A608 Carrier Board for Jetson Orin NX/ Nano

Datasheet V1.0

Product Description

The A608 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 3.5 audio jack, four USB 3.2 Type-A ports, and one USB 2.0 + USB 3.2 TypeC for versatile connectivity options, compatible with JST-GH ports to seamlessly integrate on drones/robots through rich Function CON interfaces. This extension board can enable users to capture and display video content with two 4-CSI camera ports and one DP port.

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

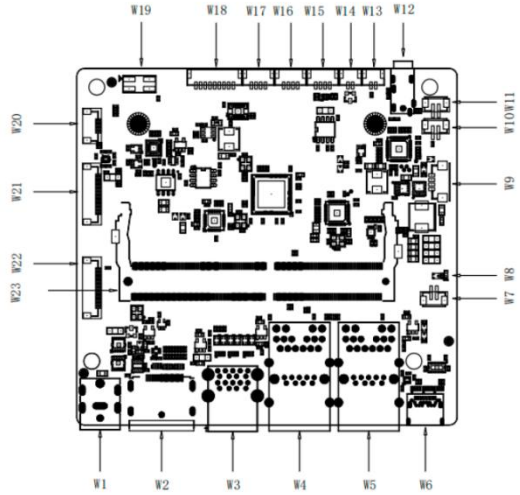
The board supports a wide input range of 9-20V DC, making it flexible to integrate into a variety of computing tasks and drone integrating development. It maintains operation in the temperature range from -25°C to 65°C.

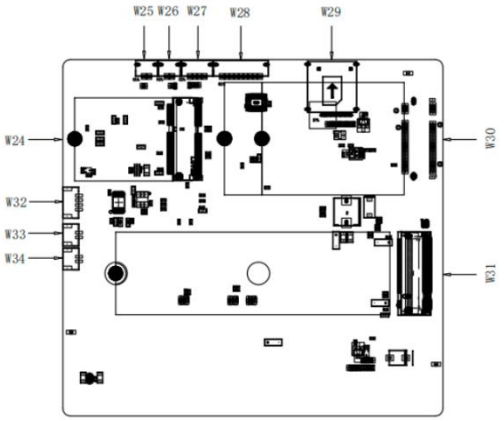
Specifications

Module Compatibility	NVIDIA Jetson Orin NX/ Jetson Orin Nano
Mechanical	101.5mm x 95mm
Display	1x DP
Networking	2x Gigabit Ethernet (10/100/1000)
USB	4x USB 3.2 Type A (Integrated USB 2.0) 1X USB 2.0 + 3.2 Type C
M.2 KEY M	1x M.2 KEY M (SSD) Interface 1x M.2 KEY B (WiFi) Interface 1x M.2 KEY E (4G/5G) Interface
Camera	2x 4-CSI Camera
Fan	1x Fan (5V PWM)
CAN	1x CAN (FD)
FUNCTION CON	2x IIC, 1x SPI, 7x IO 3,3V, 2x UART, 1x DEBUG, 1x POWER, 1x RESET, 1x RECOVERY

Power Requirement	9-20 (MAX 60W) DC Input
Operating Temperature	-25°C to 65°C, 10%-90% Non condensation environment

Interfaces Location





External Interface

Designator	Connector	Description
W1	DC Jack	CON_DCPWR_JACK_006_TH_RA_100X130
W2	DP Connect	CON_6.65mm_DP_020_3VD51207-D7JJ-7H
W3	USB 3.2 Connect	USB3.0 AF double layer 90 degree short body, gold-plated pins 5AU, 19 PIN, HIGH 13.62MM
W4/W5	RJ45 Connect	CONN MAGJACK 1P TD NPOE 10G LED
W6	TYPE C (2.0+3.2)	CON_USB3_TYPEC_30PIN_0.5MM
W7	RTC Connect	CON_1.5MM_2P_SMD battery holder
W8	LED indicator	
W9	5V FAN Connect	1.25MMPITCH_4PIN_SMD_MOLEX
W10/W11	Speaker con	CON_1.5MM_2P_SMD
W12	Audio Jack	3.5 Earphone stand PJ-31060A
W13	POWER KEY	CON, GH1.25_WT_2P
W14	CAN Connect	CON, GH1.25_WT_2P
W15	IIC Connect	CON, GH1.25_WT_4P
W16	UART Connect	CON, GH1.25_WT_4P

