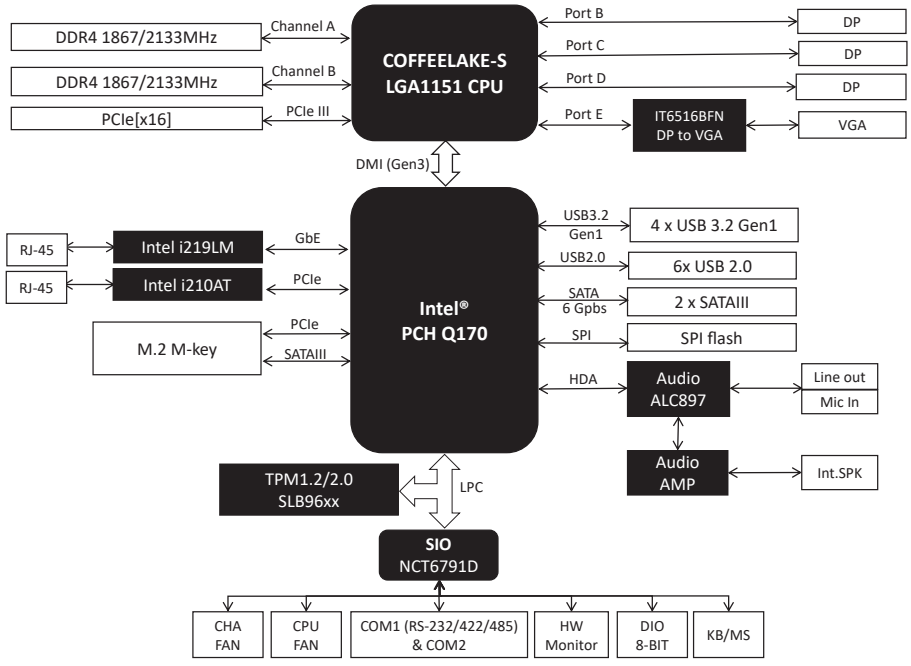
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in1)
- **I/O Shield**
- **EMB-Q170A**

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)

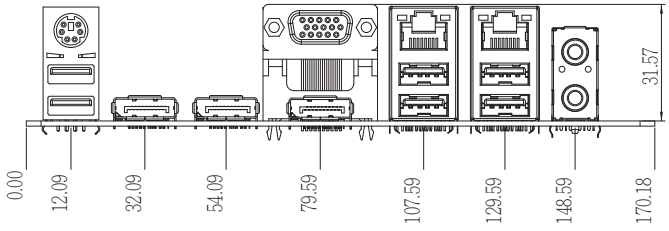
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

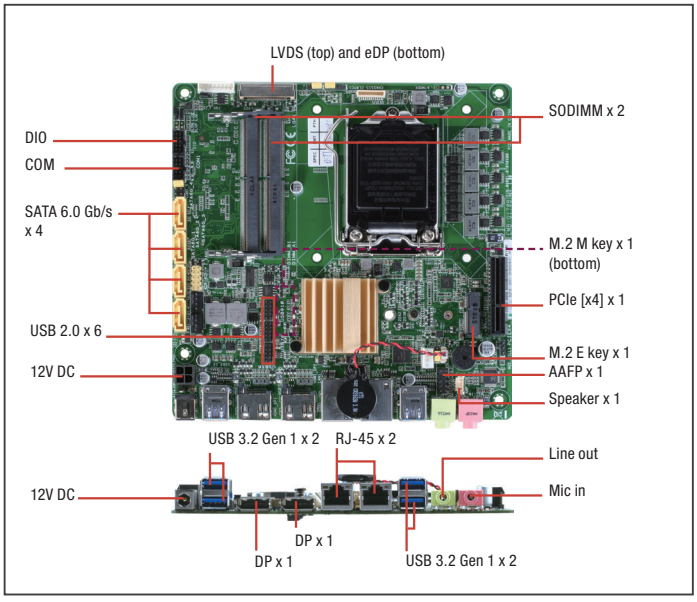


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-Q170A-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

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

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 Power consumption: [Typical: 80W]
Operating Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

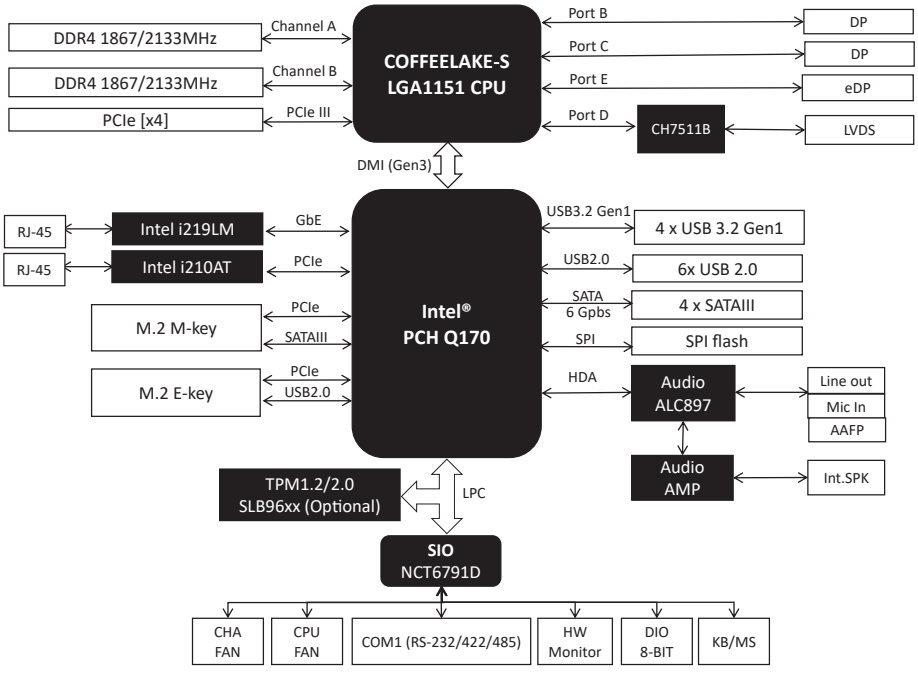
- SATA Cable
- SATA Power Cable
- I/O Shield
- EMB-Q170B

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)

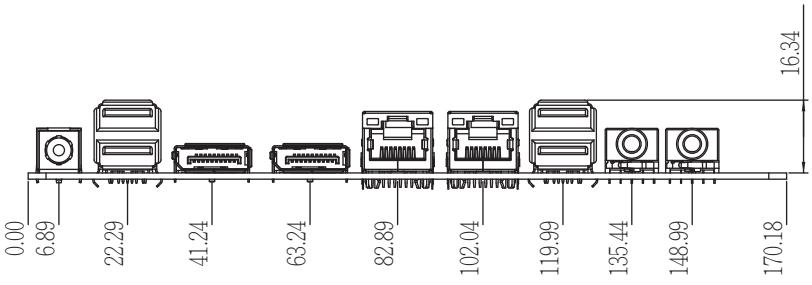
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

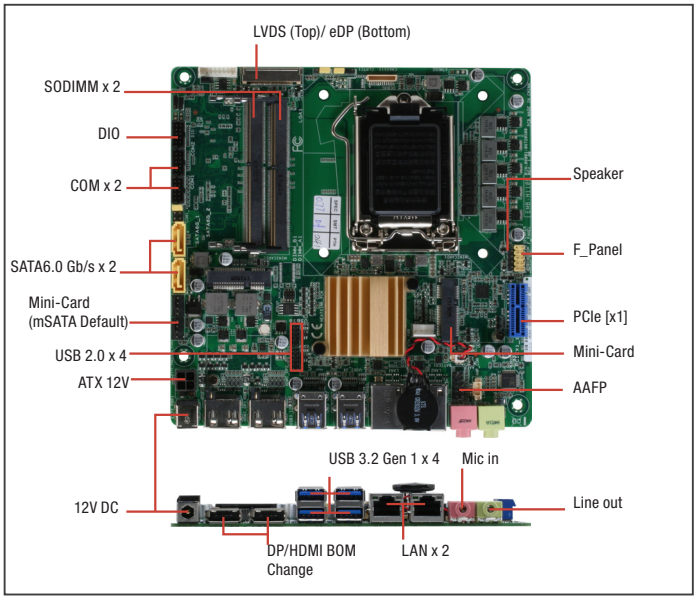


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-Q170B-A12-K	Socket	SODIMM x 2	Fan	LVDS, eDP, DP	SATA3 x 4, M.2 (M-key)	Daul Channel 18/24 bit	GbE x 2	USB 3.2 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

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 Power consumption: [Typical: 100W]
Operating Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

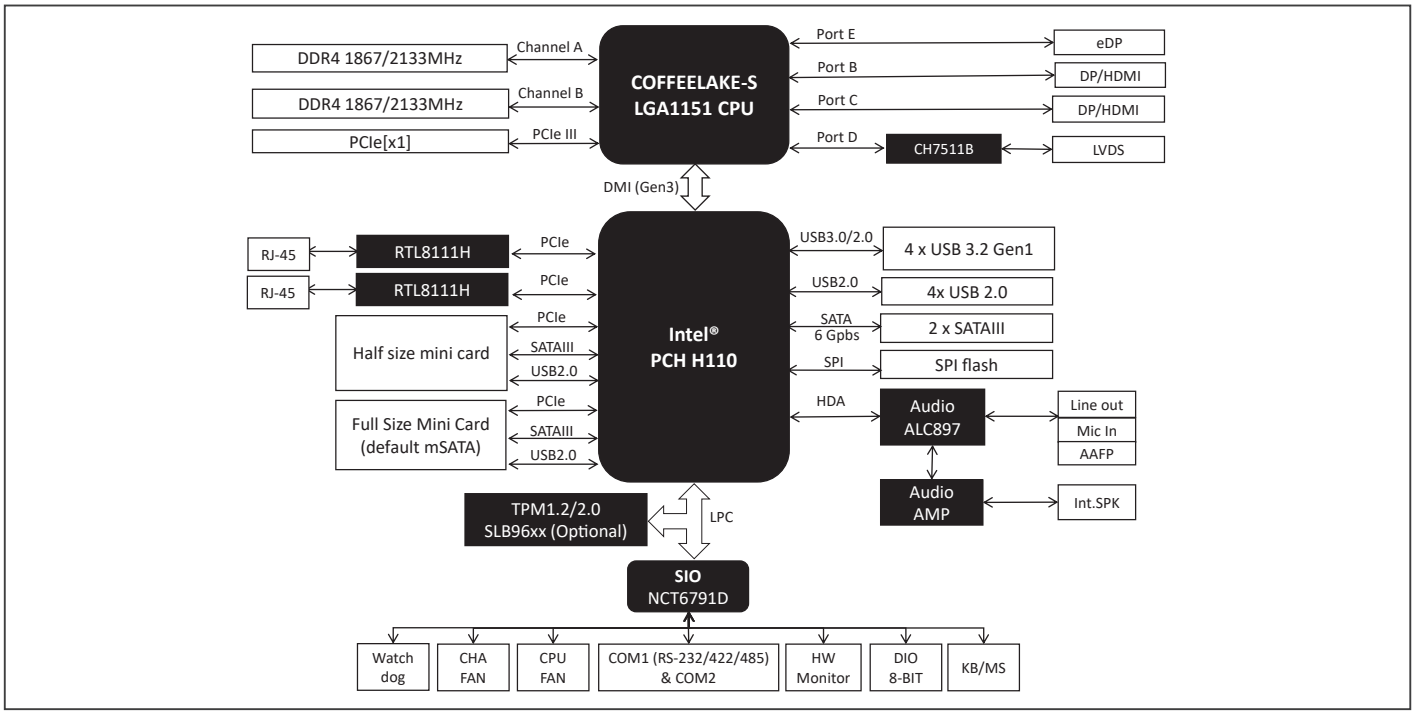
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in1)
- **14001-00230100**
  SATA to Power Cable (4P, 120MM)
- **I/O Shield**
- **EMB-H110B**

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)

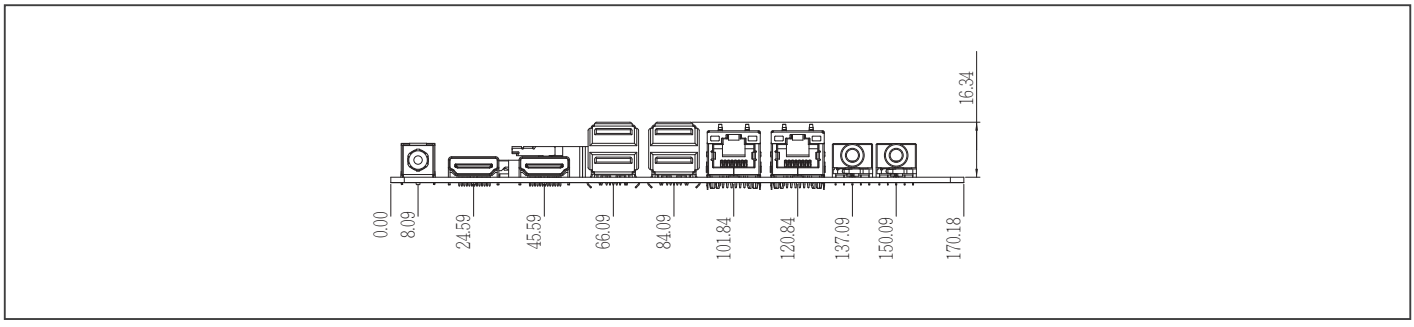
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

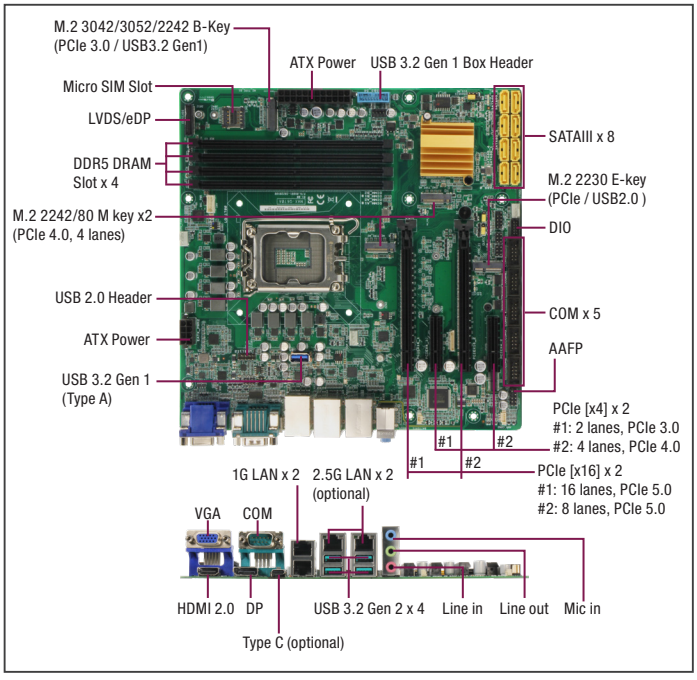


Ordering Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-H110B-A15-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-Q670A

Micro-ATX with 12th/13th/14th Generation Intel® Core™ LGA1700 Socket Processors, TDP Max. 125W



