A607 Carrier Board for Jetson Orin NX/Nano

Datasheet V1.0

Product Description

The A607 Jetson Carrier Board is an extension board for NVIDIA Jetson Orin™ NX/Nano modules, and it features high-speed networking and wireless connection with two GbE network ports and pre-installed SMD Wi-Fi/Bluetooth module.

It also comes with one CAN, one I2C Link, four USB 3.0 Type-A ports, one USB 2.0 + USB 3.0 Type-C, one USB 3.0 0.5mm pitch 20P ZIF for versatile connectivity options. This extension board can enable users to capture and display video content with the 120-pin expansion camera connector and the HDMI port.

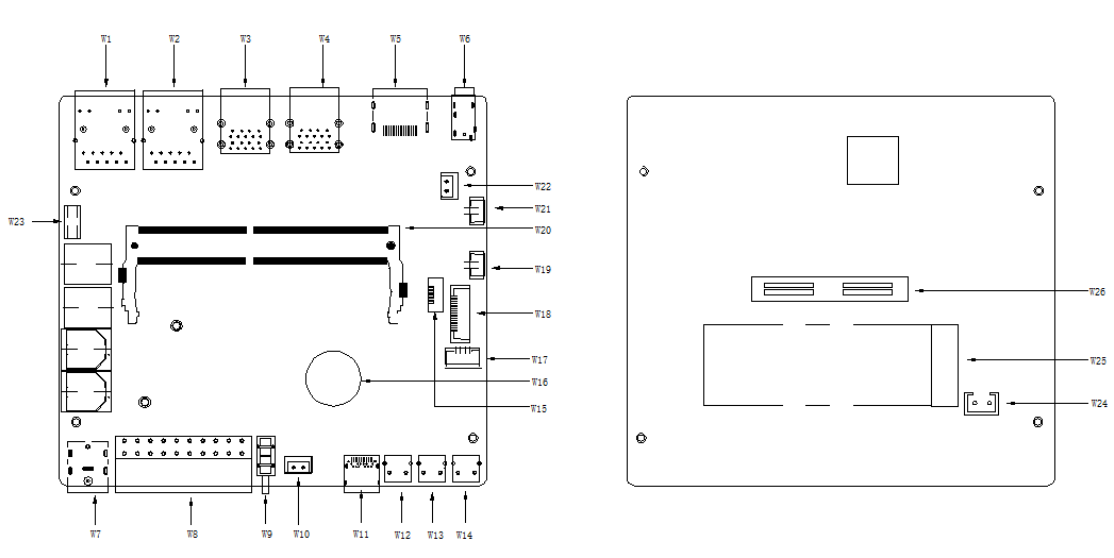
You can expand storage with onboard M.2 KEY M interface. There also includes a fan connector (5V PWM) for cooling purposes, and one RTC socket for reliable timekeeping.

The board supports a wide input range of 12-36V DC, making it flexible to integrate into a variety of computing tasks. It maintains operation in the temperature range from -20°C to 75°C.

Specifications

Module Compatibility	NVIDIA Jetson Orin NX/ Jetson Orin Nano
PCB Size / Overall Size	115mm x 105mm
Display	1x HDMI
Networking	2x Gigabit Ethernet (10/100/1000)
USB	4x USB 3.0 Type A (Integrated USB 2.0), 1x USB 2.0+3.0 Type C
M.2 KEY M	1x M.2 KEY M Interface
Camera	120P camera connector
USB 2.0+3.0	ZIF 20P 0.5mm pitch
Fan	1 x Fan (5V PWM)
CAN	1 x CAN
RS485	1 x RS485
RS232	1 x RS232
Misc.	2x I2C Link（+3.3V I/O）1X SPI Bus (+3.3V Level), 4x LED STATE
Power Requirements	+12（7A) --+36V(3A) DC Input
Operating Temperature	-25 ℃ to +75 ℃

Interfaces Location



External Interface

Designator	Connector	Description
W1 W2	RJ45 CON	RJ45 Gigabit Ethernet Connector (10/100/1000)
W3/ W4	USB 3.0 CON	USB 3.0 Link 1 Type A Connector
W5	HDMI CON	HDMI Right Angle Vertical Connector
W6	Audio Jack	3.5 Earphone stand
W7	DC Jack	13x10x10mm 6pins DC connector
W8	20PIN IO CON	3.5mm pitch ,90degrees，Double layer Phoenix terminal block
W9	LED indicator	
W10/W24	12V DC CON	HDR_1X2 2.54MM CON
W11	TYPE C (2.0+3.0)	USB 2.0 Link TYPE C Connector
W12	RECOVERY KEY	4Pin
W13	RESET KEY	4Pin
W14	POWER KEY	4Pin
W15	5V FAN CON	CON, 1.25mm PITCH, 4PIN, 4.7mm.SMD
W16	RTC CON	
W17	IIC CON	CON, 1.25mm PITCH, 4PIN, 4.7mm.SMD
W18	USB(2.0+3.0) CON	FPC 0.5MM 20P H=2MM
W19W21	Speaker con	CON, 1.5mm PITCH, 2PIN, 5.1mm , SMD

