

## **AVerMedia D131 series**

Applies to NVIDIA® Jetson Orin™ NX/ Orin™ NANO Module



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## **Preface**

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For more information of our products, pricing, and order placement, please fill in our inquiry form [here](#), we will contact you within 24 hours.

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## Revision History

Revision	Date	Updates
Version 0.1	March, 6, 2023	1 <sup>st</sup> Released
Version 0.2	June, 13, 2023	<ol style="list-style-type: none"> <li>1. Add Dip switch information</li> <li>2. Update ATX 4pin photo</li> <li>3. Update product spec</li> <li>4. Add Bottom View Interface</li> <li>5. Add Micro SD slot memo</li> </ol>
Version 0.3	June, 27, 2023	Update hardware modification of Raspberry pi v3 (imx477) for compatibility with NVIDIA Jetson Platforms.
Version 0.4	July, 11, 2023	Add OOB information into spec
Version 0.5	July, 31, 2023	Add GPIO command for JetPack5.x
Version 0.6	October, 05, 2023	Revise 40-Pin GPIO expansion pinout
Version 0.7	October, 25, 2023	Update dip switch button instruction and 40-Pin GPIO expansion pinout
Version 0.8	November, 09, 2023	Revise commands for PWM fan information
Version 0.9	November, 17, 2023	Update block diagram for the CSI CAM
Version 1.0	November, 27, 2023	Update D13IOXB operating temperature
Version 1.1	January, 31, 2024	<ol style="list-style-type: none"> <li>1. Update Ethernet LED indicator information &amp; PCN number on DC power jack.</li> <li>2. Modified power requirement according to PCN20230901-2 (9V-24V / 5A-2.6A)</li> </ol>
Version 1.2	Februrary, 15, 2024	Add accessory assmby SOP for PSE board
Version 1.3	March, 22, 2024	Add Power Consumption .
Version 1.4	April, 24, 2024	Revise Fan Pinout
Version 1.5	August, 12, 2024	Update 3.14 40-Pin GPIO expansion
Version 1.6	September, 04, 2024	<ol style="list-style-type: none"> <li>1. M.2 E key 2230 / M.2 M key 2280 Remark Description</li> <li>2. Additionally provide information on the Product Specifications Dimensions</li> <li>3. OOB Board Connector Remark Description</li> <li>4. Power Control Button Remark Description</li> </ol>

		5. Force Recovery Button Remark Description
Version 1.7	Decoumber,25,2024	USB3.2 GEN1 bandwidth description
Version 1.8	June,20,2025	<ol style="list-style-type: none"> <li>1. Fan connector Description</li> <li>2. MIPI CSI-2 DPHY Lanes Remark Description</li> <li>3. SerDes (V-by-One® HS) Remark Description</li> <li>4. 40-Pin GPIO expansion Remark Description</li> <li>5 PSE Board Connector Remark Description</li> <li>6 Debug Port Remark Description</li> </ol>
Version 1.9	Sep. 15, 2025	Modify Product warranty
Version 2.0	March, 6, 2026	Modify MIPI Select GPIO06 Description.



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## Product Warranty

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## ESD Warning

Electronic components and circuits are sensitive to Electrostatic Discharge (ESD). When handling any circuit board assemblies including AVerMedia AVerMedia products, it is highly recommended that ESD safety precautions can be observed. ESD safe best practices can include, but are not limited to the following ones.

1. Leave the circuit board in the antistatic package until it is ready to be installed.
2. Use a grounded wrist strap when handling the circuit board. At a minimum, you need to touch a grounded metal object to dissipate any static charge, which may be present on you.
3. Avoid handling the circuit board in the carpeted areas.
4. Handle the board by the edges and avoid the contact  with the components.
5. Only handle the circuit boards in ESD safe areas, which may include ESD floor and/or table mats, wrist strap stations, and ESD safe lab coats.

## Safety Precaution:

1. All cautions and warnings on the device should be noted.
2. For safety consideration, do NOT open the device if not a qualified service staff.
3. Place the device on a solid surface during installation to prevent falls.
4. Keep the device away from humidity.
5. Do NOT leave this device in an un-controlled environment with temperatures beyond the device's permitted storage temperature to avoid damage.
6. All adaptors and cables supplied by AVerMedia are verified. Do NOT use any others not supplied by AVerMedia to avoid any malfunction or fires.
7. Make sure the power source matches the power rating of the device.
8. Place the power cord where people cannot step on it. Do not put anything on the power cord.
9. Always completely disconnect the power while the device is not usage or idle for a long time.
10. Disconnect the device from any AC supply before cleaning. While cleaning, use a damp cloth instead of liquid or spray detergents.

11. Make sure the device is installed near a power outlet and easy for accessible.
12. Do not cover the openings on the device to ensure optimal heat dissipation.
13. Watch out the heatsink or heat spreader of the device when the system is running.
14. Never pour any liquid into the openings. This could cause fire or electric shock.
15. The static electricity should be noted while installing any internal components. Consider to use a grounding wrist strap and put all electronic parts in static-shielded containers.

If the following situations occur, please contact our service personnel:

- (1) The device is dropped or damaged
- (2) Damaged power cord or plug
- (3) Exposure to moisture
- (4) Liquid intrusion into the device
- (5) Any obvious signs of damage displayed on the device
- (6) Device is not working as expected or in a manner as described in this manual

## ***1.0 Introduction***

AVerMedia AVerMedia D131 includes fully featured carrier board which is all developed for NVIDIA® Jetson Orin™ NX / Orin™ Nano modules. AVerMedia D131 provides not only the access to a great list of latest interfaces on NVIDIA® Jetson Orin™ NX/ Orin™ Nano modules but also 1 x GbE RJ-45 (Option PoE) & 40-pin expansion header as the function enrichment.

D131 provides one HDMI video output, four USB 3.1 ports, one GbE RJ-45 port (Option POE), 40-pin expansion header , and one Micro-B USB 2.0 port for recovery.

Operating with NVIDIA® Jetson Orin™ NX/ Orin™ Nano modules and the rich I/O functions, AVerMedia D131 is the perfect choice in building a compact, high performance AI edge computing platform for the intelligent video analytics applications.

## 1.1 Product Specifications

<b>Model</b>	<b>D131</b>	
<b>Type</b>	Carrier board	
<b>NVIDIA GPU SoC Module Compatibility</b>	NVIDIA® Jetson Orin™ NX/ Orin™ NANO module	
<b>Networking</b>	1x GbE RJ-45 (PoE option) 1x M.2. key E 2230 for Wi-Fi	
<b>Display Output</b>	1x HDMI (3840 x 2160 at 60Hz) for Orin NX, (3840 x 2160 at 30Hz) for Orin Nano	
<b>Temperature</b>	Operating temperature 0°C~70°C Option 0°C~60°C (PSE 802.3 AF) Storage temperature -40°C ~ 85°C Relative humidity 40 °C @ 95%, Non-Condensing	
<b>MIPI Camera Inputs</b>	2x 2 lane MIPI CSI-2, 15 pin FPC 1mm Pitch Connector 1x 4 lane MIPI CSI-2, 36 pin FPC 0.5mm Pitch Connector	
<b>USB</b>	1x USB 2.0 Micro-B for recovery 4x USB3.2 Gen1 (5G) type A (Total Bandwidth: 5Gbps)	
<b>Storage*</b>	1x M.2 key M 2280 for SSD	
<b>Expansion Header</b>	40-pin: 1x UART, 2x SPI, 2x I2C, 1x I2S, 6x GPIOs 1xCAN (3-pin terminal block) 1xDip Switch button 1x OOB supported by Allxon	
<b>Power requirement (PCN20230901-2)</b>	Voltage	DC 9~24V
	Current	DC IN Jack on board: 5A~2.6A
		ATX 4pin: 5A~2.6A
<b>Power adapter/Power Cord</b>	12V/5A adapter and US/JP/EU/UK/TW/AU/CN power cord (optional)	
<b>Fan Module</b>	Heat sink with fan (optional)	
<b>Buttons</b>	Power and Recovery	
<b>RTC Battery</b>	Support RTC battery and Battery Life Monitoring by MCU	
<b>Dimensions</b>	113mm x87mm(4.45" x 3.43"), weight : 97g	
<b>Certifications</b>	CE, FCC, KC	

\* D131 have one mSD slot, but NVIDIA Orin NX/Orin Nano doesn't support mSD function. It's SOM limitation

<b>Model</b>	<b>D131OXB/D131ONB</b>	
<b>Type</b>	Engineering kit	
<b>NVIDIA GPU SoC Module Compatibility</b>	NVIDIA® Jetson Orin™ NX 8G/16G module	
<b>Networking</b>	1x GbE RJ-45 (PoE optional) 1xM.2. key E 2230 for Wi-Fi	
<b>Display Output</b>	1x HDMI (3840 x 2160 at 60Hz) for Orin NX, (3840 x 2160 at 30Hz) for Orin Nano	
<b>Temperature</b>	Operating temperature 0°C~65°C Option 0°C~60°C (PSE 802.3 AF) Storage temperature -40°C ~ 85°C Relative humidity 40 °C @ 95%, Non-Condensing	
<b>MIPI Camera Inputs</b>	2x 2 lane MIPI CSI-2, 15 pin FPC 1mm Pitch Connector 1x 4 lane MIPI CSI-2, 36 pin FPC 0.5mm Pitch Connector	
<b>USB</b>	1x USB 2.0 Micro-B for recovery 4x USB3.2 Gen1 (5G) type A (Total Bandwidth: 5Gbps)	
<b>Storage*</b>	1x M.2. key M 2280 for SSD (256G installed)	
<b>Expansion Header</b>	40-pin: 1x UART, 2x SPI, 2x I2C, 1x I2S, 6xGPIOs 1xCAN (3-pin terminal block) 1xDip Switch button 1x OOB supported by Allxon	
<b>Power requirement (PCN20230901-2)</b>	Voltage	DC 9~24V
	Current	DC IN Jack on board: 5A~2.6A ATX 4pin: 5A~2.6A
<b>Power adapter/Power Cord</b>	12V/5A adapter and US/JP/EU/UK/TW/AU/CN power cord (optional)	
<b>Fan Module</b>	Heat sink with fan	
<b>Buttons</b>	Power and Recovery	
<b>RTC Battery</b>	Support RTC battery and Battery Life Monitoring by MCU	
<b>Dimensions</b>	157mm x 105mm x 85mm(6.18" x 4.13" x 3.35"), with stand (without antenna), weight : 415g	
<b>Certifications</b>	CE, FCC,KC	

