# Table of Contents

## Introduction

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

- **PICO-APL3-A10-FA1**: AI Edge Computing Kit with Kneron KLS20 NPU
- **M2AI-2242-520**: AI Edge Computing Module with Kneron KLS20 NPU
- **M2AI-2280-520**: AI Edge Computing Module with Kneron KLS20 NPU
- **Mini-AI-520**: AI Edge Computing Module with Kneron KLS20 NPU
- **M2AI-2242-720**: AI Edge Computing Module with Kneron KL720 NPU
- **M2AI-2280-720**: AI Edge Computing Module with Kneron KL720 NPU
- **Mini-AI-720**: AI Edge Computing Module with Kneron KL720 NPU

# Gateway Board & Expansion Board

- **SRT-3352**: Standard Gateway Board with Onboard ARM Cortex-A8 800 MHz RISC Processor
- **SRT-3352C**: Compact Gateway Board with Onboard ARM Cortex-A8 800 MHz RISC Processor
- **SRT-IMX8P**: Standard IoT Gateway with ARM i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor
- **SRT-TG01**: Standard IoT Gateway System with 11th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC
- **SRT-APLC**: Standard IoT Gateway Board with Intel X5-E3940 Processor SoC

# Pico-ITX Boards

- **PICO-V2K**: Pico-ITX Board with AMD RYZEN™ V2000 embedded Processor Family
- **PICO-V2K-SEMI**: PICO-SEMI with AMD RYZEN™ V2000 embedded Processor Family
- **PICO-TGU**: Pico-ITX Board with 11th Generation Intel® Core™ 17/15/13/Celeron® U-Series Processor SoC
- **PICO-TGU-SEMI**: Pico-SEMI Embedded Barebone with 11th Generation Intel® Core™ 17/15/13/Celeron® U-Series Processor SoC
- **PICO-WHU**: Pico-ITX Board with 8th Generation Intel® Core™ 17/15/13/Celeron® U-Series Processor SoC
- **PICO-WHU-SEMI**: Pico-SEMI Embedded Barebone with 8th Generation Intel® Core™ 17/15/13/Celeron® U-Series Processor SoC
- **PICO-KBU**: Pico-ITX Board with 7th Generation Intel® Core™ 17/15/13/Celeron® U-Series Processor SoC
- **PICO-KBU-SEMI**: Pico-SEMI TurnKit with 7th Generation Intel® Core™ 17/15/13/Celeron® U-Series Processor SoC
- **PICO-EHL**: Pico-ITX Board with Intel® Atom® x6000E Series, Intel® Pentium®, and Celeron® N and J series processors
- **PICO-EHL-SEMI**: Pico-SEMI with Intel Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series Processors
- **PICO-APL**: Pico-ITX Board with Intel® Atom®/Pentium® N4200/ Celeron® N3350 Processor SoC
- **PICO-APL-SEMI**: Pico-SEMI Embedded Barebone Kit with Intel® Atom®/Pentium® Processor SoC
- **PICO-APL3**: Pico-ITX Board with Intel® Pentium® N4200/ Celeron® N3350/ Atom® Processor SoC
- **PICO-APL3-SEMI**: Pico-SEMI Embedded Barebone Kit with Intel® Celeron®/Pentium Processor SoC
- **PICO-APL4**: Pico-ITX Board with Intel® Atom®/Pentium® N4200/ Celeron® N3350 Processor SoC
- **PICO-APL4-SEMI**: Pico-SEMI TurnKit with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
- **PICO-BT01**: Pico-ITX Board with Intel® Atom®/Celeron® Processor SoC
- **PICO-EHL1**: Pico-ITX Board with Intel Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series Processors
- **PICO-EHL4-SEMI**: Pico-SEMI with Intel Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series Processors

**Pico-ITX Boards-BIO**

- **BIO-ST01-LI2**: 2.5" BIO Daughter Board with Gigabit LAN and USB
- **BIO-ST01-MU1**: 2.5" BIO Daughter Board with Mini-Card, SIM and USB
- **BIO-ST02-C4M1**: 2.5" BIO Daughter Board with COM x 4, Mini-Card, SIM and USB
- **BIO-ST03-P2U1**: 3.5" BIO Daughter Board with PoE, USB 3.2 Gen 1
- **BIO-ST02-C14-D32**: 2.5" BIO Daughter Board with 14 COM, 32bit DIO, LAN and USB 3.2 Gen 1

---

Table of Contents
# Table of Contents

## 04 COM Express CPU Modules

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM-TGHB6</td>
<td>COM Express Type 6 with 11th Generation Intel® Xeon/Core™ Processor Family</td>
<td>04-1</td>
</tr>
<tr>
<td>COM-CFHB6</td>
<td>COM Express Type 6 Basic Size with 8th/9th Generation Intel® Core™ H-Series / Xeon™ Processors</td>
<td>04-3</td>
</tr>
<tr>
<td>COM-TGUC6</td>
<td>COM Express Compact Type 6 with 11th Generation Intel® Core™ Processor Family (formerly Tiger Lake UP3)</td>
<td>04-5</td>
</tr>
<tr>
<td>COM-WHUC6</td>
<td>COM Express Compact Type 6 with 8th Gen Intel® Core™ ULT SoC</td>
<td>04-7</td>
</tr>
<tr>
<td>COM-ICDB7</td>
<td>COM Express Type 7 with Intel® 3rd Gen XEON D Processor</td>
<td>04-9</td>
</tr>
<tr>
<td>NANO-MCOM-TGU</td>
<td>COM Express Type 10 with 11th Generation Intel® Core™ Processor</td>
<td>04-11</td>
</tr>
<tr>
<td>NanoCOM-WHU</td>
<td>COM Express Type 10 with 8th Generation Intel® Core™ U Series Processor</td>
<td>04-13</td>
</tr>
<tr>
<td>NANO-MCOM-EHL</td>
<td>COM Express Type 10 CPU Module with Onboard Intel® Atom®/Celeron®/Pentium®/Processor</td>
<td>04-15</td>
</tr>
<tr>
<td>NANO-MCOM-APL-B10</td>
<td>COM Express Type 10 CPU Module with Onboard Intel® Atom®/Celeron®/Pentium®/Processor</td>
<td>04-17</td>
</tr>
<tr>
<td>NanoCOM-APL</td>
<td>COM Express Type 10 CPU Module with Onboard Intel® Atom®/Celeron®/Pentium®/Processor</td>
<td>04-19</td>
</tr>
<tr>
<td>HPC-RDSC</td>
<td>COM HPC Client Size C with 12th/13th Generation Intel® Core™ Platform</td>
<td>04-21</td>
</tr>
</tbody>
</table>

## 05 EPIC Boards

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPIC-ADS7</td>
<td>EPIC Board with 12th Generation Intel® Core™ i-S series Processor (Socket type)</td>
<td>05-1</td>
</tr>
<tr>
<td>EPIC-ADS7-PUC</td>
<td>EPIC System with 12th Generation Intel® Core™ Processor</td>
<td>05-3</td>
</tr>
<tr>
<td>EPIC-TGH7</td>
<td>EPIC Board with 11th Generation Intel® Xeon™ / Core™ Processor</td>
<td>05-5</td>
</tr>
<tr>
<td>EPIC-TGH7-PUC</td>
<td>EPIC System with 11th Generation Intel® Xeon/Core™ Processor</td>
<td>05-7</td>
</tr>
<tr>
<td>EPIC-KBS9</td>
<td>EPIC Board with 6th/7th Generation Intel® Core™ i-S series Processor (Socket Type)</td>
<td>05-9</td>
</tr>
<tr>
<td>EPIC-KBS7</td>
<td>EPIC Board with 6th/7th Generation Intel® Core™ i-S series Processor</td>
<td>05-11</td>
</tr>
<tr>
<td>EPIC-BT07</td>
<td>EPIC Board with Intel® Atom®/Celeron® Processor SoC</td>
<td>05-13</td>
</tr>
</tbody>
</table>

## 06 SubCompact Boards

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENE-ADP6</td>
<td>3.5” SubCompact Board with 12th Generation Intel® Core™/I3/11/13/Celeron®/Processor SoC</td>
<td>06-1</td>
</tr>
<tr>
<td>GENE-MADP6</td>
<td>3.5” SubCompact Board System with 12th Generation Intel® Core™/I3/11/13/Celeron®/Processor SoC</td>
<td>06-3</td>
</tr>
<tr>
<td>GENE-TGU6</td>
<td>3.5” SubCompact Board with 11th Generation Intel® Core™ (I3 I5 I7) Celeron CPU</td>
<td>06-5</td>
</tr>
<tr>
<td>GENE-MTGU6</td>
<td>3.5” SubCompact Board System with 11th Generation Intel® Core™ (I3 I5 I7) Celeron CPU</td>
<td>06-7</td>
</tr>
<tr>
<td>GENE-CML5</td>
<td>3.5” SubCompact Board with 10th Generation Intel® Core™ (I3 I5 I7) Celeron®/Processor</td>
<td>06-9</td>
</tr>
<tr>
<td>GENE-CMCL5</td>
<td>3.5” SubCompact Board with 10th Generation Intel® Core™ (I3 I5 I7) Celeron®/Processor SoC</td>
<td>06-11</td>
</tr>
<tr>
<td>GENE-WHU6</td>
<td>3.5” SubCompact Board with 8th Generation Intel® Core™ (I3 I5 I7) Celeron®/Processor SoC</td>
<td>06-13</td>
</tr>
<tr>
<td>GENE-WHCL6</td>
<td>3.5” SubCompact Board System with 8th Generation Intel® Core™ (I3 I5 I7) Celeron®/Processor SoC</td>
<td>06-15</td>
</tr>
<tr>
<td>GENE-KBU6</td>
<td>3.5” SubCompact Board with 7th Generation Intel® Core™ (I3 I5 I7) Celeron®/Processor SoC</td>
<td>06-17</td>
</tr>
<tr>
<td>GENE-KBCL6</td>
<td>3.5” SubCompact Board System with 7th Generation Intel® Core™ (I3 I5 I7) Celeron®/Processor SoC</td>
<td>06-19</td>
</tr>
<tr>
<td>GENE-SKU6</td>
<td>3.5” SubCompact Board with Intel® Core™ (I3 I5 I7) Celeron®/Processor SoC</td>
<td>06-21</td>
</tr>
<tr>
<td>GENE-SKU6 Rev. B</td>
<td>3.5” SubCompact Board with Intel® Core™ (I3 I5 I7) Celeron®/Processor SoC</td>
<td>06-23</td>
</tr>
<tr>
<td>GENE-EHL5</td>
<td>SubCompact Board with Intel Atom® x6000E Series, and Intel® Pentium® and Celeron®/N and J Series Processors</td>
<td>06-25</td>
</tr>
<tr>
<td>GENE-MEHL5</td>
<td>3.5” SubCompact Board System with Intel Atom® x6000E Series, and Intel® Pentium® and Celeron®/N and J Series Processors</td>
<td>06-27</td>
</tr>
<tr>
<td>GENE-APL5</td>
<td>3.5” SubCompact Board with Intel® Pentium®/N4200/Celeron® N3350 Processor SoC</td>
<td>06-29</td>
</tr>
</tbody>
</table>
Table of Contents

07

de next

de next-TGU8
86 x 55mm Single Board with 11th Generation Intel® Core™ i7/i5/i3 Processor 07-1

de next-V2K8
86 x 55mm Single Board with AMD Ryzen™ Embedded V2000 Series Processor 07-3

08

UP Boards

UP Board
UP Developer Board with Intel® Atom® x5-Z8350 Processor SoC 08-1

UP 4000
UP Developer Board with Intel® Celeron® N3350/Intel® Pentium® N4200/Intel® Atom® x7-E3950 Processor SoC 08-3

UP Squared
UP Squared Developer Board with Intel® Pentium®/Intel® N4200/Intel® N3350 Processor SoC 08-5

UP Squared V2
UP Squared V2 Developer Board with Intel® Pentium®/Intel® Celeron® Processor SoC 08-7

UP Squared Pro
Developer Board with Intel® Pentium®/Intel® Atom® N3350/Intel® N4200 Processor SoC 08-9

UP Squared 6000
UP Squared 6000 Developer Board with Intel® Pentium®/Intel® Atom® N3350 Processor SoC 08-11

UP Squared Pro 7000
UP Squared Pro 7000 Developer Board with Intel® Atom® Processor SoC (Alder Lake N) 08-13

UP Xtreme
UP Xtreme developer board with Intel® WHL-U Core™ i7/i5/i3/Celeron® Processor SoC 08-15

UP Xtreme i11
UP Xtreme i11 developer board with 11th generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC (formerly Tiger Lake UP3) 08-17

UP Xtreme i12
UP Xtreme i12 developer board with 12th generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC (Alder Lake-P) 08-19

UP Core
UP Core Developer Board with Intel® Atom® x5-Z8350 Processor SoC 08-21

UP Expansion Modules

Connect Plus
Expansion board with 3 x Gigabit LAN powered by Intel® i211-AT/i210-IT for UP Core Plus, UP Xtreme 08-23

UP-3G HAT
RS-232/422/485 x 2, Mini Card x 1, uSIM Card Reader x 1 08-25

UP-POE HAT
PoE Ideal Diode Bridge & PD Forward/Flyback Controller 08-26

UP Squared 6000 PSE Carrier Board
UP Squared 6000 PSE Carrier Board 08-27

UP 4000 M.2 Plus
UP 4000 Carrier Board for M.2 2230/3042/3052/2280 08-29

09

Industrial Motherboards

EMB-APL1
Mini-ITX Embedded Motherboard with Intel® N3350(UC)/N4200(QC) Processor 09-1

EMB-APL3
Mini-ITX Embedded Motherboard with Intel® N3350(UC)/N4200(QC) Processor 09-3

EMB-BT1
Mini-ITX Embedded Motherboard with Intel® Celeron® J1900/Intel® 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
## Table of Contents

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMB-BT4</td>
<td>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</td>
<td>09-9</td>
</tr>
<tr>
<td>MIX-EHLD1</td>
<td>Mini-ITX with Intel® Atom® x6000E/ Pentium®/ Celeron® N and J series processors, Max. 12W TDPs, Flexible rear IO, 12V DC input</td>
<td>09-11</td>
</tr>
<tr>
<td>MIX-KLUD1</td>
<td>Mini-ITX, 14mm, FCBGAT1356 7th Gen Intel® Core™ processor family, 15–25W TDP</td>
<td>09-13</td>
</tr>
<tr>
<td>MIX-TLUD1</td>
<td>Mini-ITX with Intel® 11thGen Core™ U-Processor, Max. 28W TDPs, 4Display output, 2.5GbEx1 + 1GbEx1</td>
<td>09-15</td>
</tr>
<tr>
<td>MIX-H310A1</td>
<td>Mini-ITX with 8th/9th Gen Intel® Core™ Processor Family, Max. 65W TDPs, Giga-LAN x 4</td>
<td>09-17</td>
</tr>
<tr>
<td>MIX-H310A2</td>
<td>Mini-ITX with 8th/9th Generation Intel® Core™ LGA1151 Socket Processor, Max. 65W TDPs, Giga-LAN x 2</td>
<td>09-19</td>
</tr>
<tr>
<td>MIX-H310D1</td>
<td>Mini-ITX with 8th/9th Generation Intel® Core™ LGA1151 Socket Processor, Max. 65W TDPs, 12V DC Power input</td>
<td>09-21</td>
</tr>
<tr>
<td>MIX-H310D2</td>
<td>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</td>
<td>09-23</td>
</tr>
<tr>
<td>MIX-Q370A1</td>
<td>Mini-ITX with 8th/9th Gen Intel® Core™ Processor Family, Max. 65W TDPs, Giga-LAN x 4</td>
<td>09-25</td>
</tr>
<tr>
<td>MIX-Q70D1</td>
<td>Mini-ITX with 8th/9th Gen Intel® Core™ Processor Family, DDR4 DRAM, USB x 10, Max. 65W TDPs</td>
<td>09-27</td>
</tr>
<tr>
<td>MIX-Q370D2</td>
<td>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</td>
<td>09-29</td>
</tr>
<tr>
<td>MIX-Q670A1</td>
<td>Mini-ITX with Intel® 12th Generation Core™ LGA1700 Socket Processor, Max. 65W TDPs, HDMI2.0 2 x + DP1.2 x 2, Giga-LAN x2, DDR5s2 Max. 64GB</td>
<td>09-31</td>
</tr>
<tr>
<td>MIX-Q670D1</td>
<td>Mini-ITX with Intel® 12th Generation Core™ LGA1700 Socket Processor, Max. 65W TDPs, HDMI2.0 x 2 + DP x 2, Giga-LAN x2, DDR5s2x2 Max. 64GB, DC 12V input, Low Profile</td>
<td>09-33</td>
</tr>
<tr>
<td>EMB-Q170A</td>
<td>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</td>
<td>09-35</td>
</tr>
<tr>
<td>EMB-Q170B</td>
<td>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</td>
<td>09-37</td>
</tr>
<tr>
<td>EMB-H110B</td>
<td>6th/7th Generation Intel® Core™ i Series, LGA1151 Socket Processor, Max. 65W TDPs, SATA 6.0 Gb/s x 2, USB x 8</td>
<td>09-39</td>
</tr>
<tr>
<td>MAX-Q470A</td>
<td>Micro-ATX Industrial Motherboard with 10th Generation Intel® Core™ Processor, DDR4 DRAM, Multiple Display Ports, Supports iAMT 12.0</td>
<td>09-41</td>
</tr>
<tr>
<td>MAX-Q370A</td>
<td>Micro-ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Multiple Display Ports, Supports iAMT 12.0</td>
<td>09-43</td>
</tr>
<tr>
<td>MAX-Q370C</td>
<td>Micro-ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Multiple Display Ports, Supports iAMT 12.0</td>
<td>09-45</td>
</tr>
<tr>
<td>MAX-C246A</td>
<td>Micro-ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Multiple Display Ports, Supports iAMT 12.0</td>
<td>09-47</td>
</tr>
<tr>
<td>MAX-H310A</td>
<td>Micro-ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM</td>
<td>09-49</td>
</tr>
<tr>
<td>IMBM-Q170A</td>
<td>Micro-ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 DRAM, USB x 14, Supports iAMT 11.0</td>
<td>09-51</td>
</tr>
<tr>
<td>IMBM-H110A</td>
<td>Micro-ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 DRAM, M.2 x 1, USB x 10</td>
<td>09-53</td>
</tr>
<tr>
<td>ATX-Q670A</td>
<td>ATX with Intel® 12th Generation Core™ LGA1700 Socket Processor, Max. 125W TDPs, DDR5 DRAM, Multiple Display Ports</td>
<td>09-55</td>
</tr>
<tr>
<td>ATX-Q370A</td>
<td>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</td>
<td>09-57</td>
</tr>
<tr>
<td>ATX-C246A</td>
<td>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</td>
<td>09-59</td>
</tr>
<tr>
<td>ATX-H310A</td>
<td>ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Option: 4G+LTE Function</td>
<td>09-61</td>
</tr>
<tr>
<td>IMBA-Q170A</td>
<td>ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 DRAM, USB x 14, Supports iAMT 11.0</td>
<td>09-63</td>
</tr>
<tr>
<td>IMBA-H110A</td>
<td>ATX with 7th/6th Generation Intel® Core™ Processor, DDR4 Max. 32GB, M.2 x 1, USB x 10</td>
<td>09-65</td>
</tr>
</tbody>
</table>

### Industrial Server

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARES-WH10</td>
<td>Intel® Whitley Platform Server Board, Support Xeon® Single Ice Lake-SP CPU</td>
<td>10-1</td>
</tr>
<tr>
<td>ZEUS-PUR0</td>
<td>4U Rackmount Purley Platform Server System, Support Xeon® FPGA CPU</td>
<td>10-3</td>
</tr>
<tr>
<td>ZEUS-WH10</td>
<td>4U Rackmount Whitley Platform Server System, Support Intel 3rd Gen. Xeon® Scalable Ice Lake-SP CPU</td>
<td>10-6</td>
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</table>
Established in 1992, AAEON is one of the leading designers and manufacturers of professional intelligent IoT solutions and advanced industrial computing platforms today. Committed to innovative engineering, AAEON provides integrated solutions including industrial motherboards and systems, industrial displays, rugged tablets, embedded controllers, network appliances and related accessories. We also work with premier OEM/ODMs and system integrators around the world. Offering x86-based platforms from Intel® Atom™ all the way to Intel® Xeon processors, and in desktop, 1U and 2U form factors, AAEON’s team of experienced engineers has helped dozens of companies around the globe deploy reliable appliances with faster times to market and lower development costs based on state-of-the-art hardware platforms, unmatched service quality and long-term support.

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

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

AAEON Core Values

Reliability:
Delivering dependable products in a timely manner

Integrity:
Valuing business integrity and ethics

Innovation:
Turning cutting-edge concepts into reality
System Level Products

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

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

Board Level Products

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

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

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

2022
• AAEON awarded 2022 Best Choice Golden Award

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

2014
• AAEON awarded the Computex Taipei 2014 Best Choice of the Year Award
• AAEON awarded the Microsoft® Windows® Embedded Partner of Year 2014
• AAEON awarded the Intel® Best Customer Award

2013
• AAEON awarded the Computex Taipei 2013 Best Choice of the Year Award
• 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 Computex Taipei Best Choice of the Year Award
• AAEON awarded the Computex Taipei Best Choice of the Year Award
• AAEON joined ASUSTek Computer Inc. (ASUS)

2012
• AAEON awarded the Computex Taipei 2012 Best Choice of the Year Award
• AAEON awarded the Intel® Marketing Development Funds Award of Excellence
• AAEON awarded the 10th 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 Computex Taipei 2011 Best Choice of the Year Award
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2010
• AAEON awarded the Computex Taipei 2010 Best Choice of the Year Award
• AAEON awarded the Microsoft® Windows® Embedded Partner of Year 2010
• AAEON awarded the Intel® Best Customer Award

2009
• AAEON awarded the Computex Taipei 2009 Best Choice of the Year Award
• AAEON awarded the Intel® Marketing Development Funds Award of Excellence
• AAEON awarded an OTC (Over The Counter) stock company
• AAEON set up a Singapore office

2008
• AAEON Technology (Su Zhou) received 3C and ISO-9001 certification
• AAEON set up a Singapore office

2007
• 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

2006
• AAEON was listed as an OTC (Over The Counter) stock company
• The AAEON Foundation was established to promote humanitarian work and technological education

2005
• AAEON became an Associate Member of the Intel® Embedded Alliance

2004
• 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

2003
• AAEON was listed as an OTC (Over The Counter) stock company
• The AAEON Foundation was established to promote humanitarian work and technological education

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

2001
• AAEON-USA, the premier off-shore branch office was established in New Jersey

2000
• AAEON acquired Asitech Technology Inc. to form the core of its panel PC Division

1999
• AAEON established sales offices in Europe and China

1998
• AAEON established its first office in Taipei, Taiwan

1997
• AAEON established its first office in Taipei, Taiwan

1996
• AAEON acquired Astech Technology Inc. to form the core of its panel PC Division

1995
• AAEON established its first office in Taipei, Taiwan

1994
• AAEON established its first office in Taipei, Taiwan

1992
• AAEON established its first office in Taipei, Taiwan

Note: All specifications are subject to change without notice.
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.

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.

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.
Quality Assurance

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

DQA

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

MQA

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

SQA

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

Technical Support

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

Repair Service

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

Quality Certification

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

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

Note: All specifications are subject to change without notice.
Introduction

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

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

Visit AAEON.ai today and explore the latest in AI Edge technology from AAEON!
Shop Online for Prompt Global Service

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

AAEON eShop Benefits

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

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

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

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

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

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

Note: All specifications are subject to change without notice.
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
- PCBA Assembly
- System Manufacturing
- Component and Subsystem Assembly
- Functional Testing
- Engineering Change Management
- BTO (Build to Order)
- Supplier Qualification
- Warehousing
- Failure Analysis

Collaboration Models

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

Customers can consign to AAEON the manufacturing of their existing products, customize existing AAEON COTS products, or joint develop new products with the expertise of a dedicated project team that oversees the project from product conceptualization to on-time delivery of the goods. AAEON DMS handles Large-volume as well as Low-Volume-High-Mix projects, satisfying the need of our customers for every kind of computing platform requirements.

Areas of Expertise

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

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

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

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

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

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

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

**WiTAS 2 Production**

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

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

Application

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

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

Note: All specifications are subject to change without notice.
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.

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

Some key features include:

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

Customization Made Easy

AAEON Single Board

BIO Module

Standard Product
- Immediate availability
- Simple expansion
Ready in 2 weeks!

Designed by AAEON
- Custom specification
- Costs at least 70% less than a new project

Designed by Customer
- Easy custom specification
- Co- & Self development
- Secured domain knowledge
Ready in 4 weeks!

Fast Delivery for Expansions
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® Embedded 8

Windows 10 IoT

Windows 10 IoT Enterprise LTSC 1607/1809/2021

Windows Embedded 7

AAEON Embedded OS Solution

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>Intel® 7th KabyLake (Q170/H110/C236)</td>
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<td>Intel® 6th SkyLake (Q170/H110/C236)</td>
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<td>Intel® TunnelCreek (E620/E640/E660/E680)</td>
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<td>Intel® Cedarview (D2550/N2800/N2600)</td>
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<td>AMD Geode (LX700/LX800/LX900)</td>
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</table>

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

Note: All specifications are subject to change without notice.
AAEON’s Embedded OS Solution/Hi-Supervisor

Embedded OS Main Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Windows® Embedded Standard</th>
<th>Windows® Embedded POS Ready</th>
<th>Windows® Embedded Enterprise</th>
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<tbody>
<tr>
<td>OS Family</td>
<td>Windows® Embedded Standard</td>
<td>Windows® Embedded POS Ready</td>
<td>Windows® Embedded Enterprise</td>
</tr>
<tr>
<td>Features</td>
<td>Full Customization</td>
<td>Simple Installation</td>
<td>Full Function</td>
</tr>
<tr>
<td></td>
<td>Windows® Embedded Standard 7</td>
<td>POSReady 7</td>
<td>Windows® 8.1 Professional</td>
</tr>
<tr>
<td></td>
<td>Windows® Embedded Standard 8</td>
<td>POSReady 2009</td>
<td>Windows® 10 IoT Enterprise LTSC 1607/1809/2021</td>
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<tr>
<td>CPU Type</td>
<td>x86</td>
<td>x86</td>
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<tr>
<td>Development Tool</td>
<td>Customization Image</td>
<td>CD Installation</td>
<td>CD Installation</td>
</tr>
<tr>
<td>Development Time</td>
<td>Short</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Maintenance Cost</td>
<td>Middle</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Embedded Features</td>
<td>Custom Shell/ EWF/ FBWF/ USB Boot/ HORM</td>
<td>Custom Shell/ FBWF/ USB Boot</td>
<td>Standard Shell/ UWF</td>
</tr>
</tbody>
</table>

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

Hi-Safe V3 Advantages

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

**System Information:**
Receives CPU, display and RAM information

**Hardware Monitor:**
Receives super I/O, fan, temperature and voltage data

**DIO:**
Obtains DIO information: sets the pin direction and pin data

**Smart Fan:**
Supports multi-stage adjustment of temperature and speed controls

**SM Bus:**
Reads and writes to SMBus device and detects SMBus base address automatically

**Backlight Controller:**
Controls LVDS or eDP display

**Watchdog:**
Sets the system reboot timer
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**

<table>
<thead>
<tr>
<th>Intel® Chipset</th>
<th>M67/ Q77/ QM77/ HM76/ B75A/ Q87/ QM87/QM170/Q170/Q370/ Q470/C246</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel® AMT Version</td>
<td>7.0/8.0/9.0/10.0/11.0/12.0/14.0</td>
</tr>
<tr>
<td>HW Inventory</td>
<td>✔</td>
</tr>
<tr>
<td>SW Inventory</td>
<td>✔</td>
</tr>
<tr>
<td>Power State Management</td>
<td>✔</td>
</tr>
<tr>
<td>System Defense</td>
<td>✔</td>
</tr>
<tr>
<td>Remote Configuration</td>
<td>✔</td>
</tr>
<tr>
<td>Remote Boot Option</td>
<td>✔</td>
</tr>
<tr>
<td>KVM Redirection</td>
<td>✔</td>
</tr>
<tr>
<td>KVM Remote Control</td>
<td>✔</td>
</tr>
<tr>
<td>ME Wake on LAN</td>
<td>✔</td>
</tr>
<tr>
<td>Proactive Security Block, HW-Based and Remote Management Recovery</td>
<td>✔</td>
</tr>
<tr>
<td>Host-Based Provisioning</td>
<td>✔</td>
</tr>
<tr>
<td>Enhanced System Defense Filters</td>
<td>✔</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
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/
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.
01

AI Edge Computing Solutions
# PICO-APL3-A10-FA1

AI Edge Computing Kit with Kneron KL520 NPU

![M2AI-2280-520](image1.jpg)

**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

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>FORM FACTOR</th>
<th>PICO-ITX</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Intel® Celeron® Processor: Pentium N4200 (4C/4T, 1.10GHz, up to 2.50GHz, TDP 6W)</td>
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</tr>
<tr>
<td>CHIPSET</td>
<td>Integrated with Intel® SoC</td>
<td></td>
</tr>
<tr>
<td>MEMORY TYPE</td>
<td>Onboard DDR3L 4GB</td>
<td></td>
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<tr>
<td>WAKE ON LAN</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>WATCHDOG TIMER</td>
<td>255 Levels</td>
<td></td>
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<tr>
<td>SECURITY</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>RTC Battery</td>
<td>Lithium Battery 3V/240mAh</td>
<td></td>
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<tr>
<td>DIMENSION</td>
<td>3.94&quot; x 2.84&quot; (100mm x 72mm)</td>
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</tr>
<tr>
<td>Gross Weight</td>
<td>0.18 lbs. (0.08 kg)</td>
<td></td>
</tr>
<tr>
<td>OS Support</td>
<td>Windows 10 (64 bit)</td>
<td></td>
</tr>
</tbody>
</table>

## Power

| POWER | POWER REQUIREMENT | +12V |
| POWER SUPPLY TYPE | ATX |
| CONNECTOR | Lockable DC Jack Connector |
| POWER CONSUMPTION | Intel® N4200 processor, DDR3L 4GB, 1.1A@12V |

## Display

| 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

| AUDIO | CODEC | — |
| AUDIO INTERFACE | — |
| Speaker | — |

## External I/O

| EXTERNAL I/O | ETHERNET | Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 1 |
| SERIAL PORT | — |
| VIDEO | HDMI 1.4b x 1 (up to 3840 x 2160@30Hz) |

## Internal I/O

| 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 |
| 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 |

## Expansion

| EXPANSION | Mini PCI-E/mSATA |
| M.2 | M.2 E-Key 2280 x 1 (PCIe/USB) |
| M.2 B-Key 2280 x 1 (SATA/USB) |
| Others | — |

## Environment & Certification

| 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% ~ 91% 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

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

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1709070500</td>
<td>(TF) SATA Cable, 50cm</td>
<td>1</td>
</tr>
<tr>
<td>1700040151</td>
<td>(TF) USB Cable, 15cm</td>
<td>2</td>
</tr>
<tr>
<td>125530040C</td>
<td>(TF) Flat Cable, D-Sub 9P(M), 9P 1.0mm Housing, 12cm</td>
<td>1</td>
</tr>
<tr>
<td>1702031802</td>
<td>Power Cord (US Type)</td>
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<tr>
<td>1702031803</td>
<td>Power Cord (European Type)</td>
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</tr>
<tr>
<td>170203180E</td>
<td>Power Cord (Japan Type)</td>
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</tr>
</tbody>
</table>
M2AI-2242-520
AI Edge Computing Module with Kneron KL520 NPU

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

Specifications

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

Packing List

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

Optional Accessories
- EverFocus Full HD Camera EUA1200

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PER-T520-M2AI-A11-0421</td>
<td>AI.NPU 520 M.2 2242(USB interface).A1.1</td>
</tr>
<tr>
<td>PER-T520-M2AI-A11-K421</td>
<td>AI.NPU KL520 M.2 2242.w/ HD Camera,A1.1</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
AI Edge Computing Module with Kneron KL520 NPU

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>IC</th>
<th>Kneron KL520</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Integrated SoC</td>
<td></td>
</tr>
<tr>
<td>Support Framework</td>
<td>ONNX, TensorFlow, Keras, Caffe</td>
<td></td>
</tr>
<tr>
<td>Support Model</td>
<td>Vgg16, Resnet, GoogleNet, YOLO, Tiny YOLO, Lenet, MobileNet, DenseNet</td>
<td></td>
</tr>
<tr>
<td>Memory Type</td>
<td>LPDDR2</td>
<td></td>
</tr>
<tr>
<td>NPU Performance</td>
<td>0.35 TOPS</td>
<td></td>
</tr>
<tr>
<td>Overall Power Consumption</td>
<td>0.5 W</td>
<td></td>
</tr>
</tbody>
</table>

Others
- Operating Temperature 32°F ~ 158°F (0°C ~ 70°C)
- Storage Temperature -40°F ~ 185°F (-40°C ~ 85°C)
- Operating Humidity 0% ~ 90% relative humidity, non-condensing
- Certification CE/FCC Class A

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

Optional Accessories
- EverFocus Full HD Camera EUA1200

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>PER-T520-M2AI-A11-K801</td>
<td>AI.NPU KL520.M.2 2280.w/ HD Camera.A1.1</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.

www.aaeon.com
Mini-AI-520
AI Edge Computing Module with Kneron KL520 NPU

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Kneron KL520</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Integrated SoC</td>
</tr>
<tr>
<td>Support Framework</td>
<td>ONNX, TensorFlow, Keras, Caffe</td>
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<tr>
<td>Support Model</td>
<td>Vgg16, Resnet, GoogleNet, YOLO, Tiny YOLO, Lenet, MobileNet, DenseNet</td>
</tr>
<tr>
<td>Memory Type</td>
<td>LPDDR2</td>
</tr>
<tr>
<td>NPU Performance</td>
<td>0.35 TOPS</td>
</tr>
<tr>
<td>Overall Power Consumption</td>
<td>0.5 W</td>
</tr>
</tbody>
</table>

Others
- Operating Temperature: 32°F ~ 158°F (0°C ~ 70°C)
- Storage Temperature: -40°F ~ 185°F (-40°C ~ 85°C)
- Operating Humidity: 0% ~ 90% relative humidity, non-condensing
- Certification: CE/FCC Class A

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

Optional Accessories
- EverFocus Full HD Camera EUA1200

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PER-T520-MIAI-A11-0001</td>
<td>AI.NPU 520 full size mini Card(USB interface).A1.1</td>
</tr>
<tr>
<td>PER-T520-MIAI-A11-K001</td>
<td>AI.NPU KL520 Full size Mini Card w/ HD Camera.A1.1</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
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

<table>
<thead>
<tr>
<th>System</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IC</td>
<td>Kneron KL720</td>
</tr>
<tr>
<td>Type</td>
<td>ARM CM &amp; DSP</td>
</tr>
<tr>
<td>Support Framework</td>
<td>Pytorch, ONNX, Tensorflow 1.6, Tensorflow lite, Keras, Caffe</td>
</tr>
<tr>
<td>Support Model</td>
<td>ResNet, GoogleNet, YOLO, Tiny YOLO, MobileNet-SSD, DenseNet, RNN, LSTM</td>
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<tr>
<td>Memory Type</td>
<td>128MB LPDDR3</td>
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<tr>
<td>NPU Performance</td>
<td>1.4 TOP/s</td>
</tr>
<tr>
<td>Overall Power Consumption</td>
<td>2.3W</td>
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<table>
<thead>
<tr>
<th>Others</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>32°F~122°F(0°C ~ 50°C with cooler 5m/s)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>32°F~158°F(0°C ~ 70°C)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0% ~ 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Certification</td>
<td>CE/FCC Class A</td>
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Packing List
- M3 screw x 2
- M2AI-2242-720 x 1

Optional Accessories
- PER-T720-M2AI-FAN01

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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</thead>
</table>

Note: All specifications are subject to change without notice.
M2AI-2280-720

AI Edge Computing Module with Kneron KL720 NPU

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Dual Kneron KL720</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>ARM CM &amp; DSP</td>
</tr>
<tr>
<td>Support Framework</td>
<td>Pytorch, ONNX, TensorFlow 1.6, Tensorflow lite, Keras, Caffe</td>
</tr>
<tr>
<td>Support Model</td>
<td>Resnet, Googlenet, YOLO, Tiny YOLO, MobileNet-SSD, DenseNet, RNN, LSTM</td>
</tr>
<tr>
<td>Memory Type</td>
<td>128MB LPDDR3</td>
</tr>
<tr>
<td>NPU Performance</td>
<td>1.4 TOP/s x2</td>
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<tr>
<td>Overall Power Consumption</td>
<td>5W</td>
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<tr>
<td>Operating Temperature</td>
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<td>Storage Temperature</td>
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<td>Operating Humidity</td>
<td>0% ~ 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Certification</td>
<td>CE/FCC Class A</td>
</tr>
</tbody>
</table>

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

Optional Accessories
- PER-T720-M2AI-FAN02

AI Architecture

System Host

Switch

Cortex M4

LPDDR3

KL720 NPU

Cortex M4

LPDDR3

KL720 NPU

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PER-T720-M2AI-A10-0801</td>
<td>AI.NPU 720 M.2 B-M Key 2280 (PCIe[x1] interface), A1.0</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
### 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

<table>
<thead>
<tr>
<th>System</th>
<th>IC</th>
<th>Kneron KL720</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>ARM CM &amp; DSP</td>
<td></td>
</tr>
<tr>
<td>Support Framework</td>
<td>Pytorch, ONNX, Tensorflow 1.6, Tensorflow lite, Keras, Caffe</td>
<td></td>
</tr>
<tr>
<td>Support Model</td>
<td>Resnet, GoogleNet, YOLO, Tiny YOLO, MobileNet-SSD, DenseNet, RNN, LSTM</td>
<td></td>
</tr>
<tr>
<td>Memory Type</td>
<td>LPDDR3</td>
<td></td>
</tr>
<tr>
<td>NPU Performance</td>
<td>1.4 TOPS</td>
<td></td>
</tr>
<tr>
<td>Overall Power Consumption</td>
<td>5W TDP</td>
<td></td>
</tr>
</tbody>
</table>

**Others**

- Operating Temperature: 32°F–122°F (0°C – 50°C with cooler 5m/s)
- Storage Temperature: 32°F–158°F (0°C–70°C)
- Operating Humidity: 0%–90% relative humidity, non-condensing
- Certification: CE/FCC Class A

### Packing List

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

### Optional Accessories

- PER-T720-MINI-FAN01

### Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PER-T720-MIAI-A10-0001</td>
<td>AI.NPU 720.full size mini Card/PCIe[x1] interface, A1.0</td>
</tr>
</tbody>
</table>

---

**AI Architecture**

System Host

PCIe[x1]

Switch

Cortex M4

LPDDR3

KL720 NPU

---

Note: All specifications are subject to change without notice.
Gateway Board & Expansion Board
### Features
- ARM Cortex-A8 800 MHz RISC Processor
- Onboard DDR3L 1 GB / eMMC 16GB
- Gigabit Ethernet port x 2
- USB2.0 x 1, RS-485 x 2
- 4 LED lights controlled through GPIO
- RTC x 1, Micro SD Slot x 1, SIM Slot x 1
- Mini PCIe connector (for RF Module) x 1
- NB-IoT connector x 1
- Micro USB Debug Port x 1
- DC9-30V Power Input
- Pre-Install Linux Debian

### Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>ARM Cortex-A8 800 MHz RISC Processor</td>
</tr>
<tr>
<td>Memory</td>
<td>Onboard DDR3L 1GB</td>
</tr>
<tr>
<td>Storage</td>
<td>eMMC 16G</td>
</tr>
<tr>
<td>Real Time Clock</td>
<td>RTC, with 3V CR2032 Lithium battery x 1</td>
</tr>
<tr>
<td>Security</td>
<td>Programmable LED control x 4</td>
</tr>
<tr>
<td>Cellular</td>
<td>Mini PCIe Connector x 1</td>
</tr>
<tr>
<td>Wireless Lan</td>
<td></td>
</tr>
<tr>
<td>Operating System</td>
<td>Debian 9</td>
</tr>
<tr>
<td>Support Protocol</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I/O Interfaces</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Port</td>
<td>RS-485, Phoenix Connector x 2</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Gigabit Ethernet, RJ-45 x 2</td>
</tr>
<tr>
<td>USB</td>
<td>USB 2.0, Type A x 1</td>
</tr>
<tr>
<td>ADC</td>
<td></td>
</tr>
</tbody>
</table>

### Packing List
- **SRT-3352**

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

Note: All specifications are subject to change without notice.
Block Diagram

Dimension

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Memory</th>
<th>Thermal</th>
<th>COM</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>Expansion slot</th>
<th>Power</th>
<th>Operation Temp.</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRT-3352-A10-A002</td>
<td>ARM Cortex-A8 800MHz</td>
<td>Onboard DDR3L 1GB</td>
<td>Fakas</td>
<td>RS-485 x2 phoenix</td>
<td>eMMC: 16GB, MicroSD x1</td>
<td>GbE x 2</td>
<td>USB 2.0 x 1</td>
<td>Mini PCIe slot x 1, SIM-card socket x 1</td>
<td>DC9-30V</td>
<td>0°C ~ 60°C @ 0.5 m/s airflow</td>
<td>3G/4G LTE module (optional)</td>
</tr>
</tbody>
</table>
SRT-3352C
Compact Gateway Board With Onboard ARM Cortex-A8 800 MHz RISC Processor

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>ARM Cortex-A8 800 MHz RISC Processor</td>
</tr>
<tr>
<td>Memory</td>
<td>Onboard DDR3L 1GB</td>
</tr>
<tr>
<td>Storage</td>
<td>eMMC 16G</td>
</tr>
<tr>
<td>Real Time Clock</td>
<td>RTC, with 3V CR2032 Lithium battery x 1</td>
</tr>
<tr>
<td>Security</td>
<td></td>
</tr>
<tr>
<td>Indicators</td>
<td>Programmable LED control x 4</td>
</tr>
<tr>
<td>Cellular</td>
<td>Mini PCIe Connector x 1</td>
</tr>
<tr>
<td>Wireless Lan</td>
<td>Onboard WiFi 802.11 b/g/n, Bluetooth4.2 / BLE</td>
</tr>
<tr>
<td>Operating System</td>
<td>Debian 10</td>
</tr>
<tr>
<td>Support Protocol</td>
<td></td>
</tr>
<tr>
<td>I/O Interfaces</td>
<td></td>
</tr>
<tr>
<td>Serial Port</td>
<td>RS-485 x 2, wafer box</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Gigabit Ethernet, RJ-45 x 2</td>
</tr>
<tr>
<td>USB</td>
<td>USB 2.0, Type A x 2</td>
</tr>
<tr>
<td>ADC</td>
<td></td>
</tr>
</tbody>
</table>

Packaging List
- SRT-3352C

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

Note: All specifications are subject to change without notice.
Block Diagram

Dimension Unit: mm

Ordering Information

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

Note: All specifications are subject to change without notice.
Features

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

Packaging List

- SRT-IMX8P
- Optional Accessories
  - 9741EC25E0 PCIe mini card. 4G LTE. module kit. W/Cable & Antenna. Quectel. EC25-E
  - 9741236A00 Mini card WiFi Kit.802.11ac/a/b/g/n. BT4.2. W/Cable&Antenna.SparkLan.WPET-236ACN(BT)
  - 1255300611 Power Adapter.DC.100/240V.12V.5A.60W.2P Phoenix P=3.81mm.
  - 1702031802 POWER CORD.3P-125V 10A.1.8M.US.
  - 1702031803 POWER CORD.3P-250V 10A.1.8M.EU.
  - 170203181J POWER CORD.3P-250V 13A.1.8M.UK
  - 1702031811 POWER CORD.3P-125V 10A.1.8M.TWN
  - 170203180E POWER CORD. 3P-125V 7A.1.8M.JPN

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor (NPU Optional)</td>
</tr>
<tr>
<td>Memory</td>
<td>Onboard DDR4L 2GB (Optional 4GB)</td>
</tr>
<tr>
<td>Storage</td>
<td>eMMC 16GB (Optional 32GB)</td>
</tr>
<tr>
<td>Real Time Clock</td>
<td>RTC x 1, with 3V CR2032 Lithium battery</td>
</tr>
<tr>
<td>Indicators</td>
<td>Programmable LED control x 7</td>
</tr>
<tr>
<td>Security</td>
<td>TPM 2.0</td>
</tr>
<tr>
<td>Cellular</td>
<td>Mini PCIe Connector x 1 (USB signal)</td>
</tr>
<tr>
<td>Wireless Lan</td>
<td>Mini PCIe Connector x 1 (USB signal)</td>
</tr>
<tr>
<td>Operating System</td>
<td>Debian 10</td>
</tr>
<tr>
<td>Support Protocol</td>
<td>—</td>
</tr>
<tr>
<td>I/O Interfaces</td>
<td>RS-232/422/485 switchable x 2, Phoenix Connector</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Gigabit Ethernet x 2, RJ-45</td>
</tr>
<tr>
<td>USB</td>
<td>USB 3.0 Type-A x 2</td>
</tr>
<tr>
<td>ADC</td>
<td>—</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
Block Diagram

Dimension

Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Memory</th>
<th>NPU</th>
<th>Thermal</th>
<th>Ports</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>Expansion Slot</th>
<th>Power</th>
<th>Operation Temp.</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRT-IMX8P-A10-0216</td>
<td>ARM NXP i.MX8M Plus</td>
<td>DDR4</td>
<td>1GB</td>
<td>Fanless</td>
<td>RS-232/422/485 x 2, Phoenix</td>
<td>1GB</td>
<td>GBE x 2</td>
<td>USB 3.0 x 2</td>
<td>Mini PCIe slot x 2</td>
<td>DC 9-36V</td>
<td>-20°C ~ 70°C</td>
<td>3G/4G LTE module</td>
</tr>
<tr>
<td></td>
<td>Quad-Core Cortex A53</td>
<td></td>
<td></td>
<td></td>
<td>CAN-FD x 2, HDMI x 1 (Dual), Fan</td>
<td></td>
<td></td>
<td></td>
<td>5W card socket x 1</td>
<td></td>
<td></td>
<td>(optional)</td>
</tr>
<tr>
<td>SRT-IMX8P-A10-0432</td>
<td>ARM NXP i.MX8M Plus</td>
<td>DDR4</td>
<td>4GB</td>
<td>Fanless</td>
<td>RS-232/422/485 x 2, Phoenix</td>
<td>4GB</td>
<td>GBE x 2</td>
<td>USB 3.0 x 2</td>
<td>Mini PCIe slot x 2</td>
<td>DC 9-36V</td>
<td>-20°C ~ 70°C</td>
<td>3G/4G LTE module</td>
</tr>
<tr>
<td></td>
<td>Quad-Core Cortex A53</td>
<td></td>
<td></td>
<td></td>
<td>CAN-FD x 2, HDMI x 1 (Dual), Fan</td>
<td></td>
<td></td>
<td></td>
<td>5W card socket x 1</td>
<td></td>
<td></td>
<td>(optional)</td>
</tr>
</tbody>
</table>
### Features
- **11th Generation Intel Core i7/i5/i3/Celeron Processor SoC**
- **DDR4 3200MHz, SO-DIMM x 2, up to 64GB**
- **USB 3.2 Gen 1 x 3, USB 3.2 Gen 2 x 1**
- **HDMI 2.0b x 1 (Output)**
- **GbE x2 (Intel I219, I211) + 2.5 GbE x1 (Intel I225)**
- **M.2 3052 B Key x1, M.2 2280 M Key x1, M.2 2230 E Key x1**
- **DC 9 ~ 36V Power Input**
- **100 pin board to board connector x 2**
- **PCIE, USB3.0, USB2.0, UART, GPIO, I2C, DDI, SPI**

### I/O Interfaces

#### Serial Port
- RS-232/422/485 x 4, Wafer Box

#### Ethernet
- Intel 6/5/2/11-LM10/100/1000Base x 1, RJ45
- Intel 6/5/2/11-LM10/100/1000Base x 1, RJ45
- Intel 6/5/2/11-LM10/100/1000Base x 1, RJ45
  (Support Vpro)

#### USB
- USB 3.2 Gen 2 x 1, Type A
- USB 3.2 Gen 1 x 1, Type A

#### CAN Bus
- 8 bit, Phoenix Connector
- CAN 2.0 B x 2 CH, Phoenix Connector

#### Display
- HDMI 2.0b x 1

#### Power Connector
- 2 Pin 3.81mm Pitch Phoenix Connector

#### Debug Port
- —

#### Expansion Slot
- Micro SIM slot x 1

#### Other Interface
- SATA 3.0 x 1
- SATA Power connector x 1 (5V)
- 100 pin board to board connector x 2
- PCIE, USB3.0, USB2.0, UART, GPIO, I2C, DDI, SPI

### Power Supply
- **Power Requirement** DC 9 ~ 36V (Optional DC12V), AT Type
- **Power Consumption** 67 W (Full Loading)
- **MTBF (Hours)** 306,575
- **Environmental and Mechanical**
  - **Dimension** 6.69” x 5.74” (170 x 146 mm)
  - **Weight** 1.4lb (650g)
  - **Mount Options** —
  - **Operation Temperature** 32 °F ~ 122 °F (0 °C ~ 50 °C)
  - **Storage Temperature** -40 °F ~ 176 °F (-40 °C ~ 80 °C)
  - **Operation Humidity** 10% ~ 95% relative humidity, non-condensing

### Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>11th Generation Core Intel® i7-1185G7E SoC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>11th Generation Core Intel® i5-1145G7E SoC</td>
</tr>
<tr>
<td>Memory</td>
<td>11th Generation Core Intel® i3-1115G4E SoC</td>
</tr>
<tr>
<td>Storage</td>
<td>11th Generation Core Intel® Celeron 6305E SoC</td>
</tr>
<tr>
<td>TDP</td>
<td>TDP 12W Only</td>
</tr>
</tbody>
</table>

| Memory         | DDR4 3200MHz, SO-DIMM x 2, up to 64GB     |

| Storage        | M.2 2280 M Key slot x 1 (PCIex4)         |
| Real Time Clock| RTC x 1, with 3V CR2032 lithium battery  |
| Security       | TPM 2.0                                  |
| Indicators     | —                                        |
| Cellular       | M.2 3052 B Key slot x 1 (4G/5G)          |
| Wireless Lan   | M.2 2230 E Key slot x 1 (WiFi 802.11 ac/b/g/n, BT 5.0) |
| Operating System| Windows 10 IoT Enterprise / Linux (by request) |
| Support Protocol| —                                        |

### Packing List
- **SRT-TG01**

### Optional Accessories

- **1255300611** Power Adapter DC 100/240V, 12V 6A 50/60Hz, 2m, CE, WEEE, RoHS, UL, 1N, US, CA, CN, JP, EN, IEC62301
- **9686Y00124** M.2 3042 LTE Cat4 module for global market, SIMCOM, SIM7600G-H with LTE antenna
- **9741364A00** M.2 2230 Wireless.802.11 ac/a/b/g/n + BT 5.0, 2.4GHz, SIMCOM QCNFA364A, w/2 sets of cable and antenna
- **1702031802** POWER CORD3.0-125V 10A 180D.1.8M USA/FANJET, YP12/YC-12 Certificate
- **1702031803** POWER CORD3.0-250V 10A 180D.1.8M EU/FANJET YP-22/YC-12
- **1702031804** POWER CORD3.0-250V 13A UK type, 180D YP12/FC-12
- **170203180E** Power cord 3.0-250V/7A 1.8M PSE YP12/YC12 Certificate
Block Diagram

Gateway Board & Expansion Board

Note: All specifications are subject to change without notice.

www.aaeon.com
Standard IoT Gateway Board with Intel Atom X5-E3940 Processor SoC

Features

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

DI/DO
—
CAN Bus
—
Display
HDMI 1.4 x 1 (Output)
Power Connector
DC Jack
Debug Port
—
Expansion Slot
Micro SD slot x 1
100 pin board to board connector x 2
PCIE, USB3.0, USB2.0, UART, GPIO, I2C, DDI, SPI
Other Interface
Power switch button x 1
Reset switch button x 1

Power Supply

Power Requirement
12V DC-In @ 3A-5A 5.5/2.5 mm
Power Consumption
20 W (Full Loading)
MTBF (Hours)
826,592

Environmental and Mechanical

Dimension
3.54” x 2.9” x 0.85” (90 x 74 x 21.5 mm)
Weight
0.44lb (200 g)
Mount Options
—
Operation Temperature
32 °F ~ 140 °F (0 °C ~ 60 °C)
Storage Temperature
-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operation Humidity
10% ~ 95% relative humidity, non-condensing

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Intel Atom X5-E3940 Processor SoC / Intel HD 500 Graphics</td>
</tr>
<tr>
<td>Memory</td>
<td>Onboard LPDDR4 1866MHz 4GB / 8GB (Optional)</td>
</tr>
<tr>
<td>Storage</td>
<td>eMMC 5.1 32GB / 64GB (Optional)</td>
</tr>
<tr>
<td>Real Time Clock</td>
<td>RTC x 1, with 3V CR2032 Lithium battery</td>
</tr>
<tr>
<td>Security</td>
<td>—</td>
</tr>
<tr>
<td>Indicators</td>
<td>—</td>
</tr>
<tr>
<td>Cellular</td>
<td>—</td>
</tr>
<tr>
<td>Wireless Lan</td>
<td>—</td>
</tr>
<tr>
<td>Operating System</td>
<td>Windows 10 IoT Enterprise / Linux (by request)</td>
</tr>
<tr>
<td>Support Protocol</td>
<td>—</td>
</tr>
<tr>
<td>I/O Interfaces</td>
<td>—</td>
</tr>
<tr>
<td>Serial Port</td>
<td>—</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Gigabit Ethernet x 1, RJ-45</td>
</tr>
<tr>
<td>USB</td>
<td>USB 3.0 x 1, Type A</td>
</tr>
<tr>
<td>ADC</td>
<td>—</td>
</tr>
</tbody>
</table>

Optional Accessories

- 1255300409
  Power Adapter: AC Input 90~264V, DC output 12V/3.4A
- 1702031802
  POWER CORD: 3P-125V 10A 180D, USA, FANJET, YP12/YC-12
- 1702031803
  POWER CORD: 3P-250V 10A 180D, 1.8M, EU, FANJET, YP-22/YC-12
- 170203180J
  POWER CORD: 3P-250V 13A, UK type, 1830mm
- 1702031811
  POWER CORD: 3P-125V 10A, 180D, 1.8M, TWIN/BSMI, FANJET, YP-12/YC-12
- 170203180E
  Power cord:3P-125V/7A 1.8M, PSE YP12/YC12

Certificat

PRELIMINARY

Note: All specifications are subject to change without notice.
Block Diagram

Dimension

Ordering Information

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

Note: All specifications are subject to change without notice.
Pico-ITX Boards
PICO-V2K4

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

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

Specifications

SYSTEM
- FORM FACTOR: PICO-ITX
- CPU: AMD RYZEN™ V2000 embedded Processor Family
  - V2718 (8C/16T, 1.7~4.15 GHz, TDP 10-25W)
  - V2516 (6C/12T, 2.1~3.95 GHz, TDP 10-25W)
- CHIPSET: AMD RYZEN™ V2000 embedded Processor Family
- MEMORY TYPE: LPDDR4x 3733 MHz onboard memory
- BIOS: UEFI
- WAKE ON LAN: Yes
- WATCHDOG TIMER: 255 Levels
- RTC Battery: Lithium Battery 3V/240mAh
- DIMENSION: 3.94” x 2.84” (100mm x 72mm)
- Gross Weight: 0.18 lbs (0.08 kg)
- OPERATING TEMP: 32°F ~ 140°F (0°C ~ 60°C)
- STORAGE TEMP: -40°F ~ 185°F (-40°C ~ 85°C)

POWER
- POWER REQUIREMENT: +12V
- POWER SUPPLY TYPE: ATX
- POWER CONSUMPTION:
  - V2718, LPDDR4x onboard 32GB, 4.24A @ +12V (TYPICAL)
  - V2718, LPDDR4x onboard 32GB, 4.82A @ +12V (MAX)
- CONNECTOR: Phoenix 2-pin Connector (Default)
  - Lockable DC Jack Connector (optional)
- Display Interface
  - Type C to DP x 1
  - HDMI 2.0b x 1, 4K x 2K 60Hz
  - HDMI 1.4 x 1, 4K x 2K 30Hz (3840 x 2160)
- Multiple Display: Up to 4 Simultaneous Displays

DISPLAY
- CONTROLLER: AMD Radeon 6, 7 Graphics (FirePro)
- LVDS/eDP:
  - eDP or LVDS x 1 (eDP 1.4: 3840x2160, 60Hz; LVDS: 12V/3.3V, 18-24 bit, single channel)
- Audio:
  - Realtek ALC269 (Optional)

AUDIO
- CODEC: Realtek ALC269 (Optional)
- AUDIO INTERFACE: High Definition Audio Interface, Line-in/Line-out/MIC (Optional)
- Speaker: —

EXTERNAL I/O
- ETHERNET
  - Intel® i226, 10/100/2500Base x 1
  - Intel® i210, 10/100/1000Base x 1
- USB
  - USB3.2 Gen2 Type C x 1
  - USB3.2 Gen2 x 2

PACKING LIST
- PICO-V2K4

Optional Accessories

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

Note: All specifications are subject to change without notice.
Block Diagram

Dimension

Ordering Information

<table>
<thead>
<tr>
<th>Part number</th>
<th>CPU</th>
<th>Memory</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>Expansion slot</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Audio</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>PICO-V2K4-A11-0002</td>
<td>V2516</td>
<td>4GB</td>
<td>Type C to DP x 1</td>
<td>SATAII x 1</td>
<td>GbE x 2</td>
<td>USB 2.0 x 4</td>
<td>M.2 2280 M-key x 1</td>
<td>+12V (Terminal block)</td>
<td>0~60°C</td>
<td>--</td>
<td>SMBUS x 1</td>
</tr>
<tr>
<td>PICO-V2K4-A11-0003</td>
<td>V2516</td>
<td>8GB</td>
<td>Type C to DP x 1</td>
<td>SATAII x 1</td>
<td>GbE x 2</td>
<td>USB 2.0 x 4</td>
<td>M.2 2280 M-key x 1</td>
<td>+12V (Terminal block)</td>
<td>0~60°C</td>
<td>--</td>
<td>SMBUS x 1</td>
</tr>
<tr>
<td>PICO-V2K4-A11-0004</td>
<td>V2718</td>
<td>8GB</td>
<td>Type C to DP x 1</td>
<td>SATAII x 1</td>
<td>GbE x 2</td>
<td>USB 2.0 x 4</td>
<td>M.2 2280 M-key x 1</td>
<td>+12V (Terminal block)</td>
<td>0~60°C</td>
<td>--</td>
<td>SMBUS x 1</td>
</tr>
<tr>
<td>PICO-V2K4-A11-0005</td>
<td>V2718</td>
<td>16GB</td>
<td>Type C to DP x 1</td>
<td>SATAII x 1</td>
<td>GbE x 2</td>
<td>USB 2.0 x 4</td>
<td>M.2 2280 M-key x 1</td>
<td>+12V (Terminal block)</td>
<td>0~60°C</td>
<td>--</td>
<td>SMBUS x 1</td>
</tr>
</tbody>
</table>
### Specifications

**SYSTEM**
- **FORM FACTOR**: PICO-SEMI
- **CPU**: AMD RYZEN™ V2000 embedded Processor Family
  - V2718 (8C/16T, 1.7~4.15 GHz, TDP 10-25W)
  - V2516 (6C/12T, 2.1~3.95 GHz, TDP 10-25W)
- **CHIPSET**: AMD RYZEN™ V2000 embedded Processor Family
- **MEMORY TYPE**: LPDDR4x 3733 MHz onboard memory
- **BIOS**: UEFI

**POWER**
- **POWER REQUIREMENT**: +12V
- **POWER SUPPLY TYPE**: ATX
- **CONNECTOR**: DC Jack Connector
- **POWER CONSUMPTION**: V2718, LPDDR4x onboard 32GB, 4.24A @ +12V (TYPICAL)
  - V2718, LPDDR4x onboard 32GB, 4.82A @ +12V (MAX)

**DISPLAY**
- **CONTROLLER**: AMD Radeon 6, 7 Graphics (Renoir)
- **LVDS/eDP**
- **SECURITY**: TPM2.0
- **RTC Battery**: Lithium Battery 3V/240mAh
- **DIMENSION**: 4.80” x 3.18” x 2.13” (122mm x 80.8mm x 54 mm)
- **Gross Weight**: 0.84 lbs (0.38 kg)
- **OS Support**: Windows 10 (64 bit), Linux Ubuntu 20.04.3/Kernel 5.11

**AUDIO**
- **CODEC**: Realtek ALC269 (Optional)
- **AUDIO INTERFACE**: Line-out (Optional)
- **Speaker**: —

**EXTERNAL I/O**
- **ETHERNET**: Intel® i226, 10/100/2500Base x 1
- **USB**:
  - USB 3.2 Gen2 Type C x 1
  - USB 3.2 Gen2 x 2
  - USB 2.0 x 2 (Optional)
- **SERIAL PORT**: COM1, COM2 (RS232/422/485, supports 5V/12V/RI) (Optional)
- **SATA**: Onboard NVME SSD 64GB
- **VIDEO**: Type C to DP x 1
  - HDMI 2.0b x 1, 4K x 2K 60Hz
  - HDMI 1.4 x 1, 4K x 2K 30Hz (3840 x 2160)

**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

**Other**
- **Front Panel**: HDD LED, PWR LED, Power Button, Buzzer, Reset
- **Others**: —

### 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)

### Packing List
- **PICO-V2K4-SEMI**

### Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1702031802</td>
<td>Power Cord (US Type)</td>
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<tr>
<td>1702031803</td>
<td>Power Cord (Europe Type)</td>
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<tr>
<td>1702031805</td>
<td>Power Cord (Japan)</td>
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<tr>
<td>1255201200</td>
<td>Power Adapter 12V/10A 120W FSP120-AHAN3 w/o Lock</td>
<td>1</td>
</tr>
<tr>
<td>1255X00063</td>
<td>Power Adapter 12V/12.5A 150W DPS-150AB-15 w/Lock</td>
<td>1</td>
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<tr>
<td>170X000568</td>
<td>Dual COM port cable</td>
<td>1</td>
</tr>
<tr>
<td>170X000576</td>
<td>Dual USB2.0 port cable</td>
<td>1</td>
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<tr>
<td>170X000442</td>
<td>Audio cable</td>
<td>1</td>
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<tr>
<td>PICO-V2K4-SEMI-VESA1</td>
<td>PICO-V2K4-SEMI VESA bracket kit</td>
<td>1</td>
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<tr>
<td>PICO-V2K4-SEMI-WMT1</td>
<td>PICO-V2K4-SEMI Wallmount bracket kit</td>
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<tr>
<td>PICO-V2K4-SEMI-DIN1</td>
<td>Din rail kit</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
**Block Diagram**

**Dimension**

Unit: mm

**Ordering Information**

<table>
<thead>
<tr>
<th>Part number</th>
<th>CPU</th>
<th>Memory</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232/422/485</th>
<th>Expansion slot</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Audio</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>PICO-V2K4-SEMI-A11-5001</td>
<td>V2516</td>
<td>8GB</td>
<td>Type C to DP x 1 HDMI e x 2</td>
<td>Onboard NVME SSD 64GB x 1</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 2 x 2 USB 3.2 Gen 2 Type C x 1</td>
<td>M.2 2280 M-key x 1 mini-PCIe(Full) x 1</td>
<td>+12V (ATX)</td>
<td>0~50°C</td>
<td>---</td>
<td>SMBUS x 1 (I2C Optional) TPM2.0</td>
<td></td>
</tr>
<tr>
<td>PICO-V2K4-SEMI-A11-5002</td>
<td>V2716</td>
<td>16GB</td>
<td>Type C to DP x 1 HDMI e x 2</td>
<td>Onboard NVME SSD 64GB x 1</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 2 x 2 USB 3.2 Gen 2 Type C x 1</td>
<td>M.2 2280 M-key x 1 mini-PCIe(Full) x 1</td>
<td>+12V (ATX)</td>
<td>0~50°C</td>
<td>---</td>
<td>SMBUS x 1 (I2C Optional) TPM2.0</td>
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<td>32GB</td>
<td>Type C to DP x 1 HDMI e x 2</td>
<td>Onboard NVME SSD 64GB x 1</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 2 x 2 USB 3.2 Gen 2 Type C x 1</td>
<td>M.2 2280 M-key x 1 mini-PCIe(Full) x 1</td>
<td>+12V (ATX)</td>
<td>0~50°C</td>
<td>---</td>
<td>SMBUS x 1 (I2C Optional) TPM2.0</td>
<td></td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
PICO-TGU4

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

Note: All specifications are subject to change without notice.

