



Jetson Platform

# AIB-MX13/AIB-MX23

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USER MANUAL

## Document Change History

| Version | Date       | Description                                 |
|---------|------------|---|
| V1.0    | 2023/02/04 | Initial Release.                            |
| V1.1    | 2023/03/01 | Modify the software and initial setup       |
| V1.2    | 2023/03/24 | Updated support information, Specifications |
| V1.3    | 2023/10/30 | Update DS information                       |

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Version 1.0

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- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

Visit the Aetina website at <https://www.Aetina.com/support-warranty-policy.php> where you can find the latest information about the product.

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4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy of the proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

## ESD Warning

This product, like all electronic products, uses the product that can be damaged by electrostatic discharge (ESD). When handling, care must be taken so that the devices are not damaged. Damage due to inappropriate handling is not covered by the warranty. The following precautions must be taken:

- Do not open the protective conductive packaging until you have read the following and are at an approved anti-static workstation.
- If working on a prototyping board, use a soldering iron or station that is marked as ESD-safe.
- Always disconnect the product from the prototyping board when it is being worked on.
- Always discharge yourself by touching a grounded bare metal surface or approved anti-static mat before picking up an ESD - sensitive electronic component.
- Use an approved anti-static mat to cover your work surface.

## Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references:

1. All cautions and warnings on the equipment should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
6. Always completely disconnect the power before working on the system's hardware.
7. Keep this equipment away from humidity.
8. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
9. The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
10. Be sure that the room in which you choose to operate your system has adequate air circulation. Ensure that the chassis cover is secure.
11. The chassis design allows cooling air to circulate effectively. An open chassis permits air leaks, which may interrupt and redirect the flow of cooling air from internal components.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
14. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
15. If any of the following situations arises, please contact our service personnel:
  - Damaged power cord or plug
  - Liquid intrusion to the device
  - Exposure to moisture
  - Device is not working as expected or in a manner as described in this manual
  - The device is dropped or damaged
  - vi. Any obvious signs of damage displayed on the device

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# 1. Introduction

AIB-MX13/23 series supports NVIDIA Jetson AGX Orin series modules, and you can quickly emulate the functionality of your desired end product for software development and hardware verification.

To build a functional prototype of your target system you will need:

- NVIDIA Jetson AGX Orin 32/64GB module
- Carrier board
- Power adaptor



## 1.1 Features

- Supports NVIDIA Jetson AGX Orin 32/64GB module
- 1 x B-Key/1 x E-Key/1 x M-Key slot
- 1 x GbE/1 x 10GbE port
- Wide Power Input Range 9 to 36 VDC
- Operating Temperature -25° C ~ 80° C
- Supports OOB (out-of-band) powered by Innodisk (optional)