Features

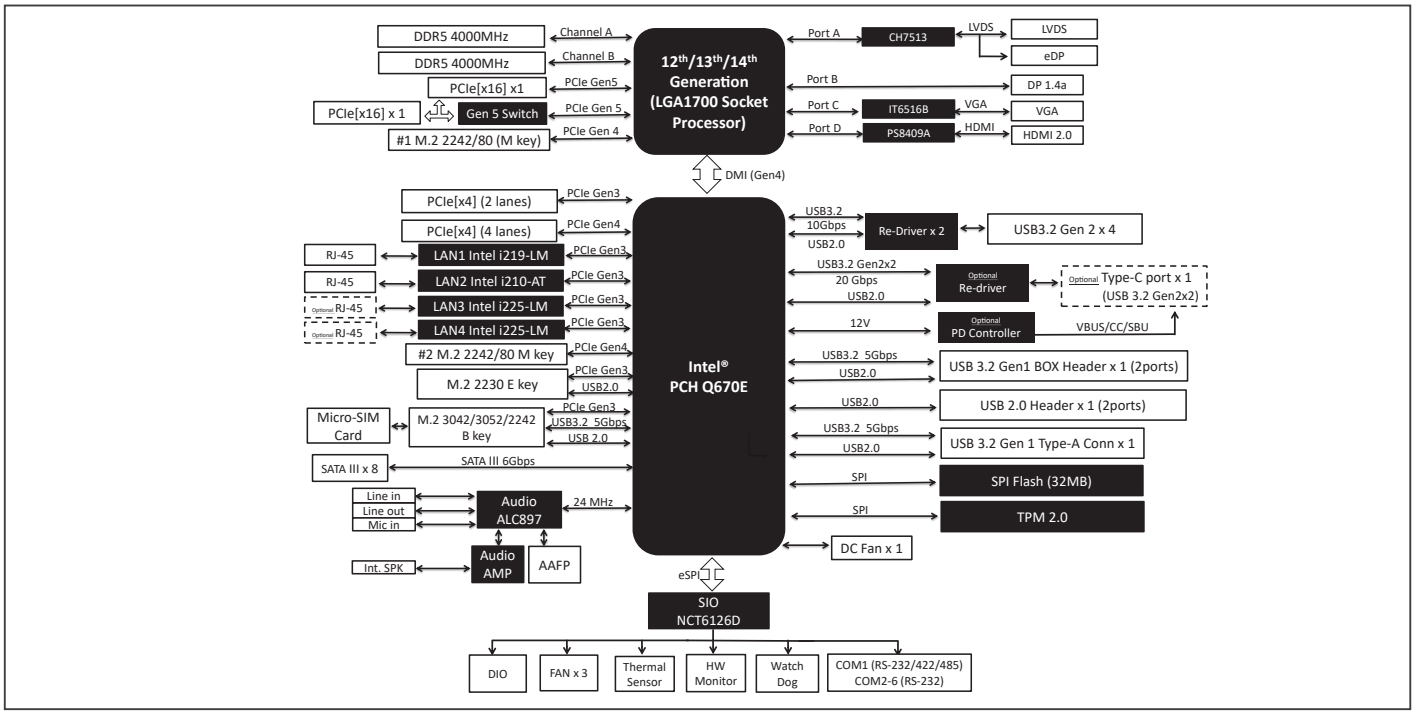
- 12th/13th/14th Generation Intel® Core™ LGA1700 Socket Processors
- DDR5 4000MHz U-DIMM x 4, up to 128GB
- Four Independent Displays: HDMI 2.0 x 1, DP x 1, VGA x 1, LVDS/eDP x 1
- GbE LAN x2 (Optional: Additional 2.5GbE LAN x 2, Intel® I225-LM)
- M.2 2242/2280 M-Key x 2, M.2 3042/3052/2242 B-Key + Micro SIM Slot, M.2 2230 E-Key x 1
- USB 3.2 Gen 2 x 4, USB 3.2 Gen 1 x 3, USB 2.0 x 2 (Optional: USB Type-C x 1)
- SATA x 8
- Switchable USB Power feature for USB device reset
- Bootable feature in rear USB Port for enhanced security
- Onboard TPM 2.0

Specifications

System	
Processor	12th/13th/14th Generation Intel® Core™ LGA1700 Socket Processors (formerly Alder Lake/Raptor Lake), TDP Max 125W
Chipset	Intel® Q670 Express Chipset
Memory	DDR5 4000MHz DIMM x 4, Up to 128GB Non-ECC, Un-buffered Memory, Dual-Channel Memory Architecture
I/O Chipset	NCT6126D
Ethernet	RJ-45 GbE LAN x 1 (Intel® PHY I219-LM, supports Intel® AMT 12.0) RJ-45 GbE LAN x 1 (Intel® I210-AT) RJ-45 2.5GbE LAN x 2 (Intel® I225-LM, Optional)
Audio	Realtek ALC897 6-Channel High Definition Audio CODEC
TPM	TPM 2.0 onboard
Expansion Slots	PCIe Gen 5 [x16] x 1 (8 Lanes/8 Lanes when dual-use PCIe [x16] slot) PCIe Gen 3 [x4] x 1 (2 Lanes, Open Slot) PCIe Gen 5 [x16] x 1 (8 Lanes) PCIe Gen 4 [x4] x 1 (4 Lanes) M.2 3042/3052/2242 B-Key x 1 (PCIe 3.0 [x1]/USB 3.2 Gen 1) + Micro SIM Slot x 1 M.2 2230 E-Key x 1 (PCIe 3.0 [x1]/USB 2.0)
BIOS	256 Mbit 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 x 1/Chassis Fan x 2 (3rd Chassis Fan is DC Fan)
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 + LVDS/eDP
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	HDMI 2.0 x 1, up to 4096 x 2160 @60/30 Hz, with Digital Audio
Display Port	DP 1.4 x 1, up to 4096 x 2160 @24 Hz or 3840 x 2160 @60 Hz, with Digital Audio
LVDS	18/24-bit Dual-Channel LVDS x 1, up to 1920 x 1080 @60 Hz
eDP	eDP x 1, up to 3840 x 2160 @30 Hz
Backlight Control	Yes
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin 12V ATX Power Connector x 1 [Voltage/Current(A) requirement:+3.3V/1.4A;+5V/10.55A;+12V/13.89A;+5VSB/0.24A]
Operating Temperature	32°F ~ 140°F(0 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
Certificate	CE & FCC Class A
Form Factor	Micro-ATX Form Factor, 9.6" x 9.6" (244mm x 244mm)
Weight	1.76 lb. (0.8Kg)
MTBF (Hours)	267,950
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 x 4 (10Gbps) USB Type-C x 1 (Optional, 20Gbps, 5V, 3A) (All ports are bootable, can be deactivated per BIOS function; USB Power switchable feature)
Display I/O	HDMI 2.0 x 1, VGA x 1, DP 1.4 x 1
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	RJ-45 LAN x 2 (Optional: RJ-45 x 4)
Serial Port	DB-9 x 1 (Supports RS-232/422/485, 5V/12V/RI)
PS/2 Port	—
Others	—
Internal I/O Connectors	
Storage	SATA III x 8, supports RAID 0, 1, 5, 10 M.2 2242/2280 M-Key x 2 (PCIe Gen 4.0, 4 Lanes, supports RAID 0, 1, 5, 10)
USB	USB 3.2 x 1 (2x5P 2.54mm Pitch Box Header, supports USB 3.2 Gen 1 x 2) USB 2.0 Header x 1 (2x5P 2.54mm Pitch Box Header, supports USB 2.0 x 2) USB 3.2 Gen 1 x 1 (Type-A, vertical) (All Headers support USB Power switchable feature)
Display I/O	—
Audio I/O	Speaker header x 1 (Line-out), AAFP x 1
Serial Port	RS-232 x 5 (via 1x9P Header)
PS/2 Port	—
Parallel Port	—
DIO	8-bit Digital I/O Interface x 1
FAN	4-pin CPU Fan Connector x 1 (PWM Mode) 4-pin Chassis Fan connector x 2 (PWM Mode) 3-pin Chassis Fan connector x 1 (DC Mode)
Power	—
Others	Chassis Intrusion x 1 AT/ATX Mode Select Jumper x 1 Front Panel Header x 1 Clear CMOS Jumper x 1 Onboard Buzzer x 1 3-pin ME Lock Header x 1 LED Header for Ethernet x 2 (Optional: LED Header x 4 when RJ-45 x 4)
OS	
OS Support	Windows® 10 64-bit, Windows® 11 64-bit

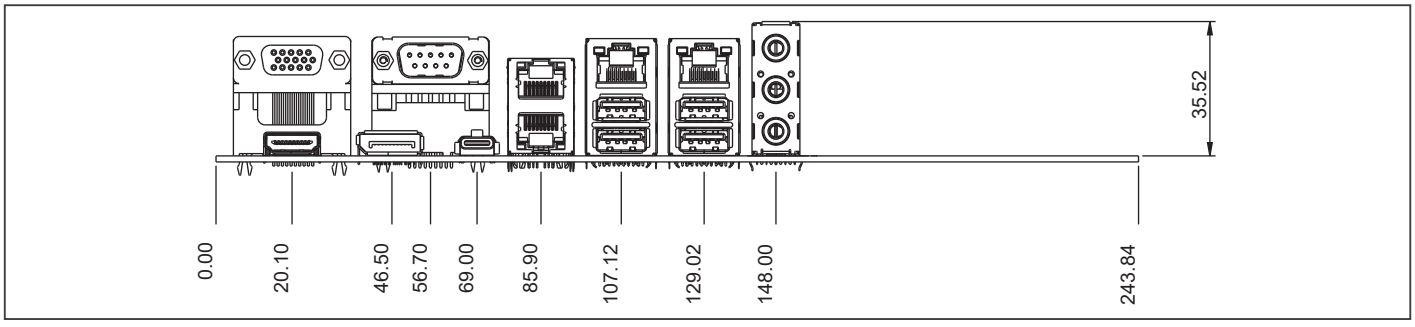
Note: All specifications are subject to change without notice.

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.
MAX-Q670A-A10-2L	LGA1700 Socket	DDR5 4000MHz	Fan	HDMI x 1 DP x 1 VGA x 1	SATA III x 8 M.2 2242/80 M-Key x 2	LVDS/eDP x 1	Intel® GbE x 2	USB 3.2 Gen 2 x 4 USB 3.0 Header x 1 USB 2.0 Header x 1 USB 3.2 Gen 1 x 1 (Type-A, Vertical)	5	1	PCIe [x16] x 2 PCIe [x4] x 2 M.2 3042/3052/2242 B-Key x 1 Micro SIM Card Slot x 1 M.2 2230 E-Key x 1	ATX	Onboard TPM 2.0	32°F ~ 140°F (0°C ~ 60°C)
MAX-Q670A-A10-4LC	LGA1700 Socket	DDR5 4000MHz	Fan	HDMI x 1 DP x 1 VGA x 1	SATA III x 8 M.2 2242/80 M-Key x 2	LVDS/eDP x 1	Intel® GbE x 4	USB 3.2 Gen 2 x 4 Type C x 1 USB 3.0 Header x 1 USB 2.0 Header x 1 USB 3.2 Gen 1 x 1 (Type-A, Vertical)	5	1	PCIe [x16] x 2 PCIe [x4] x 2 M.2 3042/3052/2242 B-Key x 1 Micro SIM Card Slot x 1 M.2 2230 E-Key x 1	ATX	Onboard TPM 2.0	32°F ~ 140°F (0°C ~ 60°C)

Optional Accessories

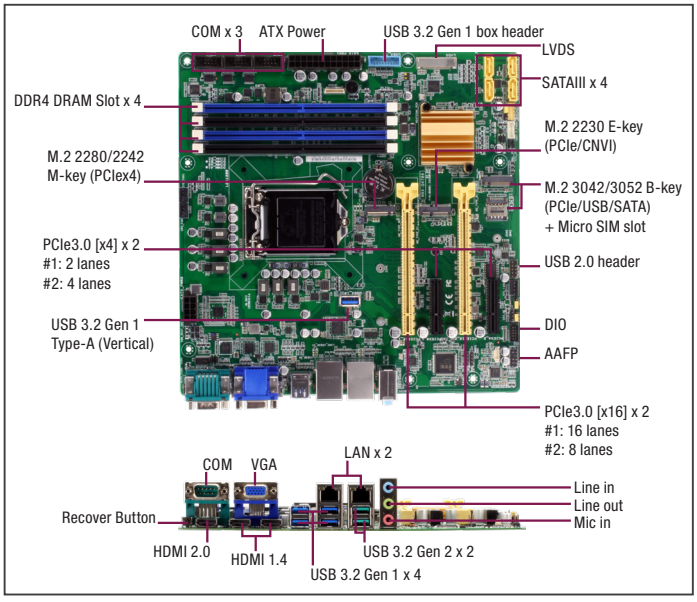
Part Number	Description
1709100330	USB 2.0 Cable (9P, 330mm, p=2.54mm, w/ Bracket)
170910020K	USB 2.0 cable (9P, 200mm, p=2.54mm, w/o Bracket)
1700190450	USB 3.2 Gen 1 Cable (19P, 450mm, w/ Bracket)
AP-FNTH11700020	1U CPU cooler for LGA1700,TDP Max. 125W, 5400RPM
AP-FNTH11700030	2U CPU cooler for LGA1700,TDP Max 125W, 8400RPM

Packing List

- **MAX-Q670A**
- **SATA Cable**
- **COM Cable**
- **I/O Shield**

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**

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

Specifications

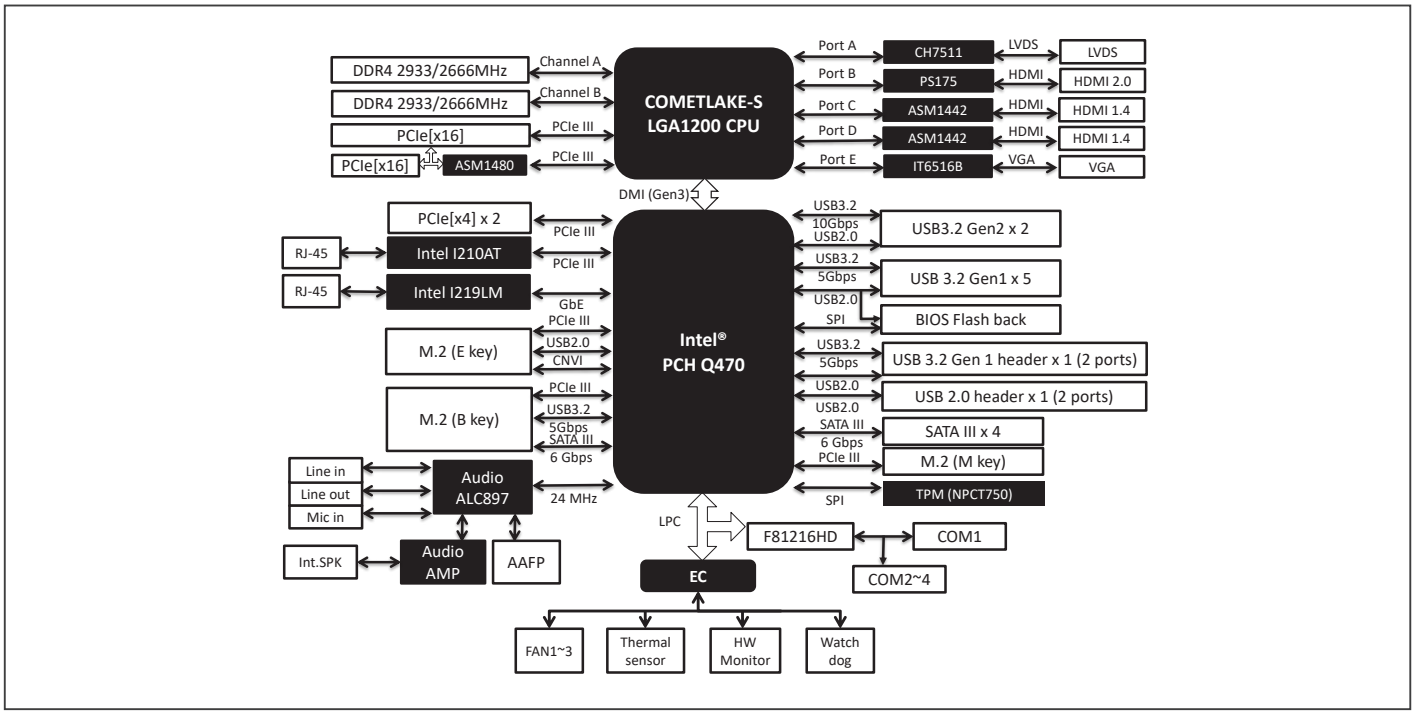
System	
Processor	Intel® 10th Generation (Comet Lake-S) Core™ i9 /i7/ i5 /i3, Pentium 14nm LGA 1200 socket Processor, Max. 10 Core 80W
Chipset	Intel® Q470E Express Chipset
Memory	DIMM x 4, DDR4 (2933/2666/2400 MHz, max. 128GB) non-ECC, un-buffered memory Dual channel memory architecture
I/O Chipset	IT5121E + 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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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**