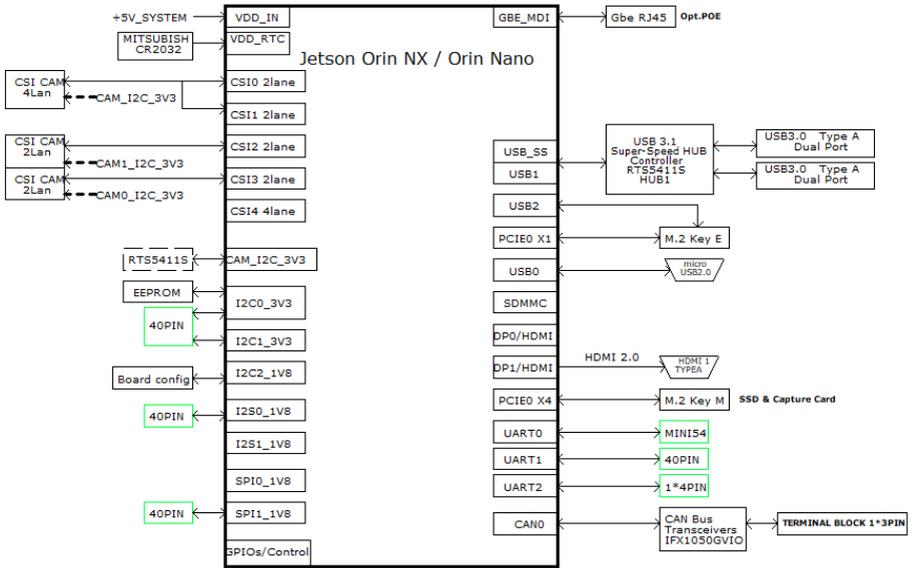
\* D131 have one mSD slot, but NVIDIA Orin NX/Orin Nano doesn't support mSD function. It's SOM limitation

## 1.2 Option Accessory

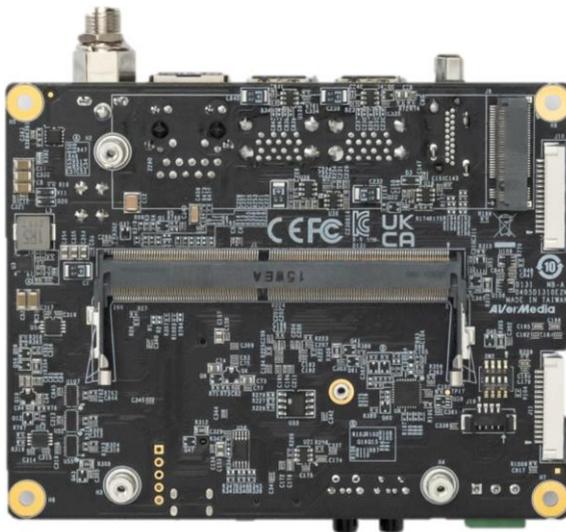
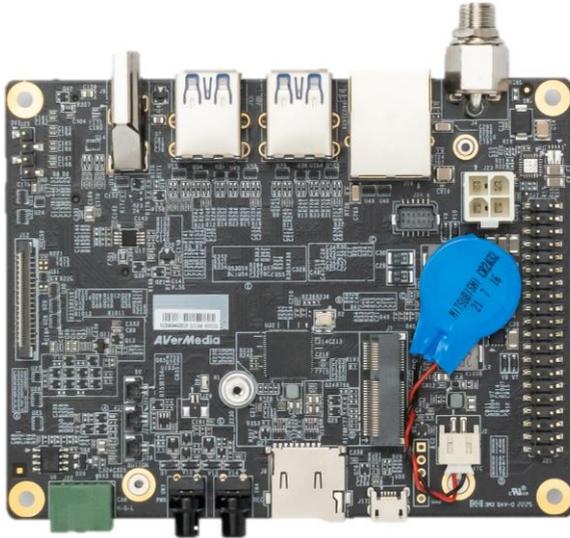
Item	D131/D131OXB/D131ONB
NVIDIA® Jetson	NVIDIA® Jetson Orin™ NX for D131OXB
Power adapter/Power Cord	12V/5A adapter and US/JP/EU/UK/TW/AU/CN power cord (optional)
MIPI Camera (internal I/O)	<ul style="list-style-type: none"> <li>● For 15 pin MIPI connector               <ol style="list-style-type: none"> <li>1. raspberry pi camera v2</li> <li>2. Manufacturer: APPRO.PHO                   <ul style="list-style-type: none"> <li>■ B-04: IMX179(8M)MIPI, 1080P(30fps)</li> <li>■ C-04: IMX290(2M)MIPI, 1080P(30fps)</li> <li>■ C-05: IMX290(2M)+ISP(YUV), 1080P(30fps)</li> </ul> </li> </ol> </li> <li>● For 36 pin MIPI connector               <ol style="list-style-type: none"> <li>1. Manufacturer: APPRO.PHO                   <ul style="list-style-type: none"> <li>■ B-03: IMX334(4K) MIPI, 4K(30fps), TBD</li> <li>■ A-06: IMX334(4K) V-by-One® HS x1,4K(30fps), TBD</li> </ul> </li> </ol> </li> </ul>

## 2.0 Product Overview

### 2.1 Block Diagram



## 2.2 Front View and Back View of Carrier board



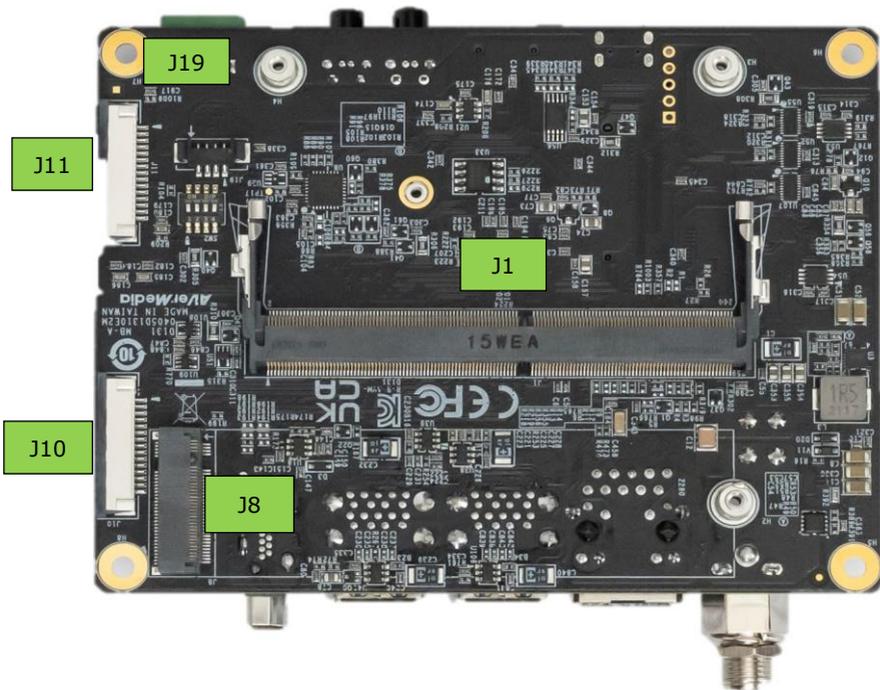
### 2.3 Connector Summary

J1	SO-DIMM 260-pin 90° SMD Socket(H-9.2mm) for Jetson Orin™ NX/ Orin™ Nano SOM
J2	External RTC Battery wafer
J4	DC power Jack with Lock
J6	HDMI output Type-A Vertical Side Connector (Female)
J7	M.2 E-Key Socket
J8	M.2 M-Key Socket
J10	FPC connector for 2-lane MIPI CSI-2
J11	FPC connector for 2-lane MIPI CSI-2
J12	FPC connector for 4-lane MIPI CSI-2
J13	USB 3.2 Gen1 Dual Port Type A Connector
J20	USB 3.2 Gen1 Dual Port Type A Connector
J16	RJ45 1Gb Ethernet connector (POE support optional)
J17	USB 2.0 Micro B Connector
J19	Fan Wafer
J21	40-pin Expansion
J22	CAN bus 3-pin terminal block with transceiver
J23	Input Power – 4.2mm Pitch 90° ATX Power 4P
J24	PSE Board Connector (Maximum 15W)
J25	Debug Port
J26	OOB Board Connector (5V)
J27	OOB Board Connector (Reset)
J28	OOB Board Connector (Power)
SW2	Dip Switch Button
SW3	Power Button w/LEDs
SW4	Recovery Button w/LEDs

## 2.4 Carrier Board Interface

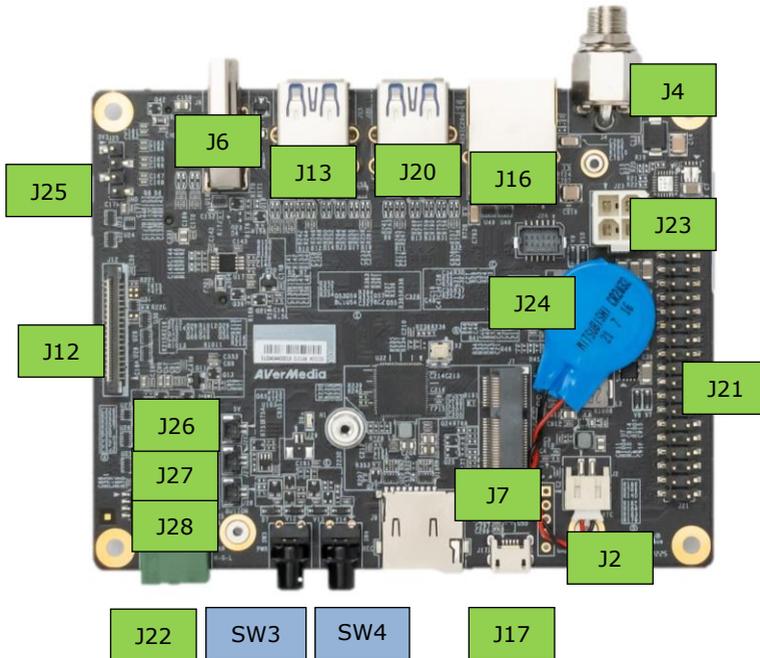
### Top View Interface

J1	SO-DIMM 260-pin 90° SMD Socket(H-9.2mm) for Jetson Orin™ NX/ Orin™ Nano SOM
J8	M.2 M-Key Socket
J10	FPC connector for 2-lane MIPI CSI-2
J11	FPC connector for 2-lane MIPI CSI-2
J19	Fan Wafer



## Bottom View Interface

J2	External RTC Battery wafer
J4	DC power Jack with Lock
J6	HDMI output Type-A Vertical Side Connector (Female)
J7	M.2 E-Key Socket
J12	FPC connector for 4-lane MIPI CSI-2
J13	USB 3.2 Gen1 Dual Port Type A Connector
J20	USB 3.2 Gen1 Dual Port Type A Connector
J16	RJ45 1Gb Ethernet connector (POE support optional)
J17	USB 2.0 Micro B Connector
J21	40-pin Expansion
J22	CAN bus 3-pin terminal block with transceiver
J23	Input Power – 4.2mm Pitch 90° ATX Power 4P
J24	PSE Board Connector (Maximum 15W)
J25	Debug Port
J26	OOB Board Connector (5V)
J27	OOB Board Connector (Reset)
J28	OOB Board Connector (Power)
SW3	Power Button w/LEDs
SW4	Recovery Button w/LEDs