## 1.2 Specifications

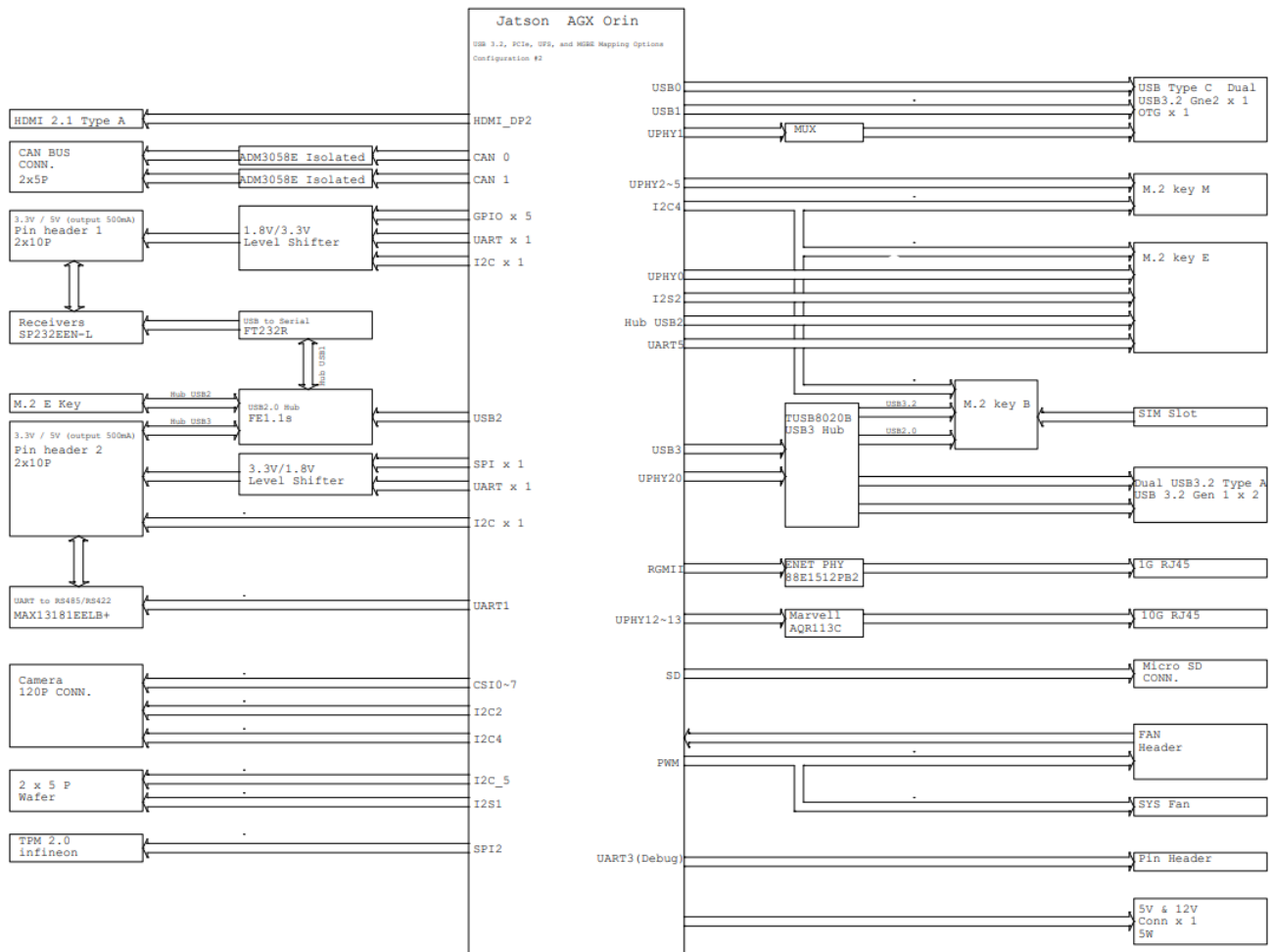
### ■ Carrier board specifications

| Specification        | AIB-MX13   | AIB-MX23  |
|----------------------|--|---|
| Module Compatibility | NVIDIA Jetson AGX Orin 32GB  | NVIDIA Jetson AGX Orin 64GB                                   |
| AI Performance       | 200 TOPs   | 275 TOPs  |
| GPU                  | 1792-core NVIDIA Ampere GPU with 56 Tensor Cores   | 2048-core NVIDIA Ampere GPU with 64 Tensor Cores              |
| CPU                  | 8-core Arm® Cortex®-A78AE<br>v8.2 64-bit CPU 2MB L2 + 4MB L3   | 12-core Arm® Cortex®-A78AE<br>v8.2 64-bit CPU 3MB L2 + 6MB L3 |
| Memory               | 32 GB 256-bit LPDDR5 204.8 GB/s  | 64GB 256-bit LPDDR5 204.8 GB/s                                |
| Storage              | 64GB eMMC 5.1  |   |
| Display              | 1x HDMI 2.0 Type A   |   |
| Audio                | LINE IN/OUT, Microphone (optional with daughter board)   |   |
| Camera Input         | 1x 16-Lane MIPI Expansion Connector  |   |
| LAN                  | 1 x RJ-45 GbE port, 1 x RJ-45 10GbE port   |   |
| USB                  | 2 x USB 3.2 Gen1 Type-A<br>1 x USB 3.2 Gen2 Type-C<br>1 x OTG Type-C   |   |
| I/O Interfaces       | 2 x I2C, 1 x I2S, 1 x SPI, 5 x GPIO, 1 x 3.3VDC/0.5A, 2 x 5VDC/0.5A,<br>1 x 12VDC/0.5A, 1 x USB 2.0  |   |
| Expansion            | 1 x M.2 B-Key 3042/3052 (LTE/4G/5G)<br>1 x M.2 E-Key 2230 (WiFi/BT)<br>1 x M.2 M-Key 2280 (supports NVMe; PCIe x4 Gen4)<br>1 x microSD Card Slot |   |
| MISC. Function       | 1 x Power/Recovery/Reset Button<br>2 x UART, 1 x UART (Debug only)<br>1 x RS-2321 x RS-422 or RS-485 (Either one)<br>2 x CAN 2.0b with isolation |   |
| Power Consumption    | Idle: 6.65 W<br>Full Loading: 49.2 W   | Idle: 7.2 W<br>Full Loading: 69.5 W                           |

|                         |   |
|-------------------------|---|
|                         | <p>Idle configuration: Connect with Keyboard, Mouse and HDMI Display</p> <p>Full Loading configuration: Connect with Keyboard, Mouse and HDMI Display with CPU and GPU 100% Loading</p> |
| Power Input / Connector | DC-in 9 to 36 VDC / 4-Pin DC Jack Power Connector   |
| Dimension (W x D x H)   | 131 x 120 x 62.9 mm (5.16 x 4.72 x 2.47 in)   |
| Net Weight              | 0.701 kg (1.54 lb) w/ Fansink   |
| Vibration               | 1 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis   |
| Shock                   | 10 G, IEC 60068-2-27, half sine, 11 ms duration   |
| Temperature             | <p>Operating Temp.: -25° C ~ 80° C (-13° F ~ 176° F)</p> <p>Storage Temp.: -40° C ~ 85° C (-40° F ~ 185° F)</p>   |
| Humidity                | 95% @ 40°C Related Humidity, Non-condensing   |
| Certification           | CE/FCC Class A, IEC 62368   |

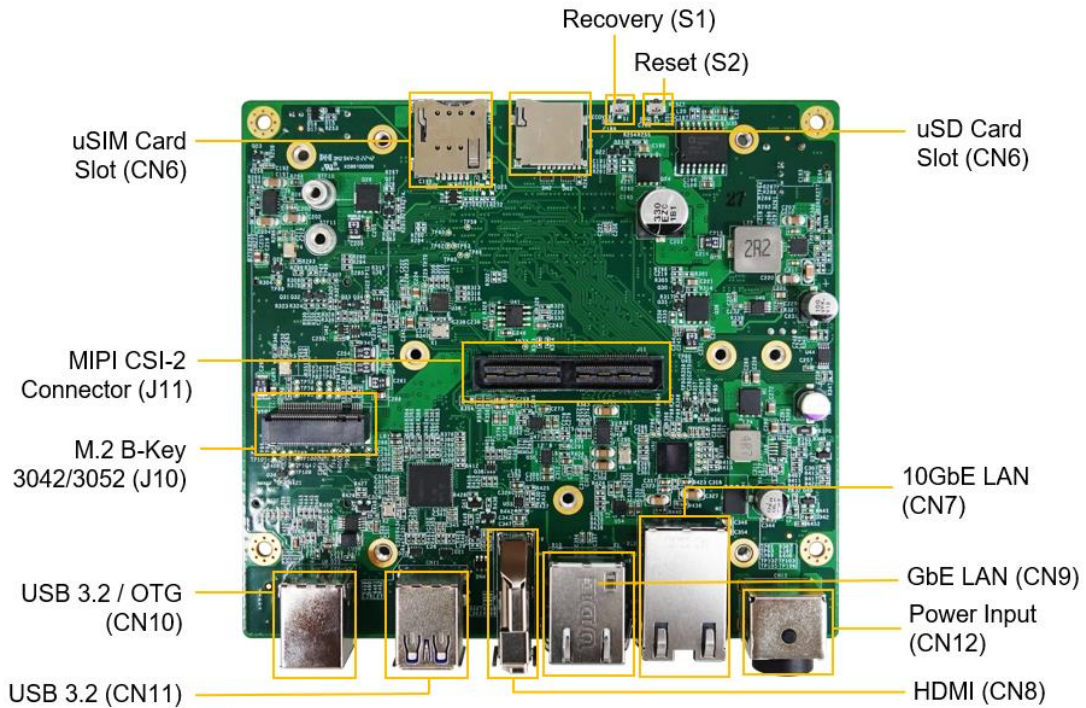
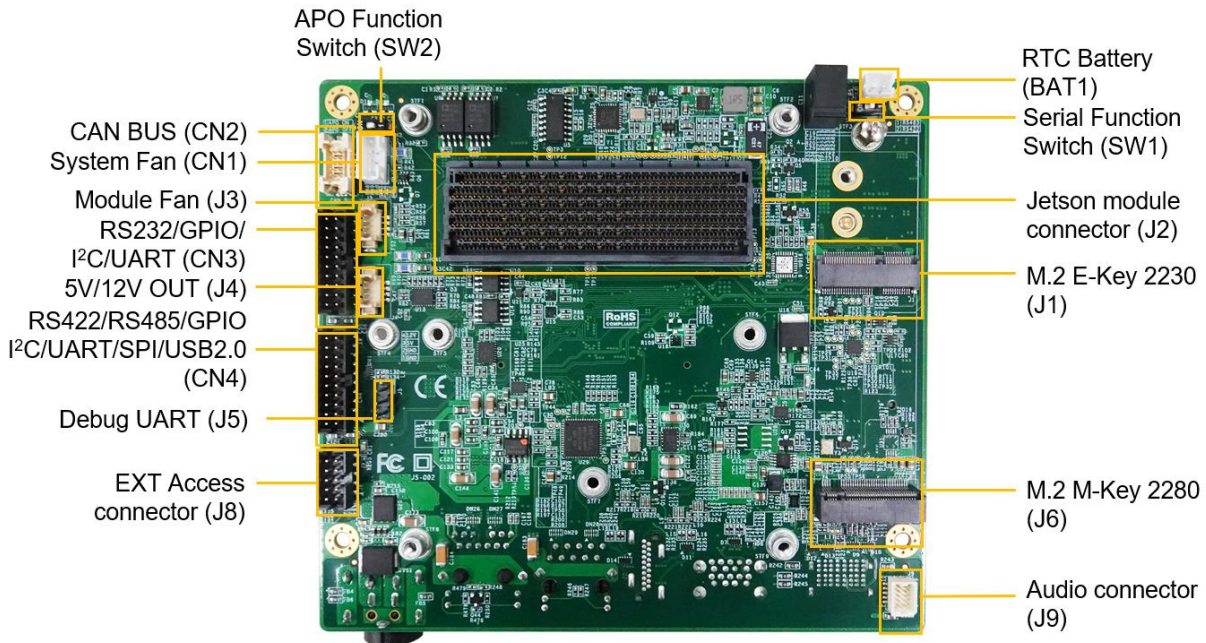
# 2. Hardware Information

