

Jetson Platform

AIB-MX11/MX12-1-A2

AIB-MX21/MX22-1-A2

USER MANUAL

Document Change History

Version	Date	Description
V1.0	2023/07/06	Initial Release.
V1.1	2023/10/30	Update DS information
V1.2	2025/11/19	Update J1 module FAN spec for AIB-MX11/12/21/22-1-A2
V1.3	2025/12/29	Update Block Diagram / Layout placement drawing Add OOB connector from Connectors and Switches Description
V1.4	2026/05/19	Update HW information, specifications

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Version 1.0

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- Product name and serial number
- 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.

Contact Information

Aetina Corporation | Headquarters

17F-1, No.237, Sec.1, Datong Rd., Xizhi Dist., New Taipei City 221, TAIWAN

Phone +886-2-7709 2568

Fax +886-2-7746 1102

Mail sales@aetina.com

Worldwide Technical Support

Mail Tech_support@aetina.com

Product Warranty (2 years)

Aetina warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Aetina, or which have been subject to misuse, abuse, accident or improper installation. Aetina assumes no liability under the terms of this warranty as a consequence of such events.

Because of Aetina's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Aetina product is defective, it will be repaired or replaced at no charge during the warranty period. For out of warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Aetina products used other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
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 the 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
 - Any obvious signs of damage displayed on the device

Contents

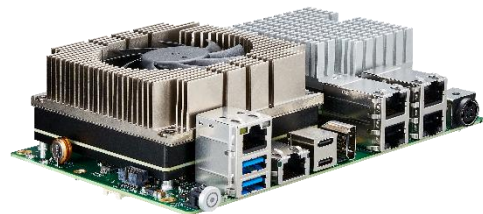
1. Introduction	1
1.1 Features	1
1.2 Specifications	2
2. Hardware Information	4
Block Diagram	4
2.1 Connectors, LEDs, and Switches Reference Designators	6
2.2 Reference Designators (Connectors, LEDs, Switches)	8
2.3 Connectors, LEDs, and Switches – Specifications	10
2.4 Power Consumption	42
2.5 Mechanical Dimensions	43
3. Software/BSP Installation	44
4. Recovery Mode	44
5. Initial Setup	45
5.1 Prepare the materials	45
5.2 Hardware connection	45
5.3 Setup details	45

1. Introduction

AIB-MX11/12/21/22 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 32GB/64GB module
- Carrier board
- Power adaptor



1.1 Features

- Supports NVIDIA Jetson AGX Orin 32GB/64GB
- 2/4 x IEEE 802.3af GbE PSE ports
- 1 x M.2 B-Key, 1 x M.2 E-Key, 1 x M.2 M-Key slot
- 1 x GbE, 1 x 10GbE port
- Wide Power Input Range 9 to 36V DC
- Operating Temperature -25°C ~ +80°C
- Supports OOB (out-of-band) powered by Innodisk (optional)

1.2 Specifications

■ Carrier board specifications

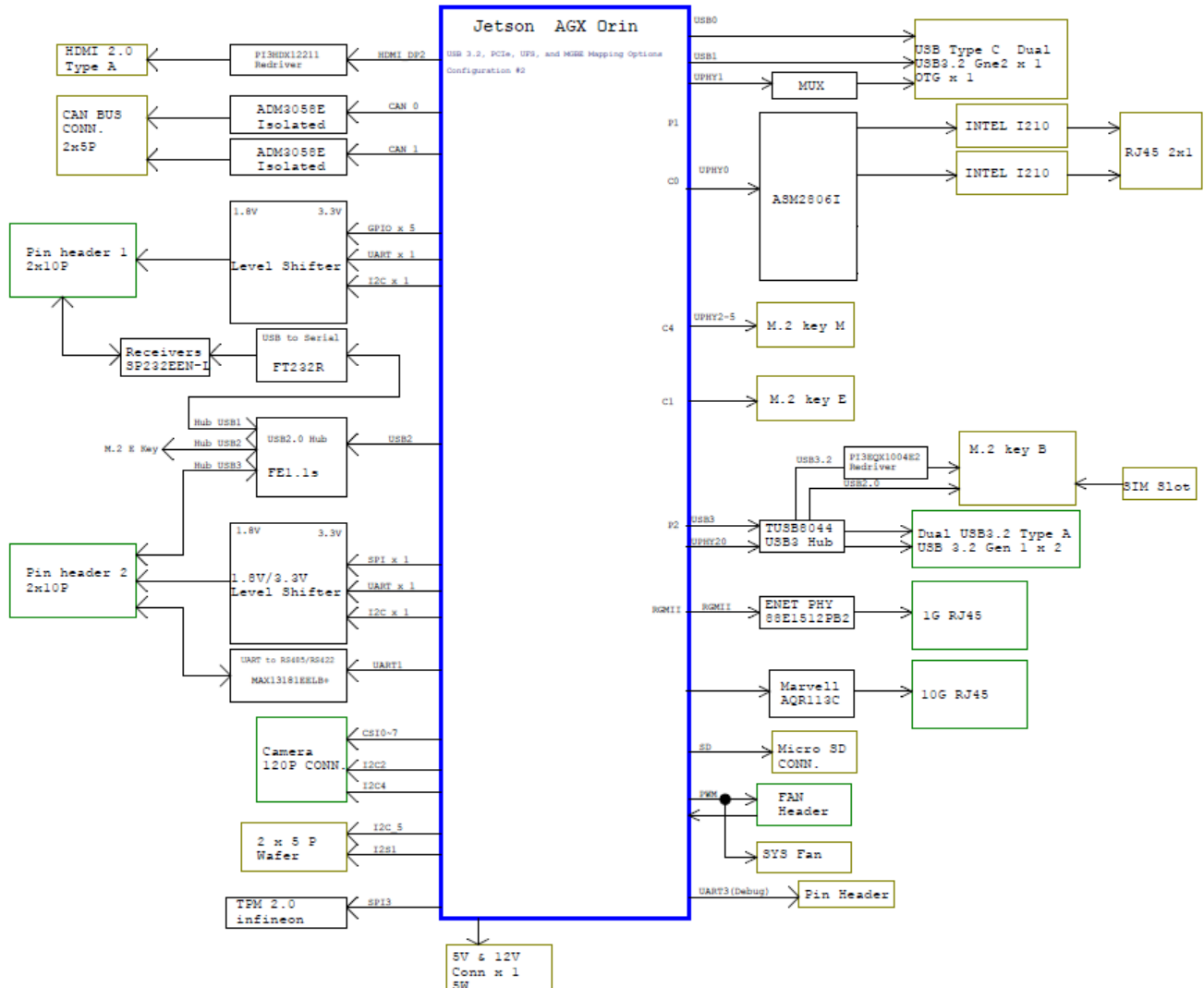
Specification	AIB-MX11	AIB-MX12	AIB-MX21	AIB-MX22
Module Compatibility	NVIDIA Jetson AGX Orin 32GB		NVIDIA Jetson AGX Orin 64GB	
AI Performance	200 TOPs		275 TOPs	
GPU	1792-core NVIDIA Ampere GPU with 56 Tensor Cores		2048-core NVIDIA Ampere GPU with 64 Tensor Cores	
CPU	8-core Arm® Cortex®-A78AE v8.2 64-bit CPU 2MB L2 + 4MB L3		12-core Arm® Cortex®-A78AE v8.2 64-bit CPU 3MB L2 + 6MB L3	
Memory	32GB 256-bit LPDDR5 204.8 GB/s		64GB 256-bit LPDDR5 204.8 GB/s	
Storage	64GB eMMC 5.1			
Display	1 x HDMI 2.0 Type-A			
TPM	TPM v2.0 (default)			
RTC	RTC battery CR2032 (default with battery)			
Audio	Line-out, Line-in, Mic (optional, requires daughter board)			
Camera Input	1 x 16-Lane MIPI expansion connector (120 pin)			
LAN	1 x RJ-45 GbE port 1 x RJ-45 10GbE port			
PoE Interface	2 x RJ-45 GbE PSE	4 x RJ-45 GbE PSE	2 x RJ-45 GbE PSE	4 x RJ-45 GbE PSE
	IEEE 802.3af compliant, power output 15W per port, 30 W max per connector			
USB	2 x USB 3.2 Gen1 Type-A 1 x USB 3.2 Gen2 Type-C 1 x USB 2.0 OTG Type-C			
I/O Interfaces	2 x UART 1 x UART (debug only) 1 x RS-232 1 x RS-422 / RS-485 2 x CAN 2.0b (isolated; supports CAN FD) 2 x I²C 1 x I²S		1 x SPI 5 x GPIO 2 x 3.3V DC / 0.5A 2 x 5V DC / 0.5A 1 x 5V DC / 0.5A (standby) 1 x 12V DC / 0.5A 1 x USB 2.0	
Expansion	1 x M.2 B-Key 3042/3052 (LTE/4G/5G) 1 x M.2 E-Key 2230 (Wi-Fi/BT)		1 x microSIM card socket 1 x OOB (out-of-band, optional)	

	1 x M.2 M-Key 2280 (supports NVMe; PCIe Gen4 x4)		1 x GMSL power connector	
	1 x microSD card socket		1 x 1PPS module function	
MISC. Function	1 x Power button, 1 x Recovery button, 1 x Reset Button			
Power Consumption	Idle: 10.5 W	Idle: 10.5 W	Idle: 12 W	Idle: 12 W
	Full Loading: 85 W	Full Loading: 125 W	Full Loading: 116 W	Full Loading: 146 W
	Idle configuration: Connect with Keyboard, Mouse and HDMI Display			
	Full Loading configuration: Connect with Keyboard, Mouse, HDMI Display and LAN with CPU and GPU			
	100% Loading			
Power Input / Connector	DC-in 9 to 36V DC, 4-Pin DC Jack Power Connector			
Dimension (W x D x H)	176 x 132 x 57.32 mm (6.93 x 5.19 x 2.26 in)			
Net Weight	0.980 kg (2.161 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	Operating Temp.: -25°C ~ +80°C (-13°F ~ +176°F)			
	Storage Temp.: -40°C ~ +85°C (-40°F ~ +185°F)			
Humidity	95% @ 40°C (104°F) (non-condensing)			
Software Support	Linux (supports NVIDIA® Jetpack™ 6.2 and above)			
Certification	CE, FCC Class A, UKCA			

