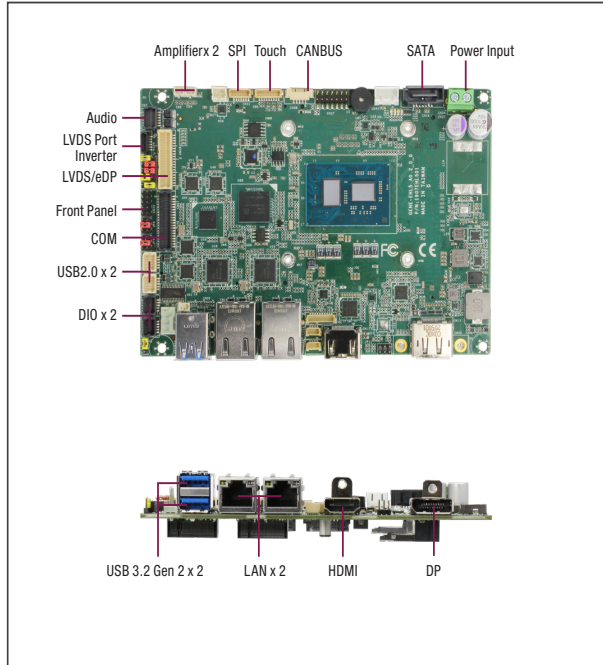


# GENE-EHL5

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

SubCompact Boards



## Specifications

| SYSTEM            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FORM FACTOR       | 3.5" SubCompact Board                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| CPU               | Intel® Atom™ x6000E series, Intel® Pentium®, and Celeron® N and J series processors:<br>Intel® Atom™ x6425RE (4C, 1.9GHz, TDP-up 12W)<br>Intel® Atom™ x6425E (4C, 2.0GHz, up to 3GHz, TDP-up 12W)<br>Intel® Atom™ x6211E (2C, 1.2GHz, up to 3GHz, TDP-up 6W)<br>Intel® Pentium® J6426 (4C, 2.0GHz, up to 3GHz, TDP-up 10W)<br>Intel® Celeron® J6412 (4C, 2.0GHz, up to 3GHz, TDP-up 10W)<br>Intel® Celeron® N6210 (2C, 1.2GHz, up to 3GHz, TDP-up 6.5W)<br>(Intel® Atom™ x6414RE/x6413E/x6427FE/x6200FE/N6415 by customer's request) |
| CHIPSET           | Integrated with Intel® SoC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| MEMORY TYPE       | DDR4 3200 MHz, SODIMM x 1, Up to 32GB, Support IBECC (select SKUs)                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| BIOS              | UEFI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| WAKE ON LAN       | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| WATCHDOG TIMER    | 255 Levels                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| SECURITY          | TPM 2.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| RTC BATTERY       | Lithium Battery 3V/240mAh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| DIMENSION         | 5.75" x 4" (146mm x 101.7mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| OS SUPPORT        | Windows 10 (64bit)<br>Linux Ubuntu 20.04.3(iOT)/Kernel 5.13                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| POWER             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| POWER REQUIREMENT | +9-36V (Optional: +12V)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| POWER SUPPLY TYPE | AT/ATX                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| CONNECTOR         | Phoenix 2-pin Connector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| POWER CONSUMPTION | Intel® Atom™ x6425E, DDR4 32GB, 3.26A@ +12V(balance), 3.26A@ +12V(TYPICAL)<br>Intel® Atom™ x6425E, DDR4 32GB, 3.26A@ +12V(balance), 3.42A@ +12V(Max)                                                                                                                                                                                                                                                                                                                                                                                 |
| DISPLAY           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| CONTROLLER        | Intel® UHD Graphics for 10th Gen Intel® Processors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| LVDS/eDP          | LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080 (Optional eDP 1.3, up to 1920X1200)                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| DISPLAY INTERFACE | HDMI2.0b x 1, up to 4K 60Hz<br>DP1.4 x 1, up to 4K x 2K 60Hz (Optional: VGA x 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| MULTIPLE DISPLAY  | 3 Simultaneous Displays                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| AUDIO             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| CODEC             | REALTEK ALC269                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| AUDIO INTERFACE   | Line-in/Line-out/MIC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| SPEAKER           | 2W Speaker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## 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)