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

Specifications

**SYSTEM**

**FORM FACTOR** PICO-ITX

**CPU**
- Intel® Core™/ Celeron® Processor:
  - i7-1185G7E (4C/8T, 1.8GHz, up to 4.4GHz, TDP up to 28W)
  - i5-1145G7E (4C/8T, 1.5GHz, up to 4.1GHz, TDP up to 28W)
  - i3-1115G4E (2C/4T, 2.2GHz, up to 3.9GHz, TDP up to 28W)
  - Celeron® 6305E (2C/2T, 1.8GHz, TDP 15W)

**CHIPSET** 11th Generation Intel® Core™ i7/i5/i3/Celeron SoC

**MEMORY TYPE** Onboard LPDDR4x 3200MHz, up to 32GB, In-Band ECC (select SKUs)

**BIOS** UEFI

**WATCHDOG TIMER** 255 Levels

**SECURITY** TPM2.0 (Optional)

**RTC Battery** Lithium Battery 3V/240mAh

**DIMENSION** 3.94” x 2.84” (100mm x 72mm)

**GROSS WEIGHT** 0.18 lbs. (0.08 kg)

**OS Support** Windows 10 (64bit)
- Linux Ubuntu 20.04.2/Kernel 5.8

**POWER**

**POWER REQUIREMENT** +12V

**POWER SUPPLY TYPE** ATX/A

**CONNECTOR** Phoenix 2-pin Connector (Default)
- Lockable DC Jack Connector (color)

**POWER CONSUMPTION**
- Intel® i7-1185G7E, LPDDR4x onboard 32GB, 2.89A@ +12V (TYPICAL)

**OPERATING TEMP** 32°F ~ 140°F (0°C ~ 60°C)

**STORAGE TEMP** -4°F ~ 185°F (-20°C ~ 85°C)

**OPERATING HUMIDITY** 0% ~ 90% relative humidity, non-condensing

**MTBF (HOURS)** 424,208

**EMC** CE/FCC Class A

**ENVIRONMENT & CERTIFICATION**

**VGA** HDMI2.0b x 1 (4K x 2K 60Hz)

**INTERNAL I/O**

**USB**
- USB3.2 Gen 1 x 2
- USB2.0 x 4

**SERIAL PORT**
- COM1, COM2 (RS232/422/485, supports 5V/12V/RI)

**VIDEO**
- HDMI2.0b x 1 (4K x 2K 60Hz)
- eDP x 1 (up to HBR3, 8Kx4K 30Hz)

**DISPLAY**
- Intel® Iris® Xe (i5/i7 support)
- Intel® UHD Graphics (i3/Celeron support)

**AUDIO**
- Realtek ALC269 (Optional)
- Audio Header x 1 (Optional)

**EXTERNAL I/O**
- LAN x 2
- USB 3.2 Gen 2 x 2
- Universal Audio Port

**EXPANSION**
- Mini PCI-E/mSATA Full-size mSATA/mPCIe or USB2.0 x 1 (PCIe as default, select by BIOS option)
- M.2 M.2 M Key 2280 x 1 (PCIE Gen 4 [x4] as default, SATA select by HW BOM)

**PACKING LIST**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>170X000285</td>
<td>USB3.2 Gen 1 cable</td>
</tr>
<tr>
<td>170X000284</td>
<td>USB2.0 x 4 + COM x 2 + DIO 4bit x 1 cable</td>
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<tr>
<td>170X000287</td>
<td>Front panel cable</td>
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<td>170X000156</td>
<td>250mm Audio cable</td>
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<tr>
<td>1709070500</td>
<td>(TF) SATA CABLE.7P Pitch 1.27mm,50cm</td>
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<tr>
<td>170X000322</td>
<td>SATA power cable</td>
</tr>
</tbody>
</table>

Optional Accessories

- PICO-TGU4-FAN01 Integrated Cooler for PICO-TGU4, assemble with PICO-TGU4 directly
- PICO-TGU4-HSP01 Integrated Heat spreader for PICO-TGU4, assemble with PICO-TGU4 directly
Block Diagram

Dimension
Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Memory</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232/422/485</th>
<th>Expansion Slot</th>
<th>Power</th>
<th>Power Temp</th>
<th>Audio</th>
<th>Others</th>
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</thead>
<tbody>
<tr>
<td>PICO-TGU4-A10-0001</td>
<td>Celeron® 6305E</td>
<td>4G</td>
<td></td>
<td>SATA III</td>
<td>2.5GbE x 1</td>
<td>M.2 2280 M-key x 1</td>
<td>2</td>
<td>+12V (Terminal block)</td>
<td>0°C – 60°C</td>
<td>—</td>
<td>DIO, SMBUS/eSPI x 1 (I2C optional)</td>
<td></td>
</tr>
<tr>
<td>PICO-TGU4-A10-0002</td>
<td>i3-1115G4E</td>
<td>4G</td>
<td></td>
<td>SATA III</td>
<td>2.5GbE x 1</td>
<td>M.2 2280 M-key x 1</td>
<td>2</td>
<td>+12V (Terminal block)</td>
<td>0°C – 60°C</td>
<td>—</td>
<td>DIO, SMBUS/eSPI x 1 (I2C optional)</td>
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<tr>
<td>PICO-TGU4-A10-0003</td>
<td>i3-1115G4E</td>
<td>8G</td>
<td></td>
<td>SATA III</td>
<td>2.5GbE x 1</td>
<td>M.2 2280 M-key x 1</td>
<td>2</td>
<td>+12V (Terminal block)</td>
<td>0°C – 60°C</td>
<td>—</td>
<td>DIO, SMBUS/eSPI x 1 (I2C optional)</td>
<td></td>
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<tr>
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<td>i5-1145G7E</td>
<td>8G</td>
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<td>SATA III</td>
<td>2.5GbE x 1</td>
<td>M.2 2280 M-key x 1</td>
<td>2</td>
<td>+12V (Terminal block)</td>
<td>0°C – 60°C</td>
<td>—</td>
<td>DIO, SMBUS/eSPI x 1 (I2C optional)</td>
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<tr>
<td>PICO-TGU4-A10-0005</td>
<td>i5-1145G7E</td>
<td>16G</td>
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<td>SATA III</td>
<td>2.5GbE x 1</td>
<td>M.2 2280 M-key x 1</td>
<td>2</td>
<td>+12V (Terminal block)</td>
<td>0°C – 60°C</td>
<td>—</td>
<td>DIO, SMBUS/eSPI x 1 (I2C optional)</td>
<td></td>
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<tr>
<td>PICO-TGU4-A10-0006</td>
<td>i5-1145G7E</td>
<td>32G</td>
<td></td>
<td>SATA III</td>
<td>2.5GbE x 1</td>
<td>M.2 2280 M-key x 1</td>
<td>2</td>
<td>+12V (Terminal block)</td>
<td>0°C – 60°C</td>
<td>—</td>
<td>DIO, SMBUS/eSPI x 1 (I2C optional)</td>
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<tr>
<td>PICO-TGU4-A10-0007</td>
<td>i7-1185G7E</td>
<td>16G</td>
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<td>SATA III</td>
<td>2.5GbE x 1</td>
<td>M.2 2280 M-key x 1</td>
<td>2</td>
<td>+12V (Terminal block)</td>
<td>0°C – 60°C</td>
<td>—</td>
<td>DIO, SMBUS/eSPI x 1 (I2C optional)</td>
<td></td>
</tr>
<tr>
<td>PICO-TGU4-A10-0008</td>
<td>i7-1185G7E</td>
<td>32G</td>
<td></td>
<td>SATA III</td>
<td>2.5GbE x 1</td>
<td>M.2 2280 M-key x 1</td>
<td>2</td>
<td>+12V (Terminal block)</td>
<td>0°C – 60°C</td>
<td>—</td>
<td>DIO, SMBUS/eSPI x 1 (I2C optional)</td>
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<tr>
<td>PICO-TGU4-A10-0009</td>
<td>i7-1185G7E</td>
<td>64G</td>
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<td>SATA III</td>
<td>2.5GbE x 1</td>
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<td>2</td>
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<td>0°C – 60°C</td>
<td>—</td>
<td>DIO, SMBUS/eSPI x 1 (I2C optional)</td>
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</tr>
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Note: All specifications are subject to change without notice.

www.aaeon.com
# PICO-TGU4-SEMI

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

## Specifications

### Lite version

- **RS-232/422/485 x 2 (Optional)**
- **HDMI x 2**
- **USB 3.0 x 2**
- **Power Button**
- **Line-out (Optional)**

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

## Packing List

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PICO-TGU4-SEMI</td>
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## Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
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<tbody>
<tr>
<td>1702031802</td>
<td>Power Cord (US Type)</td>
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<tr>
<td>1702031803</td>
<td>Power Cord (Europe Type)</td>
<td>1</td>
</tr>
<tr>
<td>170203180E</td>
<td>Power Cord (Japan)</td>
<td>1</td>
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<tr>
<td>1255201200</td>
<td>Power Adapter 12V/10A</td>
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<tr>
<td>170X000482</td>
<td>Line-out cable</td>
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<tr>
<td>170X000483</td>
<td>Dual COM port cable</td>
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<td>PICO-TGU4-SEMI-VESAI</td>
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<td>PICO-TGU4-SEMI-WMT1</td>
<td>PICO-TGU4-SEMI Wallmount bracket kit</td>
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<tr>
<td>PICO-TGU4-SEMI-DIN1</td>
<td>Din rail kit</td>
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Note: All specifications are subject to change without notice.
PICO-WHU4
Pico-ITX Board with 8th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC

Note: All specifications are subject to change without notice.

www.aaeon.com

Specifications

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

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)

Packing List
- PICO-WHU4

Optional Accessories

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

Dimension

Ordering Information

<table>
<thead>
<tr>
<th>Part number</th>
<th>CPU</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232/422/485</th>
<th>Expansion slot</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
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<tbody>
<tr>
<td>PICO-WHU4-A11-0001</td>
<td>Celeron 4305UE</td>
<td>HDMI x 2</td>
<td>SATA III x 1 SATA III/PCIe (Full) x 1</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 2 x 2 USB 2.0 x 2</td>
<td>2</td>
<td>M.2 2230 E-Key x 1</td>
<td>+12V (Terminal block)</td>
<td>0°C – 60°C</td>
<td>—</td>
</tr>
<tr>
<td>PICO-WHU4-A11-0002</td>
<td>i3-8145UE</td>
<td>HDMI x 2</td>
<td>SATA III/PCIe (Full) x 1</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 2 x 2 USB 2.0 x 2</td>
<td>2</td>
<td>M.2 2230 E-Key x 1</td>
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<tr>
<td>PICO-WHU4-A11-0003</td>
<td>i5-8365UE</td>
<td>HDMI x 2</td>
<td>SATA III/PCIe (Full) x 1</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 2 x 2 USB 2.0 x 2</td>
<td>2</td>
<td>M.2 2230 E-Key x 1</td>
<td>+12V (Terminal block)</td>
<td>0°C – 60°C</td>
<td>—</td>
</tr>
<tr>
<td>PICO-WHU4-A11-0004</td>
<td>i7-8665UE</td>
<td>HDMI x 2</td>
<td>SATA III/PCIe (Full) x 1</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 2 x 2 USB 2.0 x 2</td>
<td>2</td>
<td>M.2 2230 E-Key x 1</td>
<td>+12V (Terminal block)</td>
<td>0°C – 60°C</td>
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</tr>
<tr>
<td>PICO-WHU4-A11-DG02</td>
<td>i3-8145UE</td>
<td>HDMI x 2</td>
<td>SATA III/PCIe (Full) x 1</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 2 x 2 USB 2.0 x 2</td>
<td>2</td>
<td>M.2 2230 E-Key x 1</td>
<td>+12V (DC Jack)</td>
<td>0°C – 60°C</td>
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<td>USB 3.2 Gen 2 x 2 USB 2.0 x 2</td>
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Note: All specifications are subject to change without notice.
PICO-WHU4-SEMI
PICO-SEMI Embedded with 8th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC

Specifications

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

Packing List
- PICO-WHU4-SEMI
- Optional Accessories

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1701200102</td>
<td>(TF)Serial Cable.WL1010H-2*10P 1.0mm Housing, Dual DB9M,10cm</td>
<td>1</td>
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<tr>
<td>1255300960</td>
<td>Power Adapter 12V/2A 96W FSP096-6AHN3</td>
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</tr>
<tr>
<td>1702031802</td>
<td>Power Cord (US Type)</td>
<td>1</td>
</tr>
<tr>
<td>1702031803</td>
<td>Power Cord (Europe Type)</td>
<td>1</td>
</tr>
<tr>
<td>170203180E</td>
<td>Power Cord (Japan)</td>
<td>1</td>
</tr>
<tr>
<td>PICO-WHU4-SEMI-VE5A1</td>
<td>PICO-WHU4-SEMI VESA bracket kit</td>
<td>1</td>
</tr>
<tr>
<td>PICO-WHU4-SEMI-WMT1</td>
<td>PICO-WHU4-SEMI Wallmount bracket kit</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
Note: All specifications are subject to change without notice.
**Pico-ITX Board with 7th Generation Intel® Core™ i7/i5/i3/Celeron® U-Series Processor SoC**

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

### Specifications

**SYSTEM**
- **FORM FACTOR**: PICO-ITX

**CPU**
- Intel® 7th Generation Core™ (Celeron Processor: Intel® i7-7600U (2C/4T, 2.80GHz, up to 3.90GHz, TDP-up 25W),
- Intel® i5-7300U (2C/4T, 2.60GHz, up to 3.50GHz, TDP-up 25W),
- Intel® i3-7100U (2C/4T, 2.40GHz, TDP-up 25W),
- Intel® Celeron 3965U (2C/2T, 2.20GHz, TDP-up 15W)

**CHIPSET**: Integrated with Intel® SoC

**MEMORY TYPE**: DDR4 up to 2133MHz, SODIMM x 1, up to 16GB, Non-ECC

**BIOS**: UEFI

**WAKE ON LAN**: Yes

**WATCHDOG TIMER**: 255 Levels

**SECURITY**: —

**RTC Battery**: Lithium Battery 3V/240mAh

**DIMENSION**: 3.94" x 2.84" (100mm x 72mm)

**CROSS WEIGHT**: 0.18 lbs (0.08 kg)

**OS Support**: Windows 10 (64 bit)

**POWER**
- **POWER REQUIREMENT**: +12V

**POWER SUPPLY TYPE**: AT/ATX

**CONNECTOR**: Phoenix 2-pin Connector (Default), Lockable DC Jack Connector (colay)

**POWER CONSUMPTION**: Intel® i7-7600, DDR4 16GB, 2.3A@ +12V (TYPICAL)

**DISPLAY**
- **CONTROLLER**: Intel® HD Graphics 510/620

**LVDS/eDP**: LVDS (18/24-bit 2CH) 1920 x 1200

**Display Interface**: HDMI 1.4b x 1 (up to 4096 x 2304)

**DDI (BIO, Optional)**: Multiple Display, Up to 3 Simultaneous Displays

**AUDIO**
- **CODEC**: Realtek ALC269

**AUDIO INTERFACE**: Line-out

**Speaker**: —

**EXTERNAL I/O**
- **ETHERNET**: Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2

**USB**: USB 3.2 Gen 1 x 2

**SERIAL PORT**: —

**VIDEO**: HDMI 1.4b x 1 (up to 4096 x 2304)

**INTERNAL I/O**
- **USB**: USB 3.2 Gen 1 x 2
- **SERIAL PORT**: COM1: RS-232 x 1, COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V)
- **VIDEO**: LVDS (19/24-bit 2CH) 1920 x 1200
- **SATA**: SATA III x 1, +5V SATA Power Connector x 1
- **AUDIO**: Audio Header x 1
- **DIO/GPIO**: 4-bit
- **SMBus/I2C**: I2C/SMBus x 1 (SMBus as default)
- **Touch**: —
- **FAN**: 4pins Smart Fan x 1
- **SIM**: —

**EXPANSION**
- **Mini PCI-E/mSATA**: —

**M.2**: M.2 B-Key 2242 x 1 (PCIe[x1]/SATA select by BIOS), M.2 E-Key 2230 x 1 (PCIe/USB)

**Others (Optional)**: BIO

**ENVIRONMENT & CERTIFICATION**
- **OPERATING TEMP**: 32°F ~ 140°F (0°C ~ 60°C)
- **STORAGE TEMP**: -40°F ~ 185°F (-40°C ~ 85°C)
- **OPERATING HUMIDITY**: 0% ~ 90% relative humidity, non-condensing
- **MTBF (HOURS)**: 163,000
- **EMC**: CE/FCC Class A

### Optional Accessories

**Part Number** | **Description** | **Qty.**
--- | --- | ---
1709970500 | SATA CABLE, 7P Pitch, 27mm, 50cm | 1
1702150155 | SATA Power Cable, 15cm | 1
170010010D | USB cable (2 Port), 10cm | 1
1701200101 | Cable for COM x 2 & line-out, 10 cm | 1
1700120010 | Heat-spreader for PICO-KBU4 | 1
1700140010 | Integrated Cooler for PICO-KBU4, assemble with PICO-KBU4 directly | 1