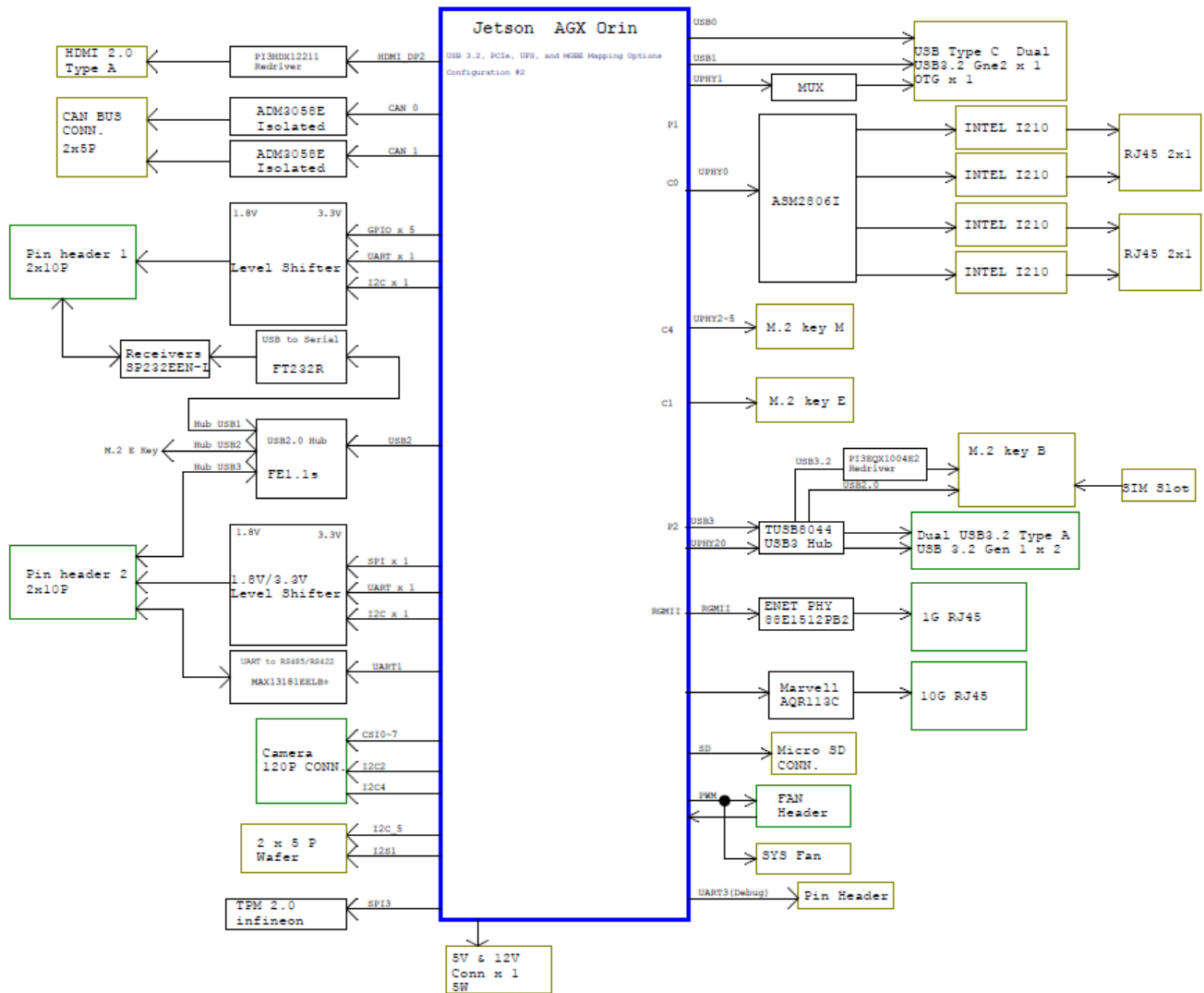
2. Hardware Information

Block Diagram

AIB-MX11 / AIB-MX21 Block diagram

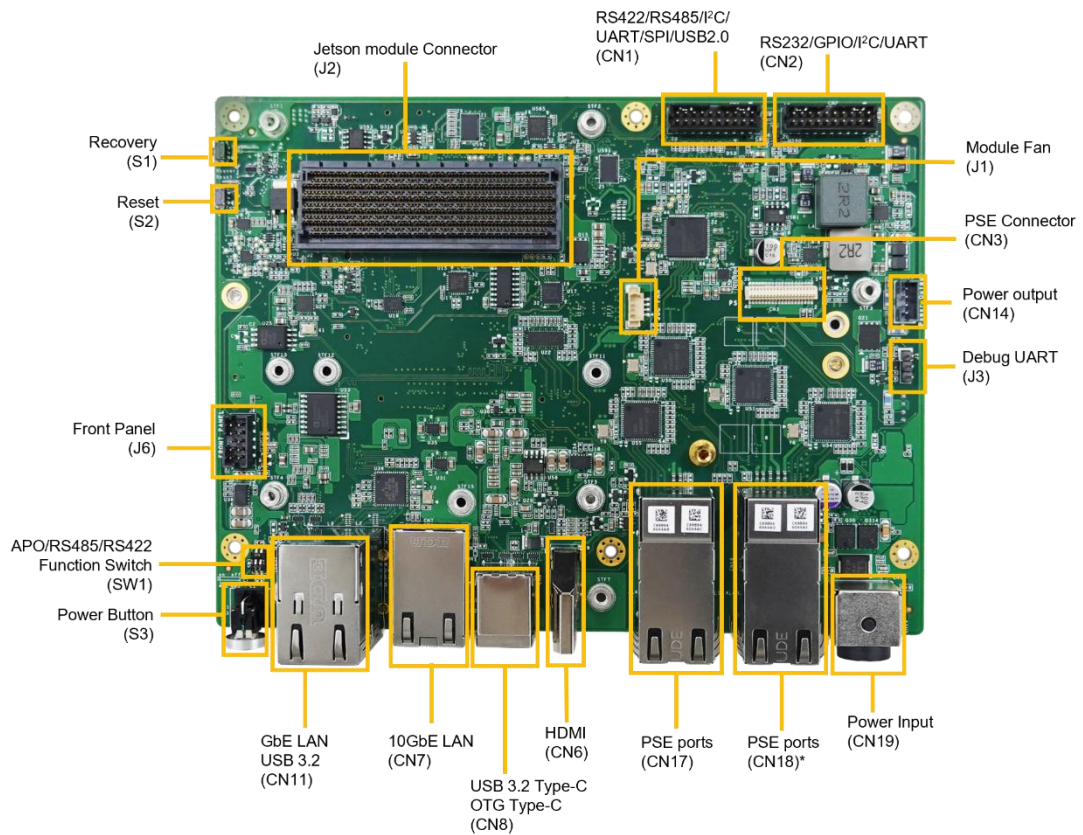


AIB-MX12 / AIB-MX22 Block diagram



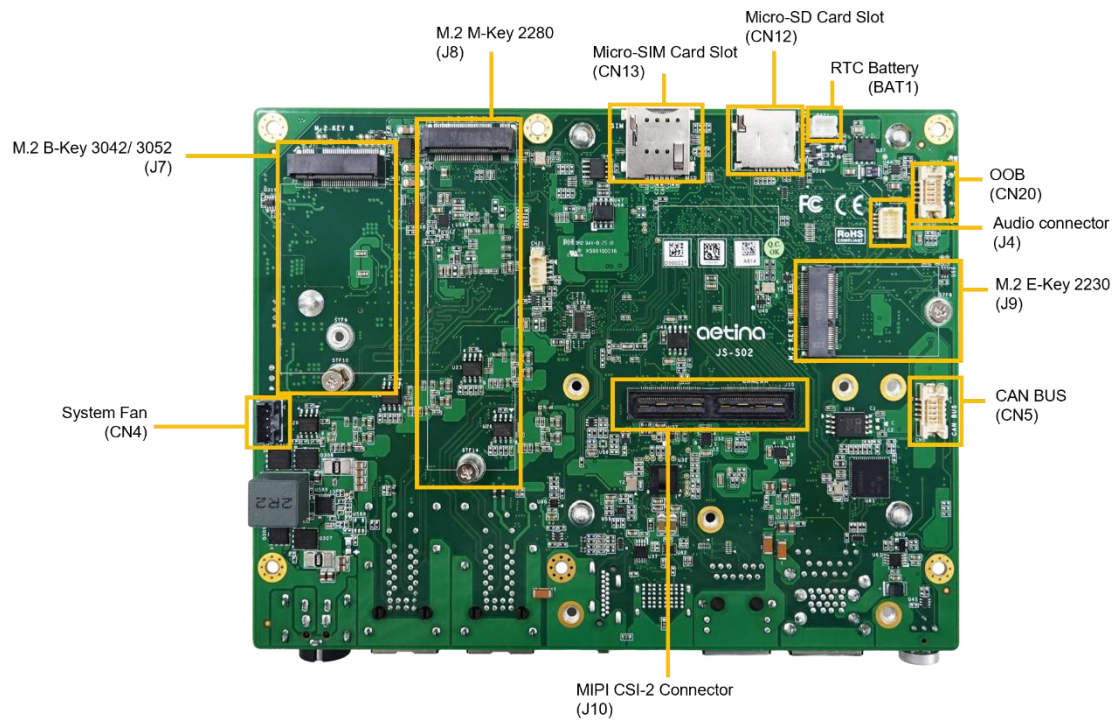
2.1 Connectors, LEDs, and Switches Reference Designators

Top



*PSE ports (CN18) are not populated on the AIB-MX11 and AIB-MX21 series.

Bottom



2.2 Reference Designators (Connectors, LEDs, Switches)

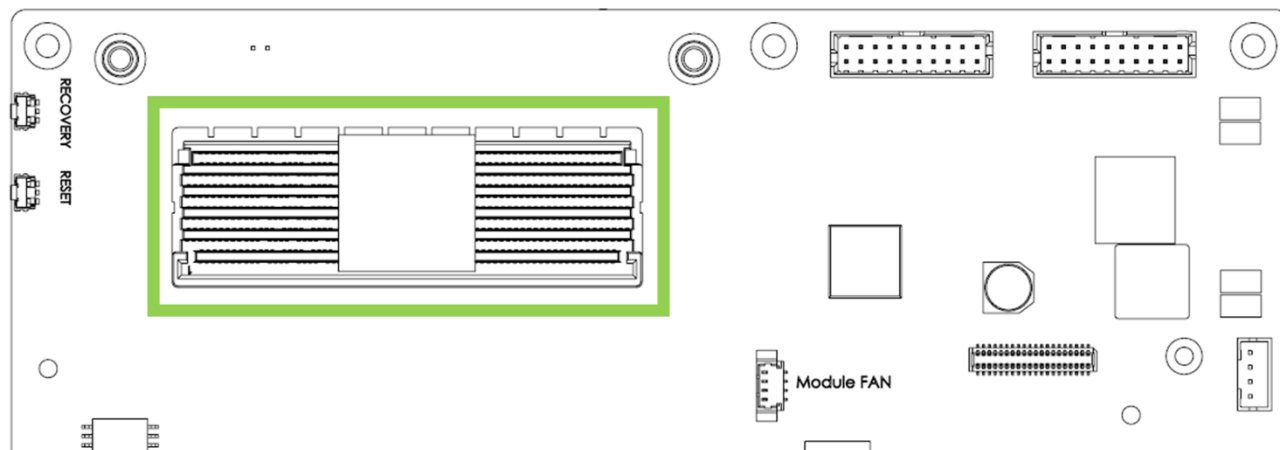
Reference Designator	Specification
J2	Jetson AGX Orin Module Connector
S1	Recovery Button
S2	Reset Button
J6	Front Panel Connector
SW1 (Position 1)	Auto Power-On (APO) Switch
SW1 (Position 2)	RS-422 / RS-485 Switch
J1	Module Fan Connector
CN1	Miscellaneous I/O Connector (Supports RS422 / RS485 / I ² C / UART / SPI / USB 2.0)
CN2	Miscellaneous I/O Connector (Supports RS232 / GPIO / I ² C / UART)
CN14	DC output 5V / 12V Connector
J3	Debug UART
S3	Power Button
CN11	Dual-Port USB 3.2 Gen1 Type-A Connector
CN11	GbE RJ45 LAN Connector
CN7	10 GbE RJ45 LAN Connector
CN8	USB 2.0 OTG Type-C; USB 3.2 Gen2 Type-C
CN6	HDMI 2.0 Type-A Connector
CN17	Dual-Port GbE RJ45 LAN Connector (Supports PSE)
CN18	Dual-Port GbE RJ45 LAN Connector (Supports PSE)
CN19	DC Power Input Connector
CN5	CAN BUS
J9	M.2 E-Key 2230 Connector
CN20	OOB Connector (Out-of-Band, Optional)
J4	Audio connector (Optional, Requires Daughter Board)

BAT1	RTC Battery Connector (Default with Battery)
J10	120-Pin Board to Board Connector for MIPI CSI-2
CN12	microSD Card Socket
CN13	microSIM Card Socket
CN21	1PPS Module Function
J8	M.2 M-Key 2280 Connector
J7	M.2 B-Key 3042/3052 Connector
CN4	System Fan Connector

2.3 Connectors, LEDs, and Switches – Specifications

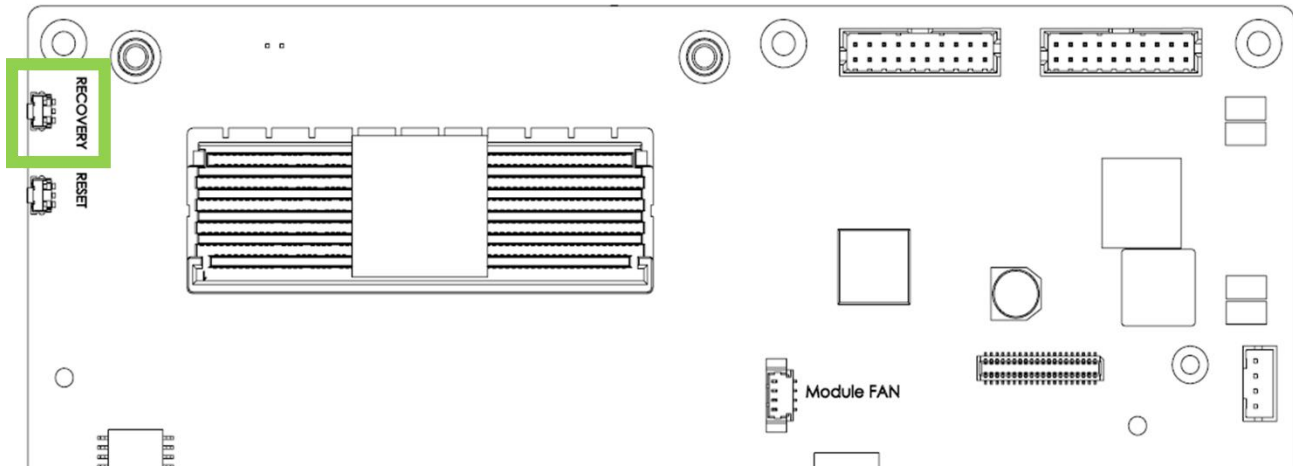
Here are the connectors and Pinout information of AIB-MX11/12/21/22 carrier board below.