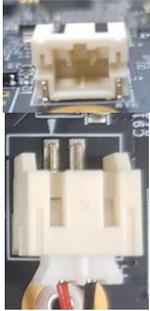


## 3.0 Feature Description

### 3.1 Jetson module Connector

Function	Provide connection with NVIDIA® Jetson Orin™ NX module	
Location	J1	
Type Description	SOCKET_DDR4 SO-DIMM_260PIN_90°	
Manufacturer and Part Number	Foxconn ASAA826-EASB0-7H	
Mating Connector	NVIDIA® Jetson Orin™ NX	
Pinout	Please refer to NVIDIA Jetson System-on-Module datasheet for pinout details.	
Remarks	<a href="https://developer.nvidia.com/embedded/downloads">https://developer.nvidia.com/embedded/downloads</a>	

### 3.2 RTC Battery Connector

Function	RTC battery for module		
Location	J2		
Type Description	2.0mm wire-to-board header 02P type		
Manufacturer and Part Number	Pinrex, 721-94-02TWR9		
Mating Connector	Tyu, TU2001HNO-02		
Pinout	Pin #	Description	
	PIN1	3V Power	
	PIN2	GND	
Remarks	RTC Battery: MITSUBISHI, CR2032 3V		

### 3.3 DC POWER JACK

Function	DC Power input with lock	
Location	J4	
Type Description	JACK_DC POWER_D2.5 mm_90°_DIP include nut and washer	

Manufacturer and Part Number	京政 JKCR DCD-020-105B							
Mating Connector	伸銘 SMCTS OD 5.5*2.5 mm DC 10mm (655-236)							
Pinout	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Center</td> <td>Power</td> </tr> <tr> <td>Outer ring</td> <td>GND</td> </tr> </tbody> </table>		Pin Number	Description	Center	Power	Outer ring	GND
	Pin Number		Description					
Center	Power							
Outer ring	GND							
Remarks	NA							

### 3.4 HDMI OUTPUT

Function	HDMI output connector	
Location	J6	
Type Description	HDMI Type-A female connector	
Manufacturer and Part Number	捷湧 EDL TECHNOLOGY CO. HM-FVD480B	
Mating Connector	Any HDMI standard Type-A interface cable or device.	
Pinout	Please refer to HDMI standard.	
Remarks	None	

### 3.5 M.2 E key 2230

Function	M.2 E key	
Location	J7	
Type Description	SOCKET_M.2-KEY E_75PIN_90°_SMD	
Manufacturer and Part Number	宏致_ACES 51748-07502-005_P0.5 mm-H8.5 mm	
Mating Connector	Any M.2 E key 2230 card standard interface device.	
Pinout	Please refer to M.2 E key card standard for the pinout details.	
Remarks	Support PCIe Gen4 x1 & USB 2.0 for Orin NX Support PCIe Gen3 x1 & USB 2.0 for Orin Nano	

### 3.6 M.2 M key 2280

Function	M.2 M key	
Location	J8	
Type Description	SOCKET_M.2-KEY M_75PIN_90°_SMD	
Manufacturer and Part Number	鴻海_FOXCONN 2E0BC21-S85BM-7H_P0.5 mm-H8.5 mm	
Mating Connector	Any M.2 M key 2280 card standard interface device.	
Pinout	Please refer to M.2 M key card standard for the pinout details.	
Remarks	Support PCIe Gen4 x4 for Orin NX Support PCIe Gen3 x4 for Orin Nano	

### 3.7 MIPI CSI-2 DPHY Lanes

Function	MIPI camera module connector			
Location	J10 , J11			
Type Description	WAFER_15PIN_1 mm_90°			
Manufacturer and Part Number	CHAMPWAY AFA07-S15FCA-HF_FPC ZIF-LOWER			
Mating Connector	2 Lane MIPI CSI-2 camera connector (15Pin)			
Pinout	J10			
	PIN#	Description	Module Pin#	Type/ Dir
	1	GND	-	Ground
	2	CSI3 D0 N	21	Input, MIPI
	3	CSI3 D0 P	23	Input, MIPI
	4	GND	-	Ground
	5	CSI3 D1 N	33	Input, MIPI
	6	CSI3 D1 P	35	Input, MIPI
	7	GND	-	Ground
8	CSI3 CLK N	27	Input, MIPI	

	9	CSI3 CLK P	29	Input, MIPI	
	10	GND	-	Ground	
	11	CAM0 PWDN	114	Output, 1.8V	
	12	CAM0_MCLK	116	Output, 1.8V	
	13	I2C CAM0_SCL	213	Output, 3.3V	
	14	I2C CAM0_SDA	215	Bidir, 3.3V	
	15	+3V3_SYSTEM	-	Power, 3.3V	
	J11				
		PIN#	Description	Module Pin#	Type/ Dir
		1	GND	-	Ground
		2	CSI2 D0 N	22	Input, MIPI
		3	CSI2 D0 P	24	Input, MIPI
		4	GND	-	Ground
		5	CSI2 D1 N	34	Input, MIPI
		6	CSI2 D1 P	36	Input, MIPI
	7	GND	-	Ground	
	8	CSI2_CLK_N	28	Input, MIPI	
	9	CSI2_CLK_P	30	Input, MIPI	
	10	GND	-	Ground	
	11	CAM1 PWDN	120	Output, 1.8V	
	12	CAM1_MCLK	122	Output, 1.8V	
	13	I2C_CAM1_SCL	213	Output, 3.3V	
	14	I2C_CAM1_SDA	215	Bidir, 3.3V	
	15	+3V3_SYSTEM	-	Power, 3.3V	
Remarks	<p>I2C_CAM0 &amp; I2C_CAM1 are both controlled by CAM_I2C of module, selected by GPIO06 of module(pin130),</p> <p>GPIO06 is high : CAM_I2C of module to I2C_CAM1</p> <p>GPIO06 is Low : CAM_I2C of module to I2C_CAM0</p>				

### 3.8 SerDes (V-by-One® HS)

Function	MIPI camera module connector	
Location	J12	
Type Description	WAFER_1*36PIN_0.5 mm_180°	
Manufacturer and Part Number	PINREX 979-44-93610A_ZIF FPC	
Mating Connector	4 Lane MIPI CSI-2 camera connector (36PIN)	

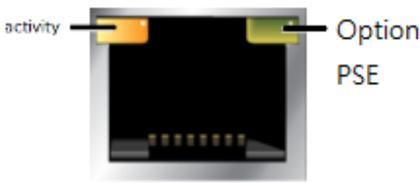
PIN OUT	<table border="1"> <thead> <tr> <th>PIN#</th> <th>Description</th> <th>Module Pin#</th> <th>Type/ Dir</th> </tr> </thead> <tbody> <tr><td>1</td><td>+5 SYSTEM</td><td>-</td><td>Power, 5V</td></tr> <tr><td>2</td><td>+5 SYSTEM</td><td>-</td><td>Power, 5V</td></tr> <tr><td>3</td><td>+1V8 SYSTEM</td><td>-</td><td>Power, 1.8V</td></tr> <tr><td>4</td><td>+3V3 SYSTEM</td><td>-</td><td>Power, 3.3V</td></tr> <tr><td>5</td><td>+3V3 SYSTEM</td><td>-</td><td>Power, 3.3V</td></tr> <tr><td>6</td><td>+3V3 SYSTEM</td><td>-</td><td>Power, 3.3V</td></tr> <tr><td>7</td><td>GND</td><td>-</td><td>Ground</td></tr> <tr><td>8</td><td>CSI0 D0 P</td><td>6</td><td>Input, MIPI</td></tr> <tr><td>9</td><td>CSI0 D0 N</td><td>4</td><td>Input, MIPI</td></tr> <tr><td>10</td><td>GND</td><td>-</td><td>Ground</td></tr> <tr><td>11</td><td>CSI0 CLK P</td><td>12</td><td>Input, MIPI</td></tr> <tr><td>12</td><td>CSI0 CLK N</td><td>10</td><td>Input, MIPI</td></tr> <tr><td>13</td><td>GND</td><td>-</td><td>Ground</td></tr> <tr><td>14</td><td>CSI0 D1 P</td><td>18</td><td>Input, MIPI</td></tr> <tr><td>15</td><td>CSI0 D1 N</td><td>16</td><td>Input, MIPI</td></tr> <tr><td>16</td><td>GND</td><td>-</td><td>Ground</td></tr> <tr><td>17</td><td>CSI1 D0 P</td><td>5</td><td>Input, MIPI</td></tr> <tr><td>18</td><td>CSI1 D0 N</td><td>3</td><td>Input, MIPI</td></tr> <tr><td>19</td><td>GND</td><td>-</td><td>Ground</td></tr> <tr><td>20</td><td>CSI1 D1 P</td><td>17</td><td>Input, MIPI</td></tr> <tr><td>21</td><td>CSI1 D1 N</td><td>15</td><td>Input, MIPI</td></tr> <tr><td>22</td><td>GND</td><td>-</td><td>Ground</td></tr> </tbody> </table>	PIN#	Description	Module Pin#	Type/ Dir	1	+5 SYSTEM	-	Power, 5V	2	+5 SYSTEM	-	Power, 5V	3	+1V8 SYSTEM	-	Power, 1.8V	4	+3V3 SYSTEM	-	Power, 3.3V	5	+3V3 SYSTEM	-	Power, 3.3V	6	+3V3 SYSTEM	-	Power, 3.3V	7	GND	-	Ground	8	CSI0 D0 P	6	Input, MIPI	9	CSI0 D0 N	4	Input, MIPI	10	GND	-	Ground	11	CSI0 CLK P	12	Input, MIPI	12	CSI0 CLK N	10	Input, MIPI	13	GND	-	Ground	14	CSI0 D1 P	18	Input, MIPI	15	CSI0 D1 N	16	Input, MIPI	16	GND	-	Ground	17	CSI1 D0 P	5	Input, MIPI	18	CSI1 D0 N	3	Input, MIPI	19	GND	-	Ground	20	CSI1 D1 P	17	Input, MIPI	21	CSI1 D1 N	15	Input, MIPI	22	GND	-	Ground
	PIN#	Description	Module Pin#	Type/ Dir																																																																																									
	1	+5 SYSTEM	-	Power, 5V																																																																																									
	2	+5 SYSTEM	-	Power, 5V																																																																																									
	3	+1V8 SYSTEM	-	Power, 1.8V																																																																																									
	4	+3V3 SYSTEM	-	Power, 3.3V																																																																																									
	5	+3V3 SYSTEM	-	Power, 3.3V																																																																																									
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	7	GND	-	Ground																																																																																									
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	17	CSI1 D0 P	5	Input, MIPI																																																																																									
	18	CSI1 D0 N	3	Input, MIPI																																																																																									
	19	GND	-	Ground																																																																																									
	20	CSI1 D1 P	17	Input, MIPI																																																																																									
21	CSI1 D1 N	15	Input, MIPI																																																																																										
22	GND	-	Ground																																																																																										