Designator	Connector	Description
W17	UART Connect	CON, GH1.25_WT_4P
W18	Multifunctional expansion port	CON, GH1.25_WT_9P A1253WT09B
W19	MCU download interface	CON_2X2_2.54_SMD
W20	Multifunctional expansion port	ZIF_0.5PITCH_8P_2MM
W21/W22	CAMERA Connect	ZIF_0.5PITCH_22P_2MM
W23	NVIDIA Orin NX/Orin NANO core module interface	TE 2309413-1
W24	M2_KEY_E（WIFI)	CON_067_M2_KEY_E_C
W25	RECOVERY KEY	GH1.25_WT_2P
W26	RESET KEY	GH1.25_WT_2P
W27	UART Connect	GH1.25_WT_4P
W28	Multifunctional interface	GH1.25_WT_9P
W29	SIM card holder	SIM-12707H137
W30	M2_KEY_B(4G/5G)	CON_067_M2_KEY_B_30X42_52
W31	M2_KEY_M(SSD)	CON_067_SMT_M2_KEY_M
W32	Speaker signal feedback	GH1.25_WT_4P
W33	Analog Microphone	GH1.25_WT_2P
W34	Analog Microphone	GH1.25_WT_2P

Interface Detail

DC Power Input Jack (W1)

PIN	Signal Name	PIN	Signal Name
1	Positive power supply	2.3.4.5.6	GND

After the power is plugged in and turned on normally, the power LED lights up (red) Note: Power input range: DC+9V-20V (MAX 60W)

DP Connect (W2)

PIN	Signal Name	PIN	Signal Name
1	DP_CON_LANE0_P	2	GND
3	DP_CON_LANE0_N	4	DP_CON_LANE1_P
5	GND	6	DP_CON_LANE1_N
7	DP_CON_LANE2_P	8	GND
9	DP_CON_LANE2_N	10	DP_CON_LANE3_P
11	GND	12	DP_CON_LANE3_N
13	DP_MODE	14	HDMI_CEC_CON
15	DP_CON_AUX_P	16	GND
17	DP_CON_AUX_N	18	DP_HPD_CON
19	GND	20	VDD_3V3_DP

Double Layer USB3.0 (W3)

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+

1G Network Port + USB3.2 (W4/W5)

PIN	Signal Name	PIN	Signal Name
1	VDD_5V0_IO_SYS_1	2	USB_DN
3	USB_DP	4	GND
5	USB_SSRX_N	6	USB_SSRX_P
7	GND	8	USB_SSTX_N
9	USB_SSTX_P		

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

Type C Connect (W6)

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	U.SB D-	A6.B6	USB0_P

RTC Battery Connector (W7)

PIN	Signal Name	PIN	Signal Name
1	B+	2	GND

LED Indicator (W8)

Red represents the power indicator light.

FAN CON (W9)

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

Speaker CON (W10)

PIN	Signal Name	PIN	Signal Name
1	SPO_RN	2	SPO_RP

Speaker CON (W11)

PIN	Signal Name	PIN	Signal Name
1	SPO_LN	2	SPO_LP

Speaker Signal Feedback CON (W32)

PIN	Signal Name	PIN	Signal Name
1	SPO_LP	2	SPO_LN
3	SPO_RP	4	SPO_RN

Analog Microphone CON (W33)

PIN	Signal Name	PIN	Signal Name
1	GND	2	Micro+(IN2)

Analog Microphone CON (W34)

PIN	Signal Name	PIN	Signal Name
1	GND	2	Micro+(IN3)

Audio Jack Interface (W12)

PIN	Signal Name	PIN	Signal Name
1	NC	2	IN1D_P
3	GND	4	HPO_R
5	AUD_HP_JD	6	HPO_L

Power Key (W13)

PIN	Signal Name	PIN	Signal Name
1	GND	2	PWR_BTN

CAN (W14)

PIN	Signal Name	PIN	Signal Name
1	CAN_L	2	CAN_H

IIC Interface (W15)

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

UART CON (W16)

PIN	Signal Name	PIN	Signal Name
1	GND	2	VDD_3V3_SYS
3	UART1_TXD_3V3	4	UART1_RXD_3V3

UART CON (W17)

PIN	Signal Name	PIN	Signal Name
1	GND	2	VDD_3V3_SYS
3	UART0_TXD_3V3	4	UART0_RXD_3V3

Multifunctional Expansion Port (W18)

PIN	Signal Name	PIN	Signal Name
1	GND	2	VDD_3V3_SYS
3	VDD_5V_SYS	4	SPI1_MISO_3V3

PIN	Signal Name	PIN	Signal Name
5	GPIO_12_3V3	6	I2C1_SCL
7	I2C1_SDA	8	GPIO_11_3V3
9	GPIO_09_3V3	10	

MCU Download Interface (W19)

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

Note: PIN4 (ACOK) and PIN3 (GND) can be turned off and automatically turned on when powered on due to a short circuit.