## 2.1 Block Diagram



AIB-MX13/AIB-MX23 Block diagram

## 2.2 Connectors, LEDs, and Switches Locations



## 2.3 Connectors and Switches Description

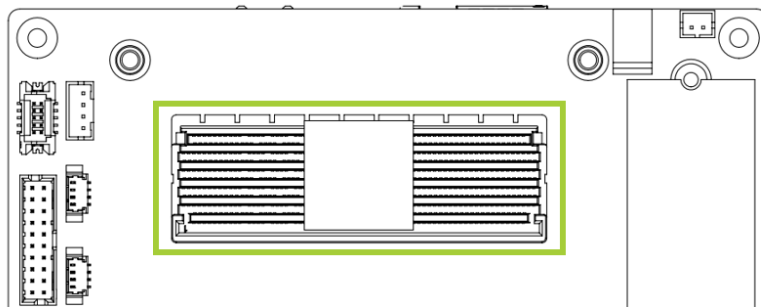
| Label | Description   |
|-------|---|
| J2    | Jetson AGX Orin module connector                              |
| CN8   | HDMI 2.0 Type-A connector                                     |
| J6    | M.2 M-Key 2280 connector (support NVMe, PCIe x2 Gen4)         |
| J1    | M.2 E-Key 2230 connector (support PCIe x1 Gen4, USB 2.0)      |
| J10   | M.2 B-Key 3042/3052 connector (support USB 3.2 Gen1, USB 2.0) |
| CN11  | 2 x USB 3.2 Gen1 Type-A                                       |
| J11   | 120-Pin board to board connector for MIPI CSI-2               |
| CN10  | USB 3.2 Gen2 Type-C / OTG Type-C                              |
| CN9   | RJ45 connector, support GbE Ethernet                          |
| CN7   | RJ45 connector, support 10GbE Ethernet                        |
| CN3   | 2 x 10P P:2.0 support RS232/GPIO/I2C/UART                     |
| CN4   | 2 x 10P P:2.0 support RS422/RS485/GPIO/I2C/UART/SPI/USB 2.0   |
| CN2   | 2 x 5P P:1.25 support CAN BUS function                        |
| J3    | 1 x 4P P:1.25 Module Fan                                      |
| J4    | 1 x 4P P:1.25 DC output 5V/12V                                |
| J8    | 2 x 5P P:1.25 Front Panel                                     |
| CN12  | DC Power input connector                                      |
| J5    | Debug UART  |
| S1    | Recovery Button   |
| S2    | Reset Button  |
| J9    | 2 x 5P P"1.0 Audio connector (optional with daughter board)   |
| SW1   | To select RS-422 or RS-485 function by switch                 |
| SW2   | To enable APO function by switch                              |
| BAT1  | 1 x 2P P:2.0 RTC Connector (optional with battery)            |
| CN1   | 1 x 4P P:2.0 System Fan                                       |

|     |                       |
|-----|-----------------------|
| CN5 | Micro SD card holder  |
| CN6 | Micro SIM card holder |

## 2.4 Connectors and Pinout

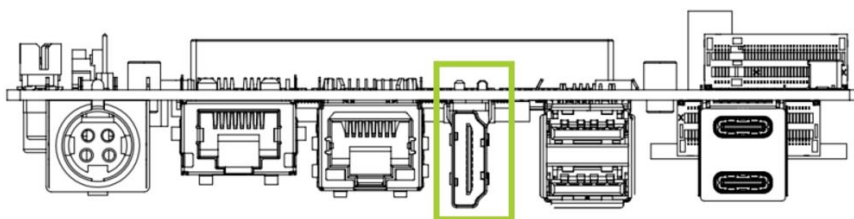
Here are the connectors and Pinout information of AIB-MX13/23 carrier board below.

### ■ Jetson AGX Orin Module Connector



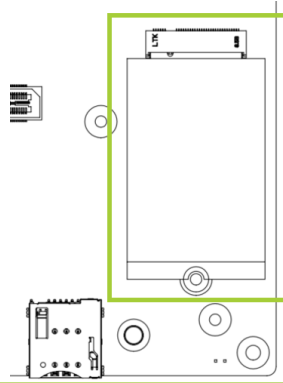
| Item     | Description   |
|----------|---|
| Location | J11   |
| Type     | AGX Xavier connector  |
| Pinout   | Please refer to NVIDIA Jetson AGX Xavier System-on-Module datasheet |

### ■ HDMI Type-A Connector



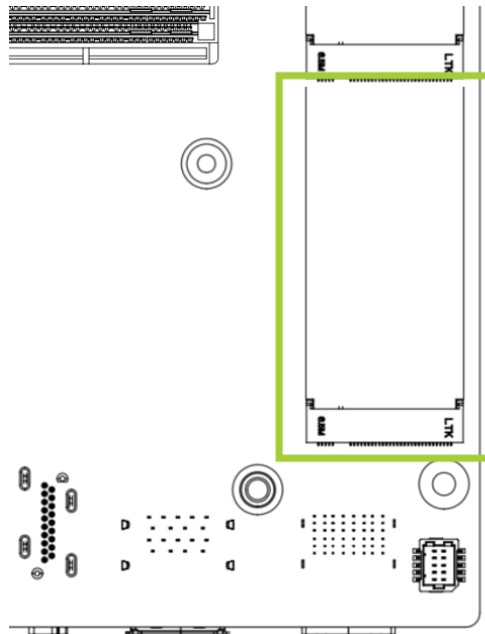
| Item     | Description                          |
|----------|--------------------------------------|
| Location | CN8                                  |
| Type     | HDMI Type-A female connector         |
| Pinout   | Please refer to HDMI Type-A Standard |

■ **M.2 B-Key Connector**



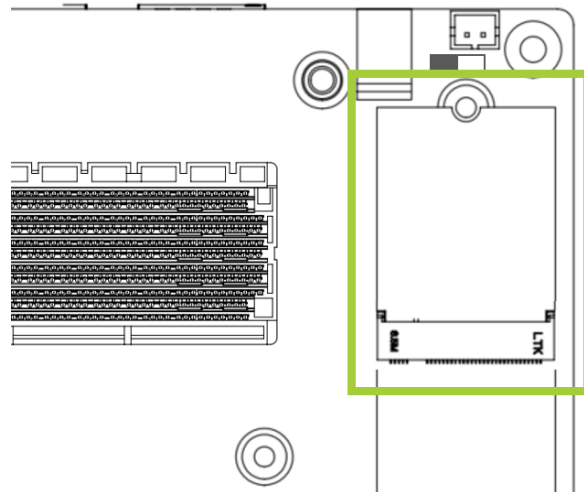
| Item     | Description                        |
|----------|------------------------------------|
| Location | J10                                |
| Type     | M.2 B-Key 3042/3052                |
| Pinout   | Please refer to M.2 B-Key Standard |
| Notes    | Support USB 3.2 Gen1, USB 2.0      |

