

AVerMedia D115W Carrier board and D115WOXB Box PC

Applies to NVIDIA® Jetson Orin NX module



AVerMedia Technologies, Inc.

No. 135, Jian 1st Rd., Zhonghe Dist., New Taipei City 23585, Taiwan

Tel: 886-2-2226-3630

Fax: 886-2-3234-4842

Sales and Marketing: [Contact](#)

Technical Support: [Professional User](#)

Table of Contents

<i>Preface</i>	3
<i>1.0 Introduction</i>	9
1.1 Product Specifications	10
1.2 OPTION ACCESSORY	12
<i>2.0 Product Overview</i>	13
2.1 Block Diagram for Orin NX	13
2.2 Front View and Back View of Carrier board	14
2.3 Front View and Three-Quarter View of BoxPC (TBU)	15
2.4 Connector Summary	18
<i>3.0 Feature Description</i>	21
3.1 Jetson module Connector	21
3.2 RTC Battery Connector	21
3.3 ATX 4P	22
3.4 DC POWER JACK	22
3.5 HDMI OUTPUT	23
3.6 M.2 E key 2230	23
3.7 M.2 M key 2280	23
3.8 MIPI CSI-2 DPHY Lanes	24
3.9 USB 3.2 Gen 2 Type-A Connector #1 , #2, #3	25
3.10 Gigabit Ethernet Connector	25
3.11 USB type C Connector	26
3.12 20-Pin GPIO expansion	28
3.13 Fan Power connector	29

3.14	Power button function wafer	30
3.15	DIP Switch	30
3.16	power Button	31
3.17	Recover Button	31
3.18	WDT function	31
3.19	PSE Board Connector	30
4.0	<i>Installation</i>	31
4.1	BSP Setup Instructions	31
4.2	Software	34
4.3	Force Recovery Mode	40
5.0	<i>Power Consumption</i>	41
6.0	<i>Accessory Drawings</i>	42
6.1	Fan Module/ Adapter/ Power Cord	42
7.0	<i>Dimension Drawings and Assembly Drawings</i>	47
7.1	Dimension Drawings of carrier board	47
7.2	Dimension Drawing of Box PC	49

Preface

Disclaimer

The information contained in this user manual, including but not limited to any product specification is subject to change without notice. AVerMedia assumes no liability for any damages incurred directly or indirectly from any technical or typographical errors or omissions contained herein or for discrepancies between the product and the user manual.

Technical Support

If you experience the difficulty after reading this manual and/or using the product, please contact the reseller from which you purchased the product. In most cases, the reseller can help you with the product installation and the difficulty you encountered.

In case the reseller is not able to resolve your problem, our highly capable global technical support team can certainly assist you. Our technical support section is available 24 hours a day and 7 days a week through our website, with the click [here](#). For more contact information, you may find it in the section of AVerMedia Global Offices.

Contact Enquiry

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

Download User Manual

Please click the link [here](#) to download the file of this user manual from AVerMedia website.

Revision History

Revision	Date	Updates
V1.0	Sep. 28, 2023	1 st Released
V1.1	Nov. 29, 2023	Update PSE board operating temperature. Update USB port information Update Raspberry pi v2 settings
V1.2	Jan. 31, 2024	Update Ethernet LED indicator information
V1.3	June 20, 2025	1. Change Block Diagram 2. Change from raspberry pi camera v2 IMX 219/ raspberry pi camera v3 to raspberry pi imx219 & imx477 (V2)
V1.4	Sep 15, 2025	Modify Product Warranty



ELITE
PARTNER

AVerMedia Global Offices

<https://www.avermedia.com/contact-us>

Headquarters

Taiwan Office

No. 135, Jian 1st Rd., Zhonghe Dist., New Taipei
City 23585, Taiwan
Tel: +886-2-2226-3630
Fax: +886-2-3234-4842
Sales & Marketing: Contact
Technical Support: Home users / Professional
users

The Americas

USA Office

754 Charcot Avenue, San Jose, CA 95131
Sales & Marketing: Contact
Technical Support: Home users / Professional
users

Brazil Office

Sales & Marketing: Contact
Technical Support: Home users / Professional
users

Latin America Office

Sales & Marketing: Contact
Technical Support: Home users / Professional
users

Europe

Head Office EU

AVT Solutions GmbH
Hanauer Landstrasse 291 B 60314 Frankfurt
Hessen
Germany
Technical Support: Home users / Professional
users

Russia Office

Sales & Marketing: Contact
Technical Support: Home users / Professional
users
Professional Solutions Support Tel:
+7 (925) 834-0310

Spain Office

AVerMedia Information (Spain) S.L.
Ronda de Poniente no. 16 Planta Baja, Puerta K
28760 Tres cantos, Madrid, Spain
Spain:
Sales & Marketing: Contact
Technical Support: Home users / Professional
users

Asia-Pacific

China Office

Room 1510, No.488, Hitech Plaza, South Wuning
Rd., Jingan District, Shanghai, China
Tel: +86-021-5298 7985
Fax: +86-021-5298 7981
Sales & Marketing: Contact
Technical Support: Home users / Professional
users

India Office

Sales & Marketing: Contact
Technical Support: Home users / Professional
users

Japan Office

10F TOWA akihabara Bldg.1-8 Akihabara, Taito-
ku, Tokyo, 110-0006 Japan
Sales & Marketing: Contact
Technical Support: Home users / Professional
users

Thailand Office

Sales & Marketing: Contact
Technical Support: Home users / Professional
users

Korea Office

Sales & Marketing: Contact
Technical Support: Home users / Professional
users

Vietnam Office

SF, No. 596 Nguyen Dinh Chieu St., Ward 3,
District 3, HCM City, Vietnam
Tel: +84-28-22 539 211
Fax: +84-28-22 539 210
Sales & Marketing: Contact
Technical Support: Home users / Professional
users



Product Warranty

Please refer to [Support | Warranty And Rma Services | AVerMedia](#)

Copyright Notice

The information contained in this document is subject to change without notice. AVerMedia shall not be liable for errors contained herein or for incidental consequential damages in connection with the furnishing, performance, or use of this material. This document contains proprietary information that is protected by copyright. All rights are reserved. No part of this document may be photocopied, reproduced, or translated to another language without the prior written consent by AVerMedia.

Trademark Acknowledgement

AVerMedia acknowledges all the trademarks, registered trademarks, and/or copyrights referred to in this document as the property of their respective owners. Not listing all possible trademarks or copyright acknowledgments does not constitute the lack of acknowledgment to the rightful owners of the trademarks and copyrights mentioned in this document.

ESD Warning

Electronic components and circuits are sensitive to Electrostatic Discharge (ESD). When handling any circuit board assemblies including 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 ^{TOP}_{SEP} 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 stuff.
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 D115W/D115WOXB is a fully featured carrier board/box PC designed for NVIDIA® Jetson Orin NX modules. AVerMedia provides access to a wide range of latest interfaces on NVIDIA® Jetson Orin NX modules.

D115W/D115WOXB provide HDMI video output , three USB 3.2 ports, two GbE RJ-45 port, 20-pin expansion header, and one USB 2.0 type C port for recovery.

Operating with NVIDIA® Jetson Orin NX modules and the rich I/O functions, AVerMedia D115W/D115WOXB is the perfect choice in building a compact, high performance AI edge computing platform for the intelligent video analytics applications.