**Packing List**
- **PICO-KBU4**

**Note**: All specifications are subject to change without notice.
### Block Diagram

```
<table>
<thead>
<tr>
<th>Function</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDR4 SO-DIMM</td>
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</tr>
<tr>
<td>Glif Ethernet</td>
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<tr>
<td>RJ-45</td>
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<tr>
<td>M.2 B-Key(2242)</td>
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<td>SATA III</td>
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<td>4-bits DIO</td>
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<td>Line Out</td>
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<td>Audio Codec</td>
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<td>HDMI</td>
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</tr>
<tr>
<td>Level Shifter</td>
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</tr>
<tr>
<td>USB 3.0/USB2.0 *2 (Rear)</td>
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<tr>
<td>18/24-bit Dual LVDS</td>
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</tr>
<tr>
<td>USB 2.0 *2</td>
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<td>USB3.0<em>2, USB2.0</em>2, USB2.0<em>2, USB2.0</em>2</td>
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<tr>
<td>SMBus/I2C, DDI1, PWRGD or GPIO/LPC</td>
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<tr>
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<tr>
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### Dimension

Unit: mm

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<th>With Heat-spreadere</th>
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* DC Jack is optional

### Ordering Information

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<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Memory</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/422/485</th>
<th>Expansion Slot</th>
<th>Power</th>
<th>Power Temp</th>
<th>Others</th>
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<tr>
<td>PICO-KBU4-A10-0001</td>
<td>Celeron® 3965</td>
<td>DDR4 Socket</td>
<td>HDMI x 1</td>
<td>SATAI x 1</td>
<td>M.2 2242 (B Key) x 1</td>
<td>QDE x 2</td>
<td>USB 3.2 Gen 1 x 2 (Rear)</td>
<td>USB 3.0 x 2 (Internal)</td>
<td>M.2 2210 (E Key) x 1</td>
<td>+12V (Terminal block)</td>
<td>0°C ~ 60°C</td>
<td>DIO x 4 bit</td>
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<td>QDE x 2</td>
<td>USB 3.2 Gen 1 x 2 (Rear)</td>
<td>USB 3.0 x 2 (Internal)</td>
<td>M.2 2210 (E Key) x 1</td>
<td>+12V (Terminal block)</td>
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<td>DIO x 4 bit</td>
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<td>SATAI x 1</td>
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<td>QDE x 2</td>
<td>USB 3.2 Gen 1 x 2 (Rear)</td>
<td>USB 3.0 x 2 (Internal)</td>
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<td>QDE x 2</td>
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<td>USB 3.2 Gen 1 x 2 (Rear)</td>
<td>USB 3.0 x 2 (Internal)</td>
<td>M.2 2210 (E Key) x 1</td>
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<td>QDE x 2</td>
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<td>USB 3.0 x 2 (Internal)</td>
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<td>USB 3.2 Gen 1 x 2 (Rear)</td>
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<td>+12V (Terminal block)</td>
<td>0°C ~ 60°C</td>
<td>DIO x 4 bit</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.

www.aaeon.com
PICO-KBU4-SEMI

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

Features

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

Specifications

**SYSTEM**

- **FORM FACTOR**: PICO-SEMI
- **CPU**: Intel® 7th Generation Core™ (Celeron Processor):
  - Intel® i7-7600U (2C/4T, 2.80GHz, up to 3.90GHz, TDP-up 25W)
  - Intel® i5-7300U (2C/4T, 2.60GHz, up to 3.50GHz, TDP-up 25W)
  - Intel® i3-7100U (2C/4T, 2.40GHz, TDP-up 25W)
  - Intel® Celeron 3965U (2C/2T, 2.20GHz, TDP-up 15W)
- **CHIPSET**: Integrated with Intel® SoC
- **MEMORY TYPE**: DDR4 up to 2133MHz, SODIMM x 1, up to 16GB, Non-ECC
- **BIOS**: UEFI
- **WAKE ON LAN**: Yes
- **WATCHDOG TIMER**: 255 Levels
- **SECURITY**: —
- **RTC Battery**: Lithium Battery 3V/240mAh
- **DIMENSION**: 4.80” x 3.18” x 1.98” (122 mm x 80.8 mm x 50.4 mm)
- **Gross Weight**: 0.88 lb (0.4 kg)
- **OS Support**: Windows 10 (64 bit)

**POWER**

- **POWER REQUIREMENT**: 12V only
- **POWER SUPPLY TYPE**: ATX
- **CONNECTOR**: Lockable DC Jack Connector
- **POWER CONSUMPTION**: Intel® i7-7600U, DDR4 16GB, 2.3A@ +12V (TYPICAL)

**DISPLAY**

- **CONTROLLER**: Intel® HD Graphics 510/620
- **LVDS/eDP**: —
- **Display Interface**: HDMI 1.4b x 1 (up to 4096 x 2304)
- **Multiple Display**: 1 Simultaneous Display

**AUDIO**

- **CODEC**: Realtek ALC269 (Optional)
- **AUDIO INTERFACE**: Line-out (Optional)
- **Speaker**: —

**EXTERNAL I/O**

- **ETHERNET**: Realtek R8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2
- **USB**: USB 3.2 Gen 1 x 2
- **SERIAL PORT**: COM1: RS-232 x 1 (Optional)
  - COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V) (Optional)

**VIDEO**

- **HDMI**: 1.4b x 1 (up to 4096 x 2304)

**INTERNAL I/O**

- **USB**: —

Packing List

- **PICO-KBU4-SEMI**

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
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<tbody>
<tr>
<td>125530040C</td>
<td>(TF)Power Adapter 12V 40W.FSP/FS-P040-RHAN3</td>
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<td>125530060Z</td>
<td>Power Adapter 12V5A 60W FSP060-DHAN3</td>
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<td>1702031802</td>
<td>Power Cord (US)</td>
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<td>1702031803</td>
<td>Power Cord (Europe)</td>
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<td>170203180E</td>
<td>Power Cord (Japan)</td>
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<td>1701200101</td>
<td>M.2 2242 -D2-B-M.64GB.SATA3,MLC</td>
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<td>9761SEM101</td>
<td>Din Rail Kit</td>
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<tr>
<td>9761SEM100</td>
<td>Wall mount Kit</td>
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Note: All specifications are subject to change without notice.
### Block Diagram

![Block Diagram](image_url)

### Dimension

<table>
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<th>Unit: mm</th>
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<tbody>
<tr>
<td><em>width</em></td>
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<tr>
<td><em>height</em></td>
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### Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Memory</th>
<th>Thermal</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/422/485</th>
<th>Expansion Slot</th>
<th>Power</th>
<th>Power Temp</th>
<th>Others</th>
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</thead>
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<tr>
<td>PICO-KBU4-SEMI-A10-B001</td>
<td>Celeron 3955</td>
<td>DDR4 Socket</td>
<td>w/Cooler</td>
<td>HDMI x 1</td>
<td>SATA x 1</td>
<td>M.2 2242 (B Key) x 1</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen</td>
<td>1x2 (Rear)</td>
<td>—</td>
<td>M.2 2230 (E Key) x 1</td>
<td>+12V (ATX)</td>
<td>0°C ~ 50°C</td>
</tr>
<tr>
<td>PICO-KBU4-SEMI-A10-B002</td>
<td>i3-7100U</td>
<td>DDR4 Socket</td>
<td>w/Cooler</td>
<td>HDMI x 1</td>
<td>SATA x 1</td>
<td>M.2 2242 (B Key) x 1</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen</td>
<td>1x2 (Rear)</td>
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<td>M.2 2230 (E Key) x 1</td>
<td>+12V (ATX)</td>
<td>0°C ~ 50°C</td>
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<td>1x2 (Rear)</td>
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<td>M.2 2230 (E Key) x 1</td>
<td>+12V (ATX)</td>
<td>0°C ~ 50°C</td>
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<td>GbE x 2</td>
<td>USB 3.2 Gen</td>
<td>1x2 (Rear)</td>
<td>—</td>
<td>M.2 2230 (E Key) x 1</td>
<td>+12V (ATX)</td>
<td>0°C ~ 50°C</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
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
- 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

### Specifications

**System**

- Form Factor: Pico-ITX
- CPU: Intel® Atom® x6425E (4C, 2.0GHz, up to 3GHz, TDP 12W), Intel® Atom® x6413E (4C, 1.5GHz, up to 3GHz, TDP 9W), Intel® Atom® x6211E (2C, 1.3GHz, up to 3GHz, TDP 6W), Intel® Atom® x6425RE (4C, 1.9GHz, TDP 12W), Intel® Atom® x6414RE (4C, 1.5GHz, TDP 9W), Intel® Atom® x6212RE (2C, 1.2GHz, TDP 6W), Intel® Pentium® J6426 (4C, 2.0GHz, up to 3GHz, TDP-up 10W), Intel® Pentium® N6415 (4C, 1.2GHz, up to 3GHz, TDP 6.5W), Intel® Celeron® J6412 (4C, 2.0GHz, up to 2.6GHz, TDP-up 10W), Intel® Celeron® N6210 (2C, 1.2GHz, up to 2.6GHz, TDP-up 6.5W)

**Chipset**

- UHD Graphics for 10th Gen Intel® Processors
- HDMI 2.0b x 2 (4K x 2K 60Hz)
- Multiple Display: Up to 3 Simultaneous Displays
- Front Panel: HDD LED, PWR LED, Power Button, Buzzer, Reset
- 4-bit DIO/GPIO
- SMBus/I2C and eSPI x 1 (SMBus as default, I2C select by HW BOM)
- eDP (up to HBR3, 8K x 4K 30Hz), LVDS (18/24bit 2CH)
- Internal I/O: SATA III x 1 +5V SATA Power Connector x 1
- Onboard eMMC 5.1, up to 128GB
- Internal I/O: USB 2.0 x 2
- External I/O: COM1, COM2 (RS232/422/485, supports 5V/12V/RI)
- SATA Power: 12V
- Expansion: Mini PCI-E/mSATA
- Mini PCIe x 1 (SATA as default, PCIe selected by BIOS)
- M.2: M.2 E key 2230 x 1 (PCIe x 4/USB2.0)
- M.2 E-key 2230 x 1 (PKC-2 x 1/USB2.0)
- mSATA x 2 (optional, N6210/J6412 not support, support up to 5Mb/s)
- OS Support: Windows 10 (64 bit), Ubuntu 20.04.3(LTS), Linux 5.13
- BIOS: UEFI
- Power: +12V
- Power Consumption: LPDDR4x up to 3200MHz, up to 16GB
- Power Supply Type: ATX/ATX
-Connector: Phoenix 2-pin Connector (Default)
- Lockable DC Jack Connector (colay)
- Power Efficiency: 90% (Typical)
- Memory: LPDDR4x up to 3200MHz, up to 16GB
- Memory Type: LPDDR4x up to 3200MHz, up to 16GB
- Motherboard Form Factor: Pico-ITX
- Cooling: 4pins Smart Fan x1
- M.2/M.2 E-key 2230 x 1 (SATA as default, PCIe selected by BIOS)
- Expansion: M.2 (M.2 E-key 2230 x 1 (PCIe x 4/USB2.0)
- Mini PCI-E/mSATA
- Others: CANBus x 2 (optional, N6210/J6412 not support, support up to 5Mb/s)
- Environment & Certification: Operating Temp: 0°C ~ 60°C
- Storage Temp: -40°C ~ +85°C
- Humidity: 0% ~ 95% relative humidity, non-condensing
- MTBF (Hours): 489,999
- EMI: CE/FCC Class A

### Option Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
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<td>170010010D</td>
<td>USB2.0 cable</td>
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<td>170070500</td>
<td>SATA cable</td>
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<tr>
<td>170215015</td>
<td>SATA power cable</td>
<td>1</td>
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<tr>
<td>1703120130</td>
<td>eSPI/mSATA/USB2.0 cable</td>
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</tr>
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<td>1709100108</td>
<td>Front panel cable</td>
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</tr>
<tr>
<td>1706-EHL4-SHSP01</td>
<td>Heat Spreader A1.5 8mm for Pentium/Celeron of PICO-EHL4</td>
<td>1</td>
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<tr>
<td>1706-EHL4-SHSP02</td>
<td>Heat Spreader A1.5 8mm for Atom Series of PICO-EHL4</td>
<td>1</td>
</tr>
<tr>
<td>1706-EHL4-HSK01</td>
<td>Heat Sink 100<em>72</em>15.5mm.Silver.To be used with HSP</td>
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<tr>
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</tbody>
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Note: eDP Panel : B713ZAN0.1-AUO, LVDS Panel : G121XN01 V0-AUO
**Block Diagram**

**Intel® SoC Elkhart Lake Processor**

**Dimension**

Unit: mm

**Packing List**

- **PICO-EHL4**

**Ordering Information**

<table>
<thead>
<tr>
<th>Part number</th>
<th>CPU</th>
<th>Memory</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232/422/485</th>
<th>Expansion slot</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>PICO-EHL4-A11-0001</td>
<td>N6210</td>
<td>4GB</td>
<td>HDMI x 2</td>
<td>SATAII x 1</td>
<td>eMMC</td>
<td>2</td>
<td>USB3.2 Gen 2 x 2</td>
<td>M.2 2230 E-key x 1</td>
<td>+12V</td>
<td>0°C – 60°C</td>
<td>+12V</td>
</tr>
<tr>
<td>PICO-EHL4-A11-0002</td>
<td>J6412</td>
<td>4GB</td>
<td>HDMI x 2</td>
<td>SATAII x 1</td>
<td>eMMC</td>
<td>2</td>
<td>USB3.2 Gen 2 x 2</td>
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<td>J6412</td>
<td>4GB</td>
<td>HDMI x 2</td>
<td>SATAII x 1</td>
<td>eMMC</td>
<td>2</td>
<td>USB3.2 Gen 2 x 2</td>
<td>M.2 2230 E-key x 1</td>
<td>+12V</td>
<td>0°C – 60°C</td>
<td>4 bit</td>
</tr>
<tr>
<td>PICO-EHL4-A11-0004</td>
<td>J6412</td>
<td>8GB</td>
<td>HDMI x 2</td>
<td>SATAII x 1</td>
<td>eMMC</td>
<td>2</td>
<td>USB3.2 Gen 2 x 2</td>
<td>M.2 2230 E-key x 1</td>
<td>+12V</td>
<td>0°C – 60°C</td>
<td>4 bit</td>
</tr>
</tbody>
</table>

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www.aaeon.com
**PICO-APL1**

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

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

**Specifications**

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

**Internal I/O**

<table>
<thead>
<tr>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SATA Cable 7P Pitch 1.27mm, 50cm</td>
<td>1</td>
</tr>
<tr>
<td>SATA Power Cable</td>
<td>1</td>
</tr>
<tr>
<td>USB Cable 20cm</td>
<td>1</td>
</tr>
<tr>
<td>COM x 2, Line-out cable</td>
<td>1</td>
</tr>
<tr>
<td>PICO-APL1</td>
<td>1</td>
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</table>

**Optional Accessories**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1709070500</td>
<td>SATA Cable</td>
<td>1</td>
</tr>
<tr>
<td>1700050207</td>
<td>USB cable 20cm</td>
<td>1</td>
</tr>
<tr>
<td>1703200153</td>
<td>COM x 2, Line-out cable</td>
<td>1</td>
</tr>
<tr>
<td>PICO-APL1-HSP01</td>
<td>Heat-spread for PICO-APL1 N4200/N3350 SKUs</td>
<td>1</td>
</tr>
<tr>
<td>PICO-APL1-HSP02</td>
<td>Heat-spread for PICO-APL1 E3950/E3940/E3930 SKUs</td>
<td>1</td>
</tr>
<tr>
<td>PICO-APL1-HSK02</td>
<td>Heat-sink for all PICO-APL1 series, to be used with Heat-spreaders</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
Block Diagram

Dimension
Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part number</th>
<th>CPU</th>
<th>FAN/FANLESS</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-422/485</th>
<th>Expansion slot</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
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</thead>
<tbody>
<tr>
<td>PICO-APL1-A11-F0A1</td>
<td>N4200</td>
<td>W/o Heat-spreader</td>
<td>LVDS x 1, HDMI x 1</td>
<td>SATA x 1, mSATA (Full size) x 1</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 1 x 2, USB 2.0 x 1</td>
<td>1</td>
<td>1</td>
<td>miniCard x 1 (Half-size)</td>
<td>12V Phoenix Terminal</td>
<td>0°C ~ 60°C</td>
<td>DIO x 4, Line-out</td>
</tr>
<tr>
<td>PICO-APL1-A11-F0A2</td>
<td>N3350</td>
<td>W/o Heat-spreader</td>
<td>HDMI x 1</td>
<td>SATA x 1, mSATA (Full size) x 1</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 1 x 2, USB 2.0 x 1</td>
<td>1</td>
<td>1</td>
<td>miniCard x 1 (Half-size)</td>
<td>12V DC-Jack</td>
<td>0°C ~ 60°C</td>
<td>DIO x 4</td>
</tr>
<tr>
<td>PICO-APL1-A11-F0A3</td>
<td>N3350</td>
<td>W/o Heat-spreader</td>
<td>LVDS x 1, HDMI x 1</td>
<td>SATA x 1, mSATA (Full size) x 1</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 1 x 2, USB 2.0 x 1</td>
<td>1</td>
<td>1</td>
<td>miniCard x 1 (Half-size)</td>
<td>12V Phoenix Terminal</td>
<td>0°C ~ 60°C</td>
<td>DIO x 4, Line-out</td>
</tr>
<tr>
<td>PICO-APL1-A11-F0A4</td>
<td>E3940</td>
<td>W/o Heat-spreader</td>
<td>LVDS x 1, HDMI x 1</td>
<td>SATA x 1, mSATA (Full size) x 1</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 1 x 2, USB 2.0 x 1</td>
<td>1</td>
<td>1</td>
<td>miniCard x 1 (Half-size)</td>
<td>12V Phoenix Terminal</td>
<td>0°C ~ 60°C</td>
<td>DIO x 4, Line-out</td>
</tr>
</tbody>
</table>

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

Specifications

SYSTEM
- FORM FACTOR: PICO-SEMI
- CPU: Intel® Celeron® Processor: Celeron N3350 (2C/2T,1.10GHz, up to 2.40GHz, TDP 6W)
- CHIPSET: Integrated with Intel® SoC
- MEMORY TYPE: DDR3L up to 1866MHz, SODIMM x 1, up to 8GB, Non-ECC
- BIOS: UEFI
- WAKE ON LAN: Yes
- WATCHDOG TIMER: 255 Levels
- SECURITY: —
- RTC Battery: Lithium Battery 3V/240mAh
- DIMENSION: 4.8” x 3.15” x 1.73” (122 x 80 x 44 mm)
- Gross Weight: 0.59 lb (0.27 kg)
- OS Support: Windows 10 (64 bit)

POWER
- POWER REQUIREMENT: +12V
- POWER SUPPLY TYPE: ATX
- CONNECTOR: Lockable DC Jack Connector
- POWER CONSUMPTION: Intel® N3350 Processor, DDR3L 8GB, 0.91A@+12V (TYPICAL)

DISPLAY
- CONTROLLER: Intel® HD Graphics 500
- LVDS/eDP: —
- Display Interface: HDMI 1.4b x 1 (up to 3840 x 2160)
- Multiple Display: 1 Simultaneous Display

AUDIO
- CODEC: Realtek ALC897/892 (Optional)
- AUDIO INTERFACE: Line-out (Optional)
- Speaker: —

EXTERNAL I/O
- ETHERNET: Intel® i210, 10/100/1000Base, RJ-45 x 1
- USB: USB 3.2 Gen 1 x 2
- SERIAL PORT: COM1: RS-232 x 1 (Optional) COM2: RS-232/422/485 x 1 (Ring / 5V / 12V) (Optional)
- VIDEO: HDMI 1.4b x 1 (up to 3840 x 2160)

INTERNAL I/O
- USB: —
- SERIAL PORT: —

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

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1205300404C</td>
<td>ITF: Power Adapter 12V 40W FSP FSP040-DHAN3</td>
<td>1</td>
</tr>
<tr>
<td>1702031802</td>
<td>Power Cord (US Type)</td>
<td>1</td>
</tr>
<tr>
<td>1702031803</td>
<td>Power Cord (European Type)</td>
<td>1</td>
</tr>
<tr>
<td>170203180E</td>
<td>Power Cord (Japan Type)</td>
<td>1</td>
</tr>
<tr>
<td>1703200052</td>
<td>COM x 2 + LINE_OUT</td>
<td>1</td>
</tr>
<tr>
<td>986C016G0V</td>
<td>SATA DOM 16GB (0°C ~ 70°C)</td>
<td>1</td>
</tr>
<tr>
<td>9761SEMI010</td>
<td>Wallmount Kit</td>
<td>1</td>
</tr>
<tr>
<td>9761SEMI01</td>
<td>DIN-Rail Mount Kit</td>
<td>1</td>
</tr>
</tbody>
</table>

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**

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

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

Note: All specifications are subject to change without notice.
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)

Specifications

SYSTEM
- FORM FACTOR: PICO-ITX
- CPU: Intel® Atom®/Celeron®/Pentium® Processor:
  - Pentium N4200 (4C/4T,1.10GHz,up to 2.50GHz, TDP 6W)
  - Celeron N3350 (2C/2T,1.10GHz,up to 2.40GHz, TDP 6W)
  - Atom E3950 (4C/4T,1.60GHz,up to 2.00GHz, TDP 12W)
  - Atom E3940 (4C/4T,1.60GHz,up to 1.80GHz, TDP 9.5W)
  - Atom E3930 (2C/2T,1.30GHz,up to 1.80GHz, TDP 6.5W)
- CHIPSET: Integrated with Intel® SoC
- MEMORY TYPE: Onboard DDR3L 2GB (Optional to 4GB)
- BIOS: UEFI
- WAKE ON LAN: Yes
- WATCHDOG TIMER: 255 Levels
- SECURITY: TPM2.0 (Optional)
- RTC Battery: Lithium Battery 3V/240mAh
- DIMENSION: 3.94" x 2.84" (100mm x 72mm)
- Gross Weight: 0.18 lbs (0.08 kg)
- OS Support: Windows 10 (64 bit)

POWER
- POWER REQUIREMENT: +12V
- POWER SUPPLY TYPE: AT/ATX
- CONNECTOR: Phoenix 2-pin Connector (Default)
- Lockable DC Jack Connector (colay)
- POWER CONSUMPTION: Intel® N4200 processor, DDR3L 4GB, 1.1A@12V

DISPLAY
- CONTROLLER: Intel® HD Graphics 500/505
- LVDS/eDP: eDP x 1 up to 3840x2160@60Hz, Optional
- Display Interface: HDMI 1.4b x 1 (up to 3840 x 2160@90Hz)
- DIO (BIO, Optional)
- Multiple Display: Up to 3 Simultaneous Displays

AUDIO
- CODEC: Realtek ALC269
- AUDIO INTERFACE: Line-in/Line-out/MIC
- Speaker: Amplifier Header

EXTERNAL I/O
- ETHERNET: Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 1
- USB: USB 3.2 Gen 1 x 2
- SERIAL PORT: —
- VIDEO: HDMI 1.4b x 1 (up to 3840 x 2160@90Hz)

Packing List

- **PICO-APL3**

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1709070000</td>
<td>(TF) SATA Cable, 50cm</td>
<td>1</td>
</tr>
<tr>
<td>1702150121</td>
<td>(TF) SATA Power Cable, 15cm</td>
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</tr>
<tr>
<td>PICO-APL3-HSK01</td>
<td>Heatsink, used with heat spreader</td>
<td>1</td>
</tr>
<tr>
<td>PICO-APL3-HSP01</td>
<td>Heat Spreader, 15cm</td>
<td>1</td>
</tr>
<tr>
<td>1700040151</td>
<td>(TF) USB Cable, 15cm</td>
<td>2</td>
</tr>
<tr>
<td>1701050122</td>
<td>(TF) Flat Cable, 9P (M), 9P 1.0mm Housing, 12cm</td>
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<tr>
<td>1709100151</td>
<td>(TF) Phone Jack Cable, 25cm</td>
<td>1</td>
</tr>
<tr>
<td>1255300408</td>
<td>(TF) Power Adapter, 12V, 40W, FSP, FSP040-RHAN2.9A0A040990, ES0</td>
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<tr>
<td>1700200176</td>
<td>(TF) Power Cable, 3P 3C jack, TERMINAL2.17cm, TKS-521-LN05</td>
<td>1</td>
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</table>

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

Note: All specifications are subject to change without notice.

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2022/09/21
Note: All specifications are subject to change without notice.

PICO-APL3

Pico-ITX Boards

Block Diagram

Dimension
Unit: mm

Ordering Information

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<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PICO-APL3-A10-F001</td>
<td>Celeron® N3350 (Dual Core)</td>
<td>Onboard DDR3L 2GB</td>
<td>No Host</td>
<td>HDMI x 1</td>
<td>SATA 3.0 x 1</td>
<td>M.2 2280 (B Key) x 1</td>
<td>eMMC 32GB</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 1 x 2 (Type A)</td>
<td>M.2 2280 (E Key)</td>
<td>12V</td>
<td>0°C – 60°C</td>
<td>Full Audio with Amp</td>
</tr>
<tr>
<td>PICO-APL3-A10-F002</td>
<td>Celeron® N3350 (Dual Core)</td>
<td>Onboard DDR3L 4GB</td>
<td>No Host</td>
<td>HDMI x 1</td>
<td>SATA 3.0 x 1</td>
<td>M.2 2280 (B Key) x 1</td>
<td>eMMC 64GB</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 1 x 2 (Type A)</td>
<td>M.2 2280 (E Key)</td>
<td>12V</td>
<td>0°C – 60°C</td>
<td>Full Audio with Amp</td>
</tr>
<tr>
<td>PICO-APL3-A10-F003</td>
<td>Pentium® N4200 (Quad Core)</td>
<td>Onboard DDR3L 4GB</td>
<td>No Host</td>
<td>HDMI x 1</td>
<td>SATA 3.0 x 1</td>
<td>M.2 2280 (B Key) x 1</td>
<td>eMMC 64GB</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 1 x 2 (Type A)</td>
<td>M.2 2280 (E Key)</td>
<td>12V</td>
<td>0°C – 60°C</td>
<td>Full Audio with Amp</td>
</tr>
<tr>
<td>PICO-APL3-A10-F004</td>
<td>Celeron® N3350 (Dual Core)</td>
<td>Onboard DDR3L 2GB</td>
<td>No Host</td>
<td>HDMI x 1</td>
<td>SATAIII x 1</td>
<td>M.2 2280 (B Key) x 1</td>
<td>eMMC 64GB</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 1 x 2 (Type A)</td>
<td>M.2 2280 (E Key)</td>
<td>12V</td>
<td>0°C – 60°C</td>
<td>Full Audio with Amp</td>
</tr>
</tbody>
</table>
PICO-APL3-SEMI
PICO-SEMI Embedded Barebone Kit with Intel® Celeron/Pentium Processor SoC

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

Specifications

SYSTEM
FORM FACTOR PICO-SEMI
CPU Intel® Celeron®/Pentium® Processor:
  Pentium N4200 (4C/4T, 1.10GHz up to 2.50GHz, TDP 6W)
  Celeron N3350 (2C/2T, 1.10GHz up to 2.40GHz, TDP 6W)
CHIPSET Integrated with Intel® SoC
MEMORY TYPE Onboard DDR3L up to 4GB
BIOS UEFI
WAKE ON LAN Yes
WATCHDOG TIMER 255 Levels
SECURITY
RTC Battery Lithium Battery 3V/240mAh
DIMENSION
W/O heat sink: 4.8" x 3.15" x 1.18" (122 x 80 x 30 mm)
W/ heat sink: 4.8" x 3.15" x 1.73" (122 x 80 x 44 mm)
Gross Weight
W/O heat sink: 0.38 lb (0.17 kg)
W/ heat sink: 0.91 lb (0.41 kg)
OS Support Windows 10 (64 bit)

POWER
POWER REQUIREMENT +12V
POWER SUPPLY TYPE ATX
CONNECTOR DC Jack Connector
POWER CONSUMPTION Intel® N4200 processor, DDR3L 4GB, eMMC 32GB, 1.1A@+12V (TYPICAL)

DISPLAY
CONTROLLER Intel® HD Graphics 500/505
LVDS/eDP —
Display Interface HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
Multiple Display 1 Simultaneous Display

AUDIO
CODEC Realtek ALC269 (Optional)
AUDIO INTERFACE Line-out (Optional)
Speaker Amplifier Header (Optional)

EXTERNAL I/O
ETHERNET Realtek® 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 1
USB USB 3.2 Gen 1 x 2
SERIAL PORT COM1, COM2 (RS232) (Optional)
VIDEO HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)

INTERNAL I/O
USB —

Packing List
- PICO-APL3-SEMI

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>125530040C</td>
<td>Power Adapter/12V 40W FSP/FSP040-DHAN3</td>
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<tr>
<td>125530060Z</td>
<td>Power Adapter 12V/5A 60W FSP060-DHAN3</td>
<td>1</td>
</tr>
<tr>
<td>1702031802</td>
<td>Power Cord (US Type)</td>
<td>1</td>
</tr>
<tr>
<td>1702031803</td>
<td>Power Cord (European Type)</td>
<td>1</td>
</tr>
<tr>
<td>170203180E</td>
<td>Power Cord (Japan Type)</td>
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<tr>
<td>1701090122</td>
<td>COM Port Cable</td>
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<td>17013008B4</td>
<td>Audio Line-out</td>
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<tr>
<td>9761SEM001</td>
<td>Wallmount Kit</td>
<td>1</td>
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<tr>
<td>9761SEM001</td>
<td>DIN-Rail Kit</td>
<td>1</td>
</tr>
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</table>
**PICO-APL3-SEMI**

### Dimension

<table>
<thead>
<tr>
<th>Part number</th>
<th>CPU</th>
<th>Memory</th>
<th>Thermal</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>Expansion slot</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>PICO-APL3-SEMI-A10-FS01</td>
<td>N3350</td>
<td>DDR3L 2GB</td>
<td>W/ heat sink</td>
<td>HDMI x 1</td>
<td>SATA x 1</td>
<td>eMMC 32GB</td>
<td>GBE x 1</td>
<td>USB3.2 Gen 1 x 2</td>
<td>M.2 2280 B-key x 1</td>
<td>+12V (ATX)</td>
<td>0~50°C</td>
</tr>
<tr>
<td>PICO-APL3-SEMI-A10-FS02</td>
<td>N3350</td>
<td>DDR3L 4GB</td>
<td>W/ heat sink</td>
<td>HDMI x 1</td>
<td>SATA x 1</td>
<td>eMMC 32GB</td>
<td>GBE x 1</td>
<td>USB3.2 Gen 1 x 2</td>
<td>M.2 2280 B-key x 1</td>
<td>+12V (ATX)</td>
<td>0~50°C</td>
</tr>
<tr>
<td>PICO-APL3-SEMI-A10-FS03</td>
<td>N4200</td>
<td>DDR3L 4GB</td>
<td>W/ heat sink</td>
<td>HDMI x 1</td>
<td>SATA x 1</td>
<td>eMMC 32GB</td>
<td>GBE x 1</td>
<td>USB3.2 Gen 1 x 2</td>
<td>M.2 2280 B-key x 1</td>
<td>+12V (ATX)</td>
<td>0~50°C</td>
</tr>
<tr>
<td>PICO-APL3-SEMI-A10-FS04</td>
<td>N3350</td>
<td>DDR3L 2GB</td>
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<td>SATA x 1</td>
<td>eMMC 32GB</td>
<td>GBE x 1</td>
<td>USB3.2 Gen 1 x 2</td>
<td>M.2 2280 B-key x 1</td>
<td>+12V (ATX)</td>
<td>0~50°C</td>
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<tr>
<td>PICO-APL3-SEMI-A10-FS05</td>
<td>N3350</td>
<td>DDR3L 4GB</td>
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<td>SATA x 1</td>
<td>eMMC 32GB</td>
<td>GBE x 1</td>
<td>USB3.2 Gen 1 x 2</td>
<td>M.2 2280 B-key x 1</td>
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<td>eMMC 32GB</td>
<td>GBE x 1</td>
<td>USB3.2 Gen 1 x 2</td>
<td>M.2 2280 B-key x 1</td>
<td>+12V (ATX)</td>
<td>0~50°C</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
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

Specifications

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 2.00GHz, TDP 6W)
  - Atom E3950 (4C/4T,1.60GHz,up to 2.05GHz, TDP 9.5W)
  - Atom E3930 (2C/2T,1.30GHz,up to 1.80GHz, TDP 6.5W)
- Chipset: Integrated with Intel® SoC
- Memory Type: Onboard DDR3L 2GB (Optional to 4GB)
- BIOS: UEFI
- Wake on LAN: Yes
- Security: —
- RTC Battery: Lithium Battery 3V/240mAh
- Dimension: 3.94" x 2.84" (100mm x 72mm)
- Weight: 0.18 lbs. (0.08 kg)
- OS Support: Windows 10 (64 bit)

POWER
- Power Requirement: +12V
- Power Supply Type: AT/ATX
- Connector: Phoenix 2-pin Connector (Default)
- Lockable DC Jack Connector (colay)
- Power Consumption: Intel®N4200 processor, DDR3L 4GB, 1.43A@12V

DISPLAY
- Controller: Intel® HD Graphics 500/505
- LVDS/eDP: eDP x 1 (up to 3840x2160@60Hz, Optional)
- Display Interface: HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
- Display (BIOS, Optional)
- Multiple Display: Up to 3 Simultaneous Displays

AUDIO
- Codec: —
- Audio Interface: —
- Speaker: —

EXTERNAL I/O
- Ethernet: Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2
- USB: USB 3.2 Gen 1 x 2
- Serial Port: —
- Video: HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)

Note: All specifications are subject to change without notice.

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1709970500</td>
<td>(TF) SATA Cable, 50cm</td>
<td>1</td>
</tr>
<tr>
<td>1702150155</td>
<td>(TF) SATA Power Cable, 12cm</td>
<td>1</td>
</tr>
<tr>
<td>PICO-APL4-HSK01</td>
<td>Heat Sink, 100<em>72</em>15.5mm,Silver used with HSP</td>
<td>1</td>
</tr>
<tr>
<td>PICO-APL4-HSP01</td>
<td>Heat Spreader, 100 x 72 x 8.5mm, Silver</td>
<td>1</td>
</tr>
<tr>
<td>1700049151</td>
<td>(TF) USB Cable, 15cm</td>
<td>2</td>
</tr>
<tr>
<td>1701090122</td>
<td>(TF) Flat Cable, D-Sub 9P(M), 9P 1.0mm Housing, 12cm</td>
<td>2</td>
</tr>
<tr>
<td>PICO-APL4-FAN01</td>
<td>CPU Cooler, 100<em>72</em>15.5mm, Silver, use w/HSP</td>
<td>1</td>
</tr>
</tbody>
</table>

*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
**Ordering Information**

<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>PICO-APL4-A10-F001</td>
<td>Celeron® N3350 (Dual Core)</td>
<td>Onboard DDR3L 2GB</td>
<td>W/o Heatspreader</td>
<td>HDMI x 1</td>
<td>SATA E (Gx1 x 1, M.2 2280 (E Key) x 1, eMMC 32GB)</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 1 x 2 (Rear)</td>
<td>USB 2.0 x 2 (Internal)</td>
<td>M.2 2230 (E Key) x 1</td>
<td>+12V (Phoenix Teresitas)</td>
<td>0°C ~ 60°C</td>
<td>DIO 4 bit</td>
<td></td>
</tr>
<tr>
<td>PICO-APL4-A10-F002</td>
<td>Celeron® N3350 (Dual Core)</td>
<td>Onboard DDR3L 4GB</td>
<td>W/o Heatspreader</td>
<td>HDMI x 1</td>
<td>SATA E (Gx1 x 1, M.2 2280 (E Key) x 1, eMMC 32GB)</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 1 x 2 (Rear)</td>
<td>USB 2.0 x 2 (Internal)</td>
<td>M.2 2230 (E Key) x 1</td>
<td>+12V (Phoenix Teresitas)</td>
<td>0°C ~ 60°C</td>
<td>DIO 4 bit</td>
<td></td>
</tr>
<tr>
<td>PICO-APL4-A10-F003</td>
<td>Pentium® N4200 (Quad Core)</td>
<td>Onboard DDR3L 4GB</td>
<td>W/o Heatspreader</td>
<td>HDMI x 1</td>
<td>SATA E (Gx1 x 1, M.2 2280 (E Key) x 1, eMMC 32GB)</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 1 x 2 (Rear)</td>
<td>USB 2.0 x 2 (Internal)</td>
<td>M.2 2230 (E Key) x 1</td>
<td>+12V (Phoenix Teresitas)</td>
<td>0°C ~ 60°C</td>
<td>DIO 4 bit</td>
<td></td>
</tr>
<tr>
<td>PICO-APL4-A10-F004</td>
<td>Celeron® N3350 (Dual Core)</td>
<td>Onboard DDR3L 2GB</td>
<td>W/o Heatspreader</td>
<td>HDMI x 1</td>
<td>SATA E (Gx1 x 1, M.2 2280 (E Key) x 1, eMMC 32GB)</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 1 x 2 (Rear)</td>
<td>USB 2.0 x 2 (Internal)</td>
<td>M.2 2230 (E Key) x 1</td>
<td>+12V (DC Jack)</td>
<td>0°C ~ 60°C</td>
<td>DIO 4 bit</td>
<td></td>
</tr>
</tbody>
</table>

**Remark:** cooler is recommended as the thermal solution.

Note: All specifications are subject to change without notice.

www.aeon.com
Features

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

Specifications

**SYSTEM**
- **FORM FACTOR**: PICO-SEMI
- **CPU**: Intel® Celeron®/Pentium® Processor:
  - Pentium N4200 (4C/4T, 1.10GHz, up to 2.50GHz, TDP 6W)
  - Celeron N3350 (2C/2T, 1.10GHz, up to 2.40GHz, TDP 6W)
- **CHIPSET**: Integrated with Intel® SoC
- **MEMORY TYPE**: Onboard DDR3L up to 4GB
- **BIOS**: UEFI
- **WAKE ON LAN**: Yes
- **WATCHDOG TIMER**: 255 Levels
- **SECURITY**: —
- **RTC Battery**: Lithium Battery 3V/240mAh
- **DIMENSION**: 4.80” x 3.15” x 1.97” (122 mm x 72 mm x 50 mm)
- **GROSS WEIGHT**: 0.88 lb (0.4 kg)
- **OS Support**: Windows 10 (64 bit)

**POWER**
- **POWER REQUIREMENT**: +12V
- **POWER SUPPLY TYPE**: ATX
- **CONNECTOR**: DC Jack Connector
- **POWER CONSUMPTION**: Intel® N4200 processor, DDR3L 4GB, 1.43A@12V

**DISPLAY**
- **CONTROLLER**: Intel® HD Graphics 500/505
- **LVDS/eDP**: —
- **Display Interface**: HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
- **Multiple Display**: 1 Simultaneous Display

**AUDIO**
- **CODEC**: —
- **AUDIO INTERFACE**: —
- **Speaker**: —

**EXTERNAL I/O**
- **ETHERNET**: Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2
- **USB**: USB 3.2 Gen 1 x 2
- **SERIAL PORT**: —
- **VIDEO**: HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)

**INTERNAL I/O**
- **USB**: —
- **SERIAL PORT**: COM1: RS-232 x 1 (Optional)
  - COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V) (Optional)
- **VIDEO**: —

**EXPANSION**
- **Mini PCI-E/mSATA**: —
- **M.2**: M.2 B-Key 2280 x 1 (SATA/USB)
  - M.2 E-Key 2230 x 1 (PCIe/USB)
- **Others**: —

**ENVIRONMENT & CERTIFICATION**
- **OPERATING TEMP**: 32°F ~ 122°F (0°C ~ 50°C) with 0.5 m/s airflow
- **STORAGE TEMP**: -40°F ~ 185°F (-40°C ~ 85°C)
- **OPERATING HUMIDITY**: 0% ~ 90% relative humidity, non-condensing
- **MTBF (HOURS)**: 191,895
- **EMC**: CE/ FCC Class A

**Packing List**

- PICO-APL4-SEMI

**Optional Accessories**

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

Dimension
Unit: mm

Ordering Information

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<thead>
<tr>
<th>Part number</th>
<th>CPU</th>
<th>Memory</th>
<th>Thermal</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>Expansion slot</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
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<tbody>
<tr>
<td>PICO-APL4-SEMI-A10-FS01</td>
<td>N3350</td>
<td>DDR3L 2GB</td>
<td>W/Cooler</td>
<td>HDMI x 1</td>
<td>SATA x 1</td>
<td>GbE x 2</td>
<td>USB 3.0</td>
<td>M.2 2230 B-key x 1</td>
<td>12V</td>
<td>0~50˚C</td>
<td>I2C x 1</td>
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<tr>
<td>PICO-APL4-SEMI-A10-FS03</td>
<td>N4200</td>
<td>DDR3L 4GB</td>
<td>W/Cooler</td>
<td>HDMI x 1</td>
<td>SATA x 1</td>
<td>GbE x 2</td>
<td>USB 3.0</td>
<td>M.2 2230 B-key x 1</td>
<td>12V</td>
<td>0~50˚C</td>
<td>I2C x 1</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
Pico-ITX Board with Intel® Atom®/Celeron® Processor SoC

Features
- Onboard Intel® Atom® E3800/Celeron® J1900/N2807 Processor SoC
- DDR3L 1066/1333 MHz SODIMM x 1, Up to 8 GB
- 18/24-bit LVDS LCD, CRT Co-lay Display Port
- SATA 3.0Gb/s x 1, Mini-Card (Full size)/mSATA (default) x 1
- USB 3.2 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

Specifications

**SYSTEM**

- **FORM FACTOR**: PICO-ITX
- **CPU**: Intel® Atom®/Celeron® Processor:
  - Celeron® J1900 (4C/4T, 2.00GHz, up to 2.42GHz, TDP 10W)
  - Celeron® N2807 (2C/2T, 1.58GHz, up to 2.16GHz, TDP 4.3W)
  - Atom™ E3845 (4C/4T, 1.91 GHz, TDP 10W)
  - Atom™ E3825 (2C/2T, 1.33 GHz, TDP 6W)
- **CHIPSET**: Integrated with Intel® SoC
- **MEMORY TYPE**: DDR3L up to 2133MHz, SODIMM x 1, up to 8GB, Non-ECC
- **BIOS**: UEFI
- **WAKE ON LAN**: Yes
- **WATICHDOG TIMER**: 255 Levels
- **SECURITY**: —
- **RTC Battery**: Lithium Battery 3V/240mAh
- **DIMENSION**: 3.94” x 2.84” (100mm x 72mm)
- **Gross Weight**: 0.18 lbs (0.08 kg)
- **OS Support**: Windows 10 (64 bit), Windows 7 (64 bit), Ubuntu 21.04.3/Kernel 5.11
- **POWER**:
  - **POWER REQUIREMENT**: +12V
  - **POWER SUPPLY TYPE**: AT/ATX
  - **CONNECTOR**: Phoenix 2-pin Connector (Default)
  - **POWER CONSUMPTION**: Intel® J1900, DDR3L 1333MHz 8GB 1.14A@ +12V (TYPICAL)
- **DISPLAY**
  - **CONTROLLER**: Intel® HD Graphics for Intel Atom® Processor 2370 Series
  - **LVDS/EDP**: LVDS (18/24-bit) up to 1400 x 900 @60Hz
  - **Display Interface**: VGA up to 2048 x 1152 @60Hz or DP up to 2560 x 1400 @60Hz
  - **Multiple Display**: Up to 2 Simultaneous Displays
- **AUDIO**
  - **CODEC**: Realtek ALC897/892
  - **AUDIO INTERFACE**: Line-out
  - **Speaker**: —
  - **EXTERNAL I/O**
  - **ETHERNET**: Intel® i210, 10/100/1000Base, RJ-45 x 1
  - **USB**: USB 3.2 Gen 1 x 1, USB 2.0 x 1
  - **SERIAL PORT**: —
  - **VIDEO**: VGA up to 2048 x 1152 @60Hz or DP up to 2560 x 1400 @60Hz

**Packing List**

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

**Optional Accessories**

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

Note: All specifications are subject to change without notice.
Block Diagram

![Block Diagram of PICO-BT01](image)

Dimension
Unit: mm

Standard model with Heat-Spreader

<table>
<thead>
<tr>
<th>Part number</th>
<th>CPU</th>
<th>Memory</th>
<th>FAN/FANLESS</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-422/485</th>
<th>Expansion slot</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>PICO-BT01-A12-00A2</td>
<td>N2807</td>
<td>DDR3L, Max. 4GB</td>
<td>Heat-spreaders</td>
<td>LVS x 1</td>
<td>SATA x 1</td>
<td>mSATA (Full size) x 1</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 1 x 1</td>
<td>1</td>
<td>1</td>
<td>miniCard x 1 (half size)</td>
<td>12V</td>
<td>0°C ~ -60°C</td>
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<tr>
<td>PICO-BT01-A12-00A3</td>
<td>E3845</td>
<td>DDR3L, Max. 8GB</td>
<td>Heat-spreaders</td>
<td>LVS x 1</td>
<td>SATATA x 1</td>
<td>mSATA (Full size) x 1</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 1 x 1</td>
<td>1</td>
<td>1</td>
<td>miniCard x 1 (half size)</td>
<td>12V</td>
<td>0°C ~ -60°C</td>
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<tr>
<td>PICO-BT01-A12-00A4</td>
<td>E3825</td>
<td>DDR3L, Max. 8GB</td>
<td>Heat-spreaders</td>
<td>LVS x 1</td>
<td>SATA x 1</td>
<td>mSATA (Full size) x 1</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 1 x 1</td>
<td>1</td>
<td>1</td>
<td>miniCard x 1 (half size)</td>
<td>12V</td>
<td>0°C ~ -60°C</td>
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<tr>
<td>PICO-BT01-A12-00A5</td>
<td>J1900</td>
<td>DDR3L, Max. 8GB</td>
<td>Heat-spreaders</td>
<td>LVS x 1</td>
<td>SATA x 1</td>
<td>mSATA (Full size) x 1</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 1 x 1</td>
<td>1</td>
<td>1</td>
<td>miniCard x 1 (half size)</td>
<td>12V</td>
<td>0°C ~ -60°C</td>
</tr>
<tr>
<td>PICO-BT01-A12-0003</td>
<td>E3845</td>
<td>DDR3L, Max. 8GB</td>
<td>Heat-spreaders</td>
<td>LVS x 1</td>
<td>SATA x 1</td>
<td>mSATA (Full size) x 1</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 1 x 1</td>
<td>1</td>
<td>1</td>
<td>miniCard x 1 (half size)</td>
<td>12V</td>
<td>-40°C ~ -85°C</td>
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<tr>
<td>PICO-BT01-A12-0004</td>
<td>E3825</td>
<td>DDR3L, Max. 8GB</td>
<td>Heat-spreaders</td>
<td>LVS x 1</td>
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<td>mSATA (Full size) x 1</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 1 x 1</td>
<td>1</td>
<td>1</td>
<td>miniCard x 1 (half size)</td>
<td>12V</td>
<td>-40°C ~ -85°C</td>
</tr>
</tbody>
</table>
PICO-EHL1 PRELIMINARY

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

Specifications

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>PICO-ITX</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Intel® Atom® x6000E series, Intel® Pentium®, and Celeron® N and J series processors:</td>
</tr>
<tr>
<td></td>
<td>- Intel® Atom® x6425RE (4C, 1.9GHz, TDP-up 12W)</td>
</tr>
<tr>
<td></td>
<td>- Intel® Atom® x6425E (4C, 2.0GHz, up to 3GHz, TDP-up 12W)</td>
</tr>
<tr>
<td></td>
<td>- Intel® Atom® x6211E (2C, 1.2GHz, up to 3GHz, TDP-up 6W)</td>
</tr>
<tr>
<td></td>
<td>- Intel® Pentium® J6426 (4C, 2.0GHz, up to 3GHz, TDP-up 10W)</td>
</tr>
<tr>
<td></td>
<td>- Intel® Celeron® N6210 (2C, 1.2GHz, up to 3GHz, TDP-up 6.5W)</td>
</tr>
<tr>
<td></td>
<td>(Intel® Atom® x6414RE/x6413E/x6427FE/x6200FE/N6415 by customer’s request)</td>
</tr>
<tr>
<td>CHIPSET</td>
<td>Intel® Elkhart Lake SoC Processor</td>
</tr>
<tr>
<td>MEMORY TYPE</td>
<td>DDR4 up to 3200MHz, SODIMM x 1, up to 32GB, support IBECC (select SKUs)</td>
</tr>
<tr>
<td>BIOS</td>
<td>UEFI</td>
</tr>
<tr>
<td>WAKE ON LAN</td>
<td>Yes</td>
</tr>
<tr>
<td>WATCHDOG TIMER</td>
<td>255 Levels</td>
</tr>
<tr>
<td>SECURITY</td>
<td>TPM2.0 (Optional)</td>
</tr>
<tr>
<td>RTC Battery</td>
<td>Lithium Battery 3V/240mAh</td>
</tr>
<tr>
<td>DIMENSION</td>
<td>3.94” x 2.84” (100mm x 72mm)</td>
</tr>
<tr>
<td>Gross Weight</td>
<td>0.18 lbs (0.08 kg)</td>
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<tr>
<td>OS Support</td>
<td>Windows 10 (64 bit)</td>
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<tr>
<td></td>
<td>Ubuntu 20.04.3/Ubuntu 18.04 (64 bit)</td>
</tr>
<tr>
<td>POWER</td>
<td>+12V</td>
</tr>
<tr>
<td>POWER REQUIREMENT</td>
<td>+12V</td>
</tr>
<tr>
<td>POWER SUPPLY TYPE</td>
<td>ATX</td>
</tr>
<tr>
<td>CONNECTOR</td>
<td>Phoenix 2-pin Connector (Default)</td>
</tr>
<tr>
<td></td>
<td>Lockable DC Jack Connector (cable)</td>
</tr>
<tr>
<td>POWER CONSUMPTION</td>
<td>TBD</td>
</tr>
<tr>
<td>DISPLAY</td>
<td>TBD</td>
</tr>
<tr>
<td>CONTROLLER</td>
<td>Intel® UHD Graphics for 10th Gen Intel® Processors</td>
</tr>
<tr>
<td>LCD/LED</td>
<td>eDP/LVDS (18/24bit 2CH) 1920 x 1200 (default: LVDS)</td>
</tr>
<tr>
<td>Display Interface</td>
<td>HDMI 1.4b x1 (up to 3840 x 2160)</td>
</tr>
<tr>
<td></td>
<td>DDI (BIO, Optional)</td>
</tr>
<tr>
<td></td>
<td>Up to 3 Simultaneous Displays</td>
</tr>
<tr>
<td>AUDIO</td>
<td>—</td>
</tr>
<tr>
<td>CODEC</td>
<td>—</td>
</tr>
<tr>
<td>AUDIO INTERFACE</td>
<td>—</td>
</tr>
<tr>
<td>Speaker</td>
<td>—</td>
</tr>
</tbody>
</table>

Features

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

Packing List

- TBD

Optional Accessories

- TBD

Note: All specifications are subject to change without notice.
Block Diagram

Intel® Atom™ x6000E series, Pentium® and Celeron® (N / J series) processors

Note: All specifications are subject to change without notice.

www.aaeon.com

Ordering Information

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

Features

- Intel Atom® E3900/ Pentium® N4200/ Celeron® N3350 Processor SoC
- DDR3L 1600 MHz SODIMM x 1, up to 8GB
- 18/24-bit Dual Channel LVDS LCD
- HDMI1.4 x 1, Pin header (up to 2K @30Hz)
- SATA 6.Gb/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)

Specifications

- CPU: Intel® Atom® x7-E3950 (4C, 1.6GHz, up to 2GHz, TDP 12W)
- Intel® Atom® x5-E3940 (4C, 1.6GHz, up to 1.8GHz, TDP 9.5W)
- Intel® Pentium® N4200 (4C, 1.1GHz, up to 2.5GHz, TDP 6W)
- Intel® Celeron® N3350 (2C, 1.1GHz, up to 2.4GHz, TDP 6W)

- Chipset: Intel® Atom® E3900/ Pentium® N4200/ Celeron® N3350 Processor SoC

- Memory Type: DDR3L SODIMM up to 1600MHz, up to 8GB

- BIOS: AMI/SPI

- Wake On LAN: Yes

- Watchdog Timer: 255 Levels

- Security: —

- RTC Battery: Lithium Battery 3V/240mAh

- Dimension: 3.94” x 2.84” (100mm x 72mm)

- Gross Weight: 0.18 lbs. (0.08 kg)

- OS Support: Windows 10 (64 bit)

- Ubuntu 20.04.4 / 5.13.0

- Power Requirement: +12V

- Power Supply Type: AT/ATX (Pin header)

- Connector: 2-pin Connector (Pin header)

- Power Consumption: Intel® Pentium® N4200, DDR3L 8GB x 1, 2.16A@ +12V(TYPICAL), Intel® Pentium® N4200, DDR2, 8GB x 1, 2.28A@ +12V(MAX)

- Display Controller: Intel® Atom® E3900/ Pentium® N4200/ Celeron® N3350 Processor SoC

- LVDS/eDP: LVDS (18/24bit 2CH)

- Display Interface: HDMI 1.4 x 1 (2K@30Hz) (Pin header type)

- Multiple Display: Up to 2 Simultaneous Displays

- Audio CODEC: Realtek 888/897

- Audio Interface: Line out

- Speaker: —

- ETHERNET: Intel® i210AT/i210IT, 10/100/1000Base x 1 (Pin header) *LED in separated pin header

- USB: USB 3.2 Gen 1 x 2

- SERIAL PORT: —

- VIDEO: HDMI 1.4 x 1 (2K@30Hz)

- Internal I/O

- USB: USB2.0 x 2

- SERIAL PORT: COM1: RS-232 x 1, COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V)

- VIDEO: —

- SATA: SATA III x 1, +5 SATA Power Connector x 1

- Audio: Line-out x 1

- DIO/GPIO: 4-bit

- SMBus/I2C: SMBus/I2C x 1 (SMBus as default, I2C selected by HW BOM)

- Touch: —

- FAN: —

- SIM: —

- Front Panel: HDD LED, PWR LED, Power Button, Buzzer, Reset

- Other: —

- Expansion

- Mini PCI-E/mSATA: Full size mPCIe/ mSATA or USB2.0 x 1 (SATA as default, PCIe selected by HW BOM)

- Half-size Mini Card x 1 (mPCIe as default)

- M.2: —

- Others: BIO x 1 (Optional), SMBus/I2C x 1 (SMBus as default, I2C selected by HW BOM)

- Environment & Certification

- Operating Temp: 32 °F ~ 140 °F (0°C ~ 60°C)

- Storage Temp: -40 °F ~ 176 °F (-40°C ~ 80°C)

- Operating Humidity: 0% ~ 90% relative humidity, non-condensing

- MTBF (HOURS): 525,137

- EMC: CE/FCC Class A

Packing List

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

- PICO-APL2

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1709670500</td>
<td>SATA Cable, 1P Pitch 1.27mm, 50cm</td>
<td>1</td>
</tr>
<tr>
<td>1702150155</td>
<td>SATA Power Cable</td>
<td>1</td>
</tr>
<tr>
<td>1700502027</td>
<td>USB Cable 20cm</td>
<td>1</td>
</tr>
<tr>
<td>1703200153</td>
<td>COM x 2, line-out cable</td>
<td>1</td>
</tr>
<tr>
<td>PICO-APL1-HSP01</td>
<td>Heat-spreader for PICO-APL1 N4200/N3350 SKUs</td>
<td>1</td>
</tr>
<tr>
<td>PICO-APL2-HSP02</td>
<td>Heat-spreader for PICO-APL1 E3950/E3940/E3930 SKUs</td>
<td>1</td>
</tr>
<tr>
<td>PICO-APL2-HSK02</td>
<td>Heat-sink for all PICO-APL1 series, to be used with Heat-sink</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
Block Diagram

Ordering Information

<table>
<thead>
<tr>
<th>Part number</th>
<th>CPU</th>
<th>Memory</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232/422/485</th>
<th>Expansion slot</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>PICO-APL2-A10-0001</td>
<td>N4200</td>
<td>8GB</td>
<td>HDMI x 1</td>
<td>SATAII x 1</td>
<td>GbE x 1</td>
<td>USB3.2 Gen 1 x 2 USB2.0 x 1</td>
<td>2</td>
<td>Half-size Mini Card (PCIe/USB) x 1</td>
<td>+12V</td>
<td>0°C ~ 80°C</td>
<td>4-bit DIO x 1</td>
</tr>
<tr>
<td>PICO-APL2-A10-0002</td>
<td>N3350</td>
<td>8GB</td>
<td>HDMI x 1</td>
<td>SATAII x 1</td>
<td>GbE x 1</td>
<td>USB3.2 Gen 1 x 2 USB2.0 x 1</td>
<td>2</td>
<td>Half-size Mini Card (PCIe/USB) x 1</td>
<td>+12V</td>
<td>0°C ~ 80°C</td>
<td>4-bit DIO x 1</td>
</tr>
<tr>
<td>PICO-APL2-A10-0003</td>
<td>E3950</td>
<td>8GB</td>
<td>HDMI x 1</td>
<td>SATAII x 1</td>
<td>GbE x 1</td>
<td>USB3.2 Gen 1 x 2 USB2.0 x 1</td>
<td>2</td>
<td>Half-size Mini Card (PCIe/USB) x 1</td>
<td>+12V</td>
<td>0°C ~ 80°C</td>
<td>4-bit DIO x 1</td>
</tr>
</tbody>
</table>
BIO-ST01-L1U2
2.5” BIO Daughter Board with Gigabit LAN and USB

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>2.5” Board</td>
</tr>
<tr>
<td>BIO</td>
<td>80-Pin high speed board to board connector</td>
</tr>
<tr>
<td>Power Requirement</td>
<td>Power Supplied from MB via board to board connector</td>
</tr>
<tr>
<td>Dimension</td>
<td>3.94” x 2.84” (100mm x 72mm)</td>
</tr>
<tr>
<td>Gross Weight</td>
<td>0.44 lb (0.2 kg)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°F ~ 176°F (-40°C ~ 80°C)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0% ~ 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Certification</td>
<td>—</td>
</tr>
<tr>
<td>OS support</td>
<td>Windows 10 (64 bit)</td>
</tr>
</tbody>
</table>

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: —
- BIO: —

Ordering Information

<table>
<thead>
<tr>
<th>P/N</th>
<th>LAN</th>
<th>USB</th>
<th>Expansion Slot</th>
<th>Temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO-ST01-L1U2-A11-0001</td>
<td>GbE x 1</td>
<td>USB 2.0 x 1</td>
<td>Speaker Out with 2W Amp, SMBus*1</td>
<td>0°C ~ 60°C</td>
</tr>
</tbody>
</table>

Dimension

Unit: mm

Note: All specifications are subject to change without notice.
BIO-ST01-M1U1
2.5” BIO Daughter Board with Mini-Card, SIM and USB

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

Specifications

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

Packing List
- Accessory kit
- BIO-ST01-M1U1

Ordering Information

<table>
<thead>
<tr>
<th>P/N</th>
<th>USB</th>
<th>Expansion Slot</th>
<th>Power Temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO-ST01-M1U1-A11-0001</td>
<td>USB 2.0 x 1</td>
<td>Mini-Card x 1, SIM x 1, Speaker Out with 2W Amp x 1, SMBus</td>
<td>0°C ~ 60°C</td>
</tr>
</tbody>
</table>

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

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

Ordering Information

<table>
<thead>
<tr>
<th>P/N</th>
<th>USB</th>
<th>RS-232</th>
<th>Expansion Slot</th>
<th>Temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO-ST02-C4M1-A10-01*</td>
<td>1</td>
<td>4</td>
<td>Mini-Card x 1, SIM x 1</td>
<td>0°C ~ 60°C</td>
</tr>
</tbody>
</table>

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>2.5” Board</td>
</tr>
<tr>
<td>BIO</td>
<td>80-Pin high speed Board to board connector</td>
</tr>
<tr>
<td>Power Requirement</td>
<td>Power Supplied from MB via board to board connector</td>
</tr>
<tr>
<td>Dimension</td>
<td>3.94” x 2.84” (100mm x 72mm)</td>
</tr>
<tr>
<td>Gross Weight</td>
<td>0.44 lb (0.2 Kg)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°F ~ 176°F (-40°C ~ 80°C)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>9% ~ 99% relative humidity, non-condensing</td>
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<tr>
<td>Certification</td>
<td>—</td>
</tr>
<tr>
<td>OS support</td>
<td>Windows 10 (64 bit)</td>
</tr>
<tr>
<td>I/O</td>
<td></td>
</tr>
<tr>
<td>Ethernet</td>
<td>—</td>
</tr>
<tr>
<td>USB</td>
<td>USB 2.0 x 1 on rear I/O</td>
</tr>
<tr>
<td>Audio</td>
<td>—</td>
</tr>
<tr>
<td>Expansion Interface</td>
<td>—</td>
</tr>
<tr>
<td>PCIe</td>
<td>Mini-Card x 1 (full size), SIM x 1</td>
</tr>
<tr>
<td>Serial Port</td>
<td>COM1, COM2 RS-232 by Pin Header</td>
</tr>
<tr>
<td></td>
<td>COM3, COM4 RS-232 on Rear I/O</td>
</tr>
<tr>
<td>SIM</td>
<td>—</td>
</tr>
<tr>
<td>BIO</td>
<td>—</td>
</tr>
</tbody>
</table>

Dimension

<table>
<thead>
<tr>
<th>Unit: mm</th>
</tr>
</thead>
</table>

Note: All specifications are subject to change without notice.
**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

**Packing List**
- Accessory Kit
- BIO-ST03-P2U1

**Ordering Information**

<table>
<thead>
<tr>
<th>P/N</th>
<th>LAN</th>
<th>USB</th>
<th>Power</th>
<th>Temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO-ST03-P2U1</td>
<td>PoE x 2</td>
<td>USB 3.2 Gen 1 x 1</td>
<td>9~36V</td>
<td>0°C ~ 60°C</td>
</tr>
</tbody>
</table>

* Customized BIOS is required.

---

**Specifications**

**System**
- Form Factor: 3.5” Board
- 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:
- SIM:
- DIO:

---

**Dimension**

Unit: mm

---

Note: All specifications are subject to change without notice.

www.aaeon.com
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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Form Factor</th>
<th>2.5&quot; Board</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BIO</td>
<td>80-Pin high speed board to board connector</td>
</tr>
<tr>
<td>Power Requirement</td>
<td>Power Supplied from MB via board to board connector</td>
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</tr>
<tr>
<td>Dimension</td>
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<tr>
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<td>32˚F ~ 140˚F (0˚C ~ 60˚C)</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40˚F ~ 176˚F (-40˚C ~ 80˚C)</td>
<td></td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0% ~ 95% relative humidity, non-condensing</td>
<td></td>
</tr>
<tr>
<td>Certification</td>
<td>CE, FCC</td>
<td></td>
</tr>
<tr>
<td>OS support</td>
<td>Windows 10 (64 bit)</td>
<td></td>
</tr>
<tr>
<td>I/O</td>
<td>Ethernet</td>
<td>Intel® i211, 10/100/1000Base-TX x 1</td>
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<tr>
<td></td>
<td>USB</td>
<td>USB 3.2 Gen 1 x 1 &amp; USB 2.0 x 3 or USB 2.0 x5(for PICO-BT01)</td>
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<tr>
<td>Audio</td>
<td>Speaker output with 2W Amp.</td>
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</tr>
<tr>
<td>Expansion Interface</td>
<td>PCIe [x1] (optional), LPT x 1</td>
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</tr>
<tr>
<td></td>
<td>Serial Port</td>
<td>COM x14, RS-232 by Pin Header</td>
</tr>
<tr>
<td></td>
<td>SIM</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>DIO</td>
<td>32 bits</td>
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Packing List
- 96978B0000
  Accessory Kit (w/ Copper Stud and Screws)
- BIO-ST02-C14D32

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>COM</th>
<th>DIO</th>
<th>LAN</th>
<th>PCIe</th>
<th>USB</th>
<th>LPT</th>
<th>Temp.</th>
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<tbody>
<tr>
<td>BIO-ST02-C14D32-A10-0001</td>
<td>RS-232 x14</td>
<td>x32 bit</td>
<td>GbE x 1</td>
<td>PCIe[x1]</td>
<td>USB 3.2 Gen 1 x 1</td>
<td>USB 2.0 x 3</td>
<td>x1</td>
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* Customized BIOS is required.

Optional Accessories

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<th>Description</th>
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<tr>
<td>1701080150</td>
<td>COM Cable 15cm</td>
<td>14</td>
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<tr>
<td>1700050207</td>
<td>USB cable 20cm</td>
<td>3 or 5</td>
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Dimension
Unit: mm
### Specifications

#### SYSTEM

<table>
<thead>
<tr>
<th>FORM FACTOR</th>
<th>PICO-SEMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Intel® Atom® x6000E series, Intel® Pentium®, and Celeron® N and J series processors:</td>
</tr>
<tr>
<td></td>
<td>Intel® Atom® x6425RE (4C, 1.9GHz, TDP=12W)</td>
</tr>
<tr>
<td></td>
<td>Intel® Atom® x6425E (4C, 2.0GHz, up to 3GHz, TDP=12W)</td>
</tr>
<tr>
<td></td>
<td>Intel® Atom® x6211E (2C, 1.2GHz, up to 3GHz, TDP=6W)</td>
</tr>
<tr>
<td></td>
<td>Intel® Pentium® J6426 (4C, 2.0GHz, up to 3GHz, TDP=10W)</td>
</tr>
<tr>
<td></td>
<td>Intel® Celeron® J6412 (4C, 2.0GHz, up to 3GHz, TDP=10W)</td>
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<tr>
<td></td>
<td>Intel® Celeron® N6210 (2C, 1.2GHz, up to 3GHz, TDP=6.5W)</td>
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<tr>
<td></td>
<td>Intel® Atom® x6414RE/x6413E/x6427FE/x6200FE/N6415 by customer's request</td>
</tr>
<tr>
<td>CHIPSET</td>
<td>Intel® Elkhart Lake SoC Processor</td>
</tr>
<tr>
<td>MEMORY TYPE</td>
<td>LPDDR4x up to 3200MHz, up to 16GB</td>
</tr>
<tr>
<td>BIOS</td>
<td>UEFI</td>
</tr>
<tr>
<td>WAKE ON LAN</td>
<td>Yes</td>
</tr>
<tr>
<td>SECURITY</td>
<td>—</td>
</tr>
<tr>
<td>RTC Battery</td>
<td>Lithium Battery 3V/240mAH</td>
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<td>DIMENSION</td>
<td>TBD</td>
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<tr>
<td>Gross Weight</td>
<td>TBD</td>
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<tr>
<td>OS Support</td>
<td>Windows 10 (64 bit) Ubuntu 20.04.3/Ubuntu 5.13</td>
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<td>POWER</td>
<td>12V only</td>
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<tr>
<td>CONNECTOR</td>
<td>DC Jack Connector</td>
</tr>
<tr>
<td>POWER CONSUMPTION</td>
<td>Intel® Atom™ x6425E, LPDDR4x on board 16GB, 2.48A@ +12V (TYPICAL)</td>
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<tr>
<td></td>
<td>Intel® Atom™ x6425E, LPDDR4x on board 16GB, 2.62A@ +12V (MAX)</td>
</tr>
<tr>
<td>DISPLAY</td>
<td>Intel® UHD Graphics for 10th Gen Intel® Processors</td>
</tr>
<tr>
<td></td>
<td>Display Interface: HDMI 2.0b x 2 (4K x 2K 60Hz)</td>
</tr>
<tr>
<td></td>
<td>Multiple Display: Up to 2 Simultaneous Displays</td>
</tr>
<tr>
<td>AUDIO</td>
<td>—</td>
</tr>
<tr>
<td>CODEC</td>
<td>—</td>
</tr>
<tr>
<td>AUDIO INTERFACE</td>
<td>—</td>
</tr>
<tr>
<td>Speaker</td>
<td>—</td>
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<tr>
<td>ETHERNET</td>
<td>Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2</td>
</tr>
<tr>
<td>USB</td>
<td>USB 3.2 Gen 2 x 2</td>
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</tbody>
</table>

#### FEATURES

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

#### Packing List

- PICO-EHL4-SEMI
- TBD

#### Optional Accessories

- TBD

#### Ordering Information

- TBD
04

COM Express
CPU Modules
COM-TGHB6

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

Features

- 11th Generation Intel® Core™ Tiger Lake-H Xeon/Core Series Processor
- Intel 500 Chipset series (RM590E / QM580E)
- DDR4 3200 MHz SODIMM x 2 (ECC Support), up to 64GB
- Intel I225LM 2.5GbE x 1
- VGA, 18/24-bit 2ch LVDS/eDP, DDI x3
- High Definition Audio Interface
- SATA3.0 x 4
- USB2.0 x 8, USB3.2 Gen2 x 4
- PCIe[x16] x 1 (Gen4), PCIe [x1] x 8 (Gen3), I2C, SMBus, LPC, TPM2.0 (Optional)
- 12V DC input

Packing List

- COM-TGHB6-A10 x 1

Optional Accessories

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

CPU Support Chart

<table>
<thead>
<tr>
<th>CPU</th>
<th>Core / Thread</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Graphic</th>
</tr>
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<tbody>
<tr>
<td>G1-1185GHE</td>
<td>8C/16T</td>
<td>2.6</td>
<td>4.7</td>
<td>Intel® UHD Graphics</td>
</tr>
<tr>
<td>G5-1150GHE</td>
<td>6C/12T</td>
<td>2.6</td>
<td>4.5</td>
<td>Intel® UHD Graphics</td>
</tr>
<tr>
<td>G3-1155GHE</td>
<td>4C/8T</td>
<td>2.4</td>
<td>4.4</td>
<td>Intel® UHD Graphics</td>
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<tr>
<td>S1-1155GHE</td>
<td>6C/12T</td>
<td>2.6</td>
<td>4.7</td>
<td>Intel® UHD Graphics</td>
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<tr>
<td>S3-1155GHE</td>
<td>6C/12T</td>
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<td>4.5</td>
<td>Intel® UHD Graphics</td>
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<td>4.4</td>
<td>Intel® UHD Graphics</td>
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<td>S3-1155GHE</td>
<td>6C/12T</td>
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<td>4.4</td>
<td>Intel® UHD Graphics</td>
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<td>S3-1155GHE</td>
<td>4C/8T</td>
<td>1.8</td>
<td>3.1</td>
<td>Intel® UHD Graphics</td>
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Specifications

<table>
<thead>
<tr>
<th>System</th>
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<tbody>
<tr>
<td>Form Factor</td>
</tr>
<tr>
<td>CPU</td>
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<tr>
<td>CPU Frequency</td>
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<tr>
<td>Chipset</td>
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<tr>
<td>Memory Type</td>
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<tr>
<td>Max. Memory Capacity</td>
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<td>BIOS</td>
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<tr>
<td>Wake on LAN</td>
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<tr>
<td>Watchdog Timer</td>
</tr>
<tr>
<td>Power Requirement</td>
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<tr>
<td>Power Supply Type</td>
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<tr>
<td>Power Consumption (Typical)</td>
</tr>
<tr>
<td>Dimension (L x W)</td>
</tr>
<tr>
<td>Operating Temperature</td>
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<tr>
<td>Storage Temperature</td>
</tr>
<tr>
<td>Operating Humidity</td>
</tr>
<tr>
<td>Certification</td>
</tr>
</tbody>
</table>

Display

| Graphic Controller             | Intel® UHD Graphics |
| Video Output                   | LVDS or eDP x 1 (Default: LVDS, 18/24b 2CH LVDS, or 4 lane eDP) | VGA x 1 |

I/O

| Ethernet                       | Intel® I225/I226LM/IT GbE x 1 |
| Audio                          | High Definition Audio Interface |
| USB Port                       | USB 2.0 x 8, USB 3.2 Gen2 x 4 |
| Serial Port                    | 2-Wire UART (Tx/Rx) x2 |
| HDD Interface                  | SATA3 x 4 |
| Expansion Slot                 | PCIe x 4 [x16] x 1, PCIe 3.0 [x1] x 8 |
|                               | LPC x 1, SMBus x 1 |
|                               | I2C x 1 |
| GPIO                           | 8-bit |
| Onboard Storage                | N/A |
| TPM                            | TPM 2.0 |

Note: All specifications are subject to change without notice.
Note: All specifications are subject to change without notice.

COM Express CPU Modules

**Block Diagram**  
Unit: mm

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>COM Express Type</th>
<th>CPU</th>
<th>Memory</th>
<th>Display</th>
<th>LVDS</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>UART</th>
<th>Expansion</th>
<th>Power</th>
<th>Temperature</th>
<th>Other</th>
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</thead>
<tbody>
<tr>
<td>COM-TGHB6-A10-0001</td>
<td>COM Express Basic Size, Type 6</td>
<td>I7-11850H</td>
<td>DDR4 SO-DIMM x2</td>
<td>DDI#A, LVDS or eDP, VOA x1</td>
<td>18/24b-2CH (LVDS or 4 lanes eDP)</td>
<td>SATA 3.0</td>
<td></td>
<td>2-Wire UART (Tx/Rx) x2</td>
<td>PCIe*16</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>LPC/e-SPI, SMBus, I2C</td>
<td></td>
</tr>
<tr>
<td>COM-TGHB6-A10-0002</td>
<td>COM Express Basic Size, Type 6</td>
<td>I5-11500H</td>
<td>DDR4 SO-DIMM x2</td>
<td>DDI#A, LVDS or eDP, VOA x1</td>
<td>18/24b-2CH (LVDS or 4 lanes eDP)</td>
<td>SATA 3.0</td>
<td></td>
<td>2-Wire UART (Tx/Rx) x2</td>
<td>PCIe*16</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>LPC/e-SPI, SMBus, I2C</td>
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<tr>
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<td>DDI#A, LVDS or eDP, VOA x1</td>
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<td>SATA 3.0</td>
<td></td>
<td>2-Wire UART (Tx/Rx) x2</td>
<td>PCIe*16</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>LPC/e-SPI, SMBus, I2C</td>
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</tr>
<tr>
<td>COM-TGHB6-A10-0004</td>
<td>COM Express Basic Size, Type 6</td>
<td>W-11865R</td>
<td>DDR4 SO-DIMM x2</td>
<td>DDI#A, LVDS or eDP, VOA x1</td>
<td>18/24b-2CH (LVDS or 4 lanes eDP)</td>
<td>SATA 3.0</td>
<td></td>
<td>2-Wire UART (Tx/Rx) x2</td>
<td>PCIe*16</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>LPC/e-SPI, SMBus, I2C</td>
<td></td>
</tr>
<tr>
<td>COM-TGHB6-A10-0005</td>
<td>COM Express Basic Size, Type 6</td>
<td>W-11865ML</td>
<td>DDR4 SO-DIMM x2</td>
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<td>18/24b-2CH (LVDS or 4 lanes eDP)</td>
<td>SATA 3.0</td>
<td></td>
<td>2-Wire UART (Tx/Rx) x2</td>
<td>PCIe*16</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>LPC/e-SPI, SMBus, I2C</td>
<td></td>
</tr>
</tbody>
</table>
## Features
- 8th / 9th Generation Intel® Core™ i3/i5/i7/Xeon-E Processors
- 3x SODIMM DDR4 2666 Memory up to 96GB, ECC support (by SKU, with CM246 PCH)
- Intel i219LM Gigabit Ethernet x 1
- VGA, 18/24-bit 2ch LVDS or 4-lane eDP, DDI up to 3
- High Definition Audio Interface
- SATA x 4, USB2.0 x 8, USB 3.2 Gen 2 X 4
- PCI-Express [x1] x 8, PCI-Express[x16] x 1
- GPIO x 8, SMbus, I2C, LPC
- COM Express Basic Size, Pin-Out Type 6, 125mmx95mm
- Support Intel iAMT

## CPU Support Chart

<table>
<thead>
<tr>
<th>CPU</th>
<th>Core/Thread</th>
<th>Base Frequency/Turbo</th>
<th>TDP</th>
<th>ECC Support</th>
<th>Graphic</th>
<th>Chipset</th>
</tr>
</thead>
<tbody>
<tr>
<td>XEON E-2276ME</td>
<td>6c/12t</td>
<td>2.9GHz/4.5GHz</td>
<td>12M</td>
<td>V</td>
<td>GT2-P630</td>
<td>CM246</td>
</tr>
<tr>
<td>XEON E-2276ML</td>
<td>6c/12t</td>
<td>2.9GHz/4.5GHz</td>
<td>12M</td>
<td>V</td>
<td>GT2-P630</td>
<td>CM246</td>
</tr>
<tr>
<td>XEON E-2254ME</td>
<td>4c/8t</td>
<td>2.8GHz/3.5GHz</td>
<td>8M</td>
<td>x</td>
<td>GT2-P630</td>
<td>CM246</td>
</tr>
<tr>
<td>XEON E-2254ML</td>
<td>4c/8t</td>
<td>2.8GHz/3.5GHz</td>
<td>8M</td>
<td>V</td>
<td>GT2-P630</td>
<td>CM246</td>
</tr>
<tr>
<td>XEON E-2250ME</td>
<td>4c/8t</td>
<td>1.7GHz/3.5GHz</td>
<td>8M</td>
<td>V</td>
<td>GT2-P630</td>
<td>CM246</td>
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<tr>
<td>XEON E-2250ML</td>
<td>4c/8t</td>
<td>1.7GHz/3.5GHz</td>
<td>8M</td>
<td>V</td>
<td>GT2-P630</td>
<td>CM246</td>
</tr>
<tr>
<td>XEON E-2100ME</td>
<td>4c/8t</td>
<td>3.0GHz</td>
<td>8M</td>
<td>X</td>
<td>GT2-630</td>
<td>OM370</td>
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<tr>
<td>XEON E-2100ML</td>
<td>4c/8t</td>
<td>3.0GHz</td>
<td>8M</td>
<td>X</td>
<td>GT2-630</td>
<td>OM370</td>
</tr>
</tbody>
</table>

## Packing List
- COM-CFHB6 x 1

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

## Display
- Graphic Controller: Intel® GT2-P630 (Xeon series)/ GT2-630 (Core I series)
- Video Output: 3 Simultaneous Displays: 18/24-bit 2 Channel LVDS/eDP x 1 (Default); LVDS), DDI x 2 (Up to 3x DDI shared with VGA), VGA x 1

## I/O
- Ethernet: Intel® i219 GbE x 1
- Audio: High Definition Audio Interface
- USB Port: USB 2.0 x 8 , USB 3.2 Gen 2 x 4
- Serial Port: 2-Wire UART (TxD/Rx) x 2
- HDD Interface: SATA 3 x 4
- Expansion Slot: PCIe[x1] x 8, PCIe[x16] x 1, LPC, SMbus, I2C
- GPIO: 8-bit
- Onboard Storage: ---
- TPM: TPM2.0

Note: All specifications are subject to change without notice.
COM Express CPU Modules

**Block Diagram** Unit: mm

**Dimension** Unit: mm

**Ordering Information**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>COM EXPRESS TYPE</th>
<th>CPU</th>
<th>MEMORY</th>
<th>DISPLAY</th>
<th>LVDS</th>
<th>STORAGE</th>
<th>LAN</th>
<th>USB</th>
<th>UART</th>
<th>EXPANSION</th>
<th>POWER</th>
<th>TEMPERATURE</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM-CFHB6-A11-0002</td>
<td>Type 6 (COM.0 Rev. 3.0)</td>
<td>Intel® 8th / 9th Gen Core/XEON</td>
<td>DDR4 SODIMM x 2, DDR4 SODIMM x 1</td>
<td>VGA, DDI 1 (up to 3)</td>
<td>18/24b 2ch LVDS/eDP</td>
<td>SATA3 x 4</td>
<td>GbE x 1</td>
<td>USB 2.0 x 2</td>
<td>2-wire (Tx/Rx) x 2</td>
<td>PCIe[x1] x 8</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>LPC, SMBus, I2C</td>
</tr>
<tr>
<td>COM-CFHB6-A11-0003</td>
<td>Type 6 (COM.0 Rev. 3.0)</td>
<td>Xeon E-2276M</td>
<td>DDR4 SODIMM x 3</td>
<td>VGA, DDI 1 (up to 3)</td>
<td>18/24b 2ch LVDS/eDP</td>