	23	N.C	-	-
	24	N.C	-	-
	25	N.C	-	-
	26	CAM4_PWDN	222	Output, 1.8V
	27	I2C0_ID_SDA	187	Bidir, 3.3V
	28	I2C0_ID_SCL	185	Output, 3.3V
	29	GND	-	Ground
	30	N.C	-	-
	31	N.C	-	-
	32	N.C	-	-
	33	N.C	-	-
	34	GND	-	Ground
	35	CAM4_MCLK	216	Input, MIPI
	36	GND	-	Ground
	Remarks	It needs to rework H/W to use CAM4_MCLK		

### 3.9 USB 3.2 Gen 1 Type-A Connector #1、#2、#3

Function	USB 3.2 Gen 1 Type-A connector #1 #2 #3	
Location	J13、J20	
Type Description	Dual-port USB 3.2 Gen 1 Type-A female connector	
Manufacturer and Part Number	Champway, CU3B-AFR15U-096H	
Mating Connector	Any USB 3.2 standard Type-A interface cable or device.	
Pinout	Please refer to USB 3.2 Gen 1 standard.	
Remarks	None	

## 3.10 Gigabit Ethernet Connector

Function	1Gb single-port Ethernet connector, used to connect to the host system.		 															
Location	J16																	
Type Description	RJ45 with integrated magnetics																	
Manufacturer and Part Number	MJ45-111QC4A-GY-S307																	
Mating Connector	Any standard 1Gb Ethernet mating connector can be applicable.																	
Pinout	Comply with Ethernet standards.																	
LED indicator	<table border="1"> <thead> <tr> <th colspan="2">Activity LED (left)</th> <th colspan="2">Link/Speed LED (right)</th> </tr> <tr> <th>Status</th> <th>Description</th> <th>Status</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Yellow Blinking</td> <td>Data transmission or receiving is occurring</td> <td>Green</td> <td>PSE Ready</td> </tr> <tr> <td>Off</td> <td>No data transmission or receiving is occurring</td> <td>Off</td> <td>W/O PSE</td> </tr> </tbody> </table>		Activity LED (left)		Link/Speed LED (right)		Status	Description	Status	Description	Yellow Blinking	Data transmission or receiving is occurring	Green	PSE Ready	Off	No data transmission or receiving is occurring	Off	W/O PSE
	Activity LED (left)		Link/Speed LED (right)															
	Status	Description	Status	Description														
	Yellow Blinking	Data transmission or receiving is occurring	Green	PSE Ready														
Off	No data transmission or receiving is occurring	Off	W/O PSE															
																		
Remarks	PSE Option.																	

## 3.11 Jetson platform/ USB 2.0 Micro B Connector

Function	BSP Installation as recovery mode	
Location	J17	
Type Description	USB micro-type B female connector	
Manufacturer and Part Number	Fullglory, FG-MCB-111440	
Mating Connector	Any USB standard Micro-type interface cable or device.	
Pinout	Please refer to USB Micro-type standard.	
Remarks	None	

### 3.12 Fan connector

Function	Fan Power Connector																						
Location	J19																						
Type Description	WAFER_1*4PIN_1.25 mm_90°																						
Manufacturer and Part Number	ACES 50271-0040N-001_BLACK																						
Mating Connector	ACES 50276-004H0H0-001																						
Pinout	<table border="1"> <thead> <tr> <th>Pin #</th> <th>Description</th> <th>Module Pin#</th> <th>Type/ Dir</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>GND</td> <td>-</td> <td>Ground</td> </tr> <tr> <td>2</td> <td>+5V Power</td> <td>-</td> <td>Power, 5V</td> </tr> <tr> <td>3</td> <td>FAN_TACH</td> <td>127</td> <td>Input, 5V</td> </tr> <tr> <td>4</td> <td>FAN_PWM</td> <td>230</td> <td>Output, 5V</td> </tr> </tbody> </table>			Pin #	Description	Module Pin#	Type/ Dir	1	GND	-	Ground	2	+5V Power	-	Power, 5V	3	FAN_TACH	127	Input, 5V	4	FAN_PWM	230	Output, 5V
Pin #	Description	Module Pin#	Type/ Dir																				
1	GND	-	Ground																				
2	+5V Power	-	Power, 5V																				
3	FAN_TACH	127	Input, 5V																				
4	FAN_PWM	230	Output, 5V																				
Remarks	None																						

### 3.13 40-Pin GPIO expansion

Function	General-purpose input/output																																																																																																																																	
Location	J21																																																																																																																																	
Type Description	Expansion I/O Connector																																																																																																																																	
Manufacturer and Part Number	212-92-20GBEL																																																																																																																																	
Mating Connector	40-Pin GPIO expansion																																																																																																																																	
Pinout	D131+Orin NX /Orin Nano																																																																																																																																	
	<table border="1"> <thead> <tr> <th>Address</th> <th>Pin Name</th> <th colspan="2">40-pin Index</th> <th>Pin Name</th> <th>Address</th> </tr> </thead> <tbody> <tr> <td></td> <td>3V3 VDC</td> <td>1</td> <td>2</td> <td>5V VDC</td> <td></td> </tr> <tr> <td rowspan="2">/dev/i2c-7</td> <td>I2C1_SDA</td> <td>3</td> <td>4</td> <td>5V VDC</td> <td></td> </tr> <tr> <td>I2C1_SCL</td> <td>5</td> <td>6</td> <td>GND</td> <td></td> </tr> <tr> <td>gpio492</td> <td>GPIO09_LS</td> <td>7</td> <td>8</td> <td>UART1_TXD_LS</td> <td>JetPack5: /dev/ttyTHS0</td> </tr> <tr> <td></td> <td>GND</td> <td>9</td> <td>10</td> <td>UART1_RXD_LS</td> <td>JetPack6: /dev/ttyTHS3</td> </tr> <tr> <td>gpio460 Only Output</td> <td>UART1_RTS_LS</td> <td>11</td> <td>12</td> <td>I2S0_SCLK_LS</td> <td>gpio398</td> </tr> <tr> <td>gpio470</td> <td>SPI1_SCK_LS</td> <td>13</td> <td>14</td> <td>GND</td> <td></td> </tr> <tr> <td>gpio433</td> <td>GPIO12_LS</td> <td>15</td> <td>16</td> <td>SPI1_CS1_LS</td> <td>gpio474</td> </tr> <tr> <td></td> <td>3V3 VDC</td> <td>17</td> <td>18</td> <td>SPI1_CS0_LS</td> <td>gpio473</td> </tr> <tr> <td>gpio483</td> <td>SPI0_MOSI_LS</td> <td>19</td> <td>20</td> <td>GND</td> <td></td> </tr> <tr> <td>gpio482</td> <td>SPI0_MISO_LS</td> <td>21</td> <td>22</td> <td>SPI1_MISO_LS</td> <td>gpio471</td> </tr> <tr> <td>gpio481</td> <td>SPI0_SCK_LS</td> <td>23</td> <td>24</td> <td>SPI0_CS0_LS</td> <td>gpio484</td> </tr> <tr> <td></td> <td>GND</td> <td>25</td> <td>26</td> <td>SPI0_CS1_LS</td> <td>gpio485</td> </tr> <tr> <td>/dev/i2c-1</td> <td>I2C0_ID_SDA</td> <td>27</td> <td>28</td> <td>I2C0_ID_SCL</td> <td>/dev/i2c-1</td> </tr> <tr> <td>gpio453</td> <td>GPIO01_LS</td> <td>29</td> <td>30</td> <td>GND</td> <td></td> </tr> <tr> <td>gpio454</td> <td>GPIO11_LS</td> <td>31</td> <td>32</td> <td>GPIO07_LS</td> <td>gpio389</td> </tr> <tr> <td>gpio391</td> <td>GPIO13_LS</td> <td>33</td> <td>34</td> <td>GND</td> <td></td> </tr> <tr> <td>gpio401</td> <td>I2S0_LRCK_LS</td> <td>35</td> <td>36</td> <td>UART1_CTS_LS</td> <td>gpio461 Only Input</td> </tr> <tr> <td>gpio472</td> <td>SPI1_MOSI_LS</td> <td>37</td> <td>38</td> <td>I2S0_SDIN_LS</td> <td>gpio400</td> </tr> <tr> <td></td> <td>GND</td> <td>39</td> <td>40</td> <td>I2S0_SDOUT_LS</td> <td>gpio399</td> </tr> </tbody> </table>					Address	Pin Name	40-pin Index		Pin Name	Address		3V3 VDC	1	2	5V VDC		/dev/i2c-7	I2C1_SDA	3	4	5V VDC		I2C1_SCL	5	6	GND		gpio492	GPIO09_LS	7	8	UART1_TXD_LS	JetPack5: /dev/ttyTHS0		GND	9	10	UART1_RXD_LS	JetPack6: /dev/ttyTHS3	gpio460 Only Output	UART1_RTS_LS	11	12	I2S0_SCLK_LS	gpio398	gpio470	SPI1_SCK_LS	13	14	GND		gpio433	GPIO12_LS	15	16	SPI1_CS1_LS	gpio474		3V3 VDC	17	18	SPI1_CS0_LS	gpio473	gpio483	SPI0_MOSI_LS	19	20	GND		gpio482	SPI0_MISO_LS	21	22	SPI1_MISO_LS	gpio471	gpio481	SPI0_SCK_LS	23	24	SPI0_CS0_LS	gpio484		GND	25	26	SPI0_CS1_LS	gpio485	/dev/i2c-1	I2C0_ID_SDA	27	28	I2C0_ID_SCL	/dev/i2c-1	gpio453	GPIO01_LS	29	30	GND		gpio454	GPIO11_LS	31	32	GPIO07_LS	gpio389	gpio391	GPIO13_LS	33	34	GND		gpio401	I2S0_LRCK_LS	35	36	UART1_CTS_LS	gpio461 Only Input	gpio472	SPI1_MOSI_LS	37	38	I2S0_SDIN_LS	gpio400		GND	39	40	I2S0_SDOUT_LS	gpio399
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Pin#	Signal Name	Module Pin #	Type/ Direction (Note.5)	Pin Drive or Power Pin Max Current	Power-on Default	Notes
1	+3V3_SYSTEM	-	Power	1A	-	1
2	+5V_SYSTEM	-	Power	1A	-	1
3	I2C1_SDA	191	Bidir OD	±2mA	z	2
4	+5V_SYSTEM	-	Power	1A	-	1
5	I2C1_SCL	189	Bidir OD	±2mA	z	2
6	GND	-	Ground	-	-	-
7	GPIO09_LS	211	Bidir	±20uA	pd	3
8	UART1_TXD_LS	203	Output	±24mA	pd	4
9	GND	-	-	-	-	-
10	UART1_RXD_LS	205	Input	±24mA	pd	4
11	UART1_RTS_LS	207	Output	±24mA	pd	4
12	I2S0_SCLK_LS	199	Bidir	±20uA	pd	3
13	SPI1_SCK_LS	106	Bidir	±20uA	pd	3
14	GND	-	Ground	-	-	-
15	GPIO12_LS	218	Bidir	±20uA	z	3
16	SPI1_CS1_LS	112	Bidir	±20uA	z	3
17	+3V3_SYSTEM	-	Power	1A	-	1
18	SPI1_CS0_LS	110	Bidir	±20uA	z	3
19	SPI0_MOSI_LS	89	Bidir	±20uA	pd	3
20	GND	-	Ground	-	-	-
21	SPI0_MISO_LS	93	Bidir	±20uA	pd	3
22	SPI1_MISO_LS	108	Bidir	±20uA	pd	3
23	SPI0_SCK_LS	91	Bidir	±20uA	pd	3
24	SPI0_CS0_LS	95	Bidir	±20uA	z	3
25	GND	-	Ground	-	-	-
26	SPI0_CS1_LS	97	Bidir	±20uA	z	3
27	I2C0_ID_SDA	187	Bidir OD	±2mA	z	2
28	I2C0_ID_SCL	185	Bidir OD	±2mA	z	2
29	GPIO01_LS	118	Bidir	±20uA	pd	3
30	GND	-	Ground	-	-	-
31	GPIO11_LS	216	Bidir	±20uA	pd	3
32	GPIO07_LS	206	Bidir	±20uA	z	3
33	GPIO13_LS	228	Bidir	±20uA	z	3
34	GND	-	Ground	-	-	-
35	I2S0_LRCK_LS	197	Bidir	±20uA	pd	3
36	UART1_CTS_LS	209	Input	±24mA	pd	4
37	SPI1_MOSI_LS	104	Bidir	±20uA	pd	3
38	I2S0_SDIN_LS	195	Bidir	±20uA	pd	3
39	GND	-	Ground	-	-	-