■ Jetson AGX Orin Module Connector



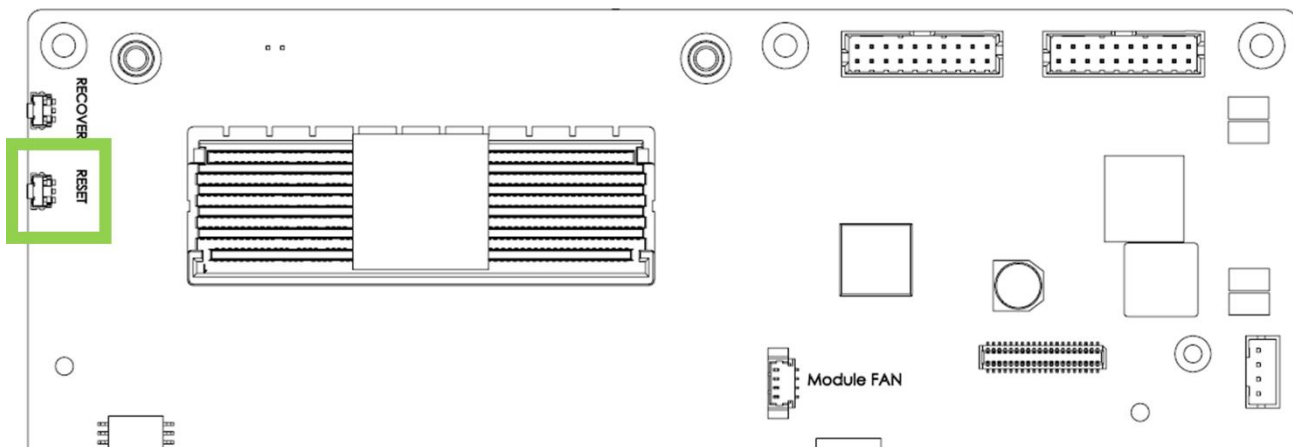
Property	Specification
Reference Designator	J2
Connector	Jetson AGX Orin module connector
Pinout	Refer to the NVIDIA Jetson AGX Orin System-on-Module specification for detailed definitions

■ Recovery Button



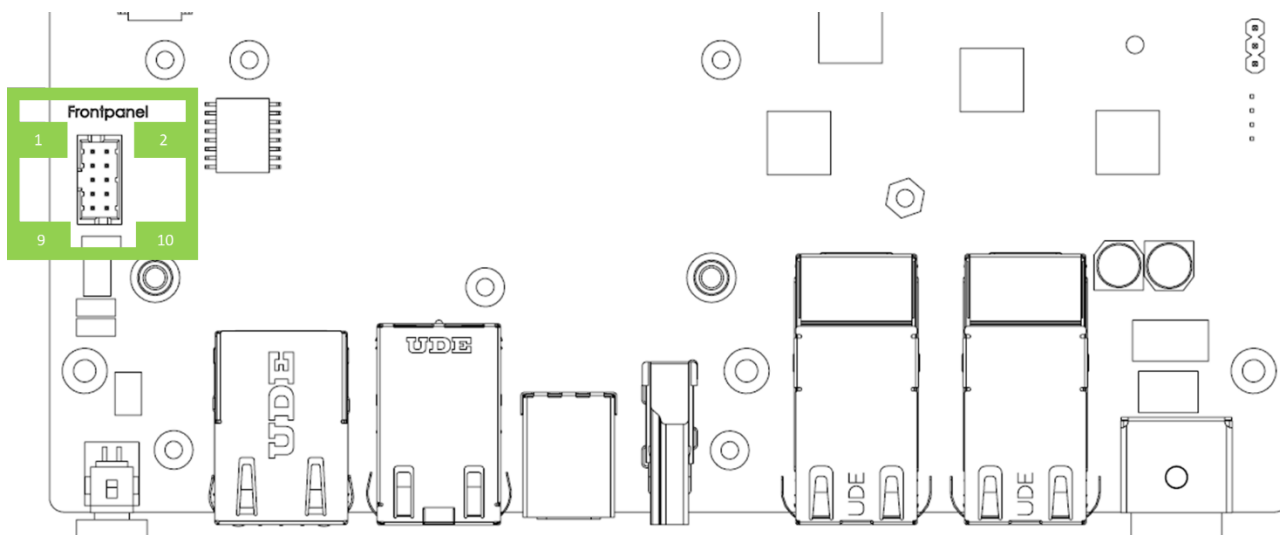
Property	Specification
Reference Designator	S1
Type	Tactile switch
Notes	To trigger system recovery action

■ Reset Button



Property	Specification
Reference Designator	S2
Connector	Tactile switch
Notes	To trigger system reset action

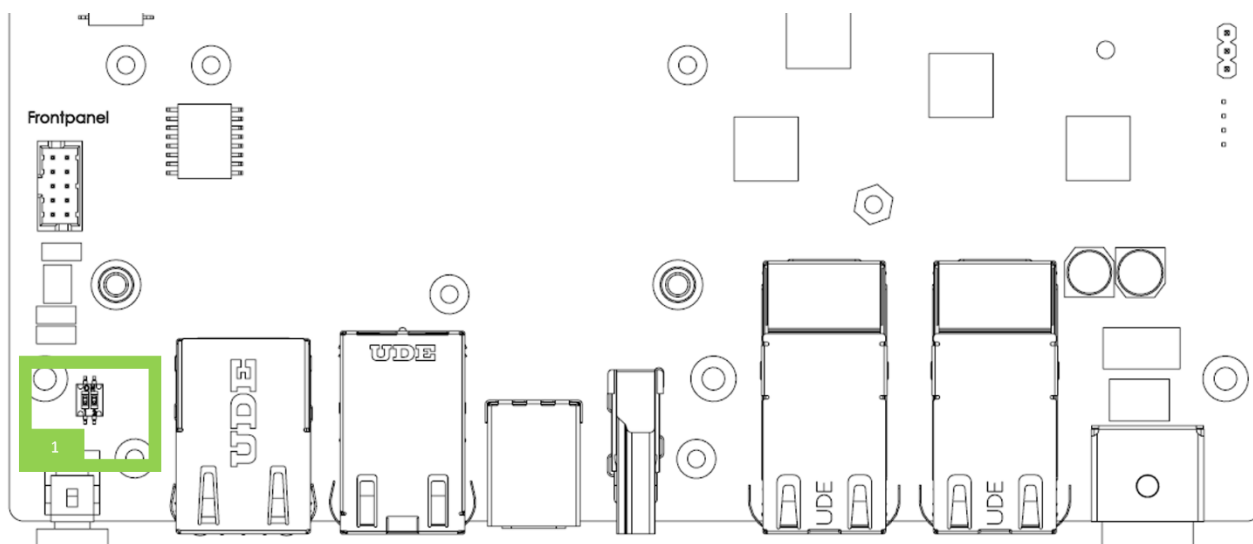
■ Front Panel Connector



Property	Specification
Reference Designator	J6
Connector	2x5 Pin, 2.0 mm Pitch Wafer (Board-to-Wire Header)

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

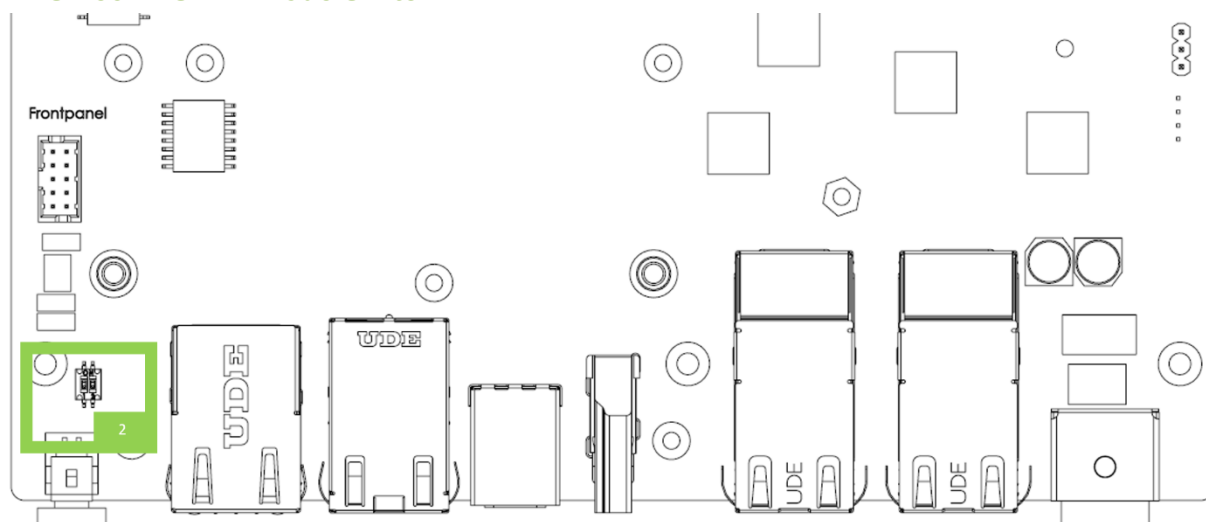
■ Auto Power On (APO) Switch



Property	Specification
Reference Designator	SW1 (Position 1)
Connector	DIP Switch
Notes	This switch enables the APO function

Position	APO Function
ON	Disable
1 (Default)	Enable

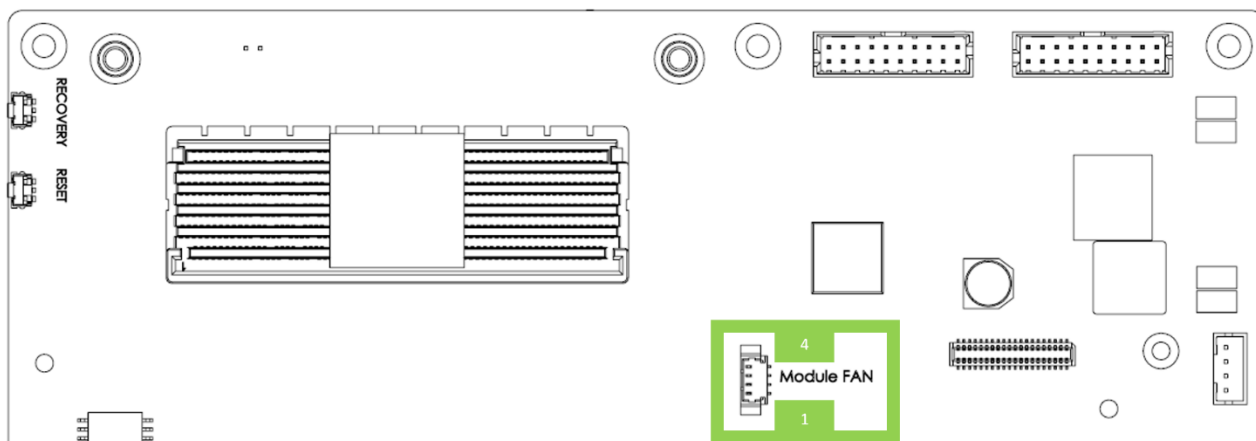
■ RS-485 / RS-422 Mode Switch



Property	Specification
Reference Designator	SW1 (Position 2)
Connector	DIP Switch
Notes	The switch selects between RS-485 and RS-422 modes

Position	Switch Function
ON	RS-422
2 (Default)	RS-485

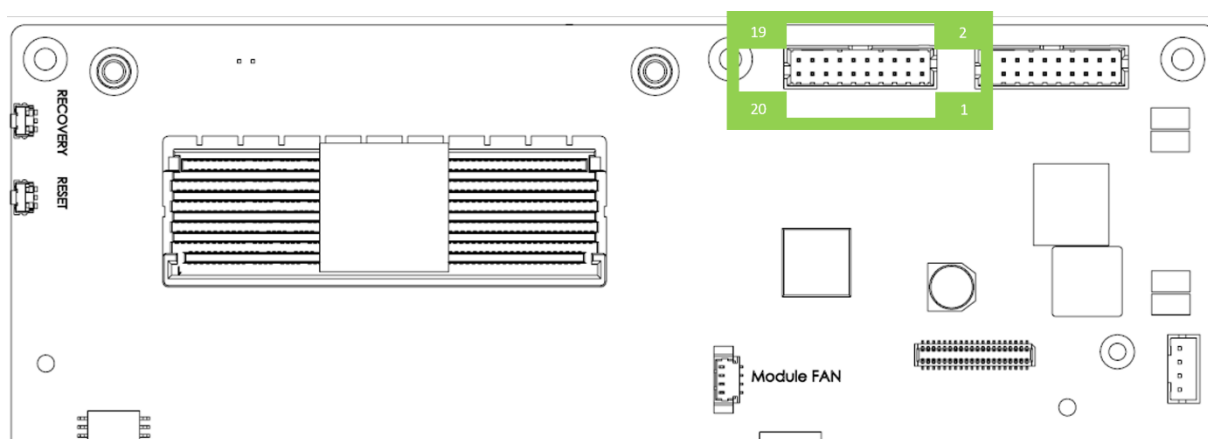
■ Module Fan Connector



Property	Specification
Reference Designator	J1
Connector	1x4 Pin, 1.25 mm Pitch Wafer (Board-to-Wire Header)

Pin #	Signal
1	GND
2	VDD_12V
3	TACH
4	PWM

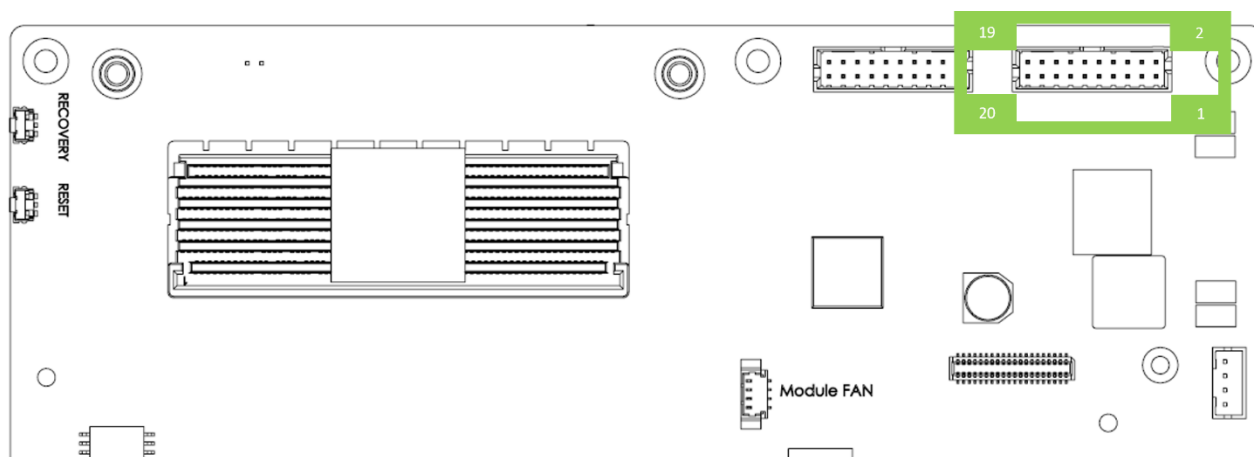
MISC I/O Connector (RS422/RS485/I²C/UART/SPI/USB2.0)