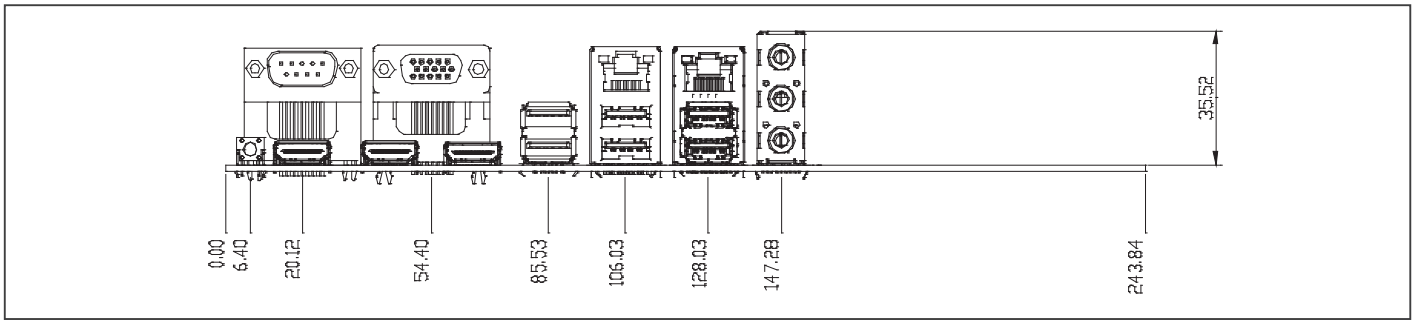
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

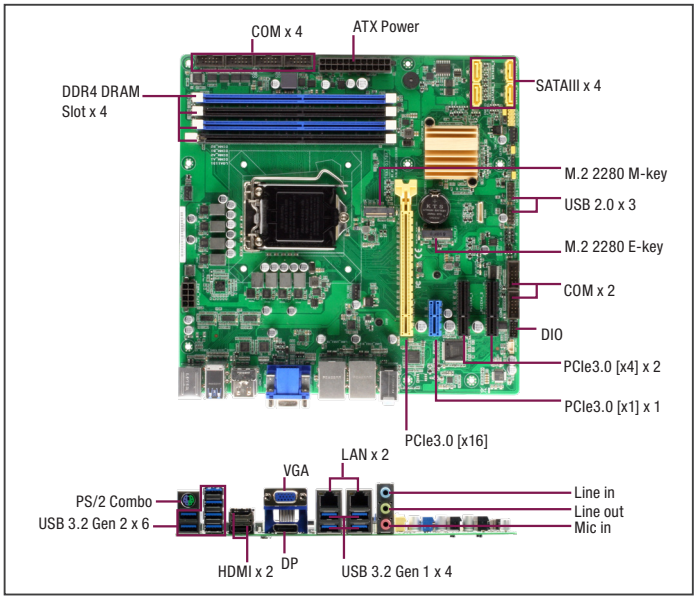
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/ 422/485	Expansion Slot	Power	TPM	Temp.
MAX-Q470A-A11-210	LGA 1200 socket	DDR4 2933/2666/2400	Fan	HDMI x 3, VGA x 1, LVDS x 1	1	SATA3 x 4, M.2 2280/2242 M-key (PCIex4) x 1	Intel®GbE x 2	USB 3.2 Gen2 x 2, USB 3.2 Gen1 x 4, USB 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**

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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

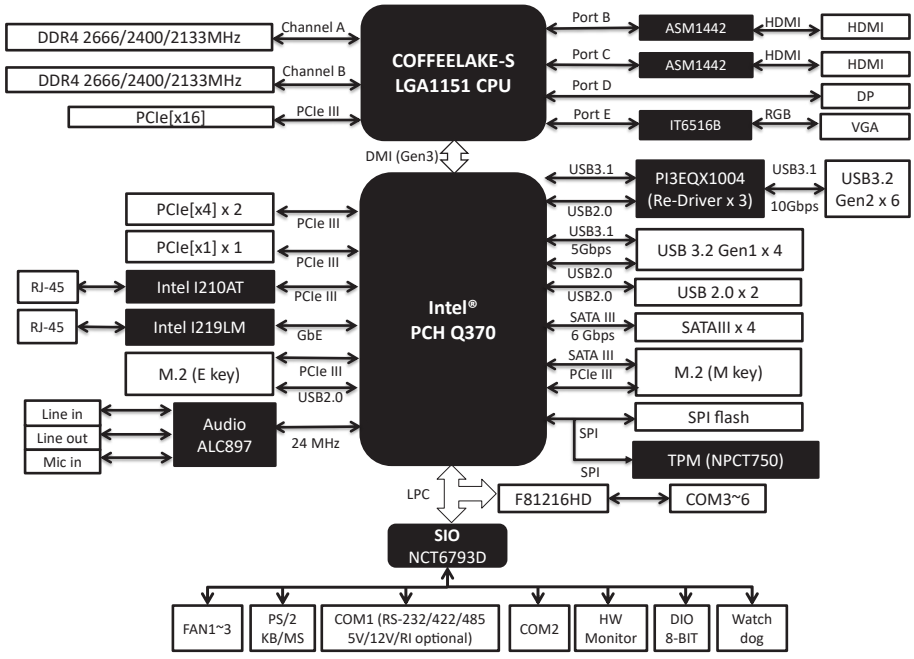
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 ports (10 Gbps) x 6, USB 3.2 Gen 1 ports (5 Gbps) x 4
Display I/O	DP x 1, VGA x 1, HDMI x 2
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2
Serial Port	—
PS/2 Port	PS/2 combo Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
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**

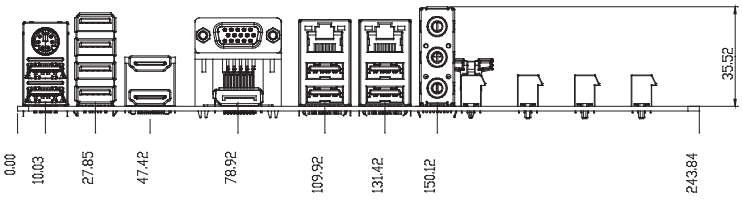
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

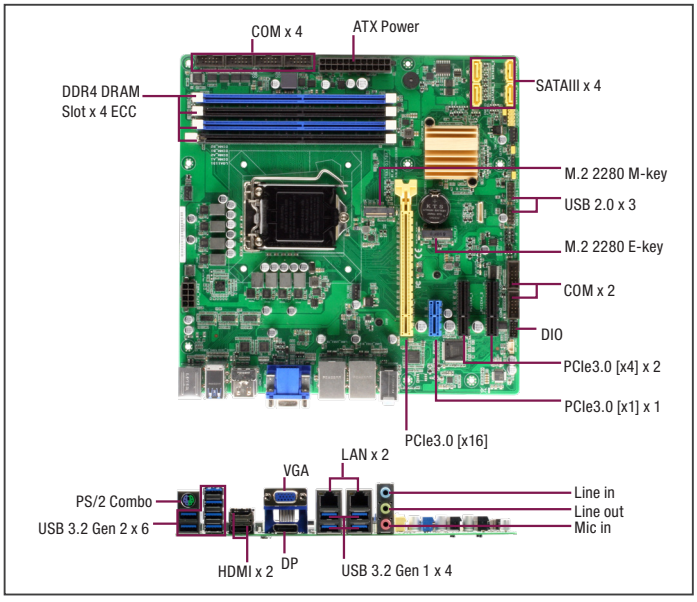
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MAX-Q370A-A20-210	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 2 VGA x 1 DP x 1	—	SATA3 x 4 M.2 2280 M-key x 1	Intel®GbE x 2	USB 3.2 Gen 2 x 6 USB 3.2 Gen 1 x 4 USB 2.0 x 3	5	1	PCIe[x16] 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-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**

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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
Certificate	CE & FCC Class A

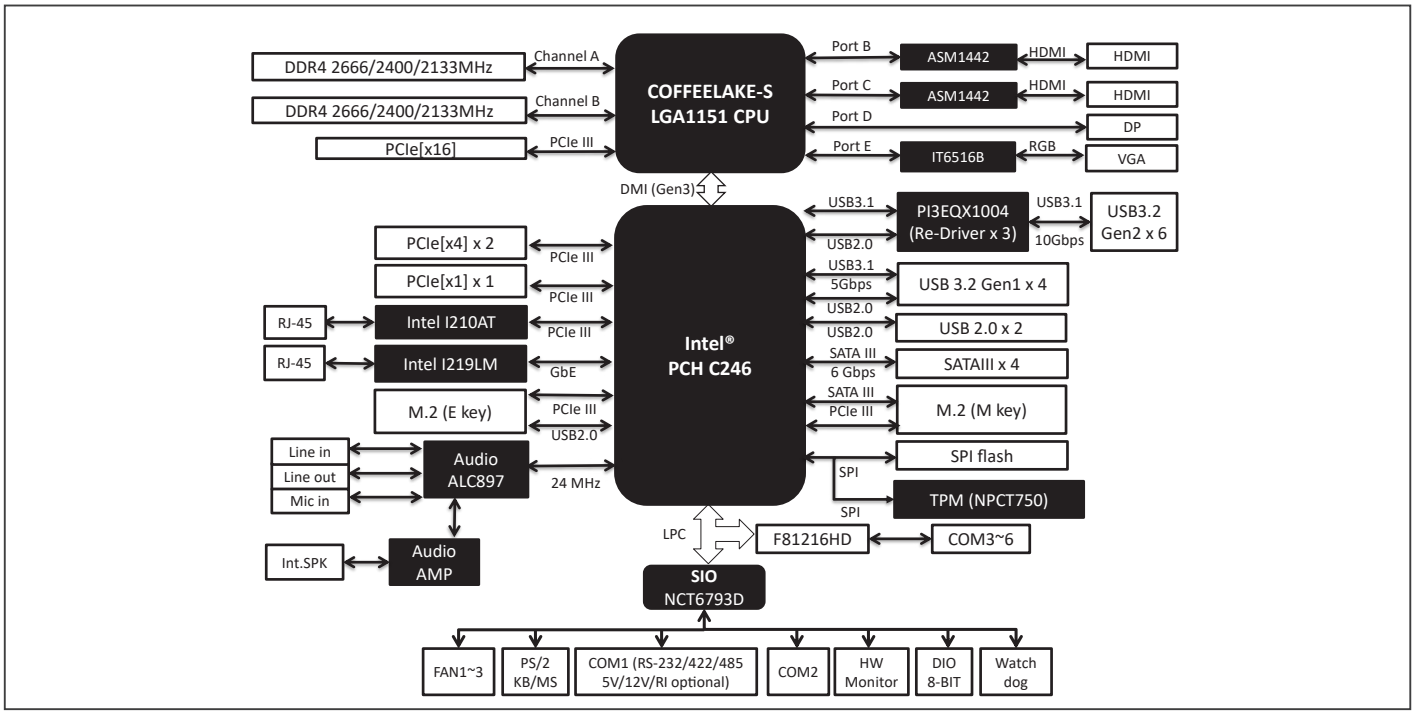
Form Factor	Micro-ATX Form Factor, 9.6"x9.6" (244mmx244mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	264,820
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 ports (10 Gbps) x 6, USB 3.2 Gen 1 ports (5 Gbps) x 4
Display I/O	DP x 1, VGA x 1, HDMI x 2
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) 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**

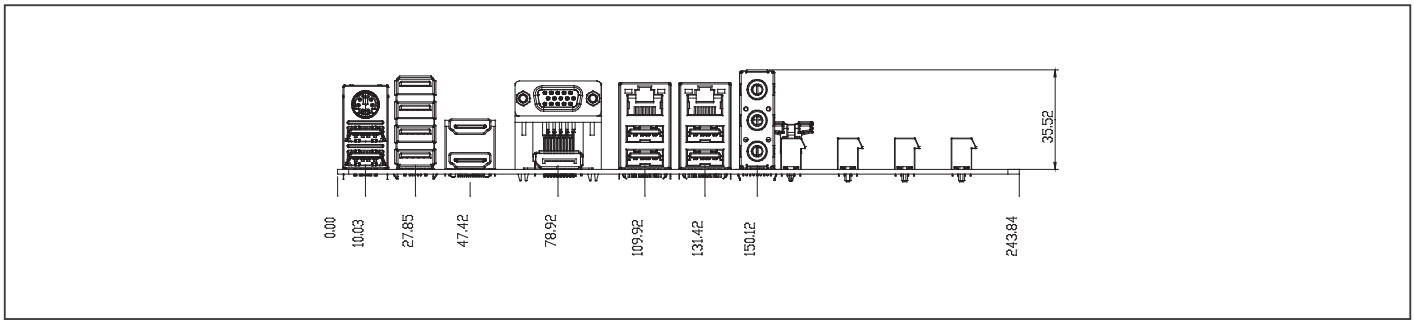
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

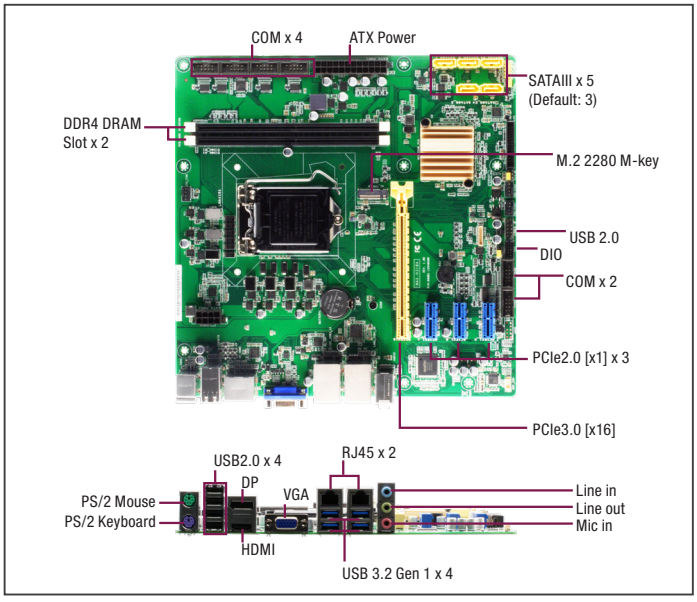
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.	Others
MAX-C246A-A20-210	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 2 VGA x 1 DP x 1	—	SATA3 x 4, M.2 2280 M-key x 1	Intel®GbE x 2 (I219LM+I210AT)	USB 3.2 Gen 2 x 6 USB 3.2 Gen 1 x 4 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)	Audio AMP IC EUA2012
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 (I219LM+I210AT)	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)	Audio AMP IC EUA2075

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

Specifications

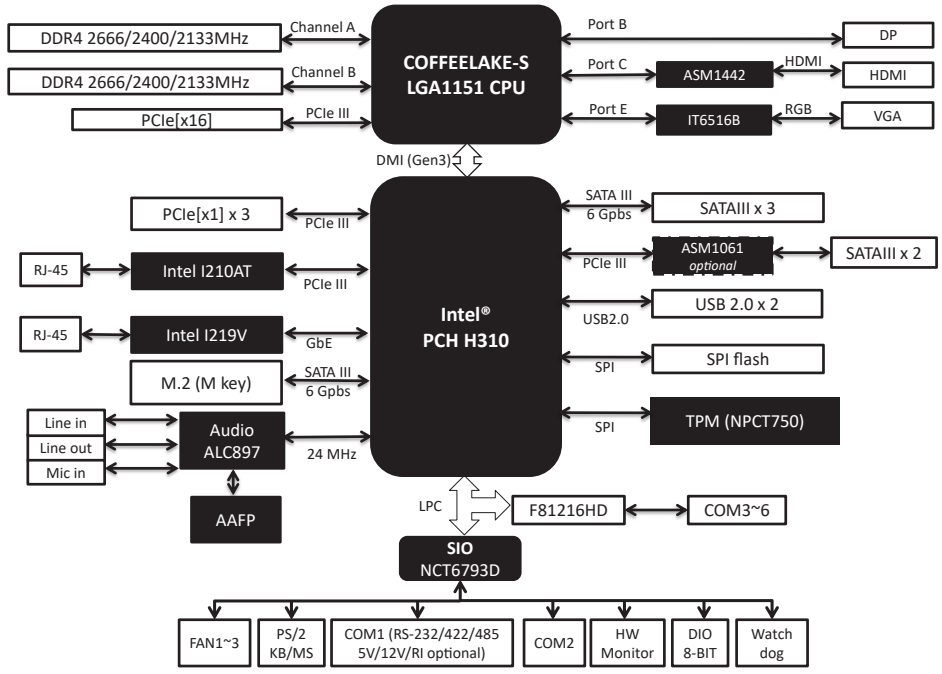
System	
Processor	8th/9th Generation Intel® (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5 /i3, Pentium 14nm LGA 1151 socket Processor
Chipset	Intel® H310 Express Chipset
Memory	DIMM x 2, DDR4 (2666/2400/2133 MHz, max. 64GB) non-ECC, un-buffered memory Dual-channel memory architecture
I/O Chipset	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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