1.1 Product Specifications

Model	D115W	
Type	Carrier board	
NVIDIA GPU SoC Module Compatibility	NVIDIA® Jetson Orin NX module NVIDIA® Jetson Orin NANO module (TBD)	
Networking	2x GbE RJ-45 1x M.2, key E 2230 for wifi	
Display Output	1x HDMI 4Kp60 for Orin NX 1x HDMI 4Kp30 for Orin Nano (TBD)	
Temperature	Operating temperature -40°C~85°C Option -40°C~ 60°C (PSE 802.3AF) (TBD) Storage temperature -40°C ~ 85°C Relative humidity 40 °C @ 95%, Non-Condensing	
MIPI Camera Inputs	2x 4 lane MIPI CSI-2, 22 pin FPC 0.5mm Pitch Connector	
USB	3x USB 3.2 Type-A 1x USB 2.0 type C for recovery	
Storage	1x M.2, key M 2280 for SSD	
Expansion Header (EU terminal block)	20 pins: 2x I2C, 2x UART, 4x GPIOs, 1xCAN	
Power requirement	Voltage	DC 9~24V
	Current	DC IN Jack on board: 5A Max
		ATX 4pin: 5A Max
Power Cord	US/JP/EU/UK/TW/AU/CN	
Thermal solution	Heat sink with fan (optional)	
Buttons	Power and Recovery	
RTC Battery	Support RTC battery and Battery Life Monitoring by MCU	
PCB/Electronics Mechanical Info	120mm (W) x 90mm (L) x 26.5mm (H) Weight: 125 g	
Certifications	CE, FCC, VCCI, KC (TBA)	

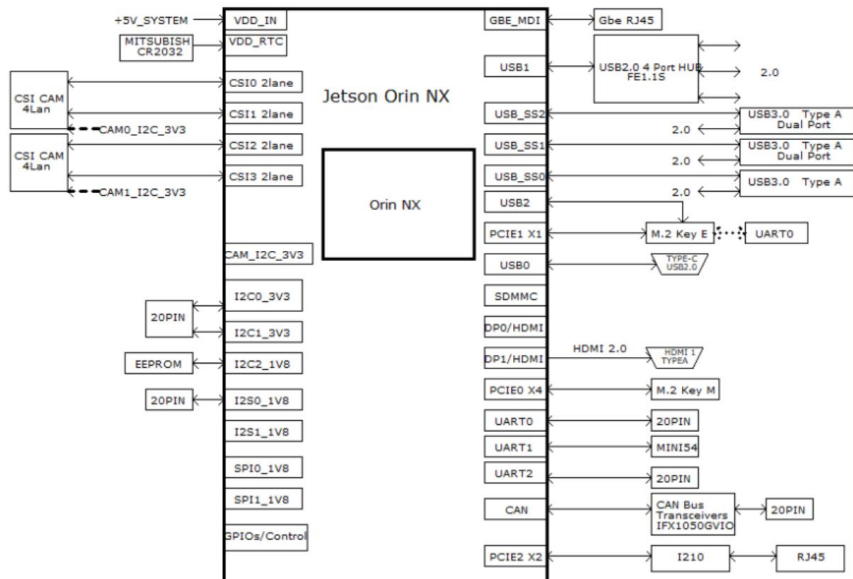
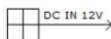
Model	D115WOXB	
Type	Box PC	
NVIDIA GPU SoC Module Compatibility	NVIDIA® Jetson Orin NX 16G/8G module	
Networking	2x GbE RJ-45 1xM.2. key E 2230 for wifi	
Display Output	1x HDMI 4Kp60 for Orin NX	
Temperature	Operating temperature -25°C~60°C (TBD) Option -40°C~ 40°C (PSE 802.3AF) (TBD) Storage temperature -40°C ~ 85°C Relative humidity 40 °C @ 95%, Non-Condensing	
MIPI Camera Inputs (Internal)	2x 4 lane MIPI CSI-2, 22 pin FPC 0.5mm Pitch Connector	
USB	3x USB 3.2 Type-A (1 x internal) 1x USB 2.0 type C for recovery	
Storage	1xM.2. key M 2280 for SSD	
Expansion Header (EU terminal block)	20 pins: 2x I2C, 2x UART, 4x GPIOs, 1xCAN	
Power requirement	Voltage	DC 9~24V
	Current	DC IN Jack on board: 5A Max
		ATX 4pin: 5 A Max
Power Cord	US/JP/EU/UK/TW/AU/CN	
Thermal solution	Fanless solution	
Buttons	Power and Recovery	
RTC Battery	Support RTC battery and Battery Life Monitoring by MCU	
PCB/Electronics Mechanical Info	W: 126mm (W) x 96mm (L) x 74mm (H) Weight: 1kg	
Certifications	CE, FCC, VCCI, KC (TBA)	

1.2 OPTION ACCESSORY

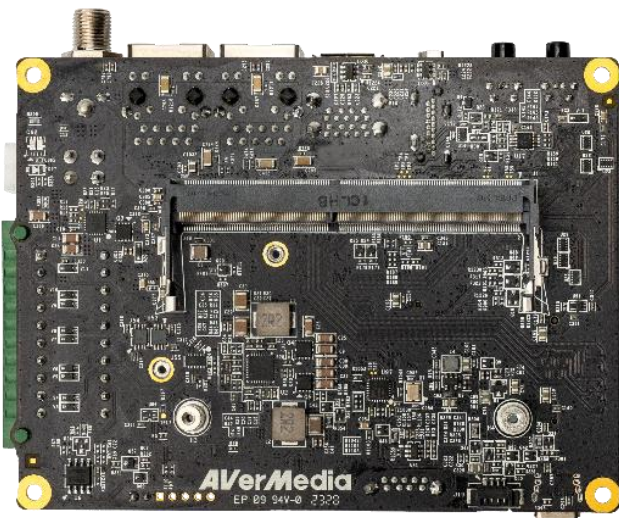
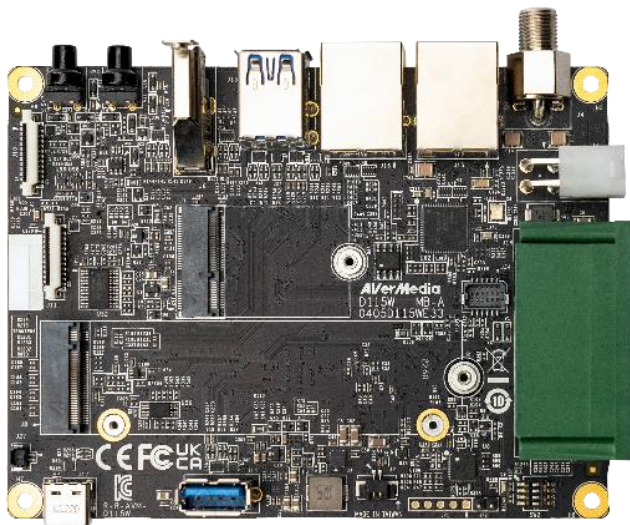
Item	D115W/D115WOXB
NVIDIA® Jetson	NVIDIA® Jetson Orin NX for D115WOXB
Power cord	EU/JP/TW/US/CN/UK/AU
MIPI Camera (internal I/O)	For 22 pin MIPI connector - Raspberry pi imx219 & imx477 (V2) - Manufacturer: APPRO.PHO ■ B-04: IMX179(8M)MIPI, 1080P(30fps) ■ C-04: IMX290(2M)MIPI, 1080P(30fps) ■ C-05: IMX290(2M)+ISP(YUV), 1080P(30fps)