Property	Specification
Reference Designator	CN1
Connector	2x10 Pin, 2.0 mm Pitch Wafer (Board-to-Wire Header)

Pin #	Signal	Pin #	Signal
1	VDD_3V3	2	VDD_5V
3	I2C_GP2_CLK_3V3	4	USB_D-
5	I2C_GP2_DAT_3V3	6	USB_D+
7	UART4_TX	8	SPI_MOSI_3V3
9	UART4_RX	10	SPI_SCK_3V3
11	RS422_A (RX+)	12	SPI_MISO_3V3
13	RS422_B (RX-)	14	SPI_CS1_3V3
15	RS422_Z (TX-) / RS485-	16	SPI_CS0_3V3
17	RS422_Y (TX+) / RS485+	18	HF_SW
19	GND	20	GND

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



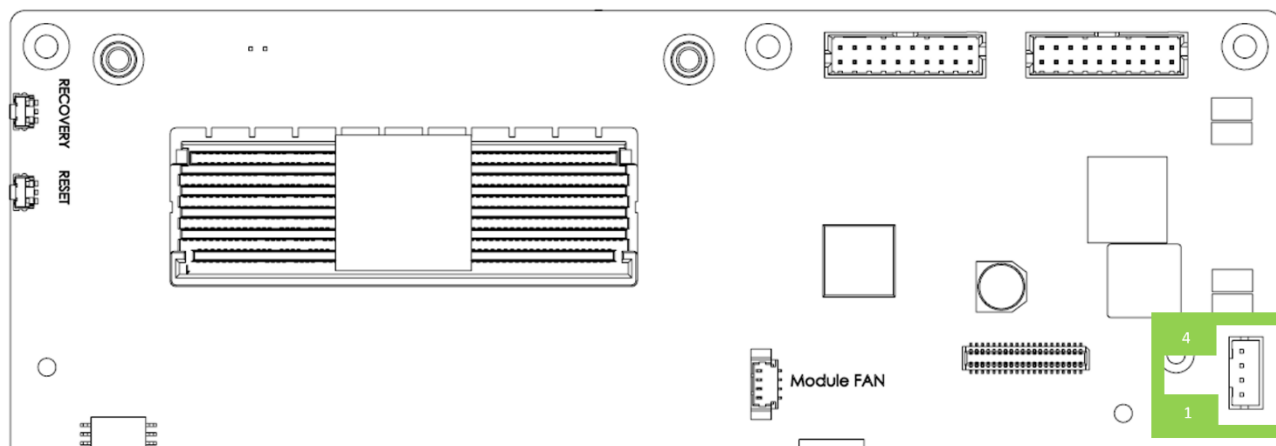
Property	Specification
Reference Designator	CN2
Connector	2x10 Pin, 2.0 mm Pitch Wafer (Board-to-Wire Header)

Pin #	Signal	Pin Config	Pin #	Signal
1	VDD_3V3		2	VDD_5V (standby)
3	GPIO_1)	PP.04444 / 3V3 / Input / Pull-up	4	UART2_TXD_HDR_3V3
5	GPIO_2	PAC.05491 / 3V3 / Input / Pull-up	6	UART2_RXD_HDR_3V3
7	GPIO_3	PR.00456 / 3V3 / Input / Pull-up	8	UART2_CTS_HDR_3V3
9	GPIO_4	PN.01433 / 3V3 / Input / Pull-up	10	UART2_RTS_HDR_3V3
11	GPIO_5	PH.00391 / 3V3 / Input / Pull-up	12	RS232_RXD
13	I2C_GP4_CLK_3V3		14	RS232_RTS
15	I2C_GP4_DAT_3V3		16	RS232_TXD
17	GND		18	RS232_CTS
19	GND		20	GND

*CN2 pins 3, 5, 7, 9, and 11 are defaulted to GPIO input with pull-up. Any change to output mode or alternate configuration requires customization support.

*Pins 4, 6, 8, and 10 are shared with CN20. These pins are not available on CN2 when the OOB function is enabled.

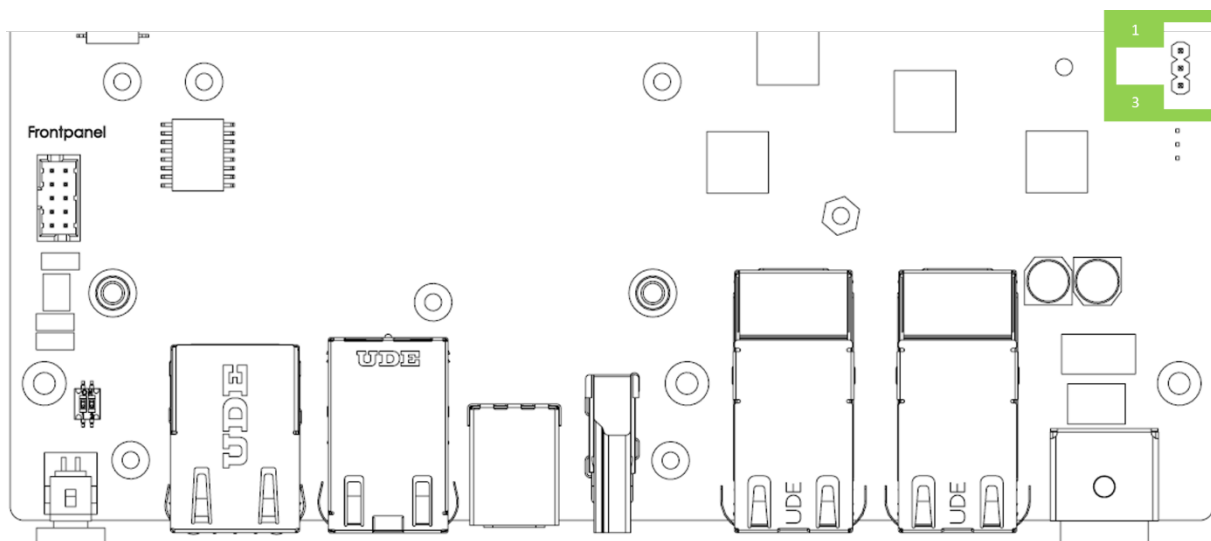
■ 5V/12V Output Connector (Supports GMSL)



Property	Specification
Reference Designator	CN14
Connector	1x4 Pin, 2.0 mm Pitch Wafer (Board-to-Wire Header)
Notes	Power output: 5V @ 1A, 12V @ 1A For GMSL, please connect pin #2 (12V) and either of the GND pins (pin #3 or pin #4).

Pin #	Signal
1	VDD_12V @ 1A
2	VDD_5V @ 1A
3	GND
4	GND

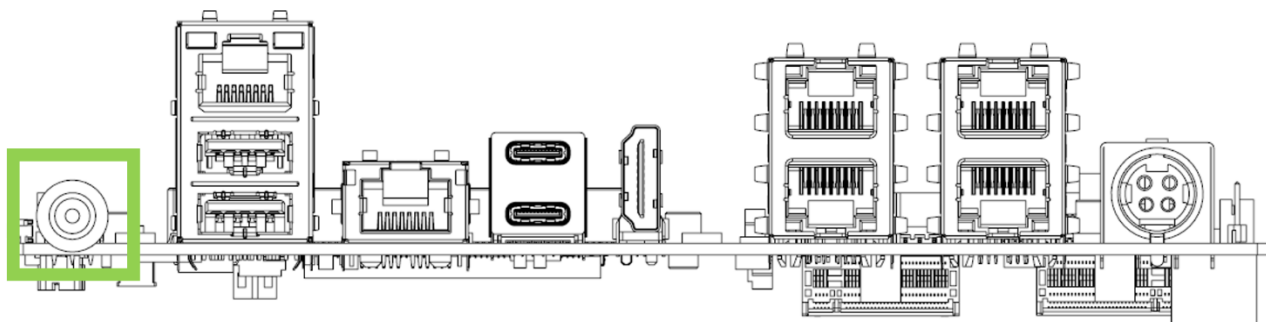
■ Debug UART



Property		Specification
Reference Designator		J3
Connector		1x3 Pin, 2.54 mm Pitch (Board-to-Wire Header)

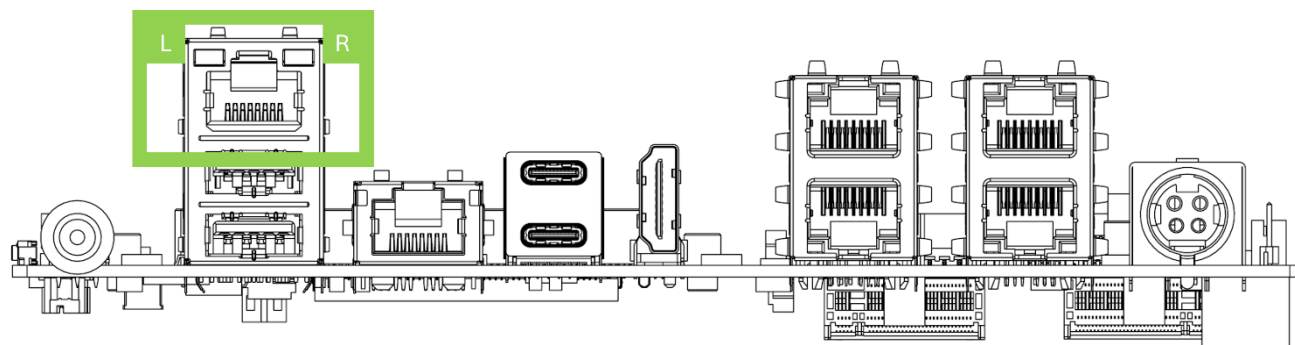
Pin #	Signal
1	Debug_UART_TX (3V3 level)
2	Debug_UART_RX (3V3 level)
3	GND

■ Power Button



Property	Specification
Reference Designator	S3
Connector	Tactile switch
Notes	To trigger system power on/off

■ Gigabit Ethernet Connector

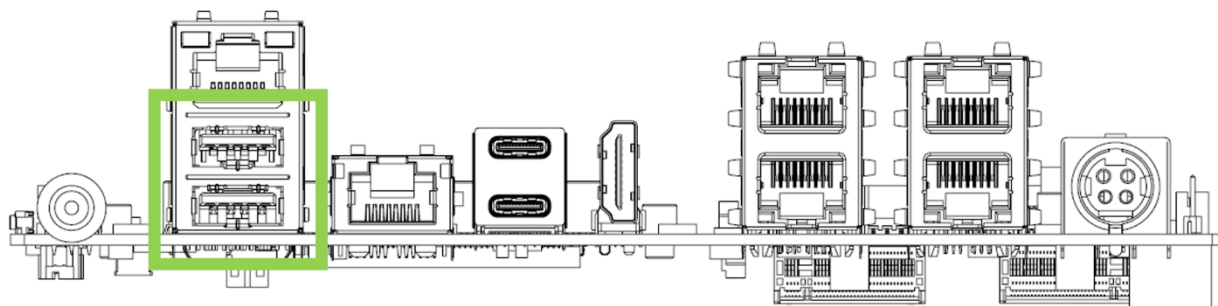


Property	Specification
Reference Designator	CN11
Connector	RJ-45 connector
Pinout	Please refer to Ethernet standard
LAN Source	Intel Ethernet controller

LAN LED Indicators

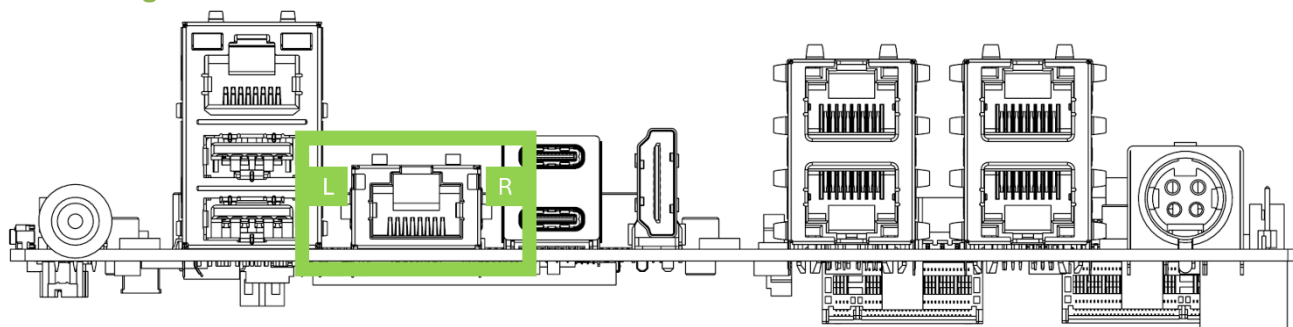
LAN	Function	Color	Status	Description
L (Left)	Link Status	Orange	ON	Link established
			Blinking	Data activity
			OFF	No link
R (Right)	Link Speed	Yellow	ON	100 Mbps / 1 Gbps
			OFF	10 Mbps

■ Dual USB 3.2 Gen1 Connector-A Connector



Property	Specification
Reference Designator	CN11
Connector	USB Type-A connector
Pinout	Pin definition follows the USB specification
Notes	Supports up to 5Gbps per port. When multiple devices are connected, bandwidth is shared and actual data rates may vary.