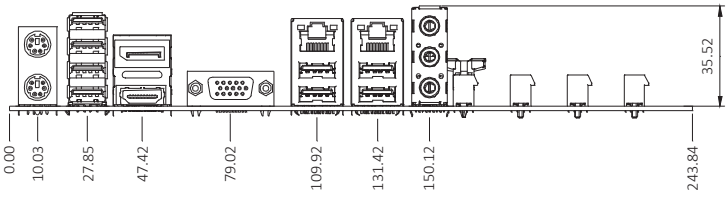
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

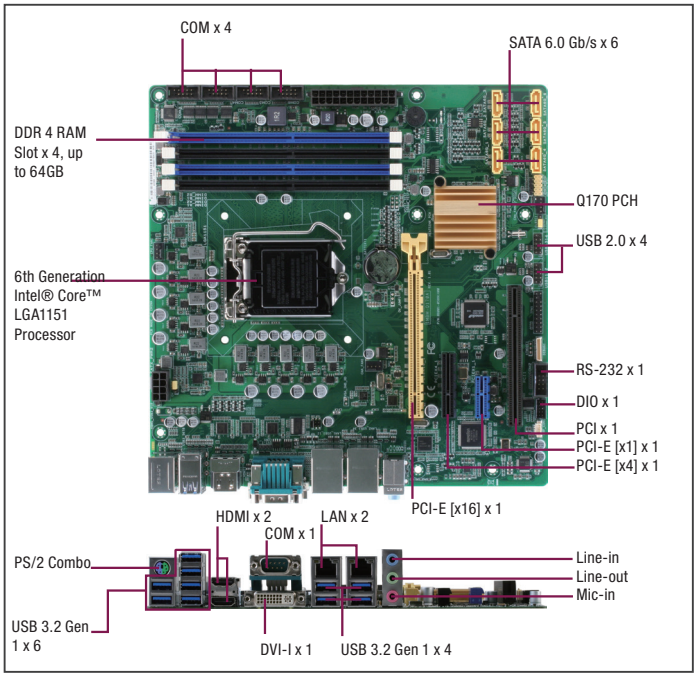
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
MAX-H310A-A11-210	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 1 VGA x 1 DP x 1	—	SATA3 x 3 M.2 2280 M-key (SATA) x 1	Intel®GbE x 2	USB 3.2 Gen 1 x 4 USB 2.0 x 6	5	1	PCIe[x16] x 1 PCIe[x1] 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

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

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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
Certificate	CE & FCC Class A
Form Factor	Micro-ATX Form Factor, 9.6" x 9.6" (244mm x 244mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	193,470

Packing List

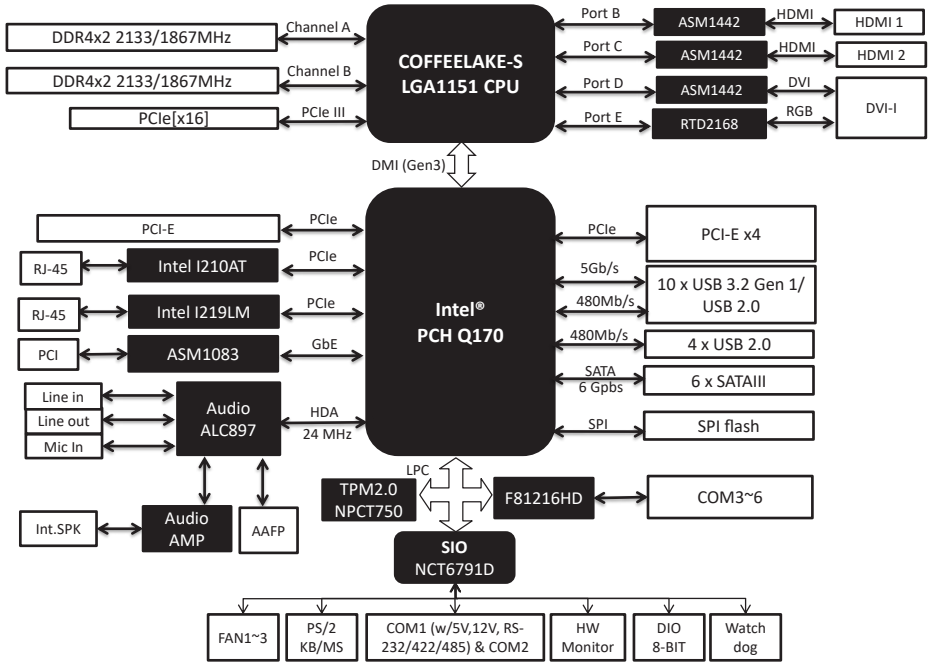
- **14001-00630100**
  SATA 6G Cable (7P, 180; 90, 500mm 2 in 1)
- **14001-00400100**
  COM Port Cable (9P, 260mm, p=2.54mm w/bracket)
- **I/O Shield**
- **IMBM-Q170A**

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)

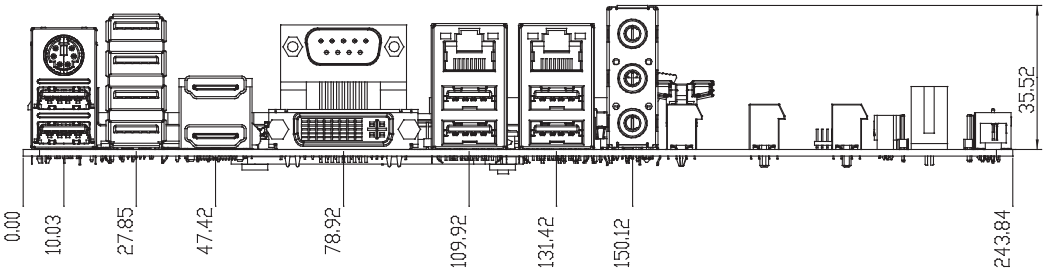
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm

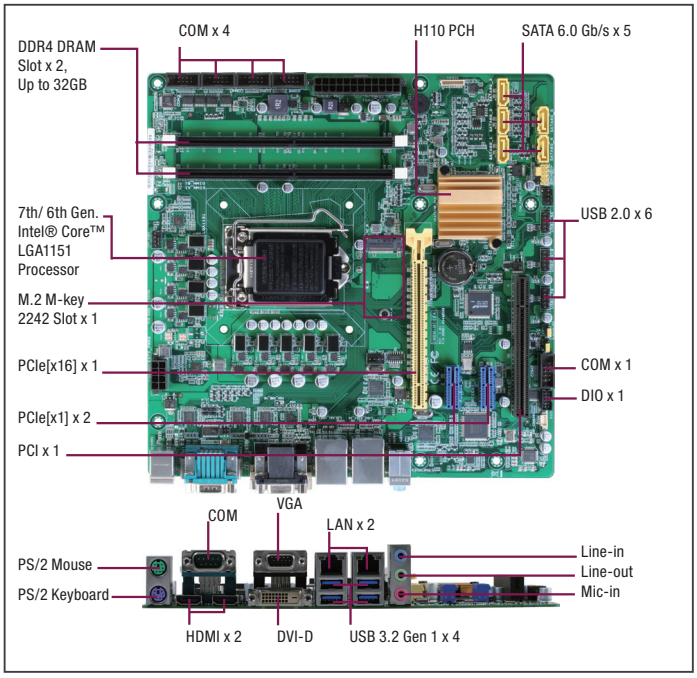


Ordering Information

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 · DDR4 · 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	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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

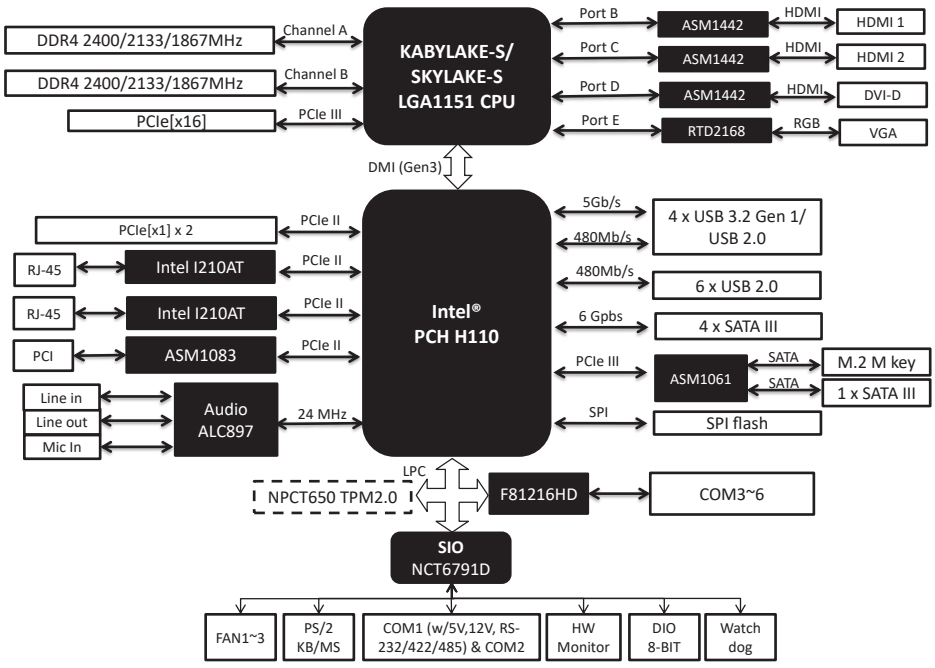
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 x 4
Display I/O	HDMI x 2, VGA x 1, DVI-D x 1
Audio I/O	Line-in, Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	DB-9 COM x 1 (supports RS-232/422/485)
PS/2 Port	Stack Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA 6.0Gb/s x 5, M.2 M key (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**

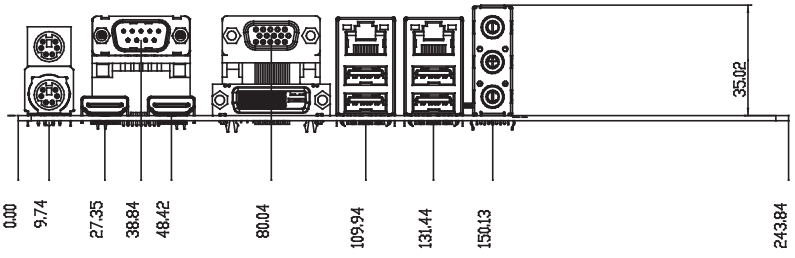
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

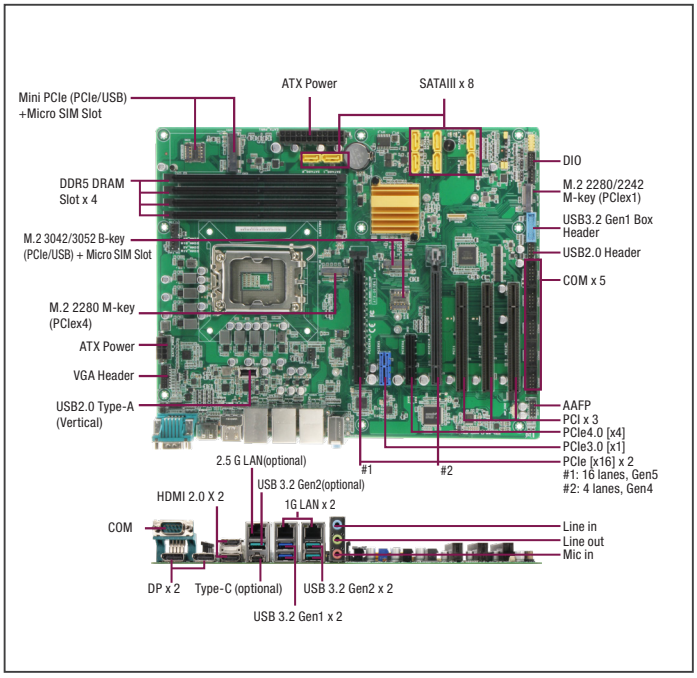
Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBM-H110A-A11-210	LGA1151 socket	DDR4 2400	Fan	HDMI x 2, VGA x 1, DVI-D x 1	M.2 M key 2242 x 1 SATA3 x 5	—	GbE x 2	USB 3.2 Gen 1 x 4, USB2.0 x 6	5	1	PCIe[x16] x 1, PCIe[x1] x 2, PCI x 1	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 12th/13th/14th Generation Intel® Core™ LGA1700 Socket Processors, TDP Max. 125W, DDR5 DRAM, Multiple Display Ports



Features

- 12th/13th/14th Generation Intel® Core™ LGA1700 Socket Processors
- DDR5 DRAM Support, 4000MHz, Max. 128GB
- Four Independent Display: HDMI 2.0 x 2, DP x 2, VGA x 1
- Dual Intel® GbE (Optional: additional LAN 3 I225-LM x 1)
- M.2 2280/2242 M-Key x 2, M.2 3042/3052 B-Key x 1 + Micro SIM Slot x 1, Mini PCIe x 1 + Micro SIM Slot x 1
- USB 3.2 Gen 2 x 2, USB 3.2 Gen 1 x 4, USB 2.0 x 3 (Optional: USB Type-C x 1, USB 3.2 Gen 2 x 3)
- SATA x 8
- Switchable USB Power feature for USB device reset
- Bootable feature in rear USB Port for enhanced security
- Onboard TPM 2.0

PCI Express · Giga LAN · DDR 5 · HDMI · USB 3.2 Gen 2 · USB 2.0

Specifications

System	
Processor	12th/13th/14th Generation Intel® Core™ LGA1700 Socket Processors (formerly Alder Lake/Raptor Lake), TDP Max 125W
Chipset	Intel® Q670E Chipset
Memory	DDR5 4000MHz DIMM x 4, up to 128GB Non-ECC, Unbuffered Memory, Dual-Channel Memory Architecture
I/O Chipset	NCT6126D
Ethernet	Intel® PHY I219-LM Giga LAN x 1 (supports Intel® AMT 12.0) Intel® I210-AT Giga LAN x 1 Intel® I225-LM Giga LAN x 1 (Optional) RJ-45 x 2 (Optional: RJ-45 x 3, LAN 3 with USB 3.2 Gen 2 x 1)
Audio	Realtek ALC897 6-Channel High Definition Audio CODEC
TPM	TPM 2.0 onboard
Expansion Slots	PCIe Gen 5 [x16] x 1 (16 Lanes) PCIe Gen 3 [x1] x 1 (1 Lane, Open Slot) PCIe Gen 4 [x4] x 1 (4 Lanes, Open Slot) PCIe Gen 4 [x16] x 1 (4 lanes) PCI Slot x 3 M.2 3042/3052 B-Key x 1 (PCIe 3.0 [x1]/USB 3.2 Gen 1) Mini PCIe Slot x 1 (PCIe 3.0/USB 2.0) Micro SIM Card Slot x 1 (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 x 1/Chassis Fan x 3
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	HDMI 2.0, up to 4096 x 2160 @60/30Hz, with Digital Audio
Display Port	DP 1.4, up to 4096 x 2160 @24Hz or 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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)