W20	NX CON	Jetson Orin NX /Nano 266-pin connector
W22	5V Power Out	HDR_1X2 2.54MM CON
W23	MCU CON	2.54mm 2X2
W25	SSD CON	67 pins M.2 KEY M connector
W26	CAMERA CON	CON_B2B_120_F_NORM-CON_QSH_SMT_2X60

Interface Details

Network Port（W1/W2）

Pin	Signal Name	Pin	Signal Name
1	TP0+	2	TP0-
3	TP1+	4	TP2+
5	TP2-	6	TP1-
7	TP3+	8	TP3-

Dual-layer USB3.0 （W3/W4 ）

Pin	Signal Name	Pin	Signal Name
1	VBUS	2	USB 2.0 D-
3	USB 2.0 D+	4	GND
5	SSRX-	6	SSRX+
7	GND	8	SSTX-
9	SSTX+	10	VBUS
11	USB 2.0 D-	12	USB 2.0 D+
13	GND	14	SSRX-
15	SSRX+	16	GND
17	SSTX-	18	SSTX+

HDMI Jack（ W5）

Pin	Signal Name	Pin	Signal Name
1	TMDS Data2+	2	TMDS Data2 GND
3	TMDS Data2-	4	TMDS Data1+
5	TMDS Data1 GND	6	TMDS Data1-
7	TMDS Data0+	8	TMDS Data0 GND
9	TMDS Data0-	10	TMDS Clock+
11	TMDS Clock GND	12	DS Clock-
13	CEC	14	NC
15	DDC clock	16	DDC data
17	DDC GND	18	+5V
19	Hot Plug Detect	20	

Audio Jack Interface（W6）

Pin	Signal Name	Pin	Signal Name
1	NC	2	IN1D_P
3	GND	4	HPO_R
5.7	AUD_HP_JD	6	HPO_L

DC Power Input Jack（ W7）

PIN	Signal Name	PIN	Signal Name
1	Power supply positive electrode	2.3.4.5.6	GND

After plugging in the power supply, the power LED lights up

(red) Note: Power input range: DC +12V(7A)~+36V(3A)

20PIN IO Connector （W8)

PIN	Signal Name	PIN#	Ball Name	PIN	Signal Name	PIN#	Ball Name
1	CAN_L			2	CAN_H		
3	RS232_TX			4	RS232_RX		
5	RS485_A			6	RS485_B		
7	I2C1_SDA (3.3V)	191	GEN2_I2C_SDA	8	I2C1_SCL (3.3V)	189	GEN2_I2C_SCL
9	GND			10	3.3V		
11	UART2_TXD_3V3	236	UART1_TXD	12	UART2_RXD_3V3	238	UART1_RXD
13	SPI0_MOSI_3V3	89	SPI1_MOSI	14	SPI0_SCK_3V3	91	SPI1_SCK
15	SPI0_MISO_3V3	93	SPI1_MISO	16	SPI0_CS0_3V3	95	SPI1_CS0
17	SPI0_SC1_3V3	97	SPI1_CS1	18	GPIO2_3V3	124	GPIO_PH6
19	GND			20	5V		

Note:

- UART2 is converted to 3.3V logic level through carrier board level conversion
- circuit; SPI0 is converted to 3.3V logic level through carrier board level conversion
- circuit; GPIO2_3V3 is 3.3V logic level

LED Indicator （W9)

Red is the power indicator, green is the normal operation indicator

12V DC Power Jack (W10/24)

PIN	Signal Name	PIN	Signal Name
1	12V	2	GND

TYPE C (2.0) （W11)

PIN	Signal Name	PIN	Signal Name
A1, A12, B1, B12	GND	A4, A9, B4, B9	5V VBUS
A5	CC1	B5	CC2
A8	NC	B8	NC
B10	SSRX1-	B11	SSRX1+
A3	SSTX1-	A2	SSTX1+

A10	SSRX2-	A11	SSRX2+
B3	SSTX2-	B2	SSTX2+
A7, B7	USB D-	A6.B6	USB0_P

Key Press Switch (W12/W13/W14)

The A607 offers three buttons:

1) W12 --- (RECOVERY) program download

2) W13 --- (RESET) Reset switch

3) W14 --- (POWER KEY) power switch

Fan Connector (W15)

PIN	Signal Name	PIN	Signal Name
1	GND	2	VDD_5V
3	FAN_TACH	4	FAN_PWM

RTC Battery Connector（W16)

Pin	Signal Name	Pin	Signal Name
1	B+	2	GND

I2C Interface（W17)

PIN	Signal Name	PIN	Signal Name
1	GND	2	3.3V
3	ID_I2C_SCL	4	ID_I2C_SDA

20PIN 0.5mm ZIF, USB2.0 (W18)