2.0 Product Overview

2.1 Block Diagram for Orin NX



2.2 Front View and Back View of Carrier board



2.3 Front View and Three-Quarter View of BoxPC (TBU)

Left view



Right view



Top view



Front view



Rear view



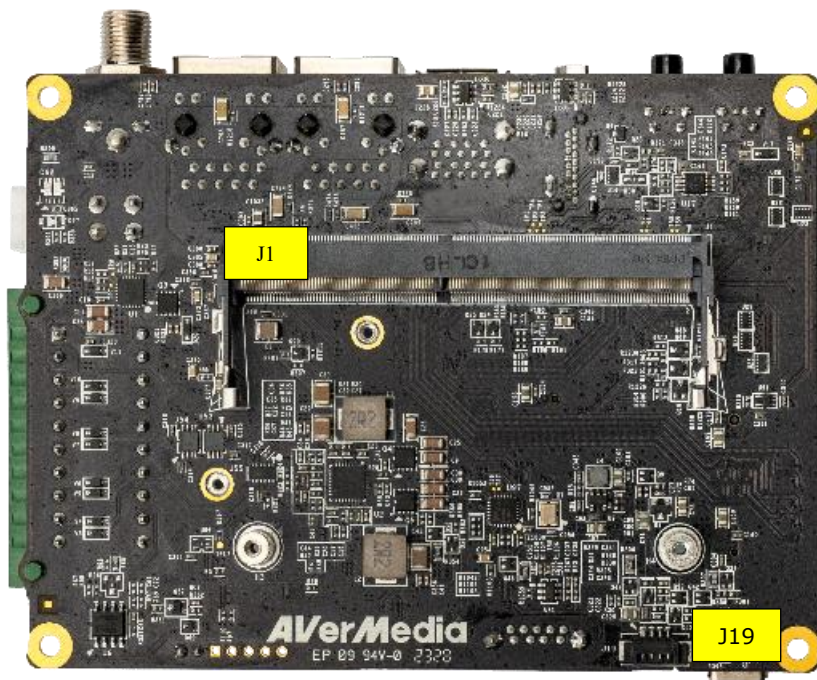
Bottom view



2.4 Connector Summary

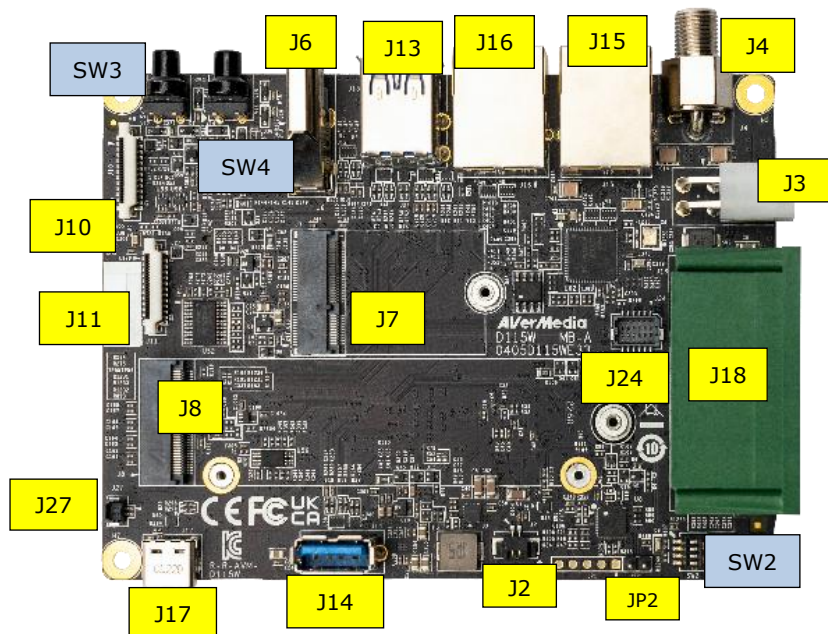
Top View Interface

J1	SO-DIMM 260-pin 90° SMD Socket(H-9.2mm)
J19	Fan Wafer



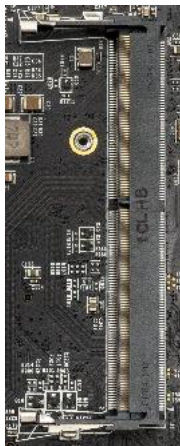
Bottom View Interface

J2	External RTC Battery wafer
J3	Input Power – 4.2mm Pitch 90° ATX Power 4P
J4	OD 5.5/2.5 DC Jack with Lock
J6	HDMI Type-A Vertical Side Connector with lock (Female)
J7	M.2 E-Key Socket
J8	M.2 M-Key Socket
J10	FPC connector for 4-lane MIPI CSI-2
J11	FPC connector for 4-lane MIPI CSI-2
J13	USB 3.2 Gen2 Dual Port Type A Connector
J14	USB 3.2 Gen2 Type A Connector
J15	Gigabit Ethernet Connector w/LEDs
J16	Gigabit Ethernet Connector w/LEDs (PSE Option)
J17	USB type C
J18	20-pin Expansion Terminal Block
SW2	DIP switch
SW3	Power Button w/LEDs
SW4	Recovery Button w/LEDs
JP2	WDT function setting
J27	Power button wafer
J24	PSE Board Connector (Maximum 15W)

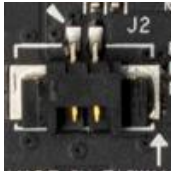


3.0 Feature Description

3.1 Jetson module Connector

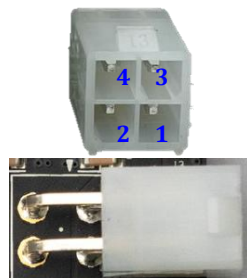
Function	Provide connection with NVIDIA® Jetson SOM	
Location	J1	
Type Description	SOCKET_DDR4 SO-DIMM_260PIN_90°	
Manufacturer and Part Number	Foxconn ASAA826-EASB0-7H	
Mating Connector	NVIDIA® Jetson Orin NX/Orin Nano	
Pinout	Please refer to NVIDIA Jetson System-on-Module datasheet for pinout details.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

3.2 RTC Battery Connector

Function	RTC battery for module			
Location	J2			
Type Description	1.25mm wire-to-board header 02P type			
Manufacturer and Part Number	宏致_ACES 50271-00201-001			
Mating Connector	Molex 51021-8602			
Pinout	Pin #	Description		
	PIN1	GND		
	PIN2	3V Power		
Remarks	RTC Battery: KTS, CR2032 3V			

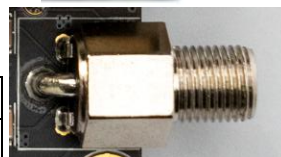
3.3 ATX 4P

Function	ATX 4P	
Location	J3	
Type	WAFER_2*2PIN	
Description		
Manufacturer and Part Number	FPWD-42R2-04NAT	
Mating Connector	power plug cable	
Pinout	Pin Number	Description
	1	GND
	2	GND
	3	9-24V Power
	4	9-24V Power
Remarks	None	



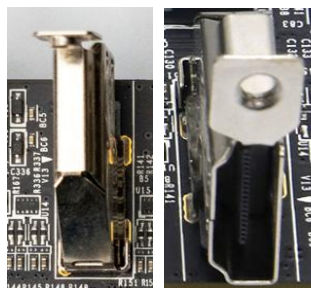
3.4 DC POWER JACK

Function	DC power input	
Location	J4	
Type	2.5 mm power jack	
Description		
Manufacturer and Part Number	JKCR, DCD 020 105B	
Mating Connector	Any 2.5mm power plug cable	
Pinout	Pin Number	Description
	1	9-24V Power
	2	GND
	3	GND
Remarks	NA	