40	I2S0_SDOUT_LS	193	Bidir	±20uA	pd	3
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**Notes:**

1. This is current capability per power pin.
2. These pins are connected to the SoC directly. They are open-drain (either pulled up or driven low by the SoC when configured as outputs). The max drive that meets the data sheet VOL is ±2 mA.
3. These pins connect to TI TXB0108 level translators. Due to the design of these devices, the output drivers are very weak, so they can be overdriven by another connected device output for bidirectional support.
4. These pins connect to TI SN74LVC2T45 with H/W direction-control. The direction is unidirectional if these are configured as GPIOs.
5. In the Type/Dir column, directions indicate H/W ability, Bidir mean direction is controlled by S/W setting signal function.
6. All signals on the 40-pin header are 3.3V levels.

### 3.14 CAN Bus 3-pin terminal block with transceiver

Function	CAN Bus 3-pin terminal block with transceiver												
Location	J22												
Type Description	TERMINAL BLOCK_1*3PIN												
Manufacturer and Part Number	進聯 DECA, ME030-38103T, GREEN-P3.81 mm												
Mating Connector	進聯 DECA, MC420-38103Z												
Pinout	<table border="1"> <thead> <tr> <th>Pin #</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CANH</td> </tr> <tr> <td>2</td> <td>GND</td> </tr> <tr> <td>3</td> <td>CANL</td> </tr> </tbody> </table>	Pin #		Description	1	CANH	2	GND	3	CANL	<table border="1"> <tr> <td>3</td> <td>2</td> <td>1</td> </tr> </table>	3	2
Pin #	Description												
1	CANH												
2	GND												
3	CANL												
3	2	1											
Remarks	None												

### 3.15 ATX 4P

Function	ATX 4P		
Location	J23		
Type Description	WAFER_2*2PIN_4.2 mm_90°_DIP		
Manufacturer and Part Number	福軒 Fullglory FPWD-42R2-04NAT		
Mating Connector	Follow ATX 4pin power standard		
Pinout	Pin Number	Description	
	1	GND	
	2	GND	
	3	9-24V Power	
	4	9-24V Power	
Remarks	None		

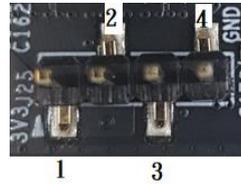
### 3.16 PSE Board Connector.

Function	PSE Board Connector.			
Location	J24			
Type Description	WAFER_2*6PIN_1 mm_180°_SMD			
Manufacturer and Part Number	ACES 50238-01241-001			
Pinout	PIN#	Description	Module Pin#	Type/ Dir
	1	VDD	-	Power Out, 12-24V
	2	GND	-	Ground
	3	VDD	-	Power Out, 12-24V
	4	GND	-	Ground
	5	54V	-	Power In, 54V+
	6	SYS_RST	239	Bidir, 3.3V

	7	54V	-	Power In, 54V+
	8	I2C1_SCL	189	Output, 3.3V
	9	54_N	-	Power In, 54V-
	10	I2C1_SDA	191	Bidir, 3.3V
	11	LED_PSE	-	Input, 3.3V
	12	+3V3_STANDBY	-	Power Out, 3.3V
Remarks	VDD is following DC_IN voltage LED_PSE low active, indicate PSE link is ready			

### 3.17 Debug Port

Function	Debug			
Location	J25			
Type Description	1*4PIN_2.54 mm_180°_SMD			
Manufacturer and Part Number	ACES 60240-00471-001			
Pinout	Pin #	Description	Module Pin#	Type/ Dir
	1	+3V3 Power	-	Power, 3.3V
	2	UART2_DEBUG_TXD	238	Input, 3.3V
	3	UART2_DEBUG_RXD	236	Output, 3.3V
	4	GND	-	Ground
Remarks	N.A			



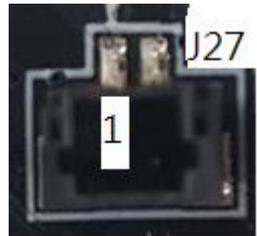
### 3.18 OOB Board Connector

Function	OOB Board Connector (5V)	
Location	J26	

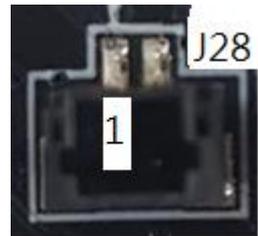


Type Description	WAFER_1*2PIN_1 mm_180°_SMD		
Manufacturer and Part Number	ACES 50228-00271-001		
Pinout	Pin #	Description	
	PIN1	5V	
	PIN2	GND	
Remarks	5V ouput for OOB daughter board		

Function	OOB Board Connector (Reset)		
Location	J27		
Type Description	WAFER_1*2PIN_1 mm_180°_SMD		
Manufacturer and Part Number	ACES 50228-00271-001		
Pinout	Pin #	Description	
	PIN1	SYS_RST*_AI	
	PIN2	GND	
Remarks	Low active		



Function	OOB Board Connector (Power)		
Location	J28		
Type Description	WAFER_1*2PIN_1 mm_180°_SMD		
Manufacturer and Part Number	ACES 50228-00271-001		
Pinout	Pin #	Description	
	PIN1	BUTTON_ON	
	PIN2	GND	
Remarks	Low active, function is same as SW3		



### 3.19 DIP Switch button

Function	Fan PWM controller/Auto Power on			
Location	SW2			
Type Description	4 SPST DIP switch			
Manufacturer and Part Number	DIPTRONICS IN OFF-SWITCHING 0.025A/24VDC			
Pinout	Location	Description	Switch ON	Switch Off
	1	Power On Mode Automatically restart after shutdown	Always Power On	X
	2	CAN0_Terminal	With 120 ohm Terminal	W/O 120 ohm Terminal
	3	Power-Up / Start-up Control When DC Plug In	ATX Mode (Power Button Press Required)	AT Mode (Automatic Start up En)
	4	PWM Fan Control	FAN Always ON	SW Controlled
Remark				

### 3.20 Power Control Button

Function	Power control button	
Location	SW3	
Type Description	Button	
Manufacturer and Part Number	Champway LS67AK-NBR-A-R2KA9	
Pinout	N/A	
Remark	<ul style="list-style-type: none"> <li>When D131 is in "Button Power Mode," pressing the button will initiate the boot-up sequence.</li> <li>When D131 is ON, pressing the button will display the Power Off GUI. If no operation is performed, the system will automatically power off in 60 seconds.</li> <li>When D131 is ON, holding the button for more than 5 seconds will force a full system power down.</li> </ul>	

## 3.21 Force Recovery Button

Function	Force recovery	
Location	SW4	
Type Description	Button	
Manufacturer and Part Number	Champway LS67AK-NBR-A-R2KA9	
Pinout	N/A	
Remark	<ul style="list-style-type: none"> <li>No function during normal operation.</li> <li>The SOM will enter recovery mode when held down during power ON</li> </ul>	

## Other Switches and Jumpers

Other switches and jumpers listed on the boards but not mentioned in this manual are reserved for the internal use by AVerMedia. They are not open to the client application.

## 4.0 Installation

1. Check and ensure all the external system power supplies are turned off.
2. Install the Micro USB2.0 cable to Jetson platform connector.
3. Press and hold on the Recover button.
4. Connect the power cord to the box PC.

### 4.1 BSP Setup Instructions

BSP (board support package) file: D1310X-R2.0.\*.tar.gz for D1310X

If you want to get the BSP download link, Please contact with AVerMedia FAE.

Default login username/password of the BSP is nvidia/nvidia

If you have difficulties to access the BSP download link, please visit AVerMedia website at <https://www.avermedia.com/professional/download>, or contact technical support at [https://www.avermedia.com/professional/technical\\_support](https://www.avermedia.com/professional/technical_support) or e-mail us at [eusupport@avermedia.com](mailto:eusupport@avermedia.com) for further assistance.

BSP Installation steps for NVIDIA Jetson board: (Important Note: Please backup your personal files before re-flashing BSP)

After you download the BSP file and put the file in a Linux PC, please refer to the steps below to re-flash BSP.

#### 1. Let the JETSON Orin NX initiate recovery mode.

You have to keep pressing "Recovery" button and then power on the NVIDIA Jetson board to initiate recovery mode.

When connecting a NVIDIA Jetson board to a Linux PC via a MicroUSB to USB cable, you can check kernel messages with `dmesg` command in the Linux PC.

Once you see these messages in the kernel messages, this means that the NVIDIA Jetson board is in the recovery mode.

```
[24685.229129] usb 1-7: Product: APX
```

```
[24685.229132] usb 1-7: Manufacturer: NVIDIA Corp
```

## 2. Using the commands below in the Linux PC to start re-flashing BSP.

```
$ sudo tar zxvf D1310X-R2.*.tar.gz
```

(file: D1310X-R2.\*.tar.gz for D1310XB)

```
$ cd JetPack_*/Linux_for_Tegra
```

```
$ sudo ./install.sh
```

The BSP is support flash to default nvme ssd or external USB dungle.

You can select whitch one you want to flash after launching the install script.

Note: sudo is required to re-flash the BSP.