<td>SATA3 x 4</td>
<td>GbE x 1</td>
<td>USB 2.0 x 2</td>
<td>2-wire (Tx/Rx) x 2</td>
<td>PCIe[x1] x 8</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>LPC, SMBus, I2C</td>
</tr>
<tr>
<td>COM-CFHB6-A11-0004</td>
<td>Type 6 (COM.0 Rev. 3.0)</td>
<td>Intel® 8th / 9th Gen Core/XEON</td>
<td>DDR4 SODIMM x 2</td>
<td>VGA, DDI 1 (up to 3)</td>
<td>18/24b 2ch LVDS/eDP</td>
<td>SATA3 x 4</td>
<td>GbE x 1</td>
<td>USB 2.0 x 2</td>
<td>2-wire (Tx/Rx) x 2</td>
<td>PCIe[x1] x 8</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>LPC, SMBus, I2C</td>
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<td>18/24b 2ch LVDS/eDP</td>
<td>SATA3 x 4</td>
<td>GbE x 1</td>
<td>USB 2.0 x 2</td>
<td>2-wire (Tx/Rx) x 2</td>
<td>PCIe[x1] x 8</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>LPC, SMBus, I2C</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
COM Express Compact Type 6 with 11th Generation Intel® Core™ Processor Family (formerly Tiger Lake UP3)

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

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>COM Express Mini size, Type 6</td>
</tr>
<tr>
<td>CPU</td>
<td>11th Generation Intel® Core™ Processor Family (formerly Tiger Lake UP3)</td>
</tr>
<tr>
<td>CPU Frequency</td>
<td>Up to 1.8 GHz, i7-1185GRE</td>
</tr>
<tr>
<td>Chipset</td>
<td>11th Gen Intel® Core™ Series Processor</td>
</tr>
<tr>
<td>Memory Type</td>
<td>DDR4, SO-DIMM x 2</td>
</tr>
<tr>
<td>Max. Memory Capacity</td>
<td>32 GB</td>
</tr>
<tr>
<td>BIOS</td>
<td>AMI UEFI</td>
</tr>
<tr>
<td>Wake on LAN</td>
<td>Yes</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>255 Levels</td>
</tr>
<tr>
<td>Power Requirement</td>
<td>+12 V and +5 VSB for ATX, +12V for AT</td>
</tr>
<tr>
<td>Power Supply Type</td>
<td>AT/ATX</td>
</tr>
<tr>
<td>Power Consumption (Typical)</td>
<td>3.5A/12V, full load, i7-1185GRE</td>
</tr>
<tr>
<td>Dimension (L x W)</td>
<td>3.75” x 3.75” (95mm x 95mm)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>22°F ~ 140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°F ~ 185°F (-40°C ~ 85°C) Option</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0% ~ 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Certification</td>
<td>CE/FCC Class A</td>
</tr>
</tbody>
</table>

Display
- Graphic Controller: Intel® Intel® Xe Graphics
- Intel® UHD Graphics for 11th Gen Intel® Processors
- Video Output: 4 Simultaneous Displays:
  - Single/Dual Channel LVDS (18/24bit) or eDP,
  - DVI x 3, VGA x 1

I/O
- Ethernet: Intel® I225LM GbE x 1
- Audio: High Definition Audio Interface
- USB Port: USB2.0 x 8, USB3.2 Gen2 x 4
- Serial Port: 2-Wire UART (TX/RX) x 2
- HDI Interface: SATA 3 x 2
- Expansion Slot: PCIe[1x] x 5
- PCIe[4x] x 1
- LPC SMBus I2C
- GPIO: 8-bit
- Onboard Storage: —
- TPM: TPM 2.0

Packing List
- COM-TGUC6

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

CPU Support Chart

<table>
<thead>
<tr>
<th>CPU</th>
<th>Core / Thread</th>
<th>Base Frequency / Turbo</th>
<th>TDP</th>
<th>Graphic</th>
<th>In-band ECC</th>
<th>Operating Temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>i7-1185G7E</td>
<td>4/8</td>
<td>1.6 GHz / 4.4 GHz</td>
<td>15W (Up to 28W)</td>
<td>Intel® Intel® Xe Graphics</td>
<td>No</td>
<td>Commercial Temp.</td>
</tr>
<tr>
<td>i5-1145G7E</td>
<td>4/8</td>
<td>1.5 GHz / 4.1 GHz</td>
<td></td>
<td>Intel® Intel® Xe Graphics</td>
<td>No</td>
<td>Commercial Temp.</td>
</tr>
<tr>
<td>i5-1155G4E</td>
<td>2 /4</td>
<td>2.2 GHz / 3.9 GHz</td>
<td></td>
<td>Intel® UHD Graphics</td>
<td>No</td>
<td>Commercial Temp.</td>
</tr>
<tr>
<td>i3-1145G7E</td>
<td>4/8</td>
<td>1.5 GHz / 4.1 GHz</td>
<td>3.5A/12V</td>
<td>Intel® Intel® Xe Graphics</td>
<td>Yes</td>
<td>Embedded/Industrial Extended Temp.</td>
</tr>
<tr>
<td>i3-1155G4E</td>
<td>2 /4</td>
<td>2.2 GHz / 3.9 GHz</td>
<td></td>
<td>Intel® UHD Graphics</td>
<td>Yes</td>
<td>Embedded/Industrial Extended Temp.</td>
</tr>
<tr>
<td>Celeron 6305E</td>
<td>2/2</td>
<td>1.6 GHz / --</td>
<td>10W</td>
<td>Intel® UHD Graphics</td>
<td>No</td>
<td>Commercial Temp.</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
## Block Diagram

**Unit: mm**

![Block Diagram](image)

## Dimension

**Unit: mm**

![Dimension](image)

## Ordering Information

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

Note: All specifications are subject to change without notice.

www.aaeon.com
COM Express Compact Type 6 with 8th Gen Intel® Core™ ULT SoC

Features
- 8th Generation Intel® Core™/Celeron™ ULT ULT Processor
- DDR4 socket x 2, non-ECC Support
- Gigabit Ethernet x 1
- VGA, 18/24b 2ch LVDS LCDs or eDP, DD1x2 (DD12 share with VGA)
- High Definition Audio Interface
- SATA3 x 2, eMMC onboard (up to 64GB)
- USB2.0 x 8, USB 3.2 Gen 2 x 4
- PCIe-Express [x1] x 8 lanes available, 5 Devices max.
- GPIO x8, SMBus, I2C, LPC
- COM Express Type 6, Compact size, 95mm x 95mm

Specifications

**System**
- Form Factor: COM Express Compact size, Type 6
- CPU: 8th Generation Intel® Core™ ULT Series Processor
- CPU Frequency: —
- Chipset: 8th Generation Intel® Core™ SoC
- Memory Type: DDR4, SO-DIMM x 2
- Max. Memory Capacity: 64GB
- BIOS: AMI UEFI
- Wake on LAN: Yes
- Watchdog Timer: 255 Levels
- Power Requirement: +12 V and +5 VSB for ATX, +12V for AT
- Power Supply Type: AT/ATX
- Power Consumption (Typical): 2.61A@12V, full load, i7-8665UE
- Dimension (L x W): 3.75” x 3.75” (95mm x 95mm)
- Operating Temperature: 32°F – 140°F (0°C – 60°C)
- Storage Temperature: -40°F ~ 185°F (-40°C ~ 85°C)
- Operating Humidity: 0% ~ 90% relative humidity, non-condensing
- Certification: CE/FCC Class A

**Display**
- Graphic Controller: Intel® UHD Graphics 620 / 610
- Video Output: 3 Simultaneous Displays: Single/Dual Channel LVDS (18/24bit) or eDP, DD1 x 2 (Up to 2x DD1 shared with VGA)

**I/O**
- Ethernet: Intel® i219 GbE x 1
- Audio: High Definition Audio Interface
- USB Port: USB 2.0 x 8, USB 3.2 Gen 2 x 4
- Serial Port: 2-Wire UART (Tx/Rx) x 2
- HDD Interface: SATA 3 x 2
- Expansion Slot: PCIe[x1] x 4
- PCIe[x4] x 1 (default)
- LPC
- SMBus
- I2C
- GPIO: 8-bit
- Onboard Storage: eMMC up to 64GB (Optional)
- TPM: TPM 2.0

**CPU Support Chart**

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

Note: All specifications are subject to change without notice.
**Block Diagram**

Unit: mm

![Block Diagram](image)

**Dimension**

Unit: mm

![Dimension](image)

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>COM Express Type</th>
<th>CPU</th>
<th>Memory</th>
<th>Display</th>
<th>LVDS</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>UART</th>
<th>Expansion</th>
<th>Power</th>
<th>Temperature</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM-WHUC6-A10-0001</td>
<td>Type 6</td>
<td>i7-8665UE</td>
<td>DDR4 SODIMM x2</td>
<td>Intel® Core™ 8th Generation Whiskey Lake-U</td>
<td>SATA 3 x 2</td>
<td>SATA 3 x 2</td>
<td>eMMC x 1</td>
<td>USB 2.0 x 8</td>
<td>USB 3.2 Gen2 x 4</td>
<td>PCIe (x1)</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>—</td>
</tr>
<tr>
<td>COM-WHUC6-A10-0003</td>
<td>Type 6</td>
<td>i3-8145UE</td>
<td>DDR4 SODIMM x2</td>
<td>Intel® Core™ 8th Generation Whiskey Lake-U</td>
<td>SATA 3 x 2</td>
<td>SATA 3 x 2</td>
<td>eMMC x 1</td>
<td>USB 2.0 x 8</td>
<td>USB 3.2 Gen2 x 4</td>
<td>PCIe (x1)</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>—</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
COM-ICDB7
COM Express Type 7 with Intel® 3rd Gen XEON D Processor

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>PICMG COM Express R3.0, Type 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Intel® Idaville Platform XEON-D1700 LCC Processor</td>
</tr>
<tr>
<td>CPU Frequency</td>
<td>Up to D-1746TER (2.0 GHz)</td>
</tr>
<tr>
<td>Chipset</td>
<td>SoC</td>
</tr>
<tr>
<td>Memory Type</td>
<td>DDR4 SODIMM Socket x2</td>
</tr>
<tr>
<td>Max. Memory Capacity</td>
<td>Up to 64 GB (ECC Support by sku)</td>
</tr>
<tr>
<td>BIOS</td>
<td>AMI BIOS (UEFI)</td>
</tr>
<tr>
<td>Wake on LAN</td>
<td>Yes</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>255 Levels</td>
</tr>
<tr>
<td>Power Requirement</td>
<td>+12 V and +5 USB for ATX, +12V for AT</td>
</tr>
<tr>
<td>Power Consumption (Typical)</td>
<td>7.75A @12V, D-1746TER</td>
</tr>
<tr>
<td>Dimension (L x W)</td>
<td>4.92” x 3.75” (125mm x 95mm)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°F ~ 185°F (-40°C ~ 85°C)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>6% ~ 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Certification</td>
<td>CE / FCC Class A (Pre-test with Class B standard)</td>
</tr>
</tbody>
</table>

Display
- Graphic Controller — |
- Video Output — |

I/O
- Ethernet 10GE: Intel® i210IT GbE 10GBE-4x10G Base-KR to carrier
- USB Port USB2.0 x 4, USB3.2 Gen1
- Serial Port 2-Wire UART(Tx/Rx) x2
- HDD Interface SATA 3 x 2
- Expansion Slot PCIe [x16] x1, 4x PCIe [x4] PCIe (Windows 10 Ready)
- LPC SMIbus
- GPIO 8-bit
- Onboard Storage — |
- TPM TPM 2.0

Packing List
- COM-ICDB7 x 1

Optional Accessories
- ECB-927A-A10-0001 COMe T7.Carrier Board. 4x10G via x557. 4USB3.PEG+PCIe.2COM.2SATA.AT/ATX.Rev A1.0
- COM-ICDB7-FAN01 CPU Cooler.FAN+HeatSink.125*95*50mm.12V.for COM-ICDB7
- COM-ICDB7-HSP01 Heat Spreader.125*95*11mm.8.BLACK.COM-ICDB7

CPU Support Chart

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

Note: All specifications are subject to change without notice.
**Block Diagram**  
Unit: mm

**Dimension**  
Unit: mm

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>COM Express Type</th>
<th>CPU</th>
<th>Memory</th>
<th>Display</th>
<th>LVDS</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>UART</th>
<th>Expansion</th>
<th>Power</th>
<th>Temperature</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM-ICDB7-A10-0001</td>
<td>COM Express R3.0, Type 7</td>
<td>D-1746TER,10c</td>
<td>DDR4 SODIMM x 2</td>
<td>—</td>
<td>SATA 3 x 2</td>
<td>10GbE: Intel® X710 QDA 10GbE, 4 x 10G Base-KR</td>
<td>USB 2.0 x 4, USB 3.2 Gen 1</td>
<td>2-Wire UART (Tx/Rx) x2</td>
<td>PCIe [x16] x1, 4x PCIe [x4]</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>LPC, SMBus, I2C, GPIO I/O</td>
<td></td>
</tr>
<tr>
<td>COM-ICDB7-A10-0002</td>
<td>COM Express R3.0, Type 7</td>
<td>D-1753TR,8c</td>
<td>DDR4 SODIMM x 2</td>
<td>—</td>
<td>SATA 3 x 2</td>
<td>10GbE: Intel® X710 QDA 10GbE, 4 x 10G Base-KR</td>
<td>USB 2.0 x 4, USB 3.2 Gen 1</td>
<td>2-Wire UART (Tx/Rx) x2</td>
<td>PCIe [x16] x1, 4x PCIe [x4]</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>LPC, SMBus, I2C, GPIO I/O</td>
<td></td>
</tr>
<tr>
<td>COM-ICDB7-A10-0003</td>
<td>COM Express R3.0, Type 7</td>
<td>D-1742TE,8c</td>
<td>DDR4 SODIMM x 2</td>
<td>—</td>
<td>SATA 3 x 2</td>
<td>10GbE: Intel® X710 QDA 10GbE, 4 x 10G Base-KR</td>
<td>USB 2.0 x 4, USB 3.2 Gen 1</td>
<td>2-Wire UART (Tx/Rx) x2</td>
<td>PCIe [x16] x1, 4x PCIe [x4]</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>LPC, SMBus, I2C, GPIO I/O</td>
<td></td>
</tr>
<tr>
<td>COM-ICDB7-A10-0004</td>
<td>COM Express R3.0, Type 7</td>
<td>D-1715TER,4c</td>
<td>DDR4 SODIMM x 2</td>
<td>—</td>
<td>SATA 3 x 2</td>
<td>10GbE: Intel® X710 QDA 10GbE, 4 x 10G Base-KR</td>
<td>USB 2.0 x 4, USB 3.2 Gen 1</td>
<td>2-Wire UART (Tx/Rx) x2</td>
<td>PCIe [x16] x1, 4x PCIe [x4]</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>LPC, SMBus, I2C, GPIO I/O</td>
<td></td>
</tr>
<tr>
<td>COM-ICDB7-A10-0005</td>
<td>COM Express R3.0, Type 7</td>
<td>D-1712TR,4c</td>
<td>DDR4 SODIMM x 2</td>
<td>—</td>
<td>SATA 3 x 2</td>
<td>10GbE: Intel® X710 QDA 10GbE, 4 x 10G Base-KR</td>
<td>USB 2.0 x 4, USB 3.2 Gen 1</td>
<td>2-Wire UART (Tx/Rx) x2</td>
<td>PCIe [x16] x1, 4x PCIe [x4]</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>LPC, SMBus, I2C, GPIO I/O</td>
<td></td>
</tr>
</tbody>
</table>
NanoCOM-TGU
COM Express Type 10 with 11th Generation Intel® Core™ Processor

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>COM Express Mini size, Type 10</td>
</tr>
<tr>
<td>CPU</td>
<td>11th Generation Intel® Core™ Processor</td>
</tr>
<tr>
<td>CPU Frequency</td>
<td>Up to i7-1185G7E, 1.8GHz</td>
</tr>
<tr>
<td>Chipset</td>
<td>11th Generation Intel® Core™ SoC</td>
</tr>
<tr>
<td>Memory Type</td>
<td>Onboard LPDDR4x</td>
</tr>
<tr>
<td>Max. Memory Capacity</td>
<td>16 GB</td>
</tr>
<tr>
<td>BIOS</td>
<td>AMI UEFI</td>
</tr>
<tr>
<td>Wake on LAN</td>
<td>Yes</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>255 Levels</td>
</tr>
<tr>
<td>Power Requirement</td>
<td>+12 V and +5 USB for ATX, +12V for AT</td>
</tr>
<tr>
<td>Power Supply Type</td>
<td>AT/ATX</td>
</tr>
<tr>
<td>Power Consumption (Typical)</td>
<td>2.75A/12V, full load, i7-1185GRE</td>
</tr>
<tr>
<td>Dimension (L x W)</td>
<td>3.31” x 2.17” (84mm x 55mm)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°F ~ 185°F (-40°C ~ 85°C)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0% ~ 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Certification</td>
<td>CE/FCC</td>
</tr>
</tbody>
</table>

Display

| Graphic Controller | —                |
| Video Output       | Dual Display: eDP, DDI x 1        |

I/O

| Ethernet          | Intel i225LM 2.5GbE x 1               |
| Audio             | High Definition Audio Interface      |
| USB Port          | USB 2.0 x 8, USB 3.2 10Gbps x 2      |
| Serial Port       | 2-Wire UART (Tx/Rx) x 2              |
| HDD Interface     | SATA 3 x 2                         |
| Expansion Slot    | PCIe [x1] x 4                       |
|                   | LPC x 1                            |
|                   | SMBus x 1                          |
|                   | I2C x 1                            |
| GPIO              | 8-bit                              |
| Onboard Storage   | NVMe, up to 256GB                  |
| TPM               | FTPM                              |

Packing List

- NanoCOM-TGU

Optional Accessories

- NanoCOM-TGU-FAN01
  CPU cooler 84*55*18 mm. Black. NanoCOM-TGU
- NanoCOM-TGU-HSP01
  Heat Spreader 84*55*11 mm. Black. for NanoCOM-TGU
- ECB-920A-A11-0001
  COM Express Type 6/10. Carrier Board ATX 2.5GbE. RUSB, 2COM. 4SATA. PCIe. AT/ATX. Rev. A1.1

CPU Support Chart

<table>
<thead>
<tr>
<th>CPU</th>
<th>Core / Thread</th>
<th>Base Frequency / Turbo</th>
<th>TDP</th>
<th>In-band ECC</th>
<th>Operating Temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>i7-1185G7E</td>
<td>4/8</td>
<td>1.8 GHz / 4.4 GHz</td>
<td>10W (Up to 28W)</td>
<td>No</td>
<td>Commercial Temp.</td>
</tr>
<tr>
<td>i5-1145G7E</td>
<td>4/8</td>
<td>1.5 GHz / 4.1 GHz</td>
<td>No</td>
<td>No</td>
<td>Commercial Temp.</td>
</tr>
<tr>
<td>i3-1115G4E</td>
<td>2/4</td>
<td>2.2 GHz / 3.9 GHz</td>
<td>No</td>
<td>No</td>
<td>Commercial Temp.</td>
</tr>
<tr>
<td>i7-1185GRE</td>
<td>4/8</td>
<td>1.6 GHz / 4.4 GHz</td>
<td>Yes</td>
<td>Embedded/Industrial Extended Temp.</td>
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</tr>
<tr>
<td>i5-1145GRE</td>
<td>4/8</td>
<td>1.5 GHz / 4.1 GHz</td>
<td>Yes</td>
<td>Embedded/Industrial Extended Temp.</td>
<td></td>
</tr>
<tr>
<td>i3-1115GRE</td>
<td>2/4</td>
<td>2.2 GHz / 3.9 GHz</td>
<td>Yes</td>
<td>Embedded/Industrial Extended Temp.</td>
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<tr>
<td>Celeron 6305E</td>
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<td>1.4 GHz / 3.2 GHz</td>
<td>10W</td>
<td>No</td>
<td>Commercial Temp.</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
**Block Diagram**  Unit: mm

**Dimension**  Unit: mm

**Ordering Information**

<table>
<thead>
<tr>
<th>Part number</th>
<th>CPU</th>
<th>Memory</th>
<th>Display</th>
<th>LVDS</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>UART</th>
<th>Expansion</th>
<th>Power</th>
<th>Temperature</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>NANOCAOM-TGU-A10-0001</td>
<td>i7-1187G7E</td>
<td>16GB</td>
<td>eDP x 1,</td>
<td>SATA3 x 2,</td>
<td>2.5GbE x 1</td>
<td>USB 3.2 100ps x 2</td>
<td>2 (Tx/Re)</td>
<td>PCIe [x] 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>NANOCAOM-TGU-A10-0002</td>
<td>i5-1145G7E</td>
<td>16GB</td>
<td>eDP x 1,</td>
<td>SATA3 x 2,</td>
<td>2.5GbE x 1</td>
<td>USB 3.2 100ps x 2</td>
<td>2 (Tx/Re)</td>
<td>PCIe [x] 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>NANOCAOM-TGU-A10-0003</td>
<td>i3-1115G4E</td>
<td>8GB</td>
<td>eDP x 1,</td>
<td>SATA3 x 2,</td>
<td>2.5GbE x 1</td>
<td>USB 3.2 100ps x 2</td>
<td>2 (Tx/Re)</td>
<td>PCIe [x] 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
<td>—</td>
<td></td>
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<tr>
<td>NANOCAOM-TGU-A10-0005</td>
<td>i7-1185GRE</td>
<td>16GB</td>
<td>eDP x 1,</td>
<td>SATA3 x 2,</td>
<td>2.5GbE x 1</td>
<td>USB 3.2 100ps x 2</td>
<td>2 (Tx/Re)</td>
<td>PCIe [x] 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

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

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

NanoCOM-WHU

Features

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

Specifications

**System**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>COM Express Mini size, Type 10</td>
</tr>
<tr>
<td>CPU</td>
<td>8th Generation Intel® Core™/Celeron™ U Series Processor</td>
</tr>
<tr>
<td>Frequency</td>
<td>Up to i5-8365UE, 1.60GHz</td>
</tr>
<tr>
<td>Chipset</td>
<td>8th Generation Intel® Core™/Celeron™ U Series SoC</td>
</tr>
<tr>
<td>Memory Type</td>
<td>Onboard DDR4</td>
</tr>
<tr>
<td>Max. Memory Capacity</td>
<td>8GB</td>
</tr>
<tr>
<td>BIOS</td>
<td>AMI UEFI</td>
</tr>
<tr>
<td>Wake on LAN</td>
<td>Yes</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>255 Levels</td>
</tr>
<tr>
<td>Power Requirement</td>
<td>+12 V and +5 VSB for ATX, +12V for AT</td>
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<tr>
<td>Power Supply Type</td>
<td>AT/ATX</td>
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<tr>
<td>Power Consumption (Typical)</td>
<td>2.23A@12V, full load, i5-8365UE</td>
</tr>
<tr>
<td>Dimension (L x W)</td>
<td>3.31” x 2.17” (84 mm x 55 mm)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F – 140°F (0°C – 60°C)</td>
</tr>
<tr>
<td></td>
<td>-40°F – 185°F (-40°C – 85°C) Option</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°F – 185°F (-40°C – 85°C)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0% – 95% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Certification</td>
<td>CE/FCC Class A</td>
</tr>
</tbody>
</table>

**Display**

- Graphic Controller: Intel® UHD Graphics 620 / 610
- Video Output: Dual Display: eDP, DDI x1

**I/O**

- Ethernet: Intel® i219LM GbE x 1
- Audio: High Definition Audio Interface
- USB Port: USB 2.0 x 8, USB 3.2 Gen 2 x 2
- Serial Port: 2-Wire UART (Tx/Rx) x 2
- HDD Interface: SATA x 2
- Expansion Slot: PCIe[x1] x 4, LPC, SMBus, I2C
- GPIO: 8-bit
- Onboard Storage: eMMC up to 64GB (Optional)
- TPM: fTPM

Note: All specifications are subject to change without notice.

Packing List

- NanoCOM-WHU x 1

Optional Accessories

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

CPU Support Chart

<table>
<thead>
<tr>
<th>CPU</th>
<th>Core/Thread</th>
<th>Base Frequency/Turbo</th>
<th>TDP</th>
<th>Graphic</th>
</tr>
</thead>
<tbody>
<tr>
<td>i5-8365UE</td>
<td>4C/8T</td>
<td>1.60GHz / 4.10GHz</td>
<td>15W</td>
<td>Intel® UHD Graphics 620</td>
</tr>
<tr>
<td>i3-8145UE</td>
<td>2C/4T</td>
<td>2.20GHz / 3.90GHz</td>
<td>15W</td>
<td>Intel® UHD Graphics 620</td>
</tr>
<tr>
<td>Celeron 4305UE</td>
<td>2C/2T</td>
<td>2.00GHz</td>
<td>15W</td>
<td>Intel® UHD Graphics 610</td>
</tr>
</tbody>
</table>
**Block Diagram**  
Unit: mm

![Block Diagram](image)

**Dimension**  
Unit: mm

![Dimension](image)

**Ordering Information**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>COM EXPRESS TYPE</th>
<th>CPU</th>
<th>MEMORY</th>
<th>DISPLAY</th>
<th>LVDS</th>
<th>STORAGE</th>
<th>LAN</th>
<th>USB</th>
<th>UART</th>
<th>EXPANSION</th>
<th>POWER</th>
<th>TEMPERATURE</th>
<th>OTHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NANOCOM-WHU-A10-0002</td>
<td>Type 10 (COM.0 Rev. 3.0)</td>
<td>i5-8565U</td>
<td>DDR4 8GB</td>
<td>eDP, DDI x 1</td>
<td>SATA3 x 2, eMMC 64GB</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 2 x 2, USB 2.0 x 8</td>
<td>2 (Tx/Rx)</td>
<td>PCIe[x1] x 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
<td>LPC, SMBus, I2C</td>
<td></td>
</tr>
<tr>
<td>NANOCOM-WHU-A10-0003</td>
<td>Type 10 (COM.0 Rev. 3.0)</td>
<td>i3-8145U</td>
<td>DDR4 8GB</td>
<td>eDP, DDI x 1</td>
<td>SATA3 x 2, eMMC 64GB</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 2 x 2, USB 2.0 x 8</td>
<td>2 (Tx/Rx)</td>
<td>PCIe[x1] x 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
<td>LPC, SMBus, I2C</td>
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<td>NANOCOM-WHU-A10-0004</td>
<td>Type 10 (COM.0 Rev. 3.0)</td>
<td>Celeron 4305U</td>
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<td>eDP, DDI x 1</td>
<td>SATA3 x 2, eMMC 32GB</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 2 x 2, USB 2.0 x 8</td>
<td>2 (Tx/Rx)</td>
<td>PCIe[x1] x 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
<td>LPC, SMBus, I2C</td>
<td></td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
NanoCOM-WHU Rev.B
COM Express Type 10 with 8th Generation Intel® Core™ U Series Processor

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>COM Express Mini size, Type 10</td>
</tr>
<tr>
<td>CPU</td>
<td>8th Generation Intel® Core™/Celeron™ U Series Processor</td>
</tr>
<tr>
<td>CPU Frequency</td>
<td>Up to i7-8665UE, 1.70GHz</td>
</tr>
<tr>
<td>Chipset</td>
<td>8th Generation Intel® Core™/Celeron™ U Series SoC</td>
</tr>
<tr>
<td>Memory Type</td>
<td>Onboard DDR4</td>
</tr>
<tr>
<td>Max. Memory Capacity</td>
<td>8GB</td>
</tr>
<tr>
<td>BIOS</td>
<td>AMI UEFI</td>
</tr>
<tr>
<td>Wake on LAN</td>
<td>Yes</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>255 Levels</td>
</tr>
<tr>
<td>Power Requirement</td>
<td>+12 V and +5 VSB for ATX, +12V for AT</td>
</tr>
<tr>
<td>Power Supply Type</td>
<td>AT/ATX</td>
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<tr>
<td>Power Consumption (Typical)</td>
<td>2.10A@12V, full load, i7-8665UE</td>
</tr>
<tr>
<td>Dimension (L x W)</td>
<td>3.31&quot; x 2.17&quot; (84 mm x 55 mm)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°F ~ 185°F (-40°C ~ 85°C) Option</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0% ~ 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Certification</td>
<td>CE/FCC Class A</td>
</tr>
</tbody>
</table>

Display

| Graphic Controller          | Intel® UHD Graphics 620 / 610 |

Video Output

| Dual Display :              | LVDS LCD/eDP, DDI x 1 |
| Single Channel LVDS        | (18/24 bit) |

I/O

| Ethernet                   | Intel® i219 Gigabit x 1 |
| Audio                      | High Definition Audio Interface |
| USB Port                   | USB 2.0 x 8, USB 3.2 Gen x 2 |
| Serial Port                | 2-Wire UART (7x Rx/Rx) x 2 |
| HDD Interface              | SATA 3 x 2 |
| Expansion Slot             | PCIe [x1] x 4 |
|                            | LPC |
|                            | SMbus |
|                            | IS2C |
| GPIO                       | 8-bit |
| Onboard Storage            | — |
| TPM                        | fTPM |

Packing List

- NanoCOM-WHU Rev.B x 1

Optional Accessories

- ECB-920A-A11-0001
  COMe Type 6/10 Carrier Board, ATX2, 6xUSB, 2COM, 4SATA, PCle, AT/ATX, Rev.A1.1
- NanoCOM-WHU-HSP01
  Heat Spreader, 84 x 55 x 11 mm, Black, NanoCOM-WHU
- NanoCOM-WHU-FAN01
  CPU Cooler, 84 x 55 x 18 mm, Black, NanoCOM-WHU

CPU Support Chart

<table>
<thead>
<tr>
<th>CPU</th>
<th>Core/Thread</th>
<th>Base Frequency/Turbo</th>
<th>TDP</th>
<th>Graphic</th>
</tr>
</thead>
<tbody>
<tr>
<td>i7-8665UE</td>
<td>4C/8T</td>
<td>1.70GHz / 4.40GHz</td>
<td>15W</td>
<td>Intel® UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8565UE</td>
<td>4C/8T</td>
<td>1.60GHz / 4.50GHz</td>
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<tr>
<td>i3-8145UE</td>
<td>2C/4T</td>
<td>2.20GHz / 3.90GHz</td>
<td>15W</td>
<td>Intel® UHD Graphics 620</td>
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<tr>
<td>Celeron 4305UE</td>
<td>2C/2T</td>
<td>2.00GHz</td>
<td>15W</td>
<td>Intel® UHD Graphics 610</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
NanoCOM-WHU Rev.B

Block Diagram

Unit: mm

Dimension

Ordering Information

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>COM EXPRESS TYPE</th>
<th>CPU</th>
<th>MEMORY</th>
<th>DISPLAY</th>
<th>LVDS</th>
<th>STORAGE</th>
<th>LAN</th>
<th>USB</th>
<th>UART</th>
<th>EXPANSION</th>
<th>POWER</th>
<th>TEMPERATURE</th>
<th>OTHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NANO-0001</td>
<td>COM Type 10</td>
<td>i7-8665UE</td>
<td>Onboard DDR4 8GB</td>
<td>LVDS, DD1 x 1</td>
<td>16/2400s</td>
<td>SATA x 2</td>
<td>GBE x 1</td>
<td>USB 3.2 Gen 2 x 2</td>
<td>2 (Tx/Rx)</td>
<td>PCIe [x1] x 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
<td>LPC, SMBus, DC</td>
</tr>
</tbody>
</table>
NanoCOM-EHL

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

Features
- Intel Atom® x6000E, Pentium®, Celeron® series Processor
- Onboard Memory LPDDR4, up to 16GB
- Intel i226IT 2.5GbE x 1
- 18/24-bit Single Channel LVDS/eDP, DDI x 1
- SATA3 x 2, Onboard eMMC up to 64GB (Optional)
- USB 2.0 x 8, USB 3.2 Gen1 x 2
- PCIe [x1] x 4
- COM Express Mini Size, Type 10, COM.0 R2.1

Specifications

**Form Factor**
COM Express Mini size, Type 10

**CPU**
Intel Atom® x6000E, Pentium® and Celeron® series Processor

**CPU Frequency**
Up to x6425E, 2.0GHz

**Chipset**
SoC

**Memory Type**
Onboard LPDDR4

**Max. Memory Capacity**
16 GB

**BIOS**
AMI UEFI

**Watchdog Timer**
255 Levels

**Power Requirement**
+12 V and +5 VSB for ATX, +12V for AT

**Power Supply Type**
ATX/ATX

**Power Consumption (Typical)**
1.44A@12V, full load, x6425E

**Dimension (L x W)**
3.31” x 2.17” (84mm x 55mm)

**Operating Temperature**
32°F ~ 140°F (0°C ~ 60°C)

**Storage Temperature**
-40°F  ~ 185°F (-40°C ~ 85°C)

**Operating Humidity**
0% ~ 90% relative humidity, non-condensing

**Certification**
CE/FCC Class A

**Display**

- Graphic Controller: Intel® UHD Graphics for 10th Gen Intel® Processors
- Video Output: Dual Display: LVDS LCD/eDP, DDI x 1, Single Channel LVDS (18/24 bit)

**I/O**

- **Ethernet**
  Intel i226IT 2.5GbE x 1

- **USB Port**
  8-pin, USB 2.0 x 8, USB 3.2 Gen1 x 2

- **HD Interface**
  SATA 3 x 2

- **Expansion Slot**
  PCIe [x1] x 4
  LPC
  SMBus
  I2C

- **GPIO**
  8-bit

- **Onboard Storage**
  eMMC up to 64GB (Optional)

- **TPM**
  FTPM

**Optional Accessories**

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

- **NanoCOM-EHL-FAN01**
  CPU cooler.84 x 55 x 18 mm.Black, NanoCOM-EHL for x6000E series

- **NanoCOM-EHL-FAN02**
  CPU cooler.84 x 55 x 18 mm.Black, NanoCOM-EHL for N, J series

**CPU Support Chart**

<table>
<thead>
<tr>
<th>CPU</th>
<th>Core/Thread</th>
<th>Base Frequency/ Turbo</th>
<th>TDP</th>
<th>Graphic</th>
<th>Extend Temp.</th>
</tr>
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<tbody>
<tr>
<td>N6211</td>
<td>2C/2T</td>
<td>1.2 / 3.0 GHz</td>
<td>6.5W</td>
<td>Intel® UHD Graphics, 16 EU</td>
<td>0°C to 70°C</td>
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<tr>
<td>J6412</td>
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<td>J6426</td>
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<tr>
<td>x6211E</td>
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<tr>
<td>x6413E</td>
<td>4C/4T</td>
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<td>9W</td>
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<td>-40°C to 85°C</td>
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<tr>
<td>x6421E</td>
<td>4C/4T</td>
<td>2.0 / 3.0 GHz</td>
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<td>Intel® UHD Graphics, 32 EU</td>
<td>-40°C to 85°C</td>
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<tr>
<td>x6212E</td>
<td>2C/2T</td>
<td>1.2 GHz</td>
<td>6W</td>
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<td>-40°C to 85°C</td>
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<tr>
<td>x6435RE</td>
<td>4C/4T</td>
<td>1.50 GHz</td>
<td>12W</td>
<td>Intel® UHD Graphics, 32 EU</td>
<td>-40°C to 85°C</td>
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**Block Diagram**

Unit: mm

**Dimension**

Unit: mm

**Ordering Information**

<table>
<thead>
<tr>
<th>Part number</th>
<th>CPU</th>
<th>Memory</th>
<th>Display</th>
<th>LVDS</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>UART</th>
<th>Expansion</th>
<th>Power</th>
<th>Temperature</th>
<th>Others</th>
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</thead>
<tbody>
<tr>
<td>NANOCOM-EHL-A11-0002</td>
<td>J6412</td>
<td>8GB</td>
<td>LVDS x 1, DDI x 1</td>
<td>18/24bits 1CH LVDS</td>
<td>SATA x 2, 32GB</td>
<td>2.5Gbe x 1</td>
<td>USB 3.2 100bps x 2 USB 2.0 x 8</td>
<td>0 (Tx/Rx)</td>
<td>PCIe [x1] x 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
<td>LPC, SMBus, I2C</td>
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<td>J6421E</td>
<td>8GB</td>
<td>LVDS x 1, DDI x 1</td>
<td>18/24bits 1CH LVDS</td>
<td>SATA x 2, 32GB</td>
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<td>0 (Tx/Rx)</td>
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<td>12V</td>
<td>0°C - 60°C</td>
<td>LPC, SMBus, I2C</td>
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<td>a6211E</td>
<td>16GB</td>
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<td>18/24bits 1CH LVDS</td>
<td>SATA x 2, 32GB</td>
<td>2.5Gbe x 1</td>
<td>USB 3.2 100bps x 2 USB 2.0 x 8</td>
<td>0 (Tx/Rx)</td>
<td>PCIe [x1] x 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
<td>LPC, SMBus, I2C</td>
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<td>8GB</td>
<td>LVDS x 1, DDI x 1</td>
<td>18/24bits 1CH LVDS</td>
<td>SATA x 2, 32GB</td>
<td>2.5Gbe x 1</td>
<td>USB 3.2 100bps x 2 USB 2.0 x 8</td>
<td>0 (Tx/Rx)</td>
<td>PCIe [x1] x 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
<td>LPC, SMBus, I2C</td>
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<td>X6425E</td>
<td>8GB</td>
<td>LVDS x 1, DDI x 1</td>
<td>18/24bits 1CH LVDS</td>
<td>SATA x 2, 32GB</td>
<td>2.5Gbe x 1</td>
<td>USB 3.2 100bps x 2 USB 2.0 x 8</td>
<td>0 (Tx/Rx)</td>
<td>PCIe [x1] x 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
<td>LPC, SMBus, I2C</td>
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</tbody>
</table>

Note: All specifications are subject to change without notice.
NanoCOM-APL-B10
COM Express Type 10 CPU Module with Onboard Intel® Atom®/Celeron®/Pentium® Processor

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>COM Express, Mini size, Type 10</td>
</tr>
<tr>
<td>CPU</td>
<td>Intel® Atom®/Celeron®/Pentium® Processor</td>
</tr>
<tr>
<td>CPU Frequency</td>
<td>Up to N4200, 2.00GHz</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel® Atom™/Celeron™/Pentium™ SoC</td>
</tr>
<tr>
<td>Memory Type</td>
<td>Onboard LPDDR4</td>
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<tr>
<td>Max. Memory Capacity</td>
<td>8GB</td>
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<tr>
<td>BIOS</td>
<td>AMI UEFI</td>
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<tr>
<td>Wake on LAN</td>
<td>Yes</td>
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<tr>
<td>Watchdog Timer</td>
<td>255 Levels</td>
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<tr>
<td>Power Requirement</td>
<td>+12 V and +5 V USB for ATX, +12V for AT</td>
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<tr>
<td>Power Supply Type</td>
<td>AT/ATX</td>
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<td>Power Consumption (Typical)</td>
<td>0.6A@12V, full load, N4200</td>
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<tr>
<td>Dimension (L x W)</td>
<td>3.31&quot; x 2.17&quot; (84mm x 55mm)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°F ~ 185°F (-40°C ~ 85°C)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0% ~ 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Certification</td>
<td>CE/FCC Class A</td>
</tr>
</tbody>
</table>

Display
- Graphic Controller: Intel® HD Graphic 505/500
- Video Output: Dual Display: LVDS LCD/eDP, DDI x 1
  Single Channel LVDS (18/24 bit)

I/O
- Ethernet: Intel® i226IT 2.5GbE x 1
- Audio: High Definition Audio Interface
- USB Port: USB 2.0 x 8, USB 3.2 Gen 1 x 2
- Serial Port: 2-Wire UART (TxD/RxD) x 2
- HDD Interface: SATA3 x 2
- Expansion Slot: PCIe [x1] x 4 (up to 3 devices)
  LPC
  SMBus
  I2C
- GPIO: 8-bit from PCH
- Onboard Storage: eMMC up to 64GB (Optional)
- TPM: fTPM

CPU Support Chart

<table>
<thead>
<tr>
<th>CPU</th>
<th>Core/Thread</th>
<th>Base Frequency/Turbo</th>
<th>TDP</th>
<th>Graphic</th>
</tr>
</thead>
<tbody>
<tr>
<td>N4200</td>
<td>4C/4T</td>
<td>1.10GHz / 2.50GHz</td>
<td>6W</td>
<td>Intel® HD Graphics 505</td>
</tr>
<tr>
<td>N3350</td>
<td>2C/2T</td>
<td>1.10GHz / 2.40GHz</td>
<td>6W</td>
<td>Intel® HD Graphics 505</td>
</tr>
<tr>
<td>E3950</td>
<td>4C/4T</td>
<td>1.60GHz / 2.00GHz</td>
<td>12W</td>
<td>Intel® HD Graphics 505</td>
</tr>
<tr>
<td>E3940</td>
<td>4C/4T</td>
<td>1.60GHz / 1.80GHz</td>
<td>9W</td>
<td>Intel® HD Graphics 505</td>
</tr>
<tr>
<td>E3930</td>
<td>2C/2T</td>
<td>1.20GHz / 1.60GHz</td>
<td>6.5W</td>
<td>Intel® HD Graphics 505</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.

Packing List
- NanoCOM-APL-B10

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

Dimension Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part number</th>
<th>COM EXPRESS TYPE</th>
<th>CPU</th>
<th>Memory</th>
<th>Display</th>
<th>LVDS</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>UART</th>
<th>EXPANSION</th>
<th>Power</th>
<th>TEMPERATURE</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>NANOCOM-APL-B10-0001</td>
<td>Type 10(COM.0 Rev 2.1)</td>
<td>N4200</td>
<td>Onboard LPDDR4 8GB</td>
<td>LVDS, DD1 x 1</td>
<td>18/24bit 1CH LVDS</td>
<td>SATA x 2, 64GB eMMC</td>
<td>2.5Gbit/s x 1</td>
<td>USB 3.2 Gen 1 x 2</td>
<td>USB 2.0 x 2</td>
<td>2 (Tx/Rx)</td>
<td>PCI x 1 x 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
</tr>
<tr>
<td>NANOCOM-APL-B10-0002</td>
<td>Type 10(COM.0 Rev 2.1)</td>
<td>N3350</td>
<td>Onboard LPDDR4 8GB</td>
<td>LVDS, DD1 x 1</td>
<td>18/24bit 1CH LVDS</td>
<td>SATA x 2, 64GB eMMC</td>
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<td>2 (Tx/Rx)</td>
<td>PCI x 1 x 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
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<tr>
<td>NANOCOM-APL-B10-0003</td>
<td>Type 10(COM.0 Rev 2.1)</td>
<td>E3900</td>
<td>Onboard LPDDR4 8GB</td>
<td>LVDS, DD1 x 1</td>
<td>18/24bit 1CH LVDS</td>
<td>SATA x 2, 64GB eMMC</td>
<td>2.5Gbit/s x 1</td>
<td>USB 3.2 Gen 1 x 2</td>
<td>USB 2.0 x 2</td>
<td>2 (Tx/Rx)</td>
<td>PCI x 1 x 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
</tr>
<tr>
<td>NANOCOM-APL-B10-0004</td>
<td>Type 10(COM.0 Rev 2.1)</td>
<td>E3940</td>
<td>Onboard LPDDR4 8GB</td>
<td>LVDS, DD1 x 1</td>
<td>18/24bit 1CH LVDS</td>
<td>SATA x 2, 128GB eMMC</td>
<td>2.5Gbit/s x 1</td>
<td>USB 3.2 Gen 1 x 2</td>
<td>USB 2.0 x 2</td>
<td>2 (Tx/Rx)</td>
<td>PCI x 1 x 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
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<tr>
<td>NANOCOM-APL-B10-0005</td>
<td>Type 10(COM.0 Rev 2.1)</td>
<td>E3930</td>
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<td>USB 3.2 Gen 1 x 2</td>
<td>USB 2.0 x 2</td>
<td>2 (Tx/Rx)</td>
<td>PCI x 1 x 4</td>
<td>12V</td>
<td>0°C - 60°C</td>
</tr>
</tbody>
</table>
NanoCOM-APL

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

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

Specifications

System
- Form Factor: COM Express, Mini size, Type 10
- CPU: Intel® Atom™/Celeron®/Pentium® Processor
- CPU Frequency: Up to J1900, 2.00GHz
- Chipset: Intel® Atom™/Celeron®/Pentium® SoC
- Memory Type: Onboard LPDDR4
- Max. Memory Capacity: 8GB
- BIOS: AMI UEFI
- Wake on LAN: Yes
- Watchdog Timer: 255 Levels
- Power Requirement: +12V and +5VSB for ATX, +12V for AT
- Power Supply Type: AT/ATX
- Power Consumption (Typical): 0.82A@12V, full load, E3950
- Dimension (L x W): 3.31” x 2.17” (84mm x 55mm)
- Operating Temperature: 32°F ~ 140°F (0°C ~ 60°C)
- Storage Temperature: 32°F ~ 140°F (0°C ~ 60°C)
- Operating Humidity: 0% ~ 90% relative humidity, non-condensing
- Certification: CE/FCC Class A

Display
- Graphic Controller: Intel® HD Graphic 505/500
- Video Output: Dual Display: LVDS LCD/eDP, DDI x 1
- Single Channel LVDS (18/24 bit)

I/O
- Ethernet: Intel® i210AT GbE x 1
- Audio: High Definition Audio Interface
- USB Port: USB 2.0 x 8, USB 3.2 Gen 1 x 2
- Serial Port: 2-Wire UART (Tx/Rx) x 2
- HDD Interface: SATA 3 x 2
- Expansion Slot: PCIe [x1] x 4 (up to 3 devices)
- LPC
- SMBus
- I2C
- GPIO: 8-bit
- Onboard Storage: eMMC up to 64GB (Optional)
- TPM: —

Packing List
- NanoCOM-APL

Optional Accessories
- ECB-920A-A11-0001
- NanoCOM-APL-E-HSP01
- NanoCOM-APL-N-HSP01
- NanoCOM-APL-E-FAN01

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<td>6W</td>
<td>Intel® HD Graphics 505</td>
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<tr>
<td>N3350</td>
<td>2C/2T</td>
<td>1.10GHz / 2.45GHz</td>
<td>6W</td>
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<tr>
<td>E3950</td>
<td>4C/4T</td>
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<td>12W</td>
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</table>

Note: All specifications are subject to change without notice.
**Block Diagram**  
Unit: mm

**Dimension**  
Unit: mm

**Ordering Information**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>COM EXPRESS TYPE</th>
<th>CPU</th>
<th>MEMORY</th>
<th>DISPLAY</th>
<th>LVDS</th>
<th>STORAGE</th>
<th>LAN</th>
<th>USB</th>
<th>UART</th>
<th>EXPANSION</th>
<th>POWER</th>
<th>TEMPERATURE</th>
<th>OTHERS</th>
</tr>
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<tbody>
<tr>
<td>NANOCOM-APL-A11-F001</td>
<td>Type 10 (COM.0 Rev. 2.1)</td>
<td>N4200</td>
<td>Onboard LPDDR4 4GB</td>
<td>LPDDR4 16GB</td>
<td>32GB eMMC</td>
<td>Intel® Processor Atom™ Apollo Lake</td>
<td>eMMC 5.0</td>
<td>eMMC 5.0</td>
<td>2 (Tx/Rx)</td>
<td>PCIe [x4]</td>
<td>12V</td>
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<td>64GB eMMC</td>
<td>Intel® Processor Atom™ Apollo Lake</td>
<td>eMMC 5.0</td>
<td>eMMC 5.0</td>
<td>2 (Tx/Rx)</td>
<td>PCIe [x4]</td>
<td>12V</td>
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<td>LPC, SMBus, I2C</td>
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<td>LPDDR4 8GB</td>
<td>64GB eMMC</td>
<td>Intel® Processor Atom™ Apollo Lake</td>
<td>eMMC 5.0</td>
<td>eMMC 5.0</td>
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<td>PCIe [x4]</td>
<td>12V</td>
<td>0°C - 60°C</td>
<td>LPC, SMBus, I2C</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
HPC-ADSC / HPC-RPSC

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

Features

- 12th/13th Gen Intel® Core™ Series Processor (Formerly Alder Lake-S & Raptor Lake-S)
- Intel 600 Series Chipset (R680E)
- 2x SODIMM w/ ECC DDR5 4800MHz Memory, up to 64GB
- 2.5 Gigabit Ethernet x 2
- M.2 2280 x 1
- SATA3.0 x 2
- 1x PCIe[x16] Gen5, 3x PCIe[x4] Gen4, 8x PCIe [x1] Gen3
- USB2.0 x 8, USB3.2 Gen2 x 4
- GPIO x12, SMbus, I2Cx2, eSPI
- COM HPC Client type, size C, 160mm x 120mm

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>12th/13th Gen Intel® Core™ Series Processor (Formerly Alder Lake-S &amp; Raptor Lake-S)</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel® R680E</td>
</tr>
<tr>
<td>Memory Type</td>
<td>SODIMM DDR5 4800MHz Socket x 2</td>
</tr>
<tr>
<td>Max. Memory Capacity</td>
<td>Up to 64GB (ECC)</td>
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<tr>
<td>BIOS</td>
<td>AMI BIOS (UEFI)</td>
</tr>
<tr>
<td>Wake on LAN</td>
<td>Yes</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>255 Levels</td>
</tr>
<tr>
<td>Power Requirement</td>
<td>+12 V and +5 V for ATX, +12 V for AT</td>
</tr>
<tr>
<td>Power Supply Type</td>
<td>AT / ATX</td>
</tr>
<tr>
<td>Power Consumption (Typical)</td>
<td>TBO</td>
</tr>
<tr>
<td>Dimension (L x W)</td>
<td>6.30” x 4.72” (160mm x 120mm)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°F ~ 185°F (-40°C ~ 80°C)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0% ~ 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Certification</td>
<td>CE / FCC Class A</td>
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Display

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphic Controller</td>
<td>Intel®UHD Graphics 770</td>
</tr>
<tr>
<td>Video Output</td>
<td>eDP x 1, DDI x 3</td>
</tr>
<tr>
<td>Ethernet</td>
<td>2.5GbE-Intel® I226LM x2</td>
</tr>
<tr>
<td>Audio</td>
<td>Soundwire</td>
</tr>
<tr>
<td>USB Port</td>
<td>USB 2.0 x 8, USB 3.2 x 4 (Up to Gen2 support)</td>
</tr>
<tr>
<td>Serial Port</td>
<td>4-Wire UART (Tx/Rx) x2</td>
</tr>
<tr>
<td>HDI Interface</td>
<td>SATA3 x 2</td>
</tr>
<tr>
<td>Expansion Slot</td>
<td>PE[8y16] x 1, PCIe[x4] x 3, PCIe[x1] x 8, eSPI, SPI, I2C, SMBus</td>
</tr>
<tr>
<td>GPIO</td>
<td>12-bit</td>
</tr>
<tr>
<td>Onboard Storage</td>
<td>M.2 2280M (NVMe+)</td>
</tr>
<tr>
<td>TPM</td>
<td>TPM 2.0</td>
</tr>
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</table>

Packing List

- **HPC-ADSC-A10-0001**
  COM HPC Client Size C.FCLGA1700 CPU skt.R680E.2xDDR5.3xDDI.eDP.I226.TPM2.0 for ADS.A1.0
- **HPC-RPSC-A10-0001**
  COM HPC Client Size C.FCLGA1700 CPU skt.R680E.2xDDR5.3xDDI.eDP.I226.TPM2.0 for RPS.A1.0

Optional Accessories

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

CPU Support Chart

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

Note: All specifications are subject to change without notice.
HPC-ADSC / HPC-RPSC

Block Diagram  Unit: mm

Dimension  Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>COM Express Type</th>
<th>CPU</th>
<th>Memory</th>
<th>Display</th>
<th>LVDS</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>UART</th>
<th>Expansion</th>
<th>Power</th>
<th>Temperature</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPC-ADSC-A10-0001</td>
<td>COM-HPC</td>
<td>Alder Lake-S</td>
<td>DDR5x2</td>
<td>eDP,DDx4</td>
<td>—</td>
<td>Onboard PCIe Gen3 [x2]</td>
<td>NVMe SSD</td>
<td>USB 2.0 x 8, USB 3.2 x 4 (Up to Gen3 support)</td>
<td>4-Multi UART (Tx/Rx) x2</td>
<td>PCI[x1] x1, PCIe[x4] x3, PCIe[x8] x5</td>
<td>12V</td>
<td>0°C - 60°C</td>
<td>eSPI, SPI, I2C, SMBus,</td>
</tr>
<tr>
<td>HPC-RPSC-A10-0001</td>
<td>COM-HPC</td>
<td>Raptor Lake-S</td>
<td>DDR5x2</td>
<td>eDP,DDx4</td>
<td>—</td>
<td>Onboard PCIe Gen3 [x2]</td>
<td>NVMe SSD</td>
<td>USB 2.0 x 8, USB 3.2 x 4 (Up to Gen3 support)</td>
<td>4-Multi UART (Tx/Rx) x2</td>
<td>PCI[x1] x1, PCIe[x4] x3, PCIe[x8] x5</td>
<td>12V</td>
<td>0°C - 60°C</td>
<td>eSPI, SPI, I2C, SMBus,</td>
</tr>
</tbody>
</table>
**ECB-920A-A11**

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

---

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

### Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>ATX</td>
</tr>
<tr>
<td>COM Express Connector</td>
<td>x 2 (Row A, B &amp; Row C, D)</td>
</tr>
<tr>
<td>I/O Chipset</td>
<td>—</td>
</tr>
<tr>
<td>Front Panel Control</td>
<td>10-pin (5x2) header</td>
</tr>
<tr>
<td>Ethernet</td>
<td>10/100/1000/2500 Base-TX, RJ45 x 1 (From CPU Module)</td>
</tr>
<tr>
<td>Expansion Interface</td>
<td>PCIe[x4] slot x 2, PCIe[x16] slot x 1</td>
</tr>
<tr>
<td>Power Supply Type</td>
<td>ATX</td>
</tr>
<tr>
<td>CMOS Battery</td>
<td>RTC battery socket x 1</td>
</tr>
<tr>
<td>BIOS</td>
<td>—</td>
</tr>
<tr>
<td>Board Size</td>
<td>12” x 9.6” (304mm x 244mm)</td>
</tr>
<tr>
<td>Gross Weight</td>
<td>1.32 lb (0.6 kg)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°F ~ 185°F (-40°C ~ 85°C)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0% ~ 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>MTBF (Hours)</td>
<td>—</td>
</tr>
</tbody>
</table>

### Display

- DVI/CRT/VGA: D-SUB15 connector x 1
- LVDS / eDP: LVDS: 40pin (20x2) Dual Channel LVDS connector, eDP: 30pin board wire connector
- SDIO: —
- DDI: Display Port x 3 (Dual x1, Single x 1)

### I/O

- Storage: SATA3 x 4
- Serial Port: COM Port (2-Wire UART Tx/Rx) x 2
- USB: Type A connector x 8 (USB2.0 x 4, USB 3.2/2.0 x 4)
- Audio: Audio Jack, supports Line-in, Line-out, Microphone
- PS/2 Port: —
- GPIO: 8-bit Programmable
- Switch/Button: Power Button x 1 / Reset Button x 1
- Debug LED: 80 PORT
- I2C: 1
- Expansion Interface: LPC, I2C, SMBus, eSPI, CAN Bus, 4 pin fan connector, Micro SD Card Slot x 1

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

### Optional Accessories

- **ECB-920A-A11-BRKT01**
  - ECB-920A-A11J0 Bracket

Note: All specifications are subject to change without notice.
**ECB-920A-A11**

**COM Express Carrier Boards**

**Block Diagram**  
Unit: mm

**Dimension**  
Unit: mm

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

**Ordering Information**
- ECB-920A-A11-0001
  COMe Type 6/10.Carrier Board.ATX.2.5GbE.USB2.COM.eSPI Slot x 1

---

**Type 6/10 Function Table**

<table>
<thead>
<tr>
<th>COM Type</th>
<th>Type 6</th>
<th>Type 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI-E [x16]</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>PCI-E[4]</td>
<td>1 (Lane 0 – Lane 3)</td>
<td>1 (Lane 0 – Lane 3)</td>
</tr>
<tr>
<td>PCI-E[x1]</td>
<td>1 (Lane 4 – Lane 7)</td>
<td>—</td>
</tr>
<tr>
<td>VGA</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>DDI</td>
<td>3 (DDI1 – DDI3)</td>
<td>1</td>
</tr>
<tr>
<td>LVDS</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>LAN</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>SATA3</td>
<td>4 (Lane 0 – Lane 3)</td>
<td>2 (Lane 0 – Lane 1)</td>
</tr>
<tr>
<td>USB3.2</td>
<td>4 (Lane 0 – Lane 3)</td>
<td>2 (Lane 0 – Lane 1)</td>
</tr>
<tr>
<td>USB2.0</td>
<td>8 (Lane 0 – Lane 7)</td>
<td>8 (Lane 0 – Lane 7)</td>
</tr>
<tr>
<td>GPIO / SDIO</td>
<td>1 (GPIO 8 bits)</td>
<td>1 (GPIO 8 bits)</td>
</tr>
</tbody>
</table>

---

Note: All specifications are subject to change without notice.
Features
- ATX Form Factor
- Support COM Express Type 7 Basic Size
- PEG + PCIe[x8] + PCIe[x4] x 2
- Display via Console or 3rd party graphic solution
- USB3.2 Gen2 x 4
- SATA III x 2
- 4x 10GbE Port via intel x557AT4

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>COM Express Basic size Type 7 Carrier board in ATX form factor</td>
</tr>
<tr>
<td>COM Express Connector</td>
<td>X 2 (Row A8 and Row CD, Type 7 pin out)</td>
</tr>
<tr>
<td>I/O Chipset</td>
<td>—</td>
</tr>
<tr>
<td>Front Panel Control</td>
<td>10-pin (5x2) header</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Intel x557AT4: 4x 10G Base T 1x GbE (source from module)</td>
</tr>
<tr>
<td>Expansion Interface</td>
<td>PCIe [x4] x 2 PCIe[x8] PCIe[x16] (PEG port)</td>
</tr>
<tr>
<td>Power Supply Type</td>
<td>Standard 24pin ATX + 4pin 12V</td>
</tr>
<tr>
<td>CMOS Battery</td>
<td>CR2032 Holder x 1</td>
</tr>
<tr>
<td>BIOS</td>
<td>—</td>
</tr>
<tr>
<td>Board Size</td>
<td>305mm x 244mm</td>
</tr>
<tr>
<td>Gross Weight</td>
<td>0.7 kg</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0°C - 60°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°C - 80°C</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0% ~ 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>MTBF (Hours)</td>
<td>—</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Display</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DVT/CRT/VGA</td>
<td>N/A. via PCIe Graphic card</td>
</tr>
<tr>
<td>LVDS / eDP</td>
<td>N/A. via PCIe Graphic card</td>
</tr>
<tr>
<td>SDVO</td>
<td>N/A. via PCIe Graphic card</td>
</tr>
<tr>
<td>DDI</td>
<td>N/A. via PCIe Graphic card</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I/O</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td>SATA x2</td>
</tr>
<tr>
<td>Serial Port</td>
<td>2-wire UART x 2 (TX/RX)</td>
</tr>
<tr>
<td>USB</td>
<td>USB3.2 x 4</td>
</tr>
<tr>
<td>Audio</td>
<td>N/A</td>
</tr>
<tr>
<td>PS/2 Port</td>
<td>—</td>
</tr>
<tr>
<td>GPIO</td>
<td>8-bit</td>
</tr>
<tr>
<td>Switch/Button</td>
<td>Power Button x 1 / Reset Button x 1</td>
</tr>
<tr>
<td>Debug LED</td>
<td>7-SEG LED X2 80 PORT POST CODE INDICATOR</td>
</tr>
<tr>
<td>I2C</td>
<td>1</td>
</tr>
<tr>
<td>Expansion Interface</td>
<td>I2C, SMBus, LPC/eSPI slot</td>
</tr>
</tbody>
</table>

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

Optional Accessories
- TBD
Block Diagram  Unit: mm

COM Express Carrier Boards

<table>
<thead>
<tr>
<th>Connector Row A,B</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIO</td>
</tr>
<tr>
<td>NCSI</td>
</tr>
<tr>
<td>SATA III x4</td>
</tr>
<tr>
<td>LPC</td>
</tr>
<tr>
<td>LPC/eSPI Slot x 1</td>
</tr>
<tr>
<td>GPIO/SDIO</td>
</tr>
<tr>
<td>2-wire Serial port</td>
</tr>
<tr>
<td>SPI</td>
</tr>
<tr>
<td>SMBUS</td>
</tr>
<tr>
<td>I2C</td>
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</tbody>
</table>

Dimension  Unit: mm

<table>
<thead>
<tr>
<th>Packing List</th>
</tr>
</thead>
<tbody>
<tr>
<td>• COM port Cable x 2</td>
</tr>
<tr>
<td>• ECB-927A-A10 x 1</td>
</tr>
</tbody>
</table>

Ordering Information

• ECB-927A-A10-0001

COMe Type7 Carrier Board: 4x10GbE, 4USB, 2COM, 2SATA, PCIe, ATX, A1.0
COM HPC Client Carrier Board for Size A/B/C

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

**Specifications**

<table>
<thead>
<tr>
<th>System</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>COM HPC Client size A/B/C</td>
</tr>
<tr>
<td>COM Express Connector</td>
<td>X 2 (J1 and J2)</td>
</tr>
<tr>
<td>I/O Chipset</td>
<td>—</td>
</tr>
<tr>
<td>Front Panel Control</td>
<td>10-pin (5x2) header</td>
</tr>
<tr>
<td>Ethernet</td>
<td>2x 1G–2.5G, 1x for 2.5G expansion</td>
</tr>
<tr>
<td>Expansion Interface</td>
<td>PCIe[x1] x1 (for BMC)</td>
</tr>
<tr>
<td></td>
<td>PCIe[x4] x2 (group 0 lane 0–7)</td>
</tr>
<tr>
<td></td>
<td>PCIe[x16] x2 (group 1 and group 2)</td>
</tr>
<tr>
<td>Power Supply Type</td>
<td>Standard 24pin ATX + 4pin 12V</td>
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<tr>
<td>CMOS Battery</td>
<td>CR2032 Holder x1</td>
</tr>
<tr>
<td>BIOS</td>
<td>—</td>
</tr>
<tr>
<td>Board Size</td>
<td>305mm x 244mm</td>
</tr>
<tr>
<td>Gross Weight</td>
<td>0.7 kg</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0°C – 60°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°C – 80°C</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0% – 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>MTBF (Hours)</td>
<td>CE/FCC CLASS A</td>
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<tr>
<td>Display</td>
<td>DVI/CRT/VGA</td>
</tr>
<tr>
<td></td>
<td>HDMI x1, DP x2</td>
</tr>
<tr>
<td>LVDS / eDP</td>
<td>eDP x1</td>
</tr>
<tr>
<td>SDVO</td>
<td>—</td>
</tr>
<tr>
<td>DDI</td>
<td>—</td>
</tr>
<tr>
<td>I/O</td>
<td>Storage</td>
</tr>
<tr>
<td></td>
<td>SATA x2, M.2 NVMe[x4] x2</td>
</tr>
<tr>
<td>Serial Port</td>
<td>4-wire UART x2</td>
</tr>
<tr>
<td>USB</td>
<td>USB3.2 Gen2x2 Type C x2, USB3.2 Gen2 Type A x2</td>
</tr>
<tr>
<td>Audio</td>
<td>Board to board connector reserved</td>
</tr>
<tr>
<td>P5/2 Port</td>
<td>—</td>
</tr>
<tr>
<td>GPIO</td>
<td>12-bit</td>
</tr>
<tr>
<td>Switch/Button</td>
<td>Power Button x 1 / Reset Button x 1</td>
</tr>
<tr>
<td>Debug LED</td>
<td>7-SEG LED X2 80 PORT POST CODE INDICATOR</td>
</tr>
<tr>
<td>i2C</td>
<td>1</td>
</tr>
<tr>
<td>Expansion Interface</td>
<td>I2C, SMBus, LPC/eSPI slot.</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
COM Express Carrier Boards

ECB-980A

Block Diagram  Unit: mm

Dimension  Unit: mm

Packing List

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

Optional Accessories

- TBD

Ordering Information

- ECB-980A-A10-0001
  COM HPC Client Carrier Board. 2USB3, 4USB2, 2SATA, 2GbE, PCie. AT/ATX Rev A1.0
05

EPIC Boards
EPIC Boards

EPIC-ADS7 Specifications

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

Specifications

System
- Form Factor: 4” EPIC Board
- CPU: 12th Generation Intel® Core™ Series Processor (TDP: 35W/65W)
- CPU Frequency: 12C/20T (Up to 4.8 GHz)
- Chipset: Intel® 600 Series Desktop Chipsets
- Memory Type: DDR5 SODIMM x 2, up to 4800MT/s
- Max. Memory Capacity: Up to 64GB
- BIOS: AMI
- Wake on LAN: Yes
- Watchdog Timer: 255 Levels
- Power Requirement: +12V
- Power Supply Type: AT/ATX
- Power Consumption (Typical): TBD
- Dimension (L x W): 4.53” x 6.50” (115mm x 165mm)
- Operating Temperature: 32°F to 140°F (0°C to 60°C)
- Storage Temperature: -40°F to 176°F (-40°C to 80°C)
- Operating Humidity: 6% ~ 90% relative humidity, non-condensing
- MTBF (Hours): TBD
- Certification: CE/FCC ClassA

Display
- VGA/LCD Controller: Intel® UHD Graphics 770 / Intel® UHD Graphics 730 (by CPU sku)
- Video Output: 4 Display Simultaneously: Dual Channel (24/48bit) LVDS or eDP x 1
- Backlight Inverter Supply: 12V

I/O
- Ethernet: Intel® i225, 10/100/1000/2500Base, RJ-45 x 1
- Audio: Line in / Line Out / Mic (Pin header)

USB Port
- USB3.2 Gen2x2 (Type C) x 1
- USB3.2 Gen2 (Type A) x 4
- USB 2.0 (Pin Header) x 4

Serial Port
- COM RS232/422/485 (Pin Header) x 4

Parallel Port
- —

HDD Interface
- SATA III x 2, +5V SATA Power Connector x 2

SSD
- The same as HDD Interface

Expansion Slot
- M.2 3052 B key x 1
- M.2 2280 M key x 1
- M.2 2230 E key x 1
- PCIe [x4] Gen3 FPC Connector x 1
- PCIe [x8] Gen3 Slot x 1

DIO
- 8 bit (Pin Header)

TPM
- TPM2.0 (Optional)

Touch
- —

SIM
- Nano SIM (optional)

Others
- SMBUS x 1, LPC

Packing List
- EPIC-ADS7x 1

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
</tr>
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<tbody>
<tr>
<td>1253050003</td>
<td>AC/DC Adapter 100-240V, 150W, DC JACK</td>
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<tr>
<td>1702031800</td>
<td>Power cord for EU</td>
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<tr>
<td>1702031802</td>
<td>Power cord for US</td>
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<td>1702031803</td>
<td>Power cord for UK</td>
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<td>1702031804</td>
<td>Power cord for Japan</td>
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<td>1702031805</td>
<td>Power cord for China</td>
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<tr>
<td>1702031811</td>
<td>Power cord for Taiwan</td>
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</tr>
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Note: All specifications are subject to change without notice.
### Block Diagram

![Block Diagram](image)

### Dimension

Unit: mm

![Dimension Diagram](image)

### Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Chipset</th>
<th>Display</th>
<th>LAN</th>
<th>USB</th>
<th>Rs-232/422/485</th>
<th>Storage</th>
<th>Expansion Slot</th>
<th>TPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPIC-ADS7-A10-TBD (sku1)</td>
<td>R680E</td>
<td>Intel(R) 600 Series Chipset</td>
<td>12th Gen Intel(R) Core(TM) Processor</td>
<td>LGA 1700</td>
<td>DMI</td>
<td>BIOS SPI</td>
<td>Intel(R) 600 Series Chipset PCH</td>
<td>R680E / Q670E / H610E</td>
<td>Optional</td>
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</table>

* Please note that the exact function may be different according to PCH sku.
EPIC System with 12th Generation Intel® Core™ Processor

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

**Display**
- VGA/LCD Controller: Intel® UHD Graphics 770 / Intel® UHD Graphics 730 (by CPU sku)
- Video Output: DP++ 1.4a x 2, HDMI 2.0a x 1
- Backlight Inverter Supply: —

**I/O**
- Ethernet: Intel® I211AT, 10/100/1000Base, RJ45 x2
- Intel® I219LM, 10/100/1000Base, RJ45 x1
- Intel® I225LM, 10/100/2500Base, RJ45 x1
- Audio: USB3.2 Gen2 (Type C) x 1, USB3.2 Gen2 (Type A) x 2
- USB Port: USB2.0 (Type A) x 2
- Serial Port: COM RS232/422/485 x 1
- Parallel Port (printer port): —

**HDD Interface**: —

**SSD**: SATA3 x 2 with +5V SATA power connector onboard

**Expansion Slot**
- M.2 3052 B key x 1 (PCIe = USB3.0/USB2.0)
- M.2 2280 M key x 1 (PCIe Gen4 [x4] x 1)
- M.2 2230 E key x 1 (PCIe = USB2.0)
- 3pin TCC/TSN x 1 (Optional)

**DIO**: DIO 8 bit x 1 (Front Panel)

**TPM**: TPM 2.0

**Touch**: —

**SIM**: Nano SIM Slot x 1

**Specifications**

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>4&quot; EPIC System</td>
</tr>
<tr>
<td>CPU</td>
<td>12th Generation Intel® Core™ Series Processor</td>
</tr>
<tr>
<td>CPU Frequency</td>
<td>—</td>
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<tr>
<td>Chipset</td>
<td>Intel® 600 Series Desktop Chipsets</td>
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<tr>
<td>Memory Type</td>
<td>DDR5 SODIMM x 2 (up to 4800MT/s)</td>
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<tr>
<td>Max. Memory Capacity</td>
<td>up to 64GB</td>
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<tr>
<td>BIOS</td>
<td>UEFI</td>
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<tr>
<td>Wake on LAN</td>
<td>Yes</td>
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<tr>
<td>Watchdog Timer</td>
<td>255 Levels</td>
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<tr>
<td>Power Requirement</td>
<td>+12V</td>
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<tr>
<td>Power Supply Type</td>
<td>ATX</td>
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<tr>
<td>Power Consumption (Typical)</td>
<td>TBD</td>
</tr>
<tr>
<td>Dimension (L x W)</td>
<td>10.2&quot; x 6.3&quot; x 2.1&quot; (260mm x 160mm x 55mm)</td>
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<tr>
<td>Operating Temperature</td>
<td>32°F – 122°F (0°C – 50°C) with 0.5 m/s airflow</td>
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<tr>
<td>Storage Temperature</td>
<td>-40°F – 176°F (-40°C – 80°C)</td>
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<tr>
<td>Operating Humidity</td>
<td>0% – 90% relative humidity, non-condensing</td>
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<td>MTBF (Hours)</td>
<td>TBD</td>
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<td>Certification</td>
<td>CE/FCC Class A</td>
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**Optional Accessories**

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<td>12530006E3</td>
<td>AC/DC Adapter 100-240V 150W DC JACK</td>
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<td>17200180G</td>
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<td>17200180G2</td>
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<td>172001811</td>
<td>Power cord for Taiwan</td>
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**Packing List**
- EPIC-ADS7-PUC x 1

Note: All specifications are subject to change without notice.
**Block Diagram**

**Dimension** Unit: mm

**Ordering Information**

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<thead>
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<tbody>
<tr>
<td>EPIC-ADS7-PUC-A10 (Sku1-TBD)</td>
<td>(12700E</td>
<td>R680E Chipset</td>
<td>4 Pin FAN</td>
<td>14x4 x 3</td>
<td>SAT A 3 x 2</td>
<td>2.5GbE (RU46) x 1</td>
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<tr>
<td></td>
<td>(12100E</td>
<td>H610E Chipset</td>
<td>4 Pin FAN</td>
<td>14x4 x 3</td>
<td>SAT A 3 x 2 (with</td>
<td>2.5GbE (RU46) x 1</td>
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<td>R680E Chipset</td>
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<td>SAT A 3 x 2</td>
<td>2.5GbE (RU46) x 1</td>
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<td>H610E Chipset</td>
<td>4 Pin FAN</td>
<td>14x4 x 3</td>
<td>SAT A 3 x 2 (with</td>
<td>2.5GbE (RU46) x 1</td>
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</tbody>
</table>

*Please note that the M.2 3052 B key slot only provides PCIe + USB2.0 interface on H610E PCH sku.

*For detailed information, please contact AAEON Sales representative.

Note: All specifications are subject to change without notice.
EPIC Board with 11th Generation Intel® Xeon™ / Core™ Processor

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

Specifications

System
- Form Factor: 4" EPIC Board
- CPU: 11th Generation Intel® 11th Xeon™ / Core™ Processor
- CPU Frequency:
  - Xeon W-11865MRE (8C/16T, 2.60GHz, up to 4.70GHz)
  - i7-11850HE (8C/16T, 2.60GHz, up to 4.70GHz)
  - i5-11500HE (6C/12T, 2.60GHz, up to 4.50GHz)
  - i3-11100HE (4C/8T, 2.40GHz, up to 4.40GHz)
  - Celeron 6600HE (2C/2T, 2.60GHz)
- Chipset: Intel® 500 Series Mobile Chipset (RM590E / HM570E)
- Memory Type: DDR4 3200 SODIMM x 2 (ECC supported by Xeon only)
- Max. Memory Capacity: Up to 64GB
- BIOS: AMI
- Wake on LAN: Yes
- Watchdog Timer: 255 Levels
- Power Requirement: +9-24V
- Power Supply Type: AT/ATX
- Power Consumption: 12W/32.2A with Xeon W-11865MRE, with 100% full loading steady status.
- Dimension (L x W): 4.53” x 6.50” (115mm x 165mm)
- Operating Temperature: 32°F ~ 140°F (0°C ~ 60°C)
- Storage Temperature: -40°F ~ 176°F (-40°C ~ 80°C)
- Operating Humidity: 0% ~ 90% relative humidity, non-condensing
- MTBF (Hours): —
- Certification: CE/FCC ClassA

Display
- VGA/LCD Controller: Intel® UHD Graphics for 11th Gen Intel® Processors
- Video Output: Dual Channel 24/48bit LVDS (Default) or eDP x 1, HDMI2.0b x 1, DP 1.2a (DP++ x 2), VGA x 1
- Backlight Inverter Supply: 12V/32W (Default: 5V)

I/O
- Ethernet: Intel® i225, 10/100/1000/2500Base, RJ-45 x 1, Intel® i219, 10/100/1000Base, RJ-45 x 1
- Audio: Realtek ALC269 (2W Amplifier)

USB Port
- USB 3.2 Gen 2 x 4
- USB 2.0 x 4

Serial Port
- RS-232 x 4
- RS-232/422/485 x 2
- RS-232 x 4
- Parallel Port: —

HDD Interface
- SATA III x 2
- +5V SATA Power Connector x 1

SSD
- Half size mSATA/mPCIe x 1 (Default mPCIE, select by BIOS)

Expansion Slot
- M.2 B key 3052 x 1 (Default PCIe[x1]+USB3.0+USB2.0 , PCIe[x2]+USB2.0 by BOM change)
- M.2 M key 2280 x 1 (PCIe 4.0[x4])
- PCIe Gen4 [x8] slot x 1 (Supply maximum 25W to the PCIe peripheral)
- Board to board FPC connector (PCIe[x4] x 1)

DIo
- 16-bit
- TPM: TPM2.0 (Optional)
- Touch: Optional
- SIM: Nano SIM
- Others: SMBus / I2C (Supported by BOM Change)

Packing List

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
</tr>
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<tbody>
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<td>9767EC001</td>
<td>Screw kit</td>
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Optional Accessories

<table>
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<th>Description</th>
<th>QTY</th>
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<tbody>
<tr>
<td>1700150151</td>
<td>VGA cable 15cm</td>
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<td>1702100155</td>
<td>SATA power cable 15cm</td>
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<tr>
<td>1709001550</td>
<td>SATA cable 15cm</td>
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<tr>
<td>1708000131</td>
<td>Dual COM cable 30cm</td>
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<td>1702404015</td>
<td>Double 4P cable 10cm</td>
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<tr>
<td>1708000297</td>
<td>Front panel cable 10cm</td>
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<tr>
<td>1708000156</td>
<td>Audio cable 25cm</td>
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<tr>
<td>1708000525</td>
<td>USB2.0/4 Cable 25cm</td>
<td>1</td>
</tr>
<tr>
<td>EPIC-TGH7-FAN01</td>
<td>CPU cooler 60<em>60</em>31.6mm with Backplane, for EPIC-TGH7 use</td>
<td>1</td>
</tr>
</tbody>
</table>
### Block Diagram

#### Intel® 500 Series Mobile Chipset

- **11th Gen Intel® Core™ Processor**
- **Channel A**
- **Channel B**
- **DDR4 SO-DIMM**
- **PCIe 4.0 [x8]**
- **M.2 M key (2280)**
- **USB2.0**
- **Intel® 500 Series Mobile Chipset**
- **HD Monitor**
- **USB to Touch**
- **Mini-Card (Half Size)**
- **Audio, DIO x 16**
- **CPU & System Fan (4P)**
- **BIOS**
- **Super I/O**
- **HR Monitor**
- **COM RS232/422/485 *2**
- **LAN**
- **USB2.0**
- **TPM**
- **2.5GbE x 1,**
- **GbE x 1**
- **SATA3 x 2**
- **USB 3.2 Gen 2 x 4**
- **USB 2.0 x 4**
- **M.2 B key 3052 x 1,**
- **M.2 M key 2280 x 1,**
- **Mini Card (Half Size) x 1**

### Dimension

Unit: mm

### Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Memory</th>
<th>Thermal</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/232/485</th>
<th>Expansion Slot</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
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</thead>
<tbody>
<tr>
<td>EPIC-TGH7-A10-0001</td>
<td>i7-11850HE (with HM570E PCH)</td>
<td>DDR4 SODIMM x 2</td>
<td>Fan</td>
<td>LVDS x 1, DP x 2, HDMI x 1, VGA x 1</td>
<td>SATA x 2</td>
<td>2.5GbE x 1, GbE x 1</td>
<td>USB 3.2 Gen 2 x 4, USB 2.0 x 4</td>
<td>4</td>
<td>2</td>
<td>M.2 B key 3052 x 1, M.2 M key 2280 x 1, Mini Card Half Size x 1</td>
<td>+9V~+24V</td>
<td>0°C ~ 60°C</td>
<td>Audio, DI x 16 NanoSIM x 1 Touch</td>
</tr>
<tr>
<td>EPIC-TGH7-A10-0002</td>
<td>i7-11850HE (with HM570E PCH)</td>
<td>DDR4 SODIMM x 2</td>
<td>Fan</td>
<td>LVDS x 1, DP x 2, HDMI x 1, VGA x 1</td>
<td>SATA x 2</td>
<td>2.5GbE x 1, GbE x 1</td>
<td>USB 3.2 Gen 2 x 4, USB 2.0 x 4</td>
<td>4</td>
<td>2</td>
<td>M.2 B key 3052 x 1, M.2 M key 2280 x 1, Mini Card Half Size x 1</td>
<td>+9V~+24V</td>
<td>0°C ~ 60°C</td>
<td>Audio, DI x 16 NanoSIM x 1 Touch</td>
</tr>
<tr>
<td>EPIC-TGH7-A10-0003</td>
<td>i5-11500HE (with HM570E PCH)</td>
<td>DDR4 SODIMM x 2</td>
<td>Fan</td>
<td>LVDS x 1, DP x 2, HDMI x 1, VGA x 1</td>
<td>SATA x 2</td>
<td>2.5GbE x 1, GbE x 1</td>
<td>USB 3.2 Gen 2 x 4, USB 2.0 x 4</td>
<td>4</td>
<td>2</td>
<td>M.2 B key 3052 x 1, M.2 M key 2280 x 1, Mini Card Half Size x 1</td>
<td>+9V~+24V</td>
<td>0°C ~ 60°C</td>
<td>Audio, DI x 16 NanoSIM x 1 Touch</td>