| EXTERNAL I/O                |                                                                                                                                                                                                                                                                          |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ETHERNET                    | Intel® i210, 10/100/1000Base x 2                                                                                                                                                                                                                                         |
| USB                         | USB3.2 Gen 2 x 2                                                                                                                                                                                                                                                         |
| SERIAL PORT                 | —                                                                                                                                                                                                                                                                        |
| VIDEO                       | HDMI 2.0b x 1, DP1.4 x 1 (Optional VGA x 1)                                                                                                                                                                                                                              |
| INTERNAL I/O                |                                                                                                                                                                                                                                                                          |
| USB                         | USB2.0 x 4                                                                                                                                                                                                                                                               |
| SERIAL PORT                 | RS-232/422/485 x 4                                                                                                                                                                                                                                                       |
| VIDEO                       | LVDS/eDP x 1                                                                                                                                                                                                                                                             |
| SATA                        | SATA3.0 x 1, +5V SATA Power Connector x 1                                                                                                                                                                                                                                |
| AUDIO                       | Audio Header x 1                                                                                                                                                                                                                                                         |
| DIO/GPIO                    | 16 Bits (8 In/8 Out)                                                                                                                                                                                                                                                     |
| SMBus/I2C                   | SMBus/I2C x 1 (Default: SMBus)                                                                                                                                                                                                                                           |
| TOUCH                       | 4/5/8-wire Touch Controller x 1 (optional)                                                                                                                                                                                                                               |
| FAN                         | 4 wire Smart Fan x 1                                                                                                                                                                                                                                                     |
| SIM                         | Nano SIM x 1                                                                                                                                                                                                                                                             |
| FRONT PANEL                 | HDD LED, PWR LED, Power Button, Buzzer, Reset                                                                                                                                                                                                                            |
| OTHERS                      | eMMC5.1 32GB<br>CANBUS x 2, TX/RX (Celeron J6412 and Celeron N6210 don't support CANBUS)                                                                                                                                                                                 |
| EXPANSION                   |                                                                                                                                                                                                                                                                          |
| Mini PCI-E/mSATA            | —                                                                                                                                                                                                                                                                        |
| M.2                         | E-Key 2230 x 1 (PCIe, USB2.0)<br>B-Key 2242 x 1 (PCIe x 2/PCIe/SATA x 1, USB2.0) Default: PCIe x 2, PCIe x 1 select by BIOS, SATA select by BOM<br>B-Key 2280 x 1 (PCIe x 1/PCIe x 2, USB2.0) Default: PCIe x 1, PCIe x 2 select by BIOS<br>B-Key 3052 x 1 (USB3.2 Gen2) |
| OTHERS                      | —                                                                                                                                                                                                                                                                        |
| ENVIRONMENT & CERTIFICATION |                                                                                                                                                                                                                                                                          |
| OPERATING TEMP.             | 32°F ~ 140°F (0°C ~ 60°C), WITAS2 -40°F ~ 185°F (-40°C ~ 85°C)                                                                                                                                                                                                           |
| STORAGE TEMP.               | -40°F ~ 185°F (-40°C ~ 85°C)                                                                                                                                                                                                                                             |
| OPERATING HUMIDITY          | 0% ~ 90% relative humidity, non-condensing                                                                                                                                                                                                                               |
| MTBF (HOURS)                | 335,427                                                                                                                                                                                                                                                                  |
| EMC                         | CE/FCC Class A                                                                                                                                                                                                                                                           |