Pin	Signal Name	Pin	Signal Name
1,2,3,4,5	VDD_5V	6	GND
7	D-	8	D+
9	GPIO1	10	GND
11	USBSS2_TX_N	12	USBSS2_TX_P
13	GND	14	USBSS2_RX_N

15	USBSS2_RX_P	16	GND
17	GPIO2	18	GND
19	GND	20	GND

Speaker Connector（W19/W21）

Pin	Signal Name	Pin	Signal Name
1	SPK-	2	SPK+

Jetson Orin NX/ Nano Core Board Interface (W20)

The 260PIN connector is used to connect the NVIDIA Jetson Orin NX/ Nano module to the A607 carrier board

5V Power Supply Output Block (W22)

PIN	Signal Name	PIN	Signal Name
1	VDD_5V_SYS	2	GND

MCU Download Jack(W23)

PIN	Signal Name	PIN	Signal Name
1	C2D	2	C2K
3	GND	4	ACOK

Note: PIN4 (ACOK) and PIN3 (GND) short circuit can turn off power on and start automatically.

SSD Connector (W25)

PIN	Signal Name	PIN	Signal Name
1	GND	2	3.3V
3	GND	4	3.3V
5	UPHY_RX5_N	6	NC
7	UPHY_RX5_P	8	NC
9	GND	10	NC
11	UPHY_TX5_N	12	3.3V

13	UPHY_TX5_P	14	3.3V
15	GND	16	3.3V
17	UPHY_RX4_N	18	3.3V
19	UPHY_RX4_P	20	NC
21	GND	22	NC
23	UPHY_TX4_N	24	NC
25	UPHY_TX4_P	26	NC
27	GND	28	NC
29	UPHY_RX3_N	30	NC
31	UPHY_RX3_P	32	NC
33	GND	34	NC
35	UPHY_TX3_N	36	NC
37	UPHY_TX3_P	38	NC
39	GND	40	I2C_GP4_ CLK
41	UPHY_RX2_N	42	I2C_GP4_DAT
43	UPHY_RX2_P	44	GPIO34_M2_KEYM_ALERT
45	GND	46	NC
47	UPHY_TX2_N	48	NC
49	UPHY_TX2_P	50	PEX_L0_RST_N
51	GND	52	PEX_L0_CLKREQ_N
53	PEX_CLK0_N	54	GPIO29_M2_KEYM_PEWAKE
55	PEX_CLK0_P	56	NC
57	GND	58	NC
59	NC	60	32.768KHz OUT
61	NC	62	3.3V
63	GND	64	3.3V
65	GND	66	3.3V
67	GND	68	GND

Camera Connector (W26)

PIN	Signal Name	PIN	Signal Name
1	CSI_0_D0_P	2	CSI_1_D0_P
3	CSI_0_D0_N	4	CSI_1_D0_N
5	GND	6	GND
7	CSI_0_CLK_P	8	CSI_1_CLK_P
9	CSI_0_CLK_N	10	CSI_1_CLK_N
11	GND	12	GND
13	CSI_0_D1_P	14	CSI_1_D1_P
15	CSI_0_D1_N	16	CSI_1_D1_N
17	GND	18	GND
19	CSI_2_D0_P	20	CSI_3_D0_P
21	CSI_2_D0_N	22	CSI_3_D0_N
23	GND	24	GND
25	CSI_2_CLK_P	26	CSI_3_CLK_P
27	CSI_2_CLK_N	28	CSI_3_CLK_N
29	GND	30	GND
31	CSI_2_D1_P	32	CSI_3_D1_P
33	CSI_2_D1_N	34	CSI_3_D1_N
35	GND	36	GND
37	NC	38	NC
39	NC	40	NC
41	GND	42	GND
43	NC	44	NC
45	NC	46	NC
47	GND	48	GND
49	NC	50	NC
51	NC	52	NC
53	GND	54	GND
55	NC	56	NC
57	NC	58	NC
59	NC	60	NC

61	NC	62	NC
63	GND	64	GND
65	NC	66	NC
67	NC	68	NC
69	GND	70	GND
71	NC	72	NC
73	NC	74	NC
75	CAM_I2C_SCL	76	NC
77	CAM_I2C_SDA	78	NC
79	GND	80	GND
81	2.8V	82	2.8V
83	2.8V	84	TEST PIONT
85	NC	86	NC
87	NC	88	CAM2_MCKL
89	NC	90	CAM3_PWDN
91	CAM1_MCKL	92	GPIO10
93	CAM1_PWDN	94	GPIO11
95	CAM2_PWDN	96	NC
97	CAM6_PWDN (PIN126)	98	NC
99	GND	100	GND
101	TEST PIONT	102	1.8V
103	NC	104	NC
105	NC	106	NC
107	NC	108	3.3V
109	TEST PIONT	110	3.3V
111	NC	112	NC
113	NC	114	NC
115	GND	116	GND
117	NC	118	3.3V
119	PWM2 (PIN 206)	120	3.3V
121-128	GND		