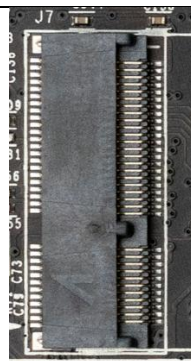
3.5 HDMI OUTPUT

Function	HDMI output connector
Location	J6
Type Description	HDMI Type-A female connector
Manufacturer and Part Number	Compupack, ACNHM220028-001
Mating Connector	Any HDMI standard Type-A interface cable or device.
Pinout	Please refer to HDMI standard.
Remarks	None



3.6 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 51750-0750P-005
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	None



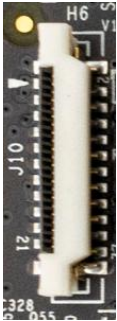
3.7 M.2 M key 2280

Function	M.2 M key
Location	J8
Type Description	SOCKET_M.2-KEY M_75PIN_90°_SMD
Manufacturer and Part Number	宏致_ACES 51757-0750C-012_P0.5 mm-H5.5 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	None	

3.8 MIPI CSI-2 DPHY Lanes

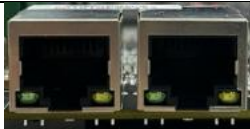
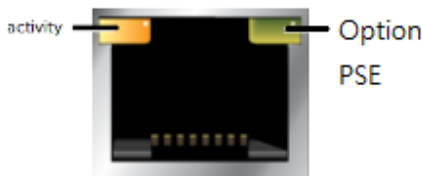
Function	MIPI camera module connector			
Location	J10 , J11			
Type Description	ZIF FPC Conn._22PIN_0.5 mm_90°			
Manufacturer and Part Number	宏致_ACES 50554-02241-003			
Mating Connector	4 Lane MIPI CSI-2 camera connector (22Pin)			
Pinout	J10			
	PIN#	Description	PIN#	Description
	Pin1	+3V3_MIPI	Pin12	CSI1_D0_N
	Pin2	CAM0_I2C_SDA	Pin13	GND
	Pin3	CAM0_I2C_SCL	Pin14	CSI0_CLK_P
	Pin4	GND	Pin15	CSI0_CLK_N
	Pin5	CAM0_MCLK	Pin16	GND
	Pin6	CAM0_/PWDN	Pin17	CSI0_D1_P
	Pin7	GND	Pin18	CSI0_D1_N
	Pin8	CSI1_D1_P	Pin19	GND
	Pin9	CSI1_D1_N	Pin20	CSI0_D0_P
	Pin10	GND	Pin21	CSI0_D0_N
	Pin11	CSI1_D0_P	Pin22	GND
	J11			
	PIN#	Description	PIN#	Description
	Pin1	+3V3_MIPI	Pin12	CSI3_D0_N
	Pin2	CAM1_I2C_SDA	Pin13	GND
	Pin3	CAM1_I2C_SCL	Pin14	CSI2_CLK_P
	Pin4	GND	Pin15	CSI2_CLK_N
	Pin5	CAM1_MCLK	Pin16	GND
	Pin6	CAM1_/PWDN	Pin17	CSI2_D1_P
	Pin7	GND	Pin18	CSI2_D1_N
	Pin8	CSI3_D1_P	Pin19	GND
	Pin9	CSI3_D1_N	Pin20	CSI2_D0_P
	Pin10	GND	Pin21	CSI2_D0_N
	Pin11	CSI3_D0_P	Pin22	GND

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

Function	USB 3.2 Gen 2 Type-A connector #1 #2 #3	J13 
Location	J13, J14	
Type Description	Dual-port USB 3.2 Gen 2 Type-A female connector	
Manufacturer and Part Number	冠泰, CU3B-AFR15U-096H (J13) 鉸運, KY-U3A-F107A (J14)	
Mating Connector	Any USB 3.2 standard Type-A interface cable or device.	
Pinout	Please refer to USB 3.2 Gen 2 standard.	J14 
Remarks	None	

3.10 Gigabit Ethernet Connector

Function	1Gb single-port Ethernet connector, used to connect to the host system.	
Location	J15, J16	
Type Description	RJ45 with integrated magnetics	
Manufacturer and Part	建倚, MJ45-111QC4A-GY-S307 1G-LEFT(G)+RIGHT(Y)-DOWN	

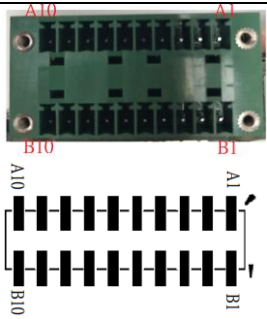
Number																		
Mating Connector	Any standard 1Gb Ethernet mating connector can be applicable.																	
Pinout	Comply with Ethernet standards.																	
LED indicator	<table><tr><th colspan="2">Activity LED (left)</th><th colspan="2">Link/Speed LED (right)</th></tr><tr><th>Status</th><th>Description</th><th>Status</th><th>Description</th></tr><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></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	J15 is via I210 Ethernet controller and J16 is directly from NVIDIA Jetson SOM. PSE(Maximum 15W) Option: J16																	

3.11 USB type C Connector

Function	BSP Installation as recovery mode	
Location	J17	
Type Description	JACK_USB_C TYPE(F)_90°_PIP-L1.45 mm	
Manufacturer and Part Number	宏致 ACES, 57988-0240D-001	
Mating Connector	Any USB type C standard interface cable or device.	

Pinout	Please refer to USB type C standard.	
Remarks	None	

3.12 20-Pin GPIO expansion

Function	General-purpose input/output																																																																	
Location	J18																																																																	
Type Description	Expansion I/O Connector																																																																	
Manufacturer and Part Number	ME252-35020-1																																																																	
Mating Connector	20-Pin GPIO expansion																																																																	
Pinout	<table><thead><tr><th>Address</th><th>Pin Name</th><th colspan="2">20-pin Index (Devkit Index)</th><th>Pin Name</th><th>Address</th></tr></thead><tbody><tr><td></td><td>5V</td><td>A1</td><td>B1</td><td>3V3</td><td></td></tr><tr><td></td><td>GND</td><td>A2</td><td>B2</td><td>GND</td><td></td></tr><tr><td rowspan="2">/dev/ttyTCU0</td><td>UART2_TXD_3V3</td><td>A3</td><td>B3</td><td>I2C1_SDA</td><td rowspan="2">/dev/i2c-7</td></tr><tr><td>UART2_RXD_3V3</td><td>A4</td><td>B4</td><td>I2C1_SCL</td></tr><tr><td></td><td>GND</td><td>A5</td><td>B5</td><td>I2C0_ID_SDA</td><td rowspan="2">/dev/i2c-1</td></tr><tr><td rowspan="2">/dev/ttyTHS1</td><td>UART0_TXD_3V3</td><td>A6</td><td>B6</td><td>I2C0_ID_SCL</td></tr><tr><td>UART0_RXD_3V3</td><td>A7</td><td>B7</td><td>I2S0_SCLK_LS</td><td>gpio398 Bidirection</td></tr><tr><td rowspan="2">can0 (Native CAN)</td><td>CANL0</td><td>A8</td><td>B8</td><td>I2S0_SDOUT_LS</td><td>gpio399 Bidirection</td></tr><tr><td>CANH0</td><td>A9</td><td>B9</td><td>I2S0_SDIN_LS</td><td>gpio400 Bidirection</td></tr><tr><td></td><td>N/A</td><td>A10</td><td>B10</td><td>I2S0_LRCK_LS</td><td>gpio401 Bidirection</td></tr></tbody></table>					Address	Pin Name	20-pin Index (Devkit Index)		Pin Name	Address		5V	A1	B1	3V3			GND	A2	B2	GND		/dev/ttyTCU0	UART2_TXD_3V3	A3	B3	I2C1_SDA	/dev/i2c-7	UART2_RXD_3V3	A4	B4	I2C1_SCL		GND	A5	B5	I2C0_ID_SDA	/dev/i2c-1	/dev/ttyTHS1	UART0_TXD_3V3	A6	B6	I2C0_ID_SCL	UART0_RXD_3V3	A7	B7	I2S0_SCLK_LS	gpio398 Bidirection	can0 (Native CAN)	CANL0	A8	B8	I2S0_SDOUT_LS	gpio399 Bidirection	CANH0	A9	B9	I2S0_SDIN_LS	gpio400 Bidirection		N/A	A10	B10	I2S0_LRCK_LS	gpio401 Bidirection
	Address	Pin Name	20-pin Index (Devkit Index)		Pin Name	Address																																																												
		5V	A1	B1	3V3																																																													
		GND	A2	B2	GND																																																													
	/dev/ttyTCU0	UART2_TXD_3V3	A3	B3	I2C1_SDA	/dev/i2c-7																																																												
		UART2_RXD_3V3	A4	B4	I2C1_SCL																																																													
		GND	A5	B5	I2C0_ID_SDA	/dev/i2c-1																																																												
	/dev/ttyTHS1	UART0_TXD_3V3	A6	B6	I2C0_ID_SCL																																																													
		UART0_RXD_3V3	A7	B7	I2S0_SCLK_LS	gpio398 Bidirection																																																												
	can0 (Native CAN)	CANL0	A8	B8	I2S0_SDOUT_LS	gpio399 Bidirection																																																												
CANH0		A9	B9	I2S0_SDIN_LS	gpio400 Bidirection																																																													
	N/A	A10	B10	I2S0_LRCK_LS	gpio401 Bidirection																																																													
Remarks	GPIO uses 3.3V																																																																	