■ **M.2 M-Key Connector**



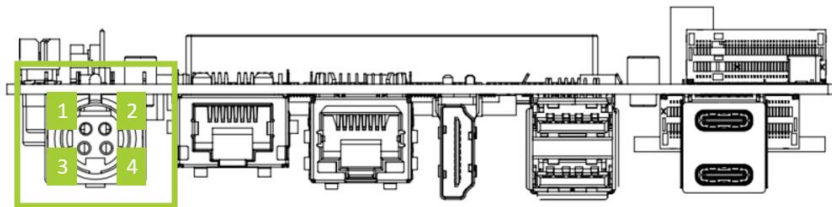
| Item     | Description                        |
|----------|------------------------------------|
| Location | J6                                 |
| Type     | M.2 M-Key 2280                     |
| Pinout   | Please refer to M.2 M-Key Standard |
| Notes    | Support NVMe, PCIe x2 Gen4         |

■ **M.2 E-Key Connector**



| Item     | Description                   |
|----------|-------------------------------|
| Location | J1                            |
| Type     | M.2 E-Key 2230                |
| Pinout   | Refer to M.2 E-Key Standard   |
| Notes    | Support PCIe x1 Gen4, USB 2.0 |

■ **DC Power Input Connector**

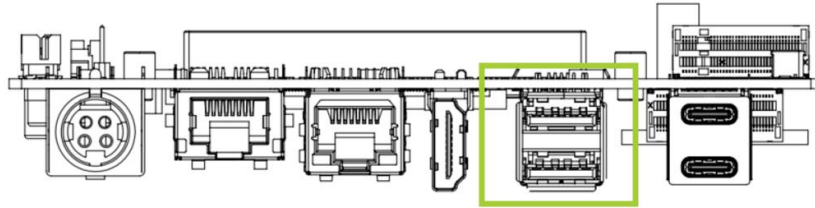


| Item     | Description                      |
|----------|----------------------------------|
| Location | CN12                             |
| Type     | 4-Pin Male DC Power Connector    |
| Pinout   | Please refer to DC Jack Standard |

| Pin # | Definition | Pin # | Definition |
|-------|------------|-------|------------|
| 1     | VIN        | 2     | GND        |
| 3     | VIN        | 4     | GND        |

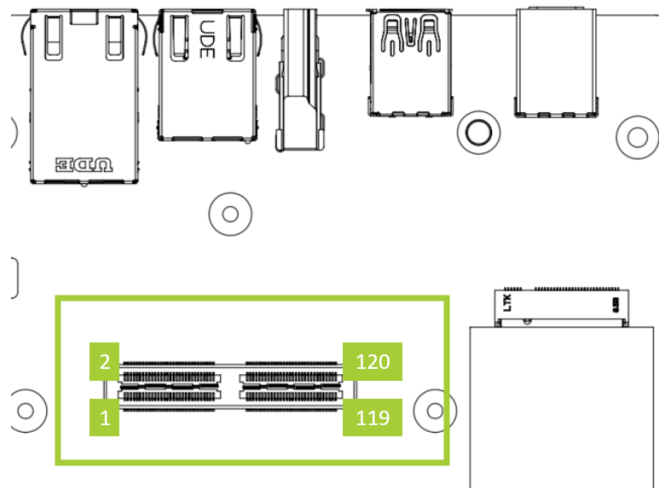


■ Dual USB 3.2 Gen1 Type-A Connector



| Item     | Description                  |
|----------|------------------------------|
| Location | CN11                         |
| Type     | Type-A USB connector         |
| Pinout   | Please refer to USB Standard |

■ 120-Pin Board-to-Board Connector for MIPI CSI-2



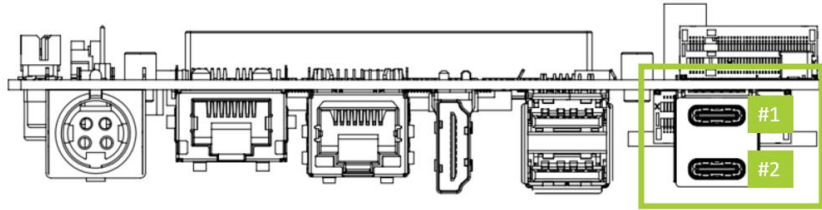
| Item     | Description           |
|----------|-----------------------|
| Location | J11                   |
| Type     | QSH 120-Pin connector |

| Pin # | Definition  | Pin # | Definition  |
|-------|-------------|-------|-------------|
| 1     | CSI_0_D0_P  | 2     | CSI_1_D0_P  |
| 3     | CSI_0_D0_N  | 4     | CSI_1_D0_N  |
| 5     | GND         | 6     | GND         |
| 7     | CSI_0_CLK_P | 8     | CSI_1_CLK_P |
| 9     | CSI_0_CLK_N | 10    | CSI_1_CLK_N |
| 11    | GND         | 12    | GND         |

|    |             |    |             |
|----|-------------|----|-------------|
| 13 | CSI_0_D1_P  | 14 | CSI_1_D1_P  |
| 15 | CSI_0_D1_N  | 16 | CSI_1_D1_N  |
| 17 | GND         | 18 | GND         |
| 19 | CSI_2_D0_P  | 20 | CSI_3_D0_P  |
| 21 | CSI_2_D0_N  | 22 | CSI_3_D0_N  |
| 23 | GND         | 24 | GND         |
| 25 | CSI_2_CLK_P | 26 | CSI_3_CLK_P |
| 27 | CSI_2_CLK_N | 28 | CSI_3_CLK_N |
| 29 | GND         | 30 | GND         |
| 31 | CSI_2_D1_P  | 32 | CSI_3_D1_P  |
| 33 | CSI_2_D1_N  | 34 | CSI_3_D1_N  |
| 35 | GND         | 36 | GND         |
| 37 | CSI_4_D0_P  | 38 | CSI_6_D0_P  |
| 39 | CSI_4_D0_N  | 40 | CSI_6_D0_N  |
| 41 | GND         | 42 | GND         |
| 43 | CSI_4_CLK_P | 44 | CSI_6_CLK_P |
| 45 | CSI_4_CLK_N | 46 | CSI_6_CLK_N |
| 47 | GND         | 48 | GND         |
| 49 | CSI_4_D1_P  | 50 | CSI_6_D1_P  |
| 51 | CSI_4_D1_N  | 52 | CSI_6_D1_N  |
| 53 | GND         | 54 | GND         |
| 55 | NC          | 56 | NC          |
| 57 | NC          | 58 | NC          |
| 59 | CSI_5_D0_P  | 60 | CSI_7_D0_P  |
| 61 | CSI_5_D0_N  | 62 | CSI_7_D0_N  |
| 63 | GND         | 64 | GND         |
| 65 | CSI_5_CLK_P | 66 | CSI_7_CLK_P |
| 67 | CSI_5_CLK_N | 68 | CSI_7_CLK_N |