■ 10 Gigabit Ethernet Connector

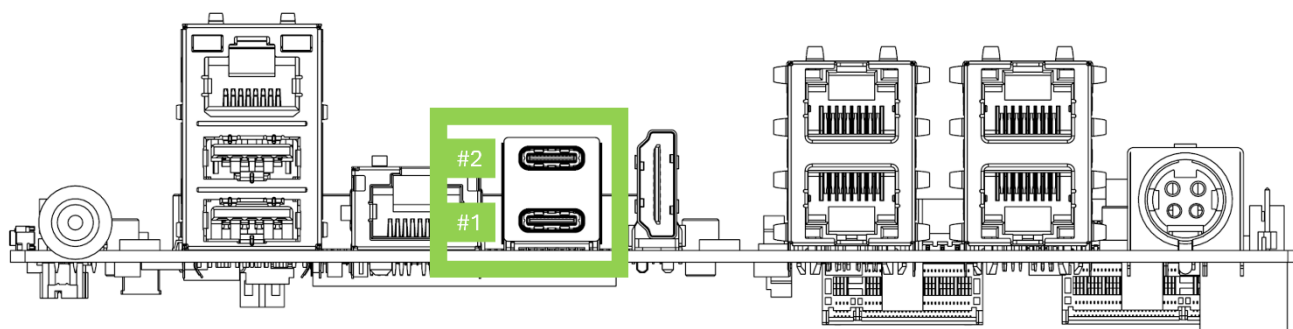


Property	Specification
Reference Designator	CN7
Connector	RJ-45 connector
Pinout	Please refer to Ethernet standard
LAN Source	NVIDIA SOM native GbE interface

LAN LED Indicators

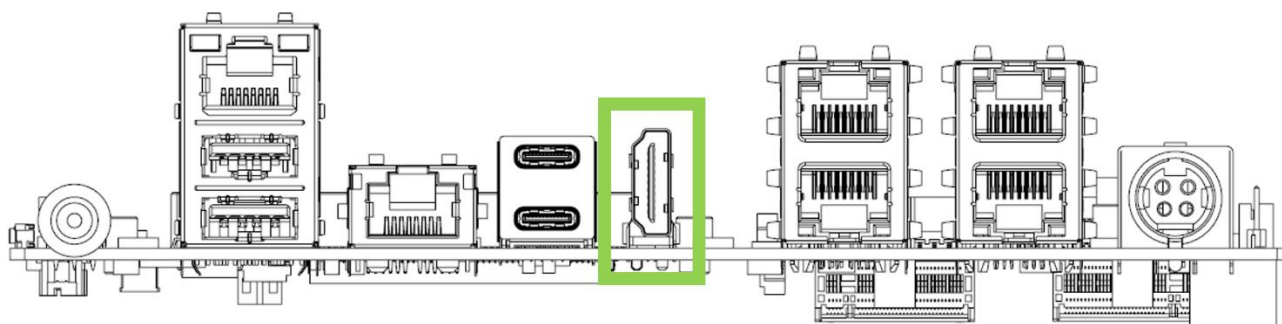
LAN	Function	Color	Status	Description
L (Left)	Link Status	Green	ON	Link established
			Blinking	Data activity
			OFF	No link
R (Right)	Link Speed	Orange	ON	100 Mbps / 1 Gbps / 10 Gbps
			OFF	2.5 Gbps / 5 Gbps

■ USB 2.0 OTG Type-C / USB 3.2 Gen2 Type-C



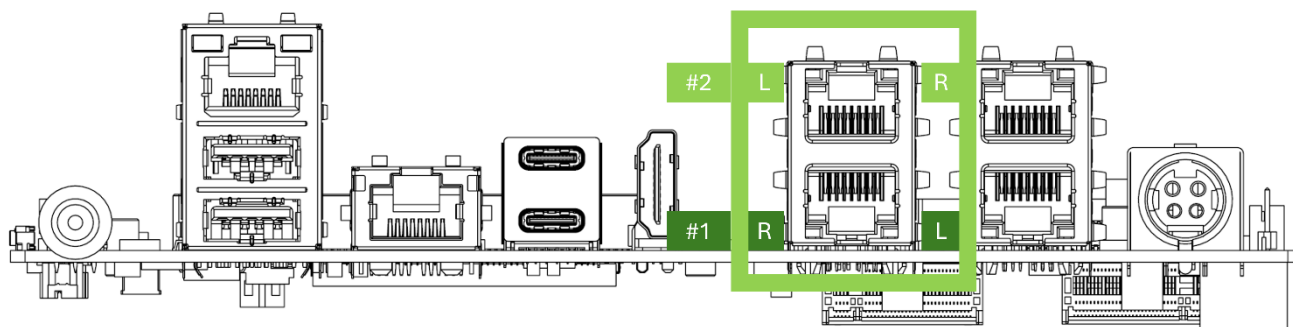
Property	Specification
Reference Designator	CN8
Connector	Dual USB Type-C connector
Pinout	Please refer to USB standard
Notes	#1 USB 2.0 OTG Type-C #2 USB 3.2 Gen2 Type-C

■ HDMI Type-A Connector



Property	Specification
Reference Designator	CN6
Type	HDMI Type-A female connector
Pinout	Please refer to HDMI Type-A standard
Notes	Resolution up to 4K@60Hz

■ PSE Port 1 / Port 2 Gigabit Ethernet Connector

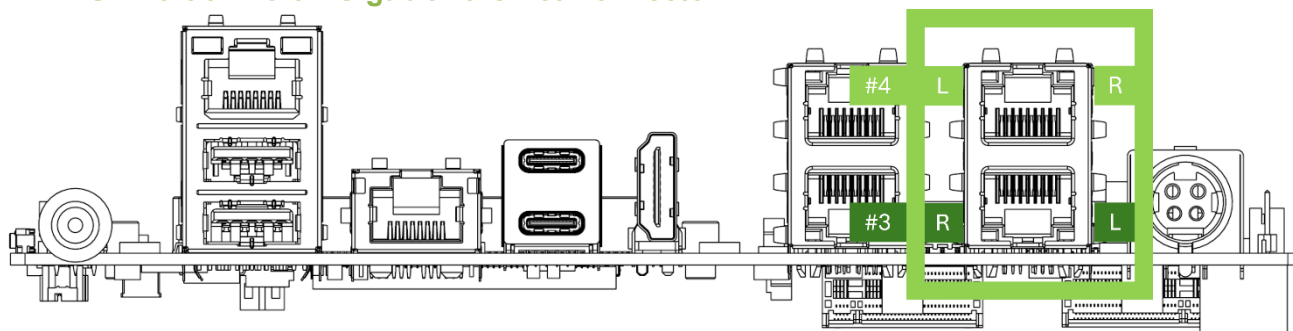


Property	Specification
Reference Designator	CN17
Connector	Dual-Port RJ-45 connector
Pinout	Pin definition follows the RJ45 specification
LAN Source	Intel Ethernet controller
Notes	IEEE 802.3af compliant, power output 15W per port, 30 W max per connector. #1 PSE port 1 #2 PSE port 2

LAN LED Indicators

LAN	Function	Color	Status	Description
L (Left)	Link Status	Yellow	ON	Link established
			Blinking	Data activity
			OFF	No link
R (Right)	Link Speed	Green	ON	1 Gbps
			OFF	10 Mbps / 100 Mbps

■ PSE Port 3 / Port 4 Gigabit Ethernet Connector

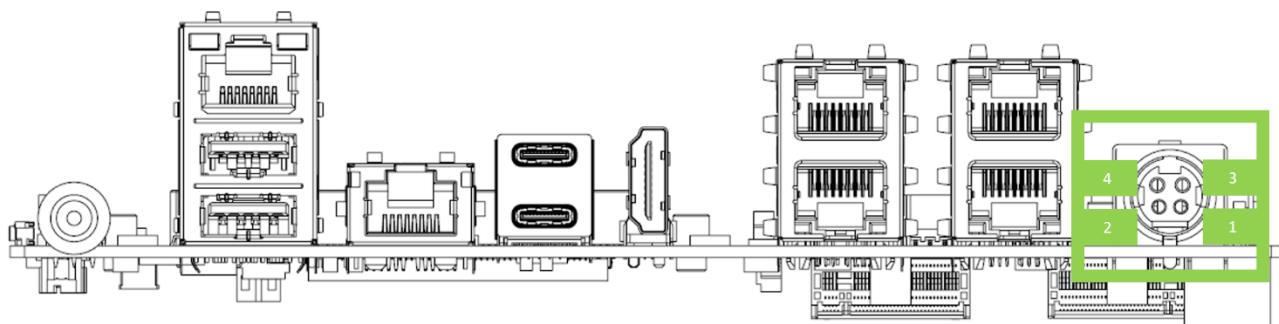


Property	Specification
Reference Designator	CN18
Connector	Dual-port RJ45 connector
Pinout	Please refer to Ethernet standard
LAN Source	Intel Ethernet controller
Notes	IEEE 802.3af compliant, power output 15W per port, 30 W max per connector. #3 PSE port 3 #4 PSE port 4 * Dual-port RJ45 connector (CN18) is not populated on the AIB-MX11 and AIB-MX21.

LAN LED Indicators

LAN	Function	Color	Status	Description
L (Left)	Link Status	Yellow	ON	Link established
			Blinking	Data activity
			OFF	No link
R (Right)	Link Speed	Green	ON	1 Gbps
			OFF	10 Mbps / 100 Mbps

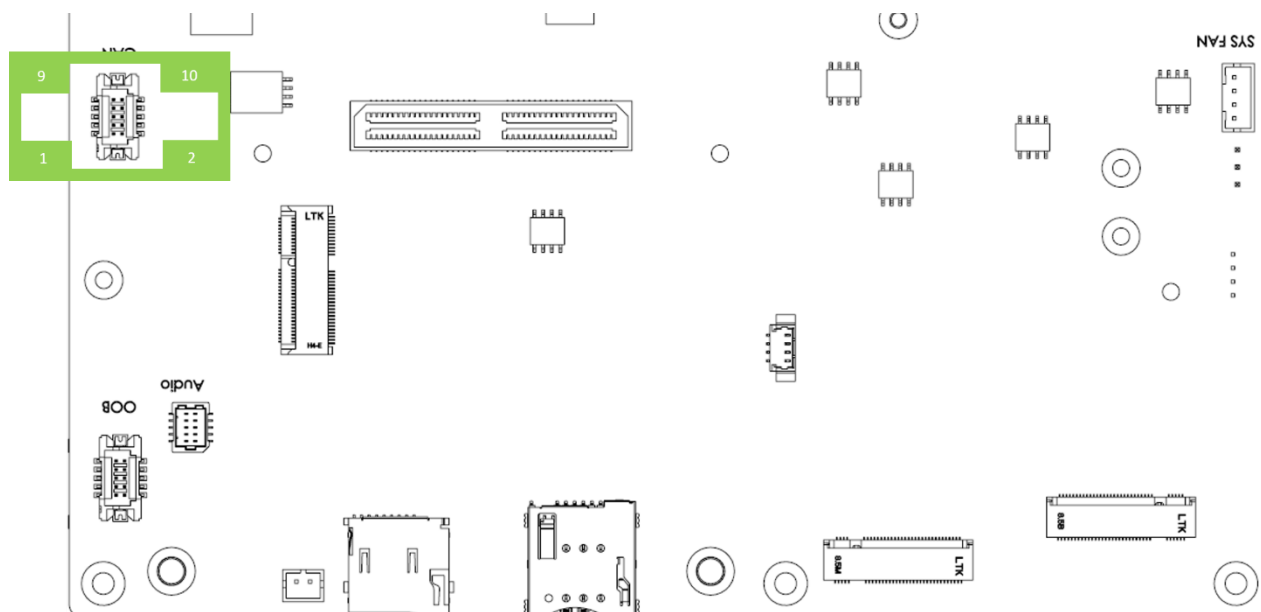
■ DC Power Input Connector



Property	Specification
Reference Designator	CN19
Connector	4-pin male DC power connector
Pinout	Please refer to DC Jack standard