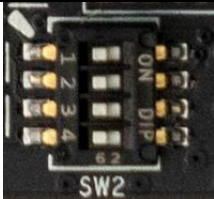
3.13 Fan Power connector

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	Pin #	Description		
	PIN 1	GND		
	PIN 2	+5V Power		
	PIN 3	FAN_TACH		
	PIN 4	FAN_PWM		
Remarks	None			

3.14 Power button function wafer

Function	Power button function wafer			
Location	J27			
Type Description	WAFER_1*2PIN_1 mm_180°_SMD			
Manufacturer and Part Number	ACES 宏致_50228-00271-001_WTB			
Mating Connector				
Pinout	Pin #	Description		
	PIN 1	power button		
	PIN 2	GND		
Remarks	None			

3.15 DIP Switch

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	Position No.	Position Description	Switch ON	Switch OFF
	1(SW1)	Power ON mode	Always Power ON	Auto Power ON
	2(SW2)	CAN0_Terminal	With 120 ohm Terminal	W/O 120 ohm Terminal
	3(SW3)	Power-Up / Start-up Control	"ATX Mode" Power Button Press Required	"AT Mode" - Automatic Start-up Enabled
	4(SW4)	PWM Fan Control	FAN Always ON	FAN PWM Enabled (SW Controlled)
Remark	Default SW2 all OFF			

3.16 power Button

Function	Power recovery	 
Location	SW3	
Type Description	Button	
Manufacturer and Part Number	冠泰 Champway, LS67AK-NBR-A-R2KA9	
Pinout	N/A	
Remark	None	

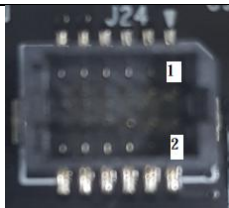
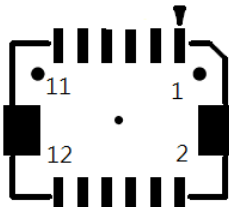
3.17 Recover Button

Function	Recover button	 
Location	SW4	
Type Description	Button	
Manufacturer and Part Number	冠泰 Champway, LS67AK-NBR-A-R2KA9	
Pinout	N/A	
Remark	None	

3.18 WDT function

Function	WDT function		
Location	JP2		
Type Description	HEADER_PIN_1*2PIN_2.54 mm _180°_DIP		
Manufacturer and Part Number	頻銳_210-81-02GB01		
Pinout	Pin 1,2	Description	
	Open	WDT enable	
	Short	WDT disable	
Remark	None		

3.19 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	<table><thead><tr><th>PIN#</th><th>Description</th><th>PIN#</th><th>Description</th></tr></thead><tbody><tr><td>Pin1</td><td>PWR_IN</td><td>Pin2</td><td>GND</td></tr><tr><td>Pin3</td><td>PWR_IN</td><td>Pin4</td><td>GND</td></tr><tr><td>Pin5</td><td>54V</td><td>Pin6</td><td>SYS_RST*</td></tr><tr><td>Pin7</td><td>54V</td><td>Pin8</td><td>I2C1_SCL *</td></tr><tr><td>Pin9</td><td>PortN_OUT0</td><td>Pin10</td><td>I2C1_SDA</td></tr><tr><td>Pin11</td><td>POE_P0</td><td>Pin12</td><td>3V3</td></tr></tbody></table>				PIN#	Description	PIN#	Description	Pin1	PWR_IN	Pin2	GND	Pin3	PWR_IN	Pin4	GND	Pin5	54V	Pin6	SYS_RST*	Pin7	54V	Pin8	I2C1_SCL *	Pin9	PortN_OUT0	Pin10	I2C1_SDA	Pin11	POE_P0	Pin12	3V3	
	PIN#	Description	PIN#	Description																													
	Pin1	PWR_IN	Pin2	GND																													
	Pin3	PWR_IN	Pin4	GND																													
	Pin5	54V	Pin6	SYS_RST*																													
	Pin7	54V	Pin8	I2C1_SCL *																													
	Pin9	PortN_OUT0	Pin10	I2C1_SDA																													
	Pin11	POE_P0	Pin12	3V3																													
Remarks	NA																																

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 USB type-C 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: D115WOX-R*.*.tar.gz for D115WOXB

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 or e-mail us at cusupport@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 USB type-C to USB cable, you can check kernel messages with `dmesg` command in the Linux PC.

Once you see these similar 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 <BSP_tarball_filename>.tar.gz
```

```
# where <BSP_tarball_filename> is the BSP tarball file name for your target device.  
$ cd JetPack_xxx/Linux_for_Tegra  
$ ./install.sh
```

Note: sudo is required to extract the BSP.

3. About how to Flash BSP for Orin NX, please refer to the following link for more instructions.

<https://www.avermedia.com/professional/support/faq/how-to-flash-bsp-for-orin-nano-nx>

4.2 Software

This section describes BSP's features for D115WOXB

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. 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 nvpmode -q  
# setup power mode  
# where <x> is power mode number, please refer to (<= r32.7.x)  
https://docs.nvidia.com/jetson/archives/l4t-archived/l4t-3261/index.html#page/Tegra%20Linux%20Driver%20Package%20Development%20Guide/power\_management\_jetson\_xavier.html and  
(>= r35.1)  
https://docs.nvidia.com/jetson/archives/r35.1/DeveloperGuide/text/SD/PlatformPowerAndPerformance/JetsonOrinNxSeriesAndJetsonAgxOrinSeries.html?highlight=nvpmode#supported-modes-and-power-efficiency for more information  
$ sudo nvpmode -m <x>
```

* Current default power mode:

D115WOXB : 15W (2)

3. RTC Battery

The following command can get RTC battery voltage.