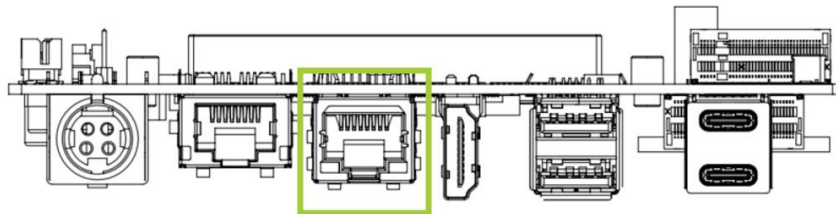
|     |                   |     |                  |
|-----|-------------------|-----|------------------|
| 69  | GND               | 70  | GND              |
| 71  | CSI_5_D1_P        | 72  | CSI_7_D1_P       |
| 73  | CSI_5_D1_N        | 74  | CSI_7_D1_N       |
| 75  | I2C_GP3_CLK       | 76  | NC               |
| 77  | I2C_GP3_DAT       | 78  | NC               |
| 79  | GND               | 80  | GND              |
| 81  | AVDD_CAM_2V8      | 82  | AVDD_CAM_2V8     |
| 83  | AVDD_CAM_2V8      | 84  | NC               |
| 85  | NC                | 86  | NC               |
| 87  | I2C_GP2_CLK       | 88  | CAM1_MCLK03      |
| 89  | I2C_GP2_DAT       | 90  | GPIO15_CAM1_PWDN |
| 91  | CAM0_MCLK02       | 92  | GPIO16_CAM1_RST  |
| 93  | CAM0_PWDN         | 94  | CAM2_MCLK04      |
| 95  | CAM0_RST          | 96  | NC               |
| 97  | NC                | 98  | NC               |
| 99  | GND               | 100 | GND              |
| 101 | NC                | 102 | VDD_1V8          |
| 103 | NC                | 104 | NC               |
| 105 | I2C_GP4_CLK       | 106 | NC               |
| 107 | I2C_GP4_DAT       | 108 | VDD_3V3          |
| 109 | NC                | 110 | VDD_3V3          |
| 111 | NC                | 112 | NC               |
| 113 | NC                | 114 | NC               |
| 115 | GND               | 116 | GND              |
| 117 | NC                | 118 | VDD_3V3          |
| 119 | GPIO25_VDD_SYS_EN | 120 | VDD_3V3          |

■ OTG Type-C / USB 3.2 Gen2 Type-C



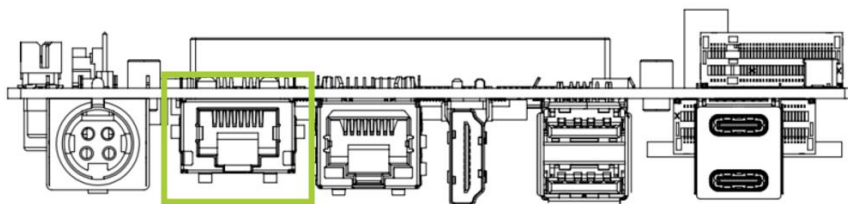
| Item     | Description                                  |
|----------|--|
| Location | CN10   |
| Type     | Dual USB TYPE-C connector                    |
| Pinout   | Please refer to USB standard                 |
| Notes    | #1 OTG Type-C Port<br>#2 USB 3.2 Gen2 Type-C |

■ Gigabit Ethernet Connector



| Item     | Description   |
|----------|---|
| Location | CN9   |
| Type     | RJ-45 connector   |
| Pinout   | Please refer to Ethernet standard   |
| Notes    | LED Static ON: LAN Link is active.<br>LED Blinking: Data is being transmitted.<br>LED Static OFF: LAN Link is inactive. |

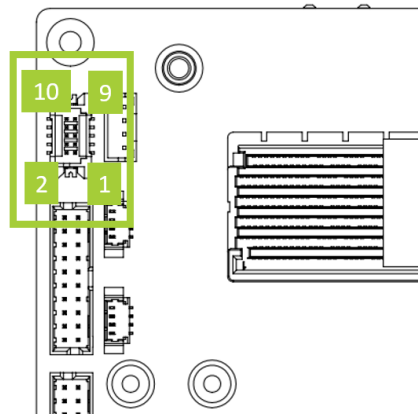
■ 10 Gigabit Ethernet Connector



| Item     | Description |
|----------|-------------|
| Location | CN7         |

|        |   |
|--------|---|
| Type   | RJ-45 connector   |
| Pinout | Please refer to Ethernet standard   |
| Notes  | LED Static ON: LAN Link is active.<br>LED Blinking: Data is being transmitted.<br>LED Static OFF: LAN Link is inactive. |

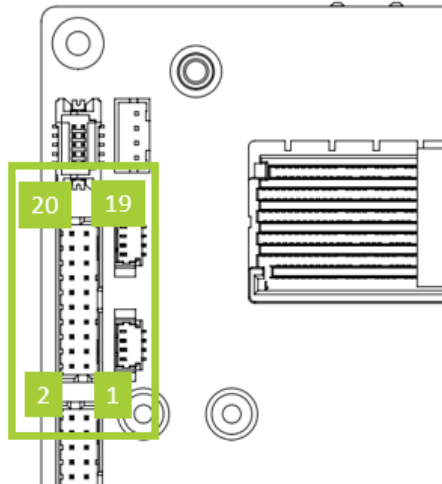
### ■ CAN BUS Connector



| Item     | Description                             |
|----------|---|
| Location | CN2                                     |
| Type     | 2*5P 1 P:1.25mm H:4.8mm Wafer connector |

| Pin # | Definition | Pin # | Definition |
|-------|------------|-------|------------|
| 1     | CAN0H      | 2     | CAN1H      |
| 3     | CAN0L      | 4     | CAN1L      |
| 5     | NC         | 6     | NC         |
| 7     | CAN_5V     | 8     | CAN_5V     |
| 9     | GND        | 10    | GND        |

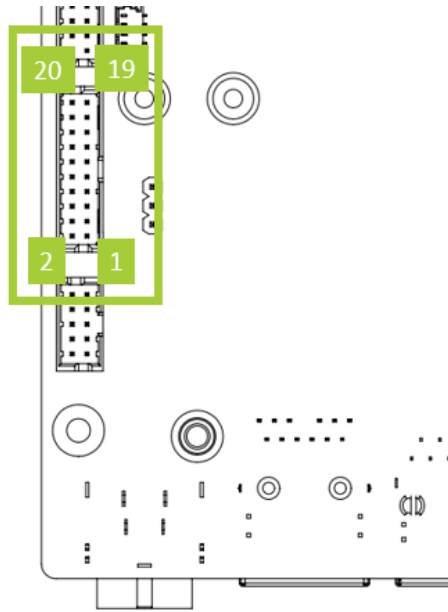
■ MISC I/O Connector (RS232/GPIO/I2C/UART)



| Item     | Description                    |
|----------|--------------------------------|
| Location | CN3                            |
| Type     | 2*10P P:2.0mm H:7mm Pin header |

| Pin # | Definition                   | Notes  | Pin # | Definition |
|-------|------------------------------|--------|-------|------------|
| 1     | VDD_3V3                      |        | 2     | VDD_5V     |
| 3     | GPIO_1 (GPIO17 / PP.04 444)  | IN/OUT | 4     | UART_TXD   |
| 5     | GPIO_2 (GPIO11 / PAC.05 491) | IN/OUT | 6     | UART_RXD   |
| 7     | GPIO_3 (PWM01 / PR.00 456)   | IN/OUT | 8     | UART_CTS   |
| 9     | GPIO_4 (GPIO27 / PN.01 433)  | IN/OUT | 10    | UART_RTS   |
| 11    | GPIO_5 (GPIO35 / PH.00 391)  | IN/OUT | 12    | RS232_RX   |
| 13    | I2C_CLK                      |        | 14    | RS232_RTS  |
| 15    | I2C_DAT                      |        | 16    | RS232_TX   |
| 17    | GND                          |        | 18    | RS232_CTS  |
| 19    | GND                          |        | 20    | GND        |