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<td>DDR4 SODIMM x 2</td>
<td>Fan</td>
<td>LVDS x 1, DP x 2, HDMI x 1, VGA x 1</td>
<td>SATA x 2</td>
<td>2.5GbE x 1, GbE x 1</td>
<td>USB 3.2 Gen 2 x 4, USB 2.0 x 4</td>
<td>4</td>
<td>2</td>
<td>M.2 B key 3052 x 1, M.2 M key 2280 x 1, Mini Card Half Size x 1</td>
<td>+9V~+24V</td>
<td>0°C ~ 60°C</td>
<td>Audio, DI x 16 NanoSIM x 1 Touch</td>
</tr>
</tbody>
</table>
EPIC System with 11th Generation Intel® Xeon/Core™ Processor

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

Specifications

System

Form Factor 4" EPIC System
CPU 11th Generation Intel® Xeon / Core™ Processor
  - Xeon W-11865MRE (8C/16T, 2.60GHz, up to 4.70GHz)
  - Xeon E-11850HE (8C/16T, 2.60GHz, up to 4.70GHz)
  - E-11500HE (6C/12T, 2.60GHz, up to 4.50GHz)
  - E-11100HE (4C/8T, 2.40GHz, up to 4.40GHz)
CPU Frequency Up to 4.70 GHz
Chipset Intel® S50 Series Chipsets
Memory Type DDR4 3200 SODIMM x 2
Max. Memory Capacity up to 64GB
BIOS UEFI
Wake on LAN Yes
Watchdog Timer 255 Levels
Power Requirement +9V to +24V
Power Supply Type AT/ATX, DC Jack Connector
Power Consumption (Typical) TBD

Dimensions (L x W x H) 260 x 160 x 50 mm
Operating Temperature 32°F – 122°F (0°C – 55°C), with 0.5 m/sec air flow
Storage Temperature -40°F – 122°F (-40°C – 80°C)
Operating Humidity 0% – 90% relative humidity, non-condensing

Display

- VGA/LCD Controller Intel® UHD Graphics for 11th Gen. Intel Processor
- Video Output DP++, 1.2a x 2, HDMI 2.0b x 1, VGA x 1
- 4 Simultaneous Displays
- Backlight Inverter Supply —

I/O

- Ethernet Intel® I211AT, 10/100/1000Base, RJ45 x 2
  - Intel® I219LM, 10/100/1000Base, RJ45 x 1
  - Intel® I225LM, 10/100/2500Base, RJ45 x 1
- Audio —
- USB Port USB3.2 Gen 2 (Type A) x 4, USB2.0 (Type A) x 2
- Serial Port COM RS232/422/485 x 2
- Parallel Port (printer port) —
- HDD Interface —
- SSD SATA III x 2 (2.5” SSD x 2 containable)
  - +5V SATA Power Connector x 1 (Total up to 5V@2A limitation for 2 SATA SSD use)
- Expansion Slot M.2 3052 B key x 1
  - M.2 2280 M key x 1
  - Mini Card (Half Size) x 1
- DIO 16 bits
- TPM —
- Touch —
- SIM NanoSIM x 1

MTBF (Hours) TBD
Certification CE/FCC Class A

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>172001803</td>
<td>Power cord for EU</td>
<td>1</td>
</tr>
<tr>
<td>172001802</td>
<td>Power cord for US</td>
<td>1</td>
</tr>
<tr>
<td>172001801</td>
<td>Power cord for China</td>
<td>1</td>
</tr>
<tr>
<td>172001811</td>
<td>Power cord for Taiwan</td>
<td>1</td>
</tr>
</tbody>
</table>

Packing List

- EPIC-TGH7-PUC x 1

Note: All specifications are subject to change without notice.
Block Diagram

11th Gen
Intel® Core™ Processor

Intel® 500 Series Mobile Chipset

Super I/O

Dimension
Unit: mm

TBD

Ordering Information
• TBD
EPIC-KBS9

Specifications

**System**
- Form Factor: 4" EPIC Board
- CPU: CPU Socket Type
- CPU Frequency: 6th/7th Generation Intel® Core™ i3/i5/i7/Celeron® (Support up to 65W SKU)
- Chipset: H110/Q170 (6W)
- Memory Type: DDR4 (Non-ECC) SODIMM x 2, 2133MHz, up to 32GB
- Max. Memory Capacity: Up to 32GB
- BIOS: AMI
- Wake on LAN: Yes
- Watchdog Timer: 255 Levels
- Power Requirement: +12V, AT/ATX
- Power Supply Type: AT/ATX
- Power Consumption (Typical): Power consumption: 12V@7.2A, total 86W (with i7-7700U, during 100% loading)
- Dimension (L x W): 4.53" x 6.50" (115 mm x 165 mm)
- Operating Temperature: 32°F ~ 140°F (0°C ~ 60°C)
- Storage Temperature: -40°F ~ 176°F (-40°C ~ 80°C)
- Operating Humidity: 0% ~ 90% relative humidity, non-condensing
- MTBF (Hours): 135,399 Hours
- Certification: CE/FCC

**Display**
- VGA/LED Controller: 6th/7th Generation Intel® Core™ i3/i5/i7/Celeron®
- Video Output: HDMI (Rear), VGA (Internal Only)
- Backlight Inverter Supply: —

**I/O**
- Ethernet: Intel® i211 Gigabit Ethernet x 4
- Audio: ALC269 (With Amp)
- USB Port: USB 3.2 Gen 1 x 2 (Real IO), USB2.0 x 2 (Internal)
- Serial Port: COM x 2 (All Internal), RS-232/422/485
- Parallel Port (printer port): —
- HDD Interface: SATA 3.0 x 2
- SSD: mSATA x 1 (Full size)
- Expansion Slot: Mini-card x 1 (Full Size) (No SIM)
- PCIe[x4] Slot x 1
- DIO: 8-bit
- TPM: —
- Touch: —
- SIM: —

**Features**
- 6th/7th Generation Intel® Core™ i3/i5/i7/Celeron® series Processor (Socket Type)
- DDR4 (Non-ECC) SODIMM 2, 2133MHz, up to 32GB
- VGA (Internal)/HDMI Display
- USB 3.2 Gen 1 x 2 (Rear IO), USB 2.0 x 2 (Internal)
- mSATA/Mini-PCIe Full Size x 1 (Default: mSATA, Optional for Mini-PCIe by BOM Change)
- Audio Codec with Amp, SATA 6.0 Gb/s x 2, GPIO x 8, RS-232/422/485 x 2 (Internal)
- 12V Only

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

**Optional Accessories**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1702002010</td>
<td>Power Cable (2pin), Length 10cm</td>
<td>1</td>
</tr>
<tr>
<td>1702002024</td>
<td>Audio Cable (3pin), Length 25cm</td>
<td>1</td>
</tr>
<tr>
<td>1705005007</td>
<td>USB Cable (3pin), Length 25cm</td>
<td>2</td>
</tr>
<tr>
<td>1701000150</td>
<td>COM Cable (9pin), Length 15cm</td>
<td>2</td>
</tr>
<tr>
<td>1704150153</td>
<td>Internal VGA Cable</td>
<td>1</td>
</tr>
<tr>
<td>EPIC-KBS9-FAN01</td>
<td>CPU Cooler, for LGA115X, 12V/4P PWM, AL, for EPIC-KBS9</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
**Block Diagram**

![Block Diagram](image)

**Dimension**

Unit: mm

![Dimension](image)

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Memory</th>
<th>Thermal</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/422/485</th>
<th>Expansion Slot</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPIC-KBS9-A10-0001 (H110)</td>
<td>LGA1151 (Socket Type)</td>
<td>DDR4 x2 (Max 32G)</td>
<td>FAN</td>
<td>HDMI (Real) x 1 VGA (Internal) x 1</td>
<td>SATA x 2</td>
<td>Gbe x 4</td>
<td>USB 3.2 Gen 1 x 2 (Real) USB 3.0 x 2 (Internal)</td>
<td>2</td>
<td>2</td>
<td>mSATA/MiniCard x 1 (Full) (by BIOS change for mPCIe)</td>
<td>+12V</td>
<td>0°C - 60°C</td>
<td>Audio, DIO x 8</td>
</tr>
<tr>
<td>EPIC-KBS9-A10-0003 (Q170)</td>
<td>LGA1151 (Socket Type)</td>
<td>DDR4 x2 (Max 32G)</td>
<td>FAN</td>
<td>HDMI (Real) x 1 VGA (Internal) x 1</td>
<td>SATA x 2</td>
<td>Gbe x 4</td>
<td>USB 3.2 Gen 1 x 2 (Real) USB 3.0 x 2 (Internal)</td>
<td>2</td>
<td>2</td>
<td>mSATA/MiniCard x 1 (Full) (by BIOS change for mPCIe)</td>
<td>+12V</td>
<td>0°C - 60°C</td>
<td>Audio, DIO x 8</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
EPIC Board with 6th/7th Generation Intel® Core™ i-S series Processor (Socket Type)

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Form Factor</th>
<th>4&quot; EPIC Board</th>
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<tbody>
<tr>
<td>CPU</td>
<td>6th/7th Generation CPU (Socket Type, TDP 35W, 54W Only)</td>
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<tr>
<td>CPU Frequency</td>
<td>6th/7th Generation Intel® Core™ i3/i5/i7/Celeron®</td>
<td></td>
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<tr>
<td>Chipset</td>
<td>H110, Q170 (6W)</td>
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<tr>
<td>Memory Type</td>
<td>DDR4 (Non-ECC), 2133MHz</td>
<td></td>
</tr>
<tr>
<td>Max. Memory Capacity</td>
<td>Up to 16GB</td>
<td></td>
</tr>
<tr>
<td>BIOS</td>
<td>AMI</td>
<td></td>
</tr>
<tr>
<td>Wake on LAN</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>255 Levels</td>
<td></td>
</tr>
<tr>
<td>Power Requirement</td>
<td>12V or 9-24V (Default)</td>
<td></td>
</tr>
<tr>
<td>Power Supply Type</td>
<td>AT/ATX</td>
<td></td>
</tr>
<tr>
<td>Power Consumption (Typical)</td>
<td>50W@Full loading</td>
<td></td>
</tr>
<tr>
<td>Dimension (L x W)</td>
<td>4.5&quot; x 6.50&quot; (115mm x 165mm)</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°F ~ 176°F (-40°C ~ 80°C)</td>
<td></td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0% ~ 90% relative humidity, non-condensing</td>
<td></td>
</tr>
<tr>
<td>MTBF (Hours)</td>
<td>110,000</td>
<td></td>
</tr>
<tr>
<td>Certification</td>
<td>CE/FCC</td>
<td></td>
</tr>
</tbody>
</table>

Display
- VGA/LCD Controller: 6th/7th Generation Intel® Core™ i3/i5/i7/Celeron®
- Video Output: CRT/LVDS/HDMI
- Backlight Inverter Supply: Max. 12V

I/O
- Ethernet: LAN x 2 (Real IO) (U211 x 2)
- Audio: ALC892, no Amp
- USB Port: USB 3.2 Gen 1 x 4 (Real IO) USB2.0 x 2 (Internal)
- Serial Port: COM x 4 (CMI2: RS-232/422/485)
- Parallel Port: —
- HDD Interface: SATA 3.0 x 2, SATA Power (5V)
- SSD: mSATA x 1 (optional for mini-Card)
- Expansion Slot: Mini-card x 1, Micro SIM x 1 (Optional)
- DIO: 8-bit
- TPM: —
- Touch: —
- SIM: —

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

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1702002010</td>
<td>Power Cable (2pin), Length 10cm</td>
<td>1</td>
</tr>
<tr>
<td>1709100254</td>
<td>Audio Cable (3pin), Length 25cm</td>
<td>1</td>
</tr>
<tr>
<td>1700052037</td>
<td>USB Cable (5pin), Length 20cm</td>
<td>2</td>
</tr>
<tr>
<td>1701090150</td>
<td>COM Cable (9pin), Length 15cm</td>
<td>4</td>
</tr>
<tr>
<td>EPIC-KBS7-FAN01</td>
<td>79<em>79</em>61mm. Silver. Recommended for operating temperature 0°C ~ 60°C (54W/35W)</td>
<td>1</td>
</tr>
<tr>
<td>EPIC-KBS7-FAN02</td>
<td>60<em>60</em>30mm. Silver. Recommended for operating temperature 0°C ~ 50°C (35W)</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
**Block Diagram**

**Dimension**

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Memory</th>
<th>Thermal</th>
<th>Display</th>
<th>LVDS</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232 /422/485</th>
<th>Expansion Slot</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPIC-KBS7-A10-0001</td>
<td>LGA1151 (Socket Type)</td>
<td>DDR4 (Max 16G)</td>
<td>FAN</td>
<td>VGA + HDMI</td>
<td>SATA x 2</td>
<td>GBE x 2</td>
<td>USB 3.2 Gen 1 x 4</td>
<td>USB2.0 x 2</td>
<td>3</td>
<td>1</td>
<td>mSATA x 1 (Mini PCIe by BOM Change)</td>
<td>3-24V</td>
<td>0°C – 60°C</td>
<td>DIO x 8</td>
</tr>
<tr>
<td>EPIC-KBS7-A10-0002</td>
<td>LGA1151 (Socket Type)</td>
<td>DDR4 (Max 16G)</td>
<td>FAN</td>
<td>VGA + LVDS + HDMI</td>
<td>SATA x 2</td>
<td>GBE x 2</td>
<td>USB 3.2 Gen 1 x 4</td>
<td>USB2.0 x 2</td>
<td>3</td>
<td>1</td>
<td>mSATA M.2 MiniCard x 1</td>
<td>9-24V</td>
<td>0°C – 60°C</td>
<td>Micro-SD, DIO x 8</td>
</tr>
</tbody>
</table>

*BIOS is ready for 6th Gen. and 7th Gen. chipset, please make sure to use the latest BIOS on website.
**EPIC Board with Intel® Atom®/ Celeron® Processor SoC**

### Features
- Onboard Intel® Atom™ E3845/ Celeron® J1900, N2807 Processor
- DDR3L 1333MHz SODIMM x 1, Up to 8GB
- Dual Display Configuration: VGA+ LVDS, VGA + HDMI or HDMI + LVDS
- SATA 3.0Gb/s x 1, mSATA/ Mini-Card x 1, Micro-SD Slot x 1 (E3800 Series Only)
- USB 3.2 Gen 1 x 1, USB2.0 x 5, RS-232 x 4, RS-232/422/485 x 2 (COM2, COM3)
- Mini-Card x 1, SIM x 1, PCI-104 (Optional)
- 16-bit Digital I/O/LPT, SMBus x 1, I2C (Optional)
- Audio 2CH, 2W Audio Amp., TPM (Optional), Touch Controller (Optional)
- 9 ~ 24VDC Wide Range or 12VDC Power Input
- SoC Processor on Solder Side Design

### Specifications

<table>
<thead>
<tr>
<th>System</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>4” EPIC Board</td>
</tr>
<tr>
<td>CPU</td>
<td>Intel® Atom® E3845/Celeron® J1900/N2807</td>
</tr>
<tr>
<td>CPU Frequency</td>
<td>Up to 2.0 GHz</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel® Atom®/ Celeron® SoC</td>
</tr>
<tr>
<td>Memory Type</td>
<td>DDR3L 1333, SODIMM x 1</td>
</tr>
<tr>
<td>Max. Memory Capacity</td>
<td>Up to 8GB</td>
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<tr>
<td>BIOS</td>
<td>AMI</td>
</tr>
<tr>
<td>Wake on LAN</td>
<td>Yes</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>255 Levels</td>
</tr>
<tr>
<td>Power Requirement</td>
<td>4 Pin Connector (Default)</td>
</tr>
<tr>
<td></td>
<td>2 Pin Phoenix Connector (Option)</td>
</tr>
<tr>
<td>Power Supply Type</td>
<td>AT/ ATX</td>
</tr>
<tr>
<td>Power Consumption (Typical)</td>
<td>12W</td>
</tr>
<tr>
<td>Dimension (L x W)</td>
<td>4.53” x 6.50” (115mm x 165mm)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F ~ 140°F (0°C ~ 60°C) or WiTAS 2 (E3845 sku , -40°C ~ 85°C)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°F ~ 185°F (-40°C ~ 85°C)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0% ~ 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>MTBF (Hours)</td>
<td>358,806 hrs</td>
</tr>
<tr>
<td>Certification</td>
<td>CE/FCC</td>
</tr>
</tbody>
</table>

### Display

- VGA/LCD Controller: Intel® Atom™/ Celeron® SoC
- Video Output: CRT, LVDS, HDMI
- Backlight Inverter Supply: Max. 12V

### I/O

- **Ethernet**: Intel® i211 Gigabit Ethernet, RJ-45 x 2
- **Audio**: High Definition Audio Interface
- **USB Port**: USB 2.0 x 5, USB 3.2 Gen 1 x 1
- **Serial Port**: COM1, 4, 5, 6 : RS-232 x 4, COM2, 3 : RS-232/422/485 x 1 (Ring+ +5V+12V)
- **Parallel Port**: SPP/EPP/ECP x 1
- **HDD Interface**: SATA 2.0 x 1
- **SSD**: mSATA x 1 (Share with full-size Mini-Card by BOM)

### Expansion Slot

- Full-size mPCIe x 1
- Full size mSATA/mPCIe x 1 (Default mSATA, select by BOM Change)
- Micro-SD x 1 (Optional, only E3800 series)
- PCI-104 x 1 (optional, only E3800 series)
- 16-bit DIO or LPT
- SMBus x 1, I2C x 1 (optional), PS/2 x 1

### Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>170204010R</td>
<td>2-Pin Power in to 4-Pin Housing Cable</td>
<td>1</td>
</tr>
<tr>
<td>1709100254</td>
<td>Audio Cable</td>
<td>1</td>
</tr>
<tr>
<td>1701260200</td>
<td>DIO/LPT Cable</td>
<td>1</td>
</tr>
<tr>
<td>1700050207</td>
<td>SATA Cable</td>
<td>1</td>
</tr>
<tr>
<td>1700060155</td>
<td>PS/2 KB/Mouse Cable</td>
<td>1</td>
</tr>
<tr>
<td>1701090150</td>
<td>COM Cable</td>
<td>1</td>
</tr>
<tr>
<td>EPIC-BT07-HSK01</td>
<td>Metal, Al, Heat Sink, 165<em>95</em>14mm, Silver, EPIC-BT07 (used with heatspreader)</td>
<td>1</td>
</tr>
</tbody>
</table>
06

SubCompact Boards
GENE-ADP6
3.5" SubCompact Board with 12th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC

Specifications

**SYSTEM**
- **FORM FACTOR**: 3.5" SubCompact Board
- **CPU**: Intel® 12th Generation Core™/Celeron CPU
  - i7-1270PE (12C/16T, 3.30GHz, up to 4.50GHz, 28W, TDP-up 64W)
  - i7-1265UE (10C/12T, 3.50GHz, up to 4.70GHz, 15W, TDP-up 55W)
  - i5-1250PE (12C/16T, 3.20GHz, up to 4.40GHz, 28W, TDP-up 64W)
  - i3-1220PE (8C/12T, 3.10GHz, up to 4.20GHz, 28W, TDP-up 64W)
  - Celeron® 7305E (5C/5T, 1.00GHz, 15W)
- **CHIPSET**: Integrated with Intel® SoC

**MEMORY TYPE**
- DDR5 4800 MHz, Dual Channel SODIMM x 2, up to 64GB

**BIOS**
- UEFI

**WATCHDOG TIMER**
- 255 Levels

**SECURITY**
- TPM2.0 (NPCT750AABYX)
- RTC BATTERY: Lithium Battery 3V/240mAh

**DIMENSION**
- 5.75" x 4" (146mm x 101.7mm)

**OPERATING TEMP.**
- 32°F ~ 140°F (0°C ~ 60°C)

**OPERATING HUMIDITY**
- 0% ~ 90% relative humidity, non-condensing

**MTBF (HOURS)**
- 344,735

**EMC**
- CE/FCC Class A

**Display**
- **CONTROLLER**: Intel® Iris® Xe Graphics
- **CODEC**: Realtek ALC897
- **AUDIO INTERFACE**: Line-in/Line-out/MIC
- **SPEAKER**: —

**Expansion**
- **Mini PCI-E/mSATA** —
- **M.2**
  - M-Key 2280 x 1 (PCIe x4 Gen4)
  - B-Key 3052/3042/2242 x 1 (PCIe x2, USB3.2+SATA, USB2.0, default: USB3.2+SATA)
- **E-Key 2230 x 1 (PCIe, USB2.0)**

**Power**
- **POWER REQUIREMENT**: +9-36V or +12V
- **POWER SUPPLY TYPE**: AT/ATX
- **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)
  - Intel® Core™ i7-1265UE, DDR5 16GB x 2, 5.59A@ +12V (TYPICAL)
  - Intel® Core™ i7-1265UE, DDR5 16GB x 2, 7.86A@ +12V (MAX)

**Network**
- **LAN x 2**: 10/100/1000Base
- **USB**: USB2.0 x 2
- **USB-C**: 1

**Video**
- **CONTROLLER**: HDMI 2.1 x 1, DP 4x1 4K/60Hz, 8K/30Hz

**Software**
- **OS SUPPORT**: Windows 10/11 (64bit), Linux Ubuntu 22.04/Kernel 5.15

**Packaging List**
- **Optional Accessories**
  - System: 1702150155 SATA HDD Power, Cable 15cm
  - 170204010R Power Cable, 10cm
  - 170X000156 Audio Cable, 25cm
  - 1709100108 FRONT PANEL Cable, 10cm
  - 170010010D USB 2.0 Cable, 15cm
- **Other**: FPC x1 (PCIe x4 Gen4, Only support Graphic or NVMe)

**Note**: All specifications are subject to change without notice.

www.aaeon.com

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**Optional Accessories**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1702150155</td>
<td>SATA HDD Power, Cable 15cm</td>
<td>1</td>
</tr>
<tr>
<td>170204010R</td>
<td>Power Cable, 15cm</td>
<td>1</td>
</tr>
<tr>
<td>170X000156</td>
<td>Audio Cable, 15cm</td>
<td>1</td>
</tr>
<tr>
<td>1709100108</td>
<td>FRONT PANEL Cable, 10cm</td>
<td>1</td>
</tr>
<tr>
<td>170X000231</td>
<td>COM Port Cable, 30cm</td>
<td>1</td>
</tr>
<tr>
<td>170010010D</td>
<td>USB 2.0 Cable, 10cm</td>
<td>1</td>
</tr>
<tr>
<td>GEN-ADP6-FAN01</td>
<td>CPU Cooler, 12V 4800RPM, Smart FAN</td>
<td>1</td>
</tr>
<tr>
<td>GEN-ADP6-HSP01</td>
<td>Heatspreader 144<em>16</em>11mm</td>
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**Packing List**

<table>
<thead>
<tr>
<th>Description</th>
<th>QTY</th>
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<tbody>
<tr>
<td>GEN-ADP6 MB</td>
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</table>
**Block Diagram**

**Dimension**
Unit: mm

**Ordering Information**

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

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

Specifications

- **3.5" SubCompact Board System**

**Features**

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

**Packing List**

- **Description**
  - GENESYSM-ADP6
  - GENESYSM-ADP6-HDD1
  - GENESYSM-ADP6-VESA1
  - GENESYSM-ADP6-WMT1

**Optional Accessories**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY per Board</th>
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<tbody>
<tr>
<td>1702031802</td>
<td>Power Cord (US Type)</td>
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<tr>
<td>1702031803</td>
<td>Power Cord (Europe Type)</td>
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<tr>
<td>170203180E</td>
<td>Power Cord (Japan)</td>
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<tr>
<td>1255X00063</td>
<td>Power Adapter 12V/2.5A 150W w/Lock 1800.Delta.DPS-150AB-15</td>
<td>1</td>
</tr>
<tr>
<td>GENESYSM-ADP6-HDD1</td>
<td>HDD Kit. For GENESYSM-ADP6</td>
<td>1</td>
</tr>
<tr>
<td>GENESYSM-ADP6-VESA1</td>
<td>VESA Mount Kit. For GENESYSM-ADP6</td>
<td>1</td>
</tr>
<tr>
<td>GENESYSM-ADP6-WMT1</td>
<td>Wall Mount Kit. For GENESYSM-ADP6</td>
<td>1</td>
</tr>
</tbody>
</table>
Block Diagram

Dimension

Ordering Information

Note: All specifications are subject to change without notice.
GENE-TGU6

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

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

Specifications

**FORM FACTOR**
- 3.5” SubCompact Board

**CPU**
- Intel® 11th Generation Core™/Celeron CPU:
  - i7-1185G7E (4C, 1.8GHz, up to 4.4GHz, TDP-up 28W)
  - i5-1145G7E (4C, 1.5GHz, up to 4.1GHz, TDP-up 28W)
  - i3-1115G4E (2C, 2.2GHz, up to 3.9GHz, TDP-up 28W)
  - Celeron® 6305E (2C, 1.8GHz, TDP 15W)

**CHIPSET**
- Integrated with Intel® SoC

**MEMORY TYPE**
- DDR4 3200MHz, Dual Channel SODIMM x 2, up to 64GB, supports IBECC (select SKUs)

**BIOS**
- UEFI

**WATCHDOG TIMER**
- 255 Levels

**SECURITY**
- TPM2.0

**RTC BATTERY**
- Lithium Battery 3V/240mAh

**DIMENSION**
- 5.75” x 4” (146mm x 101.7mm)

**DISPLAY INTERFACE**
- HDMI 2.0b x 1, up to 4K x 2K 60Hz
  - DP1.4 x 2, up to 4K x 2K 60Hz
  - Type C DP1.4a x 1, up to 4K x 2K 60Hz

**MULTIPLE DISPLAY**
- Up to 4 Simultaneous Displays

**INTERNAL I/O**
- USB 3.2 Gen 2 x 4
  - USB2.0 x2
  - USB Type C x 1 (PD 5V/3A)

**AUDIO CODEC**
- Realtek ALC892/897

**SPEAKER**
- —

**ETHERNET**
- Intel® i225LM, 10/100/1000Base, RJ-45 x1
- Intel® i219LM, 10/100/1000Base, RJ-45 x1

**USB**
- USB3.2 Gen 2 x 4
  - USB3.2 Gen 2 Type C x 1 (PD 5V/3A)

**SERIAL PORT**
- —

**VIDEO**
- HDMI 2.0b x1, DP1.4 x 2, Type C DP1.4a x 1

**ENVIRONMENT & CERTIFICATION**

**OPERATING TEMP.**
- 32°F ~ 140°F (0°C ~ 60°C), WiTAS1 -4°F ~ 158 °F (-20°C ~ 70°C),
  - WiTAS2 -40°F ~ 185°F (-40°C ~ 85°C)

**STORAGE TEMP.**
- -40°F ~ 185°F (-40°C ~ 85°C)

**OPERATING HUMIDITY**
- 0% ~ 90% relative humidity, non-condensing

**MTBF (HOURS)**
- 329,884

**EMC**
- CE/FCC Class A

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY per Board</th>
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</thead>
<tbody>
<tr>
<td>1702150155</td>
<td>SATA HDD Power, Cable 15cm</td>
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<tr>
<td>170204010R</td>
<td>Power Cable, 10cm</td>
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<td>Audio Cable, 25cm</td>
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<tr>
<td>170X000231</td>
<td>COM Port Cable, 30cm</td>
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<td>170010010D</td>
<td>USB 2.0 Cable, 10cm</td>
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<tr>
<td>GENE-TGU6-FAN01</td>
<td>CPU Cooler,3600RPM,Smart FAN</td>
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<tr>
<td>GENE-TGU6-HSK01</td>
<td>Heatsink</td>
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<td>GENE-TGU6-HSP01</td>
<td>HeatSpreader</td>
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</table>

Note: All specifications are subject to change without notice.
**Block Diagram**

**Gene-TGU6**

Intel® Tiger Lake U SOC

**Dimension**

Unit: mm

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Display</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/422/488</th>
<th>Storage</th>
<th>Expansion Slot</th>
<th>TPM</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gene-TGu6-A10-0001</td>
<td>i7-1165G7E</td>
<td>DP 1.2, Type-D 1 DP 1.2</td>
<td>HDMI 1</td>
<td>LVDS 1</td>
<td>USB 3.2<em>4/2.0</em>4</td>
<td>—</td>
<td>4</td>
<td>SATA x 1</td>
<td>mSATA (Full size) x 1</td>
<td>M.2 M Key x 2</td>
<td>2.0</td>
<td>0~36V</td>
</tr>
<tr>
<td>Gene-TGu6-A10-0002</td>
<td>i7-1165G7E</td>
<td>DP 1.2, Type-D 1 DP 1.2</td>
<td>HDMI 1</td>
<td>LVDS 1</td>
<td>USB 3.2<em>4/2.0</em>4</td>
<td>—</td>
<td>4</td>
<td>SATA x 1</td>
<td>mSATA (Full size) x 1</td>
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<td>Gene-TGu6-A10-0003</td>
<td>i7-1165G7E</td>
<td>DP 1.2, Type-D 1 DP 1.2</td>
<td>HDMI 1</td>
<td>LVDS 1</td>
<td>USB 3.2<em>4/2.0</em>4</td>
<td>—</td>
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<td>SATA x 1</td>
<td>mSATA (Full size) x 1</td>
<td>M.2 M Key x 2</td>
<td>2.0</td>
<td>0~36V</td>
</tr>
<tr>
<td>Gene-TGu6-A10-0004</td>
<td>i7-1165G7E</td>
<td>DP 1.2, Type-D 1 DP 1.2</td>
<td>HDMI 1</td>
<td>LVDS 1</td>
<td>USB 3.2<em>4/2.0</em>4</td>
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<td>4</td>
<td>SATA x 1</td>
<td>mSATA (Full size) x 1</td>
<td>M.2 M Key x 2</td>
<td>2.0</td>
<td>0~36V</td>
</tr>
<tr>
<td>Gene-TGu6-A10-0005</td>
<td>i3-1115G4E</td>
<td>DP 1.2, Type-D 1 DP 1.2</td>
<td>HDMI 1</td>
<td>LVDS 1</td>
<td>USB 3.2<em>4/2.0</em>4</td>
<td>—</td>
<td>4</td>
<td>SATA x 1</td>
<td>mSATA (Full size) x 1</td>
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<td>0~36V</td>
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<td>LVDS 1</td>
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<td>SATA x 1</td>
<td>mSATA (Full size) x 1</td>
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<td>0~36V</td>
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<td>Celeron 6305E</td>
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<td>LVDS 1</td>
<td>USB 3.2<em>4/2.0</em>4</td>
<td>—</td>
<td>4</td>
<td>SATA x 1</td>
<td>mSATA (Full size) x 1</td>
<td>M.2 M Key x 2</td>
<td>2.0</td>
<td>0~36V</td>
</tr>
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<td>DP 1.2, Type-D 1 DP 1.2</td>
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<td>LVDS 1</td>
<td>USB 3.2<em>4/2.0</em>4</td>
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<td>4</td>
<td>SATA x 1</td>
<td>mSATA (Full size) x 1</td>
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<td>LVDS 1</td>
<td>USB 3.2<em>4/2.0</em>4</td>
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<td>4</td>
<td>SATA x 1</td>
<td>mSATA (Full size) x 1</td>
<td>M.2 M Key x 2</td>
<td>2.0</td>
<td>0~36V</td>
</tr>
</tbody>
</table>

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www.aaeon.com
**GENESYSM-TGU6**

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

---

**Features**

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

---

**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 ECC (select SKUs)

**BIOS**

UEFI

**WATCHDOG TIMER**

255 Levels

**POWER**

- **POWER REQUIREMENT** +9-36V (Optional: +12V)
- **POWER SUPPLY TYPE** ATX
- **POWER CONSUMPTION** Intel® i7-1185G7E, DDR4 3200MHz 32GB x 2, 4.96A@ +12V (TYPICAL)
- **DISPLAY**
  - **PORT** 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
- **AUDIOPORT** Line-in/Line-out/MIC (Optional)
- **Speaker** —

**EXTERNAL I/O**

- **ETHERNET**
  - Intel® i219, 10/100/1000Base, RJ-45 x 1
  - Intel® i225/226, 10/100/2000Base, RJ-45 x 1

---

**Packaging List**

- **GENESYSM-TGU6 x 1**

**Optional Accessories**

- **GENESYSM-TGU6-HDD1** HDD Kit. For GENESYSM-TGU6
- **GENESYSM-TGU6-VESA1** VESA Mount Kit. For GENESYSM-TGU6
- **GENESYSM-TGU6-WMT1** Wall Mount Kit. For GENESYSM-TGU6

---

Note: All specifications are subject to change without notice.
Block Diagram

Dimension Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part number</th>
<th>CPU</th>
<th>Fan/Fanless</th>
<th>Display</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232/422/485</th>
<th>Storage</th>
<th>Expansion slot</th>
<th>TPM</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
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</thead>
<tbody>
<tr>
<td>GENESYSM-TGU6-A10-0001</td>
<td>i7-1185G7E</td>
<td>Cooler</td>
<td>DP x 2, TypeC DP x 1</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 2 x 4</td>
<td>SATA x 1</td>
<td>M.2 M Key 2280</td>
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<td>9~36 V</td>
<td>0~50°C</td>
<td>nano SIM</td>
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<tr>
<td>GENESYSM-TGU6-A10-0002</td>
<td>i5-1145G7E</td>
<td>Cooler</td>
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<td>GbE x 1</td>
<td>USB 3.2 Gen 2 x 4</td>
<td>SATA x 1</td>
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<td>9~36 V</td>
<td>0~50°C</td>
<td>nano SIM</td>
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<tr>
<td>GENESYSM-TGU6-A10-0003</td>
<td>i3-1115G4E</td>
<td>Cooler</td>
<td>DP x 2, TypeC DP x 1</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 2 x 4</td>
<td>SATA x 1</td>
<td>M.2 M Key 2280</td>
<td>2.0</td>
<td>9~36 V</td>
<td>0~50°C</td>
<td>nano SIM</td>
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</tr>
<tr>
<td>GENESYSM-TGU6-A10-0004</td>
<td>Celeron® 6305E</td>
<td>Cooler</td>
<td>DP x 2, TypeC DP x 1</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 2 x 4</td>
<td>SATA x 1</td>
<td>M.2 M Key 2280</td>
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<td>9~36 V</td>
<td>0~50°C</td>
<td>nano SIM</td>
<td></td>
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</tbody>
</table>
# SubCompact Boards

**GENE-CML5**

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

## Features

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

## Specifications

### System

<table>
<thead>
<tr>
<th>CPU</th>
<th>Intel® 10th Generation Core™/Pentium®/Celeron® processor:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>i7-10700TE (8C/16T, 2.00 GHz, up to 4.40 GHz, TDP-up 35W)</td>
</tr>
<tr>
<td></td>
<td>i5-10500TE (6C/12T, 2.30 GHz, up to 3.70 GHz, TDP-up 35W)</td>
</tr>
<tr>
<td></td>
<td>i3-10100TE (4C/8T, 2.30 GHz, up to 3.60 GHz, TDP-up 35W)</td>
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<tr>
<td></td>
<td>G6400TE (4C/4T, 3.60 GHz, TDP-up 35W)</td>
</tr>
<tr>
<td></td>
<td>G5900TE (2C/2T, 3.00 GHz, TDP-up 35W)</td>
</tr>
</tbody>
</table>

### Chipset

- Intel® Q470E / H420E / Q470

### Memory Type

- DDR4 up to 2933MHz Dual Channel SODIMM x 2, up to 64GB, Non-ECC

### Power Requirement

- +12V

## Optional Accessories

### Part Number

<table>
<thead>
<tr>
<th>Description</th>
<th>QTY per Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>SATA Cable, W/LOCK, 46cm</td>
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</tr>
<tr>
<td>Power Cable, 15cm</td>
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<td>USB Cable, 10cm</td>
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<tr>
<td>COM Cable, 12cm</td>
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<td>Audio Jack Cable, 25cm</td>
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## Packing List

### Part Number

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<th>Description</th>
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<td>GENE-CML5</td>
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<tr>
<td>TH1CML5010</td>
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<tr>
<td>TH6CML5010</td>
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## Notes

- All specifications are subject to change without notice.

---

[Image of board diagram]

---

**Packing List**

- GENE-CML5
- GENE-CML5 MB
- TH1CML5010 CPU Cooler
- TH6CML5010 CPU Cooler Backplate
Block Diagram

Dimension

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>PCH</th>
<th>Display</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232/422/485</th>
<th>Storage</th>
<th>Expansion slot</th>
<th>TPM</th>
<th>Power</th>
<th>Operating Temp</th>
</tr>
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<tbody>
<tr>
<td>GENE-CML5-A10-0011</td>
<td>FCLGA1200 (Socket Type:1PF0 up to 35W)</td>
<td>Q470E</td>
<td>DP + x1</td>
<td>VGA x 1</td>
<td>QGE x 2</td>
<td>USB3.2 Gen2 x 2 USB2.0 x 4</td>
<td>SATA x 2</td>
<td>M.2 2280 M Key x 1</td>
<td>TPM2.0</td>
<td>12V</td>
<td>0°C ~60°C</td>
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<tr>
<td>GENE-CML5-A10-0012</td>
<td>FCLGA1200 (Socket Type:1PF0 up to 35W)</td>
<td>H420E</td>
<td>DP + x1</td>
<td>VGA x 1</td>
<td>QGE x 2</td>
<td>USB3.2 Gen2 x 2 USB2.0 x 4</td>
<td>SATA x 2</td>
<td>M.2 2280 M Key x 1</td>
<td>TPM2.0</td>
<td>12V</td>
<td>0°C ~60°C</td>
</tr>
</tbody>
</table>
GENESYS-CML5

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

Specifications

SYSTEM
- FORM FACTOR: 3.5” SubCompact Board System
- CPU: Intel® 10th Generation Core™/Pentium/Celeron SoC
  - i7-10700TE (8C/16T, 2.00 GHz, up to 4.40 GHz, TDP 35W)
  - i5-10500TE (6C/12T, 2.30 GHz, up to 3.70 GHz, TDP 35W)
  - i3-10100TE (4C/8T, 2.30 GHz, up to 3.40 GHz, TDP 35W)
  - G6400TE (2C/4T, 3.20 GHz, TDP 35W)
  - G5900TE (2C/2T, 3.00 GHz, TDP 35W)

CHIPSET: Integrated with Intel® SoC

MEMORY TYPE: DDR4 up to 2933MHz Dual Channel, SODIMM x 2, up to 64GB, Non-ECC

BIOS: UEFI

WATCHDOG TIMER: 255 Levels

RTC Battery: Lithium Battery 3V/240mAH

DIMENSION: 8.27” x 5.28” x 3.23” (210mm x 134mm x 82mm)

OS Support: Windows 10 (64bit)
            Linux Ubuntu 20.04.1/Kernel 5.4

POWER
- POWER REQUIREMENT: +12V
- POWER SUPPLY TYPE: ATX
- CONNECTOR: DC Jack Connector
- POWER CONSUMPTION: Intel® i7-10700TE, DDR4 3200MHz 32GB x2, 5.64A @ +12V (Typical)
                        Intel® i7-10700TE, DDR4 3200MHz 32GB x2, 10.63A @ +12V (Max)

DISPLAY
- CONTROLLER: Intel® HD Graphics 610/630
- VGA: Display Interface DP + x 1 VGA + 1
- Multiple Display: 2 Simultaneous Displays
- CODEC —
- AUDIO INTERFACE —
- Speaker —

EXTERNAL I/O
- ETHERNET: Intel® i210, RJ45 x 1
  - Intel® i219, RJ45 x 1 (support vPro on i5/i7 processors with Q470E)
- USB: USB 2.0 front panel
- COM x 2
- DP
- VGA
- LAN x 2
- USB 3.0 x 2
- DC

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

Optional Accessories

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

Packing List
- GENESYS-CML5

Note: All specifications are subject to change without notice.
Block Diagram

- Intel® Comet Lake S LGA 1200 Socket
- Channel A
  - DP++
  - VGA
  - USB 3.2 Gen2 *2
  - SATA *2
  - PCIe [x4] *1
- Channel B
  - DP++
  - VGA
  - USB 3.2 Gen2 *2
  - SATA *2
  - PCIe [x4] *1

Intel® PCH Q470E/H420E
- INTEL Q87 Ethernet (I219)
- INTEL Q170 Ethernet (I211)
- RJ-45
- M.2 M Key (2280)
- BIOS
- Super I/O
- UART *1

Dimension
Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>PCH</th>
<th>Memory</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232/422/485</th>
<th>Expansion slot</th>
<th>TPM</th>
<th>Power</th>
<th>Operating Temp</th>
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</thead>
<tbody>
<tr>
<td>GENESYS-CML5-A10-0001</td>
<td>FCLGA1200</td>
<td>Q470E</td>
<td>Memory Slot x 2</td>
<td>SAT x 1</td>
<td>SATA x 2</td>
<td>INTEL Q87 Ethernet (I219)</td>
<td>0</td>
<td>M.2 2280 M Key x 1</td>
<td>FPC(x4) x 1</td>
<td>TPM2.0</td>
<td>12V</td>
<td>0°C – 50°C</td>
</tr>
<tr>
<td>GENESYS-CML5-A10-0002</td>
<td>FCLGA1200</td>
<td>Q470E</td>
<td>Memory Slot x 2</td>
<td>SAT x 1</td>
<td>SATA x 2</td>
<td>INTEL Q170 Ethernet (I211)</td>
<td>0</td>
<td>M.2 2280 M Key x 1</td>
<td>FPC(x4) x 1</td>
<td>TPM2.0</td>
<td>12V</td>
<td>0°C – 50°C</td>
</tr>
<tr>
<td>GENESYS-CML5-A10-A03</td>
<td>FCLGA1200</td>
<td>Q470E</td>
<td>DDR4 x 2</td>
<td>SAT x 1</td>
<td>SATA x 2</td>
<td>INTEL Q87 Ethernet (I219)</td>
<td>2</td>
<td>Modular x 2280 x 1</td>
<td>FPC(x4) x 1</td>
<td>TPM2.0</td>
<td>12V</td>
<td>0°C – 50°C</td>
</tr>
</tbody>
</table>
**GENE-WHU6**

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

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

### Specifications

#### SYSTEM
- **FORM FACTOR**: 3.5” SubCompact Board
- **CPU**: Intel® 8th Generation Core™ /Celeron Processor:
  - Core i7-8665UE (4C/8T, 1.7GHz, up to 4.40GHz, TDP-up 25W)
  - Core i5-8365UE (4C/8T, 1.6GHz, up to 4.10GHz, TDP-up 25W)
  - Core i3-8145UE (2C/4T, 2.2GHz, up to 3.90GHz, TDP-up 25W)
  - Celeron 4305UE (2C/2T, 2.00GHz, TDP-up 15W)
- **CHIPSET**: Integrated with Intel® SoC
- **MEMORY TYPE**: DDR4 up to 2400MHz Dual Channel, SODIMM x 2, up to 64GB, Non-ECC
- **BIOS**: UEFI
- **WAKE ON LAN**: Yes
- **RTC BATTERY**: Lithium Battery 3V/240mAH
- **DIMENSION**: 5.75" x 4" (146mm x 101.7mm)
- **OS SUPPORT**: Windows 10 (64bit), Linux Ubuntu 21.04.0/Kernel 5.10

#### POWER
- **POWER REQUIREMENT**: +9-36V (Optional: +12V)
- **POWER SUPPLY TYPE**: ATX
- **CONNECTOR**: Phoenix 2-pin Connector
- **POWER CONSUMPTION**: Intel® i7-8665UE, DDR4 2400MHz 16GB x2, 4.83A@ +12V (TYPICAL), Intel® i7-8665UE, DDR4 2400MHz 16GB x2, 7.3A@ +12V (MAX)

#### DISPLAY
- **CONTROLLER**: Intel® UHD Graphics 610/620
- **LVDS/eDP**: LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080 (Optional: eDP1.4, up to 1920X1200)
- **DISPLAY INTERFACE**: HDMI2.0a x 1, up to 3840 x 2160
- **MULTIPLE DISPLAY**: Up to 3 simultaneous displays
- **AUDIO**: Realtek ALC892/893
- **CODEC**: Line-in/Line-out/MAC

#### ENVIRONMENT & CERTIFICATION
- **OPERATING TEMP.**: 32°F ~ 140°F (0°C ~ 60°C), WiTAS2 -40°F ~ 185°F (-40°C ~ 85°C)
- **STORAGE TEMP.**: -40°F ~ 185°F (-40°C ~ 85°C)
- **OPERATING HUMIDITY**: 0% ~ 90% relative humidity, non-condensing
- **MTBF (HOURS)**: 354,194
- **EMC**: CE/FCC Class A

### Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY per Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>1702150155</td>
<td>SATA Power Cable, 15cm</td>
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<tr>
<td>1709070500</td>
<td>SATA CABLE, 50cm</td>
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<tr>
<td>170204010R</td>
<td>Power Cable, 10cm</td>
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<tr>
<td>1709100254</td>
<td>Audio JACK Cable, 25cm</td>
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<td>170220020B</td>
<td>ATX Power Cable, 20cm</td>
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<tr>
<td>1701090150</td>
<td>COM Cable, 15cm</td>
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<tr>
<td>170050207</td>
<td>USB Cable, 20cm</td>
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<tr>
<td>1701005007</td>
<td>USB Cable, 20cm</td>
<td>2</td>
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<tr>
<td>GENE-WHU6-FAN01</td>
<td>CPU Cooler:146x75.5x17.5mm, 3P 3600RPM</td>
<td>1</td>
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<tr>
<td>GENE-WHU6-FAN02</td>
<td>CPU Cooler:146x75.5x17.5mm, 3P 4800RPM</td>
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<tr>
<td>GENE-WHU6-HSK01</td>
<td>Heatsink:146X101.6X32.5mm, Silver for i3 &amp; Celeron</td>
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<tr>
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<td>Heat Sink:72x28X10mm, SODIMM DDR4</td>
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<td>Heat Sink:146x101.6x45.5mm</td>
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### Packing List

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<td>M10WHU6000</td>
<td>Heat spreader</td>
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Note: All specifications are subject to change without notice.
Block Diagram

Intel® Whiskey Lake / SoC

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 1) M.2 2280 B Key x1 M.2 2230 E Key x1  9~36V  0°C – 60°C  DIO x 8, nano SIM, Touch Controller
GENE-WHU6-A11-0002    Intel® i5-8365UE  VGA+HDMI+LVDS  GbE x 2       USB 3.2 Gen 2 x 4  2          SATA x 1  mSATA(Full size 1) M.2 2280 B Key x1 M.2 2230 E Key x1  9~36V  0°C – 60°C  DIO x 8, nano SIM, Touch Controller
GENE-WHU6-A11-0003    Intel® i3-8145UE  VGA+HDMI+LVDS  GbE x 2       USB 3.2 Gen 2 x 4  2          SATA x 1  mSATA(Full size 1) M.2 2280 B Key x1 M.2 2230 E Key x1  9~36V  0°C – 60°C  DIO x 8, nano SIM, Touch Controller
GENE-WHU6-A11-0004    Intel® Celeron 4305UE  VGA+HDMI+LVDS  GbE x 2       USB 3.2 Gen 2 x 4  2          SATA x 1  mSATA(Full size 1) M.2 2280 B Key x1 M.2 2230 E Key x1  9~36V  0°C – 60°C  DIO x 8, nano SIM, Touch Controller
GENE-WHU6W2-A11-0001    Intel® i7-8665UE  VGA+HDMI+LVDS  GbE x 2       USB 3.2 Gen 2 x 4  2          SATA x 1  mSATA(Full size 1) M.2 2280 B Key x1 M.2 2230 E Key x1  12V  WiTAS2 (-40~85°C)  DIO x 8, nano SIM, Touch Controller

Note: All specifications are subject to change without notice.
### Features
- Intel® Core™ 17/15/i3/Celeron Processor SoC
- Non-ECC DDR4 SODIMM Slot x 2, up to 64GB
- VGA x 1, HDMI 2.0 x 1
- GbE x 2, SATA III x 1
- USB 3.2 Gen 2 x 4 (Up to Gen 2), RS-232/422/485 x 2
- Full size mSATA/mPCIe Slot x 1 (With Nano-SIM)
- M.2 B Key 2280 x 1, M.2 E Key 2230 x 1
- Wide DC Input 9-36V (Optional: 12V Only)

### 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

**WATCHDOG TIMER**
- 255 Levels

**SECURITY**
- RTC Battery: Lithium Battery 3V/240mAh
- DIMENSION: 7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)

**OS Support**
- Windows 10 (64bit)
  - Linux Ubuntu 21.04.0/Kernel 5.1

**POWER**
- **POWER REQUIREMENT**: +9-36V (Optional: +12V)

**DISPLAY**
- **CONTROLLER**: Intel® UHD Graphics 610/620

**INTERNAL I/O**
- **USB**: USB 3.2 Gen 2 x 2
- **VGA**: VGA x 1, HDMI x 1
- **LAN**: LAN x 2
- **Power Button**: Power Button
- **FAN**: DC Fan x 1 (Optional: Smart Fan)
- **SIM**: Nano SIM x 1
- **Front Panel**: PWR LED, Power Button

**EXPANSION**
- **Mini PCI-E/mSATA**: Full-size mSATA/mPCIe Slot x 1
  - (Default: mSATA, select by BIOS)
  - M.2 B-Key 2280 x 1 (PCIe x 2, SATA, USB 2.0, selected by BIOS)
  - E-Key 2230 x 1 (PCIe, USB 2.0)

**ENVIRONMENT & CERTIFICATION**
- **OPERATING TEMP**: 32°F ~ 122°F (0°C ~ 50°C)
- **STORAGE TEMP**: -40°F ~ 185°F (-40°C ~ 85°C)
- **OPERATING HUMIDITY**: 0% ~ 90% relative humidity, non-condensing
- **MTBF (HOURS)**: 354,194
- **EMC**: CE/FCC Class A

### Packing List
- **GENESYS-WHU6**: 1
- **GENESYS-WHU6-HDD1**: 1
- **GENESYS-WHU6-WMT1**: 1
- **GENESYS-WHU6-VESA1**: 1

### Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
</tr>
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<tbody>
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<td>TFDDR4.4GB.DDR4 SODIMM 2666MT/s.512Mb x8 SAMSUNG. KAA4G045W.XY260P.MNIE06.K4540-4GSSNCK26-26</td>
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<tr>
<td>968D4008GW</td>
<td>TFDDR4.8GB.SODIMM 2666MT/s.512Mb x8 SAMSUNG. KAA4G045W.XY260P.MNIE06.K4540-8GSSNCK26-26</td>
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</tr>
<tr>
<td>968C5622</td>
<td>2.5” Sata SSD 256GB. MLC. -10~80C.Transced.S252S65SSD490K-AA</td>
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<tr>
<td>968C512G06</td>
<td>2.5” Sata SSD 512GB. MLC. -10~80C.Transced.S512S25SSD490K-AA</td>
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<td>125530606Z</td>
<td>Power Adapter. 12V.5A.6W. FSP060-DHAN3</td>
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<td>1255310060</td>
<td>Power Adapter. 12V.5A.9W. FSP060-DHAN3</td>
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<td>170203180Z</td>
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<td>170203180E</td>
<td>Power Cord (Europe)</td>
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<tr>
<td>170203180J</td>
<td>Power Cord (Japan)</td>
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</tr>
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</table>

Note: All specifications are subject to change without notice.
**Block Diagram**

![Block Diagram](image)

**Dimension**

Unit: mm

![Dimension](image)

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Fan/Fanless</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/422/485</th>
<th>Expansion Slot</th>
<th>Power</th>
<th>Power Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENESYS-WHU6-A11-0001</td>
<td>i3-8145UE</td>
<td>Cooler</td>
<td>VGA x 1</td>
<td>mSATA x 1</td>
<td>GBE x 1</td>
<td>—</td>
<td>2</td>
<td>M.2 E key 2230 x 1</td>
<td>9 ~ 36V</td>
<td>0°C ~ 50°C</td>
<td>Nano SW</td>
<td></td>
</tr>
<tr>
<td>GENESYS-WHU6-A11-0002</td>
<td>i5-8365UE</td>
<td>Cooler</td>
<td>VGA x 1</td>
<td>mSATA x 1</td>
<td>GBE x 1</td>
<td>—</td>
<td>2</td>
<td>M.2 E key 2230 x 1</td>
<td>9 ~ 36V</td>
<td>0°C ~ 50°C</td>
<td>Nano SW</td>
<td></td>
</tr>
<tr>
<td>GENESYS-WHU6-A11-0003</td>
<td>i7-8665UE</td>
<td>Cooler</td>
<td>VGA x 1</td>
<td>mSATA x 1</td>
<td>GBE x 1</td>
<td>—</td>
<td>2</td>
<td>M.2 E key 2230 x 1</td>
<td>9 ~ 36V</td>
<td>0°C ~ 50°C</td>
<td>Nano SW</td>
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</tr>
<tr>
<td>GENESYS-WHU6-A11-0004</td>
<td>4305GUE</td>
<td>Cooler</td>
<td>VGA x 1</td>
<td>mSATA x 1</td>
<td>GBE x 1</td>
<td>—</td>
<td>2</td>
<td>M.2 E key 2230 x 1</td>
<td>9 ~ 36V</td>
<td>0°C ~ 50°C</td>
<td>Nano SW</td>
<td></td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
**GENE-KBU6**
3.5” SubCompact Board with 7th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC

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

### Specifications

**SYSTEM**
- **FORM FACTOR**: 3.5” SubCompact Board
- **CPU**:
  - Intel® 7th Generation Core™ /Celeron Processor:
    - Intel® i7-7600U (2C/4T, 2.80GHz, up to 3.90GHz, TDP-up 25W)
    - Intel® i5-7300U (2C/4T, 2.60GHz, up to 3.50GHz, TDP-up 25W)
    - Intel® i3-7100U (2C/4T, 2.40GHz, TDP-up 25W)
    - Intel® Celeron 3965U (2C/2T, 2.20GHz, TDP-up 15W)
- **CHIPSET**: Integrated with Intel® SoC
- **MEMORY TYPE**: DDR4 up to 2133MHz, SODIMM x 1, up to 16GB, Non-ECC
- **BIOS**: UEFI
- **WAKE ON LAN**: Yes
- **WATCHDOG TIMER**: 255 Levels
- **SECURITY**: TPM 2.0 (Optional)
- **RTC BATTERY**: Lithium Battery 3V/240mAh
- **DIMENSION**: 5.75” x 4” (146mm x 101.7mm)
- **OS SUPPORT**: Windows 10 (64bit), Linux Ubuntu 21.04.0/Kernel 5.10

**POWER**
- **POWER REQUIREMENT**: +9-36V (Optional: +12V)
- **POWER SUPPLY TYPE**: 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: LVDS x 1 + VGA (with VGA signal)
- **MULTIPLE DISPLAY**: Up to 3 Simultaneous Displays

**AUDIO**
- **CODEC**: Realtek ALC897/892
- **AUDIO INTERFACE**: Line-in/Line-out/MIC
- **SPEAKER**: —

**EXTERNAL I/O**
- **ETHERNET**: Intel® i210/211, 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

### Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY by Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700050207</td>
<td>USB Cable, 20cm</td>
<td>2</td>
</tr>
<tr>
<td>1701090150</td>
<td>Com Cable, 15cm</td>
<td>4</td>
</tr>
<tr>
<td>1709100254</td>
<td>PHONE JACK Cable, 25cm</td>
<td>1</td>
</tr>
<tr>
<td>1702150155</td>
<td>SATA Power Cable, 15cm</td>
<td>1</td>
</tr>
<tr>
<td>170220020B</td>
<td>ATX Power Cable, 20cm</td>
<td>1</td>
</tr>
<tr>
<td>170204010R</td>
<td>Power Cable, 10cm</td>
<td>1</td>
</tr>
<tr>
<td>1708860000</td>
<td>CPU Cooler, 3P, 5000RPM</td>
<td>1</td>
</tr>
<tr>
<td>GENE-KBU6-FC</td>
<td>Heatsink, 146 x 101.6 x 29mm</td>
<td>1</td>
</tr>
<tr>
<td>GENE-KBU6-HSK03</td>
<td>Heatsink for DDR4 SO-DIMM.72 x 26 x 10mm.</td>
<td>1</td>
</tr>
</tbody>
</table>

### Packing List

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENE-KBU6</td>
<td>GENE-KBU6 MB</td>
<td>1</td>
</tr>
<tr>
<td>M10SKU6000</td>
<td>Heat Spreader</td>
<td>1</td>
</tr>
</tbody>
</table>
Gene-KBU6

Block Diagram

Dimension Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Display</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/422/485</th>
<th>Storage</th>
<th>Expansion Slot</th>
<th>TPM</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENE-KBU-A11-0001</td>
<td>Intel® Core™ i7-7600U</td>
<td>DP+LVDS+DVI*O</td>
<td>GBE x 2</td>
<td>USB3.0 Gen*1 + 4</td>
<td>2</td>
<td>3</td>
<td>SATA x 1, mSATA x 1 (half size)</td>
<td>MiniCard x 1 (Full)</td>
<td>2.0</td>
<td>9–36V</td>
<td>0°C – 60°C</td>
<td>Touch Controller, SIM, DIO x 8, SMBUS</td>
</tr>
<tr>
<td>GENE-KBU-A11-0002</td>
<td>Intel® Core™ i5-7300U</td>
<td>DP+LVDS+DVI*O</td>
<td>GBE x 2</td>
<td>USB3.0 Gen*1 + 4</td>
<td>2</td>
<td>3</td>
<td>SATA x 1, mSATA x 1 (half size)</td>
<td>MiniCard x 1 (Full)</td>
<td>2.0</td>
<td>9–36V</td>
<td>0°C – 60°C</td>
<td>Touch Controller, SIM, DIO x 8, SMBUS</td>
</tr>
<tr>
<td>GENE-KBU-A11-0003</td>
<td>Intel® Core™ i3-7100U</td>
<td>DP+LVDS+DVI*O</td>
<td>GBE x 2</td>
<td>USB3.0 Gen*1 + 4</td>
<td>2</td>
<td>3</td>
<td>SATA x 1, mSATA x 1 (half size)</td>
<td>MiniCard x 1 (Full)</td>
<td>2.0</td>
<td>9–36V</td>
<td>0°C – 60°C</td>
<td>Touch Controller, SIM, DIO x 8, SMBUS</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.

www.aaeon.com
GENESIS-KBU6
3.5” SubCompact Board System with 7th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC

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
WATCHDOG TIMER 255 Levels
SECURITY TPM 2.0 (Optional)
RTC Battery Lithium Battery 3V/240mAh
DIMENSION 6.69” x 5.39” x 1.91” (170mm x 137mm x 48.5mm)
OS Support Windows 10 (64bit)
Linux Ubuntu 21.04.0/Kernel 5.10

POWER
POWER REQUIREMENT +9-36V (Optional: +12V)
POWER SUPPLY TYPE ATX
CONNECTOR DC Jack Connector
POWER CONSUMPTION Intel® i7-7600U, DDR4 2400MHz 16GB, 1.85A@ +12V (Typical)

DISPLAY
CONTROLLER Intel® HD Graphics 610/620
LVDS/eDP —
Display interface DVI-D 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 DVI x 1

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

Packing List
- GENESYS-KBU6

Optional Accessories
- GENESYS-KBU6-HDD1 HDD Kit. For GENESYS-KBU6
- GENESYS-KBU6-WMT1 Wall Mount Kit. For GENESYS-KBU6
- GENESYS-KBU6-VESA1 VESA Mount Kit. For GENESYS-KBU6

Note: All specifications are subject to change without notice.
Block Diagram

**Genesys-KBU6**

**SubCompact Board System**

**Dimension Unit: mm**

**Ordering Information**

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

Note: All specifications are subject to change without notice.
### 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

### Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Intel® 6th Generation Core™/Celeron Processor:</td>
</tr>
<tr>
<td></td>
<td>- Intel® i7-6600U (2C/4T, 2.6GHz, up to 3.4GHz, TDP-up 25W)</td>
</tr>
<tr>
<td></td>
<td>- Intel® i5-6300U (2C/4T, 2.4GHz, up to 3.0GHz, TDP-up 25W)</td>
</tr>
<tr>
<td></td>
<td>- Intel® i3-6100U (2C/4T, 2.3GHz, TDP-up 25W)</td>
</tr>
<tr>
<td></td>
<td>- Intel® Celeron 3955U (2C/2T, 2.20GHz, TDP-up 15W)</td>
</tr>
<tr>
<td>Chipset</td>
<td>Integrated with Intel® SoC</td>
</tr>
<tr>
<td>Memory Type</td>
<td>DDR4 up to 2133MHz, S0DIMM x 1, up to 16GB, Non-ECC</td>
</tr>
<tr>
<td>BIOS</td>
<td>UEFI</td>
</tr>
<tr>
<td>Wake On LAN</td>
<td>Yes</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>255 Levels</td>
</tr>
<tr>
<td>Security</td>
<td>TPM 2.0 (Optional)</td>
</tr>
<tr>
<td>RTC Battery</td>
<td>Lithium Battery 3v/240mAh</td>
</tr>
<tr>
<td>Dimension</td>
<td>5.75” x 4” (146mm x 101.7mm)</td>
</tr>
<tr>
<td>OS Support</td>
<td>Windows 7/10 (64bit)</td>
</tr>
<tr>
<td>Power</td>
<td>+9-36V (Optional: +12V)</td>
</tr>
<tr>
<td>Power Supply Type</td>
<td>AT/ATX</td>
</tr>
<tr>
<td>Connector</td>
<td>Phoenix 2-Pin Connector</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>Intel® i7-6600U, DDR4 2666MHz 32GB, 3.42Aper +12V(Typical), Intel® i5-6300U, DDR4 2666MHz 32GB, 4.24Aper +12V(MAX)</td>
</tr>
<tr>
<td>Display</td>
<td>Controller: Intel® HD Graphics 510/520</td>
</tr>
<tr>
<td>LVS/EDP</td>
<td>LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080</td>
</tr>
<tr>
<td>Display Interface</td>
<td>Default: DVI-D x 1 (up to 3840 x 2160); DVI-D x 1 (Optional: DVI-D x 1 with VGA signal)</td>
</tr>
<tr>
<td>Multiple Display</td>
<td>Up to 3 Simultaneous Displays</td>
</tr>
<tr>
<td>Audio</td>
<td>Codec: Realtek ALC897/92</td>
</tr>
<tr>
<td>Audio Interface</td>
<td>Line-in/Line-out/UMIC</td>
</tr>
<tr>
<td>Speaker</td>
<td>—</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Intel® i210/211, 10/100/1000Base-TX, RJ-45 x 2</td>
</tr>
<tr>
<td>USB</td>
<td>USB 3.2 Gen 1 x 4</td>
</tr>
<tr>
<td>Serial Port</td>
<td>—</td>
</tr>
<tr>
<td>Video</td>
<td>DP1.2 x 1, DVI-I x 1</td>
</tr>
<tr>
<td>Internal I/O</td>
<td>USB 2.0 x 2</td>
</tr>
<tr>
<td></td>
<td>Serial Port: COM1(RS232), COM2, COM3, COM4(RS232/422/485, support 5V/12V/RL)</td>
</tr>
<tr>
<td></td>
<td>Video: LVDS x 1</td>
</tr>
</tbody>
</table>

### Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY by Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700050207</td>
<td>USB Cable, 20cm</td>
<td>2</td>
</tr>
<tr>
<td>1700190150</td>
<td>Com Cable, 15cm</td>
<td>4</td>
</tr>
<tr>
<td>1709100254</td>
<td>PHONE JACk Cable, 25cm</td>
<td>1</td>
</tr>
<tr>
<td>1702150155</td>
<td>SATA Power Cable, 15cm</td>
<td>1</td>
</tr>
<tr>
<td>170220020B</td>
<td>ATX Power Cable, 20cm</td>
<td>1</td>
</tr>
<tr>
<td>170204010R</td>
<td>Power Cable, 10cm</td>
<td>1</td>
</tr>
<tr>
<td>GENESKIU6-FAN01</td>
<td>CPU Cooler, 3P, 5000RPM</td>
<td>1</td>
</tr>
<tr>
<td>GENESKIU6-HSK01</td>
<td>Heatsink, 146 x 80 x 14mm</td>
<td>1</td>
</tr>
<tr>
<td>GENESKIU6-HSK02</td>
<td>Heatsink, 146 x 101.6 x 29mm</td>
<td>1</td>
</tr>
<tr>
<td>GENESKIU6-HSK03</td>
<td>Heatsink for DDR4 SO-DIMM, 72 x 28 x 10mm</td>
<td>1</td>
</tr>
</tbody>
</table>

### Packing List

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
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<tbody>
<tr>
<td>GENESKIU6</td>
<td>GENESKIU6 MB</td>
<td>1</td>
</tr>
<tr>
<td>M10SKIU6000</td>
<td>Heat Spreader</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
Block Diagram

DG4 SODIMM
16GB
USB3.2 Gen1*4
USB2.0*2
SATA 6.0Gb/s*1
Mini Card (Full)
BIO: PCIe*2, USB3.0*1, Line-out, SM Bus, LPC

Intel® SKYLAKE-U
15W

DDR4
DDR3
DDR2
USB2.0
USB2.0
SATA
PCIe/USB

Level shift
DP to VGA (Option)

DVI (DVI+VGA)

DP

LVDS

Audio Codec
HDA

Line-in, Line-out, MIC

Touch Controller, SIM, DIO x 8, SMBUS

Mini Card or mSATA (Half)

LAN
Giga LAN*2

PCM/SATA/USB

LAN I210 *2

PCIe

+9V ~ +36V
or
+12V

Dimension

Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Display</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/423/485</th>
<th>Storage</th>
<th>Expansion Slot</th>
<th>TPM</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENE-SKU6-A11-0001</td>
<td>Intel® Core™ i7-6600U</td>
<td>DP+LVDS+DVI*0</td>
<td>IDE x 2</td>
<td>USB0.0(x1) x 4</td>
<td>USB 2.0 x 2</td>
<td>1  3</td>
<td>SATA x 1</td>
<td>mSATA x 1 (half size)</td>
<td>MiniCard x 1 (Full)</td>
<td>2.0</td>
<td>5~36V</td>
<td>0°C ~ 60°C</td>
</tr>
<tr>
<td>GENE-SKU6-A11-0002</td>
<td>Intel® Core™ i5-6300U</td>
<td>DP+LVDS+DVI*0</td>
<td>IDE x 2</td>
<td>USB0.0(x1) x 4</td>
<td>USB 2.0 x 2</td>
<td>1  3</td>
<td>SATA x 1</td>
<td>mSATA x 1 (half size)</td>
<td>MiniCard x 1 (Full)</td>
<td>2.0</td>
<td>5~36V</td>
<td>0°C ~ 60°C</td>
</tr>
<tr>
<td>GENE-SKU6-A11-0003</td>
<td>Intel® Core™ i3-6100U</td>
<td>DP+LVDS+DVI*0</td>
<td>IDE x 2</td>
<td>USB0.0(x1) x 4</td>
<td>USB 2.0 x 2</td>
<td>1  3</td>
<td>SATA x 1</td>
<td>mSATA x 1 (half size)</td>
<td>MiniCard x 1 (Full)</td>
<td>2.0</td>
<td>5~36V</td>
<td>0°C ~ 60°C</td>
</tr>
<tr>
<td>GENE-SKU6W1-A11-0001</td>
<td>Intel® Core™ i7-6600U</td>
<td>DP+LVDS+DVI*0</td>
<td>IDE x 2</td>
<td>USB0.0(x1) x 4</td>
<td>USB 2.0 x 2</td>
<td>1  3</td>
<td>SATA x 1</td>
<td>mSATA x 1 (half size)</td>
<td>MiniCard x 1 (Full)</td>
<td>2.0</td>
<td>12V</td>
<td>-20°C ~ 70°C</td>
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</tbody>
</table>
GENE-SKU6 Rev. B
3.5” SubCompact Board with Intel® Core™ i7/i5/i3/Celeron® Processor SoC

Features
- Intel® Core™ i7/i5/i3/Celeron® Processor SoC
- DDR4 1866/2133, SODIMM x 1
- VGA, HDMI, 18/24-bit Dual Channel LVDS
- 2 CH Audio, 3W Speaker
- SATA 6.0 Gb/s x 1 & mSATA (Shared with Half-size Mini-Card and Selected by BIOS)
- Supports 8-bit Digital I/O, USB 2.0 x 2, USB 3.2 Gen 1 x 4
- COM x 4 (RS-232 x 1, RS-232/422/485 x 3)
- Mini-Card Slot x 1 (Shared with full-size mATA and Selected by BIOS), TPM
- Wide DC Support 9~36V, +12V Only (Optional)
- 4/5/8-wire Resistive Touch Screen Controller
- BIO Connector for Daughter Board (Optional)
- Solder Design for System Assembly and Thermal

Specifications

- SYSTEM
  - FORM FACTOR: 3.5” SubCompact Board
  - CPU: Intel® 6th Generation Core™ /Celeron Processor:
    - Intel® i7-6600U (2C/4T, 2.6GHz, up to 3.4GHz, TDP-up 25W)
    - Intel® i5-6300U (2C/4T, 2.4GHz, up to 3.0GHz, TDP-up 25W)
    - Intel® i3-6100U (2C/4T, 2.3GHz, TDP-up 25W)
    - Intel® Celeron 3955U (2C/2T, 2.20GHz, TDP-up 15W)
  - CHIPSET: Integrated with Intel® SoC
  - MEMORY TYPE: DDR4 up to 2133MHz, SODIMM x 1, up to 16GB, Non-ECC
  - BIOS: UEFI
  - WAKE ON LAN: Yes
  - WATCHDOG TIMER: 255 Levels
  - SECURITY: TPM 2.0 (Optional)
  - RTC BATTERY: Lithium Battery 3V/240mAh
  - DIMENSION: 5.75” x 4” (146mm x 101.7mm)
  - OS SUPPORT: Windows 7/10 (64bit)
  - Linux Ubuntu 21.04.0/Kernel 5.10

- POWER
  - POWER REQUIREMENT: +9-36V (Optional: +12V)
  - POWER SUPPLY TYPE: ATATX
  - CONNECTOR: Phoenix 2-pin Connector
  - POWER CONSUMPTION: Intel® i7-6600U, 6600U, DDR4 2400MHz 16GB, 0.73A at +36V

- DISPLAY
  - CONTROLLER: Intel® HD Graphics 510/520
  - LVDS/eDP: LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080
  - DISPLAY INTERFACE: VGA x1, Up to 1920 x 1200
  - HDMI1.4 x1, up to 4096 x 2304
  - MULTIPLE DISPLAY: Up to 3 Simultaneous Displays

- AUDIO
  - CODEC: Realtek ALC892/897
  - AUDIO INTERFACE: Line-in/Line-out/MIC
  - SPEAKER: 3W Amplifier (Optional)

- EXTERNAL I/O
  - ETHERNET: Intel® i210, 10/100/1000Base-TX, RJ-45 x 2
  - USB: USB 3.2 Gen 1 x 4
  - SERIAL PORT:
  - VIDEO: HDMI 1.4 x 1, VESA 1

- INTERNAL I/O
  - USB: USB 2.0 x 2
  - SERIAL PORT: COM1 (RS232)
  - VIDEO: LVDS x 1

- EXPANSION
  - Mini PCI-EmSATA: Full-size mSATA/mPCIe x 1 (Default mPCIe, select by BIOS)
  - Half-size mSATA/mPCIe x 1 (Default mSATA, select by BIOS)
  - M.2:
  - OTHERS: BIO 1 (optional)

- ENVIRONMENT & CERTIFICATION
  - OPERATING TEMP.: 32°F – 140°F (0°C ~ 60°C)
  - STORAGE TEMP.: -40°F ~ 176°F (-40°C ~ 80°C)
  - OPERATING HUMIDITY: 0% ~ 90% relative humidity, non-condensing
  - MTBF (HOURS): 371,039
  - EMC: CE/FCC Class A

Packaging List
- GENE-SKU6 with Heatspreader

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700050207</td>
<td>TF/USB CABLE 1*SP Pitch=1.25mm Housing:20cm for PFM-945C</td>
<td>2</td>
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<tr>
<td>170198150</td>
<td>TF/Cable 12P 180° Pitch=2.0mm for Power Cable, Select by BIOS</td>
<td>1</td>
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<tr>
<td>1702160150</td>
<td>TF/Cable 15P SODIMM Power 2.0mm Housing:15cm</td>
<td>1</td>
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<tr>
<td>1702200200</td>
<td>TF/Mini Card Slot 20P ATX(M) 4P 5.0mm Housing:20cm</td>
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<td>1702020010</td>
<td>TF/Cable 1*SP Pitch=1.25mm Housing:10cm for PFM-945C (12V only)</td>
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<tr>
<td>GENE-SKU6-FAN01</td>
<td>CPU Cooler, 3P, 5000RPM, A1.0, REV. A1.0</td>
<td>1</td>
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<tr>
<td>GENE-SKU6-HSK02</td>
<td>Heatsink, 146 x 101.6 x 25mm, Silver, for GENE-SKU6</td>
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<tr>
<td>GENE-SKU6-HSK03</td>
<td>Heat Sink, 72<em>28</em>10mm GENE-SKU6 SODIMM DDR4</td>
<td>1</td>
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</tbody>
</table>

Note: All specifications are subject to change without notice.
**Block Diagram**

**Dimension**

Unit: mm

**Ordering Information**

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<tr>
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<tbody>
<tr>
<td>GENE-SKU6-B12-0001</td>
<td>Intel® i7-6600U</td>
<td>Fanless</td>
<td>VGA+HDMI+LVDS</td>
<td>18/24-bit, 2CH</td>
<td>SATA x 1, mSATA x 1</td>
<td>GBE x 2</td>
<td>USB 3.2 Gen1 x 4</td>
<td>1</td>
<td>miniCard x 1 (Full-size)</td>
<td>9~36V 0°C ~ 60°C</td>
<td>Dual x 2, Touch Controller, TPM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GENE-SKU6-B12-0002</td>
<td>Intel® i5-6300U</td>
<td>Fanless</td>
<td>VGA+HDMI+LVDS</td>
<td>18/24-bit, 2CH</td>
<td>SATA x 1, mSATA x 1</td>
<td>GBE x 2</td>
<td>USB 3.2 Gen1 x 4</td>
<td>1</td>
<td>miniCard x 1 (Full-size)</td>
<td>9~36V 0°C ~ 60°C</td>
<td>Dual x 2, Touch Controller, TPM</td>
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</tr>
<tr>
<td>GENE-SKU6-B12-0003</td>
<td>Intel® i3-6100U</td>
<td>Fanless</td>
<td>VGA+HDMI+LVDS</td>
<td>18/24-bit, 2CH</td>
<td>SATA x 1, mSATA x 1</td>
<td>GBE x 2</td>
<td>USB 3.2 Gen1 x 4</td>
<td>1</td>
<td>miniCard x 1 (Full-size)</td>
<td>9~36V 0°C ~ 60°C</td>
<td>Dual x 2, Touch Controller, TPM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
SubCompact Boards with Intel® Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series Processors

Features

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

Specifications

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

USB
- USB Type-C x 2
- SERIAL PORT —
- VIDEO HDMI 2.0b x 1, DP1.4 x 1 (Optional VGA x 1)

INTERNAL I/O
- USB Type-C x 2
- SERIAL PORT —
- VIDEO HDMI 2.0b x 1, DP1.4 x 1 (Optional VGA x 1)

EXPANSION
- Mini PCI-EmSATA —
- M.2 E-Key 2230 x 1 (PCIe, USB2.0)
- B-Key 2242 x 1 (PCIe x 2/PCIe x 1, SATA select by BIOS, SATA select by BOM)
- B-Key 2280 x 1 (PCIe x 1/PCIe x 2, USB2.0, Default: PCIe x 2, Default: PCIe x 1 select by BIOS, SATA select by BOM)
- B-Key 3052 x 1 (USB3.2 Gen2)

ENVIROMENT & CERTIFICATION
- OPERATING TEMP. 32°F ~ 140°F (0°C ~ 60°C), WiTAS2 -40°F ~ 185°F (-40°C ~ 85°C)
- STORAGE TEMP. -40°F ~ 185°F (-40°C ~ 85°C)
- OPERATING HUMIDITY 0% ~ 90% relative humidity, non-condensing
- MTBF (HOURS) 335,427
- EMC CE/FCC Class A

Optional Accessories

Part Number | Description | QTY per Board
--- | --- | ---
170X000156 | Audio Cable, 25cm | 1
1709070500 | SATA Cable, 50cm | 1
1702150155 | SATA HDD Power, Cable 15cm | 1
1700100160 | USB 2.0 Cable, 10cm | 2
1702040100 | Power Cable, 10cm | 1
1708000317 | COM cable, 15cm | 1
1702290200 | ATX Power Cable, 20cm | 1

Packing List

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

Note: All specifications are subject to change without notice.
Block Diagram

SubCompact Boards

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Display</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232/422/485</th>
<th>Storage</th>
<th>Expansion Slot</th>
<th>TPM</th>
<th>Power</th>
<th>Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENE-EHL5-A10-0001</td>
<td>Celeron N6210</td>
<td>DP + x1, HDMI + x1, LVDS + x1</td>
<td>GbE x1</td>
<td>USB 3.2 Gen 2 x 2, USB 2.0 x 2</td>
<td>4</td>
<td>SATA x1</td>
<td>M.2 B-Key 2280 x1, M.2 B-Key 2242 x1, M.2 E-Key 2230 x1, M.2 B-Key 3052 x1</td>
<td>2.0</td>
<td>9~36V</td>
<td>0°C ~ 60°C</td>
<td>DIO x 16, nano SIM, Touch Controller, SMBUS</td>
</tr>
<tr>
<td>GENE-EHL5-A10-0002</td>
<td>Celeron N6210</td>
<td>DP + x1, HDMI + x1</td>
<td>GbE x1</td>
<td>USB 3.2 Gen 2 x 2, USB 2.0 x 2</td>
<td>4</td>
<td>SATA x1</td>
<td>M.2 B-Key 2280 x1, M.2 B-Key 2242 x1, M.2 E-Key 2230 x1, M.2 B-Key 3052 x1</td>
<td>2.0</td>
<td>9~36V</td>
<td>0°C ~ 60°C</td>
<td>DIO x 16, nano SIM, SMBUS</td>
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<tr>
<td>GENE-EHL5-A10-0003</td>
<td>Celeron J4127</td>
<td>DP + x1, HDMI + x1, LVDS + x1</td>
<td>GbE x1</td>
<td>USB 3.2 Gen 2 x 2, USB 2.0 x 2</td>
<td>4</td>
<td>SATA x1</td>
<td>M.2 B-Key 2280 x1, M.2 B-Key 2242 x1, M.2 E-Key 2230 x1, M.2 B-Key 3052 x1</td>
<td>2.0</td>
<td>9~36V</td>
<td>0°C ~ 60°C</td>
<td>DIO x 16, nano SIM, Touch Controller, SMBUS</td>
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<tr>
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<td>Celeron J4127</td>
<td>DP + x1, HDMI + x1</td>
<td>GbE x1</td>
<td>USB 3.2 Gen 2 x 2, USB 2.0 x 2</td>
<td>4</td>
<td>SATA x1</td>
<td>M.2 B-Key 2280 x1, M.2 B-Key 2242 x1, M.2 E-Key 2230 x1, M.2 B-Key 3052 x1</td>
<td>2.0</td>
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<td>USB 3.2 Gen 2 x 2, USB 2.0 x 2</td>
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<td>SATA x1</td>
<td>M.2 B-Key 2280 x1, M.2 B-Key 2242 x1, M.2 E-Key 2230 x1, M.2 B-Key 3052 x1</td>
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<td>9~36V</td>
<td>0°C ~ 60°C</td>
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<td>SATA x1</td>
<td>M.2 B-Key 2280 x1, M.2 B-Key 2242 x1, M.2 E-Key 2230 x1, M.2 B-Key 3052 x1</td>
<td>2.0</td>
<td>9~36V</td>
<td>0°C ~ 60°C</td>
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<td>SATA x1</td>
<td>M.2 B-Key 2280 x1, M.2 B-Key 2242 x1, M.2 E-Key 2230 x1, M.2 B-Key 3052 x1</td>
<td>2.0</td>
<td>9~36V</td>
<td>0°C ~ 60°C</td>
<td>DIO x 16, nano SIM, Touch Controller, SMBUS</td>
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<tr>
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<td>DP + x1, HDMI + x1</td>
<td>GbE x1</td>
<td>USB 3.2 Gen 2 x 2, USB 2.0 x 2</td>
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<td>SATA x1</td>
<td>M.2 B-Key 2280 x1, M.2 B-Key 2242 x1, M.2 E-Key 2230 x1, M.2 B-Key 3052 x1</td>
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<td>Atom x6405E</td>
<td>DP + x1, HDMI + x1, LVDS + x1</td>
<td>GbE x1</td>
<td>USB 3.2 Gen 2 x 2, USB 2.0 x 2</td>
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<td>SATA x1</td>
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<td>2.0</td>
<td>9~36V</td>
<td>0°C ~ 60°C</td>
<td>DIO x 16, nano SIM, Touch Controller, SMBUS</td>
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</tbody>
</table>

Note: All specifications are subject to change without notice.

www.aaeon.com

06-26
# SubCompact Board System

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

### Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>3.5” SubCompact Board System</td>
</tr>
</tbody>
</table>
| CPU | Intel® Atom® x6425E (4C, 2.0GHz, up to 3GHz, TDP-up 12W)  
Intel® Celeron® J6412 (4C, 2.0GHz, up to 3GHz, TDP-up 10W)  
Intel® Celeron® N6210 (2C, 1.2GHz, up to 3GHz, TDP-up 6.5W) |
| Chipset | Integrated with Intel® SoC |
| Memory Type | DDR4 up to 3200 Hz, SODIMM x 1, up to 32GB, in band ECC |
| BIOS | UEFI |
| Wake On LAN | Yes |
| Watchdog Timer | 255 Levels |
| Security | TPM2.0 |
| Dimension | 7.00” x 5.28” x 2.08” (178mm x 134.1mm x 53mm) |
| OS Support | Windows 10 (64bit)  
Linux Ubuntu 20.04.3(IOT)/Kernel 5.13 |
| Power Requirement | -12V/+9-36V |
| Power Supply Type | ATX |
| Connector | DC Jack Connector |
| Power Consumption | Intel® AtomTM x6425E, DDR4 32GB, 3.26A@+12V(balance), 3.26A@+12V(Typical)  
Intel® AtomTM x6425E, DDR4 32GB, 3.26A@+12V(balance), 3.42A@+12V(Max) |
| Display Controller | Intel® UHD Graphics for 10th Gen Intel® Processors |
| Display Interface | HDMI2.0b x 1, up to 4K 60Hz  
VGA x 1 |
| Multiple Display | Up to 2 Simultaneous Displays |
| Audio Code | Realtek ALC897 |
| Audio Interface | Line-in/Line-out/MIC |
| Speaker | 2W Speaker |
| Ethernet | Intel® i210, 10/100/1000Base x 2 |
| USB | USB3.2 Gen 2 x 2  
USB2.0 x 2 |
| Serial Port | COM1, COM2 (RS232/422/485, supports 5V/12V/RI) |

### Features

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

### Optional Accessories

- TBD

### Packing List

- GENESYSM-EHL5

---

*Note: All specifications are subject to change without notice.*
**GenesysM-EHL5**

**Block Diagram**

- **Intel® Atom ELKHART LAKE**
- **DDR4 SO-DIMM x1**
- **RJ-45**
- **Intel® GbE Ethernet DIO**
- **M.2 2230 E-key**
- **SATA III *1**
- **BIOS**
- **TPM**
- **PSE**
- **COM1 ~ 2 (RS232/422/485)**
- **Super I/O**

**Dimension**

Unit: mm

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Fan/Fanless</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232/422/485</th>
<th>Expansion slot</th>
<th>TPM</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
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</thead>
<tbody>
<tr>
<td>GENESYSM-EHL5-A10-0001</td>
<td>N6260</td>
<td>HeatSink</td>
<td>HDMI x 1</td>
<td>SATA x 1</td>
<td>G&amp; E x 2</td>
<td>USB 3.2 Gen 2 x 2 USB 2.0 x 2</td>
<td>2</td>
<td>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</td>