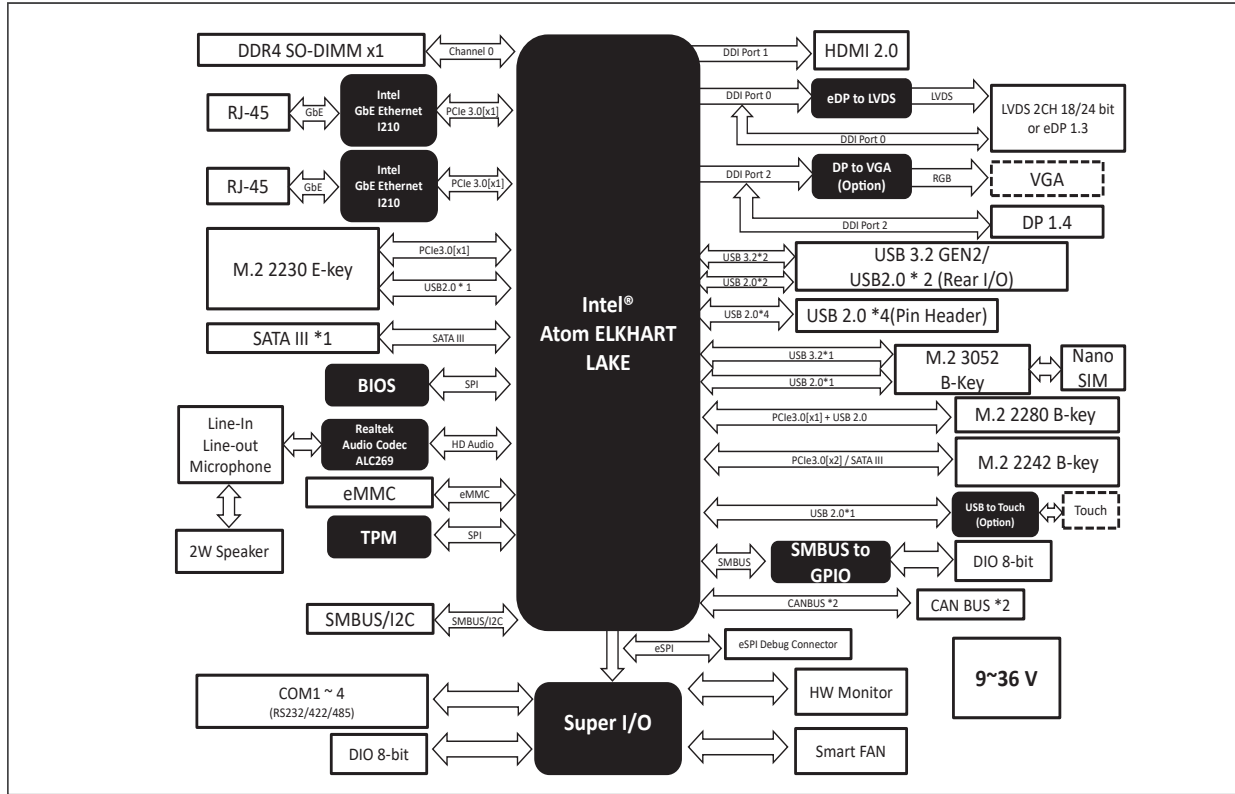
## Optional Accessories

| Part Number | Description                | QTY per Board |
|-------------|----------------------------|---------------|
| 170X000156  | Audio Cable, 25cm          | 1             |
| 1709070500  | SATA Cable, 50cm           | 1             |
| 1702150155  | SATA HDD Power, Cable 15cm | 1             |
| 1700100100  | USB 2.0 Cable, 10cm        | 2             |
| 170204010R  | Power Cable, 10cm          | 1             |
| 170X000317  | COM cable, 15cm            | 1             |
| 170220020B  | ATX Power Cable, 20cm      | 1             |

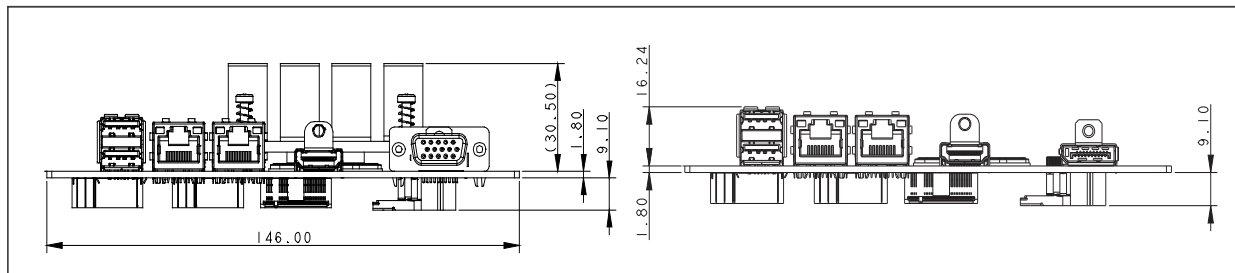
## Packing List

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

## Block Diagram



## Dimension Unit: mm



## Ordering Information

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

Note: All specifications are subject to change without notice.

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**06-2**

## Assured Systems

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