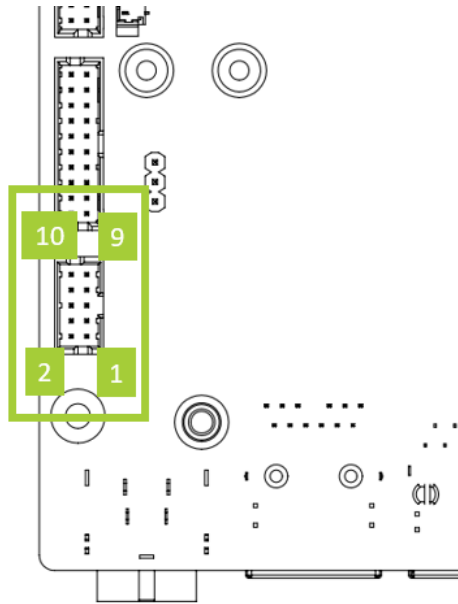
■ MISC I/O Connector (RS422/RS485/GPIO/I2C/UART/SPI/USB2.0)



| Item     | Description                    |
|----------|--------------------------------|
| Location | CN4                            |
| Type     | 2*10P P:2.0mm H:7mm Pin header |

| Pin # | Definition             | Pin # | Definition |
|-------|------------------------|-------|------------|
| 1     | VDD_3V3                | 2     | VDD_5V     |
| 3     | I2C_CLK                | 4     | USB_D-     |
| 5     | I2C_DAT                | 6     | USB_D+     |
| 7     | UART_TX                | 8     | SPI_MOSI   |
| 9     | UART_RX                | 10    | SPI_SCK    |
| 11    | RS422_A (RX+)          | 12    | SPI_MISO   |
| 13    | RS422_B (RX-)          | 14    | SPI_CS1    |
| 15    | RS422_Z (TX-) / RS485- | 16    | SPI_CS0    |
| 17    | RS422_Y (TX+) / RS485+ | 18    | NC         |
| 19    | GND                    | 20    | GND        |

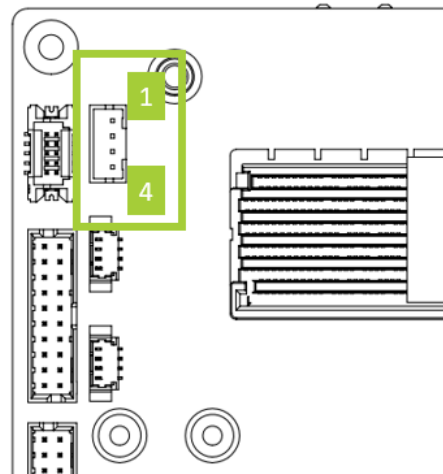
■ Front Panel Connector



| Item     | Description                        |
|----------|------------------------------------|
| Location | J8                                 |
| Type     | 2*5P P:2.0mm H:7mm Wafer connector |

| Pin # | Definition | Pin # | Definition |
|-------|------------|-------|------------|
| 1     | Power On   | 2     | GND        |
| 3     | Reset      | 4     | GND        |
| 5     | Recovery   | 6     | GND        |
| 7     | Sleep      | 8     | GND        |
| 9     | LED+       | 10    | LED-       |

■ System Fan Connector

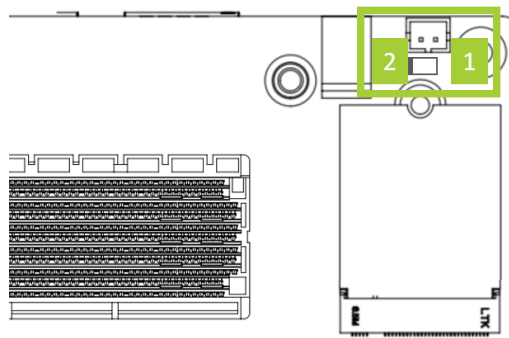




| Item     | Description                  |
|----------|------------------------------|
| Location | CN1                          |
| Type     | 1*4P P:2.0mm Wafer connector |

| Pin # | Definition | Pin # | Definition |
|-------|------------|-------|------------|
| 1     | GND        | 2     | VCC_12V    |
| 3     | NC         | 4     | PWM        |

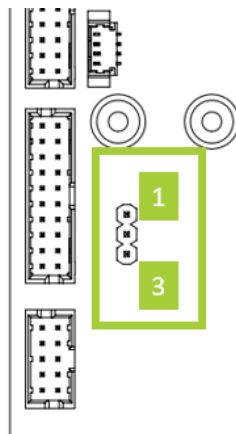
■ RTC Battery Connector



| Item     | Description            |
|----------|------------------------|
| Location | BAT1                   |
| Type     | 1*2P P:2.0mm connector |

| Pin # | Definition |
|-------|------------|
| 1     | -          |
| 2     | +          |

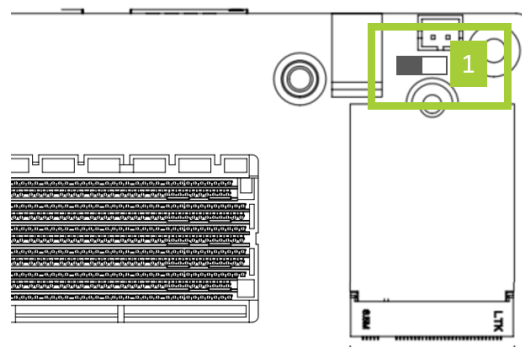
■ Debug UART



| Item     | Description                 |
|----------|-----------------------------|
| Location | J5                          |
| Type     | 1*3P P:2.54mm Pin connector |

| Pin # | Definition    |
|-------|---------------|
| 1     | Debug_UART_TX |
| 2     | Debug_UART_RX |
| 3     | GND           |

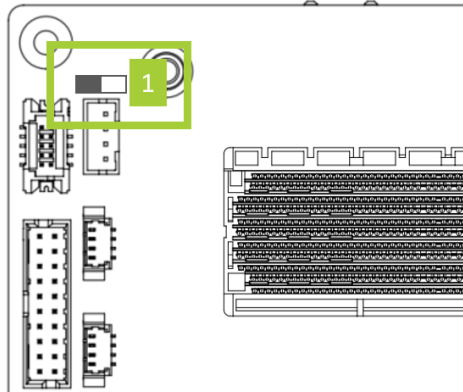
■ **RS422 / RS485 Function Switch**



| Item     | Description                                   |
|----------|---|
| Location | SW1   |
| Type     | DIP Switch                                    |
| Notes    | To select RS-485 or RS-422 function by Switch |

| Position    | Function |
|-------------|----------|
| ON          | RS-422   |
| 1 (Default) | RS-485   |