Pin #	Signal	Pin #	Signal
1	VIN+	2	GND
3	VIN+	4	GND

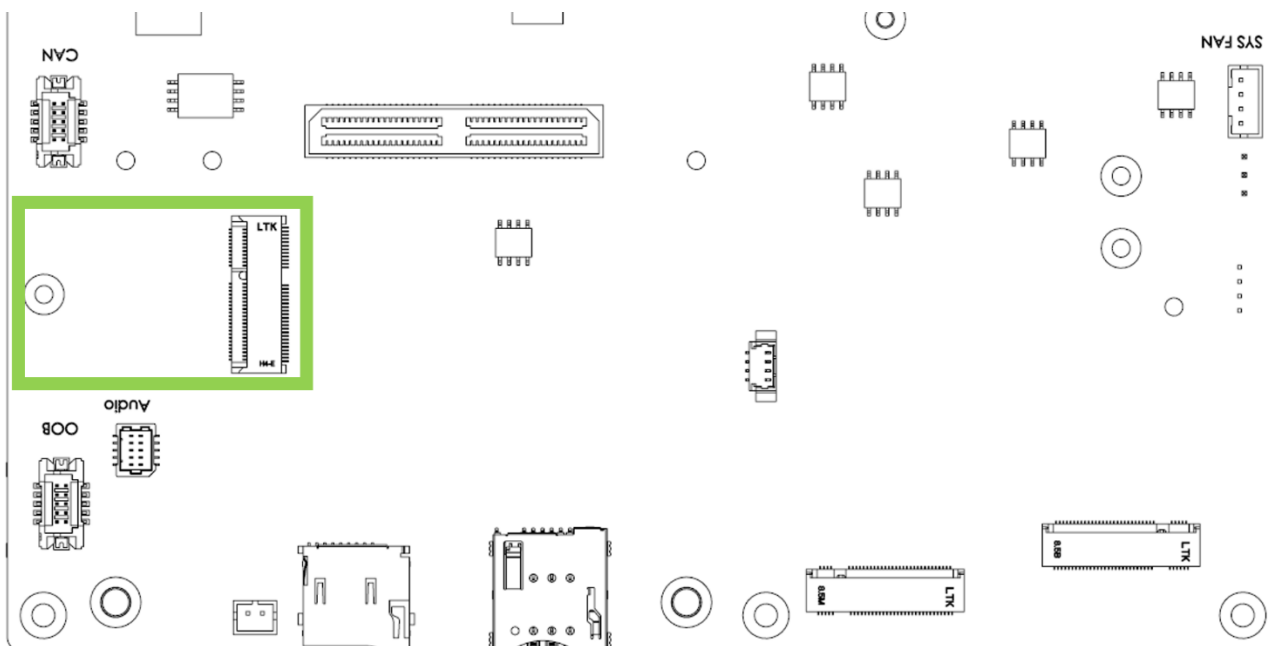
■ CAN BUS Connector



Property		Specification	
Reference Designator		CN5	
Connector		2x5 Pin, 1.25 mm Pitch Wafer (Board-to-Wire Header)	

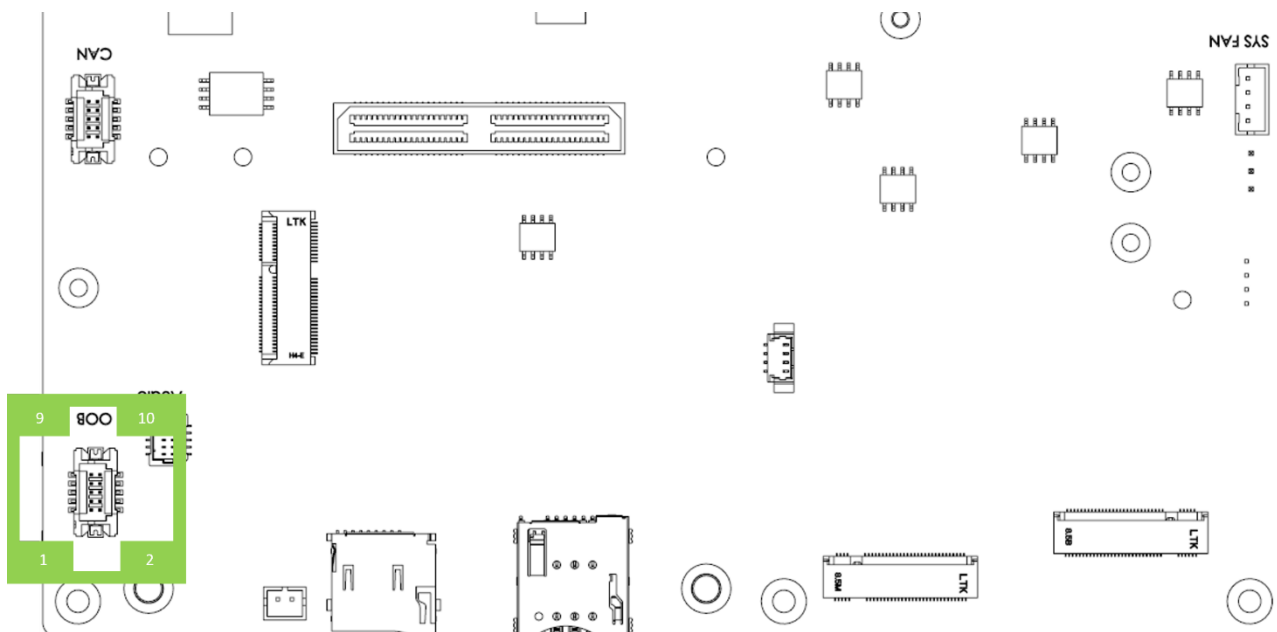
Pin #	Signal	Pin #	Signal
1	CAN0H	2	CAN1H
3	CAN0L	4	CAN1L
5	NC	6	NC
7	CAN_5V	8	CAN_5V
9	GND	10	GND

■ M.2 E-Key Connector



Property	Specification
Reference Designator	J9
Connector	M.2 E-Key 2230
Pinout	Pin definition follows the M.2 E-Key specification
Interface	PCIe Gen4 x1 / USB 2.0
Notes	Supports Wi-Fi / Bluetooth

■ OOB Connector



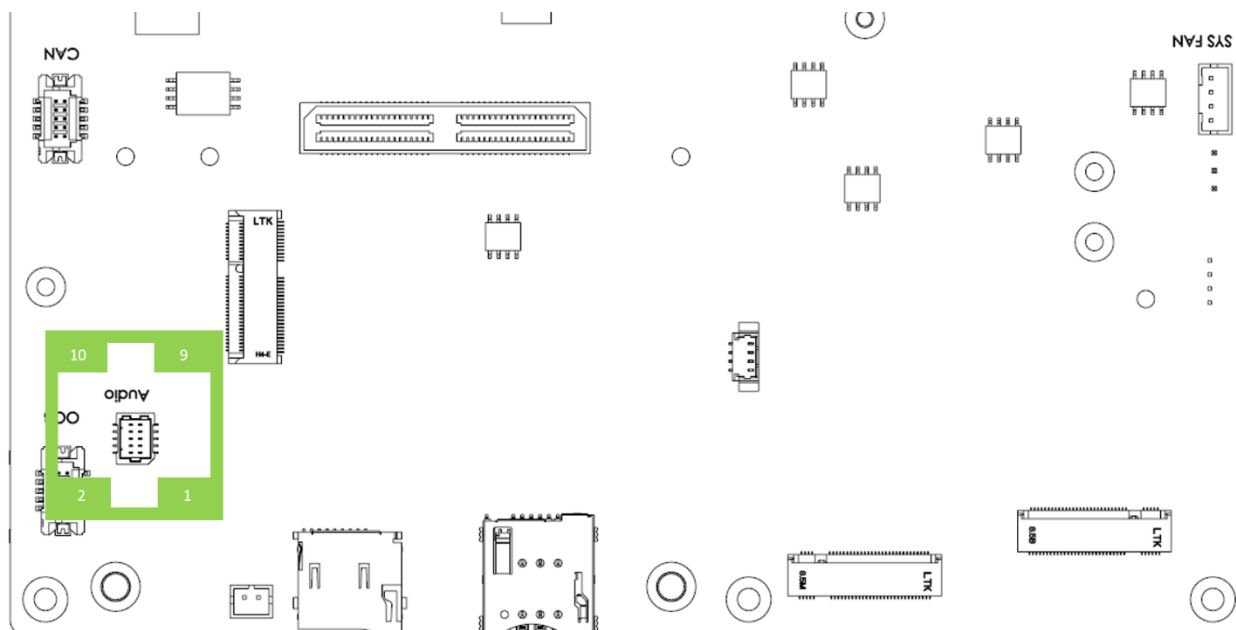
Property	Specification
Reference Designator	CN20
Connector	2x5 Pin, 2.0 mm Pitch Wafer (Board-to-Wire Header)
Notes	Optional; requires module support and software customization.

Pin #	Signal	Pin #	Signal
1	GND	2	VDD_5V (Standby)
3	OOB_GPIO_1	4	UART_TXD (3.3V level)*
5	OOB_GPIO_2	6	UART_RXD (3.3V level)*
7	Power on	8	UART_RTS (3.3V level)*
9	Reset	10	UART_CTS (3.3V level)*

*Pins 4, 6, 8, and 10 are shared with CN2.

These pins are not available on CN2 when the OOB function is enabled.

■ Audio Board-to-Board Connector

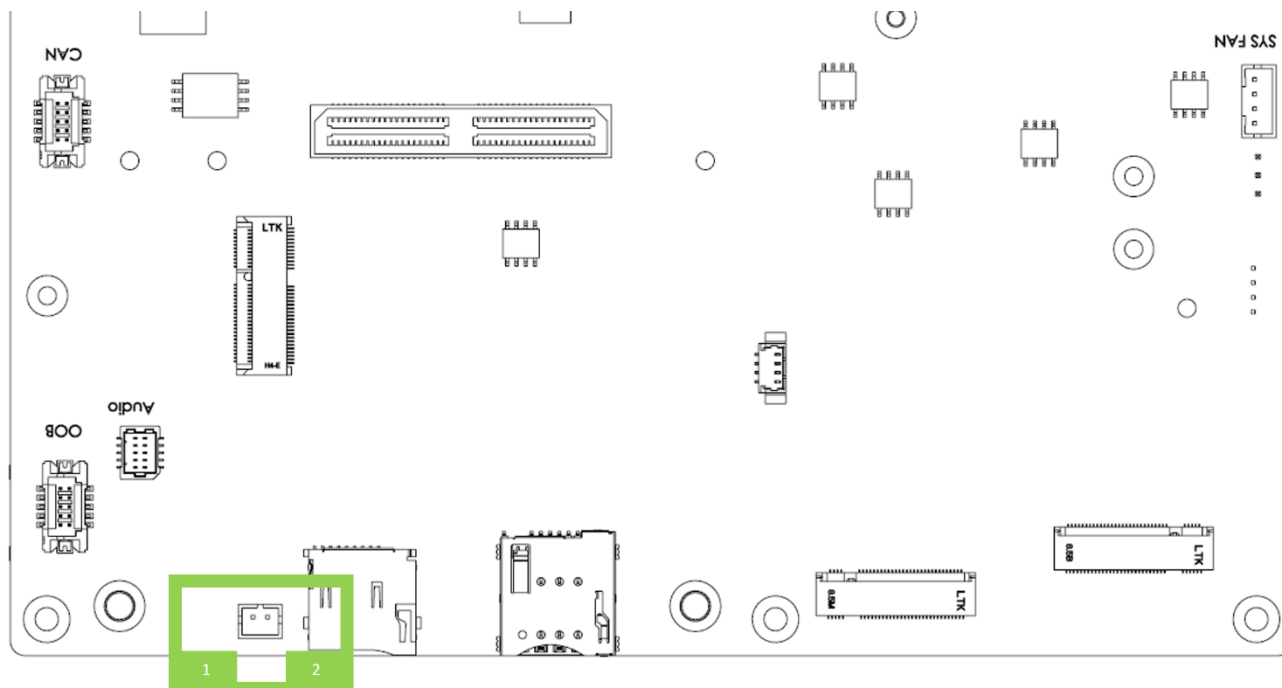


Property	Specification
Reference Designator	J4
Connector	2x5 Pin, 1.0 mm Pitch Wafer (Board-to-Wire Header)

Pin #	Signal	Pin #	Signal
1	I2S1_SCLK_1V8	2	VDD_3V3
3	I2S1_OUT_1V8	4	I2C_G4_DAT
5	I2S1_IN_1V8	6	I2C_G4_CLK
7	I2S1_FS_1V8	8	GND
9	I2S1_MCLK_1V8	10	GND

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

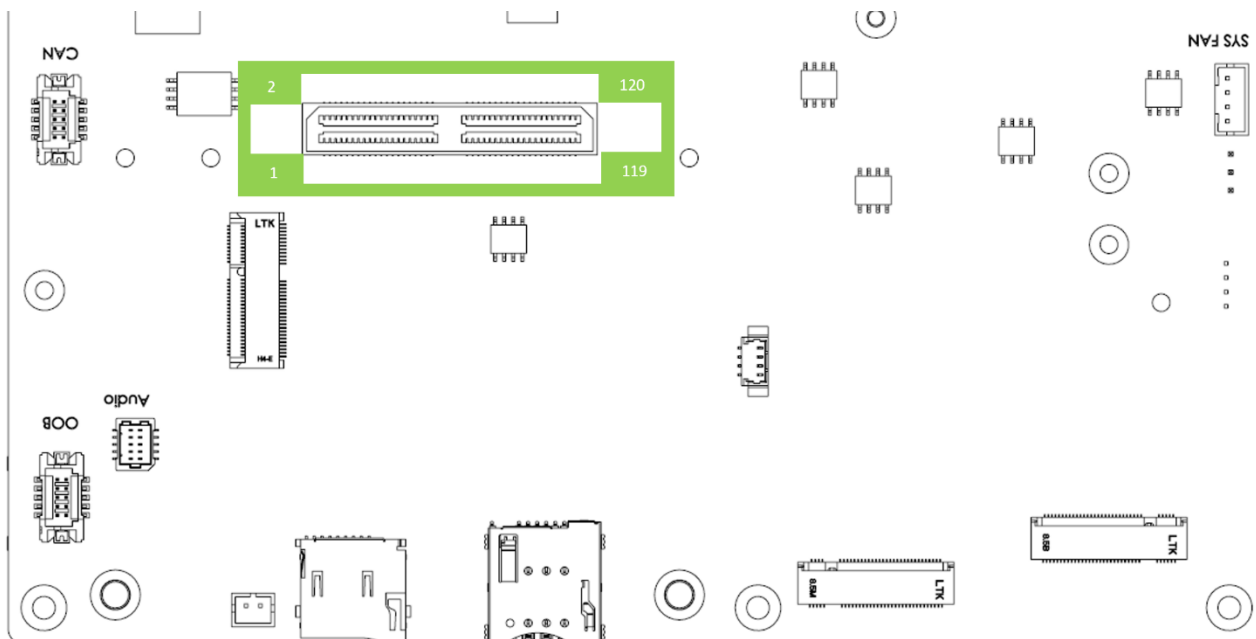
■ RTC Battery Connector (Default with Battery)