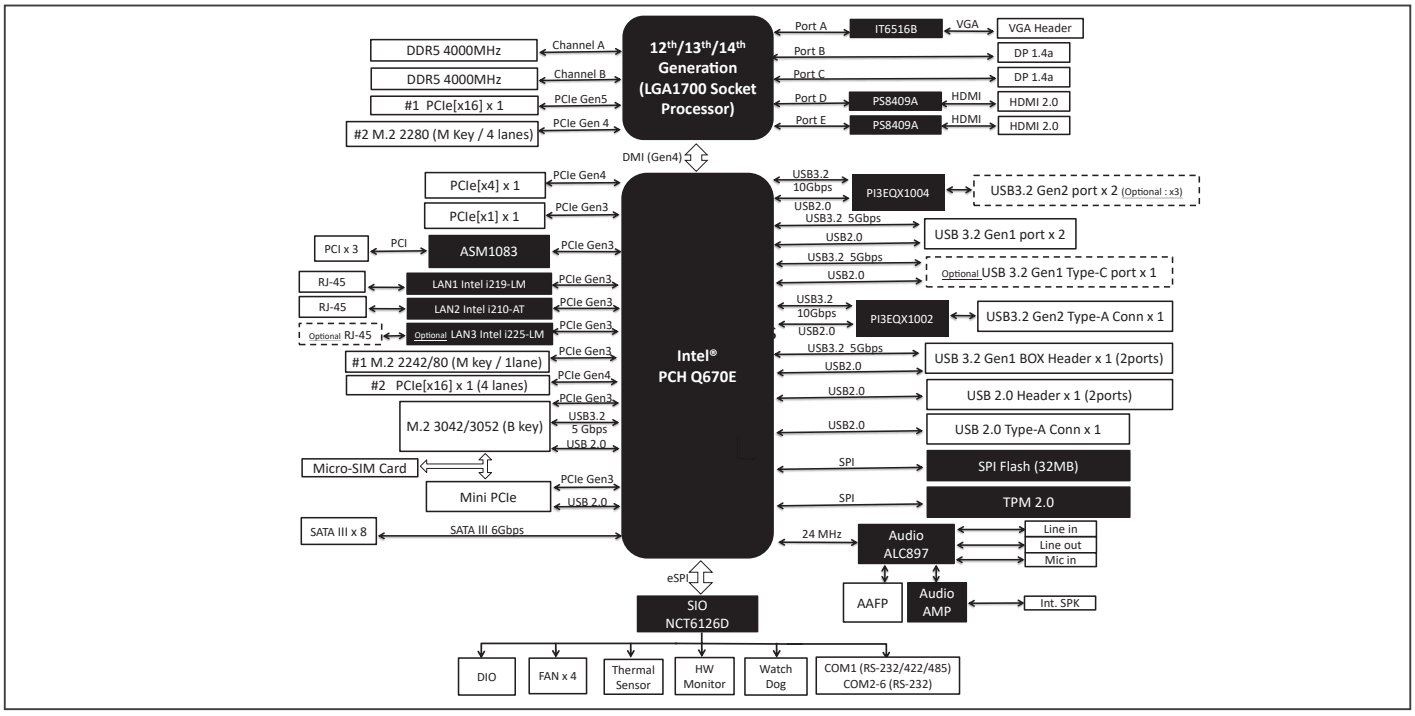
Certificate	CE & FCC Class A
Form Factor	ATX Form Factor, 12" x 9.6" (305mm x 244mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	281,760
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 x 2 (10Gbps, Optional: x 3 units if with LAN 3 I225-LM) USB 3.2 Gen 1 x 2 (5Gbps) USB Type C x 1 (5Gbps, 5V, 1.5A, Optional) (All ports are bootable, can be deactivated per BIOS function; USB Power switchable feature)
Display I/O	HDMI 2.0 x 2, DP 1.4 x 2
Audio I/O	Audio Jack x 3, Line-in, Mic-in, Line-out
LAN I/O	RJ-45 LAN x 2 (Optional: RJ-45 x 3)
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 x 8, supports RAID 0/1/5/10 M.2 2280 M-Key x 1 (PCIe Gen 4.0, 4 Lanes) M.2 2242/80 M-Key x 1 (PCIe Gen 3.0 1 Lane)
USB	USB 3.0 Box Header x 1 (2x5P, p=2.54mm), supports USB 3.2 Gen 1 x 2 (USB Power switchable feature) USB 2.0 Header x 1 (2x5P, p=2.54mm) supports USB 2.0 x 2 (USB Power switchable feature) USB 2.0 x 1 (Vertical Type-A)
Display I/O	VGA Header x 1
Audio I/O	Speaker Header (Line-out), AAFP x 1
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	4-pin CPU Fan Connector x 1 (PWM Mode) 4-pin Chassis Fan Connector x 3 (PWM Mode)
Power	—
Others	Chassis Intrusion x 1, AT/ATX Mode Select Jumper x 1, 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**

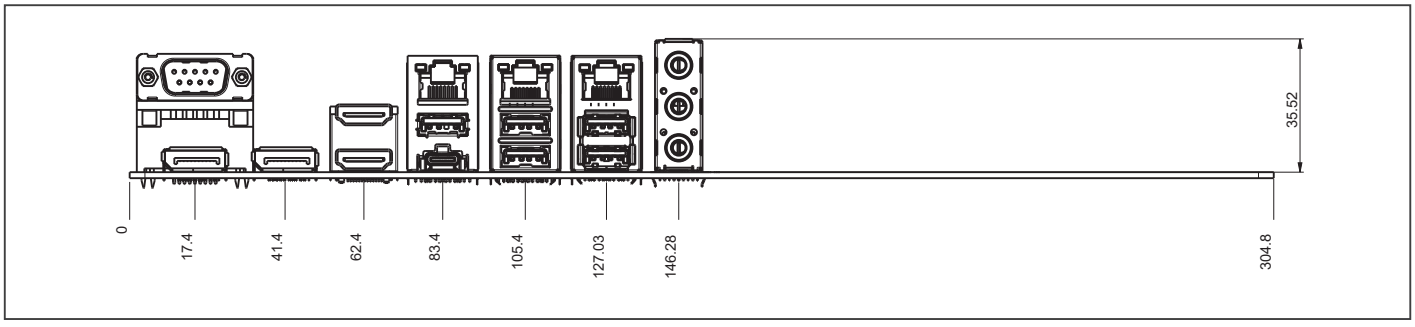
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

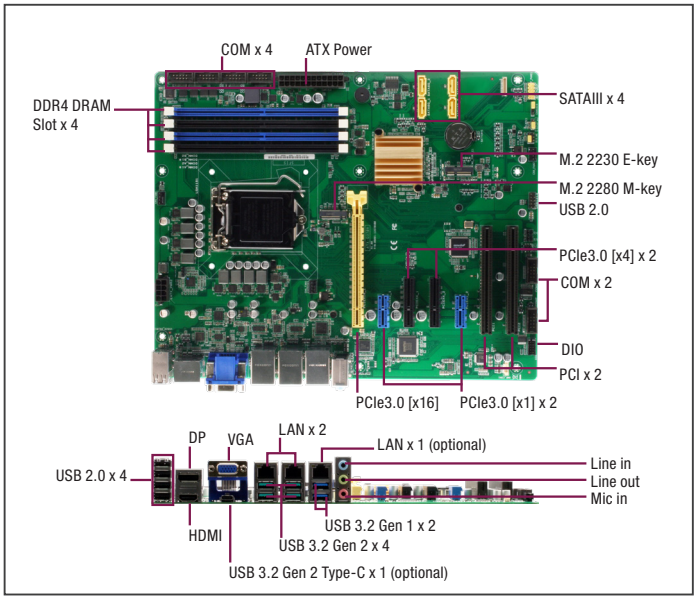
Part Number	CPU	RAM	Fan/ Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
ATX-Q670A-A10-2L	LGA1700 Socket	DDR5 4000MHz	Fan	HDMI x 2 DP x 2 VGA Header x 1	SATA III x 8 M.2 2280 M-Key x 1 M.2 2242/80 M-Key x 1	—	Intel®GbE x 2	USB 3.2 Gen 2 x 2 USB 3.2 Gen 1 x 2 USB 3.0 Header x 1 USB 2.0 Header x 1 USB 2.0 x 1 (Vertical Type A)	5	1	PCIe [x16] x 1 PCIe [x1] x 1 PCIe [x4] x 1 PCIe [x16] x 1 (4 Lanes) PCI Slot x 3 M.2 3042/3052 B-Key x 1 (PCIe/USB) Mini PCIe Slot x 1 (PCIe/USB) Micro SIM Card Slot x 1	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)
AP-FNTH11700010	2U CPU cooler for LGA1700,TDP Max. 95W, 2500RPM
AP-FNTH11700020	1U CPU cooler for LGA1700,TDP Max. 125W, 5400RPM
AP-FNTH11700030	2U CPU cooler for LGA1700,TDP Max 125W, 8400RPM

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**

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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
Certificate	CE & FCC Class A
Form Factor	ATX Form Factor, 12"x9.6" (305mm x 244mm)
Weight	1.76 lb (0.8 Kg)

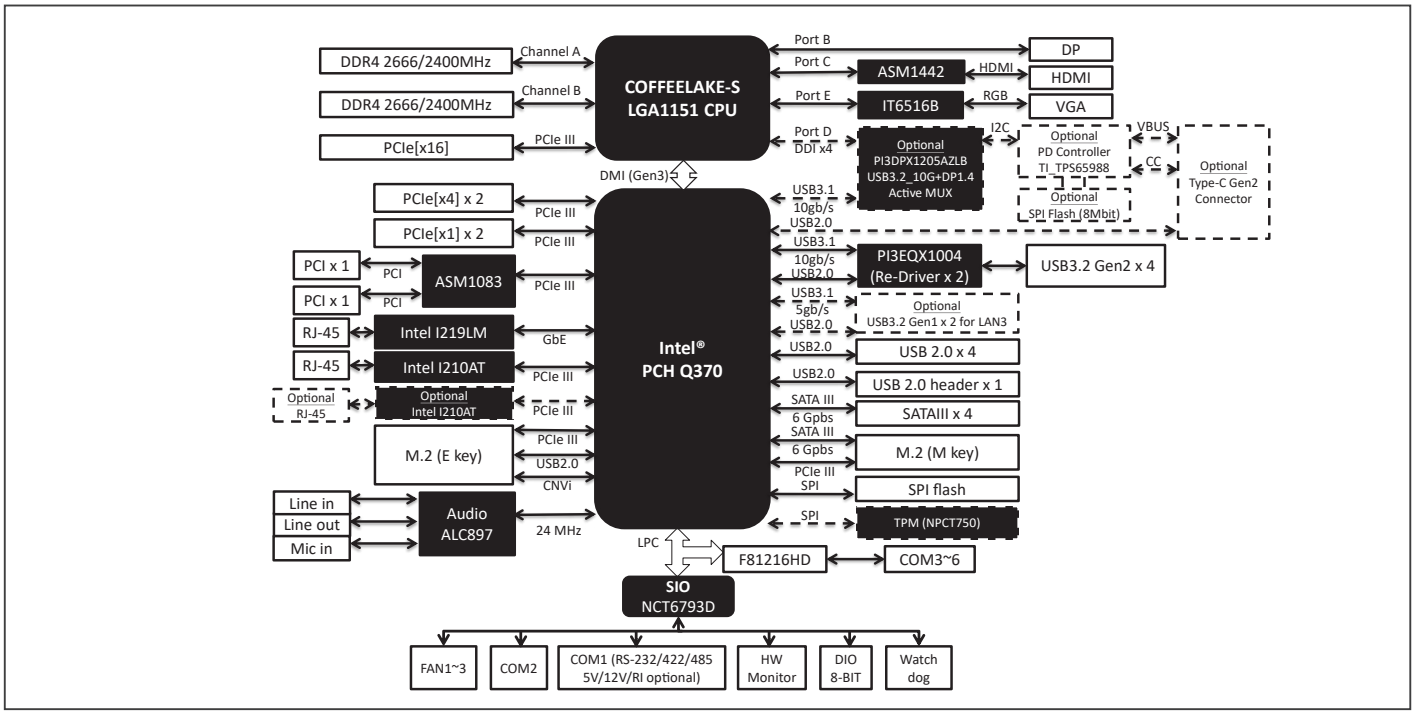
MTBF (Hours)	281,410
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 ports (10 Gbps) x 4, USB 3.2 Gen 1 ports (5 Gbps) x 2, USB 2.0 ports x 4
Display I/O	HDMI x 1, VGA x 1, DP x 1, USB Type-C x 1 (optional)
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2 (BOM option: RJ45 x 3)
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**

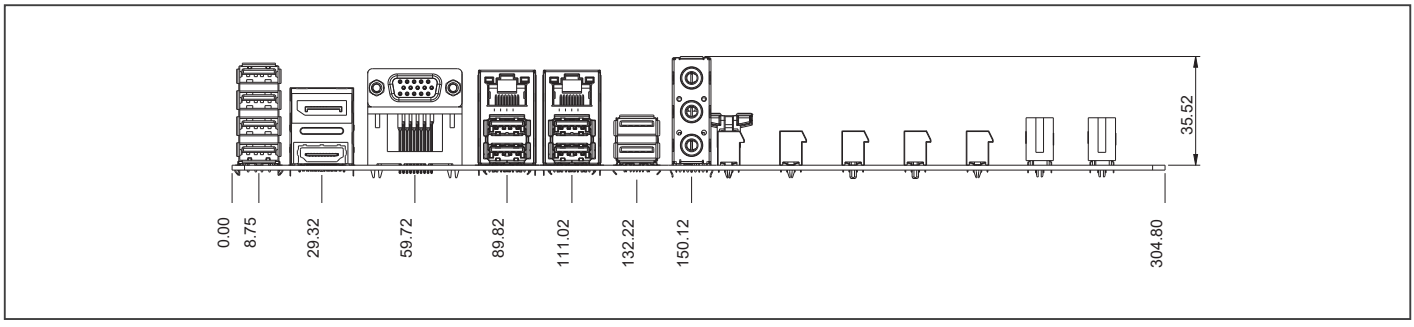
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

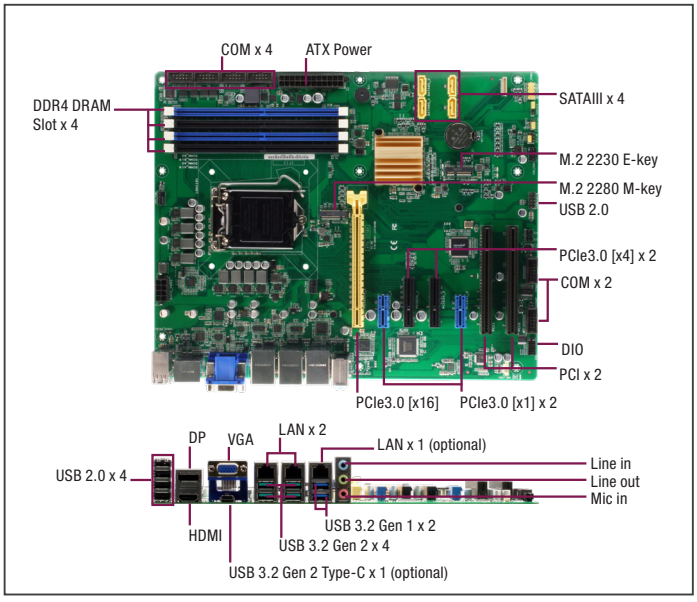
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232 /422/485	Expansion Slot	Power	TPM	Temp.
ATX-Q370A-A20-2L-210	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 1 VGA x 1 DP x 1	—	SATA3 x 4 M.2 2280 M-key x 1	Intel®GbE x 2	USB 3.2 Gen 2 x 4 USB 3.2 Gen 1 x 2 USB 2.0 x 6	5	1	PCIe[x16] 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

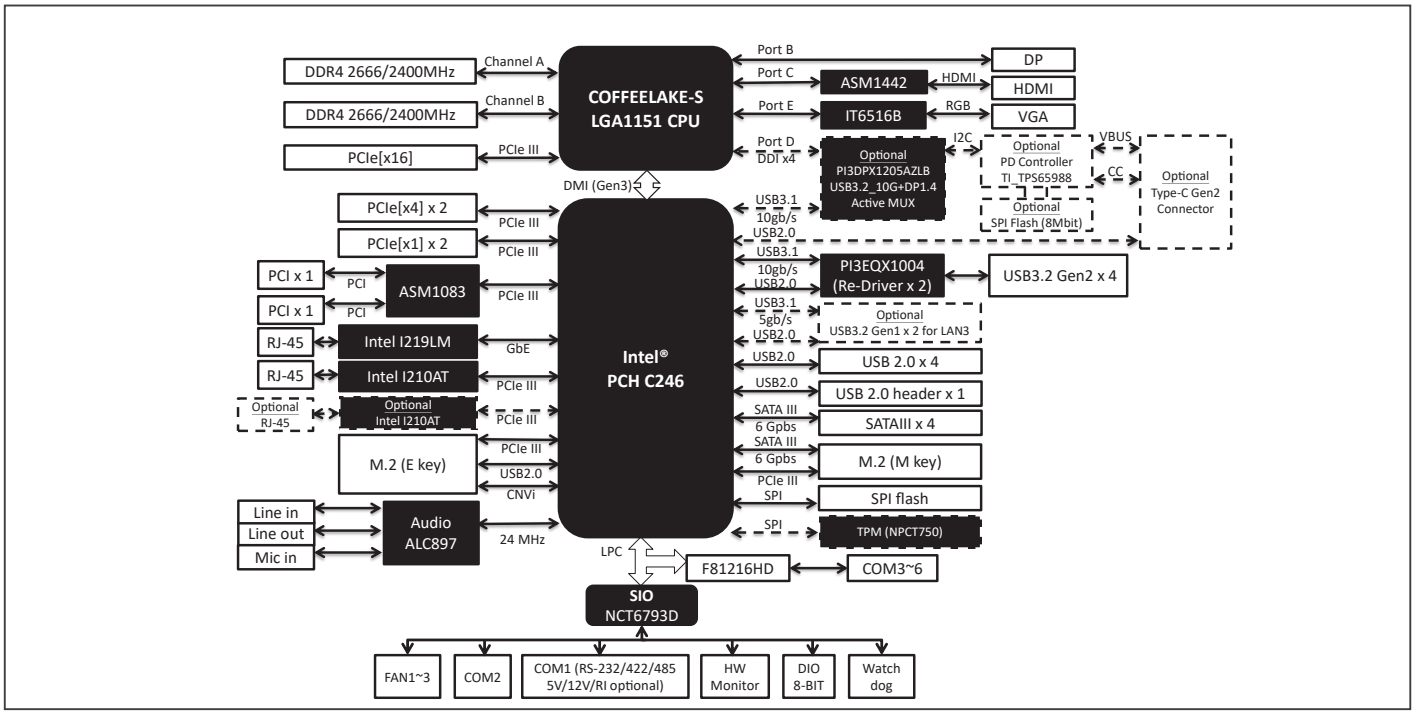
System	
Processor	Intel® 8th/9th Generation (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5 /i3, Pentium 14nm, Celeron™, Xeon E-2200/2100, LGA 1151 socket Processor, max. TDP 8 Core 95W
Chipset	Intel® C246 Express Chipset
Memory	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB) ECC, un-buffered 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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