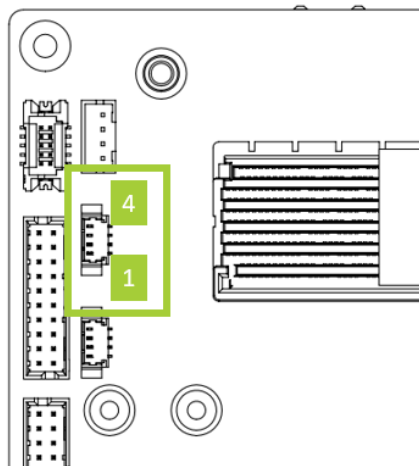
■ Auto Power ON (APO) Switch



| Item     | Description                      |
|----------|----------------------------------|
| Location | SW2                              |
| Type     | DIP Switch                       |
| Notes    | To enable APO function by Switch |

| Position    | Function    |
|-------------|-------------|
| ON          | Disable APO |
| 1 (Default) | Enable APO  |

■ 5V Fan Connector

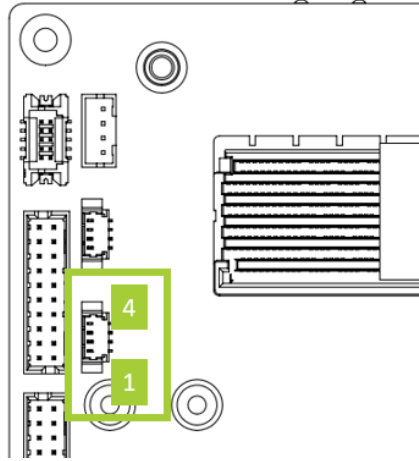


| Item     | Description                 |
|----------|-----------------------------|
| Location | J3                          |
| Type     | 1*4P 1.25mm Wafer connector |

| Pin # | Definition | Pin # | Definition |
|-------|------------|-------|------------|
|-------|------------|-------|------------|

|   |      |   |        |
|---|------|---|--------|
| 1 | GND  | 2 | VDD_5V |
| 3 | TACH | 4 | PWM    |

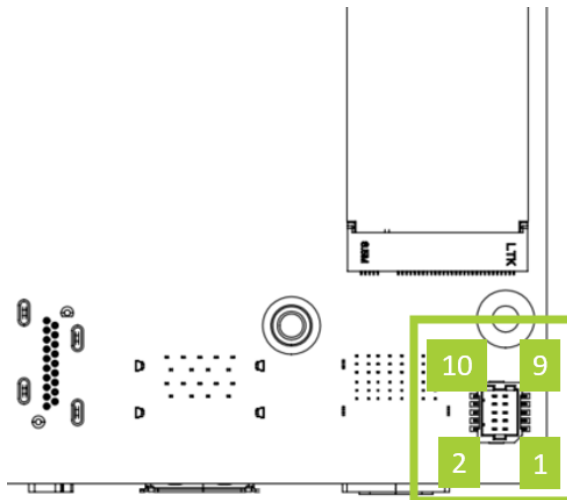
■ **5/12V Connector**



| Item     | Description                 |
|----------|-----------------------------|
| Location | J4                          |
| Type     | 1*4P 1.25mm Wafer connector |
| Notes    | Output: 0.5A @5V, 0.5A @12V |

| Pin # | Definition | Pin # | Definition |
|-------|------------|-------|------------|
| 1     | GND        | 2     | GND        |
| 3     | 5V         | 4     | 12V        |

■ **Audio Board-to-Board Connector**



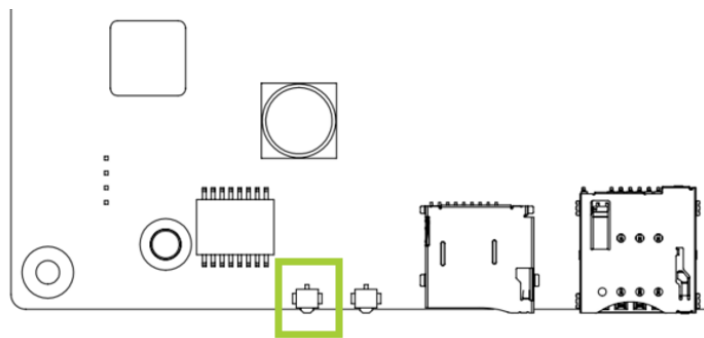
| Item | Description |
|------|-------------|
|------|-------------|

|          |                              |
|----------|------------------------------|
| Location | J9                           |
| Type     | 2*5P P:1.0mm Wafer connector |

| Pin # | Definition | Pin # | Definition |
|-------|------------|-------|------------|
| 1     | I2S_SCLK   | 2     | VDD_3V3    |
| 3     | I2S_OUT    | 4     | I2C_DAT    |
| 5     | I2S_IN     | 6     | I2C_CLK    |
| 7     | I2S_FS     | 8     | GND        |
| 9     | I2S_MCLK   | 10    | GND        |

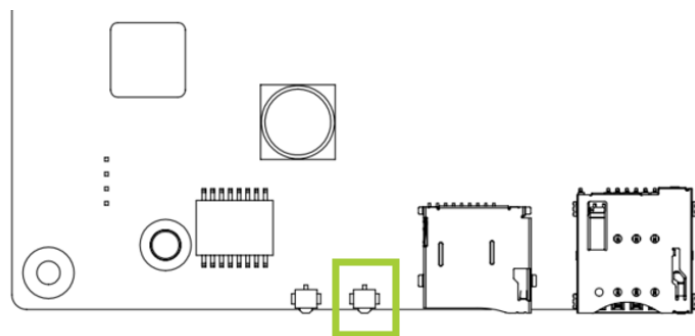
Note: The voltage level of I2C & I2S is 1.8V

### Reset Button



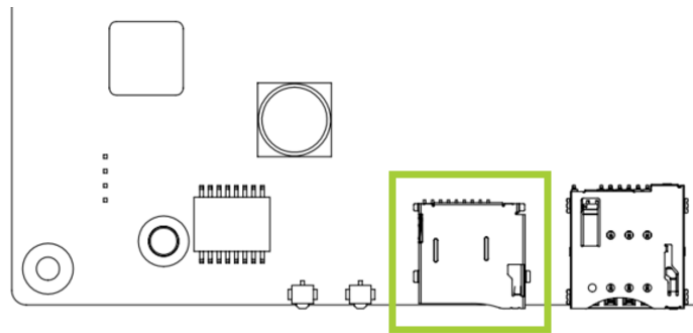
| Item     | Description                    |
|----------|--------------------------------|
| Location | S2                             |
| Type     | Tact switch                    |
| Notes    | To trigger system reset action |

### Recovery Button



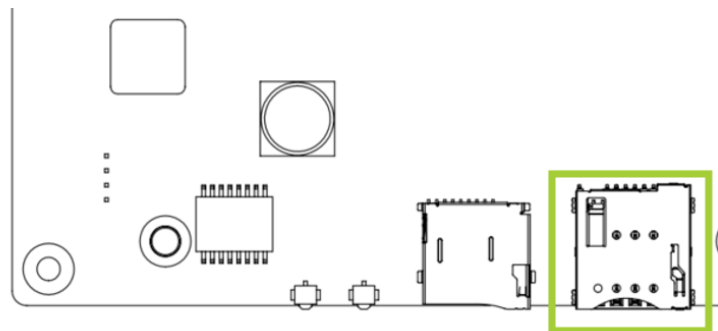
| Item     | Description                       |
|----------|-----------------------------------|
| Location | S1                                |
| Type     | Tact switch                       |
| Notes    | To trigger system recovery action |

#### ■ Micro SD Card Slot



| Item     | Description                    |
|----------|--------------------------------|
| Location | CN5                            |
| Type     | Push-Push Micro SD card holder |

#### ■ Micro SIM Card Socket



| Item     | Description        |
|----------|--------------------|
| Location | CN6                |
| Type     | Push-Push SIM card |

## 2.5 Power Consumption

The power consumption shown as below is the theoretical value with AGX Orin module installed on AIB-MX13.

| Type         | Theoretical Maximum System power  |
|--------------|---|
| Idle         | 6.655 W (Connect with Keyboard, Mouse and HDMI Display)                               |
| Full Loading | 52.25 W (Connect with Keyboard, Mouse and HDMI Display with CPU And GPU 100% Loading) |

The power consumption shown as below is the theoretical value with AGX Orin module installed on AIB-MX23.