<td>2.0 12V 0~50˚C</td>
<td>Nano SIM, DIO, 50W, 10W, Audio</td>
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<td></td>
</tr>
<tr>
<td>GENESYSM-EHL5-A10-0002</td>
<td>J6412</td>
<td>HeatSink</td>
<td>HDMI x 1</td>
<td>SATA x 1</td>
<td>G&amp; E x 2</td>
<td>USB 3.2 Gen 2 x 2 USB 2.0 x 2</td>
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<td>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</td>
<td>2.0 9<del>36V 0</del>50˚C</td>
<td>Nano SIM, DIO, 50W, 10W, Audio</td>
<td></td>
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</tr>
<tr>
<td>GENESYSM-EHL5-A10-0003</td>
<td>x6425E</td>
<td>HeatSink</td>
<td>HDMI x 1</td>
<td>SATA x 1</td>
<td>G&amp; E x 2</td>
<td>USB 3.2 Gen 2 x 2 USB 2.0 x 2</td>
<td>2</td>
<td>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</td>
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<td>Nano SIM, DIO, 50W, 10W, Audio</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
GENE-APL5

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

Features
- Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
- DDR3L 1866 MHz SODIMM x 1, up to 8 GB
- VGA/LVDS/LVDS2 (HDMI Co-layout with LVDS2 Optional)
- 2 CH Audio, SATA 6.0 Gb/s x 1
- Supports 8-bit Digital I/O, USB 2.0 x 4, USB 3.2 Gen 1 x 2, COM x 4
- Mini Card x 1 (Half-size), mSATA x 1 (Full size)
- DC 12V Only or +9~19V (Optional), AT/ATX Mode
- Supports TPM (Optional)
- 4/5/8-wire Resistive Touch Screen Controller (Optional)

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 up to 1866MHz, SODIMM x 1, up to 8GB, Non-ECC

BIOS
- UEFI

WATCHDOG TIMER
- 255 Levels

SECURITY
- TPM 2.0 (Optional)

RTC BATTERY
- Lithium Battery 3V/240mAh

DIMENSION
- 5.75” x 4” (146mm x 101.7mm)

OS SUPPORT
- Windows 10 (64bit)
  - Linux Ubuntu 21.04.0/Kernel 5.10

POWER
- POWER REQUIREMENT +12V (Optional: +9-19V)
- POWER SUPPLY TYPE 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 1200
  - LVDS2 Dual Channel 18/24bit x 1 (Optional: HDMI1.4b, up to 3840 x 2160)
- DISPLAY INTERFACE VGA x 1
- MULTIPLE DISPLAY Up to 3 Simultaneous Displays

AUDIO
- CODEC Realtek ALC897/892
- AUDIO INTERFACE Line-in/Line-out/MIC
- SPEAKER —

EXTERNAL I/O
- ETHERNET Intel® i210/211, 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)

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY per Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700050207</td>
<td>USB Cable, 20cm</td>
<td>2</td>
</tr>
<tr>
<td>1701090150</td>
<td>COM Cable, 15cm</td>
<td>3</td>
</tr>
<tr>
<td>1709150054</td>
<td>Audio Jack Cable, 25cm</td>
<td>1</td>
</tr>
<tr>
<td>1709070500</td>
<td>SATA CABLE, 50cm</td>
<td>1</td>
</tr>
<tr>
<td>170204010R</td>
<td>Power Cable, 10cm</td>
<td>1</td>
</tr>
<tr>
<td>1702150155</td>
<td>SATA Power Cable, 15cm</td>
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</tr>
<tr>
<td>170220020B</td>
<td>ATX Power Cable, 20cm</td>
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Packing List

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEN-EPL5</td>
<td>GENE-APL5 MB</td>
<td>1</td>
</tr>
<tr>
<td>M16807020</td>
<td>Heatsink</td>
<td>1</td>
</tr>
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</table>

Note: All specifications are subject to change without notice.
### Block Diagram

![Block Diagram of GENE-APL5 SubCompact Boards](image)

### Dimension

Unit: mm

![Dimension Diagram of GENE-APL5 SubCompact Boards](image)

### Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Display</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/422/485</th>
<th>Storage</th>
<th>Expansion Slot</th>
<th>TPM</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENE-APL5-A12-F001</td>
<td>N3350</td>
<td>VGA/LVDS</td>
<td>INTEL GbE Ethernet</td>
<td>USB 3.2 x 2, USB 2.0 x 4</td>
<td>2</td>
<td>2</td>
<td>SATA x 1, mSATA x 1 (full-size)</td>
<td>MiniCard x 1 (full-size)</td>
<td>---</td>
<td>12V</td>
<td>0°C ~ 60°C</td>
<td>Touch Controller, SIM, DIO x 8</td>
</tr>
<tr>
<td>GENE-APL5-A12-F002</td>
<td>N3350</td>
<td>VGA/LVDS/LVDS2</td>
<td>INTEL GbE Ethernet</td>
<td>USB 3.2 x 2, USB 2.0 x 4</td>
<td>2</td>
<td>2</td>
<td>SATA x 1, mSATA x 1 (full-size)</td>
<td>MiniCard x 1 (full-size)</td>
<td>2.0</td>
<td>0~19V</td>
<td>0°C ~ 60°C</td>
<td>Touch Controller, SIM, DIO x 8</td>
</tr>
<tr>
<td>GENE-APL5-A12-F003</td>
<td>N4200</td>
<td>VGA/LVDS/LVDS2</td>
<td>INTEL GbE Ethernet</td>
<td>USB 3.2 x 2, USB 2.0 x 4</td>
<td>2</td>
<td>2</td>
<td>SATA x 1, mSATA x 1 (full-size)</td>
<td>MiniCard x 1 (full-size)</td>
<td>2.0</td>
<td>0~19V</td>
<td>0°C ~ 60°C</td>
<td>Touch Controller, SIM, DIO x 8</td>
</tr>
<tr>
<td>GENE-APL5W2-A12-F004</td>
<td>E3850</td>
<td>VGA/LVDS/LVDS2</td>
<td>INTEL GbE Ethernet</td>
<td>USB 3.2 x 2, USB 2.0 x 4</td>
<td>2</td>
<td>2</td>
<td>SATA x 1, mSATA x 1 (full-size)</td>
<td>MiniCard x 1 (full-size)</td>
<td>2.0</td>
<td>12V</td>
<td>-40°C ~ 85°C</td>
<td>Touch Controller, SIM, DIO x 8</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
SubCompact Boards

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

Specifications

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

**Displays**
- VGA x 1, up to 1920 x 1200

**Audio**
- CODEC: Realtek ALC897/892
- Audio Interface: Line-in/Line-out/MIC
- Speaker: —

**External I/O**
- **Ethernet**:
  - Intel® i210/i211, 10/100/1000Base, RJ-45 x 2
- **USB**:
  - USB 2.0 x 2
- **Serial Port**:
  - COM1 (RS232)
- **Video**:
  - VGA x 1

**Internal I/O**
- **USB**:
  - USB 3.2 Gen 1 x 2
- **Serial Port**:
  - COM2, COM3 (RS232/422/485, support 5V/12V/Ri)
  - COM4 (RS232)
- **Video**:
  - LVDS1 x 1
  - LVDS2/LVDS x 1 (Default: LVDS2)
- **SATA**:
  - SATA 3 x 1
  - +5V SATA Power Connector x 1
- **Audio**:
  - Audio Header x 1
- **i2C/I2C/Bi-directional**
  - i2C/I2CBus x 1 (Default: I2C)
- **Touch**:
  - 4/5/8-wire Touch Controller x 1 (optional)
- **Fan**:
  - DC Fan x 1 (optional: Smart Fan)
- **SIM**:
  - Micro SIM x 1 (Optional)
- **Front Panel**:
  - HDD LED, PWR LED, Power Button, Buzzer, Reset
- **Others**:
  - eMMC 16G/32G/64G (optional)
  - Parallel Port(SPP/EPP/ECP) x 1 (optional, select by BIOS)

**Expansion**
- **Mini PCI-E/mSATA**
  - Full-size mPCIe x 1
  - Half-size mSATA x 1
- **M.2**
  - —
- **Others**
  - —

**Environment & Certification**
- **Operating Temp.**
  - 32°F ~ 140°F (0°C ~ 60°C), WiTAS2 -40°F ~ 185°F (-40°C ~ 85°C)
  - **Storage Temp.**
    - -40°F ~ 185°F (-40°C ~ 85°C)
  - **Operating Humidity**
    - 0% ~ 90% relative humidity, non-condensing
  - **MTBF (Hours)**
    - 374,567
  - **EMC**
    - CE/FCC Class A

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY per Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700050207</td>
<td>USB Cable, 20cm</td>
<td>2</td>
</tr>
<tr>
<td>1701090150</td>
<td>COM Cable, 15cm</td>
<td>3</td>
</tr>
<tr>
<td>1709100254</td>
<td>Audio Jack Cable, 25cm</td>
<td>1</td>
</tr>
<tr>
<td>1709070500</td>
<td>SATA Cable, 50cm</td>
<td>1</td>
</tr>
<tr>
<td>1702150155</td>
<td>SATA Power Cable, 15cm</td>
<td>1</td>
</tr>
<tr>
<td>1702200208</td>
<td>ATX Power Cable, 20cm</td>
<td>1</td>
</tr>
<tr>
<td>1702040100</td>
<td>Power Cable, 10cm</td>
<td>1</td>
</tr>
<tr>
<td>GENE-APL6-HSK01</td>
<td>HeatSink,140X80X14mm,GENE-APL6.(used with heat spreader)</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
Block Diagram

Dimension

Packaging List

Ordering Information

Note: All specifications are subject to change without notice.
Specifications

**SYSTEM**
- 3.5” SubCompact Board

**CPU**
- Intel® Atom®/Celeron®/Pentium® Processor:
  - Pentium N4200 (4C/4T, 1.10GHz, up to 2.50GHz, 6W)
  - Celeron N3350 (2C/2T, 1.10GHz, up to 2.40GHz, 6W)
  - Atom E3950 (4C/4T, 1.60GHz, up to 2.00GHz, 9.5W)
  - Atom E3940 (4C/4T, 1.60GHz, up to 1.80GHz, 9.5W)
  - Atom E3930 (2C/2T, 1.30GHz, up to 1.80GHz, 6.5W)

**CHIPSET**
- Integrated with Intel® SoC

**MEMORY TYPE**
- DDR3L 1600MHz (max. 8GB)/1866MHz (max. 4GB), SODIMM x 1, Non-ECC
*1866MHz is limited to the verified DDR module in AAEON’s Approved Vendor List*

**BIOS**
- UEFI

**WATCHDOG TIMER**
- 255 Levels

**RTC BATTERY**
- Lithium Battery 3V/240mAh

**DIMENSION**
- 5.75” x 4” (146mm x 101.7mm)

**OS SUPPORT**
- Windows 10 (64bit)
- Linux Ubuntu 21.04.0/Kernel 5.10

**POWER**
- POWER REQUIREMENT: 12V Only
- POWER SUPPLY TYPE: AT/ATX
- Connector: Phoenix 2-pin Connector
- POWER CONSUMPTION:
  - Intel® E3950, DDR3L 1866MHz 8GB, 4.15A @+12V (TYPICAL)
  - Intel® E3950, DDR3L 1866MHz 8GB, 4.29A @+12V (MAX)

**DISPLAY**
- CONTROLLER: Intel® HD Graphics 500/505
- LVDS/eDP:
  - LVDS1 Dual Channel 18/24bit x 1 (Optional: eDP1.3, up to 3840 x 2160)
  - LVDS2 Dual Channel 18/24bit x 1, up to 1920 x 1080
- DISPLAY INTERFACE:
  - VGA x 1, up to 1920 x 1200
- MULTIPLE DISPLAY: Up to 3 Simultaneous Displays

**AUDIO**
- CODEC: Realtek ALC897/892
- AUDIO INTERFACE: Line-in/Line-out/MIC
- SPEAKER: 2W Amplifier (Optional)

**EXTERNAL I/O**
- ETHERNET: Realtek RTL8119-CG, 10/100/1000Base, RJ-45 x 2
- USB: USB 3.2 Gen 1 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 2
- SERIAL PORT: COM3 ~ COM6 (RS232, COM3~COM5 support 5V/12V/RI)
  - Optional: COM7~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
- SIM Slot: 1/2C
  - I2C/SIMBus x 1 (Default: SIMBus)
- TOUCH: —
- FAN:
  - DC Fan x 1 (optional: Smart Fan)
- SIM:
  - Micro SIM x 1 (Optional)
- FRONT PANEL: HDD LED, PW LED, Power Button, Buzzer, Reset
- OTHERS: —

**EXPANSION**
- Mini PCI-E/mSATA:
  - Full-size mPCIe x 1
  - Full-size mSATA/mPCIe x 1 (Default mSATA, BOM Option: mPCIe)
- M.2: —
- OTHERS: —

**ENVIRONMENT & CERTIFICATION**
- OPERATING TEMP.: 32°F ~ 140°F (0°C ~ 60°C)
- STORAGE TEMP.: -40°F ~ 185°F (-40°C ~ 85°C)
- OPERATING HUMIDITY: 0% ~ 90% relative humidity, non-condensing
- MTBF (HOURS): 409,108
- EMC: CE/FCC Class A

**Optional Accessories**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700050207</td>
<td>USB Cable, 20cm</td>
<td>8</td>
</tr>
<tr>
<td>1701090150</td>
<td>COM Cable, 15cm</td>
<td>10</td>
</tr>
<tr>
<td>1709100254</td>
<td>Audio Jack Cable, 25cm</td>
<td>1</td>
</tr>
<tr>
<td>1702150155</td>
<td>SATA Power Cable, 15cm</td>
<td>1</td>
</tr>
<tr>
<td>170204010R</td>
<td>Power Cable, 10cm</td>
<td>1</td>
</tr>
<tr>
<td>1709150151</td>
<td>CRT Cable, 15cm (VGA D-SUB connector co-layout with internal pin header by option)</td>
<td>1</td>
</tr>
<tr>
<td>GENE-APL7-HSK01</td>
<td>Heat sink</td>
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**Packing List**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
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<tbody>
<tr>
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<td>GENE-APL7 MB</td>
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Note: All specifications are subject to change without notice.
### Block Diagram

![Block Diagram of GENE-APL7](image)

### Dimension

Unit: mm

![Dimension Diagram of GENE-APL7](image)

### Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Display</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/2422/485</th>
<th>Storage</th>
<th>Expansion Slot</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENE-APL7-A11-F001</td>
<td>N3350</td>
<td>VGA/LVDS</td>
<td>PCIe x 2</td>
<td>USB 3.2 Gen 1 x 2</td>
<td>5</td>
<td>1</td>
<td>SATA x 1</td>
<td>MiniCard x 1 (Full)</td>
<td>12V</td>
<td>0°C – 60°C</td>
<td>Audio, DIO x 8</td>
</tr>
<tr>
<td>GENE-APL7-A11-F002</td>
<td>N3350</td>
<td>VGA/LVDS/LVDS2</td>
<td>PCIe x 2</td>
<td>USB 3.2 Gen 1 x 2</td>
<td>11</td>
<td>1</td>
<td>SATA x 1</td>
<td>MiniCard x 1 (Full)</td>
<td>12V</td>
<td>0°C – 60°C</td>
<td>Micro SIM, DIO x 8, Audio, 2W AMP</td>
</tr>
<tr>
<td>GENE-APL7-A11-F003</td>
<td>N4200</td>
<td>VGA/LVDS/DP</td>
<td>PCIe x 2</td>
<td>USB 3.2 Gen 1 x 2</td>
<td>11</td>
<td>1</td>
<td>SATA x 1</td>
<td>MiniCard x 1 (Full)</td>
<td>12V</td>
<td>0°C – 60°C</td>
<td>Micro SIM, DIO x 8, Audio, 2W AMP</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
3.5” SubCompact Board System with Intel® Pentium® N4200/ Celeron® N3350 Processor SoC

**Specifications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSTEM</td>
<td>3.5” SubCompact Board System</td>
</tr>
<tr>
<td>CPU</td>
<td>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)</td>
</tr>
<tr>
<td>CHIPSET</td>
<td>Integrated with Intel® SoC</td>
</tr>
<tr>
<td>MEMORY TYPE</td>
<td>DDR3L up to 1866MHz, SODIMM x 1, up to 8GB, Non-ECC</td>
</tr>
<tr>
<td>BIOS</td>
<td>UEFI</td>
</tr>
<tr>
<td>WAKE ON LAN</td>
<td>Yes</td>
</tr>
<tr>
<td>WATCHDOG TIMER</td>
<td>255 Levels</td>
</tr>
<tr>
<td>SECURITY</td>
<td>—</td>
</tr>
<tr>
<td>RTC Battery</td>
<td>Lithium Battery 3V/240mAh</td>
</tr>
<tr>
<td>DIMENSION</td>
<td>7.00” x 5.28” x 1.69” (178mm x 134.1mm x 43mm)</td>
</tr>
<tr>
<td>OS Support</td>
<td>Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10</td>
</tr>
<tr>
<td>POWER</td>
<td>POWER REQUIREMENT +12V</td>
</tr>
<tr>
<td>CONNECTOR</td>
<td>DC Jack Connector</td>
</tr>
<tr>
<td>POWER SUPPLY TYPE</td>
<td>ATX</td>
</tr>
<tr>
<td>POWER CONSUMPTION</td>
<td>Intel® N4200,DDR3L 1600MHz 8GB,1.61A@+12V (Typical)</td>
</tr>
<tr>
<td>DISPLAY</td>
<td>CONTROLLER Intel® HD Graphics 500/505</td>
</tr>
<tr>
<td>LVDS/4eP</td>
<td>—</td>
</tr>
<tr>
<td>Display Interface</td>
<td>VGA x 1 Multiple Display —</td>
</tr>
<tr>
<td>AUDIO</td>
<td>CODEC —</td>
</tr>
<tr>
<td>AUDIO INTERFACE</td>
<td>—</td>
</tr>
<tr>
<td>Speaker</td>
<td>—</td>
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<tr>
<td>ETHERNET</td>
<td>REALtek RTL8119-CG.10/100/1000Base, RJ-45 x 2</td>
</tr>
<tr>
<td>USB</td>
<td>USB 3.2 Gen 1 x 2</td>
</tr>
<tr>
<td>SERIAL PORT</td>
<td>COM1 (RS232)</td>
</tr>
<tr>
<td>VIDEO</td>
<td>VGA x 1</td>
</tr>
<tr>
<td>INTERNAL I/O</td>
<td>USB 2.0 x 2</td>
</tr>
<tr>
<td>SERIAL PORT</td>
<td>Optional: COM3,COM4,COM5 (Optional) Support 5V/12V(R)</td>
</tr>
</tbody>
</table>

**Features**

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

**Packing List**

- GENESYS-APL7
- GENESYS-APL7-WMT1 Wall Mount Kit For GENESYS-APL7
- GENESYS-APL7-4096 VESA Mount Kit For GENESYS-APL7
- GENESYS-APL7-HDD1 HDD Kit For GENESYS-APL7
- GENESYS-APL7-COM1 COM Extension Kit w/ 1 Cable. For GENESYS-APL7

**Optional Accessories**

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

Note: All specifications are subject to change without notice.
Block Diagram

Dimension

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Fan/Fanless</th>
<th>Display</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/422/485</th>
<th>Expansion Slot</th>
<th>Power</th>
<th>Power Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENESYS-APL7-A10-FS01</td>
<td>N3350</td>
<td>w/HS, Fan</td>
<td>VGA</td>
<td>SATA x 1, mSATA x 1 (Full size)</td>
<td>6Gb x 2</td>
<td>USB 3.2 Gen 1 x 2, USB 2.0 x 2</td>
<td>1</td>
<td>—</td>
<td>MiniCard x 1 (Full)</td>
<td>12V</td>
<td>0°C – 50°C</td>
<td>—</td>
</tr>
<tr>
<td>GENESYS-APL7-A10-FS02</td>
<td>N4200</td>
<td>w/HS, Fan</td>
<td>VGA</td>
<td>SATA x 1, mSATA x 1 (Full size)</td>
<td>6Gb x 2</td>
<td>USB 3.2 Gen 1 x 2, USB 2.0 x 2</td>
<td>1</td>
<td>—</td>
<td>MiniCard x 1 (Full)</td>
<td>12V</td>
<td>0°C – 50°C</td>
<td>—</td>
</tr>
</tbody>
</table>
3.5” SubCompact Board with Intel® Pentium & Celeron® N3000 Series Processor SoC

**Features**
- Onboard Intel® Pentium/Celeron® N3000 Series Processor SoC
- DDR3L 1600 SODIMM x 1, Up to 8 GB
- Gigabit Ethernet x 2
- VGA, LVDS1, LVDS2/HDMI (Co-design)
- 2CH HD Audio
- Mini-Card x 1 (Full-Size)
- mSATA x 1 (Shared with Mini-Card, Half-size)
- USB 3.2 Gen 1 x 2, USB2.0 x 3, COM x 6, Digital I/O 8-bit
- +12V DC, AT/ATX

**Specifications**

**SYSTEM**
- 3.5” SubCompact Board
- CPU: Intel® Celeron® N3160 (4C/4T, 1.60GHz, up to 2.24GHz)
- CHIPSET: Integrated with Intel® SoC
- MEMORY TYPE: DDR3L up to 1600MHz, SODIMM x 1, up to 8GB, Non-ECC
- BIOS: UEFI
- WAKE ON LAN: Yes
- RTC BATTERY: Lithium Battery 3V/240mAh
- DIMENSION: 5.75” x 4” (146mm x 101.7mm)
- OS SUPPORT: Windows 7/10 (64bit), Linux Ubuntu 21.04.0/Kernel 5.10

**POWER**
- POWER REQUIREMENT: +12V Only
- POWER SUPPLY TYPE: AT/ATX
- POWER CONNECTOR: Phoenix 2-pin Connector
- POWER CONSUMPTION: Intel® N3160, DDR3L 1600MHz 8GB, 1.63A @ +12V (TYPICAL), Intel® N3160, DDR3L 1600MHz 8GB, 1.95A @ +12V (MAX)

**DISPLAY**
- CONTROLLER: Intel® HD Graphics for Intel® Celeron® Processor N3000 Series
- LVDS/eDP: LVDS1 Dual Channel 18/24bit x 1, up to 1920 x 1080
- LVDS2 Dual Channel 18/24bit x 1 (Optional: HDMI1.4b)
- DISPLAY INTERFACE: VGA x 1, up to 1920 x 1200
- MULTIPLE DISPLAY: Up to 3 Simultaneous Displays

**AUDIO**
- CODEC: Realtek ALC897/892
- AUDIO INTERFACE: Line-in/Line-out/MIC
- SPEAKER: —

**EXTERNAL I/O**
- ETHERNET: Realtek RTL8119-CG, 10/100/1000Base-TX, RJ-45 x 2
- USB: USB 3.2 Gen1 x 2
- SERIAL PORT: COM1 (RS232)
- VIDEO: VGA x 1 (HDMI x 1 (optional))

**INTERNAL I/O**
- USB: USB2.0 x 2
- SERIAL PORT: COM2, COM3 (RS232/422/485, supports 5V/12V/9V), COM4, COM5, COM6 (RS232)
- VIDEO: LVDS1 x 1, LVDS2/HDMI x 1 (Default: LVDS2)

**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

**Optional Accessories**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY per Board</th>
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<tbody>
<tr>
<td>1702150155</td>
<td>SATA Power Cable, 15cm</td>
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<tr>
<td>170220020B</td>
<td>ATX Power Cable, 20cm</td>
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<td>1709070500</td>
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<td>Power Cable, 10cm</td>
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<td>1709112062</td>
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<td>1701090150</td>
<td>COM Cable, 15cm</td>
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<td>1700050207</td>
<td>USB Cable, 20cm</td>
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<td>1700060152</td>
<td>PS/2 KB/MS Cable, 15cm</td>
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<td>1750118166</td>
<td>BATTERY, 3.0W, Wire 110mm, MITSUBISHI Long Horn CR2032-HAT00 (MLF)</td>
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**Packing List**

<table>
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<td>M16BT05000</td>
<td>Heatsink</td>
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Note: All specifications are subject to change without notice.
**Block Diagram**

**Dimension**

**Ordering Information**

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<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Display</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/422/485</th>
<th>Storage</th>
<th>Expansion Slot</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
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<tbody>
<tr>
<td>GENE-BSW5-A12-0001</td>
<td>N3160</td>
<td>VGA+LVDS</td>
<td>2x e2</td>
<td>USB 3.2 Gen 1 x 2, UBS 2.0 x 3</td>
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<td>2</td>
<td>SATA x 1, mSATA x 1 (Half-Size)</td>
<td>Mini Card x 1 (Half-Size)</td>
<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>DIO x 8</td>
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<tr>
<td>GENE-BSW5-A12-0002</td>
<td>N3160</td>
<td>VGA+LVDS</td>
<td>2x e2</td>
<td>USB 3.2 Gen 1 x 2, UBS 2.0 x 3</td>
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<td>SATA x 1, mSATA x 1 (Half-Size)</td>
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<td>+12V</td>
<td>0°C ~ 60°C</td>
<td>Touch Controller, SIM, DIO x 8</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
3.5" SubCompact Board with Intel® Celeron® J1900/N2807 Processor SoC

**Features**
- Intel® Celeron® J1900/ N2807 Processor SoC
- DDR3L 1333 SODIMM slot x1, Max. up to 8GB
- HDMI x 2: HDMI 1 (w/ Audio), HDMI 2 (w/o Audio)
- USB 2.0 x 2, USB 3.2 Gen 1 x 1, COM x 1
- Mini-Card x 1 (Full-size)
- SATA 2.0 x 1
- DC 12V ATX Mode
- 12 ~ 24V DC Input, ATX Mode

**Specifications**

**SYSTEM**
- CPU: Intel® Atom®/ Celeron® Processor:
  - Celeron® J1900 (4C/4T, 2.00GHz, up to 2.42GHz, 10W)
  - Celeron® N2807 (2C/2T, 1.58GHz, up to 2.16GHz, 4.3W)
- MEMORY TYPE: DDR3L up to 1333MHz, SODIMM x 1, up to 8GB, Non-ECC
- BIOS: UEFI
- WAKE ON LAN: Yes
- WATCHDOG TIMER: 255 Levels
- RTC BATTERY: Lithium Battery 3V/240mAh
- DIMENSION: 5.75” x 4” (146mm x 101.7mm)
- OS SUPPORT: Windows 7/10 (64bit), Linux Ubuntu 20.04.3/Kernel 5.11

**POWER**
- POWER REQUIREMENT: +12~24V
- POWER CONSUMPTION: Intel® N2807, DDR3L 1600MHz 4G, 0.65A@ +12V(TYPICAL)

**DISPLAY**
- CONTROLLER: Intel® HD Graphics for Intel® Atom® Processor Z3700 Series
- DISPLAY INTERFACE: HDMI x 2: HDMI 1(w/Audio), HDMI 2(w/o Audio)
- MULTIPLE DISPLAY: Up to 2 Simultaneous Displays

**AUDIO**
- CODEC: —
- AUDIO INTERFACE: —
- SPEAKER: —

**EXTERNAL I/O**
- ETHERNET: Intel® I210, 10/100/1000Base, RJ-45 x 4
- USB: USB 2.0 x 2, USB 3.2 Gen 1 x 1
- SERIAL PORT: COM1 (RS232)
- VIDEO: HDMI x 2

**INTERNAL I/O**
- USB: —
- SERIAL PORT: —
- VIDEO: —
- SATA: SATA III x 1 +5V SATA Power Connector x 1
- AUDIO: —

**Packing List**

<table>
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<tr>
<th>Description</th>
<th>QTY</th>
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<td>M10BT04010 (heat spreader)</td>
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<td>Power cable</td>
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**Optional Accessories**

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<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
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<tbody>
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<td>1709970500</td>
<td>SATA Cable, 50cm</td>
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<tr>
<td>1702150155</td>
<td>SATA HDD Power Cable, 15cm</td>
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**OS Support**

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<tr>
<td>OS-W10R-600-00000-EN</td>
<td>Windows 10 IoT Enterprise for Retail or Thin Clients. 64bit MultiLang. (EngFreCNTHNCnKor)</td>
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</table>
Block Diagram

- DDR3L SO-DIMM x 1
- Mini Card
- USB 2.0 * 2
- USB 3.2 Gen1* 1
- SATA II * 1
- CFAST* 1
- BIOS
- HDMI
- DDI Port 0
- DDI Port 1
- USB 2.0
- USB 3.2
- SATA
- SPI
- H/W Monitor
- Super I/O
- 4bit DIO
- COM1
- Intel® Celeron
- N2807, J1900
- Integrated Clock
- HDMI
- RJ-45
- RJ-45
- RJ-45
- RJ-45
- Mini Card
- USB 2.0
- USB 3.2
- SATA II
- SATA II
- CFAST
- BIOS
- LPC
- Super I/O
- COM1

Dimension

Unit: mm

Ordering Information

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<th>CPU</th>
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<th>Display</th>
<th>LVDS</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/422/485</th>
<th>Expansion Slot</th>
<th>Power</th>
<th>Power Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENE-BT04-A12-0001</td>
<td>Intel® Celeron® N2807</td>
<td>Fanless</td>
<td>HDMI x 2</td>
<td>—</td>
<td>SATA x 1</td>
<td>GBE x 4</td>
<td>USB 3.2 Gen1 x 1</td>
<td>1</td>
<td>—</td>
<td>Mini-Card x 1 (Full)</td>
<td>12V – 24V</td>
<td>0°C – 60°C</td>
<td>DIO x 4</td>
</tr>
<tr>
<td>GENE-BT04-A12-0002</td>
<td>Intel® Celeron® J1900</td>
<td>Fanless</td>
<td>HDMI x 2</td>
<td>—</td>
<td>SATA x 1</td>
<td>GBE x 4</td>
<td>USB 3.2 Gen1 x 1</td>
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<td>—</td>
<td>Mini-Card x 1 (Full)</td>
<td>12V – 24V</td>
<td>0°C – 60°C</td>
<td>DIO x 4</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
**Gene-BT05**

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

### 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
- **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 Requirement**: +12V Only
- **Power Supply Type**: 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, 23700 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
- **Audio 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**: –

**Ethernet**
- **Controller**: Intel® i210/i211, 1G/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

**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)

### Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY per Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700050207</td>
<td>USB Cable, 20cm</td>
<td>2</td>
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<tr>
<td>1701090150</td>
<td>COM Cable, 15cm</td>
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<tr>
<td>1709100254</td>
<td>Audio Jack Cable, 25cm</td>
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<td>1709070500</td>
<td>SATA Cable, 50cm</td>
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<tr>
<td>170220410R</td>
<td>Power Cable, 10cm</td>
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<tr>
<td>1702150155</td>
<td>SATA Power Cable, 15cm</td>
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<tr>
<td>170220020B</td>
<td>ATX Power Cable, 20cm</td>
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### Packing List

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<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
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<td>M16BT07020</td>
<td>Heatsink</td>
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*Note: All specifications are subject to change without notice.*
Block Diagram

Dimension

Ordering Information

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<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Display</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/42/485</th>
<th>Storage</th>
<th>Expansion Slot</th>
<th>TPM</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
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<tbody>
<tr>
<td>GENE-BT05-A12-0001</td>
<td>Intel® Celeron® N2930</td>
<td>CRT + LVDS + HDMI + CRT</td>
<td>DDI Port 0: SPI</td>
<td>USB 3.0: 1</td>
<td>USB 2.0: 3</td>
<td>SATA x 1</td>
<td>CFast x 1</td>
<td>Mini Card x 2</td>
<td>1.2</td>
<td>-12V, AT/ATX</td>
<td>0°C ~ 60°C</td>
<td>Touch, SIM, DIO x 8</td>
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<tr>
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<td>Intel® Celeron® N2930</td>
<td>CRT + LVDS + HDMI + CRT</td>
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<td>USB 3.0: 1</td>
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<td>Mini Card x 1</td>
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<tr>
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<td>Mini Card x 2</td>
<td>1.2</td>
<td>-12V, AT/ATX</td>
<td>0°C ~ 60°C</td>
<td>Touch, SIM, DIO x 8</td>
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<td>SATA x 1</td>
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<td>0°C ~ 60°C</td>
<td>Touch, SIM, DIO x 8</td>
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<tr>
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<td>SATA x 1</td>
<td>CFast x 1</td>
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<td>-12V, AT/ATX</td>
<td>0°C ~ 60°C</td>
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<tr>
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<td>Intel® Atom™ E3825</td>
<td>CRT + LVDS + HDMI + CRT</td>
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<td>USB 3.0: 1</td>
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<td>SATA x 1</td>
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<td>-12V, AT/ATX</td>
<td>0°C ~ 60°C</td>
<td>Touch, SIM, DIO x 8</td>
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<tr>
<td>GENE-BT05-A12-0008</td>
<td>Intel® Atom™ E3825</td>
<td>CRT + LVDS + HDMI + CRT</td>
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<td>USB 3.0: 1</td>
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<td>Mini Card x 1</td>
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<tr>
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<td>CRT + LVDS</td>
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<td>CFast x 1</td>
<td>Mini Card x 1</td>
<td>---</td>
<td>-12V, AT/ATX</td>
<td>-40°C ~ 85°C</td>
<td>DIO x 8</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
GENESYS-BT05
3.5” SubCompact Board System with Intel® Atom® and Celeron® Processor SoC

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

Specifications

SYSTEM
FORM FACTOR 3.5” SubCompact Board System

CPU
Intel® Atom®/Celeron® Processor:
- Celeron® J1900 (4C/4T, 2.00GHz, up to 2.42GHz, TDP 10W)
- Celeron® N2930 (4C/4T, 1.83GHz, up to 2.16GHz, TDP 7.5W)
- Celeron® N2807 (2C/2T, 1.58GHz, up to 2.16GHz, TDP 4.3W)
- Atom® E3845 (4C/4T, 1.91 GHz, TDP 10W)
- Atom® E3825 (2C/2T, 1.33 GHz, TDP 6W)

CHIPSET
Integrated with Intel® SoC

MEMORY TYPE
DDR3L up to 1333MHz, SODIMM x 1, up to 8GB, Non-ECC

BIOS
UEFI

WATCHDOG TIMER
255 Levels

RTC Battery
Lithium Battery 3V/240mAh

DIMENSION
7.00” x 5.28” x 1.69” (178mm x 134.1mm x 43mm)

OS Support
Windows 7/10 (64bit)
Linux Ubuntu 20.04.3/Kernel 5.11

POWER
POWER REQUIREMENT +12V Only

POWER SUPPLY CONNECTOR
DC Jack Connector

POWER CONSUMPTION
Intel® J1900, DDR3L 1600MHz 8GB, 1.73A @ +12V (TYPICAL)
Intel® J1900, DDR3L 1600MHz 8GB, 1.88A @ +12V (MAX)

DISPLAY
CONTROLLER Intel® HD Graphics for Intel Atom® Processor Z3700 Series
LVDS/eDP Display Interface HDMI 1.4a x 1 VGA x 1
Multiple Display Up to 2 Simultaneous Displays

AUDIO
CODEC —
AUDIO INTERFACE —
Speaker —

EXTERNAL I/O
ETHERNET Intel® i210, 10/100/1000Base, RJ-45 x 2
USB USB 3.2 Gen 1 x 1 USB 2.0 x 1

Note: All specifications are subject to change without notice.

Packing List

<table>
<thead>
<tr>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENESYS-BT05</td>
<td>1</td>
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</tbody>
</table>

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>12553006G2</td>
<td>Power Adapter, 12V 5A 60W, FSP060-DHAN3</td>
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<tr>
<td>12553009G2</td>
<td>Power Adapter, 12V 5A 96W, FSP096-DHAN3</td>
<td>1</td>
</tr>
<tr>
<td>17020318B2</td>
<td>Power Cord (US)</td>
<td>1</td>
</tr>
<tr>
<td>17020318B3</td>
<td>Power Cord (Europe)</td>
<td>1</td>
</tr>
<tr>
<td>17020318E</td>
<td>Power Cord (Japan)</td>
<td>1</td>
</tr>
<tr>
<td>GENESYS-BT05-WMT1</td>
<td>Wall Mount Kit For GENESYS-BT05</td>
<td>1</td>
</tr>
<tr>
<td>GENESYS-BT05-VESA1</td>
<td>VESA Mount Kit For GENESYS-BT05</td>
<td>1</td>
</tr>
<tr>
<td>GENESYS-BT05-HDD1</td>
<td>HDD Kit For GENESYS-BT05</td>
<td>1</td>
</tr>
<tr>
<td>GENESYS-BT05-COM1</td>
<td>COM Extension Kit, w/ 1 Cable. For GENESYS-BT05</td>
<td>1</td>
</tr>
</tbody>
</table>
Block Diagram

Intel® Atom E38xx series / Celeron N2930, N2807, J1900

Dimension
Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Display</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>Storage</th>
<th>Expansion Slot</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENESYS-BT05-A12-0002</td>
<td>N2807</td>
<td>VGA</td>
<td>Gbe 2</td>
<td>USB1.2 x 1</td>
<td>1</td>
<td>SATA x 1</td>
<td>Mini Card x 1 (Full-Size)</td>
<td>+12V, ATX</td>
<td>0°C ~ 50°C</td>
<td>—</td>
</tr>
<tr>
<td>GENESYS-BT05-A12-0004</td>
<td>J1900</td>
<td>VGA</td>
<td>Gbe 2</td>
<td>USB1.2 x 1</td>
<td>1</td>
<td>SATA x 1</td>
<td>Mini Card x 1 (Full-Size)</td>
<td>+12V, ATX</td>
<td>0°C ~ 50°C</td>
<td>—</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
GENE-BT06
3.5” SubCompact Board with Intel® Atom® E3845/ E3825 and Celeron® Processor SoC

### 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
- **Watchdog Timer**: 255 Levels
- **Wake on LAN**: Yes
- **Security**: TPM 2.0 (BOM optional)
- **RTC Battery**: Lithium Battery 3V/240mAh
- **Dimension**: 5.75” x 4” (146mm x 101.7mm)
- **OS Support**: Windows 7/10 (64bit), Linux Ubuntu 20.04.0/Kernel 5.11

**Power**
- **Power Requirement**: +9~24V
- **Power Supply Type**: 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 23700 Series
- **LVDS/eDP**: LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080

**Audio**
- **Codec**: Realtek ALC991/92
- **Audio Interface**: Line-in/Line-out/MIC
- **Speaker**: 2W Amplifier (Optional)

**External I/O**
- **Ethernet**: Intel® i210, 10/100/1000Base, RJ-45 x 2
- **USB**: USB 3.2 Gen1 x 1, USB2.0 x 1
- **Serial Port**: COM(1/RS232)

**Environment & Certification**
- **Operating Temp.**: 32°F ~ 140°F (0°C ~ 60°C) or WiTAS -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

### 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

### Packing List

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY per Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700050207</td>
<td>USB CABLE, 20cm</td>
<td>2</td>
</tr>
<tr>
<td>1701090150</td>
<td>COM Cable, 15cm</td>
<td>3</td>
</tr>
<tr>
<td>1709100254</td>
<td>Audio Jack Cable, 25cm</td>
<td>1</td>
</tr>
<tr>
<td>1702150155</td>
<td>SATA Power Cable, 15cm</td>
<td>1</td>
</tr>
<tr>
<td>170220020B</td>
<td>ATX Power Cable, 26cm</td>
<td>1</td>
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<tr>
<td>170204010R</td>
<td>Power Cable, 10cm</td>
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<tr>
<td>GENE-BT06</td>
<td>GENE-BT06 MB</td>
<td>1</td>
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<tr>
<td>M10BT06010</td>
<td>Heat spreader</td>
<td>1</td>
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### Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY per Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700050207</td>
<td>USB CABLE, 20cm</td>
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</tr>
<tr>
<td>1701090150</td>
<td>COM Cable, 15cm</td>
<td>3</td>
</tr>
<tr>
<td>1709100254</td>
<td>Audio Jack Cable, 25cm</td>
<td>1</td>
</tr>
<tr>
<td>1702150155</td>
<td>SATA Power Cable, 15cm</td>
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<tr>
<td>170220020B</td>
<td>ATX Power Cable, 26cm</td>
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</tr>
<tr>
<td>170204010R</td>
<td>Power Cable, 10cm</td>
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Note: All specifications are subject to change without notice.
### Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Memory</th>
<th>Display</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-222/242/485</th>
<th>Storage</th>
<th>Expansion Slot</th>
<th>TPM</th>
<th>Power</th>
<th>Operating Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENE-BT06-A12-0001</td>
<td>Intel® Celeron® N2930</td>
<td>Onboard 4GB</td>
<td>VGA, LVDS, HDMI</td>
<td>GbE x 2</td>
<td>USB 3.0 x 1 USB 2.0 x 3</td>
<td>2</td>
<td>2</td>
<td>SATA x 1 mSATA x 1 (half size)</td>
<td>MiniCard x 1 (Full)</td>
<td>2.0</td>
<td>9–24V</td>
<td>0°C – 60°C</td>
<td>Touch Controller, SIM, DIO x 8</td>
</tr>
<tr>
<td>GENE-BT06-A12-0002</td>
<td>Intel® Celeron® J1900</td>
<td>Onboard 4GB</td>
<td>VGA, LVDS, HDMI</td>
<td>GbE x 2</td>
<td>USB 3.0 x 1 USB 2.0 x 3</td>
<td>2</td>
<td>2</td>
<td>SATA x 1 mSATA x 1 (half size)</td>
<td>MiniCard x 1 (Full)</td>
<td>2.0</td>
<td>9–24V</td>
<td>0°C – 60°C</td>
<td>Touch Controller, SIM, DIO x 8</td>
</tr>
<tr>
<td>GENE-BT06-A12-0003</td>
<td>Intel® Atom™ E3825</td>
<td>Onboard 2GB</td>
<td>VGA + LVDS</td>
<td>GbE x 2</td>
<td>USB 3.0 x 1 USB 2.0 x 3</td>
<td>2</td>
<td>2</td>
<td>SATA x 1 mSATA x 1 (half size)</td>
<td>MiniCard x 1 (Full)</td>
<td>—</td>
<td>9–24V</td>
<td>0°C – 60°C</td>
<td>DIO x 8</td>
</tr>
<tr>
<td>GENE-BT06-A12-0004</td>
<td>Intel® Atom™ E3825</td>
<td>Onboard 4GB</td>
<td>VGA, LVDS, HDMI</td>
<td>GbE x 2</td>
<td>USB 3.0 x 1 USB 2.0 x 3</td>
<td>2</td>
<td>2</td>
<td>SATA x 1 mSATA x 1 (half size)</td>
<td>MiniCard x 1 (Full)</td>
<td>2.0</td>
<td>9–24V</td>
<td>0°C – 60°C</td>
<td>Touch Controller, SIM, DIO x 8</td>
</tr>
<tr>
<td>GENE-BT06-A12-0005</td>
<td>Intel® Atom™ E3845</td>
<td>Onboard 2GB</td>
<td>VGA + LVDS</td>
<td>GbE x 2</td>
<td>USB 3.0 x 1 USB 2.0 x 3</td>
<td>2</td>
<td>2</td>
<td>SATA x 1 mSATA x 1 (half size)</td>
<td>MiniCard x 1 (Full)</td>
<td>—</td>
<td>9–24V</td>
<td>0°C – 60°C</td>
<td>DIO x 8</td>
</tr>
<tr>
<td>GENE-BT06-A12-0006</td>
<td>Intel® Atom™ E3845</td>
<td>Onboard 4GB</td>
<td>VGA, LVDS, HDMI</td>
<td>GbE x 2</td>
<td>USB 3.0 x 1 USB 2.0 x 3</td>
<td>2</td>
<td>2</td>
<td>SATA x 1 mSATA x 1 (half size)</td>
<td>MiniCard x 1 (Full)</td>
<td>2.0</td>
<td>9–24V</td>
<td>0°C – 60°C</td>
<td>Touch Controller, SIM, DIO x 8</td>
</tr>
<tr>
<td>GENE-BT06-A12-0007</td>
<td>Intel® Atom™ E3845</td>
<td>Onboard 2GB</td>
<td>VGA + LVDS</td>
<td>GbE x 2</td>
<td>USB 3.0 x 1 USB 2.0 x 3</td>
<td>2</td>
<td>2</td>
<td>SATA x 1 mSATA x 1 (half size)</td>
<td>MiniCard x 1 (Full)</td>
<td>—</td>
<td>12V</td>
<td>WTAS 2 (-40°C–85°C)</td>
<td>DIO x 8</td>
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<tr>
<td>GENE-BT06-A12-0008</td>
<td>Intel® Atom™ E3845</td>
<td>Onboard 4GB</td>
<td>VGA, LVDS, HDMI</td>
<td>GbE x 2</td>
<td>USB 3.0 x 1 USB 2.0 x 3</td>
<td>2</td>
<td>2</td>
<td>SATA x 1 mSATA x 1 (half size)</td>
<td>MiniCard x 1 (Full)</td>
<td>2.0</td>
<td>12V</td>
<td>WTAS 2 (-40°C–85°C)</td>
<td>Touch Controller, SIM, DIO x 8</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.

www.aaeon.com
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

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>3.5&quot; SubCompact Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>AMD Geode™ LX800 Processor</td>
</tr>
<tr>
<td>CHIPSET</td>
<td>CS5536</td>
</tr>
<tr>
<td>MEMORY TYPE</td>
<td>DDR333 SODIMM x 1 (DDR400 optional), up to 1 GB</td>
</tr>
<tr>
<td>BIOS</td>
<td>Award 1MB</td>
</tr>
<tr>
<td>WAKE ON LAN</td>
<td>Yes</td>
</tr>
<tr>
<td>WATCHDOG TIMER</td>
<td>255 Levels</td>
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<tr>
<td>SECURITY</td>
<td>—</td>
</tr>
<tr>
<td>RTC BATTERY</td>
<td>Lithium Battery 3V/240mAh</td>
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<tr>
<td>DIMENSION</td>
<td>5.75&quot; x 4&quot; (146mm x 101.7mm)</td>
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<tr>
<td>OS SUPPORT</td>
<td>Windows XP 32-bit</td>
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<table>
<thead>
<tr>
<th>POWER</th>
<th>+5V</th>
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<tbody>
<tr>
<td>POWER REQUIREMENT</td>
<td>+5V</td>
</tr>
<tr>
<td>POWER SUPPLY TYPE</td>
<td>AT/ATX</td>
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<tr>
<td>CONNECTOR</td>
<td>4Pin Connector</td>
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<tr>
<td>POWER CONSUMPTION</td>
<td>LX 800 500 MHz, DDR400 1 GB, 1.17A@+5V (Typical)</td>
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<table>
<thead>
<tr>
<th>DISPLAY</th>
<th>AMD Geode™</th>
</tr>
</thead>
<tbody>
<tr>
<td>LVDS/eDP</td>
<td>Up to 24-bit Single Channel LVDS/TTL LCD</td>
</tr>
<tr>
<td>DISPLAY INTERFACE</td>
<td>VGA x 1, up to 1920 x 1200</td>
</tr>
<tr>
<td>MULTIPLE DISPLAY</td>
<td>Up to 2 Simultaneous Displays</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AUDIO</th>
<th>High Definition Audio Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>CODEC</td>
<td>—</td>
</tr>
<tr>
<td>AUDIO INTERFACE</td>
<td>Line-in/Line-out/MIC/CD-in</td>
</tr>
<tr>
<td>SPEAKER</td>
<td>—</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXTERNAL I/O</th>
<th>10/100Base-TX x 2, Realtek RTL 8139DL</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB</td>
<td>—</td>
</tr>
<tr>
<td>SERIAL PORT</td>
<td>COM1(RS-232)</td>
</tr>
<tr>
<td>VIDEO</td>
<td>VESA x 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INTERNAL I/O</th>
<th>USB2.0 x 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERIAL PORT</td>
<td>COM2(RS-232/422/485)</td>
</tr>
<tr>
<td>VIDEO</td>
<td>TTL LCD x 1, LVDS LCD x 1</td>
</tr>
<tr>
<td>SATA</td>
<td>—</td>
</tr>
<tr>
<td>AUDIO</td>
<td>Audio Header x 1</td>
</tr>
<tr>
<td>DIO/GPIO</td>
<td>8-bit</td>
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<tr>
<td>SMBus/DC</td>
<td>—</td>
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<tr>
<td>TOUCH</td>
<td>—</td>
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</table>

<table>
<thead>
<tr>
<th>FAN</th>
<th>System Fan x 1</th>
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</thead>
<tbody>
<tr>
<td>SIM</td>
<td>—</td>
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</tbody>
</table>

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

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1702200295</td>
<td>Conversion Cable for ATX Power Supply, Length 20cm</td>
<td>1</td>
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<tr>
<td>1709148181</td>
<td>Audio Cable, Length 18cm</td>
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<tr>
<td>170910298</td>
<td>USB Cable, Length 20cm</td>
<td>1</td>
</tr>
<tr>
<td>1701100206</td>
<td>COM Port Cable, 9P DB Male, Length 20cm</td>
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</tr>
<tr>
<td>1701260201</td>
<td>Parallel Port Cable, Length 20 cm</td>
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</tr>
<tr>
<td>1701340600</td>
<td>Floppy Cable, Length 60 cm</td>
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</tbody>
</table>
Block Diagram

![Block Diagram of GENE-5315 Rev. A SubCompact Boards](image)

Dimension
Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Fan/Fanless</th>
<th>Display</th>
<th>LVDS</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/422/485</th>
<th>Expansion Slot</th>
<th>Power</th>
<th>Power Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENE-5315-A13</td>
<td>AMD Geode™ LX800</td>
<td>Fanless</td>
<td>CRT + LVDS CRT + TTL</td>
<td>24b/1CH</td>
<td>EIDE x 1 Floppy x 1 CompactFlash™ x 1</td>
<td>FE x 2</td>
<td>USB2.0 x 4</td>
<td>1</td>
<td>1</td>
<td>Mini-PCIE x 1 CardBus x 1</td>
<td>+5V, AT/ATX</td>
<td>0°C ~ 60°C</td>
<td>DIO x 8</td>
</tr>
<tr>
<td>GENE-5315-A15-01</td>
<td>AMD Geode™ LX800</td>
<td>Fanless</td>
<td>CRT + LVDS CRT + TTL</td>
<td>18b, 12CH</td>
<td>EIDE x 1 Floppy x 1 CompactFlash™ x 1</td>
<td>FE x 2</td>
<td>USB2.0 x 4</td>
<td>1</td>
<td>1</td>
<td>Mini-PCIE x 1 CardBus x 1</td>
<td>+5V, AT/ATX</td>
<td>0°C ~ 60°C</td>
<td>DIO x 8</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
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)
- CHIPSSET CS5536
- MEMORY TYPE DDR333 SODIMM x 1 (DDR400 optional), up to 1GB
- BIOS Award 1MB
- WAKE ON LAN Yes
- WATCHDOG TIMER 255 Levels
- RTC BATTERY Lithium Battery 3V/240mAh
- DIMENSION 5.75” x 4” (146mm x 101.7mm)
- OS SUPPORT Windows XP 32-bit

POWER
- POWER REQUIREMENT +5V
- POWER SUPPLY TYPE AT/ATX
- POWER CONSUMPTION LX 800 500 MHz, DDR400 1 GB, 1.17A@+5V(Typical)

DISPLAY
- CONTROLLER AMD Geode™
- LVDS/eDP Up to 24-bit Single Channel LVDS/ TTL LCD
- DISPLAY INTERFACE VGA x1, up to 1920 x 1200
- MULTIPLE DISPLAY Up to 2 Simultaneous Displays
- AUDIO CODEC High Definition Audio Interface
- AUDIO INTERFACE Line-in/Line-out/MIC/CD-in
- SPEAKER —
- EXTERNAL I/O ETHERNET 10/100Base-TX x 2, Realtek RTL 8139DL
- USB —
- SERIAL PORT COM1(RS-232)
- VIDEO VGA x 1

INTERNAL I/O
- USB USB2.0 x 4
- SERIAL PORT COM2, COM3, COM4(RS-232/422/485)
- VIDEO TTL LCD x 1 LVDS LCD x 1
- SATA —
- AUDIO Audio Header x 1
- DIO/GPIO 8-bit
- SMBus/I2C —
- TOUCH —

Optional Accessories

Part Number | Description | QTY
--- | --- | ---
1702200205 | Conversion Cable for ATX Power Supply, Length 20cm | 1
17094181 | Audio Cable, Length 18cm | 1
1709100208 | USB Cable, Length 20cm | 1
1701100206 | COM Port Cable, 9P DB Male, Length 20cm | 1
1701260201 | Parallel Port Cable, Length 20 cm | 1
1701340600 | Floppy Cable, Length 60 cm | 1

Packing List

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

Note: All specifications are subject to change without notice.
Block Diagram

Dimension

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>Fan/Fanless</th>
<th>Display</th>
<th>LVDS</th>
<th>Storage</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/422/485</th>
<th>Expansion Slot</th>
<th>Power</th>
<th>Power Temp</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENE-5315-B13</td>
<td>AMD Geode™ LX800</td>
<td>Fanless</td>
<td>CRT + LVDS CRT + TTL</td>
<td>24-bit, 1 CH</td>
<td>EIDE x 1, Floppy x 1, CompactFlash™ x 1</td>
<td>FE x 2</td>
<td>UB2.0 x 4</td>
<td>4</td>
<td>1</td>
<td>Mini-PCI x 1</td>
<td>+5V, AT/ATX</td>
<td>0°C – 60°C</td>
<td>DIO x 8</td>
</tr>
<tr>
<td>GENE-5315-B13-01</td>
<td>AMD Geode™ LX800</td>
<td>Fanless</td>
<td>CRT + LVDS CRT + TTL</td>
<td>18-bit, 1 CH</td>
<td>EIDE x 1, Floppy x 1, CompactFlash™ x 1</td>
<td>FE x 2</td>
<td>UB2.0 x 4</td>
<td>4</td>
<td>1</td>
<td>Mini-PCI x 1</td>
<td>+5V, AT/ATX</td>
<td>0°C – 60°C</td>
<td>DIO x 8</td>
</tr>
<tr>
<td>GENE-5315W1-B13</td>
<td>AMD Geode™ LX800</td>
<td>Fanless</td>
<td>CRT + LVDS CRT + TTL</td>
<td>24-bit, 1 CH</td>
<td>EIDE x 1, Floppy x 1, CompactFlash™ x 1</td>
<td>FE x 2</td>
<td>UB2.0 x 4</td>
<td>4</td>
<td>1</td>
<td>Mini-PCI x 1</td>
<td>+5V, AT/ATX</td>
<td>WiTAS 1 (-20°C – 70°C)</td>
<td>DIO x 8</td>
</tr>
<tr>
<td>GENE-5315W1-B13-01</td>
<td>AMD Geode™ LX800</td>
<td>Fanless</td>
<td>CRT + LVDS CRT + TTL</td>
<td>18-bit, 1 CH</td>
<td>EIDE x 1, Floppy x 1, CompactFlash™ x 1</td>
<td>FE x 2</td>
<td>UB2.0 x 4</td>
<td>4</td>
<td>1</td>
<td>Mini-PCI x 1</td>
<td>+5V, AT/ATX</td>
<td>WiTAS 1 (-20°C – 70°C)</td>
<td>DIO x 8</td>
</tr>
</tbody>
</table>
07

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

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

Specifications
- **CPU**: Onboard 11th Gen. Intel® Core™ Processor
  - i7-1185G7E (4C/8T, 1.80GHz, up to 4.40GHz)
  - i5-1145G7E (4C/8T, 1.50GHz, up to 4.10GHz)
  - i3-1115G4E (2C/4T, 2.20GHz, up to 3.90GHz)
- **CPU TDP**: 15W, (TDP up to 28W)
- **CHIPSET**: Integrated with Intel® SoC
- **MEMORY TYPE**: Onboard LPDDR4x, 3733, up to 16GB
- **BIOS**: UEFI
- **WATCHDOG TIMER**: 255 Levels
- **SECURITY**: fTPM
- **RTC Battery**: Lithium Battery 3V/240mAh
- **DIMENSION (L X W)**: 3.38" x 2.17" (86 mm x 55 mm)
- **POWER**: DC in +12V
- **CONNECTOR**: ATX
- **POWER CONSUMPTION**: With i7-1185G7E + LPDDR4x 16GB : 12V@4.58A, 55W (steady state during full loading)
- **DISPLAY**: Intel® UHD Graphics for 11th Gen Intel® Processors
- **LVDS/eDP**: eDP x 1
- **RESOLUTION**: HDMI 1.4b x 1
- **AUDIO**: —
- **CODEC**: —
- **AUDI INTERFACE**: —
- **Speaker**: —
- **EXTERNAL I/O**: —
- **ETHERNET**: Intel® i219LM, 10/100/1000Base.RJ-45 x1
- **USB**: USB3.2 Gen 2 x 2 (Type A)
- **SERIAL PORT**: —
- **VIDEO**: HDMI 1.4b x 1

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

Packing List
- **de next-TGU8 x 1**
- **Copper stud M2.5mm.19mm x 4**
Block Diagram

Intel Tiger Lake-UP3 SoC (Up to 28W)

M.2 2280 M key
FPC (PCIe Gen3 [x4])
eDP
SATA (w/Power)
Coin Battery
USB2.0 x 4

PCIe Gen3 [x2]
PCIe Gen3 [x4]
DDI
SATA3
RTC
USB2.0 x 4

COM Port x 2 (RS232/422/485)
COM Transceiver
UART
Super I/O

Super I/O

Intel Tiger Lake-UP3 SoC (Up to 28W)

USB3.2/2.0 x2
HDMI1.4
HDMI
PCIe Gen3 x 1
PCIe Gen3 x 1
USB3.2 x 2 Dual Port

I219LM
GbE
I225LM
2.5GbE
Dual Port

FAN CTRL
4 pin FAN Ctrl

Ordering Information

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CPU</th>
<th>MEMORY</th>
<th>THERMAL</th>
<th>DISPLAY</th>
<th>STORAGE</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/232/485</th>
<th>EXPANSION SLOT</th>
<th>POWER</th>
<th>OPERATING TEMP</th>
<th>OTHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DENEXT-TGU8-A10-0001</td>
<td>i7-1185G7E</td>
<td>Onboard LPDDR4x 16GB</td>
<td>Fan</td>
<td>eDP x 1, HDMI x 1</td>
<td>SATA x 1</td>
<td>2.5GbE x 1, GbE x 1</td>
<td>USB 3.2 Gen 2 x 2, USB 2.0 x 4</td>
<td>—</td>
<td>2</td>
<td>M.2 M key 2280 x 1 FPC Connector x 1</td>
<td>+12V in (DC Jack)</td>
<td>0°C ~ 60°C</td>
<td>dio 8 bit</td>
</tr>
<tr>
<td>DENEXT-TGU8-A10-0002</td>
<td>i5-1145G7E</td>
<td>Onboard LPDDR4x 16GB</td>
<td>Fan</td>
<td>eDP x 1, HDMI x 1</td>
<td>SATA x 1</td>
<td>2.5GbE x 1, GbE x 1</td>
<td>USB 3.2 Gen 2 x 2, USB 2.0 x 4</td>
<td>—</td>
<td>2</td>
<td>M.2 M key 2280 x 1 FPC Connector x 1</td>
<td>+12V in (DC Jack)</td>
<td>0°C ~ 60°C</td>
<td>dio 8 bit</td>
</tr>
<tr>
<td>DENEXT-TGU8-A10-0003</td>
<td>i3-1115G4E</td>
<td>Onboard LPDDR4x 16GB</td>
<td>Fan</td>
<td>eDP x 1, HDMI x 1</td>
<td>SATA x 1</td>
<td>2.5GbE x 1, GbE x 1</td>
<td>USB 3.2 Gen 2 x 2, USB 2.0 x 4</td>
<td>—</td>
<td>2</td>
<td>M.2 M key 2280 x 1 FPC Connector x 1</td>
<td>+12V in (DC Jack)</td>
<td>0°C ~ 60°C</td>
<td>dio 8 bit</td>
</tr>
</tbody>
</table>
de next-V2K8

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

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

Specifications

SYSTEM
FORM FACTOR 86mm x 55mm, Single board computer
CPU AMD Ryzen™ Embedded V2718 with Radeon™ Graphics, AMD Ryzen™ Embedded V2516 with Radeon™ Graphics
CPU TDP 10W, TDP-up to 25W : V2718 / V2516
CHIPSET Integrated with AMD Ryzen™Embedded SoC
MEMORY TYPE Onboard LPDDR4x 3200, up to 16GB
BIOS UEFI
WAKE ON LAN Yes
WATCHDOG TIMER 255 Levels
SECURITY TPM
RTC Battery Lithium Battery 3V/240mAh
DIMENSION (L x W) 3.38” x 2.17” (86 mm x 55 mm)

POWER
POWER REQUIREMENT DC in +12V
POWER SUPPLY TYPE AT/ATX
CONNECTOR DC Jack (Optional : 2pin Phoenix Connector)
PPOWER CONSUMPTION
AMD Ryzen™V2718 Processor, LPDDR4 3200MHz16GB, 3.92A@12V, 47.04W during full loading test (Peak)
AMD Ryzen™V2718 Processor, LPDDR4 3200MHz16GB, 3.07A@12V, 36.84W during full loading test (Steady)

DISPLAY
CONTROLLER AMD Radeon™ Graphics
LVDS/eDP eDP only, up to 3840 X 2160 Resolution
Display Interface eDP x 1
HDMI 1.4b x 1
Multiple Display Up to 2 Simultaneous Displays

AUDIO
CODEC —
AUDIO INTERFACE —
Speaker —

EXTERNAL I/O
ETHERNET REALTEK RTL8111R, 10/100/1000Base,RJ-45 x 1, Intel® i225LM, 10/100/2500Base RJ-45 x 1
USB USB3.2 Gen 2 x 2 (Type A)
SERIAL PORT —
VIDEO HDMI 1.4b x 1

INTERNAL I/O
USB USB2.0 x 4 (pin header)
SERIAL PORT COM Port (RS232/422/485) x 2 (pin header)

Optional Accessories
- 170X000512 de next 45 pin cable for USB2.0 x 4, COM Port x 2, DIO 8 bit
- 170X000603 Front Panel Cable for de next use.Length 10 cm
- 1709070200 SATA Cable,180D.Length 20cm
- 170X000322 SATA Power Cable,Length 6cm
- DENEXT-FAN01 CPU cooler for de next-TGU8 / de next-V2K8

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

Note: All specifications are subject to change without notice.
**Block Diagram**

**Dimension**
Unit: mm

**Ordering Information**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CPU</th>
<th>MEMORY</th>
<th>THERMAL</th>
<th>DISPLAY</th>
<th>STORAGE</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>RS-232/232/480</th>
<th>EXPANSION SLOT</th>
<th>POWER</th>
<th>OPERATING TEMP</th>
<th>OTHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DENEXT-V200-A10-0001</td>
<td>V2718</td>
<td>Onboard LPDDR4x 16GB</td>
<td>Fan</td>
<td>eDP x 1, HDMI x 1</td>
<td>SATA3 x 1</td>
<td>2.5G Be x 1, GbE x 1</td>
<td>USB 3.2 Gen 2 x 2, USB 2.0 x 4</td>
<td>—</td>
<td>2</td>
<td>M.2 M key 2280 x 1</td>
<td>+12V in (DC Jack)</td>
<td>0°C ~ 60°C</td>
<td>DIO 8 bit</td>
</tr>
<tr>
<td>DENEXT-V200-A10-0002</td>
<td>V2516</td>
<td>Onboard LPDDR4x 16GB</td>
<td>Fan</td>
<td>eDP x 1, HDMI x 1</td>
<td>SATA3 x 1</td>
<td>2.5G Be x 1, GbE x 1</td>
<td>USB 3.2 Gen 2 x 2, USB 2.0 x 4</td>
<td>—</td>
<td>2</td>
<td>M.2 M key 2280 x 1</td>
<td>+12V in (DC Jack)</td>
<td>0°C ~ 60°C</td>
<td>DIO 8 bit</td>
</tr>
</tbody>
</table>
08

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

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

Specifications

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

Note: All specifications are subject to change without notice.
Note: All specifications are subject to change without notice.

### Block Diagram

![Block Diagram](image)

### Dimension

Unit: mm

![Dimension Diagram](image)

### Ordering Information

<table>
<thead>
<tr>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP-CHT01-A20-0116-A11</td>
<td>UP board with x5-Z8350 CPU, 1GB RAM+16GB eMMC, passive heatsink</td>
</tr>
<tr>
<td>UP-CHT01-A20-0216-A11</td>
<td>UP board with x5-Z8350 CPU, 2GB RAM+16GB eMMC, passive heatsink</td>
</tr>
<tr>
<td>UP-CHT01-A20-0322-A11</td>
<td>UP board with x5-Z8350 CPU, 2GB RAM+32GB eMMC, passive heatsink</td>
</tr>
<tr>
<td>UP-CHT01-A20-0432-A11</td>
<td>UP board with x5-Z8350 CPU, 4GB RAM+16GB eMMC, passive heatsink</td>
</tr>
<tr>
<td>UP-CHT01-A20-0464-A11</td>
<td>UP board with x5-Z8350 CPU, 4GB RAM+64GB eMMC, passive heatsink</td>
</tr>
</tbody>
</table>

### Packing List

- UP-CHT01 with Heatsink
UP 4000
UP Developer Board with Intel® Celeron® N3350/ Intel® Pentium® N4200/ Intel Atom® x7-E3950 Processor SoC

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

Specifications

System

<table>
<thead>
<tr>
<th>Processor</th>
<th>Intel® Celeron® N3350/ Intel® Pentium® N4200/ Intel Atom® x7-E3950 Processor SoC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphics</td>
<td>Intel® Gen 9 HD, supporting 4K Codec Decode and Encode for HEVC4, H.264, VP8</td>
</tr>
</tbody>
</table>
| I/O                | 2 pin wafer for Fan (12V) x 1  
|                    | 2 pin wafer for RTC Battery x 1  
|                    | 6 pin wafer for Audio (Line out + MIC in) x 1  
|                    | 10 pin wafer (2 USB2.0 + 1 HSUART) x 1  
|                    | HAT 40 pin header x 1  
|                    | 4pin wafer power button for front panel x 1  
|                    | 41 pin FPC connector for high speed expand x 1 power button x 1                   |
| Camera             | —                                                                                 |
| USB                | USB 3.2 Gen 1 (Type A) x 3  
|                    | USB 2.0 pin header (10 pins in total) x 2  
|                    | USB 3.2 Gen 1 OTG via USB Type-C x 1                                               |
| Expansion          | 40 pin GPIO x 1  
|                    | via carrier board: M.2 2230/2242/2280 x 1  
|                    | M.2 3052 x 1                                                                         |
| RTC                | Yes                                                                               |
| Power              | 12V DC-in  Ø6A (phoenix Terminal co-lay)                                           |
| Dimension          | 3.34" x 2.20" (85mm x 56mm)                                                       |
| Memory             | onboard LPDDR4 max to 8GB                                                         |
| Storage            | 16GB/32GB/64GB eMMC                                                              |
| Display Interface  | HDMI1.4x1  
|                    | DP 1.2 via USB TYPE C Connector                                                   |
| Ethernet           | 1 Gb Ethernet (full speed) RJ-45 x 1                                               |
| OS Support         | Microsoft Windows 10 (full), Windows IOT Core Yocto project 3.1 Kernel 5.4 Ubuntu 18.04 |
| Operating Temperature | 32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow                                           |
| Operation Humidity | 10% ~ 80% relative humidity, non-condensing                                     |
| Certification      | CE/FCC Class A, RoHS Compliant                                                   |

Note: All specifications are subject to change without notice.
Block Diagram

Dimension Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part number</th>
<th>CPU</th>
<th>Memory</th>
<th>Storage</th>
<th>TPM 2.0</th>
<th>Gbe LAN</th>
<th>Audio wafer</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP-APL03C2F-A10-0216</td>
<td>Apollo Lake N3350(F1)</td>
<td>2GB</td>
<td>16GB</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>UP-APL03C2F-A10-0232</td>
<td>Apollo Lake N3350(F1)</td>
<td>2GB</td>
<td>32GB</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>UP-APL03C2F-A10-0432</td>
<td>Apollo Lake N3350(F1)</td>
<td>4GB</td>
<td>32GB</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>UP-APL03F4F-A10-0432</td>
<td>Apollo Lake N4200(F1)</td>
<td>4GB</td>
<td>32GB</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>UP-APL03X7F-A10-0464</td>
<td>Apollo Lake E3950(F1)</td>
<td>4GB</td>
<td>64GB</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>UP-APL03P4F-A10-0864</td>
<td>Apollo Lake N4200(F1)</td>
<td>8GB</td>
<td>64GB</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>UP-APL03X7F-A10-0864</td>
<td>Apollo Lake E3950(F1)</td>
<td>8GB</td>
<td>64GB</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
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</table>

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1255300660L</td>
<td>(TF) PowerAdapter.DC.100/240V.12V.60W.Powertron.PS1065-1201B500.For UP-PLUS</td>
</tr>
<tr>
<td>9741364A00 (via carrier board)</td>
<td>Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT4.0.2T2R, with 2 sets of cable &amp; antenna (Enk.DCNFAT36A4A)</td>
</tr>
<tr>
<td>9651906001 (via carrier board)</td>
<td>(TF) M.2 2230 WiFi Kit.802.11ac/b/g/n + BT4.0.2T2R, with WiFi &amp; BT antenna.</td>
</tr>
<tr>
<td>170X000382</td>
<td>(TF) Cable 6P.Pitch=1.0mm.150mm.FLYINGWAY.FWAA-1473.Audio Jack Cable</td>
</tr>
</tbody>
</table>

Packing List

- UP 4000 with Heatsink

Note: All specifications are subject to change without notice.
UP Squared

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

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Intel® Pentium® N4200/ Celeron® N3350/ Atom™ E3940/ E3950 Processor SoC</td>
</tr>
<tr>
<td>Graphics</td>
<td>Intel® Gen 9 HD, supporting 4K Codec Decode and Encode for HEVC and H.264, VP9</td>
</tr>
<tr>
<td>I/O</td>
<td>HDMI x 1, DP x 1, I2S Audio Port</td>
</tr>
<tr>
<td>Camera</td>
<td>CSI 2-Lane + CSI 4-Lane</td>
</tr>
<tr>
<td>USB</td>
<td>USB 2.0 x 2, USB3.0 OTG x 1, USB3.0 (Type A) x 3</td>
</tr>
<tr>
<td>Expansion</td>
<td>40 pin GPIO x 1, Full-sized Mini-PCIe x 1 (PCIe &amp; USB2.0), M.2 2230 x 1, SATA3 x 1, 60pin EXHAT x 1</td>
</tr>
<tr>
<td>RTC</td>
<td>Yes</td>
</tr>
<tr>
<td>Power</td>
<td>5V DC-in @ 4A-6A</td>
</tr>
<tr>
<td>Dimension</td>
<td>3.37” x 3.54” (85.6 mm × 90 mm)</td>
</tr>
<tr>
<td>Memory</td>
<td>2GB (single channel) LPDDR4, 4GB/6GB (dual channel) LPDDR4</td>
</tr>
<tr>
<td>Storage</td>
<td>eMMC 32 GB / 64 GB / 128 GB</td>
</tr>
<tr>
<td>Display Interface</td>
<td>eDP</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Gb Ethernet (full speed) RJ-45 x 2</td>
</tr>
<tr>
<td>OS Support</td>
<td>Microsoft Windows 10 (full), Windows IoT Core, Linux (Debian, Ubuntu, Yocto), Android Nougat</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>Operation Humidity</td>
<td>0% ~ 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Certification</td>
<td>CE/FCC Class A, RoHS Compliant, REACH</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
### Block Diagram

![Block Diagram Image]

### Dimension

Unit: mm

![Dimension Image]

### Ordering Information

<table>
<thead>
<tr>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPS-APL2F-A20-0232</td>
<td>UP² (UP Squared) board with Intel® Celeron® Dual Core N3350(F1) up to 2.4GHz, on board 2GB DDR4, 32GB eMMC</td>
</tr>
<tr>
<td>UPS-APL2F-A20-0432</td>
<td>UP² (UP Squared) board with Intel® Celeron® Dual Core N3350(F1) up to 2.4GHz, on board 4GB DDR4, 32GB eMMC</td>
</tr>
<tr>
<td>UPS-APL2F-A20-0832</td>
<td>UP² (UP Squared) board with Intel® Pentium® N4200(F1) Quad Core up to 2.5 GHz, on board 4GB DDR4, 32GB eMMC</td>
</tr>
<tr>
<td>UPS-APL2F-A20-0864</td>
<td>UP² (UP Squared) board with Intel® Pentium® N4200(F1) Quad Core up to 2.5 GHz, on board 8GB DDR4, 64GB eMMC</td>
</tr>
<tr>
<td>UPS-APL3F-A20-08128</td>
<td>UP² (UP Squared) board with Intel® Pentium® N4200(F1) Quad Core up to 2.5 GHz, on board 8GB DDR4, 128GB eMMC</td>
</tr>
<tr>
<td>UPS-APL5F-A20-08128</td>
<td>UP² (UP Squared) board with Intel® Atom™ E3940(F1).4G memory 32G eMMC.Rev.1.0</td>
</tr>
<tr>
<td>UPS-APL7F-A20-0464</td>
<td>UP² (UP Squared) board with Intel® Atom™ E3950(F1).4G memory 64G eMMC.Rev.1.0</td>
</tr>
<tr>
<td>UPS-APL7F-A20-0864</td>
<td>UP² (UP Squared) board with Intel® Atom™ E3950(F1).8G memory 64G eMMC.Rev.1.0</td>
</tr>
</tbody>
</table>

### Packing List

- UPS-APL with Heatsink

### Optional Accessories

- 1702020910
  Power cord for EU
- 1702020911
  Power cord for US
- 1255300362
  30W/90V/6A power adapter
- PER-TAICX-A10-001
  AI Core X mPCIe card with 30 mm heat sink
- PER-TAICX-A10-002
  AI Core X mPCIe card with 15 mm heat sink with FAN

Note: All specifications are subject to change without notice.

www.aaeon.com

UP Boards

UP Squared

08-6
### 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 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
- **Front Panel**: Audio wafer

#### 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
- **DP**: 1.2 x 1
- **eDP**: 1.3 x 1

#### Ethernet
- **Gb Ethernet (full speed)** RJ-45 x 2

#### Security
- **Onboard TPM 2.0**

#### OS Support
- Microsoft Windows 10 (full)
- Windows IOT Core
- Ubuntu 20.04 LTS
- Yocto 3.1

#### Power Requirement
- **Power**: 12V DC-in, 5A

#### Mechanical
- **Dimension**: 3.37” x 3.54” (85.6 mm x 90 mm)
- **Net Weight**: 0.52 lbs (0.24kg)
- **Gross Weight**: 0.66 lbs (0.3kg)

#### Environment
- **Operating Temperature**: 32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow
- **Operation Humidity**: 0% ~ 90% relative humidity, non-condensing
- **MTBF**: 465,586
- **Certification**: CE/FCC Class A, RoHS Compliant, REACH

Note: All specifications are subject to change without notice.
Block Diagram

Dimension Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part number</th>
<th>CPU</th>
<th>Memory</th>
<th>Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPS-EHLCN2-A10-0232</td>
<td>N6210</td>
<td>2GB</td>
<td>32GB</td>
</tr>
<tr>
<td>UPS-EHLCN2-A10-0432</td>
<td>N6210</td>
<td>4GB</td>
<td>32GB</td>
</tr>
<tr>
<td>UPS-EHLFJ4-A10-0432</td>
<td>J6426</td>
<td>4GB</td>
<td>32GB</td>
</tr>
<tr>
<td>UPS-EHLFJ4-A10-0864</td>
<td>J6426</td>
<td>8GB</td>
<td>64GB</td>
</tr>
<tr>
<td>UPS-EHLFJ4-A10-1664</td>
<td>J6426</td>
<td>16GB</td>
<td>64GB</td>
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</table>

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1255300600L</td>
<td>12V, 5A, 60W Power Adapter w/ multi-country plugs</td>
</tr>
<tr>
<td>1709070500</td>
<td>SATA cable</td>
</tr>
<tr>
<td>1702150555</td>
<td>SATA power cable(15cm)</td>
</tr>
<tr>
<td>1702150506</td>
<td>SATA power cable(30cm)</td>
</tr>
<tr>
<td>170010015G</td>
<td>UART to USB cable</td>
</tr>
<tr>
<td>9651926801</td>
<td>M.2 2230 WiFi Kit:B02.11ac 2.4GHz/5GHz/BT w/2 cable &amp; antenna</td>
</tr>
<tr>
<td>9741064400</td>
<td>Wireless LAN Kit M.2 2230 B02.11ac/bgn/4x4:802.11ac/bgn + BT4.0, 2T2R, with 2 sets of cable &amp; antenna</td>
</tr>
<tr>
<td>170X003382</td>
<td>Audio cable for audio wafer</td>
</tr>
<tr>
<td>170X005556</td>
<td>COM cable for RS232 wafer</td>
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</table>

Packing List

- UP Squared V2 with heatsink
UP Squared Pro
Developer Board with Intel® Pentium® N4200/ Celeron® N3350/ Atom® E3950 Processor SoC

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Intel® Pentium® N4200/ Celeron® N3350/ Atom® E3950 Processor SoC</td>
</tr>
<tr>
<td>Graphics</td>
<td>Intel® Gen 9 HD, supporting 4K Codec Decode and Encode for HEVC4, H.264, VP9</td>
</tr>
<tr>
<td>I/O</td>
<td>HDMI x 1, DP x 1, COM port (RS422/RS232/RS485) x 2, Audio Jack x 1</td>
</tr>
<tr>
<td>Camera</td>
<td>—</td>
</tr>
<tr>
<td>USB</td>
<td>USB 2.0 x 2, USB 3.2 Gen 1 OTG x 1, USB 3.2 Gen 1 (Type A) x 3</td>
</tr>
<tr>
<td>Expansion</td>
<td>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</td>
</tr>
<tr>
<td>RTC</td>
<td>Yes</td>
</tr>
<tr>
<td>Power</td>
<td>12V-24V DC-in (Lockable plug/ Phoenix connector (optional))</td>
</tr>
<tr>
<td>Dimension</td>
<td>10.16cm x 10.16cm</td>
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<tr>
<td>Memory</td>
<td>2GB (single channel) LPDDR4, 4GB/8GB (dual channel) LPDDR4</td>
</tr>
<tr>
<td>Storage</td>
<td>eMMC 32 GB / 64 GB</td>
</tr>
<tr>
<td>Display Interface</td>
<td>HDMI1.4 x 1, DP1.2 x 1, eDP x 1</td>
</tr>
<tr>
<td>Ethernet</td>
<td>5G Ethernet (full speed) RJ-45 x 2</td>
</tr>
<tr>
<td>OS Support</td>
<td>Microsoft Windows 10 (64-bit), Windows IoT Core, Linux: Ubuntu 18.04.5, Ubuntu 20.04.1, Yocto 3.1</td>
</tr>
</tbody>
</table>
Block Diagram

Dimension
Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPN-APL2F-A10-0232</td>
<td>UPN-APL01 CPU N3350(F1) Memory 2GB eMMC 32GB REV.A1.0</td>
</tr>
<tr>
<td>UPN-APL2F-A10-0432</td>
<td>UPN-APL01 CPU N3350(F1) Memory 4GB eMMC 32GB REV.A1.0</td>
</tr>
<tr>
<td>UPN-APL4F-A10-0432</td>
<td>UPN-APL01 CPU N4200(F1) Memory 4GB eMMC 32GB REV.A1.0</td>
</tr>
<tr>
<td>UPN-APL4F-A10-0864</td>
<td>UPN-APL01 CPU N4200(F1) Memory 8GB eMMC 64GB REV.A1.0</td>
</tr>
<tr>
<td>UPN-APLX7F-A10-0464</td>
<td>UPN-APL01 CPU E3950(F1) Memory 4GB eMMC 64GB REV.A1.0</td>
</tr>
</tbody>
</table>

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1255X00032</td>
<td>12VDC/8A Adapter</td>
</tr>
<tr>
<td>1702031803</td>
<td>Power cord for EU</td>
</tr>
<tr>
<td>1702031802</td>
<td>Power cord for US</td>
</tr>
<tr>
<td>PER-TAIK2-A10-2280</td>
<td>AI Core XM M.2 2280 B+M key card 15mm heatsink with fan</td>
</tr>
<tr>
<td>9651926001</td>
<td>M.2 2230 WiFi Kit.802.11ac:2.4G/5G,W/BT, w/2 cable &amp; antenna</td>
</tr>
<tr>
<td>9741364A00</td>
<td>Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT4.0,2T2R,with 2 sets of cable &amp; antenna</td>
</tr>
</tbody>
</table>

Packing List

- UPN-APL01 with heatsink

Note: All specifications are subject to change without notice.
UP Squared 6000
UP Squared 6000 Developer Board with Intel® Atom® x6000E Pentium® Celeron® Processor SoC