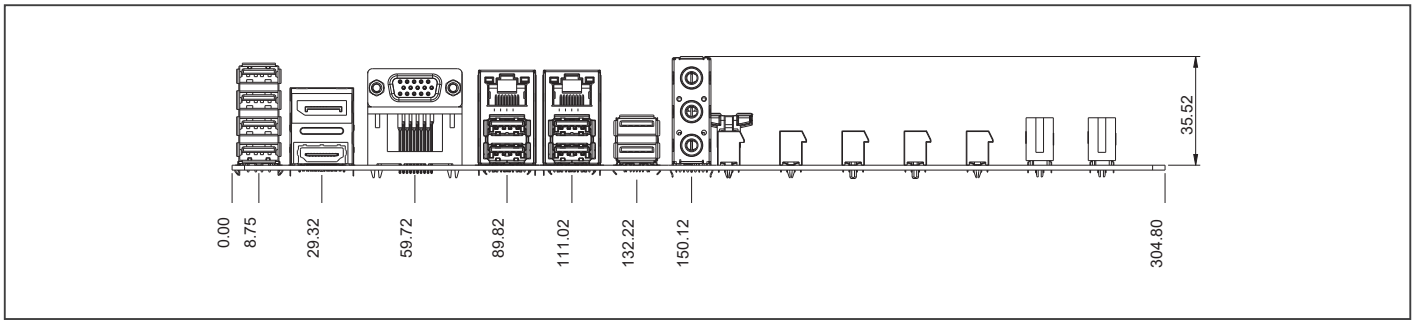
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

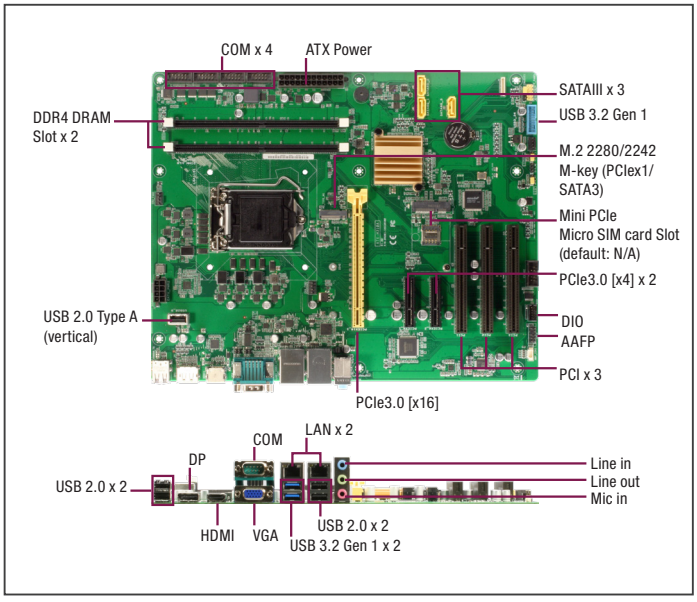
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232 /422/485	Expansion Slot	Power	TPM	Temp.
ATX-C246A-A20-2L-210	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 1 VGA x 1 DP x 1	—	SATA3 x 4 M.2 2280 M-key x 1	Intel®GbE x 2	USB 3.2 Gen 2 x 4 USB 3.2 Gen 1 x 2 USB 2.0 x 6	5	1	PCIe[x16] 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

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. 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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
Certificate	CE & FCC Class A
Form Factor	ATX Form Factor, 12" x 9.6" (305mm x 244mm)
Weight	1.76 lb (0.8 Kg)

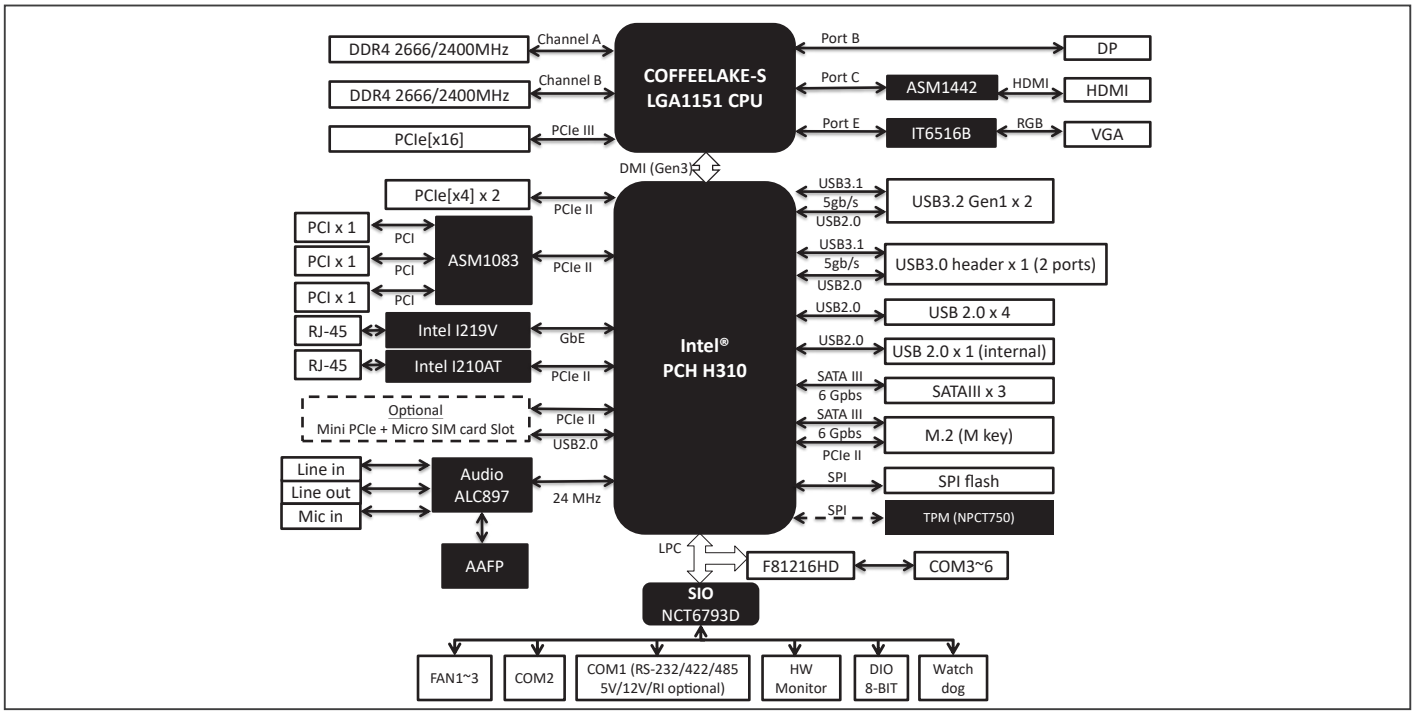
MTBF (Hours)	285,600
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 ports x 2, USB 2.0 ports x 4
Display I/O	HDMI x 1, VGA x 1, DP x 1
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2
Serial Port	DB-9 COM x 1 (supports RS-232/422/485, 5V/12V/RI)
PS/2 Port	—
Others	—
Internal 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

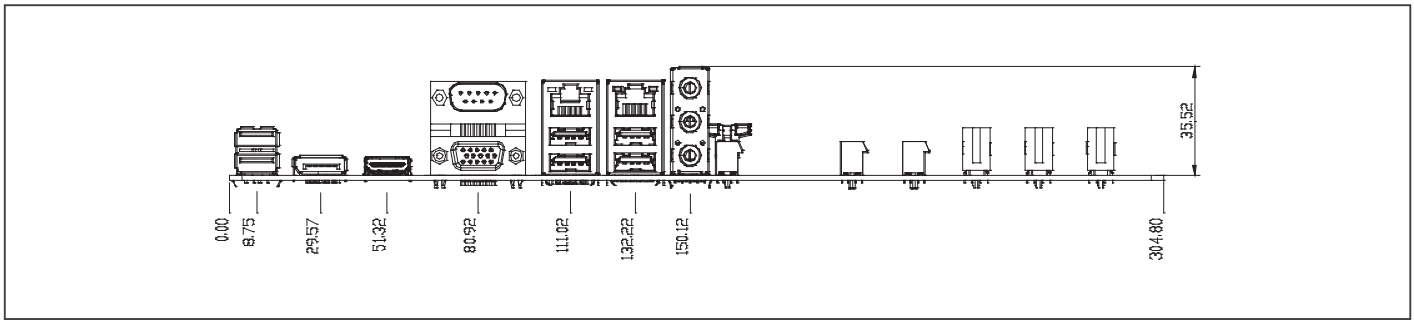
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

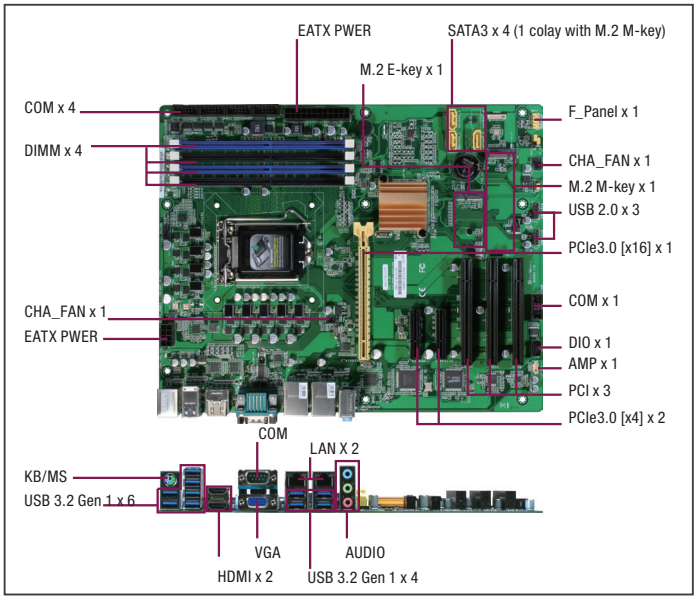
Part number	CPU	RAM	Fan/ Fanless	Display	LVDS	Storage	LAN	USB	RS-232	RS-232 /422/485	Expansion Slot	Power	TPM	Temp.
ATX-H310A-A11-210	LGA 1151 socket	DDR4 2666/2400/2133	Fan	HDMI x 1 VGA x 1 DP x 1	—	SATA3 x 3, M.2 2280/2242 M-key x 1	Intel®GbE x 2	USB 3.2 Gen 1 x 2 USB 2.0 x 4 USB 3.2 Gen 1 header x 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 | 1000 Giga LAN | DDR 4 | PCIe PCI Express | CE | FC

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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

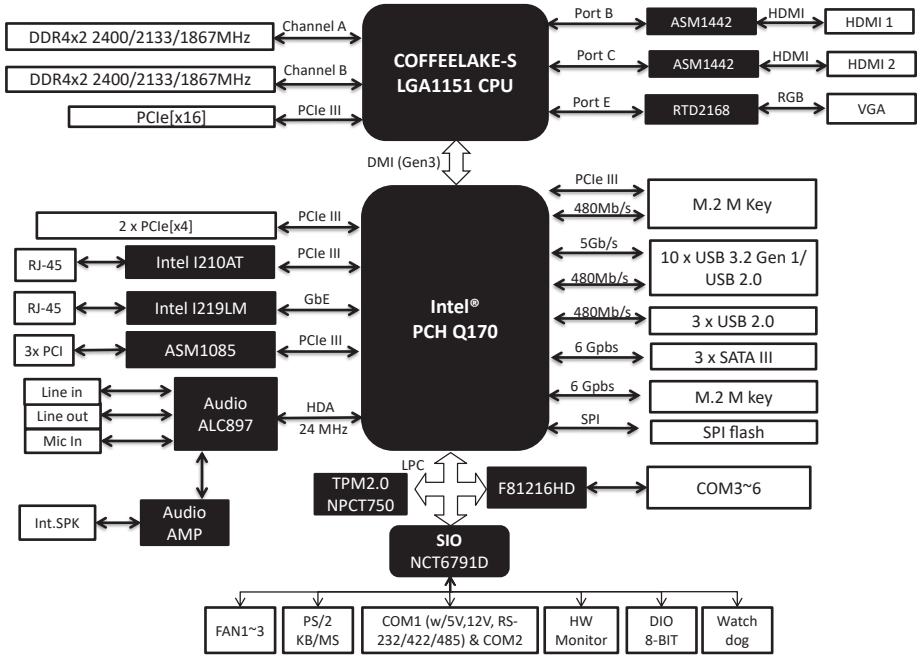
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 x 10
Display I/O	HDMI x 2, VGA x 1
Audio I/O	Line-in, Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	DB-9 COM x 1 (supports RS-232/422/485, 5V/12V/RI)
PS/2 Port	Stack Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	Supports RAID 0/1/5/10 SKU1: 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**

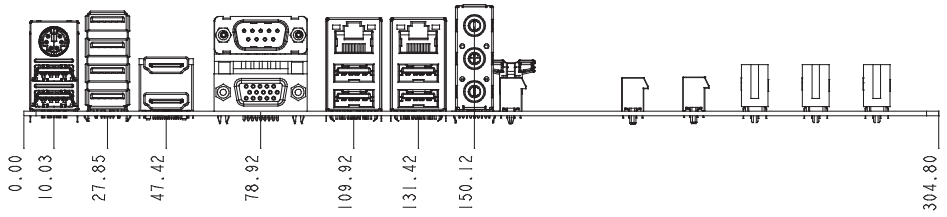
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

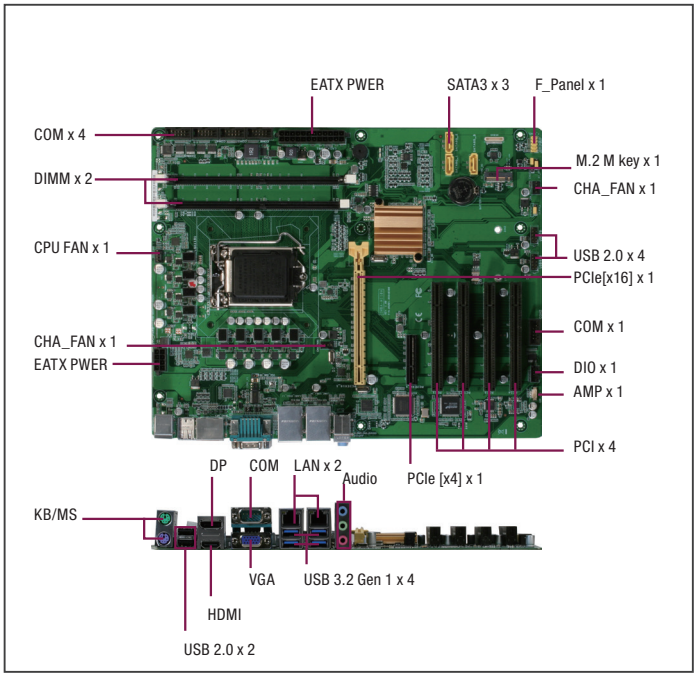
PN	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBA-Q170A-A11-2P4-210	LGA1151 socket	DDR4 2400	Fan	VGA x 1, HDMI x 2	M.2 M key 2280 x 1 (SATA module only), SATA3 x 3	—	GbE x 2	USB 3.2 Gen 1 x 10, USB2.0 x 3	5	1	PCIe[x16] x 1, PCIe [x4] x 2, PCI 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 ~ 60°C) (Operational humidity: 60°C @ 90% RH Non-Condensing)
Storage Temperature	—
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