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

4. Fan Speed

The following commands can get PWM fan information.

```
# get current speed setting of PWM Fan (0 ~ 255)
$ cat /sys/devices/platform/pwm-fan/hwmon/hwmon<x>/pwm1

# get Fan RPM value
$ cat /sys/devices/platform/39c0000.tachometer/hwmon/hwmon<y>/rpm
```

* Where <x> and <y> are dynamic hwmon indexes

5. MIPI CSI Camera

There are 2x 2-lane and 1x 4-lane MIPI CSI camera supported on D115W, 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

* IMX179 (2-lane)

* IMX290 (2-lane)

* IMX290ISP (2-lane)

Test Command:

```
> Raspberry pi v2 :
```

* Please follow the settings below first:

1. Set the power mode to maximize at 25W.

2. Follow the settings in the Release Notes, and maximize the ISP & VI clock.

```
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 ! 'video/x-raw(memory:NVMM),
width=(int)3280, height=(int)2464, format=(string)NV12, framerate=(fraction)21/1' !
queue ! nvvidconv ! xvimagesink -e
```

```
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 ! 'video/x-raw(memory:NVMM),
width=(int)3280, height=(int)1848, format=(string)NV12, framerate=(fraction)28/1' !
queue ! nvvidconv ! xvimagesink -e
```

```
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 ! 'video/x-raw(memory:NVMM),
width=(int)1920,height=(int)1080,format=(string)NV12,framerate=(fraction)30/1' !
queue ! nvvidconv ! xvimagesink -e
```

```
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 ! 'video/x-raw(memory:NVMM),
width=(int)1640,height=(int)1232,format=(string)NV12,framerate=(fraction)30/1' !
queue ! nvvidconv ! xvimagesink -e
```

```
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 ! 'video/x-raw(memory:NVMM),
width=(int)1280,height=(int)720,format=(string)NV12,framerate=(fraction)60/1' !
queue ! nvvidconv ! xvimagesink -e
```

Multiple:

```
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 ! 'video/x-raw(memory:NVMM),
width=(int)3264,height=(int)2464,format=(string)NV12,framerate=(fraction)21/1' !
queue ! 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	3840	2160	30
1	1920	1080	60

```
$ gst-launch-1.0 -e nvarguscamerasrc sensor-id=0 !
'video/x-raw(memory:NVMM),width=3840,height=2160,framerate=30/1' ! queue !
nvvidconv ! fpsdisplaysink video-sink='xvimagesink' sync=false
```

```
$ gst-launch-1.0 -e nvarguscamerasrc sensor-id=0 !
'video/x-raw(memory:NVMM),width=1920,height=1080,framerate=60/1' ! queue !
nvvidconv ! fpsdisplaysink video-sink='xvimagesink' sync=false
```

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 ! 'video/x-raw(memory:NVMM),
```

```
width=(int)3280, height=(int)2464, format=(string)NV12, framerate=(fraction)15/1' !
queue ! nvvidconv ! xvimagesink -e
```

```
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 ! 'video/x-raw(memory:NVMM),
width=(int)1920, height=(int)1080, format=(string)NV12, framerate=(fraction)30/1' !
queue ! nvvidconv ! xvimagesink -e
```

```
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 ! 'video/x-raw(memory:NVMM),
width=(int)3280, height=(int)1698, format=(string)NV12, framerate=(fraction)30/1' !
queue ! nvvidconv ! xvimagesink -e
```

```
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 ! 'video/x-raw(memory:NVMM),
width=(int)2096, height=(int)1084, format=(string)NV12, framerate=(fraction)30/1' !
queue ! nvvidconv ! xvimagesink -e
```

```
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 ! 'video/x-raw(memory:NVMM),
width=(int)1640, height=(int)1232, format=(string)NV12, framerate=(fraction)30/1' !
queue ! nvvidconv ! xvimagesink -e
```

```
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 ! 'video/x-raw(memory:NVMM),
width=(int)820, height=(int)616, format=(string)NV12, framerate=(fraction)30/1' !
queue ! nvvidconv ! xvimagesink -e
```

```
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 ! 'video/x-raw(memory:NVMM),
width=(int)820, height=(int)616, format=(string)NV12, framerate=(fraction)60/1' !
queue ! nvvidconv ! xvimagesink -e
```

> IMX290 :

No	width	height	framerate
0	1948	1096	30
1	1948	1096	60

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

```
$ gst-launch-1.0 nvarguscamerasrc sensor-id=0 ! 'video/x-raw(memory:NVMM),
width=(int)1948, height=(int)1096, format=(string)NV12, framerate=(fraction)60/1' !
queue ! 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=60/1, format=UYVY' ! queue !
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' ! queue !
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' ! queue !
xvimagesink sync=false
```

```
$ gst-launch-1.0 v4l2src io-mode=4 device=/dev/video0 do-timestamp=true !
'video/x-raw, width=800, height=600, framerate=30/1, format=UYVY' ! queue !
xvimagesink sync=false
```

```
$ gst-launch-1.0 v4l2src io-mode=4 device=/dev/video0 do-timestamp=true !
'video/x-raw, width=640, height=480, framerate=30/1, format=UYVY' ! queue !
xvimagesink sync=false
```

```
$ gst-launch-1.0 v4l2src io-mode=4 device=/dev/video0 do-timestamp=true !
'video/x-raw, width=640, height=360, framerate=30/1, format=UYVY' ! queue !
xvimagesink sync=false
```

6. CAN Bus

There are one CAN Bus for D115WOXB, 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. GPIO usage

(1) Output

```
$ sudo su
$ gpio_id=483
$ echo $gpio_id > /sys/class/gpio/export
$ cat /sys/kernel/debug/gpio | grep 483
# show gpio-483 PZ.05 status

$ gpio_index=PZ.05
$ echo out > /sys/class/gpio/$gpio_index/direction
$ echo 1 > /sys/class/gpio/$gpio_index/value # set HIGH
$ echo 0 > /sys/class/gpio/$gpio_index/value # set LOW
```