## 5.0 Software

This section describes BSP's features for D1310XB

1. Support optional M.2 WI-FI/Bluetooth modules (Intel® Wireless-AC 9260), the manager UI of AC9260 WiFi/Bluetooth is located on the upper-right corner of Ubuntu desktop. It can be also controlled by nmcli/hcitool in command line.
2. Support SD slot (D1310X is not support SD card slot.)
3. Power Mode  
Power mode can be modified by the UI on the upper-right corner of Ubuntu or the following commands.

```
# get current power mode
$ sudo nvpmodel -q
# setup power mode
# where <x> is power mode number, please refer to
https://docs.nvidia.com/jetson/archives/r35.2.1/DeveloperGuide/index.html#page/Tegra%20Linux%20Driver%20Package%20Development%20Guide/clock\_power\_setup.html
# for more information
$ sudo nvpmodel -m <x>
```

\* Current default power mode:

D1310X: MODE 15W DESKTOP (2)

4. RTC Battery  
The following command can get RTC battery voltage.

```
$ sudo avt tool -a | grep -oP "AIN5.*[\K[^\]]*"
```

5. Fan Speed

The following commands can get PWM fan information.

```
# get Fan RPM value  
cat $(find /sys/devices/platform/gpio_tachometer/hwmon/ -name gpiotach_rpm -type f)
```

## 6. CAN Bus

There are one CAN Bus for D131OXB, see the following command for usage.

### (1) Enable and setup CAN Bus

```
# 1. Enable CAN Bus  
$ sudo modprobe can  
$ sudo modprobe can-raw  
$ sudo modprobe mttcan  
# 2. Setup CAN Bus  
$ sudo ip link set can0 type can bitrate 500000 dbitrate 2000000 berr-reporting on fd  
on restart-ms 100  
$ sudo ip link set can0 up
```

### (2) Receive and Send

```
# Receive  
$ candump can0  
  
# Send  
$ cansend can0 <can frame>
```

\* where:

<can\_frame> is CAN Bus frame message, see `cansend --help` for more detail.

7. MIPI CSI Camera

There are 2x 2-lane and 1x 4-lane MIPI CSI camera supported on D131OXB, for current supported products type are listing as below:

\* IMX219 (2-lane)

\* IMX477 (2-lane): IMX477 requires a hardware modification in order to work with Jetson Platforms. Please refer to

[https://developer.ridgerun.com/wiki/index.php/Raspberry\\_Pi\\_HQ\\_camera\\_IMX477\\_Linux\\_driver\\_for\\_Jetson#Compatibility\\_with\\_NVIDIA.C2.AEJetson.E2.84.A2\\_Platforms](https://developer.ridgerun.com/wiki/index.php/Raspberry_Pi_HQ_camera_IMX477_Linux_driver_for_Jetson#Compatibility_with_NVIDIA.C2.AEJetson.E2.84.A2_Platforms)

\* IMX179 (2-lane)

\* IMX290 (2-lane)

\* IMX290ISP (2-lane)

\* IMX334 (4-lane)

\* IMX334THCV (4-lane)

Test Command:

```
> Raspberry pi v2 :
No width height framerate
0 3264 2464 21
1 3264 1848 28
2 1920 1080 30
3 1640 1232 30
4 1280 720 60

$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=0 !
'video/x-raw(memory:NVMM), width=(int)3264, height=(int)2464,
format=(string)NV12, framerate=(fraction)21/1' ! nvvidconv ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=1 !
'video/x-raw(memory:NVMM), width=(int)3264, height=(int)1848,
format=(string)NV12, framerate=(fraction)28/1' ! nvvidconv ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=2 !
'video/x-raw(memory:NVMM), width=(int)1920, height=(int)1080,
format=(string)NV12, framerate=(fraction)30/1' ! nvvidconv ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=3 !
'video/x-raw(memory:NVMM), width=(int)1640, height=(int)1232,
format=(string)NV12, framerate=(fraction)30/1' ! nvvidconv ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=4 !
'video/x-raw(memory:NVMM), width=(int)1280, height=(int)720,
format=(string)NV12, framerate=(fraction)60/1' ! nvvidconv ! xvimagesink -e

Multiple:
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=0 !
'video/x-raw(memory:NVMM), width=(int)3264, height=(int)2464,
format=(string)NV12, framerate=(fraction)21/1' ! nvvidconv ! xvimagesink -e &
gst-launch-1.0 nvarguscamerasrc sensor-id=1 sensor-mode=0 !
'video/x-raw(memory:NVMM), width=(int)3264, height=(int)2464,
format=(string)NV12, framerate=(fraction)21/1' ! nvvidconv ! xvimagesink -e &
```

```
> Raspberry pi v3 (imx477):
No width height framerate
0 4032 3040 30
1 1920 1080 60
```

```
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 !
"video/x-raw(memory:NVMM),width=4032,height=3040,framerate=30/1" !
nvvidconv ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 !
"video/x-raw(memory:NVMM),width=1920,height=1080,framerate=60/1" !
nvvidconv ! xvimagesink -e
Multiple:
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 !
"video/x-raw(memory:NVMM),width=1920,height=1080,framerate=60/1" !
nvvidconv ! xvimagesink -e & gst-launch-1.0 nvarguscamerasrc sensor-id=1 !
"video/x-raw(memory:NVMM),width=1920,height=1080,framerate=60/1" !
nvvidconv ! xvimagesink -e &
```

```
> IMX179 :
No width height framerate
0 3280 2464 15
1 1920 1080 30
2 3280 1698 30
3 2096 1084 30
4 1640 1232 30
5 820 616 30
6 820 616 60
```

```
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=0 !
'video/x-raw(memory:NVMM), width=(int)3280, height=(int)2464,
format=(string)NV12, framerate=(fraction)15/1' ! nvvidconv ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=1 !
'video/x-raw(memory:NVMM), width=(int)1920, height=(int)1080,
format=(string)NV12, framerate=(fraction)30/1' ! nvvidconv ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=2 !
'video/x-raw(memory:NVMM), width=(int)3280, height=(int)1698,
format=(string)NV12, framerate=(fraction)30/1' ! nvvidconv ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=3 !
'video/x-raw(memory:NVMM), width=(int)2096, height=(int)1084,
format=(string)NV12, framerate=(fraction)30/1' ! nvvidconv ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=4 !
'video/x-raw(memory:NVMM), width=(int)1640, height=(int)1232,
format=(string)NV12, framerate=(fraction)30/1' ! nvvidconv ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=5 !
```

```
'video/x-raw(memory:NVMM), width=(int)820, height=(int)616,
format=(string)NV12, framerate=(fraction)30/1' ! nvvidconv ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=6 !
'video/x-raw(memory:NVMM), width=(int)820, height=(int)616,
format=(string)NV12, framerate=(fraction)60/1' ! nvvidconv ! xvimagesink -e
Control Focus:
$ v4l2-ctl -d /dev/video2 --set-ctrl=focus_manual=1
$ v4l2-ctl -d /dev/video2 --set-ctrl=focus_manual=1024

> IMX290 :
No width height framerate
0 1948 1096 30
1 1948 1096 60

$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=0 !
'video/x-raw(memory:NVMM), width=(int)1948, height=(int)1096,
format=(string)NV12, framerate=(fraction)30/1' ! nvvidconv ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=1 !
'video/x-raw(memory:NVMM), width=(int)1948, height=(int)1096,
format=(string)NV12, framerate=(fraction)60/1' ! nvvidconv ! xvimagesink -e

> IMX290ISP :
No width height framerate
0 1920 1080 25/30/50/60
1 1280 960 25/30/50/60
2 1280 720 25/30/50/60
0 800 600 25/30/50/60
1 640 480 25/30/50/60
2 640 360 25/30/50/60

$ gst-launch-1.0 v4l2src io-mode=4 device=/dev/video0 do-timestamp=true !
'video/x-raw, width=1920, height=1080, framerate=30/1, format=UYVY' !
xvimagesink sync=false
$ gst-launch-1.0 v4l2src io-mode=4 device=/dev/video0 do-timestamp=true !
'video/x-raw, width=1280, height=720, framerate=30/1, format=UYVY' ! xvimagesink
sync=false
$ gst-launch-1.0 v4l2src io-mode=4 device=/dev/video0 do-timestamp=true !
'video/x-raw, width=1280, height=960, framerate=30/1, format=UYVY' ! xvimagesink
sync=false
$ gst-launch-1.0 v4l2src io-mode=4 device=/dev/video0 do-timestamp=true !
'video/x-raw, width=1920, height=1080, framerate=60/1, format=UYVY' !
xvimagesink sync=false
$ gst-launch-1.0 v4l2src io-mode=4 device=/dev/video0 do-timestamp=true !
'video/x-raw, width=1280, height=720, framerate=60/1, format=UYVY' ! xvimagesink
sync=false
```

```

$ gst-launch-1.0 v4l2src io-mode=4 device=/dev/video0 do-timestamp=true !
'video/x-raw, width=1280, height=960, framerate=60/1, format=UYVY' ! xvimagesink
sync=false

> IMX334 :
  No width height framerate
  0 3864 2180 30
  1 3864 2180 60
  2 1944 1090 30
  3 1944 1090 60

$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=0 !
'video/x-raw(memory:NVMM), width=(int)3864, height=(int)2180,
format=(string)NV12, framerate=(fraction)30/1' ! nvvidconv ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=1 !
'video/x-raw(memory:NVMM), width=(int)3864, height=(int)2180,
format=(string)NV12, framerate=(fraction)60/1' ! nvvidconv ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=2 !
'video/x-raw(memory:NVMM), width=(int)1944, height=(int)1090,
format=(string)NV12, framerate=(fraction)30/1' ! nvvidconv top=5 bottom=1085
left=12 right=1932 ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=3 !
'video/x-raw(memory:NVMM), width=(int)1944, height=(int)1090,
format=(string)NV12, framerate=(fraction)60/1' ! nvvidconv top=5 bottom=1085
left=12 right=1932 ! xvimagesink -e

> IMX334 V-by-One (imx334thcv):
  No width height framerate
  0 3864 2180 30
  1 1944 1090 30
  2 1944 1090 60

$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=0 !
'video/x-raw(memory:NVMM), width=(int)3864, height=(int)2180,
format=(string)NV12, framerate=(fraction)30/1' ! nvvidconv ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=1 !
'video/x-raw(memory:NVMM), width=(int)1944, height=(int)1090,
format=(string)NV12, framerate=(fraction)30/1' ! nvvidconv top=5 bottom=1085
left=12 right=1932 ! xvimagesink -e
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 sensor-mode=2 !
'video/x-raw(memory:NVMM), width=(int)1944, height=(int)1090,
format=(string)NV12, framerate=(fraction)60/1' ! nvvidconv top=5 bottom=1085
left=12 right=1932 ! xvimagesink -e

```

## 8. GPIO usage

➤ For JetPack4.x

(1) Output: (e.g. gpio232)

```
$ sudo su
$ gpio_id=232
$ echo $gpio_id > /sys/class/gpio/export
$ echo out > /sys/class/gpio/gpio$gpio_id/direction
$ echo 1 > /sys/class/gpio/gpio$gpio_id/value # HIGH
$ echo 0 > /sys/class/gpio/gpio$gpio_id/value # LOW
```