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

Specifications

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

Note: All specifications are subject to change without notice.
UP Squared 6000

Block Diagram

Dimension

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CPU Type</th>
<th>Memory</th>
<th>Storage</th>
<th>USB 3.2 Type C</th>
<th>RS232 / 422 wafer</th>
<th>eDP</th>
<th>TPM 2.0</th>
<th>LAN</th>
<th>100 pin board-board connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPN-EHLQ2-A10-0232</td>
<td>PC Client: N6210 (No PSE)</td>
<td>2GB</td>
<td>32GB</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>1211-AT / 1225-V</td>
</tr>
<tr>
<td>UPN-EHLF4-A10-0432</td>
<td>PC Client: J6426</td>
<td>4GB</td>
<td>32GB</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>1211-AT / 1225-V</td>
</tr>
<tr>
<td>UPN-EHLX4E-A10-0432</td>
<td>Embedded: X6413E</td>
<td>4GB</td>
<td>32GB</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>210-IT / 225-IT</td>
</tr>
<tr>
<td>UPN-EHLX4RE-A10-0864</td>
<td>Industrial: X6425RE</td>
<td>8GB</td>
<td>64GB</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>210-IT / 225-IT</td>
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</tbody>
</table>

Packing List

- UP Squared 6000 with heatsink

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1255400032</td>
<td>12VDC/6A Adapter</td>
</tr>
<tr>
<td>1702631803</td>
<td>Power cord for EU</td>
</tr>
<tr>
<td>1702631802</td>
<td>Power cord for US</td>
</tr>
<tr>
<td>170263180J</td>
<td>Power cord for UK</td>
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<tr>
<td>170263180E</td>
<td>Power cord for Japan</td>
</tr>
<tr>
<td>170263180B</td>
<td>Power cord for China</td>
</tr>
<tr>
<td>1702631811</td>
<td>Power cord for Taiwan</td>
</tr>
<tr>
<td>1709970500</td>
<td>SATA cable</td>
</tr>
<tr>
<td>1702150055</td>
<td>SATA power cable(15cm)</td>
</tr>
<tr>
<td>1702150036</td>
<td>SATA power cable(30cm)</td>
</tr>
<tr>
<td>170010001G</td>
<td>UART to USB cable</td>
</tr>
<tr>
<td>PER-TX4X2-A10-2280</td>
<td>Al Core XM M.2 2280 B+M key card 15mm heatsink with fan</td>
</tr>
<tr>
<td>9651926801</td>
<td>M.2 2230 Wi-Fi Kit,802.11ac/a/b/g/n + Bluetooth, with 2 sets of cable &amp; antenna</td>
</tr>
<tr>
<td>9741364A00</td>
<td>Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + Bluetooth, with 2 sets of cable &amp; antenna</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
UP Squared Pro 7000 Developer Board with Intel® Atom® Processor SoC (Alder Lake N)

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

**Specifications**

<table>
<thead>
<tr>
<th>System</th>
<th>Intel® Atom® Processor SoC (Alder Lake N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphics</td>
<td>Intel® Gen 12 UHD Graphics</td>
</tr>
<tr>
<td>Memory</td>
<td>Up to 16GB LPDDR5</td>
</tr>
<tr>
<td>Storage</td>
<td>Up to 64GB eMMC</td>
</tr>
<tr>
<td>I/O</td>
<td>2x HDMI 2.0b x 1, DP 1.2 x 2, Audio Jack x 1, RS-232/422/485 from 6 pin header x 1</td>
</tr>
<tr>
<td>Camera</td>
<td></td>
</tr>
<tr>
<td>USB</td>
<td>2x USB 2.0 x 2 (from 10 pin header x 1), 2x USB 3.2 Gen 2 Type A x 2, 2x USB 3.2 Gen 2 Type C x 1</td>
</tr>
<tr>
<td>Expansion</td>
<td>40 pin GPIO x 1, M.2 2230 E-Key x 1 (CNVI, PCIe X1, USB2.0), M.2 2280 M-Key x 1 (PCIe X2, USB2.0), M.2 3052 B-Key x 1 (USB3.0 only), SATA3 x 1</td>
</tr>
<tr>
<td>Display Interface</td>
<td>HDMI 2.0b x 1, DP 1.2 x 1, DP 1.2 via USB Type C</td>
</tr>
<tr>
<td>Ethernet</td>
<td>2.5GbE x 2 (Intel® i225/i226)</td>
</tr>
<tr>
<td>Security</td>
<td>Onboard TPM 2.0</td>
</tr>
<tr>
<td>RTC</td>
<td>Yes</td>
</tr>
<tr>
<td>OS Support</td>
<td>Windows 10 IoT Enterprise, Windows IoT Core, Ubuntu 22.04 LTS, Yocto 4</td>
</tr>
</tbody>
</table>

**Power Requirement**
- Power: 12V DC-in, 6A
- POWER SUPPLY TYPE: AT/ATX
- POWER CONSUMPTION (TYPICAL): TBD

**Mechanical**
- Dimension: 4” x 4” (101.6 mm x 101.6 mm)
- Net Weight: TBD
- Gross Weight: TBD

**Environment**
- Operating Temperature: 32°F – 140°F (0°C – 60°C) / 0.5 airflow
- Operation Humidity: 0% – 90% relative humidity, non-condensing
- MTBF: TBD
- Certification: CE/FCC Class A, RoHS Compliant, REACH

Note: All specifications are subject to change without notice.
UP Squared Pro 7000

Block Diagram

INTEL Alder Lake N
35 mm x 24 mm

Dimension
Unit: mm

Ordering Information
• TBD

Optional Accessories
• TBD

Packing List
• UP Squared Pro 7000 with heatsink

Note: All specifications are subject to change without notice.
UP Xtreme developer board with Intel® WHL-U Core™ i7/i5/i3/Celeron® Processor SoC

Features
- Intel® WHL-U Core i7/i5/i3/Celeron® Processor SoC
- Onboard DDR4 memory, Max 16GB
- eMMC 64GB
- 40Pin HAT Connector
- 100pin docking connector
- SATA 6.0Gb/s x 3
- Mini-card slot x 1
- M.2 2280 M Key x 1
- M.2 2330 E key x 1
- Audio Jack x 1 (line out + Mic)
- Lockable DC connector

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>8th generation Intel® Core i7/i5/i3/Celeron® Processor SoC</td>
</tr>
<tr>
<td>Graphics</td>
<td>Intel® Graphics, GEN 9</td>
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<tr>
<td>I/O</td>
<td>RJ45 Ethernet Connector x 2</td>
</tr>
<tr>
<td></td>
<td>HDMI/DP STACK Connector x 1</td>
</tr>
<tr>
<td></td>
<td>Power Button / LED x 1</td>
</tr>
<tr>
<td></td>
<td>Audio Jack (Line out + MIC) x 1</td>
</tr>
<tr>
<td></td>
<td>DC connector (Lockable) x 1</td>
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<td></td>
<td>eDP with Backlight control Header x 1</td>
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<tr>
<td></td>
<td>16 pin 1xGB2.0 x 1 / HSUART (TTL) x 1</td>
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<td></td>
<td>SATA Connector with power connector (5V, 5V) x 1</td>
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<tr>
<td></td>
<td>4 pin Fan connector x 1</td>
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<td></td>
<td>Power Button header x 1</td>
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<tr>
<td></td>
<td>Reset Pin header x 1</td>
</tr>
<tr>
<td></td>
<td>M.2 2230 E Key x 1</td>
</tr>
<tr>
<td></td>
<td>M.2 2330 M Key x 1</td>
</tr>
<tr>
<td></td>
<td>40 pin HAT connector x 1</td>
</tr>
<tr>
<td></td>
<td>mPCIe slot x 1</td>
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<tr>
<td></td>
<td>10 pin RS232/422/485 pin header x 2</td>
</tr>
<tr>
<td></td>
<td>100pin connector x 1</td>
</tr>
<tr>
<td>Camera</td>
<td>—</td>
</tr>
<tr>
<td>USB</td>
<td>USB 3.2 Gen 2 STACK Connector for 2 ports (Front) x 1</td>
</tr>
<tr>
<td></td>
<td>USB 3.2 Gen 2 STACK Connector for 2 ports (Rear) x 1</td>
</tr>
<tr>
<td>Expansion</td>
<td>M.2 2230 E Key x 1</td>
</tr>
<tr>
<td></td>
<td>M.2 2330 M key x 1</td>
</tr>
<tr>
<td></td>
<td>mPCIe slot x 1</td>
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<tr>
<td></td>
<td>100pin connector x 1</td>
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<td></td>
<td>40pin HAT</td>
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<td>RTC</td>
<td>RTC battery, CR2032 x 1</td>
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<tr>
<td>Power</td>
<td>12V - 60VDC</td>
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<tr>
<td>Dimension</td>
<td>122 x 120 mm</td>
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<tr>
<td>Memory</td>
<td>Onboard DDR4 memory, Max 16GB</td>
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<tr>
<td></td>
<td>Single Channel: 4GB</td>
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<tr>
<td></td>
<td>Dual Channel: 8GB, 16GB</td>
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<tr>
<td>Storage</td>
<td>SATA3 (6Gb/s) x 3:</td>
</tr>
<tr>
<td></td>
<td>a. SATA connector x 1</td>
</tr>
<tr>
<td></td>
<td>b. M.2 2280 SATA option (auto detect) x 1</td>
</tr>
<tr>
<td></td>
<td>c. miniSD mSATA option (auto detect) x 1</td>
</tr>
<tr>
<td>Display Interface</td>
<td>HDMI2.0 x 1</td>
</tr>
<tr>
<td></td>
<td>DP1.2 x 1</td>
</tr>
<tr>
<td></td>
<td>eDP x 1</td>
</tr>
<tr>
<td></td>
<td>CEC support with STM32 on HDMI x 1</td>
</tr>
<tr>
<td>Ethernet</td>
<td>i7/i5 SKU: LAN (i210 AT) x 1</td>
</tr>
<tr>
<td></td>
<td>LAN (i219 LM) x 1</td>
</tr>
<tr>
<td></td>
<td>i3/Celeron®: LAN (i210 AT) x 1</td>
</tr>
<tr>
<td></td>
<td>LAN (i219 V) x 1</td>
</tr>
<tr>
<td>OS Support</td>
<td>Win 10</td>
</tr>
<tr>
<td></td>
<td>Linux Ubuntu 18.04 with Kernel 5.0</td>
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<tr>
<td></td>
<td>Linux Yocto 2.7 with Kernel 4.19</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F – 140°F (9°C – 60°C)</td>
</tr>
<tr>
<td>Operation Humidity</td>
<td>0% – 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Certification</td>
<td>CE/FCC class A, RoHS Compliant, REACH</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
Block Diagram

Dimension Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>UPX-WHLCR-A20-04064</td>
<td>Celeron 4305UE</td>
<td>4GB</td>
<td>64GB</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 2 x 4, USB 2.0 x 1</td>
<td>2</td>
<td>Mini card x 1, M.2 2280 B + M key x 1, M.2 2230 E key x 1</td>
<td>12-60V</td>
<td>32°F ~140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>UPX-WHLI7-A20-16064</td>
<td>Core i7-8565U</td>
<td>16GB</td>
<td>64GB</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 2 x 4, USB 2.0 x 1</td>
<td>2</td>
<td>Mini card x 1, M.2 2280 B + M key x 1, M.2 2230 E key x 1</td>
<td>12-60V</td>
<td>32°F ~140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>UPX-WHLI5-A20-08064</td>
<td>Core i5-8365UE</td>
<td>8GB</td>
<td>64GB</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 2 x 4, USB 2.0 x 1</td>
<td>2</td>
<td>Mini card x 1, M.2 2280 B + M key x 1, M.2 2230 E key x 1</td>
<td>12-60V</td>
<td>32°F ~140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>UPX-WHLI3-A20-08064</td>
<td>Core i3-8145UE</td>
<td>8GB</td>
<td>64GB</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 2 x 4, USB 2.0 x 1</td>
<td>2</td>
<td>Mini card x 1, M.2 2280 B + M key x 1, M.2 2230 E key x 1</td>
<td>12-60V</td>
<td>32°F ~140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>UPX-WHLCR-A20-04064</td>
<td>Celeron 4305UE</td>
<td>4GB</td>
<td>64GB</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 2 x 4, USB 2.0 x 1</td>
<td>2</td>
<td>Mini card x 1, M.2 2280 B + M key x 1, M.2 2230 E key x 1</td>
<td>12-60V</td>
<td>32°F ~140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>UPX-WHLI7C1-A20-16064</td>
<td>Core i7-8565U</td>
<td>16GB</td>
<td>64GB</td>
<td>GbE x 2</td>
<td>USB 3.2 Gen 2 x 4, USB 2.0 x 1</td>
<td>2</td>
<td>Mini card x 1, M.2 2280 B + M key x 1, M.2 2230 E key x 1</td>
<td>12-60V</td>
<td>32°F ~140°F (0°C ~ 60°C)</td>
</tr>
</tbody>
</table>

Packing List

• UPX-WHLO1 with Heatsink + cooler

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>125530865A</td>
<td>19Wdc/3.42A.65W power adapter</td>
</tr>
<tr>
<td>1762331830</td>
<td>Power cord for USA</td>
</tr>
<tr>
<td>9741364000</td>
<td>Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT4.0, with 2 sets of cable &amp; antenna (Enter.QDF03A64A)</td>
</tr>
<tr>
<td>9741159000</td>
<td>TF Wi-Fi Wireless LAN Kit IEEE 802.11.b/g/n/ BT 4.0/3.0 (AzureWave AW- NB150H), with cable &amp; antenna (mini card)</td>
</tr>
<tr>
<td>PER-TAIK2-A10-2280</td>
<td>AI Core XM 2280.M.2 2280 B+M key card with Dual Myriad X.15 mm heat sink with FAN</td>
</tr>
<tr>
<td>UPFC-CR-VPX3-A10-001</td>
<td>Vision Plus X w/ 3x Myriad X 2485 fan heatsink, REV:A1.0</td>
</tr>
<tr>
<td>UPFC-CR-NPL4-A10-002</td>
<td>NetPlus.i210-if for UP core Plus/A1.0</td>
</tr>
<tr>
<td>UPFC-CPL3-A11-001</td>
<td>Connect Plus.i211-AI for UP core Plus/IP Xtreme</td>
</tr>
</tbody>
</table>
UP Xtreme i11

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

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Intel® Core™ Processor SoC (formerly Tiger Lake UP3)</td>
</tr>
<tr>
<td>Graphics</td>
<td>Intel® Iris® Xe graphics</td>
</tr>
<tr>
<td>I/O</td>
<td>RJ45 Ethernet Connector x 2, HDMI/DP Stack Connector x 1, Power Button / LED x 1, DC Connector (Lockable) x 1, 10-pin USB 2.0 x 2 / HSSUART x 1, SATA Connector with Power Connector (SATA, GND) x 1, 4-pin Fan Connector x 1, 6-pin Front Panel Header, M.2 2230 E Key x 1, M.2 2280 M Key x 1, USB 4.0, 40-pin HAT Connector x 1, M.2 3052 B Key x 1 with SIM, 10-pin RS232/422/485 Pin Header x 2, Alternative 4pin ATX Connector Behind DC Connector</td>
</tr>
<tr>
<td>Camera</td>
<td>—</td>
</tr>
<tr>
<td>USB</td>
<td>USB 3.2 Gen 2 Type A x 3, USB 2.0 x 1, USB4.0 x 1 Type-C</td>
</tr>
<tr>
<td>Expansion</td>
<td>M.2 2230 E Key x 1, M.2 2280 M Key x 1, M.2 3052 B Key x 1, 40-pin HAT Connector x 1, PCIe x 4 Slot</td>
</tr>
<tr>
<td>RTC</td>
<td>RTC battery, CR2032 x 1</td>
</tr>
<tr>
<td>Power</td>
<td>12V</td>
</tr>
<tr>
<td>Dimension</td>
<td>120.35 x 122.5 mm</td>
</tr>
<tr>
<td>Memory</td>
<td>DDR4 SO-DIMM Slot x 2 (up to 64GB 3200MHz)</td>
</tr>
<tr>
<td>Storage</td>
<td>SATA3 (6Gb/s) x 1, a. SATA Connector x 1, b. M.2 2280 M Key NVMe(PCIe [x2])</td>
</tr>
<tr>
<td>Display Interface</td>
<td>HDMI 2.0 x 1, DP 1.4 x 1 + eDP x 1, 4K at 60hz internal panel</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Intel® i225IT x 1, Intel® i219 (vPRO) x 1</td>
</tr>
<tr>
<td>OS Support</td>
<td>Win 10/10D, Linux Ubuntu 20.04.02, Linux Yocto 3.1</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>Operation Humidity</td>
<td>5% ~ 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Certification</td>
<td>CE/FCC class A, RoHS Compliant, REACH</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
UP Xtreme i12

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

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

Specifications

System
- Processor: 12th Gen Intel® Core™ Processor SoC
  - Core i7-1270PE
  - Core i5-1250PE
  - Core i3-1220PE
  - Celeron® 7305E
- Graphics: Intel® Iris® Xe graphics
- Memory: Up to 32GB on board LPDDR5 4800MHz (Dual Channel)
- Storage: M.2 2280 (PCIe Gen4.0 x 4) M-key x 2
  - SATA x 1
- I/O: 10-pin USB 2.0 x 2 / HSUART x 1
  - 4pin Fan Connector x 1
  - 6pin Front Panel Header x 1
  - 10-pin RS232/422/485 Pin Header x 2
  - DC Connector x 1
  - Power Button/LED x 1
  - Audio Jack x 1 (Mic-in, Line out)
  - RJ45 x 2
- Camera
- USB: USB 2.0 x 2 (from wafer x 1), USB2.0 Type A x 1
  - USB 3.2 Gen 2 Type A x 3
  - USB4.0 Type C x 1
- Expansion: 40 pin GPIO x 1
  - M.2 2280 E-key x 1
  - M.2 2280 (PCIe Gen4.0 x 4) M-key x 2
  - SATA x 1
  - M.2 3052 B-key x 1
  - Nano SIM slot x 1
- Display Interface: HDMI 2.0b x 1
  - DP 1.4a x 1
  - DP 1.4b x 1
- Ethernet: Intel® i226IT (TSN) x 1, Intel® i219 (vPRO) x 1
- Security: TPM 2.0
- RTC: Yes
- OS Support: Windows* 10 Enterprise 2021 LTSC
  - Ubuntu 22.04
  - Yocto (TBD)

Power Requirement
- Power: 12-36V DC input (AT/ATX mode)
- POWER SUPPLY TYPE: Lockable
- POWER CONSUMPTION (TYPICAL): Intel® Core™ i7-1270PE, LPDDR5 4800MHz 16GB, 5.86A@+12V (Typical)
  - Intel® Core™ i7-1270PE, LPDDR5 4800MHz 16GB, 8.05A@+12V (Max)

Mechanical
- Dimension: 4.74" x 4.92" (120.35 x 122.5 mm)
- Net Weight: 0.86lb (0.4kg)
- Gross Weight: 1.32lb (0.6kg)

Environment
- Operating Temperature: With Heatsink: 32°F – 140°F (0°C – 60°) / 0.5 airflow
- Operation Humidity: 0% – 90% relative humidity, non-condensing
- MTBF: 362,068 Hours
- Certification: CE/FCC Class A, RoHS Compliant, REACH

Note: All specifications are subject to change without notice.
UP Xtreme i12

Block Diagram

Dimension
Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9741364A00</td>
<td>Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT4.0, 2T2R, with 2 sets of cable &amp; antenna (EnQ:NQAFA364A)</td>
</tr>
<tr>
<td>9651926001</td>
<td>(TF) M.2 2230 WiFi Kit 802.11ac 2.4G/5G, W/Intel 9260 NGW NIC, 2 Cable &amp; antenna</td>
</tr>
<tr>
<td>1702150155</td>
<td>Power Cable 15P SATA(F) + 2P 1mm, Housing (PCB 15cm)</td>
</tr>
<tr>
<td>1700070200</td>
<td>SATA CABLE 7P 180D(F) + lock to 7P 90D(F)</td>
</tr>
<tr>
<td>1255000071</td>
<td>(TF) Power Cord 3P/125V 10A 180D, 6.32A, DC Jack w/Lock, FSP FSP120-ABAN3/9NA1208548</td>
</tr>
<tr>
<td>1702031802</td>
<td>(TF) Power Cord 3P-125V 10A 180D, 6.32A DC JAC w/Lock, FSP FSP120-ABAN3/9NA1208548</td>
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<tr>
<td>1702031803</td>
<td>(TF) Power Cord 3P-250V 10A 180D, 6.32A DC JAC w/Lock, FSP FSP120-ABAN3/9NA1208548</td>
</tr>
<tr>
<td>170203180E</td>
<td>(TF) Power Cord 3P-125V 1A 1M FSP 1P12/121 Certificat</td>
</tr>
<tr>
<td>9651210000</td>
<td>Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT5.2, 2.4G/5G/6G, with 2 sets of cable &amp; antenna (Intel AX210)</td>
</tr>
</tbody>
</table>

Optional Accessories

Packing List
- UP Xtreme i12 with active heatsink
UP Core Developer Board with Intel® Atom® x5-Z8350 Processor SoC

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

Specifications

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

Note: All specifications are subject to change without notice.
**Block Diagram**

**Dimension**

Unit: mm

**Ordering Information**

<table>
<thead>
<tr>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPC-CHT01-0250-A11</td>
<td>UP Core with x5-Z8350 CPU + 2GB RAM + 16GB eMMC, passive heatsink, WiFi 802.11 b/g/n + Bluetooth 4.2 on board powered by AMPAK AP6214A</td>
</tr>
<tr>
<td>UPC-CHT01-0260-A11</td>
<td>UP Core with x5-Z8350 CPU + 2GB RAM + 16GB eMMC, passive heatsink, WiFi 802.11 b/g/n + Bluetooth 4.2 on board powered by AMPAK AP6214A</td>
</tr>
<tr>
<td>UPC-CHT01-0230-A11</td>
<td>UP Core with x5-Z8350 CPU + 3GB RAM + 32GB eMMC, passive heatsink, WiFi 802.11 b/g/n + Bluetooth 4.2 on board powered by AMPAK AP6214A</td>
</tr>
<tr>
<td>UPC-CHT01-0432-A11</td>
<td>UP Core with x5-Z8300 CPU + 4GB RAM + 64GB eMMC, passive heatsink, WiFi 802.11 b/g/n + Bluetooth 4.2 on board powered by AMPAK AP6214A</td>
</tr>
</tbody>
</table>

**Packing List**

- **UPC-CHT01 with Heatsink**
**Connect Plus**

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

### Features
- Gigabit LAN x 3
- Intel® i211-AT (optional with I210-IT for wide temperature) x 3
- USB 3.2 Gen 1 Type A x 1
- Windows® 10, Linux (ubilinux, Ubuntu, Yocto), Android-IA 9.0
- UART x 1
- SPI x 1
- M.2 3042/3052 B-key x 1

### Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPU</td>
<td>—</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Intel i211-AT x 3 (A10-001)</td>
</tr>
<tr>
<td></td>
<td>Intel i210-IT for wide temperature x 3 (A10-002)</td>
</tr>
<tr>
<td>Power Requirement</td>
<td>12V5A</td>
</tr>
<tr>
<td>Power Supply Type</td>
<td>12VDC from M/B</td>
</tr>
<tr>
<td>Power Consumption (Typical)</td>
<td>Max 13.5W w/o 5G module</td>
</tr>
<tr>
<td>Dimensions (L x W)</td>
<td>3.54” x 2.2” (90 mm x 56 mm)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>Operation Humidity</td>
<td>10 ~ 80% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Certification</td>
<td>CE/FCC Class A</td>
</tr>
<tr>
<td>OS Support</td>
<td>Microsoft Windows 10</td>
</tr>
<tr>
<td></td>
<td>Linux: ubilinux, Ubuntu, Yocto</td>
</tr>
<tr>
<td></td>
<td>Android-IA 9.0</td>
</tr>
</tbody>
</table>

### I/O

- Ethernet
  - 001: Intel® i211-AT x 3
  - 002: Intel® i210-IT for wide temperature
- USB
  - USB 3.0 Type A x 1
- SATA
  - —
- Expansion Slot
  - M.2 3042/3052 B-key
  - DOCKING I
  - DOCKING II
  - UART x 1
  - SPI x 1

### Packing List

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

### Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPCR-CPL3-A11-001</td>
<td>Connect Plus i211-AT for UP Core Plus/Up Xtreme</td>
</tr>
<tr>
<td>UPCR-CPL3-A11-002</td>
<td>Connect Plus i210-IT for UP Core Plus/Up Xtreme, A.1</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
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
- Mini card x 1, uSIM Card Reader x 1
- HAT 40-pin Header x 1
- WiFi Module Header for x 1

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
</tr>
</thead>
</table>
| IC           | 2-CH FULL-SPEED USB UART x 1  
USB 2.0 Hub x 1  
RS-232/RS-485/RS-422 transceiver x 2 |

<table>
<thead>
<tr>
<th>I/O Placements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Ports</td>
<td>RS-232/422/485 Connector (DB9) x 1</td>
</tr>
</tbody>
</table>
| Internal connector | RS-232 wafer (RS-232/422/485) x 1  
USB wafer x 1  
Mini card 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 |

<table>
<thead>
<tr>
<th>Others</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>2.56” x 2.2” (65 mm x 56 mm)</td>
</tr>
<tr>
<td>Certification</td>
<td>CE/FCC Class A</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F – 140°F (0°C – 60°C)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>10%–60% RH, non-condensing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WiFi Module</td>
<td>UP-WIFIMD-A20-7001 (WiFi module: 7M02)</td>
</tr>
<tr>
<td></td>
<td>UP-WIFIMD-A20-4001 (WiFi module: 4M02)</td>
</tr>
<tr>
<td>BT Module</td>
<td>UP-BTMID-A20-001</td>
</tr>
<tr>
<td>3G Module</td>
<td>9741UC20050 (3G module: UC20-0)</td>
</tr>
</tbody>
</table>

Packing List

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

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP-3GHA-T-A20-0001</td>
<td>3G HAT</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
UP-POE HAT
PoE Ideal Diode Bridge & PD Forward/Flyback Controller

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IC</td>
<td>LT4321I (PoE Ideal Diode Bridge Controller) x 1</td>
</tr>
<tr>
<td></td>
<td>LT4276B (PD Forward / Flyback Controller) x 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I/O Placements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>External Ports</td>
<td>RJ45 Input x 1</td>
</tr>
<tr>
<td></td>
<td>RJ45 Output x 1</td>
</tr>
<tr>
<td>Internal connector</td>
<td>HAT 40 GPIO male (5V, GND) x 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Others</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>3.37&quot; x 2.22&quot; x 0.98&quot; (85.6 mm x 56.5 mm x 25 mm)</td>
</tr>
<tr>
<td>Certification</td>
<td>CE / FCC Class A</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>OS Support</td>
<td>No OS limitation</td>
</tr>
</tbody>
</table>

Packing List
- LAN cable
- UP-POE HAT

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP-POE-A20-0001</td>
<td>POE board</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
UP Squared 6000 PSE Carrier Board

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>UPN-EHLCB-A10-001:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GbE via Marvell Alaska x 2</td>
</tr>
<tr>
<td></td>
<td>Micro USB (PSE DEBUG PORT) x 1</td>
</tr>
<tr>
<td></td>
<td>40 pin HAT2 PSE header x 1</td>
</tr>
<tr>
<td></td>
<td>(CAN x 2, QEP x 4, I2C x 1, PWM x 4, ADC x 4)</td>
</tr>
<tr>
<td></td>
<td>SATA with power connector x 1</td>
</tr>
<tr>
<td></td>
<td>100 pin board-to-board high speed connector x 1</td>
</tr>
<tr>
<td></td>
<td>Full-sized Mini-PCIe (via USB2.0) x 1</td>
</tr>
<tr>
<td></td>
<td>SIM card slot x 1</td>
</tr>
<tr>
<td></td>
<td>SWD 10 pin wafer (connect to MB) x 1</td>
</tr>
<tr>
<td></td>
<td>UART 10 pin wafer (connect to MB) x 1</td>
</tr>
<tr>
<td></td>
<td>RS232 wafer x 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I/O</th>
<th>UPN-EHLCB-A10-002:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Micro USB (PSE DEBUG PORT) x 1</td>
</tr>
<tr>
<td></td>
<td>40 pin HAT2 PSE header x 1</td>
</tr>
<tr>
<td></td>
<td>(CAN x 2, QEP x 4, I2C x 1, PWM x 4, ADC x 4)</td>
</tr>
<tr>
<td></td>
<td>SATA with power connector x 1</td>
</tr>
<tr>
<td></td>
<td>100 pin board-to-board high speed connector x 1</td>
</tr>
<tr>
<td></td>
<td>SWD 10 pin wafer (connect to MB) x 1</td>
</tr>
<tr>
<td></td>
<td>UART 10 pin wafer (connect to MB) x 1</td>
</tr>
<tr>
<td></td>
<td>RS232 wafer x 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>4&quot; x 4&quot; (101.6mm x 101.6mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Weight</td>
<td>0.08 kg</td>
</tr>
<tr>
<td>Gross Weight</td>
<td>0.14 kg</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>Operation Humidity</td>
<td>0% ~ 90% relative humidity, non-condensing</td>
</tr>
<tr>
<td>Certification</td>
<td>CE/FCC Class A</td>
</tr>
</tbody>
</table>

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

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPN-EHLCB-A10-001</td>
<td>PSE Carrier board for UP Squared 6000. w/ GbE*2, mPCIe slot &amp; SIM (Full function version)</td>
</tr>
<tr>
<td>UPN-EHLCB-A10-002</td>
<td>PSE Carrier board for UP Squared 6000. w/o GbE*2, mPCIe slot &amp; SIM (Lite version)</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
Block Diagram

UP Squared 6000 PSE Carrier Board

Dimension
Unit: mm

Note: All specifications are subject to change without notice.
# UP 4000 M.2 Plus

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

## 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

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP-APL03CB-A10-0001:</td>
<td>M.2 3052/3042 B Key x1 (USB3.0) M.2 2230 E Key x1 (PCIe x1) (w/o Bluetooth) 41pin FPC connector x1</td>
</tr>
<tr>
<td>UP-APL03CB-A10-0002:</td>
<td>M.2 2230 E Key x1 (PCIe x1) 41pin FPC connector x1</td>
</tr>
<tr>
<td>UP-APL03CB-A10-0003:</td>
<td>M.2 2280 M Key x1 (PCIe x1) 41pin FPC connector x1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I/O</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP-APL03CB-A10-0001:</td>
<td>Push-push Nano SIM card x1 41pin FPC connector x1</td>
</tr>
<tr>
<td>UP-APL03CB-A10-0002:</td>
<td>41pin FPC connector x1</td>
</tr>
<tr>
<td>UP-APL03CB-A10-0003:</td>
<td>41pin FPC connector x1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP-APL03CB-A10-0001:</td>
<td>2” x 2.36” (51mm x 60mm)</td>
</tr>
<tr>
<td>UP-APL03CB-A10-0002:</td>
<td>2” x 3.5” (51mm x 89 mm)</td>
</tr>
<tr>
<td>UP-APL03CB-A10-0003:</td>
<td>2” x 2.36” (51mm x 60mm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Net Weight</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP-APL03CB-A10-0001:</td>
<td>16g</td>
</tr>
<tr>
<td>UP-APL03CB-A10-0002:</td>
<td>19g</td>
</tr>
<tr>
<td>UP-APL03CB-A10-0003:</td>
<td>15g</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gross Weight</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP-APL03CB-A10-0001:</td>
<td>55g</td>
</tr>
<tr>
<td>UP-APL03CB-A10-0002:</td>
<td>58g</td>
</tr>
<tr>
<td>UP-APL03CB-A10-0003:</td>
<td>54g</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating Temperature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>32°F – 140°F (0°C – 60°C), 0.5m/s airflow</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operation Humidity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10% – 90% relative humidity, non-condensing</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Certification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE/FCC Class A, RoHS Compliant</td>
<td></td>
</tr>
</tbody>
</table>

## Packing List
- UP 4000 carrier board
- FPC cable
- Screws pack

## Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP-APL03CB-A10-0001</td>
<td>UP 4000 carrier board kit for WiFi and 5G module</td>
</tr>
<tr>
<td>UP-APL03CB-A10-0002</td>
<td>UP 4000 carrier board kit for M.2 2280</td>
</tr>
<tr>
<td>UP-APL03CB-A10-0003</td>
<td>UP 4000 carrier board kit for WiFi and BT module</td>
</tr>
</tbody>
</table>

## Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9741364A00</td>
<td>Wireless LAN Kit M.2 2230 802.11ac/a/b/g/n + BT4.0,2T2R, with 2 sets of cable &amp; antenna (Enli,GCNF1364)</td>
</tr>
<tr>
<td>9651926001</td>
<td>WiFi-KT8220, 2.4/5GHz/2.4GHz, with 2 sets of cable &amp; antenna (Enli,958867)</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
Focus • Agility • Competitiveness
09

Industrial Motherboards
EMB-APL1

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

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

Specifications

- **System**
  - Processor: N4200, (4C @ 2.5GHz CPU [Burst Mode], 750MHz GFX [Turbo], ~6W TDP)
  - N3350, (2C @ 2.4GHz CPU [Burst Mode], 650MHz GFX [Turbo], ~6W TDP)
  - Chipset: Integrated into SoC
  - Memory: DDR3L 1333/1600/1867MHz SODIMM x 2, max. 8GB, non-ECC, unbuffered memory

- **Chipset**
  - I/O Chipset: NCT6116D

- **Memory**
  - DDR3L 1333/1600/1867MHz SODIMM x 2, max. 8GB, non-ECC, unbuffered memory

- **I/O Ports**
  - USB 3.2 Gen 1 (5 Gbps) x 2, USB 2.0 x 2

- **Graphics**
  - Graphics Chipset: Intel® HD Graphics

- **Audio**
  - Audio Codec: Realtek® ALC897

- **WatchDog Timer**
  - 1~255 steps by software program

- **BIOS**
  - 128Mbit Flash ROM x 1, AMI BIOS

- **Environment & Power & ME**
  - Battery: Lithium battery
  - Power Requirement: 12V–24V wide-range voltage input back panel DC jack x 1; 4-pin AX Power connector x 1
  - Operation Temperature: 32°F ~ 140°F (0°C ~ 60°C)
  - Storage Temperature: -40°F ~ 185°F (-40°C ~ 85°C)
  - Operation Humidity: 0% ~ 90% RH, non-condensing
  - Certificate: CE & FCC Class A
  - Form Factor: Mini-ITX: 6.7” x 6.7” (170mm x 170mm)
  - Weight: 1.1 lb (0.5 Kg)
  - MTBF (Hours): 263,080

Rear Panel I/O Ports
- USB x 2, USB 2.0 x 2
- Display I/O x 2
- 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 w/ M.2 Key), M.2 M-key (22 x 42mm) x 1
- USB x 2, 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 M-key (22 x 30mm) for PCIe x 1

OS Support: Windows® 10 64bit, Ubuntu16.04.02/Kernel4.8.0

Packing List
- Heatsink
- I/O Shield
- EMB-APL1

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1709100201</td>
<td>202.0 Cable (10P, 200MM, p=2.00mm, w/bracket)</td>
</tr>
<tr>
<td>1700100491</td>
<td>USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)</td>
</tr>
<tr>
<td>1709050201</td>
<td>60W.180D.W/Lock.FSP060-DHAN3</td>
</tr>
<tr>
<td>1701100206</td>
<td>COM Cable (200MM, p=2.00mm)</td>
</tr>
<tr>
<td>1702150300</td>
<td>SATA Power Cable (4P, 300MM p=2.54mm)</td>
</tr>
<tr>
<td>1255300602Z</td>
<td>Adapter.60W.180D.W/Lock.FSP060-DHAN3</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
**Block Diagram**

- **Intel Processor**: Apollo Lake (Integrated PCH) (Integrated Clock Gen.)
- **Memory**: 2x DDR3L SO-DIMM 1333/1600/1867
- **SATA3**: 1 x SATA3
- **PCI**: 16x PCI-E 2.0 [x1], 1 x SATA3
- **USB**: 5 x USB 2.0, 1 x SATA3, USB 2.0
- **Video**: HDMI, eDP, LVDS, eDP
- **Audio**: ALC892, HDMI Audio Jack
- **Expansion Slots**: PCIe, M.2 (M-Key), M.2 (E-Key)
- **Power**: 12V-24V DC

**Dimension**

Unit: mm

**Order Information**

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<tr>
<td>EMB-APL1-A11-4200-LV</td>
<td>N4200</td>
<td>SODIMM x 2</td>
<td>Fanless</td>
<td>VGA, HDMI, LVDS</td>
<td>SATA3 x 1, M.2(M-Key)</td>
<td>Dual Channel 18/24 bit</td>
<td>GBE x 2</td>
<td>USB2.0 x 1, USB 3.2 Gen 1 x 1</td>
<td>5 1</td>
<td>PCIe x 0 (x1) x 1, M.2(M-Key) x 1</td>
<td>12V-24V DC</td>
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<td>32°F ~ 140°F</td>
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<td>N3350</td>
<td>SODIMM x 2</td>
<td>Fanless</td>
<td>VGA, HDMI, LVDS</td>
<td>SATA3 x 1, M.2(M-Key)</td>
<td>Dual Channel 18/24 bit</td>
<td>GBE x 2</td>
<td>USB2.0 x 1, USB 3.2 Gen 1 x 1</td>
<td>5 1</td>
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<td>12V-24V DC</td>
<td>—</td>
<td>32°F ~ 140°F</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.

www.aaeon.com
E北海EE-APL3

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

Specifications

| System | Processor | N4200, (4C @ 2.50GHz CPU [Burst Mode] 750MHz GFX [Turbo] ~6W TDP)
| Chipset | Integrated into SoC
| Memory | DDR3L 1333/1600/1867MHz SODIMM x 2, max. 8GB, non-ECC, un-buffered memory
| I/O Chipset | NCT6116D
| Ethernet | Realtek® PCIe Gb LAN 8111H x 2
| Audio | Realtek® ALC897
| TPM | Nuvoton NPCT652 TPM2.0 (default: No)
| Expansion Slots | PCIe2.0 [x1] x 1
| 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
| Display Port | Up to 4956 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 4956 x 2160 @ 60Hz
| Backlight Control | Voltage/PWM

Environment & Power & ME

| Battery | Lithium battery
| Power Requirements | 12V DC jack (screw type)
| Power | 4-pin internal power connector
| Operation Temperature | 32°F ~ 140°F (0°C ~ 60°C)
| Storage Temperature | -40°F ~ 185°F (-40°C ~ 85°C)
| Operation Humidity | 0%~90%RH, non-condensing
| Certificate | CE & FCC
| Form Factor | Mini-ITX: 6.7” x 6.7” (170mm x 170mm)
| Weight | 1.1 lb (0.5 Kg)
| MTBF (Hours) | 230,820

Features

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

Rear Panel I/O Ports

- 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

- SATA 6.0Gb/s x 2 (colay with M.2 M-key), M.2 M-key (22 x 42mm) x 1
- 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
- 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 Windows® 10 64bit
- Ubuntu16.04.02/Kernel4.8.0

Packing List

- Heatsink
- I/O Shield
- EMB-APL3

Optional Accessories

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<td>SATA Power Cable (4P, 300MM, p=2.54mm)</td>
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<td>125530060Z</td>
<td>Adapter.60W.180D.W/Lock.FSP060-DHAN3</td>
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Note: All specifications are subject to change without notice.
Block Diagram

Dimension

Unit: mm

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<td>N3350</td>
<td>SODIMM x 2</td>
<td>Fanless</td>
<td>VGA, HDMI, LVDS</td>
<td>Dual Channel</td>
<td>SATA3 x 1, M.2(M-key)</td>
<td>GbE x 2</td>
<td>USB2.0 x 5, USB 3.2 Gen 1 x 2</td>
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<td>PCIe2.0[x1] x 1, M.2(M-key) x 1</td>
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<td>GbE x 2</td>
<td>USB2.0 x 5, USB 3.2 Gen 1 x 2</td>
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<td>1</td>
<td>PCIe2.0[x1] x 1, M.2(M-key) x 1</td>
<td>12V DC</td>
<td>—</td>
<td>32°F ~ 140°F</td>
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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, PCIe-E[x1] x 1
- 12V DC Power Input

Specifications

System
- Processor
  - Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP),
  - Intel® Celeron® N2807 Processor (2C @ 1.58 GHz CPU, 313/750 MHz GFX, 4.3W TDP),
  - Intel® Atom® E3845 Processor (4C @ 1.91 GHz CPU, 542/792 MHz GFX, 10W TDP)
- 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-E[x1] x 1
- BIOS
  - 64 M bit Flash ROM, AMI BIOS
- H/W Monitor
  - Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
- WatchDog Timer
  - 1~255 steps by software program
- Smart Fan Control
  - Chassis Fan (fanless)
- Wake On LAN/ PXE
  - Yes (WOL/PXE)
- Power State
  - S3, S4, S5

Graphics
- Graphics Chipset
  - Intel® HD Graphics
- Graphics Multi Display
  - VGA+LVDS, VGA+HDMI, LVDS+HDMI
- VGA
  - Up to 1920 x 1200 @60 Hz
- DVI
  - —
- HDMI
  - Up to 1920 x 1200 @60 Hz
- Display Port
  - —
- LVDS
  - Up to 1920 x 1080 @60Hz, dual-channel 18/24-bit (via CH7511)
- eDP
  - —
- Backlight Control
  - Voltage/PWM

Environment & Power & ME
- Battery
  - Lithium battery
- Power Requirement
  - 12VDC
- Operating Temperature
  - 32°F ~ +140°F (0°C ~ 60°C)
- Storage Temperature
  - -40°F ~ +185°F (-40°C ~ -85°C)
- Operating Humidity
  - 0% ~ 90% RH, non-condensing
- Certificate
  - CE & FCC
- Form Factor
  - Mini-ITX 6.7” x 6.7” (170mm x 170mm)
- Weight
  - 1.16 lbs (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 1 (1 Colay with mSATA), SATA power connector x 1, Full 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
- Parallel Port
  - —
- Others
  - USB 2.0 (1x 5-pin, 2.0mm) x 1 port supports additional 1 USB

Optional Accessories

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

Packaging List

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

Note: All specifications are subject to change without notice.
EMB-BT1

Block Diagram

Dimension Unit: mm

Ordering Information

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</thead>
<tbody>
<tr>
<td>EMB-BT1-A31-1900-MSH</td>
<td>J1900</td>
<td>DDR3L-1333 x 2</td>
<td>Fanless</td>
<td>VGA, LVDS, HDMI</td>
<td>SATA2 x 1, SATA3 x 2, Full size Mini Card x 1 (mSATA)</td>
<td>Dual Channel 18/24-bit</td>
<td>GBE x 2</td>
<td>USB 3.2 Gen 1 x 1, USB 2.0 x 7</td>
<td>S</td>
<td>1</td>
<td>PCIe [x1] x 1, Half size Mini Card x 1 (PCIe [x1] x 1 &amp; USB)</td>
<td>12V DC</td>
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<td>32°F – 140°F (0°C – 60°C)</td>
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<td>N2807</td>
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<td>VGA, LVDS, HDMI</td>
<td>SATA2 x 1, SATA3 x 2, Full size Mini Card x 1 (mSATA)</td>
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<td>GBE x 2</td>
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<td>Dual Channel 18/24-bit</td>
<td>GBE x 2</td>
<td>USB 3.2 Gen 1 x 1, USB 2.0 x 7</td>
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<td>12V DC</td>
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<td>32°F – 140°F (0°C – 60°C)</td>
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</tbody>
</table>
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

- Processor: Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 668/854 MHz GFX, 10W TDP)
- 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, AMBIOS
- Hi/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, SS

Graphics

- Graphics Chipset: Intel® HD Graphics
- Graphics Multi Display: VGA+LVDS, Dual LVDS
- VGA: Up to 1920 x 1200 @60 Hz
- DVI: —
- HDMI: —
- Display Port: —
- LVDS: Dual LVDS, Up to 1920 x 1080 @60Hz, dual-channel 18/24-bit (via CH7511)
- eDP: —
- Backlight Control: Voltage/PWM

Environment & Power & ME

- Battery: Lithium battery
- Power Requirement: ATX
- Operating Temperature: 32°F ~ 140°F (0°C ~ 60°C)
- Storage Temperature: -40°F ~ 185°F (-40°C ~ 85°C)
- Operating Humidity: 0% ~ 90% R/H, non-condensing
- Certificate: CE & FCC
- Form Factor: Mini-ITX 6.7” x 6.7” (170mm x 170mm)
- Weight: 1.1 lb (0.5 Kg)
- MTBF (Hours): 290,990

Rear Panel I/O Ports

- USB: USB 2.0 x 6
- Display I/O: VGA x 1
- Audio I/O: Mic-in x 1, Line-out x 1
- LAN I/O: LAN (RJ-45) port x 2
- Serial Port: COM (RS-232/422/485) x 1, COM (RS-232) x 2

PS/2 Port: PS/2 Keyboard Mouse combo x 1
Others: —

Internal I/O Connectors

- SATA2 (3.0Gb/s) x 2 (1 colay with mSATA), Full 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

- Display Ports: 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

- Audio Ports: AAFP x 1, Speaker x 1

Serial Port

- Serial Ports: 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

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

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>1709100330</td>
<td>USB 2.0 Cable (RP, 330MM, p=2.54mm, w/ bracket)</td>
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<tr>
<td>1701100206</td>
<td>COM Port Cable</td>
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<tr>
<td>170910020K</td>
<td>USB 2.0 Cable (RP, 200MM, p=2.54mm, w/ bracket)</td>
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Note: All specifications are subject to change without notice.
Block Diagram

Order Information

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<thead>
<tr>
<th>Part Number</th>
<th>CPU</th>
<th>RAM</th>
<th>Fan/Fanless</th>
<th>Display</th>
<th>Storage</th>
<th>LVDS</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>Expansion Slot</th>
<th>Power</th>
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<th>Temp.</th>
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<td>EMB-BT2-A14-1900-D1-MSH</td>
<td>J1900</td>
<td>SO-DIMM x 1</td>
<td>Fanless</td>
<td>VGA, LVDS x 2</td>
<td>SATA2 x 1, Full-Size Mini-Card x 1(mSATA)</td>
<td>Dual Channel: 16/24-26 x 2</td>
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<td>1</td>
<td>ATX</td>
<td>—</td>
<td>32°F – 140°F</td>
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Note: All specifications are subject to change without notice.
**Features**
- Intel® Celeron® J1900/N2807 Processor
- DDR3L 1333 MHz SODIMM x 2, Up to 8 GB, (J1900)
- Dual Displays: LVDS x 1, VGA x 1, HDMI x 1,
- SATA 6.0 Gb/s x 2, SATA 3.0 Gb/s x 2
- USB 3.2 Gen 1 x 1, USB 2.0 x 7
- Full-size Mini-Card + SIM Card (mSATA Default) x 1, Half-size Mini-Card x 1
- 12V DC Power Input
- Low Profile

**Specifications**

### System
- Processor: Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 68B/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
- Intel® Celeron® J1900 (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

### 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/SV3.3V/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: —
- Display Port: —
- LVDS: —
- eDP: —
- Backlight Control: Voltage/PWM

### Environment & Power & ME
- Battery: Lithium battery
- Power Requirement: 12VDC
- Operating Temperature: 32°F – 140°F (0°C – 60°C)
- Storage Temperature: -40°F – 185°F (-40°C – 85°C)
- Operating Humidity: 0% ~ 90% R/H, non-condensing
- Certificate: CE & FCC
- Form Factor: Mini-ITX 6.7" x 6.7" (170mm x 170mm)
- Weight: 1.1 lb (0.5 Kg)
- MTBF (Hours): 295,750

### Rear Panel I/O Ports
- USB: USB 3.2 Gen 1/2.0 x 1, USB 2.0 x 2

### Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1709100330</td>
<td>USB 2.0 Cable (9P, 330MM, p=2.54mm, w/ bracket)</td>
</tr>
<tr>
<td>1709050201</td>
<td>USB 2.0 Cable (5P, 220MM, p=2.00mm)</td>
</tr>
<tr>
<td>1701260305</td>
<td>LPT Cable (25P, 270MM)</td>
</tr>
<tr>
<td>125590084A</td>
<td>Adapter 12V, 84W/N3</td>
</tr>
<tr>
<td>1701100206</td>
<td>COM Port Cable</td>
</tr>
<tr>
<td>1700050152</td>
<td>PS/2 Cable (6P, 150mm, p=2.00mm)</td>
</tr>
<tr>
<td>170910020K</td>
<td>USB 2.0 Cable (9P, 200MM, p=2.54mm, w/ bracket)</td>
</tr>
<tr>
<td>1702150300</td>
<td>SATA Power Cable 4P, 2.54mm</td>
</tr>
<tr>
<td>125530060A</td>
<td>Lockable Adapter 60W, 12V, 5A, 60W</td>
</tr>
<tr>
<td>1701160201</td>
<td>VGA Cable</td>
</tr>
</tbody>
</table>
Block Diagram

!!! Image of Block Diagram showing the layout of the motherboard components including CPU, RAM, I/O ports, and other connectivity options. !!!

Dimension

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>Unit: mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>161.6</td>
</tr>
<tr>
<td>Length</td>
<td>108</td>
</tr>
<tr>
<td>Height</td>
<td>38.1</td>
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</table>

Order Information

<table>
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<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EMB-BT4-013-1900-01-MS</td>
<td>J1900</td>
<td>SODIMM x 2</td>
<td>Fanless</td>
<td>VGA, HDMI, LVDS</td>
<td>SATA2 x 1, SATA3 x 2, Full-Size Mini Card (pHAT)x 1</td>
<td>Dual Channel 10/100/1000</td>
<td>GbE x 1</td>
<td>USB 3.2 Gen 1</td>
<td>5</td>
<td>1</td>
<td>Half-Size Mini-Card (PCIe x USB)x 1 w/ SIM slot</td>
<td>12V DC</td>
<td>—</td>
<td>32°F – 140°F</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
MIX-EHLD1

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

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

Specifications

■ Intel® Elkhart Lake Processor, J6412/X6413E
■ DDR4 SODIMM x 2, Max. 32GB
■ M.2 B-key [3042/3052] slot x 1, Mini-Card x 1
■ USB 3.2 Gen1 x 2, USB 2.0 x 4
■ HDMI2.0 x 1, VGA x 1, LVDS/eDP x 1
■ Flexible rear I/O (Full I/O or Low profile)
■ 12V DC input

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)
1709100491 | USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
1701100206 | COM Cable (200MM, p=2.00mm)
12553006Z | Adapter.60W.180D.W/Lock.FSP060-DHAN3

Note: All specifications are subject to change without notice.
Block Diagram

Dimension

Ordering Information

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<thead>
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</thead>
<tbody>
<tr>
<td>MIX-EHLD1-A10-J6412</td>
<td>J6412</td>
<td>SODIMM x 2</td>
<td>Fan</td>
<td>VGA, HDMI, LVDS/4DP</td>
<td>Dual Channel 18/24 bit</td>
<td>SATA x 1, M.2(M-Key)</td>
<td>GbE x 2</td>
<td>USB 3 x 6, USB 2.0 x 6, USB 2.0 Gen 1 x 2</td>
<td>5</td>
<td>1</td>
<td>Mini-Card x 1, M.2(B-Key) x 1</td>
<td>12V DC</td>
<td>2.0</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
</tr>
<tr>
<td>MIX-EHLD1-A10-X6413E</td>
<td>X6413E</td>
<td>SODIMM x 2</td>
<td>Fan</td>
<td>VGA, HDMI, LVDS/4DP</td>
<td>Dual Channel 18/24 bit</td>
<td>SATA x 1, M.2(M-Key)</td>
<td>GbE x 2</td>
<td>USB 2.0 x 6, USB 3.2 Gen 1 x 2</td>
<td>5</td>
<td>1</td>
<td>Mini-Card x 1, M.2(B-Key) x 1</td>
<td>12V DC</td>
<td>2.0</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
</tr>
</tbody>
</table>
Mini-ITX, 14nm, FCBGA1356 7th Gen Intel® Core™ processor family, 15~25W TDP

**Features**

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

**Note:** All specifications are subject to change without notice.

---

**Specs**

**System**

<table>
<thead>
<tr>
<th>Processor</th>
<th>Core™ i3-7100U, 2C/4C, 2.4GHz, 3M, 300MHz/1.00GHz (Turbo) GFX, ~15W TDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chipset</td>
<td>—</td>
</tr>
<tr>
<td>Memory</td>
<td>SODIMM x 2, max. 32GB, DDR4-2133 non-ECC, un-buffered memory</td>
</tr>
<tr>
<td>I/O Chipset</td>
<td>NCT6793D</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Intel® PCIe Gb LAN 219LM (vPro for i7-7600U/i5-7300U) x 1 Intel® PCIe Gb LAN 210AT x 1</td>
</tr>
<tr>
<td>Audio</td>
<td>Realtek® ALC897 with Amp.</td>
</tr>
<tr>
<td>TPM</td>
<td>NPTC8560 TPM2.0 onboard (default: No)</td>
</tr>
<tr>
<td>Expansion Slots</td>
<td>PCIe3.0 [x1] x 1, M.2 M key (22 x 80 mm) x 1, SATA &amp; PCIe [x4] M.2 E key (22 x 30 mm) x 1 for Wireless-wi-fi module (PCIe+USB)</td>
</tr>
<tr>
<td>BIOS</td>
<td>128Mb Flash ROM, AMI BIOS</td>
</tr>
<tr>
<td>H/W Monitor</td>
<td>Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis</td>
</tr>
<tr>
<td>WatchDog Timer</td>
<td>1~255 steps by software program</td>
</tr>
<tr>
<td>Smart Fan Control</td>
<td>CPU Fan/Chassis Fan</td>
</tr>
<tr>
<td>Wake On LAN/PXE</td>
<td>Yes (WOL/PXE)</td>
</tr>
<tr>
<td>Power State</td>
<td>S3, S4, S5</td>
</tr>
</tbody>
</table>

**Graphics**

<table>
<thead>
<tr>
<th>Graphics</th>
<th>Intel® UHD Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphics Multi Display</td>
<td>HDMI x 2, eDP x 1 or LVDS x 1</td>
</tr>
<tr>
<td>VGA</td>
<td>—</td>
</tr>
<tr>
<td>DVI</td>
<td>—</td>
</tr>
<tr>
<td>HDMI</td>
<td>—</td>
</tr>
<tr>
<td>Display Port</td>
<td>—</td>
</tr>
<tr>
<td>LVDS</td>
<td>—</td>
</tr>
<tr>
<td>eDP</td>
<td>—</td>
</tr>
<tr>
<td>Backlight Control</td>
<td>Voltage/PWM, Max 1A</td>
</tr>
</tbody>
</table>

**Environment & Power & ME**

<table>
<thead>
<tr>
<th>Battery</th>
<th>Lithium battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Requirement</td>
<td>12V/DC</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32°F ~ 131°F (0°C ~ 55°C)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°F ~ 185°F (-40°C ~ -85°C)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>0% ~ 90%RH, non-condensing</td>
</tr>
<tr>
<td>Certificate</td>
<td>CE &amp; FCC (Class A)</td>
</tr>
<tr>
<td>Form Factor</td>
<td>Mini-ITX: 6.7” x 6.7” (170 mm x 170 mm)</td>
</tr>
<tr>
<td>Weight</td>
<td>1.1 lb (0.5 Kg)</td>
</tr>
<tr>
<td>MTBF (Hours):</td>
<td>400,000</td>
</tr>
</tbody>
</table>

**Rear Panel I/O Ports**

| USB      | USB 3.2 Gen 1 (5 Gbps) x 4 |
| Display I/O | HDMI x 2 |

**Packing List**

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

**Optional Accessories**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1709100201</td>
<td>USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)</td>
</tr>
<tr>
<td>1700100491</td>
<td>USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)</td>
</tr>
<tr>
<td>1709050201</td>
<td>USB 2.0 Cable (9P, 220mm, p=2.00mm)</td>
</tr>
<tr>
<td>1701100206</td>
<td>COM Cable (200MM, p=2.00mm)</td>
</tr>
<tr>
<td>1702150300</td>
<td>SATA Power Cable (4P, 300MM p=2.54mm)</td>
</tr>
<tr>
<td>1702151201</td>
<td>SATA Power Cable (4P, 120MM, p=2.5mm)</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
Block Diagram

Ordering Information

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CPU</th>
<th>RAM</th>
<th>FAN/ FANLESS</th>
<th>DISPLAY</th>
<th>STORAGE</th>
<th>LVDS</th>
<th>LAN</th>
<th>USB</th>
<th>RS-232</th>
<th>EXPANSION SLOT</th>
<th>POWER</th>
<th>TPM</th>
<th>TEMP.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIX-KLUD1-A11-7100-LV-210</td>
<td>i3-7100U</td>
<td>SODIMM x 2</td>
<td>Fanless</td>
<td>HDMI x 2, LVD5</td>
<td>SATA3 x 2, M.2</td>
<td>Dual Channel</td>
<td>USB 2.0</td>
<td>USB 3.0</td>
<td>2 x SATAIII</td>
<td>4 x USB 2.0</td>
<td>4 x USB 3.0</td>
<td>SPI flash 16MB</td>
<td>12V DC</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
Mini-ITX with Intel® 11th Gen Core™ U-Processor, Max. 28W TDPs, 4 Display 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

**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: IT5121E
- Memory: DDR4 2666/3200 MHz SODIMM x 2, Up to 64GB
- Ethernet: Intel® PCIe Gb LAN 225LM x 1, 219V x 1
- Audio: Realtek® ALC897
- TPM: Nuvoton NPCT750 TPM2.0 onboard
- Expansion Slots: PCIe 3.0 [x4] x 1, mini-card x 1 (PCIe/SATA; BOM Optional)
- BIOS: 256Mbit Flash ROM, AMI BIOS
- H/W Monitor: Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
- WatchDog Timer: 1~255 step by software program
- Smart Fan Control: CPU Fan/Chassis Fan
- Wake On LAN/ PXE: Yes (WOL / PXE)
- Power State: S3, S4, S5

**Graphics**

- Graphics Chipset: Intel® Xe (Gen 12) Graphics
- Graphics Multi Display: Quad Display
- VGA: —
- DVI: —
- HDMI: HDMI 2.0
- Display Port: DP1.4
- LVDS: Up to 1920 x 1200 @60Hz, Dual Channel 18/24 bit (via CH7511B)
- eDP: eDP1.4b
- Backlight Control: —

**Environment & Power & ME**

- Battery: Lithium battery
- Power Requirement: 12(+/-5%) DC
- Operating Temperature: 32°F ~122°F (0°C ~ 50°C)
- Storage Temperature: -40°F ~185°F (-40°C ~85°C)
- Operating Humidity: 0%~90%RH, non-condensing
- Certificate: CE & FCC Class A
- Form Factor: Mini-ITX: 6.7” x 6.7” (170mm x 170mm)
- Weight: 1.1 lb (0.5 Kg)
- MTBF (Hours): —

**Packing List**

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

**Optional Accessories**

- SATA Power Cable (4P, 300MM p=2.54mm)
- Adapter 12V, 84W/N3

Note: All specifications are subject to change without notice.
### Block Diagram

![Block Diagram](image)

### Dimension

**Unit: mm**

![Dimension](image)

### Ordering Information

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</thead>
<tbody>
<tr>
<td>MIX-TLUD1-A10-6305E</td>
<td>Celeron 6305E</td>
<td>SODIMM x 2</td>
<td>Fan</td>
<td>HDMI(x2), DP(x2)</td>
<td>Dual Channel 18/24 bit</td>
<td>SATA3 x 1, M.2 (M-Key)</td>
<td>2.0GE x 1, 10GE x 1</td>
<td>USB 2.0 x 4, USB 3.2 Gen 1 x 4</td>
<td>2</td>
<td>0</td>
<td>Mini-PCIe[x1]</td>
<td>12V</td>
<td>TPM2.0</td>
<td>32°F – 122°F (0°C – 50°C)</td>
</tr>
<tr>
<td>MIX-TLUD1-A10-1115G4E</td>
<td>i3-1115G4E</td>
<td>SODIMM x 2</td>
<td>Fan</td>
<td>HDMI(x2), DP(x2)</td>
<td>Dual Channel 18/24 bit</td>
<td>SATA3 x 1, M.2 (M-Key)</td>
<td>2.0GE x 1, 10GE x 1</td>
<td>USB 2.0 x 4, USB 3.2 Gen 1 x 4</td>
<td>2</td>
<td>0</td>
<td>Mini-PCIe[x1]</td>
<td>12V</td>
<td>TPM2.0</td>
<td>32°F – 122°F (0°C – 50°C)</td>
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<td>MIX-TLUD1-A10-1145G7E</td>
<td>i5-1145G7E</td>
<td>SODIMM x 2</td>
<td>Fan</td>
<td>HDMI(x2), DP(x2)</td>
<td>Dual Channel 18/24 bit</td>
<td>SATA3 x 1, M.2 (M-Key)</td>
<td>2.0GE x 1, 10GE x 1</td>
<td>USB 2.0 x 4, USB 3.2 Gen 1 x 4</td>
<td>2</td>
<td>0</td>
<td>Mini-PCIe[x1]</td>
<td>12V</td>
<td>TPM2.0</td>
<td>32°F – 122°F (0°C – 50°C)</td>
</tr>
</tbody>
</table>
**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

**Packing List**

- SATA Cable
- I/O Shield
- MIX-H310A1
Note: All specifications are subject to change without notice.

Block Diagram

Dimension

Ordering Information

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</thead>
<tbody>
<tr>
<td>MIX-H310A1-A11-2L-210FT</td>
<td>Socket</td>
<td>SODIMM x 2</td>
<td>Fan</td>
<td>VGA, HDW</td>
<td>SATA3x2, M.2 (M-key)</td>
<td>—</td>
<td>GBE e 2</td>
<td>USB2.0 x 4, USB 3.2 Gen 1 x 4</td>
<td>1</td>
<td>1</td>
<td>PCie3.0 (x16) x 1, M.2(M-key) x 1, M.2E-Key x 1</td>
<td>ATX</td>
<td>TPM</td>
<td>0~60°C</td>
</tr>
<tr>
<td>MIX-H310A1-A11-4L-210FT</td>
<td>Socket</td>
<td>SODIMM x 2</td>
<td>Fan</td>
<td>VGA, HDW</td>
<td>SATA3x2, M.2 (M-key)</td>
<td>—</td>
<td>GBE e 4</td>
<td>USB2.0 x 4, USB 3.2 Gen 1 x 4</td>
<td>1</td>
<td>1</td>
<td>PCie3.0 (x16) x 1, M.2(M-key) x 1, M.2E-Key x 1</td>
<td>ATX</td>
<td>TPM</td>
<td>0~60°C</td>
</tr>
</tbody>
</table>

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1759209172</td>
<td>CPU Cooler (2-Ball, Screw with Retention Plate)</td>
</tr>
<tr>
<td>1759211568</td>
<td>CPU Cooler (2-Ball, Push-pin Type)</td>
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<tr>
<td>COOLER-65W-01</td>
<td>CPU Cooler</td>
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<tr>
<td>1709012021</td>
<td>USB 2.0 Cable (10P, 200mm, p=2.00mm, w/bracket)</td>
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<td>1701100260</td>
<td>COM Cable (200mm, p=2.00mm)</td>
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<tr>
<td>1700100491</td>
<td>USB 2.0 Cable (10P, 490mm, p=2.00mm)</td>
</tr>
<tr>
<td>17090550201</td>
<td>USB 2.0 Cable (5P, 220mm, p=2.00mm)</td>
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</tbody>
</table>
**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

### Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chipset</td>
<td>Intel® H310 Express Chipset</td>
</tr>
<tr>
<td>Memory</td>
<td>DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture</td>
</tr>
<tr>
<td>I/O Chipset</td>
<td>NCT6793D</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Intel® PCIe Gb LAN 219V x 1, Intel® PCIe Gb LAN i210AT x 1</td>
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<tr>
<td>Audio</td>
<td>Realtek® ALC897 with Amp.</td>
</tr>
<tr>
<td>TPM</td>
<td>FIRMWARE TPM</td>
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<tr>
<td>BIOS</td>
<td>256MB Flash ROM, AMI BIOS</td>
</tr>
<tr>
<td>H/W Monitor</td>
<td>Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis</td>
</tr>
<tr>
<td>WatchDog Timer</td>
<td>1~255 steps by software program</td>
</tr>
<tr>
<td>Smart Fan Control</td>
<td>CPU Fan/ Chassis Fan</td>
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<tr>
<td>Wake On LAN/PXE</td>
<td>Yes (WOL / PXE)</td>
</tr>
<tr>
<td>Power State</td>
<td>S3, S4, S5</td>
</tr>
<tr>
<td>Graphics Chipset</td>
<td>Intel® UHD Graphics</td>
</tr>
<tr>
<td>Graphics Multi Display</td>
<td>HDMI+VGA, HDMI+DP, HDMI+LVDS, VGA+DP, VGA+LVDS, DP+LVDS</td>
</tr>
<tr>
<td>VGA</td>
<td>Up to 1920 x 1200 @ 60 Hz</td>
</tr>
<tr>
<td>DVI</td>
<td>—</td>
</tr>
<tr>
<td>HDMI</td>
<td>Up to 3840 x 2160 @30 Hz (HDMI 1.4b)</td>
</tr>
<tr>
<td>Display Port</td>
<td>Up to 4096 x 2160 @24 Hz / 3840 x 2160 @ 60 Hz</td>
</tr>
<tr>
<td>LVDS</td>
<td>LVDS Up to 1920 x 1200 @60 Hz, Dual Channel 18/24 bit (1 x inverter)</td>
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<tr>
<td>aDP</td>
<td>—</td>
</tr>
<tr>
<td>Backlight Control</td>
<td>—</td>
</tr>
<tr>
<td>Environment &amp; Power &amp; ME</td>
<td>Battery Lithium battery</td>
</tr>
<tr>
<td>Power Requirement</td>
<td>ATX</td>
</tr>
<tr>
<td>Operation Temperature</td>
<td>32°F ~140°F (0°C ~ 60°C)</td>
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<tr>
<td>Storage Temperature</td>
<td>-40°F ~185°F (-40°C ~ 85°C)</td>
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<tr>
<td>Operation Humidity</td>
<td>0%-95%RH, non-condensing</td>
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<tr>
<td>Certificate</td>
<td>CE &amp; FCC</td>
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<tr>
<td>Form Factor</td>
<td>Mini-ITX: 6.7” x 6.7” (170mm x 170mm)</td>
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<tr>
<td>Weight</td>
<td>1.1 lb (0.5 Kg)</td>
</tr>
<tr>
<td>MTBF (Hours)</td>
<td>333,520</td>
</tr>
</tbody>
</table>

### Packing List
- SATA Cable
- I/O Shield
- MIX-H310A2

Note: All specifications are subject to change without notice.
Block Diagram

Dimension

Ordering Information

Optional Accessories
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 SO-DIMM x 2, Up to 32 GB
- Two Independent Display: DP, HDMI, eDP, LVDS
- M.2 Slot (M-key, 2242) x 1, M.2 Slot (E-key) x 1
- PCIe [x4] x 1
- Low Profile
- 12V DC Power Input
- USB 3.2 Gen 1 x 4, USB 2.0 x 5

Specifications

System
- Processor: 8th/9th Gen. Intel® Core™ LGA1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
- Chipset: Intel® H310 Express Chipset
- Memory: DDR4 2666 Mhz SO-DIMM 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
- BIGS: 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 1280 @ 60 Hz, dual-channel 18/24 bit (via CH 7511)
- eDP: Up to 4096 x 2304@60Hz
- Backlight Control: Voltage/PWM

Environment & Power & ME
- Battery: Lithium battery
- Power Requirement: 12V DC
- Operation Temperature: 32°F ~ 140°F (0°C ~ 60°C)
- Storage Temperature: -40°F ~ 185°F (-40°C ~ 85°C)
- Operation Humidity: 0%~90%RH, non-condensing
- Certificate: CE & FCC
- Form Factor: Mini-ITX 6.7” x 6.7” (170 mm x 170 mm)
- Weight: 1.1 lb (0.5 kg)
- MTBF (Hours): 246,210

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

Note: All specifications are subject to change without notice.
Note: All specifications are subject to change without notice.

Block Diagram

![Block Diagram of MIX-H310D1](image)

Dimension

Unit: mm

Ordering Information

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</thead>
<tbody>
<tr>
<td>MIX-H310D1-A13-HH</td>
<td>Socket SODIMM x 2</td>
<td>Fan</td>
<td>Dual HDMI, DP, LVDS</td>
<td>SATA x 4</td>
<td>Dual Channel 16/24 bit</td>
<td>6x2 x 2</td>
<td>USB2.0 x 5, USB 3.2 Gen 1 x 4</td>
<td>1</td>
<td>1</td>
<td>PCIex1.0(x4) x 1, M.2 (E-Key) x 1</td>
<td>12V DC</td>
<td>TPM</td>
<td>32°F - 140°F (0°C - 60°C)</td>
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</table>

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1759200172</td>
<td>(TF)CPU Cooler Fan, LGA 1156 socket, 4P, 12V, 2-Ball Bearing, Dynatron, K785, (2U cooler)</td>
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<tr>
<td>1759211568</td>
<td>(TF)CPU Cooler Fan, LGA 1156 socket, 12V, 4P, 2Ball (Tray), Dreamer, DSA-00273</td>
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<tr>
<td>COOLER-65W-01</td>
<td>CPU Cooler, LGA 1156, 12V, 65W, 4P, Kingcooler, 0571-1463R</td>
</tr>
<tr>
<td>1709100201</td>
<td>USB 2.0 Cable (10P, 200mm, p=1.50mm, w/bracket)</td>
</tr>
<tr>
<td>1700100491</td>
<td>USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)</td>
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<tr>
<td>1709050201</td>
<td>USB 2.0 Cable (5P, 220mm, p=2.00mm)</td>
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<tr>
<td>1701100206</td>
<td>COM Cable (200mm, p=2.00mm)</td>
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<tr>
<td>1702150300</td>
<td>SATA Power Cable (4P, 300mm p=2.54mm)</td>
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<tr>
<td>1702151201</td>
<td>SATA Power Cable (4P, 120mm, p=2.5mm)</td>
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</table>
## 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
- PCIe-Express [x16] (Gen3) x 1
- 12VDC input

### 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 @ 60Hz (HDMI 1.4)
- **Display Port**: —
- **LVDS**: —
- **eDP**: Up to 4096 x 2304 @ 60Hz

#### Environment & ME
- **Battery**: Lithium battery
- **Power Requirement**: 12V DC
- **Operation Temperature**: 32°F ~140°F (0°C ~ 60°C)
- **Storage Temperature**: -40°F ~-185°F (-40°C ~-85°C)
- **Operation Humidity**: 0%~90%RH, Non-condensing
- **Certificate**: CE & FCC
- **Form Factor**: Mini-ITX: 6.7” x 6.7” (170 mm x 170 mm)
- **Weight**: 1.1 lb (0.5 kg)
- **MTBF (Hours)**: 373,720

### Packing List
- SATA Cable
- SATA Power Cable
- I/O Shield
- MIX-H310D2

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*Note: All specifications are subject to change without notice.*
Block Diagram

Dimension
Unit: mm

Ordering Information

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<tbody>
<tr>
<td>MIX-H310D2-A11-210</td>
<td>Socket</td>
<td>SODIMM x 2</td>
<td>Fan</td>
<td>HDMI x 2</td>
<td>SATA3 x 2</td>
<td>M.2(M Key) x 1</td>
<td>—</td>
<td>PCIe x 2</td>
<td>USB2.0 x 5</td>
<td>USB2.0 x 5</td>
<td>PCIe x 5 (optional)</td>
<td>12V DC</td>
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<td>12°F to 140°F (0°C to 60°C)</td>
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</table>

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1759200172</td>
<td>CPU Cooler (2-Ball, Screw with Retention Plate)</td>
</tr>
<tr>
<td>1759211568</td>
<td>CPU Cooler (2-Ball, Push-pin Type)</td>
</tr>
<tr>
<td>COOLER-65W-01</td>
<td>CPU Cooler, LGA 1156, 12V, 65W, 4P, Kingcooler, 0571-1463R</td>
</tr>
<tr>
<td>1709100201</td>
<td>USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)</td>
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<tr>
<td>1707100206</td>
<td>COM Cable (200MM, p=2.00mm)</td>
</tr>
<tr>
<td>1709050201</td>
<td>USB 2.0 Cable (5P, 220MM, p=2.00mm)</td>
</tr>
<tr>
<td>1253X00011</td>
<td>(TF)AC/DC Adapter, 12V 192W/16A, FSP192-ANHAN3.9M41920100</td>
</tr>
</tbody>
</table>
### 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

### Rear Panel I/O Ports
<table>
<thead>
<tr>
<th>Port Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB</td>
<td>USB 3.2 Gen 2 (10 Gbps x 4, USB 2.0 x 2)</td>
</tr>
<tr>
<td>Display I/O</td>
<td>VGA x 1, HDMI x 1</td>
</tr>
<tr>
<td>Audio I/O</td>
<td>Mic-in x 1, Line-out x 1</td>
</tr>
<tr>
<td>LAN I/O</td>
<td>LAN (RJ-45) port x 4</td>
</tr>
<tr>
<td>Serial Port</td>
<td>—</td>
</tr>
<tr>
<td>PS/2 Port</td>
<td>—</td>
</tr>
<tr>
<td>Others</td>
<td>—</td>
</tr>
</tbody>
</table>

### 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, 2.0mm) x 1 ports support additional 2 USB
- Display I/O: —
- Audio I/O: —
- LAN I/O: —
- 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: —
- Others: Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1

### OS
- Supports: 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.
**MIX-Q370A1**

**Block Diagram**

**Dimension**
Unit: mm

**Ordering Information**

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<tbody>
<tr>
<td>MIX-Q370A1-A11-4L-210FT</td>
<td>Socket SODIMM x 2</td>
<td>Fax</td>
<td>VGA, HDMI</td>
<td>SATA3 x 2, M.2 M-key</td>
<td>—</td>
<td>GBE x 4</td>
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<tr>
<td>MIX-Q370A1-A11-2L-210FT</td>
<td>Socket SODIMM x 2</td>
<td>Fax</td>
<td>VGA, HDMI</td>
<td>SATA3 x 2, M.2 M-key</td>
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<td>GBE x 2</td>
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**Optional Accessories**

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<tbody>
<tr>
<td>1759200172</td>
<td>CPU Cooler (2-Ball, Screw with Retention Plate)</td>
</tr>
<tr>
<td>175921156B</td>
<td>CPU Cooler (2-Ball, Push-pin Type)</td>
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<tr>
<td>COOLER-45W-01</td>
<td>CPU Cooler</td>
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<tr>
<td>1709100201</td>
<td>USB 2.0 Cable (10P, 200mm, p=2.00mm, w/bracket)</td>
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<td>COM Cable (200mm, p=2.00mm)</td>
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<tr>
<td>1700100491</td>
<td>USB 2.0 Cable (10P, 490mm, p=2.00mm)</td>
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<tr>
<td>1709050201</td>
<td>USB 2.0 Cable (5P, 220mm, p=2.00mm)</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.

www.aaeon.com
MIX-Q370D1

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

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

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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>8th/9th Generation Intel® Core™ i7 / i5 / Pentium® LGA 1151 socket processor</td>
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<tr>
<td>Chipset</td>
<td>Intel® Q370 Express Chipset</td>
</tr>
<tr>
<td>Memory</td>
<td>SODIMM x 2, Max. 32GB, DDR4 2666/2400 MHz, Non-ECC, Un-buffered Memory, Dual channel</td>
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<tr>
<td>I/O Chipset</td>
<td>NCT7673D</td>
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<tr>
<td>Ethernet</td>
<td>Intel® PHY i219LM Giga LAN (support Intel® AMT 12.0) x 1</td>
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<td>Audio</td>
<td>Realtek® ALC897</td>
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<tr>
<td>TPM</td>
<td>Nuvoton TPM version 2.0</td>
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<tr>
<td>BIOS</td>
<td>256Mb flash ROM, AMI BIOS</td>
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<tr>
<td>H/W Monitor</td>
<td>Temperature Monitor on CPU/System, Voltage Monitor on Vcore/SV/3V/12V, Fan Monitor on Chassis</td>
</tr>
<tr>
<td>WatchDog Timer</td>
<td>1~255 steps by software program</td>
</tr>
<tr>
<td>Smart Fan Control</td>
<td>PC fan/Chassis Fan</td>
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<tr>
<td>Wake On L/A/P/X</td>
<td>Yes (WOL/PXE)</td>
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<td>Power State</td>
<td>S3, S4, S5</td>
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<td>Graphics Chipset</td>
<td>Intel® UHIO Graphics</td>
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<td>Graphics Multi Display</td>
<td>Three independent displays for independent monitors</td>