(2) Input

```
$ sudo su
$ gpio_id=483
$ echo $gpio_id > /sys/class/gpio/export
$ cat /sys/kernel/debug/gpio | grep 483

$ gpio_index=PZ.05
$ 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=483
$ 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>)

4.3 Force Recovery Mode

USB 3.1 / Jetson platform port of D115WOXB 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.

5.0 Power Consumption

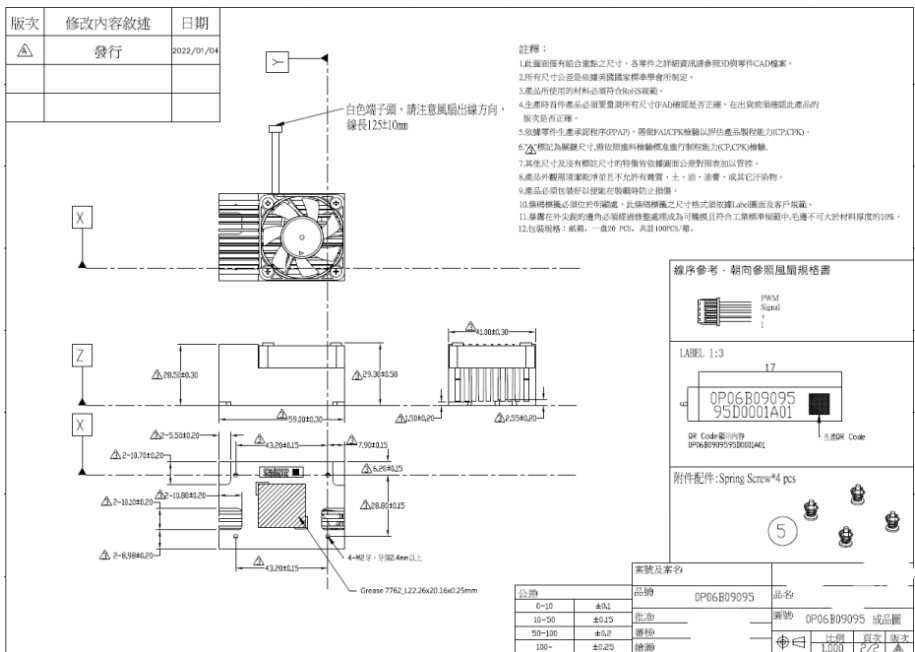
Item Description	Power Consumption
Theoretical Maximum System Power Consumption	D115WOXB Power Consumption: 4.8W(standby) to 38W(full) The condition is connected to USB3.0 device*2, USB 2.0 device*1, LAN *1, SSD 256G*1,WIFI 9260*1, HDMI*1,with CPU/ GPU full loading. (maximum power consumption up to 60W based on adapter)
Typical System Power Consumption	The power consumption under the normal operating mode is depending on the application software running with NVIDIA® Jetson Orin NX

6.0 Accessory Drawings

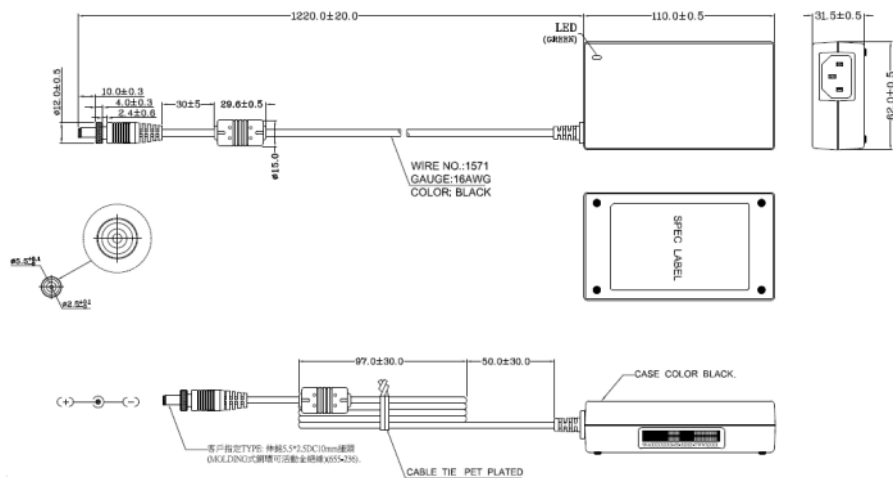
6.1 Fan Module/ Adapter/ Power Cord