(2) Input

```
$ sudo su
$ gpio_id=232
$ echo $gpio_id > /sys/class/gpio/export
$ echo in > /sys/class/gpio/gpio$gpio_id/direction
$ cat /sys/class/gpio/gpio$gpio_id/value # 1: HIGH, 0: LOW
```

(3) Disable

```
$ sudo su
$ gpio_id=232
$ echo $gpio_id > /sys/class/gpio/unexport
```

➤ For JetPack5.x

(1) Output: (e.g. gpio 492)

```
$ sudo su
$ gpio_id=492
$ sudo cat /sys/kernel/debug/gpio | grep ${gpio_id}
# output:
  gpio-492 (PX.04          )
$ gpio_index=PX.04
$ echo ${gpio_id} > /sys/class/gpio/export
$ echo out > /sys/class/gpio/${gpio_index}/direction
$ echo 1 > /sys/class/gpio/${gpio_index}/value # HIGH
$ echo 0 > /sys/class/gpio/${gpio_index}/value # LOW
```

(2) Input

```
$ sudo su
$ gpio_id=492
$ sudo cat /sys/kernel/debug/gpio | grep ${gpio_id}
```

```
# output:
gpio-492 (PX.04          )
$ gpio_index=PX.04
$ echo ${gpio_id} > /sys/class/gpio/export
$ echo in > /sys/class/gpio/${gpio_index}/direction
$ cat /sys/class/gpio/${gpio_index}/value      # 1: HIGH,  0: LOW
```

(3) Disable

```
$ sudo su
$ gpio_id=492
$ echo ${gpio_id} > /sys/class/gpio/unexport
```

For L4T (Linux for Tegra) BSP support and the other software support associated with NVIDIA® Jetson Orin NX, please visit AVerMedia website to contact our technical support function. (<https://www.avermedia.com/tw/support/contact>)

## 9. Force Recovery Mode

USB 3.1/ Jetson platform port of D131OXB can be used to re-program NVIDIA® Jetson Orin NX by using the other host system running NVIDIA Jetpack, as the procedure described below.

1. Power off the system. Ensure the system power must be completely OFF, instead of staying in the suspend mode or the sleep mode.
2. Connect a USB cable from Jetson platform USB port to the other host system which will be used to re-program the new system file into NVIDIA® Jetson Orin NX.
3. Press and hold down Force Recovery Button and then power on the carrier board.
4. After three seconds, release Force Recovery Button.
5. NVIDIA® Orin NX will show up on the USB list of the host system as a new NVIDIA target device.

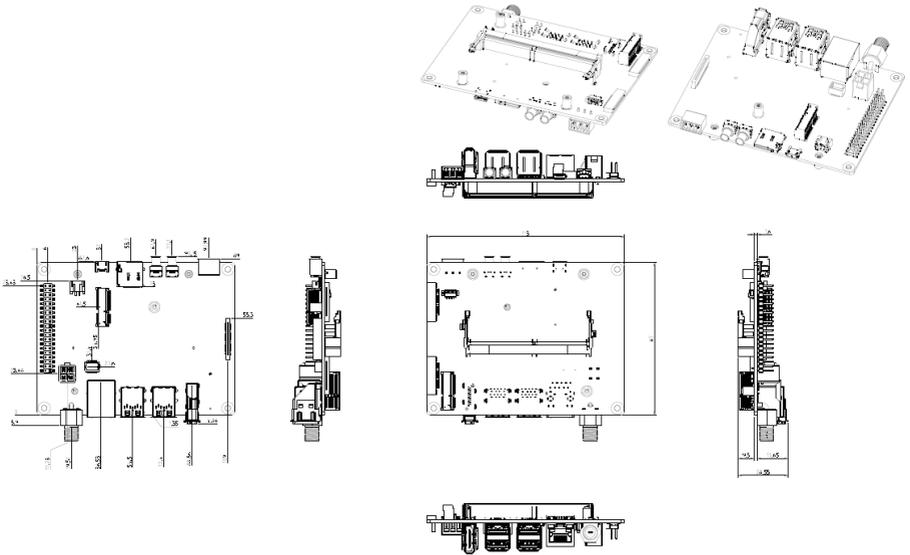
After the system software is updated successfully, please ensure to power off the system. A clean power-on will then revert Jetson platform port back to the host mode

### 10. Power Consumption

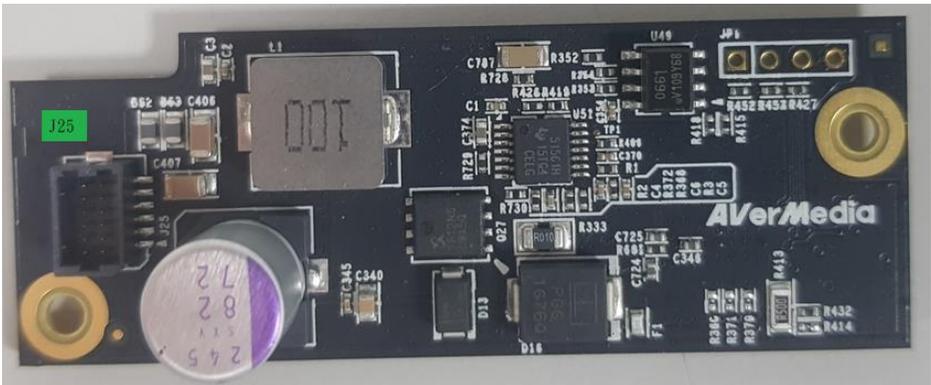
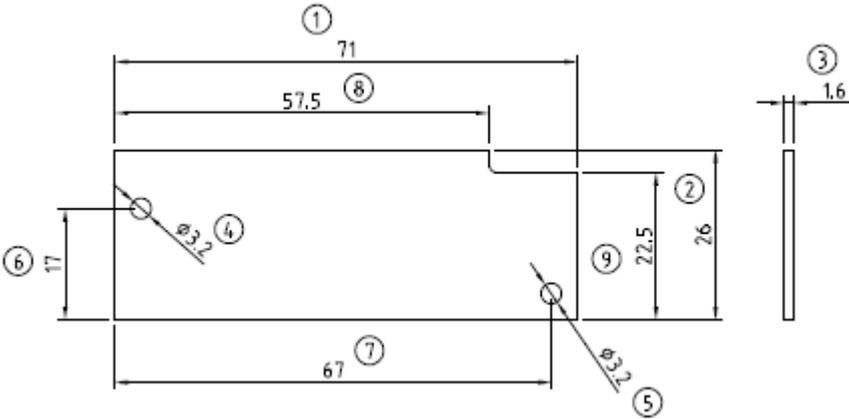
Item Description	Power Consumption
<p>Theoretical Maximum System Power Consumption</p>	<p>D131OXB-16G Power Consumption: 6.48W to 33W</p> <p>D131OXB-8G Power Consumption: 6.48W to 28W</p> <p>D131ONB-8G Power Consumption: 6.48W to 23W</p> <p>D131ONB-4G Power Consumption: 6.48W to 18W</p> <p>The condition is connected to USB3.2*4,USB*1,MIPI 2 lane*2, 4 lane *1, SSD 256G*1,Wifi 9260*1, HDMI*1, with CPU/ GPU full loading. (maximum power consumption up to 60W based on adapter )</p>
<p>Typical System Power Consumption</p>	<p>The power consumption under the normal operating mode is depending on the application software running with NVIDIA® Orin™ NX</p>

## 6.0 Dimension Drawings

### 6.1 Dimension Drawings of carrier board



## 6.2 Dimension Drawing of PSE Board



## 7.0 Accessory Drawings

### 7.1 Fan Module/ Adapter/ Power Cord

Fan Module for Orin NX

- Rated Voltage: 5V
- Operating Voltage Range: 3.5V~5.5V
- Rated Speed: 7000RPM±10%  
(Testing Speed After Continuous 3 Minute Operation At Ambient Temperature Of 25°C)
- Life Expectancy: 70,000hours at 40°C (WITH 15~65% RH)
- Bearing Type: Two Ball

版次	修改內容敘述	日期
Δ	發行	2022/01/04

白色端子頭，請注意風扇出線方向，線長125±10mm

4-M2牙，牙距4mm以上

Grease 7762, L22.26x20.16x0.25mm

**註釋：**

- 1.此圖所標有組合重製之尺寸，各零件之詳細資訊請參照3D與零件CAD檔案。
- 2.所有尺寸公差皆依美國國家標準進行制定。
- 3.產品所使用之材料必須符合RoHS規範。
- 4.生產時零件必須量測所有尺寸(FAD)確認是否正確，在出貨前確認此產品的批次是否正確。
- 5.包裝零件生產承認程序(PPAP)，需做FAI/CPK檢驗以評估產品製程能力(CP,CPK)。
- 6.△標記為關鍵尺寸，請依照應料檢驗標準進行製程能力(CP,CPK)檢驗。
- 7.其他尺寸及沒有標註尺寸的特徵皆依圖面公差對照表加以管控。
- 8.產品外觀清潔度影響並且不允許有雜質、土、油、塗層，或其他污漬物。
- 9.產品必須包裝好以確保在裝載時的止損。
- 10.裝載時應儘量減少沖擊，並依照標規之尺寸格式提供圖面(圖面並送客戶規範)。
- 11.裝載在外包裝的邊角必須經過修整或採用符合規範且符合工業標準規範，且應不可大於材料厚度的10%。
- 12.包裝規格：紙箱，一盒20 PCS，共計1000PCS/箱。