Property	Specification
Reference Designator	BAT1
Connector	1x2 Pin, 2.0 mm Pitch Wafer (Board-to-Wire Header)

Pin #	Signal
1	—
2	+

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



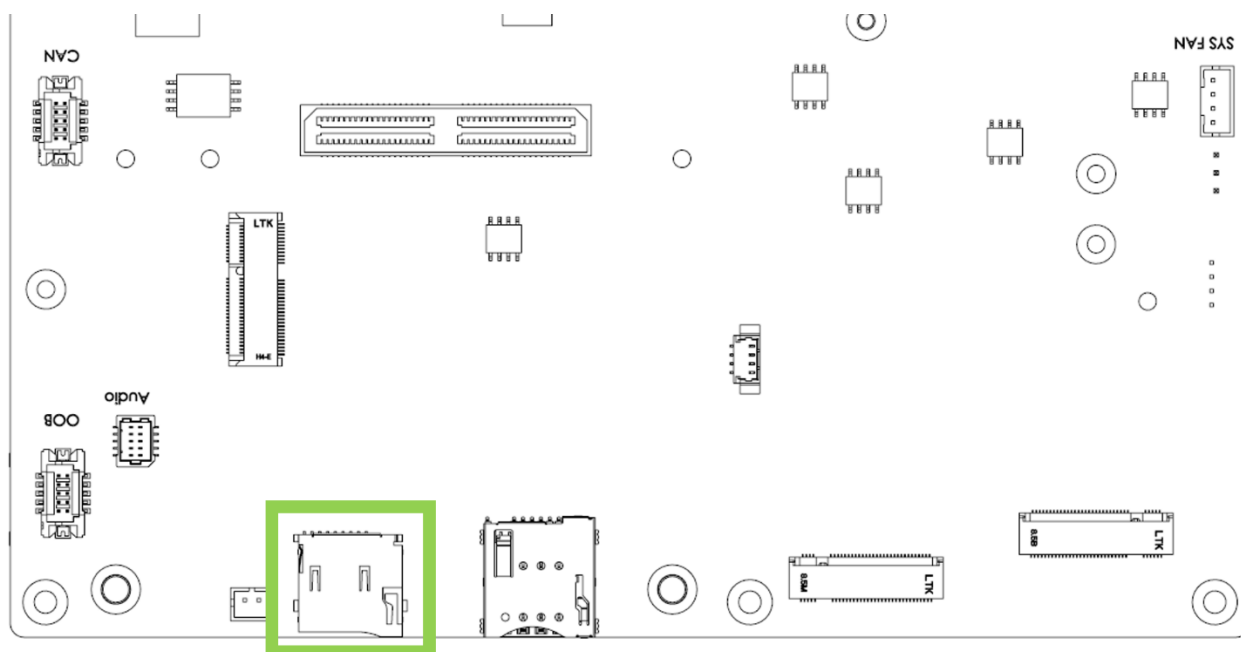
Property	Specification
Reference Designator	J10
Connector	QSH 120-Pin connector

Pin #	Signal	Pin #	Signal
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	CAM_ERROR1
77	I2C_GP3_DAT	78	CAM_ERROR2
79	GND	80	GND
81	AVDD_CAM_2V8	82	AVDD_CAM_2V8

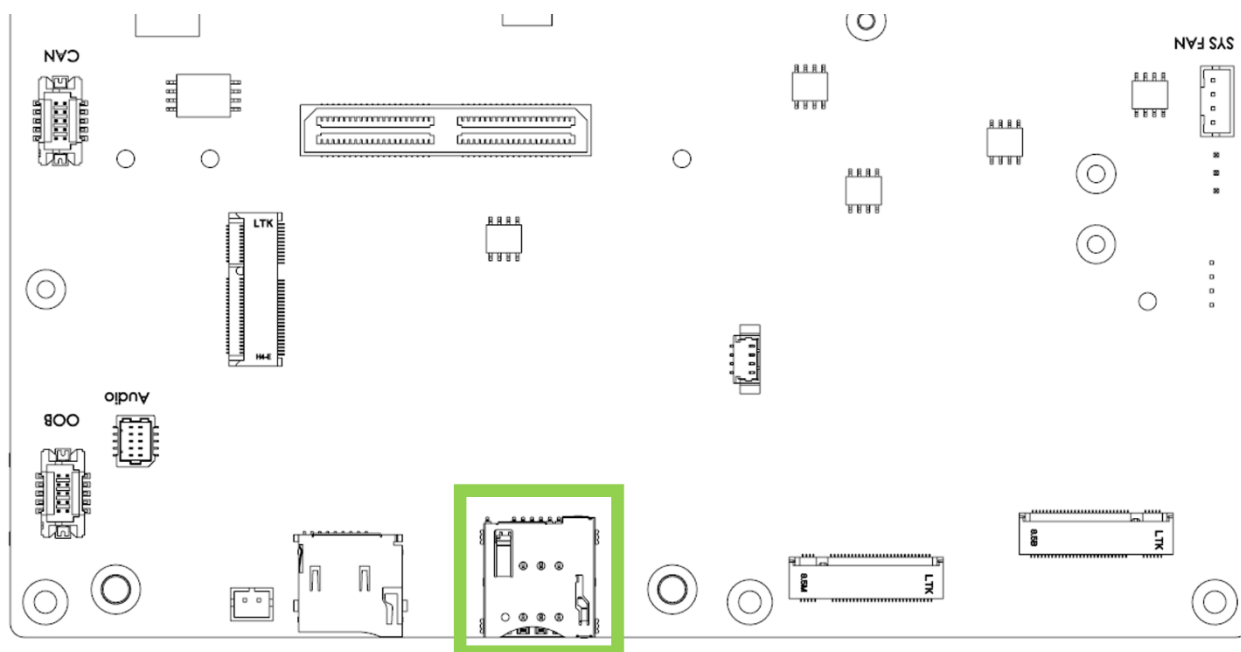
83	AVDD_CAM_2V8	84	CAM_ERROR3
85	CAM_FRSYNC1	86	CAM_ERROR4
87	I2C_GP2_CLK	88	CAM1_MCLK03
89	I2C_GP2_DAT	90	GPIO15_CAM1_PWDN
91	CAM0_MCLK02	92	GPIO16_CAM1_RST
93	CAM0_PWDN	94	CAM2_MCLK04
95	CAM0_RST	96	CAM_FRSYNC4
97	CAM_FRSYNC3	98	CAM_FRSYNC2
99	GND	100	GND
101	NC	102	VDD_1V8
103	CAM_INT3	104	CAM_INT4
105	I2C_GP9_CLK	106	CAM_INT2
107	I2C_GP9_SDA	108	VDD_3V3
109	NC	110	VDD_3V3
111	NC	112	NC
113	NC	114	NC
115	GND	116	GND
117	CAM_INT1	118	VDD_3V3
119	CAM_VDD_SYS_EN	120	VDD_3V3

■ microSD Card Socket



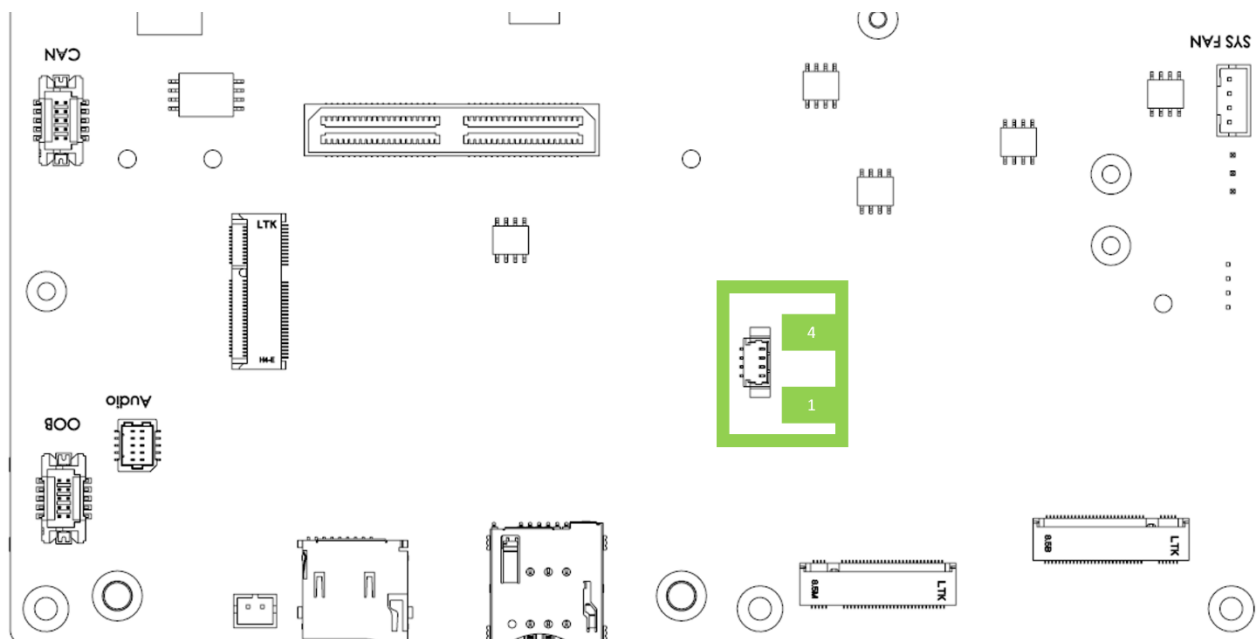
Property	Specification
Reference Designator	CN12
Connector	microSD push-push card socket

■ microSIM Card Socket



Property	Specification
Reference Designator	CN13
Connector	microSIM push-push card socket

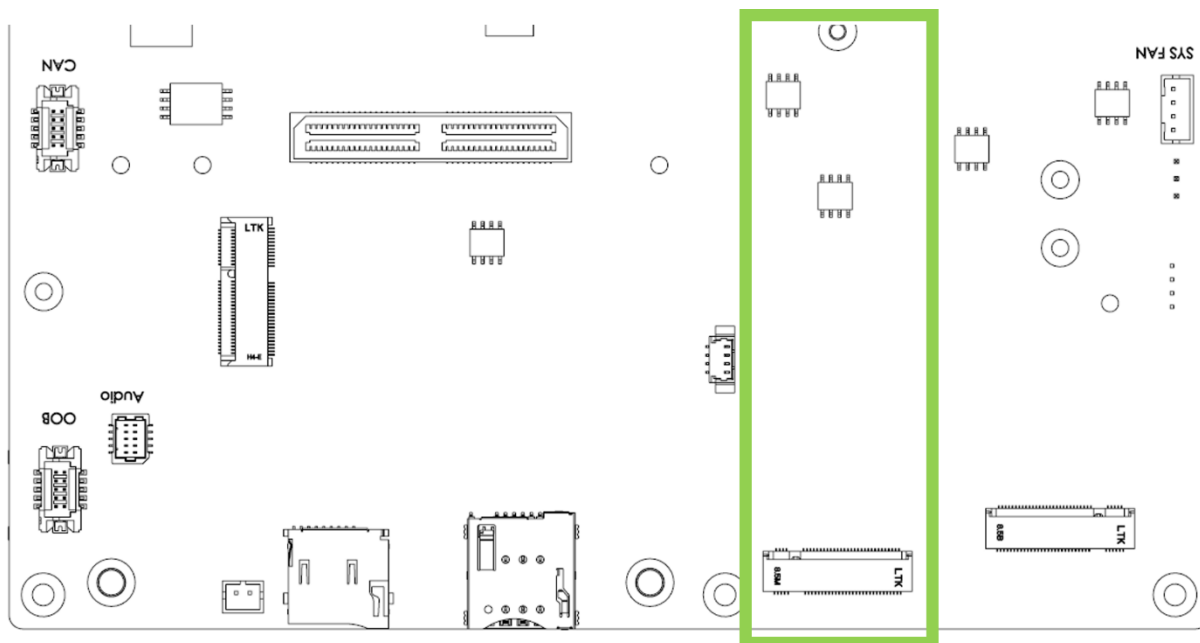
■ 1PPS Module function



Property	Specification
Reference Designator	CN21
Connector	1x4 Pin, 1.25 mm Pitch Wafer (Board-to-Wire Header)
Notes	1PPS input supports 1V8 to 3V3 logic levels