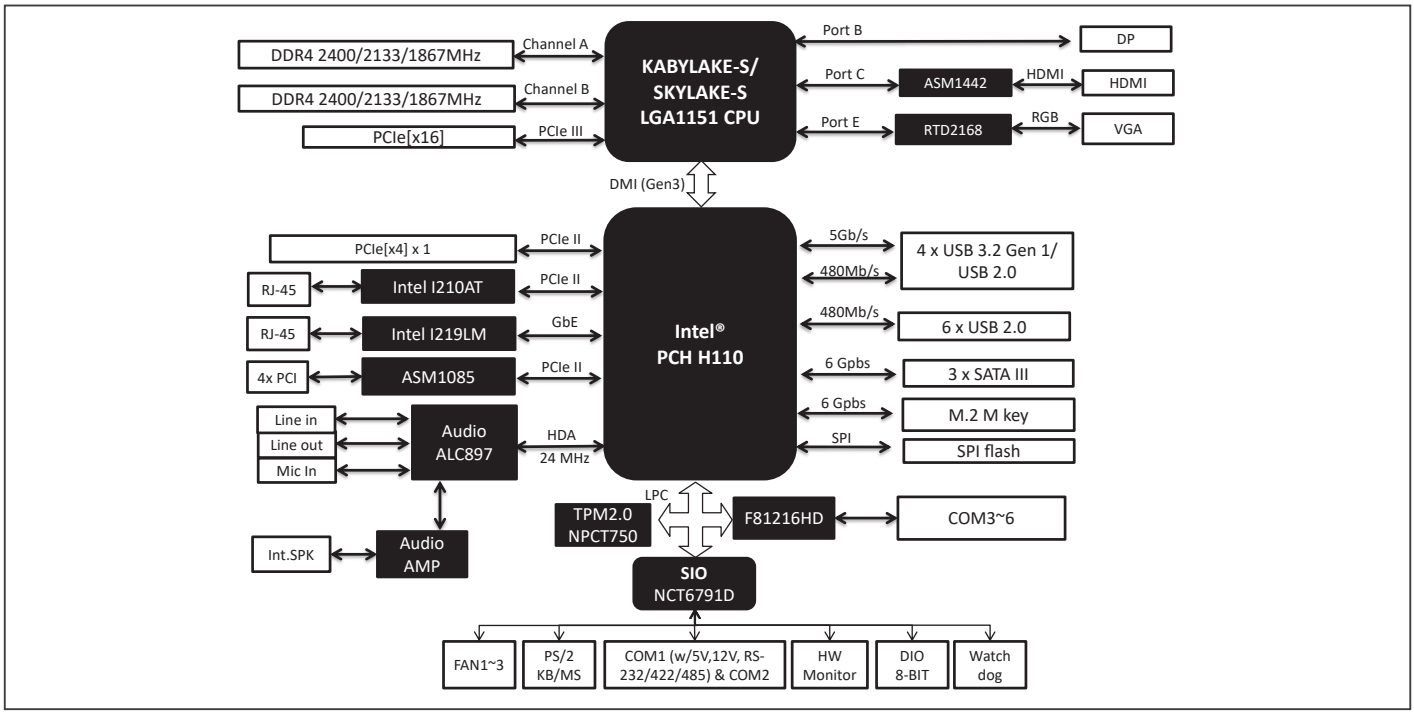
Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 x 4, USB 2.0 x 2
Display I/O	HDMI x 1, DP x 1, VGA x 1
Audio I/O	Line-in, Mic-in, Line-out
LAN I/O	RJ-45 x 2
Serial Port	DB-9 COM x 1 (supports RS-232/422/485)
PS/2 Port	Stack Port (Keyboard & Mouse) x 1
Others	—
Internal I/O Connectors	
Storage	SATA 6.0Gb/s x 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**

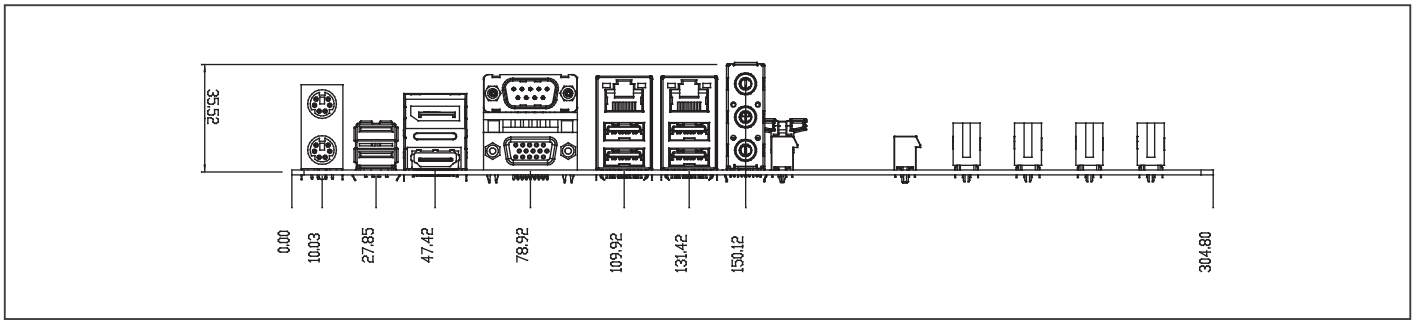
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

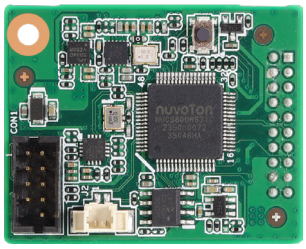
Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
IMBA-H110A-A11-210	LGA1151 socket	DDR4	Fan	HDMI x 1, DP x 1, VGA x 1	M.2 M key 2280 x 1 SATA3 x 3	—	GbE x 2	USB 3.2 Gen 1 x 4, USB2.0 x 6	5	1	PCIe[x16] x 1, PCIe [x4] x 1, PCI x 4	ATX	onboard	32°F ~ 140°F (0°C ~ 60°C)

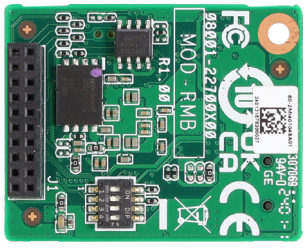
Optional Accessories

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)

MOD-RMB PRELIMINARY

Out-Of-Band Remote Management Module





Features

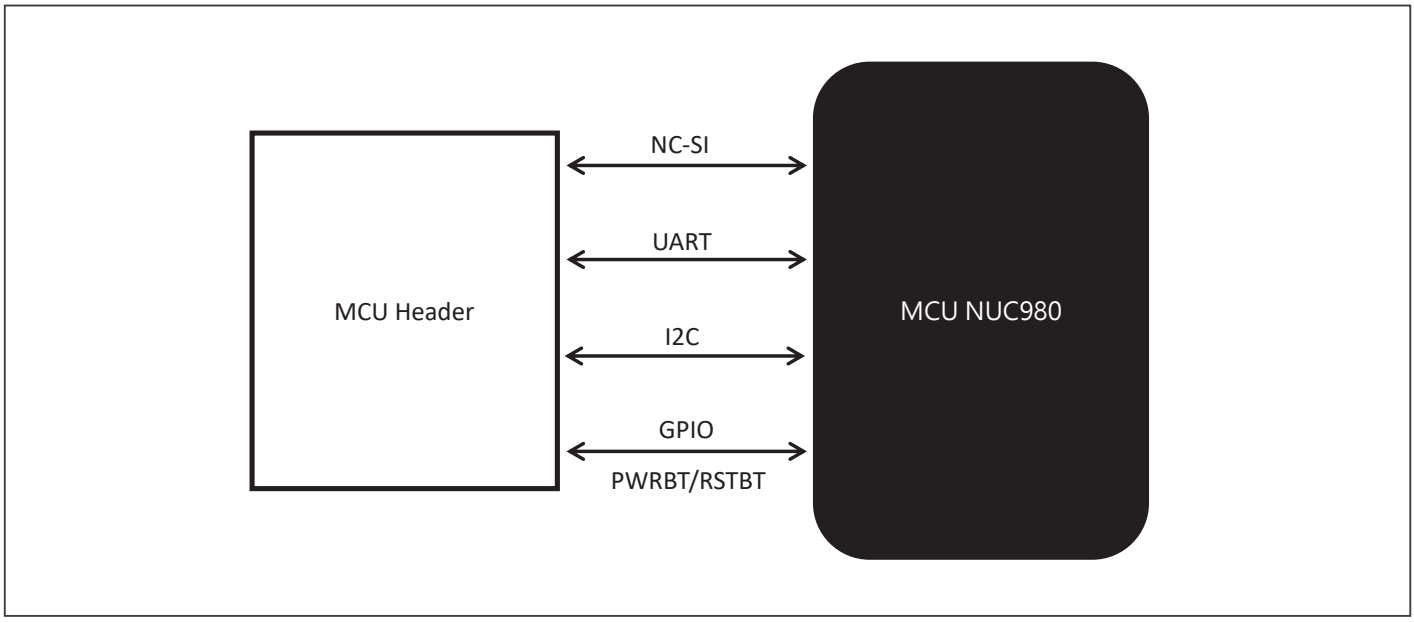
- Nuvoton NUC980 Microprocessor
- Remote Power On/Off/Reset
- Enforcement Shutdown
- Hardware Monitor
- System and Ethernet Information
- NUC980 Firmware Upgrade
- Support Intel® Ethernet Controller i210-AT via NC-SI

Specifications

Out-Of-Band Monitoring and Management Functions	
Power Cycling	Enforcement Shutdown Power Switch On/Off Reset
System	
MCU	Nuvoton NUC980DR63YC
Remote Control	Power Switch (PSW/GND) Power Reset (RST/GND)
Power Source	Power Input (+5V standby/GND)
NC-SI	Yes
10/100 Ethernet	—
Dimension	1.57" x 1.37" (40mm x 35mm)
Others	UART x 1 I2C x 1 SPI NOR Flash x 1
Power	
Input Voltage	5V DC
Power Consumption	<1W
Connector	2x10-pin box header
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operational Humidity	30% RH to 70% RH
Certificate	—

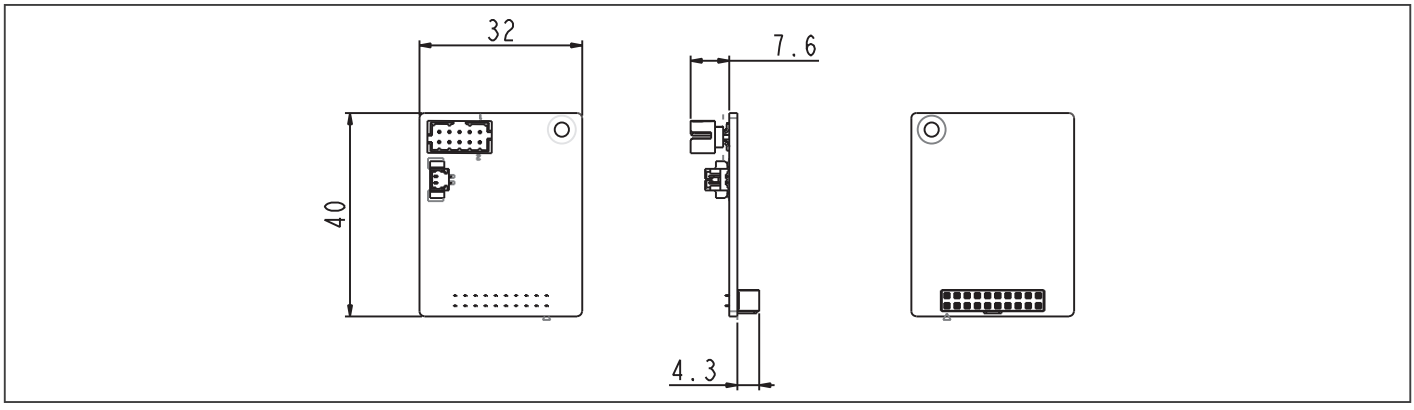
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Packing List

- MOD-RMB (Honeycomb Board Packing)

Ordering Information

- MOD-RMB-A10

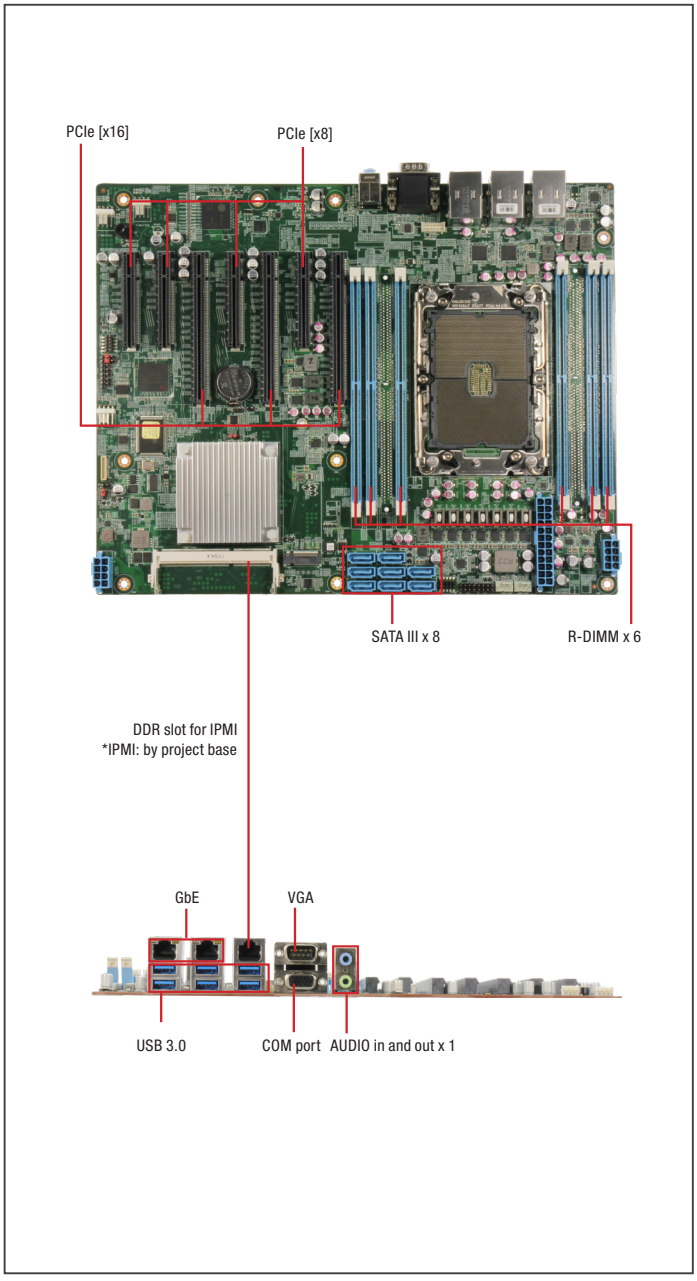
10

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 | 1000 Giga LAN | USB 3.2 Gen 1