**線序參考，朝向參照風扇規格書**

PWM  
Sense

17

OP06B09095  
95D0001A01

QR Code: 0P09  
OP06B0909595D0001A01

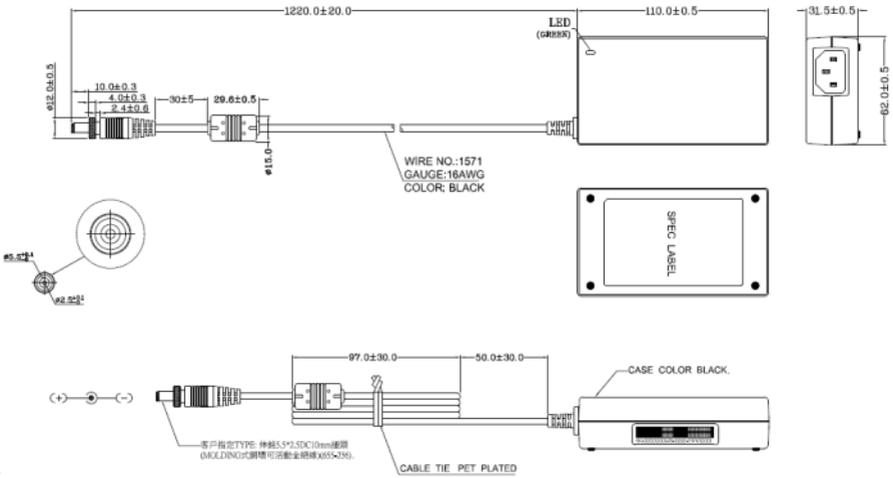
生產QR Code

附件配件: Spring Screw\*4 pcs

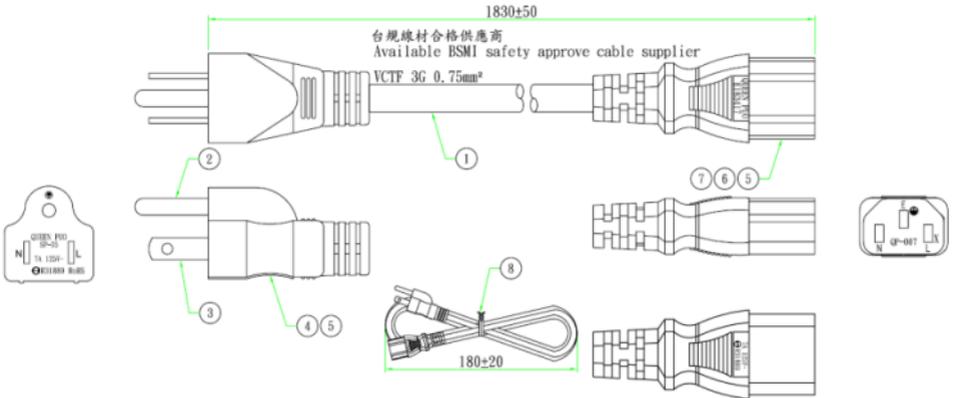
5

公稱		品號		品名	
6-10	M4	OP06B09095	風扇	OP06B09095	成品圖
10-50	M2.5				
50-100	M3				
100+	M2.5				

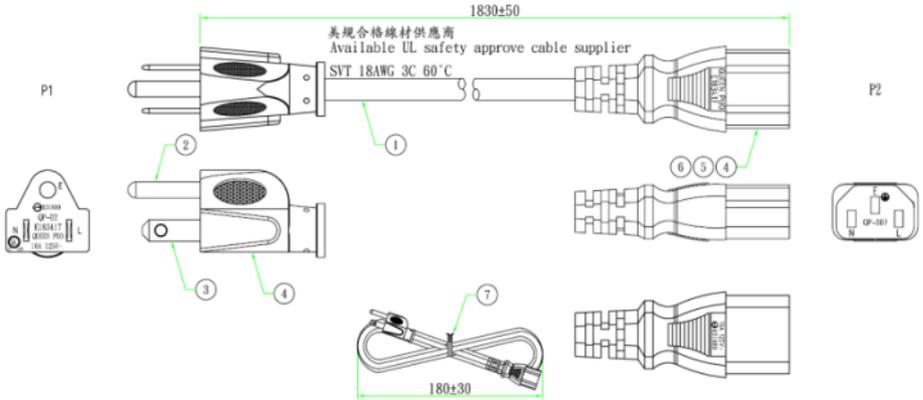
Power Adapter 04131HGOUANK



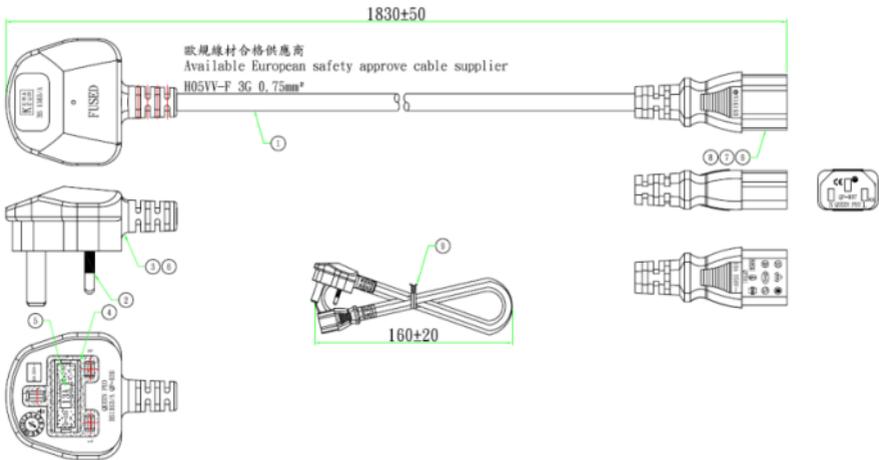
## 064APowerBrx-IPD (TW version)



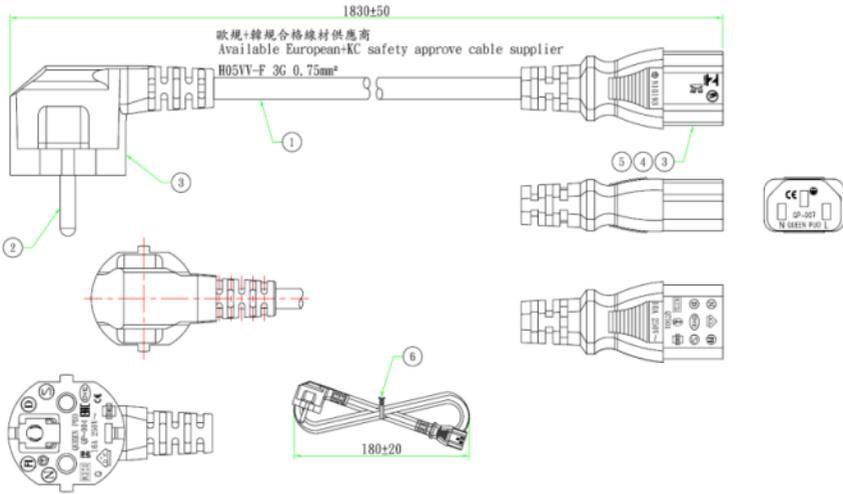
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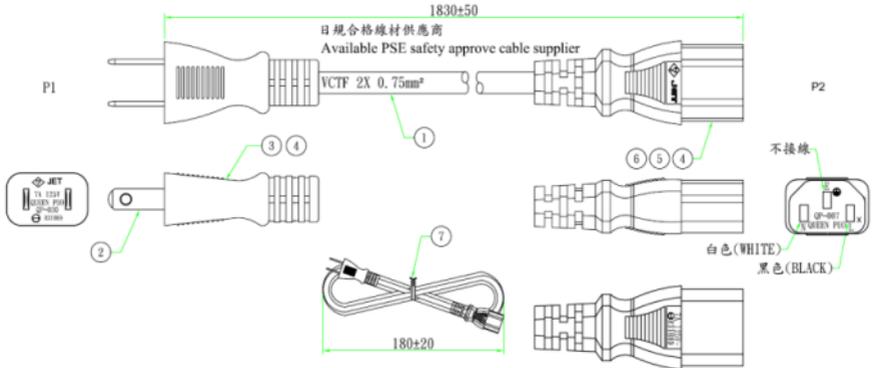
## 064APOWBRW-IPD (UK version)



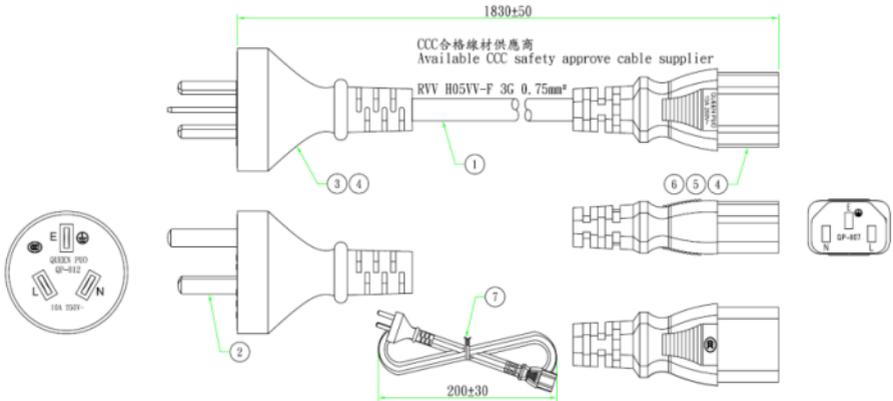
## 064APOWBR5-IPD (EU version)



## 064APOWBRSL (JP version)



## 064APOWBR4-IPD (CN version)



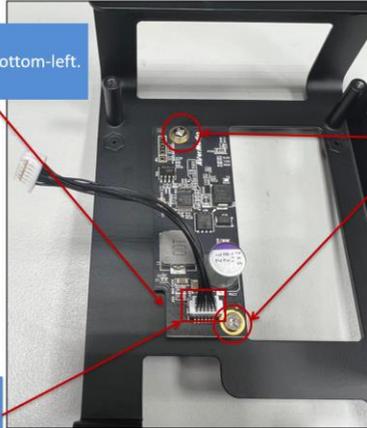
## 8.0 Accessory Assembly SOP

### 8.1 PSE board

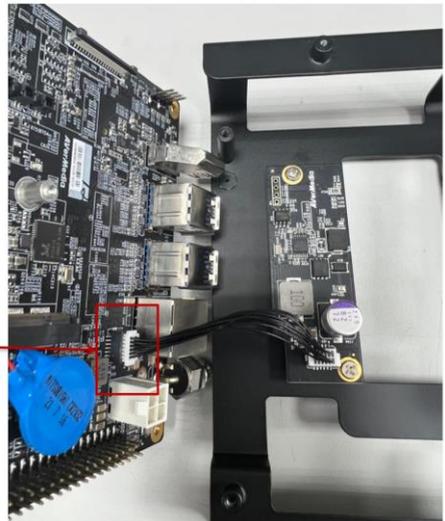
Step 1.  
Place the PCB with the notch facing bottom-left.  
PCB缺口朝左下

Step 2.  
Lock 2 silver screws  
鎖附2個螺絲

Step 3.  
Connect the wire to the connector  
插上CABLE接頭

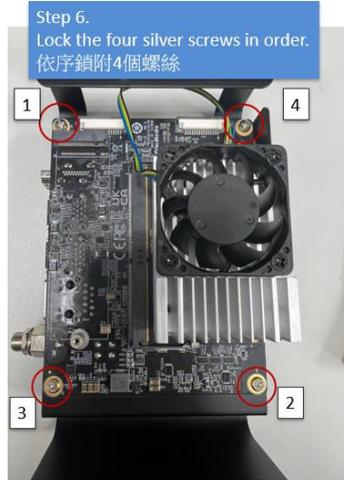


Step 4.  
Insert the cable connector into the motherboard.  
插上CABLE接頭到主板





**Step 5.**  
Store the wires within the space between the large capacitor and the external connectors, ensuring they do not extend beyond the red box to avoid damaging the wires.  
將線材收納在大電容與外部連接器間的空間，勿超出紅框範圍以免壓傷線材



**Step 7.**  
Assembly complete. PoE functionality can be used directly after installing the BSP.  
組裝完成，安裝完BSP後可直接使用PoE功能