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<td>VGA</td>
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<td>DVI</td>
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<tr>
<td>Display Port</td>
<td>Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio, DP++ supported</td>
</tr>
<tr>
<td>LVDS</td>
<td>LVDS Up to 1920 x 1200 @ 60 Hz, dual-channel 18/24 bit (via Chrontel 7511)</td>
</tr>
<tr>
<td>eDP</td>
<td>eDP Up to 4096 x 2304 @ 60Hz</td>
</tr>
<tr>
<td>F_PANEL</td>
<td>Yes (WOL/PXE)</td>
</tr>
<tr>
<td>Power State</td>
<td>S3, S4, S5</td>
</tr>
<tr>
<td>LVDS (top) and eDP (bottom)</td>
<td>12V DC, USB 2.0 x 6, AAFP x 1, Speaker x 1</td>
</tr>
<tr>
<td>PCI3.0 [x4]</td>
<td>x1</td>
</tr>
<tr>
<td>PCIe3.0 [x4]</td>
<td>x1</td>
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<tr>
<td>M.2 E key x 1</td>
<td>x1</td>
</tr>
<tr>
<td>M.2 M key x 1</td>
<td>x1</td>
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<tr>
<td>USB 2.0 x 6</td>
<td>USB 2.0 x 6</td>
</tr>
<tr>
<td>M.2 E key (bottom)</td>
<td>12V DC, USB 2.0 x 6, AAFP x 1, Speaker x 1</td>
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<tr>
<td>USB 3.2 Gen 2 x 2</td>
<td>USB 2.0 x 6</td>
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<tr>
<td>USB 2.0 x 6</td>
<td>USB 2.0 x 6</td>
</tr>
<tr>
<td>DC Jack</td>
<td>12V DC</td>
</tr>
<tr>
<td>Internal I/O Connectors</td>
<td></td>
</tr>
<tr>
<td>Storage</td>
<td>SATA 6.0 Gb/s x 4</td>
</tr>
<tr>
<td>USB</td>
<td>3 x USB 2.0 pin header support additional 6 USB ports</td>
</tr>
<tr>
<td>Display I/O</td>
<td>40-pin LCD Display connector x 1</td>
</tr>
<tr>
<td>Audio I/O</td>
<td>4-pin CPU Fan connector x 1</td>
</tr>
<tr>
<td>Serial Port</td>
<td>Box header x 1 for COM (COM1: RS-232/422/485 supports 5V/12V/Ri)</td>
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<tr>
<td>PS/2 Port</td>
<td>—</td>
</tr>
<tr>
<td>Parallel Port</td>
<td>—</td>
</tr>
<tr>
<td>DIO</td>
<td>8-bit x 1 (In/Out programmable)</td>
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<tr>
<td>FAN</td>
<td>4-pin Chassis Fan connector x 1</td>
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<tr>
<td>Power</td>
<td>12V DC Power jack x 1</td>
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<td>Others</td>
<td>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</td>
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<tr>
<td>OS</td>
<td>Windows® 10 64 bit, Ubuntu 16.04 LTS</td>
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<tr>
<td>OS Support</td>
<td>Windows® 10 64 bit, Ubuntu 16.04 LTS</td>
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<tr>
<td>Environment &amp; Power &amp; ME</td>
<td></td>
</tr>
<tr>
<td>Battery</td>
<td>Lithium battery</td>
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<tr>
<td>Power Requirement</td>
<td>12V DC</td>
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<tr>
<td>Operating Temperature</td>
<td>32°F – 140°F (0°C – 60°C)</td>
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<td>Storage Temperature</td>
<td>-40°F – 185°F (-40°C – 85°C)</td>
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<tr>
<td>Operating Humidity</td>
<td>0% – 90% R/H, non-condensing</td>
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<tr>
<td>Certificate</td>
<td>CE &amp; FCC (Class A)</td>
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<tr>
<td>Form Factor</td>
<td>Mini-ITX: 6.7” x 6.7” (170 mm x 170 mm)</td>
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<tr>
<td>Weight</td>
<td>1.1 lb (0.5 Kg)</td>
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<tr>
<td>MTBF (Hours)</td>
<td>256,310</td>
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Packing List
- SATA Cable
- SATA Power Cable
- I/O Shield
- MIX-Q370D1
Block Diagram

Dimension

Ordering Information

Optional Accessories

Note: All specifications are subject to change without notice.

www.aaeon.com
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

Notes:
- 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

Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Features</th>
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</thead>
<tbody>
<tr>
<td>Processor</td>
<td>8th/9th Gen. Intel® Core™ LGA1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel® Q370 Express Chipset</td>
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<tr>
<td>Memory</td>
<td>DDR4 2666/2400/2133 MHz SO-DIMM x 2, Up to 64GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture</td>
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<tr>
<td>I/O Chipset</td>
<td>NCT6793D</td>
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<tr>
<td>Ethernet</td>
<td>Intel® GbE LAN i219V x 1, Intel® GbE LAN i210AT x 1</td>
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<tr>
<td>Audio</td>
<td>Realtek® ALC897</td>
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<tr>
<td>Expansion Slots</td>
<td>PCIe3.0 [x16] x 1, M.2 E-key(22 x 30 mm) x1 for Wireless-wifi module ( PCIe+USB; CNVi)</td>
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<tr>
<td>BIOS</td>
<td>256Mbit Flash ROM, AMI BIOS</td>
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<tr>
<td>H/W Monitor</td>
<td>Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis</td>
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<tr>
<td>WatchDog Timer</td>
<td>1~255 steps by software program</td>
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<tr>
<td>Smart Fan Control</td>
<td>CPU Fan/Chassis Fan</td>
</tr>
<tr>
<td>Wake On LAN/ PXE</td>
<td>Yes (WOL/PXE)</td>
</tr>
<tr>
<td>Power State</td>
<td>S3, S4, S5</td>
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Graphics

<table>
<thead>
<tr>
<th>Graphics</th>
<th>Features</th>
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<tr>
<td>Graphics Chipset</td>
<td>Intel® UHD Graphics</td>
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<tr>
<td>Graphics Multi Display</td>
<td>HDMI+VGA+eDP, HDMI+HDMI+VGA, HDMI+HDMI+eDP</td>
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<tr>
<td>VGA</td>
<td>Up to 1920 x 1200 @ 60 Hz</td>
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<td>DVI</td>
<td>—</td>
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<tr>
<td>HDMI</td>
<td>Up to 3840 x 2160 @30 Hz(HDMI 1.4b)</td>
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<td>Display Port</td>
<td>—</td>
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<tr>
<td>LVDS</td>
<td>—</td>
</tr>
<tr>
<td>eDP</td>
<td>eDP UP to 4096 x 2304 @ 60Hz</td>
</tr>
<tr>
<td>Backlight Control</td>
<td>Support eDP</td>
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</table>

Environment & Power & ME

| Battery | Lithium battery |
| Power Requirement | 12V DC |
| Operating Temperature | 32°F – 140°F (0°C – 60°C) |
| Storage Temperature | -40°F – 185°F(-40°C – 85°C) |
| Operating Humidity | 0% – 90% R/H, non-condensing |
| Certificate | CE & FCC |
| Form Factor | Mini-ITX: 6.7” x 6.7” (170 mm x 170 mm) |
| Weight | 1.1 lb (0.5 Kg) |
| MTBF (Hours) | 319,160 |

Rear Panel I/O Ports

| USB | USB 3.2 Gen2 x 6, USB2.0 x 4 |

Features

- Display I/O: VGA x 1, HDMI x 2
- Audio I/O: Mic-in x 1, Line-out x 1
- LAN I/O: 12V AT Power Connector x 1
- Display I/O: eDP (bottom) |
- Audio I/O: Microphone x 2
- 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) x1 port support additional 2 USB
  - Display I/O: eDP x1
  - Audio I/O: AAFP x 1
  - Serial Port: Box header for COM (RS-232) x1, 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

Packaging List

- SATA Cable
- SATA Power Cable
- I/O Shield
- MIX-Q370D2

Note: All specifications are subject to change without notice.
**Block Diagram**

![Block Diagram Image]

**Dimension**

Unit: mm

![Dimension Image]

**Ordering Information**

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<tbody>
<tr>
<td>MIX-Q370D2-A11-210</td>
<td>Socket SODIMM e2</td>
<td>Fan</td>
<td>VGA, HDMI x 2, eDP</td>
<td>SATAD x 2 M.2(M-key) x 1</td>
<td>—</td>
<td>GbE x 2</td>
<td>USB2.0 x 6</td>
<td>USB3.2 Gen2</td>
<td>2 x SATA III</td>
<td>1</td>
<td>1</td>
<td>PCIe3.0 (x16) x 1 M.2(E-Key) x 1</td>
<td>12V DC</td>
<td>2.0</td>
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**Optional Accessories**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>1759200172</td>
<td>CPU Cooler (2-Ball, Screw with Retention Plate)</td>
</tr>
<tr>
<td>1759211568</td>
<td>CPU Cooler (2-Ball, Push-pin Type)</td>
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<tr>
<td>COOLER-65W-01</td>
<td>CPU Cooler, LGA 1156, 12V, 65W, 4 Pin, Kingcooler, 0571-1463R</td>
</tr>
<tr>
<td>1709150201</td>
<td>USB 2.0 Cable (10P, 200MM, p=2.00mm, w/bracket)</td>
</tr>
<tr>
<td>1701980206</td>
<td>COM Cable (200MM, p=2.00mm)</td>
</tr>
<tr>
<td>1700104991</td>
<td>USB 2.0 Cable (10P, 490mm, p=2.00mm)</td>
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<tr>
<td>125500011</td>
<td>(TF)AC/DC Adapter,12V,192W,16A,FSP192-AHAN3.9NA1920100</td>
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Note: All specifications are subject to change without notice.
MIX-Q670A1 PRELIMINARY

Mini-ITX with Intel® 12th Generation Core™ LGA1700 Socket Processor, Max. 65W TDPs, HDMI2.0 x 2 + DP1.2 x 2, Giga-LAN x 2, DDR5x2 Max. 64GB

Specifications

Features
- 12th Gen. Intel® Core™ LGA1700 Processor
- DDR5 DRAM Support, 4800MHz, Max. 64GB
- HDMI2.0 x 2 + DP1.2 x 2
- M.2 Slot (M key) x 1, M.2 Slot (B key) x 1
- USB 3.2 Port x 8, USB 2.0 Port x 4
- Intel GbE LAN x 2
- SATA 6.0 Gb/s x 2
- PCI-Express [x16] x 1
- ATX Power

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

Notes: All specifications are subject to change without notice.
Block Diagram

MIX-Q670A1-A10

Intel®
PCH Q670E
ALDER LAKE-S
LGA1700 CPU
PCIe
Channel A
DDR5 4800MHz
Channel B
PCIe

Intel®
I210AT
Intel®
I219LM

Audio
ALC897

TPM

PCIe

HDMI

USB

SPI

eSPI

SIO

NCT6126D

CPU

CPU_FAN

COM1 (w/ 5V, 12V, RS-232/422/485) & COM2

Monitor

DIO

8-BIT

Watch dog

PS8409

PS8409

HDMI

HDMI

PS8409

HDMI

170.18

132.11

128.28

91.09

113.09

71.28

51.34

12.35

0.00

1.25

5.3

33.40

49.5

113.09

91.09

71.28

51.34

12.35

0.00

Dimension

Unit: mm

Ordering Information

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</thead>
<tbody>
<tr>
<td>MIX-Q670A1-A10</td>
<td>Socket</td>
<td>SODIMM x 2</td>
<td>Fan</td>
<td>HDMI x 2, DP x 2, LVDS x DP/DPv1</td>
<td>1</td>
<td>SATA x 2, M.2(M-Key)</td>
<td>GBE x 2</td>
<td>1</td>
<td>1</td>
<td>PCIe x 1, x1, M.2 Key x 1</td>
<td>ATX</td>
<td>2.0</td>
<td>0~60˚C</td>
<td></td>
</tr>
</tbody>
</table>

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1701100206</td>
<td>COM Cable (200MM, p=2.00mm)</td>
</tr>
</tbody>
</table>
### Specifications

**System**
- Processor: Intel® Alder Lake-S Core™ Processors, B+ B:65W
- Chipset: Q670E
- Memory: SO-DIMM x 2, max. 64GB, Dual Channel DDR5 4800MHz (Non-ECC)
- I/O Chipset: Intel® UHD Graphics
- Ethernet: Intel® GbE LAN 219LM x 1
- Audio: Realtek® ALC897 with Amp.
- TPM: TPM2.0 IC on board
- Expansion Slots: M.2 B-key (3042/3052; PCIex1; USB3.2 Gen1/USB2.0) x 1
- USB: 256Mbit Flash ROM, AMI BIOS
- BIOS: UEFI
- 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® UDQ Graphics
- Graphics Multi Display: HDMI2.0 x 2, DPx2, HDMIx2 x 2, DisplayPort x 2, HDMIx2 + DPx2 x 1, HDMIx2 + DPx2 x 1 + eDPx1, HDMIx1 x 1 + LVDSx1, HDMIx1 x 1 + DPx2 + eDPx1

**Power**
- Battery: Lithium battery
- Power Requirement: DC 12V
- Operating Temperature: 32°F ~ 140°F (0°C ~ 60°C)
- Storage Temperature: -40°F ~ 185°F (-40°C ~ 85°C)
- Operating Humidity: 0% ~ 90%RH, non-condensing
- CE & FCC
- Form Factor: Mini-ITX: 6.7” x 6.7” (170mm x 170mm)

### Features
- 12th Gen. Intel® Core™ LGA1700 Processor
- DDR5 DRAM Support, 4800MHz, Max. 64GB
- HDMI2.0 x 2 + DP1.2 x 2
- M.2 Slot (M-key; PClex4; NVMe; eDP; x1, M.2 Slot (E-key; 2230) x 1, M.2 Slot (B-key; 3042/3052) x 1 with SIM slot
- USB 3.2 Port x 4, USB 2.0 Port x 4
- Intel GbE LAN x 2
- SATA 6.0 Gb/s x 2
- DC 12V input

### Packing List
- I/O Shield
- SATA Cable
- SATA Power Cable
- MIX-Q670D1

### Weight
1.1 lb (0.5 Kg)

### MTFB (Hours)
—

### Rear Panel I/O Ports
- USB: USB 3.2 Gen2 x 4
- Display I/O: HDMI x 2, DP x 2
- Audio I/O: Line-out x 1
- LAN I/O: LAN (RJ-45) port x 2
- Serial Port: —
- PS/2 Port: —
- Others: —

### Internal I/O Connectors
- Storage: SATA 6.0Gb/s x 2 with SATA power conn x 2(1A)
- USB: USB2.0 x 4 ports using 2 x 5-pin headers x 2
- Display I/O: 40-pin LVDS/eDP connector x 1 with Inverter
- Audio I/O: HD Audio using AAFP header x 1, Internal Speaker (2W/4Ohm)x 1
- Serial Port: Box header for COM (RS-232/422/485) x 1, Box header for COM (RS-232) x 1
- PS/2 Port: —
- Parallel Port: —
- DIO: Digital I/O box header x 1
- FAN: 4-pin CPU Fan connector x 1, 4-pin System Fan connector x 1
- Power: —
- Others: Front Panel connector x 1, Chassis Intrusion x 1, Bezer onboard x 1, CMOS jumper x 1
- OS: Windows® 10 64-bit, Windows® 11 64-bit

### Notes
All specifications are subject to change without notice.
Block Diagram

Ordering Information

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<tbody>
<tr>
<td>MIX-Q670D1-A10</td>
<td>Socket</td>
<td>SODIMM x 2</td>
<td>Fan</td>
<td>HDMI x2, DP x2, LVDS/eDP x1</td>
<td>1</td>
<td>SATA3 x2, M.2 (M-key)</td>
<td>GBE x 2</td>
<td>1</td>
<td>1</td>
<td>M.2 (M-key) x 1, M.2 (E-key) x 1</td>
<td>DC 12V</td>
<td>2.0</td>
<td>0~60˚C</td>
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</table>

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1701000206</td>
<td>COM Cable (200MM, p=2.00mm)</td>
</tr>
<tr>
<td>1255300011</td>
<td>(TF)AC/DC Adapter.12V:19W.16A, FSP192-AHAN3.9NA1920100</td>
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</tbody>
</table>

Note: All specifications are subject to change without notice.
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
- 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

Rear Panel I/O Ports
- 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
- SATA StorageATA3.0 (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
- 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

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>1759200172</td>
<td>CPU Cooler (2-Ball, Screw with Retention Plate)</td>
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<tr>
<td>175921156B</td>
<td>CPU Cooler (2-Ball, Push-pin Type)</td>
</tr>
<tr>
<td>C0OLER-65W-01</td>
<td>CPU Cooler</td>
</tr>
<tr>
<td>1709100201</td>
<td>USB 2.0 Cable (10P, 200MM, p=2.00mm, w/ bracket)</td>
</tr>
<tr>
<td>1701100206</td>
<td>COM Cable (200MM, p=2.00mm)</td>
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<tr>
<td>1700100491</td>
<td>USB 2.0 Cable (10P, 490mm, p=2.00mm)</td>
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<tr>
<td>1709050201</td>
<td>USB 2.0 Cable (5P, 220mm, p=2.00mm)</td>
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</table>

Note: All specifications are subject to change without notice.
Block Diagram

Dimension
Unit: mm

Ordering Information

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<tr>
<td>EMB-Q170A-A11-210</td>
<td>Socket</td>
<td>SODIMM x 2</td>
<td>—</td>
<td>VGA, DP</td>
<td>SATA3 x 2, M.2(M-Key)</td>
<td>—</td>
<td>GBE x 1</td>
<td>USB 3.2 Gen1 x 4, USB2.0 x 6</td>
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<td>1</td>
<td>PCIe3.0[x16] x 1, M.2(M-Key) x 1</td>
<td>ATX</td>
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EMB-Q170B

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

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

Specifications

- Processor: 6th/7th Generation Intel® Core™ i Series, LGA1151 Socket Processor, Max. 65W TDPs
- Chipset: Intel® Q170
- Memory: DDR4 SODIMM x 2, Up to 32GB
- Display: 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
- PCIe [x4] x 1
- Low Profile
- 4K for DP/eDP
- LAN1 Supports iAMT11.0

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, 2-Ball (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=2.5mm)
1702151201 | SATA Power Cable (4P, 120MM, p=2.5mm)
1700100491 | USB 2.0 Cable (2 x 5P, 490mm, p=2.00mm)
125590084A | Adapter 12V, 84W/N3
1709050201 | USB 2.0 Cable (5P, 220mm, p=2.00mm)
Block Diagram

Intel® PCH Q170
COFFEELAKE-S
LGA1151 CPU

PLL (Gen3)

4 x USB 3.2 Gen1

6x USB 2.0

4 x SATAIII

SPI flash

Audio

ALC897

USB2.0

DMI (Gen3)

USB3.2 Gen1

PCIe [x4]

DDR4 1867/2133MHz

Channel A

Channel B

Channel C

Channel D

CPU FAN

MB FAN

Port B

Port C

Port D

Port E

Port F

GPIO

SPI

SIO

Line out

Mic In

Audio AMP

Int. SPK

TPM1.2/2.0

SLB96xx (Optional)

LPC

Internal Audio

USB2.0

SATAIII

PCIe

DDR4 1867/2133MHz

PCIe

SATA

PCIe

USB2.0

AAFP

Dimension
Unit: mm

Order Information

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<tr>
<td>EMB-Q170B-A11-210</td>
<td>Socket</td>
<td>SODIMM x 2</td>
<td>Fan</td>
<td>LVDS, eDP, DP</td>
<td>SATA3 x 4, M.2 (M-key)</td>
<td>Dual Channel 16/24 bit</td>
<td>GBE x 2</td>
<td>USB 3.2 Gen1 x 4, USB2.0 x 6</td>
<td>1</td>
<td>PCIe [x4] x 1, M.2(M-key) x 1, M.2(E-key) x 1</td>
<td>12VDC</td>
<td>—</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
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EMB-H110B
6th/7th Generation Intel® Core™ i Series, LGA1151 Socket Processor, Max. 65W TDPs, SATA 6.0 Gb/s x 2, USB x 8

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

Specifications

System
- Processor: 6th/7th Generation Intel® Core™ i Series, LGA1151 Socket Processor, Max. 65W TDPs
- Chipset: Intel® H110
- Memory: 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 (mSATA Default)
- USB x 8
- PCI-E [x1] x 1
- 12V DC
- Low Profile
- 4K for HDMI/eDP

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

System

Processor
- 6th/7th Generation Intel® Core™ i Series, LGA1151 Socket Processor, Max. 65W TDPs
- Chipset: Intel® H110
- Memory: 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 (mSATA Default)
- USB x 8
- PCI-E [x1] x 1
- 12V DC
- Low Profile
- 4K for HDMI/eDP

Graphics
- Graphics Chipset: —
- Graphics Multi Display: HDMI1+HDMI2, HDMI1+DP2, DP1+HDMI2, HDMI1+LVDS, HDMI2+LVDS, HDMI1+eDP, HDMI2+eDP, DP1+DP2, DP1+LVDS, 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

Graphics
- Graphics Chipset: —
- Graphics Multi Display: HDMI1+HDMI2, HDMI1+DP2, DP1+HDMI2, HDMI1+LVDS, HDMI2+LVDS, HDMI1+eDP, HDMI2+eDP, DP1+DP2, DP1+LVDS, 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

Environmental & Power & ME
- Battery: Lithium battery
- Power Requirement: 12VDC
- Operating Temperature: 32°F ~140°F (0°C ~ 60°C)
- Storage Temperature: -40°F ~185°F (-40°C ~85°C)
- Operating Humidity: 0% ~ 90% R/H, non-condensing
- Certificate: CE & FCC
- Form Factor: Mini-ITX: 6.7” x 6.7” (170mm x 170mm)
- Weight: 1.1 lb (0.5 Kg)
- MTBF (Hours): 315,210

Note: All specifications are subject to change without notice.

Packing List
- • 14001-00630100 SAT 6G Cable (7P, 180; 90, 500mm 2 in)
- • 14001-00230100 SATA to Power Cable (4P, 120MM)

Optional Accessories
- • 1759200172 CPU Cooler (2-Ball, Screw with Retention Plate)
- • 175921156B CPU Cooler (2-Ball, Push-pin Type)
- • 125590084A Adapter 12V, 84W/N3
- • 1709050201 USB 2.0 Cable (5P, 220mm, p=2.00mm, w/ bracket)
- • 1700150300 SATA Power Cable, 4P, 2.54mm
- • 1702100491 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.

Packing List
- • 14001-00630100 SAT 6G Cable (7P, 180; 90, 500mm 2 in)
- • 14001-00230100 SATA to Power Cable (4P, 120MM)

Optional Accessories
- • 1759200172 CPU Cooler (2-Ball, Screw with Retention Plate)
- • 175921156B CPU Cooler (2-Ball, Push-pin Type)
- • 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

EMB-H110B

Industrial Motherboards

Note: All specifications are subject to change without notice.
MAX-Q470A

Micro-ATX Industrial Motherboard with 10th Generation Intel® Core™ Processor, DDR4 DRAM, Multiple Display Ports, Supports iAMT 12.0

Features
- 10th Generation Intel® Core™ LGA1200 Processor
- Supports Power 10 Core 80W max.
- DDR4 2933/2666/2400 MHz, max. 128GB
- Three Independent Displays: HDMI x 3 (2.0 x 1, 1.4 x 2), VGA x 1, LVDS x 1
- Dual Intel® Gigabit Ethernet, LAN1 Supports iAMT 12.0
- USB 3.2 Gen2 x 2, USB 3.2 Gen1 x 7, USB 2.0 x 2
- BIOS recovery function, convenient way to flash BIOS if needed
- TPM Onboard

Specifications

**System**
- Processor: Intel® 10th Generation (Comet Lake-S) Core™ i9 /i7/ i5 /i3, Pentium 14nm LGA 1200 socket Processor, Max. 10 Core 80W
- Chipset: Intel® Q470E Express Chipset
- Memory: DIMM x 4, DDR4 (2933/2666/2400 MHz, max. 128GB)
- Expansion Slots: PCIe 3.0 x16 (Slot (16 lanes) when use dual PCIe[x16] x 1, PCIe 3.0 x 16 (8 lanes) x 1, PCIe 3.0 x 4 (Slot (2 lanes) x 1, M.2 2230 2-key (PCIe/USB/SATA) x 1, Micro SIM Slot x 1)
- BIOS: 256Mbit Flash ROM, AMI BIOS
- I/O Monitor: Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V
- WatchDog Timer: 1~255 steps by software program
- SmartFan Control: CPU Fan/ Chassis Fan x 2
- 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 IT8516B
- 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
- Temperature: 32°F ~ 140°F (0°C ~ 60°C)
- Storage Temperature: -40°F ~ 185°F (-40°C ~ 85°C)
- Operation Humidity: 0%~90%RH, non-condensing
- Certificate: CE & FCC Class A

**Rear Panel I/O Ports**
- USB: USB 3.2 Gen2 ports (10 Gbps) x 4, 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/RS) x 1
- Other: BIOS recovery button

**Internal I/O Connectors**
- SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10
- M.2 2280/2242 M-key (PCIex16) x 1, M.2 3042/3052 8-key (PCIe/USB/SATA) x 1, Micro SIM Slot x 1
- USB3.2 Gen 1 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
- Other: 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; 500mm 2 in 1)
- 14001-00400100 COM Port Cable (9P, 260mm, p=2.54mm w/bracket)
- I/O Shield
- MAX-0470A

Note: All specifications are subject to change without notice.
Block Diagram

Dimension

Ordering Information

--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
MAX-Q470A-A11-210 | LGA 1200 socket DDR4 2933/2666MHz | Fan | HDMI x 3, VGA x 1, LVDS x 1 | SATA x 4, M.2 2280/2242 M-key (PCIe) x 1, Intel® i/o x 2 | USB 3.2 Gen2 x 2, USB 3.2 Gen1 x 4, USB 3.2 Gen1 type A x 1, USB 2.0 x 1 | 3 | 1 | PCI(p16) Express 1x, PCI(p4) Express 1x, M.2 2222 M-key (PCIe) x 1, M.2 2230/2242 M-key (PCIe) x 1, M.2 2242/2280 M-key (PCIe) x 1, USB 3.2 Gen1 x 4, SATA III x 4, M.2 (M key) | 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)
1709100450 | USB 3.2 Gen 1 Cable (9P, 450MM, w/bracket)
AP-FNTHQ370010 | CPU Cooler (2-Ball Bearing, 2U, TDP Max. 100W)

Note: All specifications are subject to change without notice.
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

Specifications
- 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

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.
### Ordering Information

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<td>LGA 1151 socket</td>
<td>DDR4 2666/2400/2133</td>
<td>Fan</td>
<td>HDMI x 2</td>
<td>—</td>
<td>SATA3 x 4</td>
<td>M.2 2280</td>
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<td>PCIe x 4</td>
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<td>USB 3.2 Gen 2 x 4</td>
<td>PCI Express x 16</td>
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<td>12V/5V</td>
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### Optional Accessories

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<td>AP-FNTH10370010</td>
<td>CPU Cooler (2-Ball Bearing, 2U, TOP Max. 100W)</td>
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<tr>
<td>1709100330</td>
<td>USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)</td>
</tr>
<tr>
<td>170910020K</td>
<td>USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)</td>
</tr>
<tr>
<td>1759211568</td>
<td>CPU Cooler (2-Ball, Push-pin Type)</td>
</tr>
<tr>
<td>1759200172</td>
<td>CPU Cooler (2-Ball, Screw with Retention Plate)</td>
</tr>
</tbody>
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**Note:** All specifications are subject to change without notice.
Micro-ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Multiple Display Ports, Supports iAMT 12.0

Features
- 8th/9th Generation Intel® Core™ LGA1151 Processor
- Supports Max. TDP 6 Core 95W, Do Not Support 8 Core 65W/ 95W
- DDR4 2666/2400/2133 MHz, max. 128GB
- Three Independent Displays: HDMI x 2, VGA x 1, DP x 1
- Dual Intel® Gigabit Ethernet, LAN1 Supports iAMT 12.0
- USB 3.2 Gen 1 x 9, USB 2.0 x 4
- Internal USB 3.2 Gen 1 box header x 1, USB 3.2 Gen 1 Type A (vertical) x 1, M.2 2280/2242 M-key (PCIe x 2) x 1
- TPM Onboard

Specifications

System
- Processor: Intel® 8th/9th Generation (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/i7/i5/i3, Pentium 14nm LGA 1151 socket Processor, Max. 6 Core 95W
- Chipset: Intel® Q370 Express Chipset
- Memory: DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB)
- I/O Chipset: NCT6793D+ F81216HD
- Ethernet: Intel® PHY Z19ML Gigabit Ethernet
- Audio: Realtek® ALC897 6-Channel High Definition Audio CODEC
- TPM: Nuvoton NPTC750 TPM2.0 onboard
- Expansion Slots: PCIe 3.0 x 16, Slot x 1
- BIOS: 256 Mbit Flash ROM x 1, AMI BIOS
- H/W Monitor: Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
- Smart Fan Control: CPU Fan/ Chassis Fan x 2
- Wake On LAN/PXE: Yes (WOL / PXE)
- Power State: S3, S4, S5

Graphics
- Graphics Chipset: Intel® Graphics Media Accelerator
- Graphics Multi Display: HDMI+VGA+DP, HDMI+HDMI+VGA, HDMI+HDMI+DP
- VGA: Up to 1920 x 1200 @60Hz (via IT6516B)
- DVI: —
- HDMI: Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
- Display Port: Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
- LVDS: —
- eDP: —
- Backlight Control: —

Environment & Power & ME
- Battery: Lithium battery
- Power Requirement: 24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
- Operation Temperature: 32°F ~ 140°F (0°C ~ 60°C)
- Storage Temperature: -40°F ~ 185°F (-40°C ~ 85°C)
- Operation Humidity: 0%~90%RH, non-condensing
- Certificate: CE & FCC Class A
- Form Factor: Micro-ATX Form Factor. 9.6"x9.6" (244 mm x 244 mm)
- Weight: 1.76 lb (0.8 Kg)
- MTBF (Hours): 264,820

Packing List
- 14001-00630100 SATA 6G Cable (7R: 180; 90, 500mm 2 in 1)
- 14001-00400100 COM Port Cable (9P, 250mm, p=2.54mm w/bracket)
- I/O Shield
- MAX-Q370C

Note: All specifications are subject to change without notice.
Block Diagram

Dimension

Ordering Information

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<tr>
<td>MAX-Q370C-A11-210</td>
<td>LGA 1151 socket</td>
<td>DDR4 2666/2400</td>
<td>Fan</td>
<td>HDMI x 2, VGA x 1, DP x 1</td>
<td>SATA 3 x 4, M.2 2280/2242</td>
<td>Intel® Q370</td>
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<td>USB 3.2 Gen 1 x 4, USB 2.0 x 4, USB 3.2 Gen 1 type A (vertical) x 1</td>
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<td>ASMB1442/G150 16GB</td>
<td>A18</td>
<td>Onboard</td>
<td>32°F ~ 140°F (0°C ~ 60°C)</td>
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Optional Accessories

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<th>Part number</th>
<th>Description</th>
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</thead>
<tbody>
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<td>1700190450</td>
<td>USB 3.2 Gen 1 Cable (10P, 450mm, w/bracket)</td>
</tr>
<tr>
<td>AP-FNTHQ370010</td>
<td>CPU Cooler (2-Ball Bearing, 2U, TDP Max. 100W)</td>
</tr>
<tr>
<td>1709100030</td>
<td>USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)</td>
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<td>1709100020</td>
<td>USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)</td>
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<tr>
<td>1750921156B</td>
<td>CPU Cooler (2-Ball, Push-pin Type)</td>
</tr>
<tr>
<td>1759200172</td>
<td>CPU Cooler (2-Ball, Screw with Retention Plate)</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.

www.aaeon.com
# 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

## Specifications

### System
- **Processor**: 8th/9th Generation Intel® (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/i7/i5/i3, Pentium™, Celeron™, Xeon™, LGA1151 socket Processor, max. TDP 8 Core 95W
- **Chipset**: Intel® C246 Express Chipset
- **Memory**: DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB)
- **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 2220 M-key x 1 (PCIex4/USB), M.2 2280 M-key x 1 (PCIex4/SATA3)
- **BIOS**: 256Mb 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
- **Power State**: S3, S4, S5

### Graphics
- **Graphics**: Intel® UHD Graphics
- **HDMI**: Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
- **LVDS**: —
- **Display Port**: Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
- **eDP**: —
- **Backlight Control**: —

### Environment & Power & ME
- **Battery**: Lithium battery
- **Power Requirement**: 24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
- **Operation Temperature**: 32°F ~ 140°F (0°C ~ 60°C)
- **Storage Temperature**: -40°F ~ 185°F (-40°C ~ 85°C)
- **Operation Humidity**: 0%~90%RH, non-condensing
- **Certificate**: CE & FCC Class A
- **MTBF (Hours)**: 264,820

## Packaging List
- **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**: —

## Notes
- All specifications are subject to change without notice.

---

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

**Internal I/O Connectors**
- **Storage**: SATA3 (6.0Gbps) ports x 4, support RAID 0/1/5/10
- **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
- **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
- **Power**: Chassis Fan connector(s) (4-pin) x 2
- **Others**: Chassis Intrusion x 1
- **AT/ATX mode select jumper x 1**
- **Front panel header x 1**
- **Clear CMOS jumper x 1**
- **Bi-Directional header x 1**
- **Fan header x 2**
- **Buzzer on-board x 1**

## OS
- **OS Support**: Windows® 10 64-bit, Windows® 11 64-bit, Linux Ubuntu 64-bit (18.04.1/Kernal4.8.0)
### Optional Accessories

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<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>AP-FNTH1Q370010</td>
<td>CPU Cooler (2-Ball Bearing, 2U, TDP Max. 100W)</td>
</tr>
<tr>
<td>1709100330</td>
<td>USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)</td>
</tr>
<tr>
<td>170910020K</td>
<td>USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)</td>
</tr>
<tr>
<td>175921156B</td>
<td>CPU Cooler (2-Ball, Push-pin Type)</td>
</tr>
<tr>
<td>1759200172</td>
<td>CPU Cooler (2-Ball, Screw with Retention Plate)</td>
</tr>
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</table>

### Ordering Information

**Part Number**

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<th>Description</th>
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<tr>
<td>170910020K</td>
</tr>
<tr>
<td>175921156B</td>
</tr>
<tr>
<td>1759200172</td>
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### Dimension

**Unit:** mm

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<tr>
<td>Width: 255.2mm</td>
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<tr>
<td>Height: 243.44mm</td>
</tr>
<tr>
<td>Depth: 19.92mm</td>
</tr>
<tr>
<td>Overall: 269.97mm</td>
</tr>
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Note: All specifications are subject to change without notice.

[www.aaeon.com](http://www.aaeon.com)
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
- Processor: 8th/9th Generation Intel® Core™ LGA1151 Processor
- Memory: DDR4 2666/2400/2133 MHz, max. 64GB
- Ethernet: 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

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

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
- USB: USB 2.0 header support additional 2 USB ports (2x5PIN, p=2.54mm) x 1
- Display I/O: —
- Audio I/O: —
- Power: —
- Others: —

Power
- Fan: CPU Fan connector (4-pin) x 1
- Chassis Fan connector(s) (4-pin) x 2

Options
- OS Support: Windows® 10 64bit, Windows® 11 64bit, Linux Ubuntu 64bit (18.04.1/Kernal4.8.0)

Note: All specifications are subject to change without notice.
Block Diagram

![Block Diagram of MAX-H310A Industrial Motherboard](image)

Dimension

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<tbody>
<tr>
<td>MAX-H310A-A11-210</td>
<td>LGA1151 socket</td>
<td>DDR4 2666/2400/2133</td>
<td>Fan</td>
<td>HDMI x 1, VGA x 1, DP x 1</td>
<td>SATA x 3, M.2 2280 M-key (SATA) x 1</td>
<td>Intel®IOGE x 2</td>
<td>USB 3.2 Gen 1 x 4, USB 2.0 x 6</td>
<td>5</td>
<td>1</td>
<td>PCIe(x16) x 1, PCIe(x1) x 3, M.2 2280 M-key (SATA) x 1</td>
<td>ATX on-board</td>
<td>32°F to 140°F (0°C to 60°C)</td>
<td></td>
</tr>
</tbody>
</table>

Optional Accessories

<table>
<thead>
<tr>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1709100300</td>
<td>USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)</td>
</tr>
<tr>
<td>170910020K</td>
<td>USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)</td>
</tr>
<tr>
<td>175921156B</td>
<td>CPU Cooler (2-Ball, Push-pin Type)</td>
</tr>
<tr>
<td>1759220172</td>
<td>CPU Cooler (2-Ball, Screw with Retention Plate)</td>
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</table>

Note: All specifications are subject to change without notice.
# 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

---

### Rear Panel I/O Ports

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB</td>
<td>USB 3.2 Gen 1 port x 10</td>
</tr>
<tr>
<td>Display I/O</td>
<td>DVI-I x 1, HDMI x 2</td>
</tr>
<tr>
<td>Audio I/O</td>
<td>Audio Jack x 3: Line-in, Mic-in, Line-out</td>
</tr>
<tr>
<td>LAN I/O</td>
<td>LAN (RJ-45) port x 2</td>
</tr>
<tr>
<td>Serial Port</td>
<td>RS-232/422/485 DB-9 connector x 1 (COM1, supports 5/12V on RI pin)</td>
</tr>
<tr>
<td>PS/2 Port</td>
<td>PS/2 Combo Port (Keyboard &amp; Mouse) x 1</td>
</tr>
<tr>
<td>Others</td>
<td>—</td>
</tr>
</tbody>
</table>

### Internal I/O Connectors

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td>SATA3 (6.0Gb/s) port x 6, supports RAID 0/1/5/10</td>
</tr>
<tr>
<td>USB</td>
<td>USB 2.0 header supports additional 2 USB ports x 2</td>
</tr>
<tr>
<td>Display I/O</td>
<td>—</td>
</tr>
<tr>
<td>Audio I/O</td>
<td>Speaker header x 1 (Line-out)</td>
</tr>
<tr>
<td>Serial Port</td>
<td>RS-232 header x 5</td>
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<tr>
<td>PS/2 Port</td>
<td>—</td>
</tr>
<tr>
<td>Parallel Port</td>
<td>—</td>
</tr>
<tr>
<td>DIO</td>
<td>8-bit Digital I/O interface x 1 (IN/OUT programmable)</td>
</tr>
<tr>
<td>FAN</td>
<td>CPU Fan connecter(s) (4-pin) x 1, Chassis Fan connecter(s) (4-pin) x 2</td>
</tr>
<tr>
<td>Power</td>
<td>—</td>
</tr>
<tr>
<td>OS</td>
<td>Windows® 7.32/64-bit, Windows® 8.1 64-bit, Windows® 10 64-bit, Linux Fedora 64bit</td>
</tr>
</tbody>
</table>

### Packing List

- **14001-00630100**
  - SATA 6Gb 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

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>1709100330</td>
<td>USB 2.0 cable (9P; 33/3MM; p=2.54mm, w/bracket)</td>
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<tr>
<td>1709910330</td>
<td>USB 2.0 cable (9P; 200MM; p=2.54mm, w/bracket)</td>
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<tr>
<td>17592156B</td>
<td>CPU Cooler (2-Ball, Push-pin Type)</td>
</tr>
<tr>
<td>1759200172</td>
<td>CPU Cooler (2-Ball, Screw with Retention Plate)</td>
</tr>
</tbody>
</table>

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## 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 DDR4 x 4, max. 64GB, DDR4 2133/1867 MHz, non-ECC, un-buffered memory, dual-channel memory architecture
- **I/O Portfolio:**
  - 6th/7th Generation Intel® Core™ LGA1151 Processor
  - DDR4 RAM Slot x 4, up to 64GB
  - 6th Generation Intel® Core™ LGA1151 Processor
- **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 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/SV/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 1920 x 1200 @60Hz
- **Display Port:** —
- **LVDS:** —
- **eDP:** —
- **Backlight Control:** —

### Environment & Power & ME

- **Battery:** Lithium battery
- **Power Requirement:** 24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
- **Operating Temperature:** 32°F – 140°F (0°C – 60°C)
- **Storage Temperature:** -40°F – 185°F (-40°C – 85°C)
- **Operating Humidity:** 0% – 95% RH, non-condensing
- **Certificate:** CE & FCC Class A
- **Form Factor:** Micro-ATX Form Factor, 9.6” x 9.6” (244mm x 244mm)
- **Weight:** 1.76 lb (0.8 Kg)
- **MTBF (Hours):** 193,470

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Note: All specifications are subject to change without notice.
**Block Diagram**

**Dimension**

**Ordering Information**

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<tr>
<td>IMBM-Q170A</td>
<td>LGA1151</td>
<td>DDR4 2133</td>
<td>Fan</td>
<td>DVI x 1, HDMI x 2</td>
<td>SATA3 x 6</td>
<td>—</td>
<td>Intel®®82860E x 2</td>
<td>USB 3.2 Gen 1 x 10</td>
<td>USB 2.0 x 4</td>
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<td>PCIe (x16) x 1, PCIe (x8) x 1, PCIe (x4) x 1, PCIe (x1)</td>
<td>ATX</td>
<td>—</td>
<td>32°F – 140°F (0°C – 60°C)</td>
</tr>
</tbody>
</table>
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

Specifications

■ 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

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

Rear Panel I/O Ports
- 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
- 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)
- Power 4-pin CPU Fan x 1, 4-pin Chassis Fan x 2
- Others —
- Others Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (2p x 4) p=1.27mm x 1, Chassis Intrusion x 1, AT/ATX mode select jumper x 1

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

Environment & Power & ME
- Battery Lithium battery
- Power Requirement 24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
- Operation Temperature 32°F ~ 140°F (0°C ~ 60°C)
- Storage Temperature -40°F ~ 185°F (-40°C ~ 85°C)
- Operation Humidity 0% ~ 90% RH, non-condensing
- Certificate CE & FCC Class A
- Form Factor Micro-ATX, 9.6” x 9.6” (244mm x 244mm)
- Weight 1.78 lb (0.8 Kg)
- MTBF (Hours) 245,250
**Block Diagram**

**Dimension**

Unit: mm

**Ordering Information**

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<td>IMBM-H110A-A01-21S</td>
<td>LGA1151 socket</td>
<td>DDR4 2400</td>
<td>Fan</td>
<td>HDMI x 2, VGA x 1, DVI-D x 1</td>
<td>M.2 M key 2242 x 1, SATA3 x 5</td>
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<td>GBE x 2</td>
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<td>5</td>
<td>1</td>
<td>PCIe[x16] x 1, PCIe[x1] x 2, PCI x 1</td>
<td>ATX</td>
<td>—</td>
<td>32°F-140°F (0°C-60°C)</td>
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</table>

**Optional Accessories**

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

Note: All specifications are subject to change without notice.
### ATX-Q670A

ATX with Intel® 12th Generation Core™ LGA1700 Socket Processor, Max.125W TDPs, DDR5 DRAM, Multiple Display Ports

## Specifications

### System
- **Processor**: Intel® Alder Lake-S, LGA 1700 socket, Processor Max. 125W TDPs
- **Chipset**: Intel® Q670 Express Chipset
- **Memory**: DDR5 DRAM, Non-ECC, Un-buffered Memory, Dual-Channel Memory Architecture
- **I/O Chipset**: NCT6126D
- **Ethernet**: Intel® PHY 2.5GLAN Giga LAN x 1 (supports Intel® AMT 12.0)
- **Intel® i210AT Giga LAN x 1
- **Intel® i225LM Giga LAN x 1 (Optional)
- **Audio**: Realtek ALC897 6-Channel High Definition Audio CODEC
- **TPM**: TPM 2.0 onboard

### Expansion Slots
- **PCIe [x16] Slot (16 lanes, Gen5) x 1
- **PCIe [x16] Slot (open Slot) (1 lane, Gen4) x 1
- **PCIe [x4] Slot (open Slot) (4 lanes, Gen4) x 1
- **PCIe [x1] Slot (open Slot) (1 lane, Gen3) x 1
- **M.2 3042/3052 B-key (PCIex1/USB3.2 Gen1) x 1
- **Mini PCIe Slot (PCIex1/USB2.0) x 1
- **Micro SIM Card Slot x 1 (either with M.2 B-Key or Mini PCIe Slot)

### BIOS
- 256Mbit Flash ROM, AMI BIOS

### H/W Monitor
- Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis

### WatchDog Timer
- WatchDog Timer: 1-255 step by software program

### Smart Fan Control
- CPU Fan x1, Chassis Fan x3

### Wake On LAN/ PXE
- Yes (WOL / PXE)

### Power State
- S3, S4, S5

### Graphics
- **Graphics Chipset**: Intel® Graphics Media Accelerator
- **Graphics Multi Display**: HDMI+HDMI+DP+VGA, HDMI+VGA+DP
- **VGA**: Up to 1920 x 1200 @60Hz (via IT6516B)
- **DVI**: —
- **HDMI**: Up to 4096 x 2160 @ 60 Hz, with digital audio (HDMI2.3)
- **Display Port**: Up to 4096 x 2160 @ 24 Hz 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°C ~ 60°C)
- **Storage Temperature**: -40°F ~ 185°F (-40°C ~ 85°C)
- **Operating Humidity**: 0%~90%RH, non-condensing

### Hardware Monitor
- Fan Monitor on CPU/Chassis
- Temperature Monitor on CPU/Chassis
- Voltage Monitor on Vcore/5V/3.3V/12V

### BIOS Features
- **Fan Monitor on CPU/Chassis**
- **WatchDog Timer**: 1-255 step by software program
- **Smart Fan Control**: CPU Fan x1, Chassis Fan x3

### Display I/O
- VGA Header x 1, 10LAN x 2
- HDMI 2.0 x 2
- DP 2 x 2
- USB 3.2 Gen2 x 2
- Micro SIM Card Slot x 1
- M.2 2280 M-key (PCIex4)
- M.2 2280 K-key (PCIex4)

### USB
- USB 3.2 Gen2 (10Gbps) x 2 (Option: x3 units if with LAN3 i225LM)
- USB 3.2 Gen1 (5Gbps) x 2, Type-C (5Gbps, 5V, 1.5A) x 1 (Optional)
- All ports are bootable, can be deactivated per BIOS information; USB Power switchable feature

### Rear Panel I/O Ports
- **USB 3.2 Gen2 x 2, USB 3.2 Gen1 x 4, USB 2.0 x 3 (Option: USB Type-C x1, USB 3.2 Gen2 x 3)
- **SATA ports x 8
- **USB Power switchable feature, convenient way to reset USB device remotely
- **Bootable feature in rear USB Port, enhance the security level
- **TPM 2.0 on board

### Internal I/O Connectors
- **Storage**: SATA III ports x 8, support RAID 0/1/5/10
- **USB 3.0 Box Header x 1 (2x5PIN, p=2.54mm) support 2 USB3.2 Gen1 ports (USB Power switchable feature)
- **USB 2.0 Header x 1 (2x5PIN, p=2.54mm) support 2 USB2.0 ports (USB Power switchable feature)
- **USB 2.0 Vertical type A connector x 1

### Display I/O
- VGA Header x 1
- Audio I/O
- Speaker header (Line-out, Mic-out, Line-out)
- LAN I/O
- LAN (RJ-45) port x 2 (Option: RJ45 x 3)
- Serial Port
- DB-9 COM (supports RS-232/422/485, 5V/12V/Rs) x 1
- PS/2 Port —
- Others —

### Packing List
- 14001-0063010
- SATA 6G Cable (7P, 180, 90, 500mm 2 m)
- 14019-00060700
- VGA Cable (200mm, 2X8Pin, w/bracket)
- I/O Shield
- ATX-Q670A

Note: All specifications are subject to change without notice.
Industrial Motherboards

## ATX-Q670A

### Block Diagram

![Block Diagram](image-url)

### Dimension

Unit: mm

![Dimension Diagram](image-url)

### Ordering Information

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<tr>
<td>ATX-Q670A-A10-2L</td>
<td>LGA1700 Socket</td>
<td>DDR5 4800MHz</td>
<td>Fan</td>
<td>HDMI, DP, VGA header</td>
<td>SATA3</td>
<td>M.2 2280 M-Key x1, M.2 2242/3052 (8 lanes)</td>
<td>Intel® PCH Q670E</td>
<td>USB3.2 Gen2 x2, USB 3.2 Gen1 x2, USB 3.0 Hub x1, USB 2.0 Hub x1, USB 2.0 Hub x1, USB 2.0 (Vertical Type A) x1</td>
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<td>ATX</td>
<td>TPM2.0 onboard</td>
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### Optional Accessories

<table>
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<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>1709100330</td>
<td>USB 2.0 cable (9P, 300MM, p=2.54mm, w/bracket)</td>
</tr>
<tr>
<td>170910020K</td>
<td>USB 2.0 cable (9P, 200MM, p=2.54mm, w/o bracket)</td>
</tr>
<tr>
<td>1700190450</td>
<td>USB3.2 Gen1 Cable (19P, 450mm, w/bracket)</td>
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</table>

Note: All specifications are subject to change without notice.

www.aaeon.com
**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 (PCIe4/USB2.0/CNVi) x 1, M.2 M-key (PCIe4/SATA3) x 1**
- **TPM Onboard**

---

### Specifications

<table>
<thead>
<tr>
<th>System</th>
<th>Processor</th>
<th>Chipset</th>
<th>Memory</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>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</td>
<td>Intel® Q370 Express Chipset</td>
<td>DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB)</td>
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<thead>
<tr>
<th>System</th>
<th>I/O Chipset</th>
<th>Expansion Slots</th>
<th>Ethernet</th>
<th>Audio</th>
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<tbody>
<tr>
<td></td>
<td>NCT6793D + F81216HD</td>
<td>PCIe 3.0(x16) Slot x 1, PCIe 3.0(x4) Slot (open edge) x 2, PCIe 3.0(x4) Slot (open edge) x 2, PCI x 2, M 2 2230 E-key (PCIe4/USB2.0/CNVi) x 1, M 2 2280 M-key (PCie4/SATA3) x 1</td>
<td>Intel® PHY 2/10GigE LAN x 1 (supports Intel® ATME12.0) Intel® 210ATSig x 1 (BOM option: PCIe1/USB2.0/CNVi) x 2, RJ45 x 2 (BOM option: RJ45 x 3)</td>
<td>Realtek® ALC897 6-Channel High Definition Audio CODEC</td>
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</table>

<table>
<thead>
<tr>
<th>System</th>
<th>BIOS</th>
<th>H/W Monitor</th>
<th>Audio I/O</th>
<th>Display I/O</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>256MBbit Flash ROM x 1, AMI BIOS</td>
<td>Temperature Monitor on CPU/Chassis, Voltage Monitor on Intel®/3.3V/12V, Fan Monitor on CPU/Chassis</td>
<td>Audio Jack x 3: Line-in, Mic-in, Line-out</td>
<td>HDMI x 1, VGA x 1, DP x 1, USB Type-C x 1 (optional)</td>
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<table>
<thead>
<tr>
<th>System</th>
<th>WatchDog Timer</th>
<th>BIOS &amp; Storage</th>
<th>TPM</th>
<th>Internal I/O Connectors</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1~255 steps by software program</td>
<td>SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M 2 2280 M-key (PCIe4/SATA3) x 1</td>
<td>Nuvoton NPTC7350 TPM2.0 onboard</td>
<td>S x RS-232 headers 1 x RS-232/422/485 (COM1, supports 5V/12V/RI optional)</td>
</tr>
</tbody>
</table>

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**Power State**
- S3, S4, S5

---

### 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)
- **PS/2 Port**: —

---

### Internal I/O Connectors
- **Storage**: SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M 2 2280 M-key (PCIe4/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 Clear CMOS jumper x 1 3-pin ME lock header x 1 Buzzer on-board x 1

### Operating System
- Windows® 10 64bit, Windows® 11 64bit, Linux Ubuntu 64bit (18.04.1/Kernal 4.8.0)

---

**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

Ordering Information

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<tr>
<td>ATX-Q370A-A20-2L-210</td>
<td>LGA 1151 socket</td>
<td>DDR4 2666/2400/1866</td>
<td>Fan</td>
<td>HDMI x 1, VGA x 1, DP x 1</td>
<td>—</td>
<td>SATA III x 4, M.2 2280, M.2 2230, M.2 2212</td>
<td>Intel®</td>
<td>USB 3.2 Gen 2 x 4, USB 2.0</td>
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<td>5</td>
<td>PCIe[x16] (open edge), M.2 2212, M.2 2230, M.2 2280, M.2 2212, M.2 2230, M.2 2280, M.2 2212, M.2 2230, M.2 2280</td>
<td>ATX</td>
<td>Onboard</td>
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<td>USB 2.0 cable (9P, 330MM, P=2.54mm, w/bracket)</td>
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<td>USB 2.0 cable (9P, 330MM, P=2.54mm, w/o bracket)</td>
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<tr>
<td>175921156B</td>
<td>CPU Cooler (2-Ball, Push-pin Type)</td>
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<tr>
<td>1759200172</td>
<td>CPU Cooler (2-Ball, Screw with Retention Plate)</td>
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Optional Accessories

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<tr>
<th>Part Number</th>
<th>Description</th>
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<tr>
<td>AP-FNTH103700010</td>
<td>CPU Cooler (2-Ball Bearing, 2U, TOP Max. 100W)</td>
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<td>USB 2.0 cable (9P, 330MM, P=2.54mm, w/bracket)</td>
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<td>170910020K</td>
<td>USB 2.0 cable (9P, 330MM, P=2.54mm, w/o bracket)</td>
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<tr>
<td>175921156B</td>
<td>CPU Cooler (2-Ball, Push-pin Type)</td>
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<tr>
<td>1759200172</td>
<td>CPU Cooler (2-Ball, Screw with Retention Plate)</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
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 (PClex1/USB2.0/CNVi) x 1, M.2 M-key (PClex4/SATA3) x 1
- TPM Onboard

Specifications

System
- Processor: Intel® 8th/9th Generation (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/i7/i5/i3, Pentium, Celeron™, Xeon E-2200/2100, LGA 1151 socket
- Chipset: Intel® C246 Express Chipset
- Memory: DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB)
- I/O Chipset: NCT6793D + F81216HD
- Ethernet: Intel® PHY i219LM Giga LAN x 1 (supports Intel® AMT 12.0)
- 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 2.0 x 2 (open edge) x 2, PCI 2.0 x 2, M.2 2230 E-key (PClex1/USB2.0/CNVi) x 1, M.2 2280 M-key (PClex4/SATA3) x 1
- BIOS: 256MB 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 (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: Up to 2048 x 1536 @60Hz (via IT6516B)
- HDMI: Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
- Display Port: Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
- LVDS: —
- eDP: —
- Backlight Control: —

Environment & Power & ME
- Battery: Lithium battery
- Power Requirement: 24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
- Operation Temperature: 32°F ~ 140°F (-0°C ~ 60°C)
- Storage Temperature: -4°F ~ 185°F (-20°C ~ 85°C)
- Operation Humidity: 0%~90%RH, non-condensing
- Certificate: CE & FCC Class A
- Form Factor: ATX Form Factor, 12"x9.6" (305mm x 244mm)

Weight: 1.76 lb (0.8 Kg)
MTBF (hours): 281,410

Rear Panel I/O Ports
- USB: USB 3.2 Gen 2 ports (10 Gbps) x 4, USB 3.2 Gen 1 ports (5 Gbps) x 2, USB 2.0 ports x 4
- Display I/O: HDMI x 1, VGA x 1, DP x 1, USB Type-C (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 (6.0Gbps) ports x 4, support RAID 0/1/5/10
- 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
- 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
- Power: Chassis Fan connector(s) (4-pin) x 2
- 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

Ordering Information

Optional Accessories
ATX Industrial Motherboard with 8th/9th Generation Intel® Core™ Processor, DDR4 DRAM, Option: 4G+LTE Function

### Features
- 8th/9th Generation Intel® Core™ LGA1151 Processor
- Supports Max. TDP 6 Core 95W
- DDR4 2666/2400/2133 MHz, max. 64GB
- Two Independent Displays: HDMI x 1, VGA x 1, DP x 1
- Dual Intel® Gigabit Ethernet, i210AT x 1, i219V x 1
- USB 3.2 Gen1 ports x 4, USB 2.0 ports x 5
- M.2 2280/2242 M-key (PCIex1/SATA3) x 1
- TPM Onboard

### Specifications

#### System
- **Processor**: Intel® 8th/9th Generation (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/i7/i5/i3, Pentium 14nm LGA 1151 socket Processor, Max. 6 Core 95W
- **Chipset**: Intel® H310 Express Chipset
- **Memory**: DIMM x 2, DDR4 (2666/2400/2133 MHz, max. 64GB)
- **I/O Chipset**: NCT6793D+ F81216HD
- **Audio**: Realtek® ALC897 6-Channel High Definition Audio CODEC
- **Expansion Slots**: PCIe 3.0 x16 Slot x 1, PCIe 2.0 x4 Slot (open edge) x 2 (#1: 1Lane #2: Default: 2Lanes, only support 1Lane when Mini PCIe slot is installed.), PCI x 3, M.2 2280/2242 M-key (PCIex1/SATA3) x 1, Mini PCIe + Micro SIM card Slot (optional, default: N/A)
- **BIOS**: 128Mbit Flash ROM x 1, AMI BIOS
- **H/W Monitor**: Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
- **WatchDog Timer**: 1~255 steps by software program
- **Smart Fan Control**: CPU Fan/ Chassis Fan x 2
- **Wake On LAN/PXE**: Yes (WOL / PXE)
- **Power State**: S3, S4, S5

#### Graphics
- **Graphics Chipset**: Intel® Graphics Media Accelerator
- **Graphics Multi Display**: HDMI+VGA, HDMI+DP, VGA+DP
- **VGA**: Up to 1920 x 1200 @60Hz (via IT6516B)
- **DVI**: —
- **HDMI**: Up to 4096 x 2160 @ 30 Hz
- **Display Port**: Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
- **LVDS**: —
- **eDP**: —
- **Backlight Control**: —

#### Environment & Power & ME
- **Battery**: Lithium battery
- **Power Requirement**: 24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
- **Operation Temperature**: 32°F ~ 140°F (0°C ~ 60°C)
- **Storage Temperature**: -40°F ~ 185°F (-40°C ~ 85°C)
- **Operation Humidity**: 0% ~ 90%RH, non-condensing
- **Certificate**: CE & FCC Class A
- **Form Factor**: ATX Form Factor, 12” x 9.6” (305mm x 244mm)

### 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

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**Note**: All specifications are subject to change without notice.
Block Diagram

Ordering Information

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<td>LGA 1151 socket</td>
<td>DDR4 2666/2400MHz</td>
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<td>HDMI x 1</td>
<td>—</td>
<td>SATA3 x 3, M.2 2280/2242 M-key x 1</td>
<td>Intel®RJ45E x 2</td>
<td>USB 3.2 Gen 1 x 2</td>
<td>USB 3.0 header x 1 (2 ports)</td>
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<td>1</td>
<td>ATX</td>
<td>on-board</td>
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Optional Accessories

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<tr>
<td>1700190450</td>
<td>USB3.2 Gen 1 Cable (19P, 450mm, w/bracket)</td>
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<td>1709100330</td>
<td>USB 2.0 cable (19P, 300mm, p=2.54mm, w/bracket)</td>
</tr>
<tr>
<td>170910020K</td>
<td>USB 2.0 cable (IP, 200MM, p=2.54mm, w/o bracket)</td>
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<tr>
<td>175921156B</td>
<td>CPU Cooler (2-Ball, Push-pin Type)</td>
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<td>17592200172</td>
<td>CPU Cooler (2-Ball, Screw with Retention Plate)</td>
</tr>
<tr>
<td>AP-FNT31Q370010</td>
<td>CPU Cooler (2-Ball Bearing, 2U, TDP Max. 100W)</td>
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</table>
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

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/Rel)
- PS/2 Port Stack Port (Keyboard & Mouse) x 1
- Others —

Internal I/O Connectors
- Storage Supports RAID 0/1/5/10
- USB USB 2.0 x 3
- Display I/O —
- Audio I/O Speaker header x 1 (Line-out)
- Parallel Port —
- PS/2 Port —
- BIO 8-bit DIO x 1 (In/Out programmable)
- FAN 4-pin CPU Fan x 1, 4-pin Chassis Fan x 2
- Others Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (32[4]P p=1.27mm x 1), Chassis Intrusion x 1, AT/ATX mode select jumper x 1
- OS 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

Notes: All specifications are subject to change without notice.
Block Diagram

Dimension Unit: mm

Ordering Information

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>IMBA-Q170A-A11-2P4-210</td>
<td>LGA1151 socket</td>
<td>DDR4 2400</td>
<td>Fan</td>
<td>VGA x 1, HDMI x 2</td>
<td>M.2 M key 2280 x 1 (SATA module only), SATA3 x 3</td>
<td>PCIe x 2</td>
<td>GBE x 2</td>
<td>5</td>
<td>1</td>
<td>PCIe x16 x 1, PCIe x4 x 2, PCI x 3, M.2 E key 2230 x 1</td>
<td>ATX Onboard</td>
<td>32°F – 140°F (0°C – 60°C)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Optional Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1709100330</td>
<td>USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)</td>
</tr>
<tr>
<td>170910020K</td>
<td>USB 2.0 cable (9P, 330MM, p=2.54mm, w/o bracket)</td>
</tr>
<tr>
<td>175921156B</td>
<td>CPU Cooler (2-Ball, Push-pin Type)</td>
</tr>
<tr>
<td>1759200172</td>
<td>CPU Cooler (2-Ball, Screw with Retention Plate)</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
**IMBA-H110A**

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

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### 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

### Rear Panel I/O Ports
- 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
- Audio: 4-pin CPU Fan x 1, 4-pin Chassis Fan x 2
- Others: Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (2P[x4]p=1.27mm) x 1, Chassis Intrusion x 1, AT/ATX mode select jumper x 1

### 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
**Block Diagram**

![Block Diagram of IMBA-H110A Industrial Motherboards](image)

**Dimension**

Unit: mm

![Dimensional Diagram](image)

**Ordering Information**

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>IMBA-H110A-A11-210</td>
<td>LGA1151 socket</td>
<td>DDR4</td>
<td>Fan</td>
<td>HDMI x 1, DP x 1, VGA x 1</td>
<td>M.2 M key</td>
<td>GE x 1</td>
<td>GE x 1</td>
<td>USB 2.0 - 3.2 Gen</td>
<td>4 x USB 3.2 Gen 1/ USB 2.0</td>
<td>PCIe[x16]</td>
<td>ATX</td>
<td>onboard</td>
<td>32°F – 140°F (0°C – 60°C)</td>
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<td>USB 2.0 cable (9P, 330MM, p=2.54mm, w/bracket)</td>
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<tr>
<td>170910020K</td>
<td>USB 2.0 cable (9P, 330MM, p=2.54mm, w/o bracket)</td>
</tr>
<tr>
<td>175921156B</td>
<td>CPU Cooler (2-Ball, Push-pin Type)</td>
</tr>
<tr>
<td>1759280172</td>
<td>CPU Cooler (2-Ball, Screw with Retention Plate)</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
Industrial Server
**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)

**Specifications**

<table>
<thead>
<tr>
<th>System</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>ATX Server Board Whitely Platform</td>
</tr>
<tr>
<td>Processor</td>
<td>Single Intel® Xeon® Processor Ice Lake-SP processor, supports up to 270W</td>
</tr>
<tr>
<td>System Memory</td>
<td>DDR4 2666MHz R-DIMM Slot x 6, supports up to 192Gb (32Gb per DIMM)</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel® C621A</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Intel® i210 Gigabit Ethernet x 2</td>
</tr>
<tr>
<td>COM</td>
<td>RS-232 x 1</td>
</tr>
<tr>
<td>BIOS</td>
<td>AMI BIOS</td>
</tr>
<tr>
<td>SATA</td>
<td>SATA III port x 8</td>
</tr>
<tr>
<td>Audio and VGA</td>
<td>1</td>
</tr>
</tbody>
</table>
| Expansion Interface | PCIe 1: 1 x PCIe x16 (Gen4 x16) slot  
PCIE 2: 1 x PCIe x8 (Gen3 x8) 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 | InternalRTC |
| 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, 16b 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 x 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%~90% 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)  
- Shock: 10 G peak acceleration (11 m sec. duration), operation  
          20 G peak acceleration (11 m sec. duration), non operation
### Dimension

Unit: mm

![Dimension Diagram](image)

### Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Chipset</th>
<th>RAM</th>
<th>Storage</th>
<th>RAID Support</th>
<th>Display</th>
<th>LAN</th>
<th>USB</th>
<th>Serial port</th>
<th>Expansion interface</th>
<th>Power requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARES-WHIO-A10-00</td>
<td>Lewisburg C621A</td>
<td>288pin R-DIMM slot x 6</td>
<td>Supporting SATA slot x 8, M.2 M-Key 2280 x 1</td>
<td>RAID 0,1,5,10</td>
<td>VGA x 1</td>
<td>GbE x 2</td>
<td>USB 3.0 x 6</td>
<td>COM x1</td>
<td>[PCI-E 3.0 x 16] x 3, [PCI-E 3.0 x 4] x 3, [PCI-E 3.0 x 8] x 3, [PCI-E 3.0 x 8] x 1</td>
<td>ATX</td>
</tr>
</tbody>
</table>

### 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

Note: All specifications are subject to change without notice.
 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

<table>
<thead>
<tr>
<th>System</th>
<th>4U Rackmount Server System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Intel® Xeon® Skylake-SP and Cascade Lake-SP Processors</td>
</tr>
<tr>
<td>System Memory</td>
<td>DDR4 2133/2400/2666 R-DIMM, Up to 512 GB</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel® C621</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Intel® i211 Gigabit Ethernet x 2</td>
</tr>
<tr>
<td>BIOS</td>
<td>AMI BIOS</td>
</tr>
<tr>
<td>Serial ATA</td>
<td>SATA II port x 6</td>
</tr>
<tr>
<td>Storage</td>
<td>2.5&quot; HDD x 6 or 3.5&quot; HDD x 6, M.2 x 1</td>
</tr>
<tr>
<td>Expansion Interface</td>
<td>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</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>1~255 steps by software programmable</td>
</tr>
<tr>
<td>RTC</td>
<td>Internal RTC</td>
</tr>
</tbody>
</table>

Note: All specifications are subject to change without notice.
**Dimension**

Unit: mm

**Ordering Information**
- TBD

**Packing List**
- ZEUS-PUR0

**Optional Accessories**
- TBD

Note: All specifications are subject to change without notice.
Launching in Q1

Specifications

System

- Form Factor: EATX Server Board Whiteley Platform
- Processor: Dual Intel® Xeon® Scalable Sapphire Rapid-SP processor, supports up to 355W
- System Memory: DDR5 4800 MHz R-DIMM Slot x 12
- Chipset: Intel® Emmitsburg PCH
- Ethernet: Intel® I226LM LAN controller x 1, Intel® X550-AT2 x 1
- COM: Pin header x 1
- BIOS: AMI BIOS
- Serial ATA: SATA III port x 2, miniSAS x 1 (up to 4x SATA)
- Audio and VGA: VGA x 1, Audio In Out (Optional)
- Expansion Interface: PCIe 1: 1 x PCIe Gen. 5 [x16] slot
  PCIe 2: 1 x PCIe Gen. 5 [x16] slot
  PCIe 3: 1 x PCIe Gen. 5 [x16] slot
  PCIe 4: 1 x PCIe Gen. 5 [x16] slot
  PCIe 5: 1 x PCIe Gen. 5 [x16] slot
  PCIe 6: 1 x PCIe Gen. 5 [x16] slot
- Watchdog Timer: 1-255 steps by software programming
- RTC: Internal RTC
- System Fan: 4-pin fan headers x 5 (up to 5 fans)
- Front I/O Panel: —
- Rear I/O Panel: USB 3.2 Gen.1 x 4, 2.5Gb RJ45 LAN x 1, 10Gb RJ45 LAN x 2, VGA x 1, COM x 1
- Color: —
- Power Supply: ATX
- Dimension: 305 x 330 mm
- Power Consumption: TBD

Features

- EATX Server Board
- Dual Intel® 4th Gen. Xeon® Scalable Sapphire Rapid-SP CPU
- Intel® Emmitsburg Chipset
- DDR5 4800 MHz R-DIMM Slot x 12
- SSATA3 port x 2, miniSAS x 1 (up to 4x SATA), SlimSAS 4i x 1, SlimSAS 8i x 4
- M.2 M-Key 2280 with PCIe x 4 Signal
- 1x GbE LAN RJ-45. 2x 10GbE LAN RJ-45
- VGA x 1, Audio In Out (Optional)
- TPM, Digital IO pin header reserved, and Case open Support
- PCIe Gen.5 [x16] x 6
- 4-pin fan headers (up to 5 fans) x 5, CPU / System Overheat LED, Suspend static indicator LED
- Operating Temperature Range 2°F ~ 140°F (0°C ~ 60°C)

Features

- Intel® Eagle stream Platform Server Board, Support Intel 4th Gen. Xeon® Scalable Sapphire Rapid-SP CPU
- Intel® Emmitsburg Chipset
- DDR5 4800 MHz R-DIMM Slot x 12
- SSATA3 port x 2, miniSAS x 1 (up to 4x SATA), SlimSAS 4i x 1, SlimSAS 8i x 4
- M.2 M-Key 2280 with PCIe x 4 Signal
- 1x GbE LAN RJ-45. 2x 10GbE LAN RJ-45
- VGA x 1, Audio In Out (Optional)
- TPM, Digital IO pin header reserved, and Case open Support
- PCIe Gen.5 [x16] x 6
- 4-pin fan headers (up to 5 fans) x 5, CPU / System Overheat LED, Suspend static indicator LED
- Operating Temperature Range 2°F ~ 140°F (0°C ~ 60°C)

Packing List

- TBD

Ordering Information

- TBD

Optional Accessories

- TBD

Note: All specifications are subject to change without notice.
4U Rackmount Whitely Platform Server System, Support Intel 3rd Gen. Xeon® Scalable Ice Lake-SP CPU

Features
- 4U Rackmount Server System
- Single Intel® 3rd Gen. Xeon® Scalable Ice Lake-SP CPU
- Intel® Communications Chipset C621A
- DDR4 2666 MHz R-DIMM Slot x 6
- IPMI Support, optional
- 8 x 3.5” SATA HDD or 2.5” SATA HDD x 8, M.2 2280 M key socket x 1
- Rear side PCIe 3.0 [x16] x 3, PCIe 3.0 [x4] use PCIe [x8] slot x 3, PCIe 3.0 [x8] x 1
- 800~1600W mini redundant or CRPS PSU

Specifications

<table>
<thead>
<tr>
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>4U Rackmount Server System</td>
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<tr>
<td>Processor</td>
<td>Single Intel® Xeon® Processor Ice Lake-SP processor, supports up to 270W</td>
</tr>
<tr>
<td>System Memory</td>
<td>DDR4 2666MHz R-DIMM Slot x 6, supports up to 192GB (32GB per DIMM)</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel®C621A</td>
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<tr>
<td>Ethernet</td>
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<td>AMI BIOS</td>
</tr>
<tr>
<td>Serial ATA</td>
<td>SATA III port x 8</td>
</tr>
<tr>
<td>Storage</td>
<td>2.5” HDD x 8 or 3.5” HDD x 8, M.2 2280 M key socket x 1</td>
</tr>
<tr>
<td>Expansion Interface</td>
<td>PCIE 1: 1 x PCIe x16 (Gen4 x16) slot, PCIE 2: 1 x PCIe x8 (Gen3 x16) slot, PCIE 3: 1 x PCIe x8 (Gen4 x16) slot, PCIE 4: 1 x PCIe x8 (Gen4 x16) slot, PCIE 5: 1 x PCIe x16 (Gen4 x16) slot, PCIE 6: 1 x PCIe x8 (Gen3 x16) slot, PCIE 7: 1 x PCIe x8 (Gen4 x8) slot</td>
</tr>
<tr>
<td>Watchdog Timer</td>
<td>1~255 steps by software programmable</td>
</tr>
</tbody>
</table>

RTC | Internal RTC |
System Fan | 3 x middle fans default; 2 x rear fans, optional |
Front I/O Panel | Power LED x 1, Status LED x 1, HDD Active LED x 1 |
Rear I/O Panel | AC Power Input x 1, Power Switch button x 1, USB 3.0 x 6, 1Gb RJ45 LAN x 2, AUDIO in and out x 1, VGA x 1, Rear Expansion Slots x 7 |
Color | Black |
Power Supply | 800 mini redundant PSU; 1600W CRPS PSU, optional |
Dimension | 596.0 (D) x430.4 (W) x174.8 (H) mm |
Power Consumption | — |
MTBF (hours) | — |
Display
- Chipset: SM750 |
- Graphic Engine: — |
- Resolution: 1920x1080 (WIN Server 2019); 800x600 (CentOS 7.3) |
- Connector: VGA |
I/O
- Serial Port: COM x 1 |
- K/B and Mouse: — |
- USB: USB 3.0 x 6 |
Environmental
- Operating Temperature: 32°F ~ 104°F (0°C ~ 40°C) |
- Storage Temperature: -4°F ~ 140°F (-20°C ~ 60°C) |
- Operating Humidity: 10% ~ 80% relative humidity, non-condensing |
- Storage Humidity: 10% ~ 80% @40°C, non-condensing |
- Vibration: 0.5 g rms/ 5 ~ 500Hz / operation (2.5” Hard Disk Drive) 1.5 g rms/ 5 ~ 500Hz / non operation |
- Shock: 10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation |

Packing List
- TBD

Ordering Information
- TBD

Optional Accessories
- TBD

Note: All specifications are subject to change without notice.