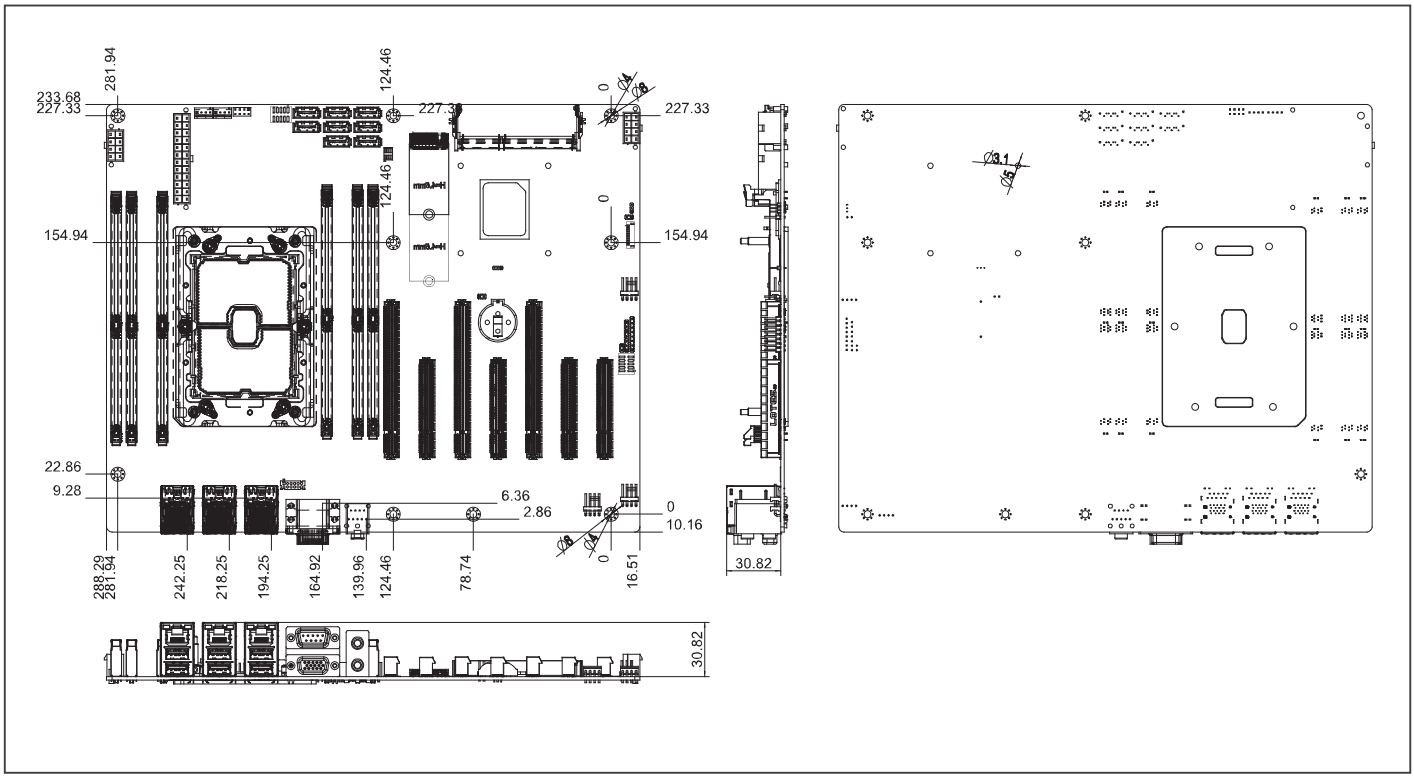
Specifications

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-WHIO-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-WHIO 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

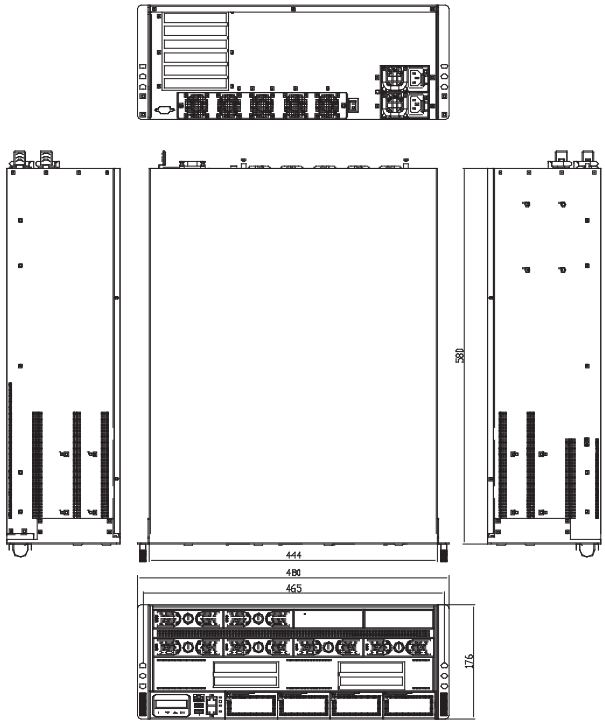
Specifications

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

Note: All specifications are subject to change without notice.

Dimension

Unit: mm



Ordering Information

- TBD

Packing List

- ZEUS-PUR0

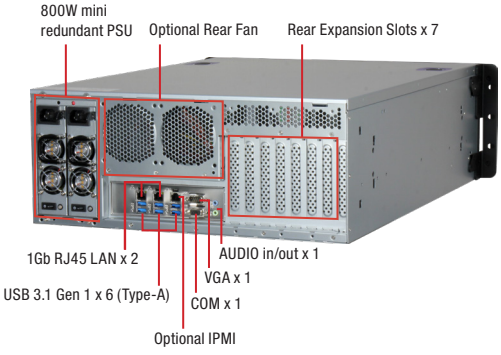
Optional Accessories

- TBD

ZEUS-WHI0

4U Rackmount Whitely Platform Server System, Supports a 3rd Generation Intel® Xeon® Scalable Ice Lake-SP CPU





Features

- 4U Rackmount Server System
- Single 3rd Generation Intel® Xeon® Scalable Ice Lake-SP CPU
- Intel® Communications Chipset C621A
- DDR4 2666MHz R-DIMM Slot x 6
- IPMI Support, optional
- 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
- 800W Mini Redundant PSU or 1600W CRPS PSU

RTC	Internal RTC
System Fan	Middle Fan x 3 (Default), Rear Fan x 2 (Optional)
Front I/O Panel	Power LED x 1, HDD Active LED x 1
Rear I/O Panel	AC Power Input x 1, Power Switch button x 1, USB 3.1 Gen 1 x 6 (Type-A), 1Gb RJ45 LAN x 2, AUDIO in and out x 1, VGA x 1, Rear Expansion Slots x 7
Color	Black
Power Supply	800 mini redundant PSU; 1600W CRPS PSU, optional
Dimension	23.5” x 17” x 6.88” (597.2mm x 430mm x 174.8mm)
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 3.1 Gen 1 x 6 (Type-A)
Environmental	
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	10% ~ 90% relative humidity, non-condensing
Storage Humidity	10% ~ 80% @40°C; non-condensing
Vibration	0.5 g rms/ 5 ~ 500Hz / operation (3.5” 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

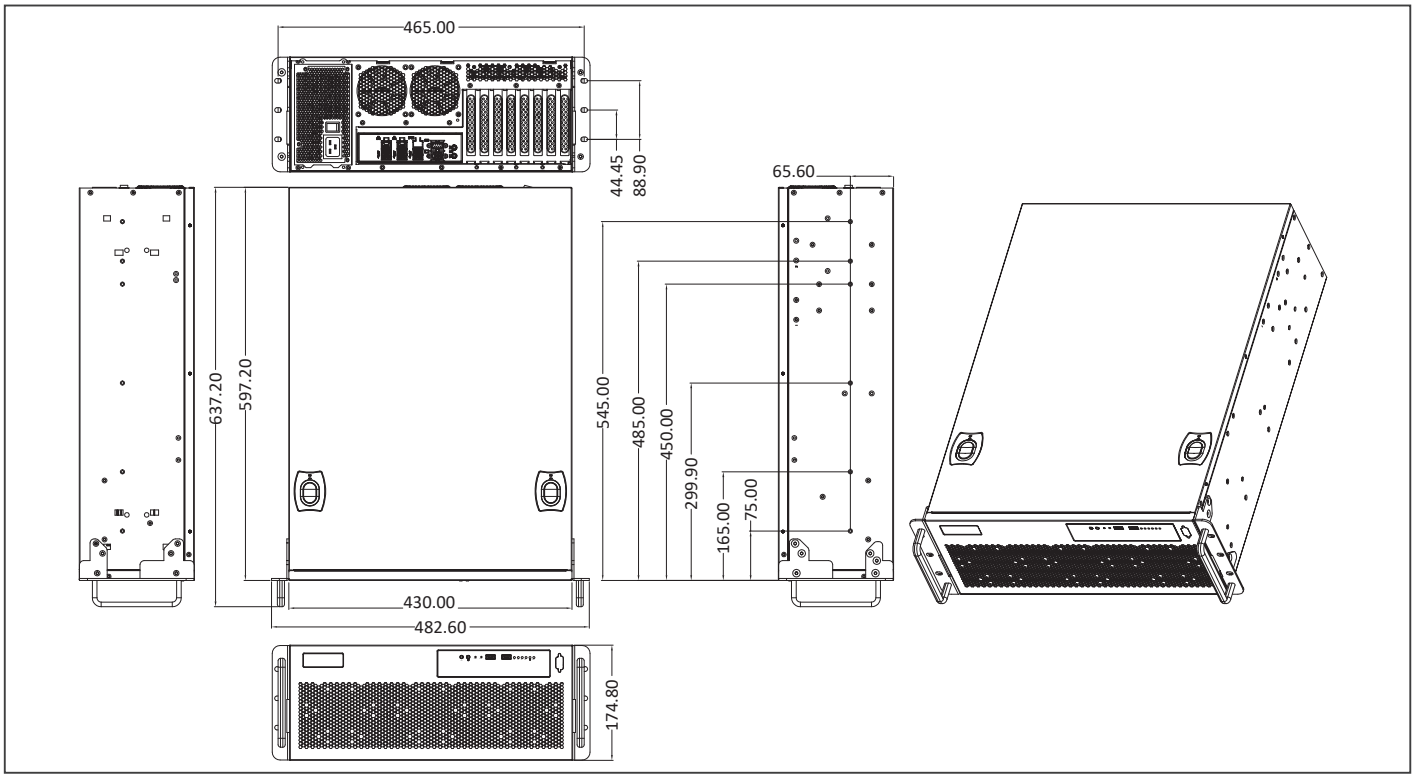
Specifications

System	
Form Factor	4U Rackmount Server System
Processor	Single Intel® Xeon® Processor Ice Lake-SP processor, supports up to 205W
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

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
ZEUS-WHI0-A10-00	Lewisburg C621A	288pin R-DIMM slot x 6	Internal 3.5" HDD bays x 8 M.2 M-Key 2280 x 1	RAID 0,1,5,10	VGA x 1	GbE x 2	USB 3.0 x 2 (USB 2.0 Signal) USB 3.1 Gen 1 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	800W Mini Redundant PSU

Packing List

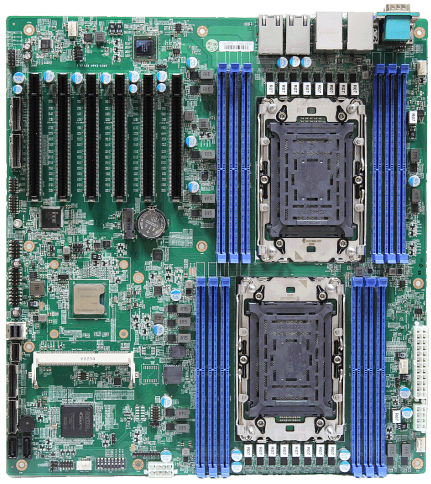
- **ZEUS-WHI0 x 1**

Optional Accessories

- **1709070800**
  SATA CABLE.7P Pitch 1.27mm.80cm.W/Lock

ARES-EAGO PRELIMINARY

Platform Server Board with 4th/5th Generation Intel® Xeon® Scalable Processors



Features

- EATX Server Board
- Dual 4th/5th Generation Intel® Xeon® Scalable CPU Support
- Intel® C741 Chipset
- DDR5 4800 MHz R-DIMM Slot x 12
- SATA3 port x 2, miniSAS x 1 (up to SATA x 4), SlimSAS 4i x 1, SlimSAS 8i x 4
- M.2 2280 M-Key (PCIe [x4])
- 2.5GbE LAN x 1, 10GbE LAN x 2
- 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 Header x 5 (up to 5 fans), CPU/System Overheat LED, Suspend Static Indicator LED
- Operating Temperature Range 32°F ~ 140°F (0°C ~ 60°C)

LPDDR 5 | 10 GbE | USB 3.2 Gen 1 | CE FC

Specifications

System	
Form Factor	EATX Sever Board Eagle Stream Platform
Processor	Dual 4th/5th Generation Intel® Xeon® Scalable CPU Support, TDP Max. 350W
System Memory	DDR5 4800 MHz R-DIMM Slot x 12
Chipset	Intel® C741 Chipset
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: PCIe Gen 5 [x16] x 1 PCIe 2: PCIe Gen 5 [x16] x 1 PCIe 3: PCIe Gen 5 [x16] x 1 PCIe 4: PCIe Gen 5 [x16] x 1 PCIe 5: PCIe Gen 5 [x16] x 1 PCIe 6: PCIe Gen 5 [x16] x 1
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 2.5GbE LAN x 1 10GbE LAN x 2 VGA x 1 COM x 1
Color	—
Power Supply	ATX
Dimension	12" x 13" (305mm × 330mm)
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	1.5 g rms/ 5 ~ 500Hz / non operation
Shock	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.

Focus • Agility • Competitiveness

Always Agile, Always Ahead.

MKT-2202500

AAEON Technology Inc.

6F., No. 28, Baogao Rd., Xindian Dist., New Taipei City 231029 , Taiwan R.O.C.
Tel: +886-2-8919-1234 Fax: +886-2-8919-1056 E-mail: sales@aaeon.com.tw

LITERATURE ORDERING

Contact your local office for literature requests.

USA

USA

California Office
324 W. Blueridge Ave, Orange, CA 92865
Toll Free: +1-877-TO-AAEON (1-877-862-2366)
TEL: +1-714-996-1800
FAX: +1-714-996-1811
E-mail: sales@aaeon.com
Tech Support: tech@aaeon.com

New Jersey Office
11 Crown Plaza, Hazlet, NJ 07730-2441
TEL: +1-732-203-9300
FAX: +1-732-203-9311
E-mail: sales@aaeon.com
Tech Support: tech@aaeon.com

EUR

Netherlands

AAEON EUROPE
Beatrix de Rijkweg 8, 5657 EG Eindhoven
TEL: +31(0)499-745200
FAX: +31(0)499-462010
E-mail: sales@aaeon.eu

Germany

AAEON Technology GmbH
Monzastrasse 4e, 63225 Langen
TEL: +49(0)61033 74 79 00
FAX: +49(0)61033 74 79 49
E-mail: sales@aaeon.eu

France

AAEON France Office
Gare de Lyon, 37/39 Avenue Ledru-Rollin,
CS 11237, 75012 Paris Cedex 12
TEL: +33 (0) 156 95 16 40
E-mail: sales@aaeon.eu

Italy

AAEON Italy Office
Viale Masini 12/14, 40126 Bologna
TEL: + 39 051 0923582
E-mail: sales@aaeon.eu

ASIA

China

AAEON Technology (Su Zhou) Inc.
Room 12, 2F, Building B, No.5 Xing Han Street,
Suzhou Industrial Park, Jiang Su Province
TEL: +86-512-6762-5700
FAX: +86-512-6761-7337
E-mail: sales@aaeon.com.cn

Shanghai Branch Office
20F, Unit D, GEM Building, No.487 Tianlin Road,
Xuhui District, Shanghai
TEL: +86-21-3367-5511
FAX: +86-21-3367-4238
E-mail: sales@aaeon.com.cn

Beijing Branch Office
Room 710, Tower D, Jiahua Building, No.9,
Shangdi Third Street, Haidian District, Beijing
TEL: +86-10-8278-0904
FAX: +86-10-8278-0214
E-mail: sales@aaeon.com.cn

Wuhan Branch Office
Room 05, 4 / F, Building 3, Phase I, Modern International
Design City, Optics Valley Avenue, East Lake New
Technology Development Zone, Wuhan
TEL: +86-027-87003780
E-mail: sales@aaeon.com.cn

China

Chengdu Branch Office
Room 1105, 11th Floor, Huafu International,
No. 528, Section 4, Shuanghua Road,
Shuangliu District, Chengdu
TEL: +86-028-85120523
E-mail: sales@aaeon.com.cn

Shenzhen Branch Office
518, 5th floor, Guoxin Investment Building,
Gaoxin South Seventh Road,
Nanshan District, Shenzhen
TEL: +86-755-8304-7277
FAX: +86-755-8304-7272
E-mail: sales@aaeon.com.cn

Hangzhou Branch Office
A411 Haichuang Building, No. 1338 Wenyi
West Road, Yuhang District, Hangzhou
TEL: +86-0571-8609-7652
E-mail: sales@aaeon.com.cn

Singapore

AAEON Technology Singapore PTE LTD.
57 Genting Lane, #07-00, Singapore 349564
TEL: +65-6749-8749
FAX: +65-6746-1595
E-mail: sales@aaeon.com.sg