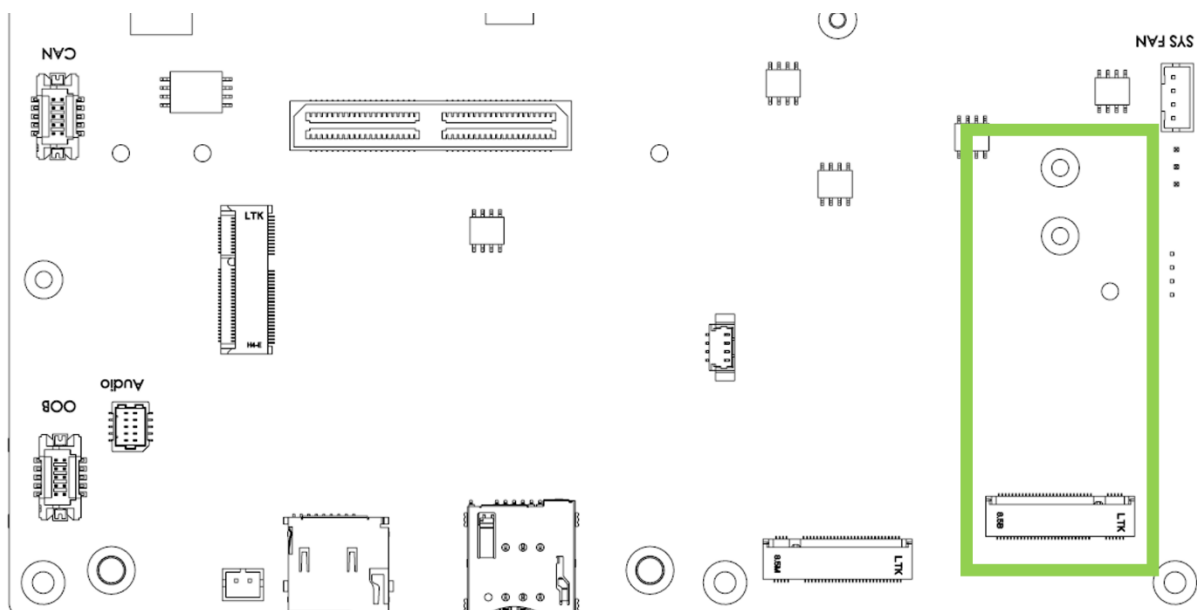
Pin #	Signal
1	GND
2	1PPS_GPIO
3	NC
4	NC

■ M.2 M-Key Connector



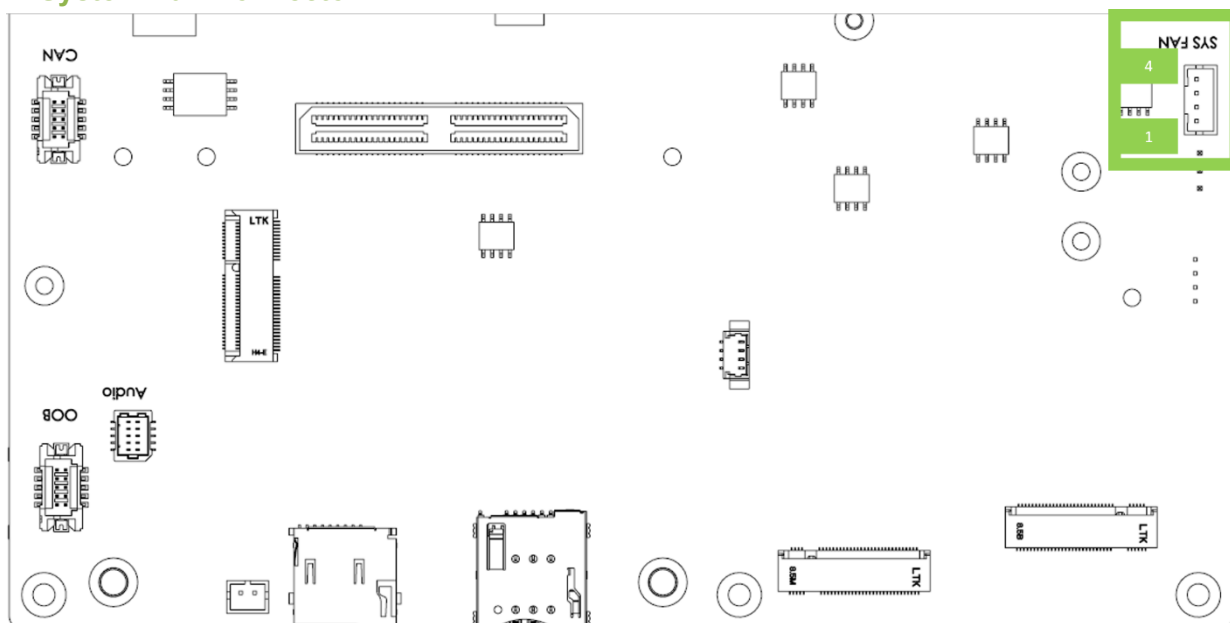
Property	Specification
Reference Designator	J8
Connector	M.2 M-Key 2280
Pinout	Pin definition follows the M.2 M-Key specification
Interface	PCIe Gen4 x4
Notes	Supports NVMe, PCIe Gen4 x4

■ M.2 B-Key Connector



Property	Specification
Reference Designator	J7
Connector	M.2 B-Key 3042/3052
Pinout	Please refer to M.2 B-Key Standard
Pinout	Pin definition follows the M.2 B-Key specification
Interface	USB 2.0 / USB 3.2 Gen1
Notes	Supports LTE / 4G / 5G

■ System Fan Connector



Property	Specification
Reference Designator	CN4
Connector	1x4 Pin, 2.0 mm Pitch Wafer (Board-to-Wire Header)

Pin #	Signal
1	GND
2	VCC_12V
3	NC
4	PWM

2.4 Power Consumption

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

Model Name	Condition	Power Consumption (W)
AIB-MX11	Idle	10.5 W
	Full Loading	85 W
AIB-MX12	Idle	10.5 W
	Full Loading	125 W
AIB-MX21	Idle	12 W
	Full Loading	116 W
AIB-MX22	Idle	12 W
	Full Loading	146 W

*Idle: Connect with Keyboard, Mouse and HDMI Display.

Full Loading: Connect with Keyboard, Mouse, HDMI Display, LAN ports with CPU and GPU 100% Loading.

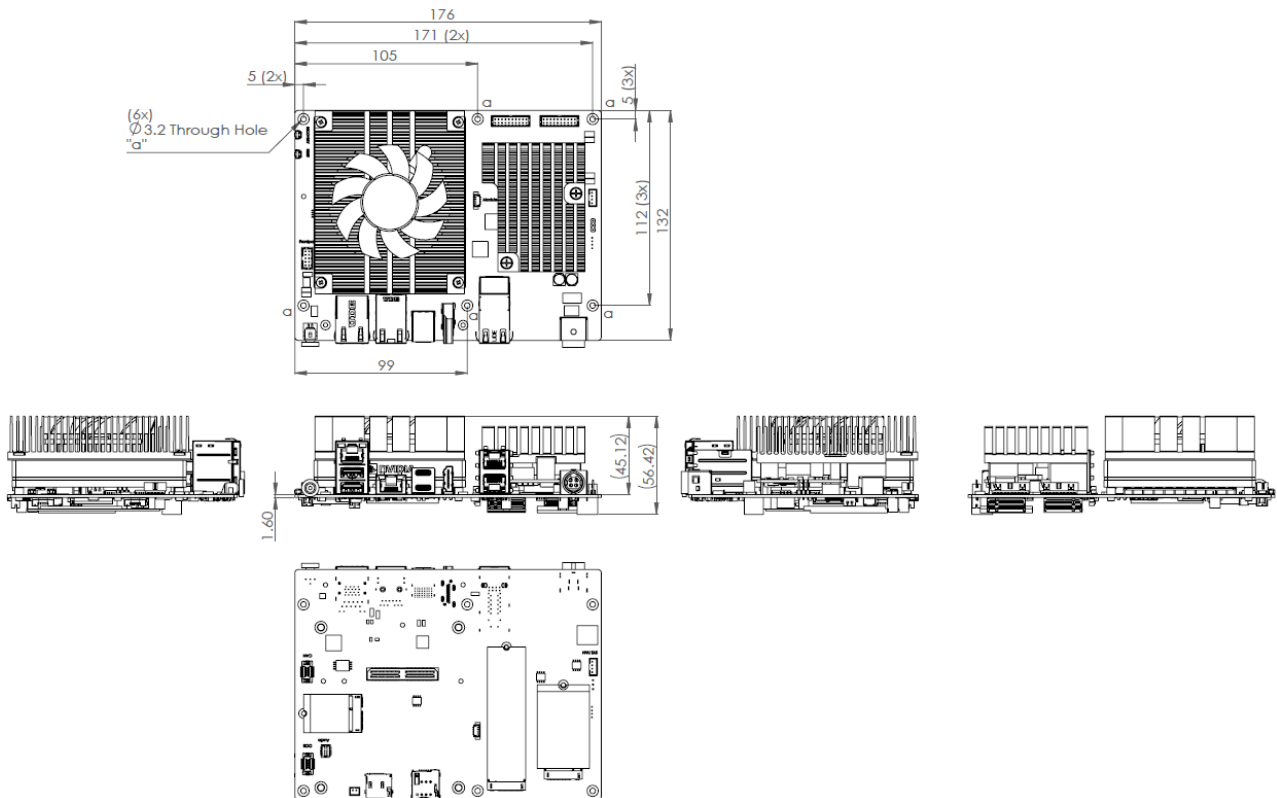
Please refer to the following power consumption of individual I/O interface according to your use case.

Interface	Theoretical Max Power (W)
USB 3.2 Gen1 Type A (per port)	4.5 W
USB Type C	4.5 W
HDMI	0.25 W
M.2 E-KEY	2 W
M.2 M-KEY	7 W
M.2 B-KEY	3 W
CAN BUS	1 W
microSD Card	0.72 W
RJ-45 (1G)	0.83 W
RJ-45 (10G)	3.43 W
PoE (per port)	15 W (IEEE 802.3af compliant)
Module Fan	2 W

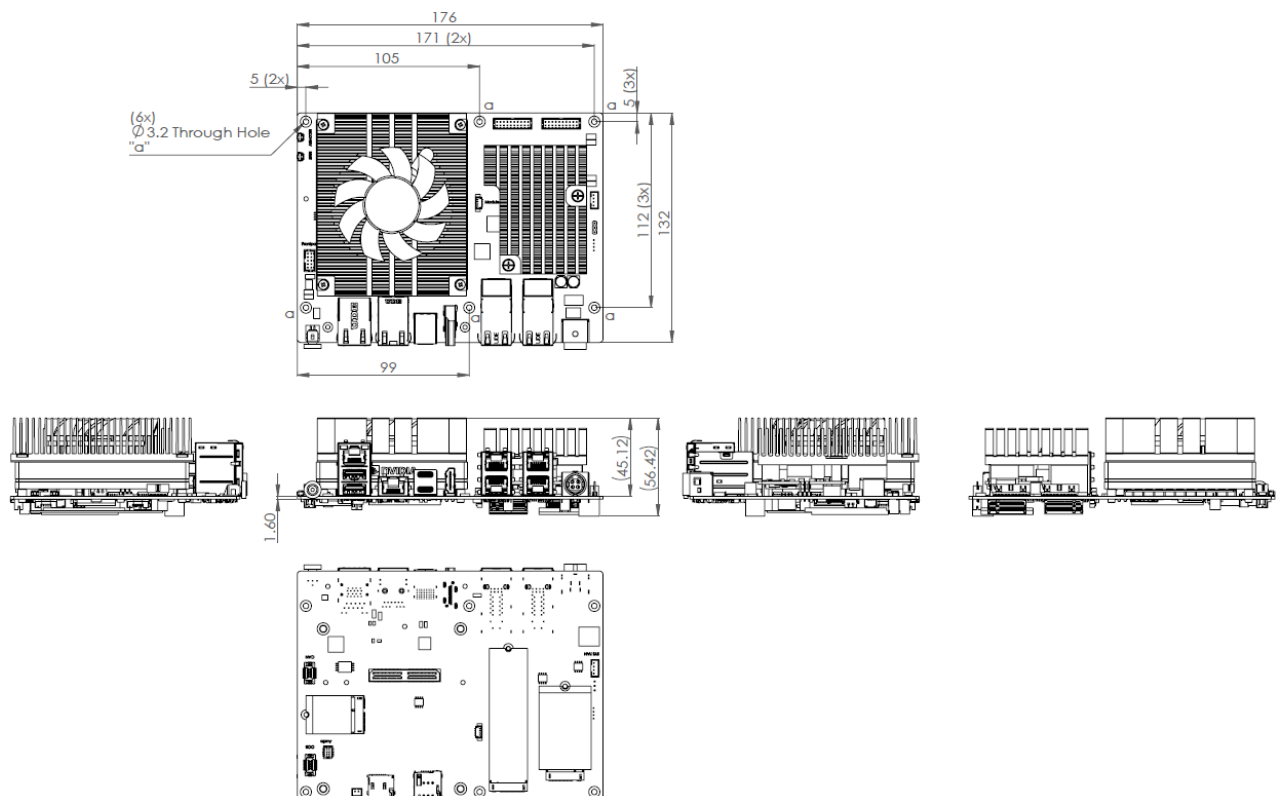
2.5 Mechanical Dimensions

Integration assembly drawing for AIB-MX11/12/21/22 carrier board, AGX Orin module and Fansink.

AIB-MX11 / AIB-MX21 System & Mounting Dimensions



AIB-MX12 / AIB-MX22 System & Mounting Dimensions



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 for installation guides, BSPs and technical tips.

4. Recovery Mode

The OTG Type-C port of AIB-MX11/12/21/22 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-MX11/12/21/22 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 AGX Orin module is not hot-pluggable. Before installing or removing the module, the main power supply (to power connector, CN19) 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.

Aetina Corporation | Headquarters

17F-1, No.237, Sec.1, Datong Rd., Xizhi Dist., New Taipei City 221, TAIWAN

Phone: +886-2-7709 2568

Fax : +886-2-7746 1102

Mail : sales@aetina.com

www.Aetina.com