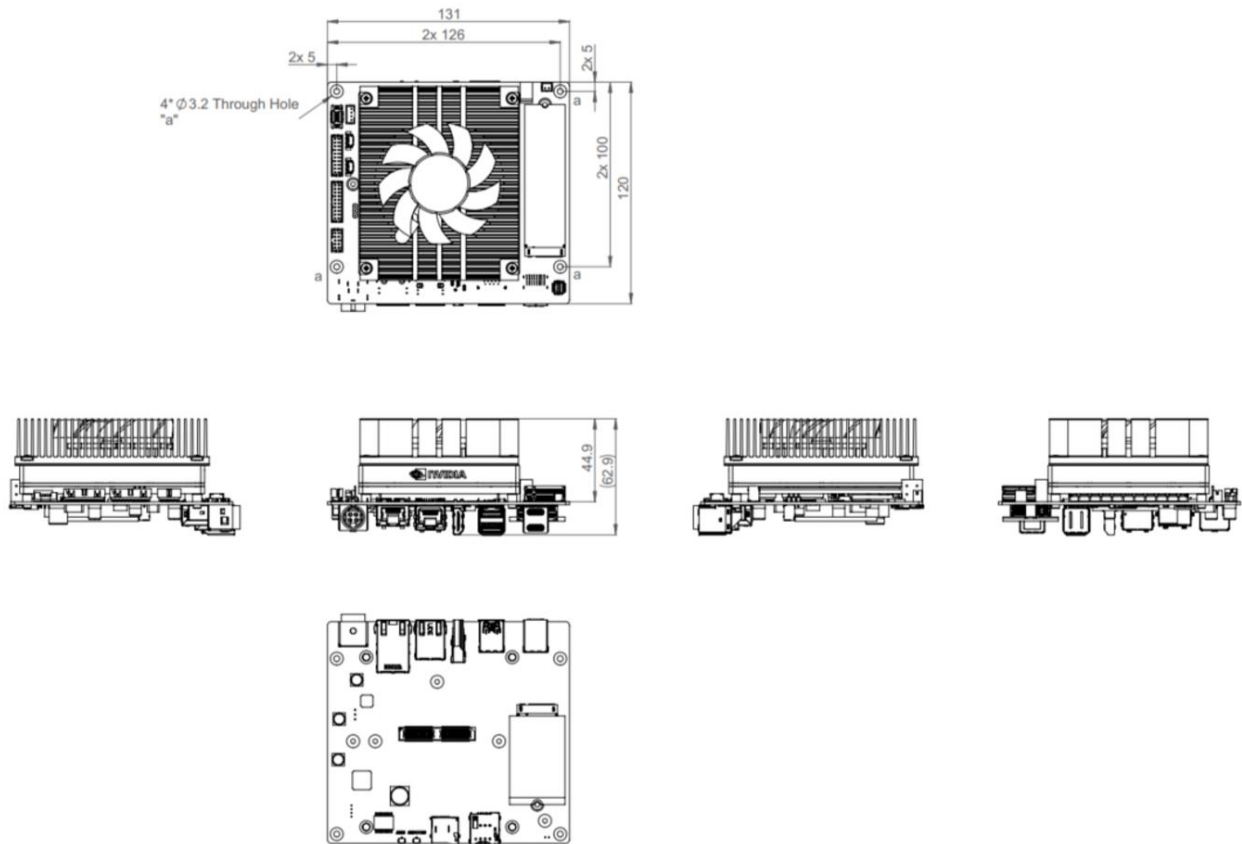
| Type         | Theoretical Maximum System power  |
|--------------|---|
| Idle         | 6.9 W (Connect with Keyboard, Mouse and HDMI Display)                                 |
| Full Loading | 72.25 W (Connect with Keyboard, Mouse and HDMI Display with CPU And GPU 100% Loading) |

Please refer to the following power consumption of individual I/O interface according to your use case.

| Type                             | Theoretical Maximum System power |
|----------------------------------|----------------------------------|
| HDMI                             | 0.25 W                           |
| M.2 M key                        | 7 W                              |
| M.2 E key                        | 2 W                              |
| USB 3.2 Gen1 (1 port)            | 4.5 W                            |
| 120-Pin connector for MIPI CSI-2 | 12.6 W                           |
| USB 2.0                          | 4.5 W                            |
| GbE LAN port                     | 0.83 W                           |
| 10GbE LAN Port                   | 3.43 W                           |
| CAN Bus                          | 1 W                              |
| Front Panel                      | 0.05 W                           |
| Fan connector                    | 3 W                              |

## 2.6 Mechanical Dimensions

Integration assembly drawing for AIB-MX13/23 carrier board, AGX Orin module and Fansink.





### 3. Software/BSP Installation

Aetina NVIDIA Jetson products have built-in BSP so the users don't have to install it after getting the products. Since we develop our own BSP, the users may need to follow the BSP installation SOP to re-install/upgrade/downgrade the BSP. Please visit the Aetina website or contact with Aetina FAE at [Tech\\_support@aetina.com](mailto:Tech_support@aetina.com) for installation guides, BSPs and technical tips.

### 4. Recovery Mode

The OTG Type-C port of AIB-MX13/23 can be connected to another host device (Linux PC running NVIDIA Jetpack™) to run recovery process for re-flashing BSP.

Note: Please backup user personal files before flashing process

Connect the OTG Type-C port to another host device which supplying updated BSP file.

Press and hold the Reset button, then press and hold the Recovery button continually.

After one second (1 sec.) release the Reset button first, then release the Recovery button.

The AGX Orin will show up as a new NVIDIA device on USB list (Terminal console) at the host device.

Running re-flashing BSP process can be executed by the host device now.

## 5. Initial Setup

Before using AIB-MX13/23 series, please follow the steps below to have initial setup.

### 5.1 Prepare the materials

Please prepare the materials list below.

- A monitor with HDMI and respective cables
- USB keyboard and mouse
- Ethernet cable

### 5.2 Hardware connection

**ATTENTION:** Jetson Orin module is not hot-pluggable. Before installing or removing the module, the main power supply (to Power connector, CN12) must be disconnected and adequate time allowed for the various power rails to fully discharge.

For the initial setup, users will need to connect LAN port, keyboard and mouse via USB interface, HDMI interface, and power connector.

### 5.3 Setup details

Step 1: Connect to the monitor while powering off

Step 2: Power on and automatically enter the OS

Step 3: Log in to the Ubuntu OS via credentials below

- Username: nvidia
- Password: nvidia

For more information on how to use Ubuntu and NVIDIA Jetson modules, please visit Ubuntu and NVIDIA website.



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