Fan Module for Orin NX/Orin Nano

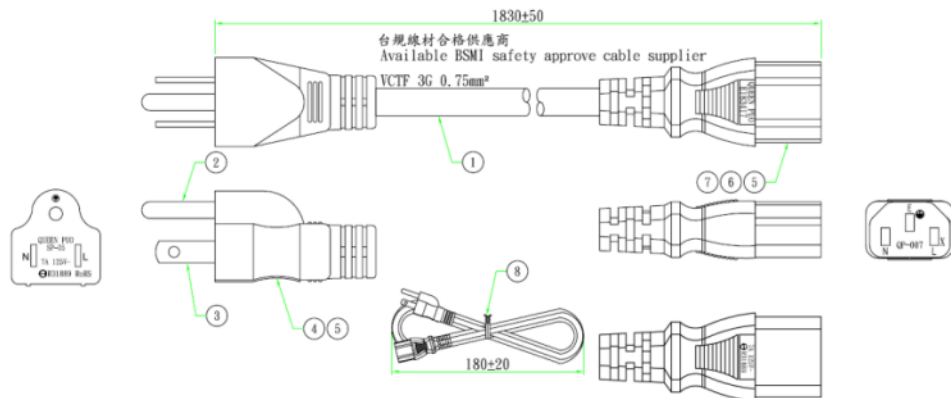
- Rated Voltage: 5V
- Operating Voltage Range: 3.5V~5.5V
- Rated Speed: 7000RPM±10%
(Testing Speed After Continuous 3 Minute Operation At Ambient Temperature Of 25°C)
- Life Expectancy: 70,000hours at 40°C (WITH 15~65% RH)
- Bearing Type: Two Ball



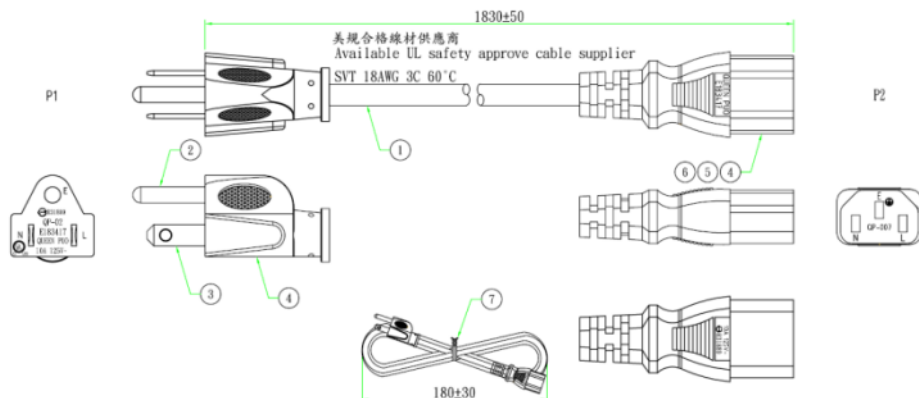
Power Adapter 04131HGOUANK



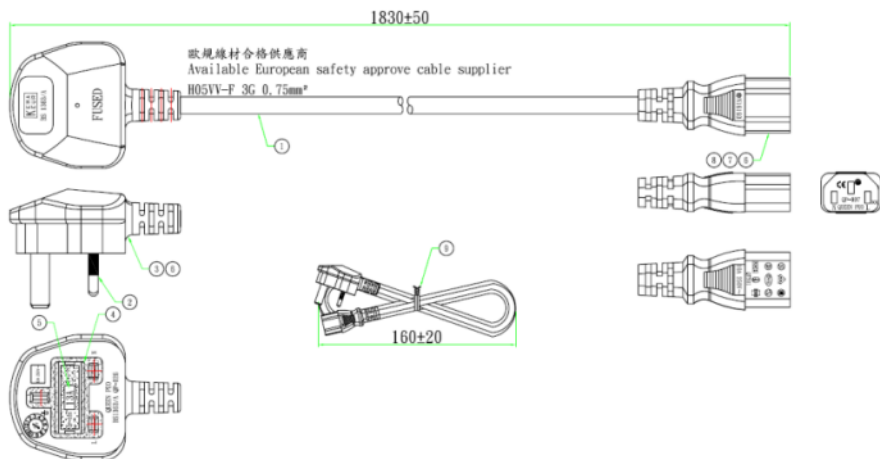
64APOWERBRX-IPD (TW version)



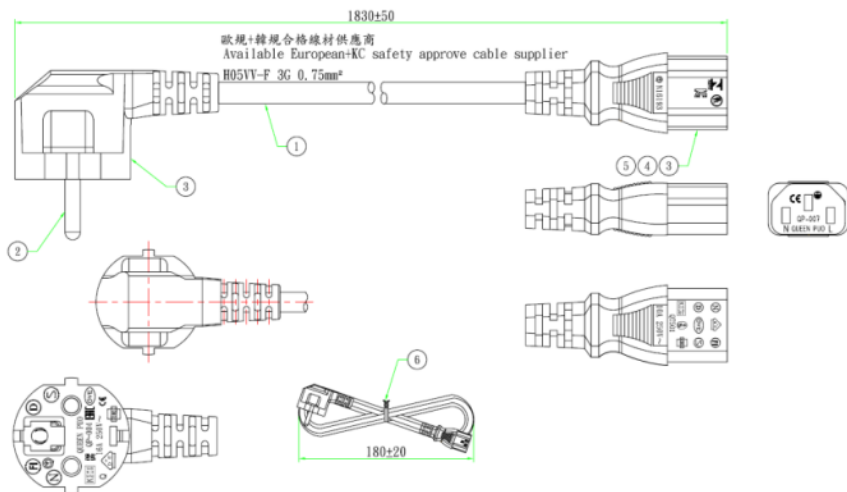
064APOWBR2-IPD (US version)



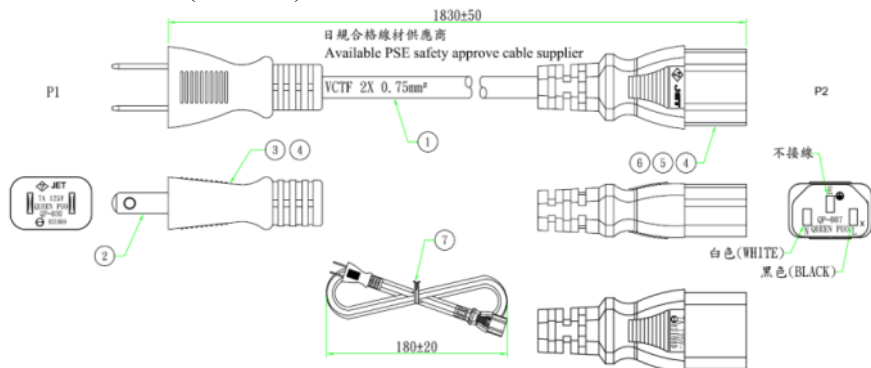
064APOWBRW-IPD (UK version)



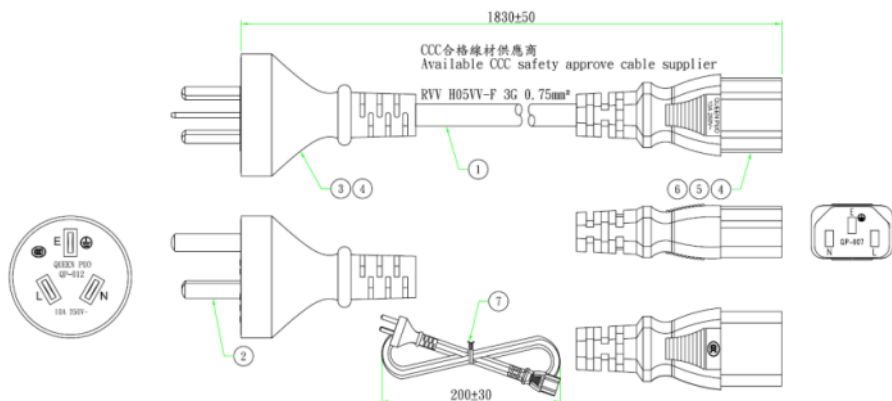
064APOWBR5-IPD (EU version)



064APOWERSL (JP version)

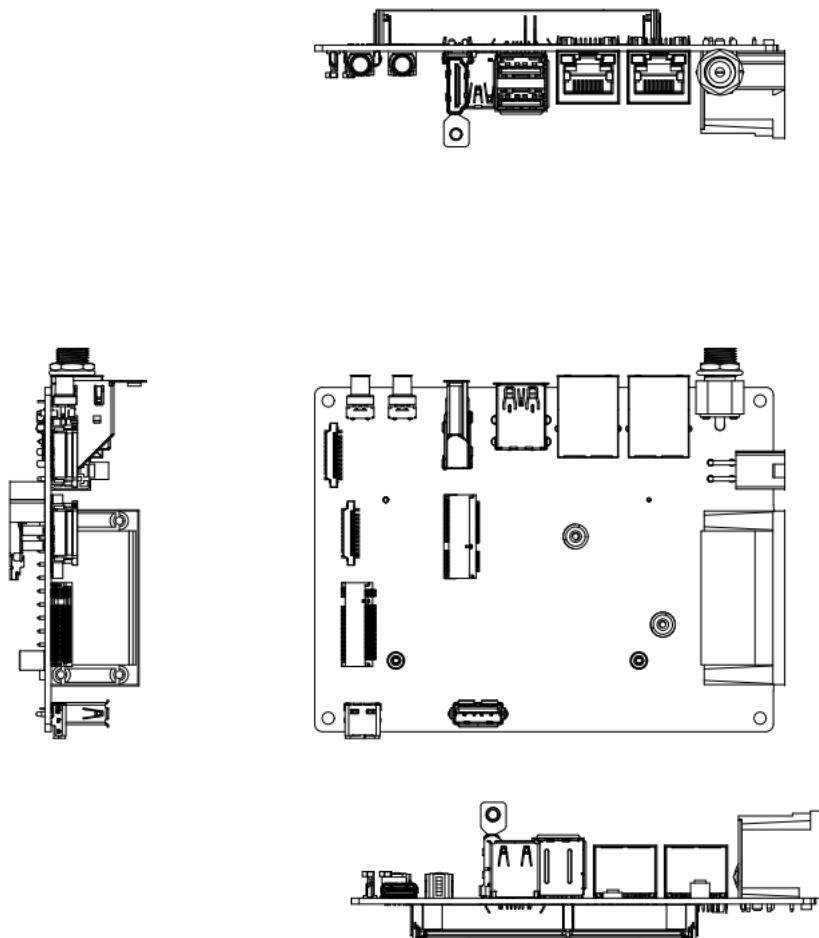


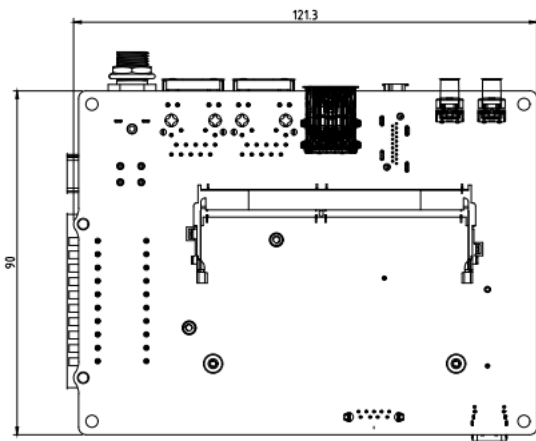
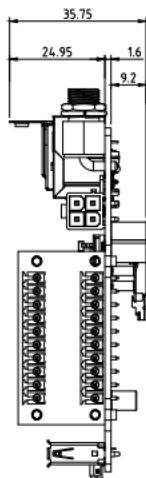
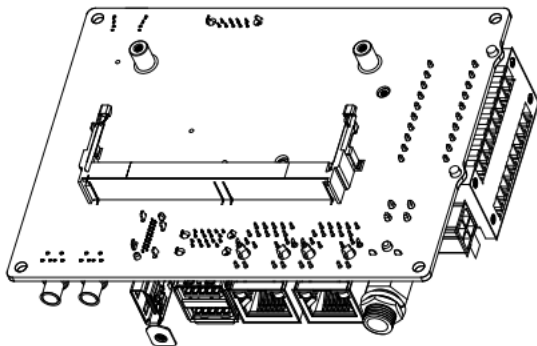
064APOWBR4-IPD (CN version)



7.0 Dimension Drawings and Assembly Drawings

7.1 Dimension Drawings of carrier board





7.2 Dimension Drawing of Box PC