Multifunctional Expansion Port (W20)

PIN	Signal Name	PIN	Signal Name
1	PIN112_INT	2	I2C2_SCL
3	I2C2_SDA	4	PIN110_PRO
5	PIN104_RST	6	GND
7	GND	8	VDD_1V8

Camera CON (W21)

PIN	Signal Name	PIN	Signal Name
1	VDD_3V3_SYS	2	CAM0_I2C_SDA
3	CAM0_I2C_SCL	4	GND
5	CAM0_MCLK	6	CAM0_PWDN_LS
7	GND	8	CSI1_D1_P
9	CSI1_D1_N	10	GND
11	CSI1_D0_P	12	CSI1_D0_N

PIN	Signal Name	PIN	Signal Name
13	GND	14	CSI0_CLK_P
15	CSI0_CLK_N	16	GND
17	CSI0_D1_P	18	CSI0_D1_N
19	GND	20	CSI0_D0_P
21	CSI0_D0_N	22	GND

Camera CON (W22)

PIN	Signal Name	PIN	Signal Name
1	VDD_3V3_SYS	2	CAM1_I2C_SDA
3	CAM1_I2C_SCL	4	GND
5	CAM1_MCLK	6	CAM1_PWDN_LS
7	GND	8	CSI3_D1_P
9	CSI3_D1_N	10	GND
11	CSI2_D0_P	12	CSI2_D0_N
13	GND	14	CSI2_CLK_P
15	CSI2_CLK_N	16	GND
17	CSI2_D1_P	18	CSI2_D1_N
19	GND	20	CSI2_D0_P
21	CSI2_D0_N	22	GND

NVIDIA Jetson Orin NX/Nano Core Module Interface (W23)

260PIN connector, mainly used for NVIDIA Jetson Orin NX/Nano core module and

Connection between Leetop_ A608 carrier plates

M.2 KEY E (W24)

PIN	Signal Name	PIN	Signal Name
1	GND	2	VDD_3V3_SYS
3	USB_DP	4	VDD_3V3_SYS
5	USB_DN	6	NC
7	GND	8	I2S1_SCLK
9	NC	10	I2S1_LRCK
11	NC	12	I2S1_SDIN
13	NC	14	I2S1_SDOUT
15	NC	16	NC
17	NC	18	GND
19	NC	20	BT_M2_WAKE_AP
21	NC	22	UART0_RXD
23	NC	24	UART0_TXD
25	GND	26	UART0_CTS
27	PCIE1_TX0_P	28	UART0_RTS
29	PCIE1_TX0_N	30	NC
31	GND	32	NC
33	PCIE1_RX0_P	34	NC
35	PCIE1_RX0_N	36	NC
37	GND	38	NC
39	PCIE1_CLK_P	40	NC
41	PCIE1_CLK_N	42	SUSCLK_32KHZ_BUF
43	GND	44	PCIE1_RST
45	PCIE1_CLKREQ	46	W_DISABLE2
47	PCIE_WAKE	48	W_DISABLE1
49	GND	50	I2C2_SDA
51	NC	52	I2C2_SCL

PIN	Signal Name	PIN	Signal Name
53	NC	54	M2_E_ALERT
55	GND	56	NC
57	NC	58	NC
59	NC	60	NC
61	GND	62	NC
63	NC	64	VDD_3V3_SYS
65	NC	66	VDD_3V3_SYS
67	GND	68	GND
69	GND	70	

Recovery Key (W25)

PIN	Signal Name	PIN	Signal Name
1	GND	2	RECOVER

Reset Key (W26)

PIN	Signal Name	PIN	Signal Name
1	GND	2	SYS_RST

5V UART CON (W27)

PIN	Signal Name	PIN	Signal Name
1	GND	2	VDD_5V_SYS
3	UART2_TXD_LS	4	UART2_RXD_LS

Multifunctional Interface (W28)

PIN	Signal Name	PIN	Signal Name
1	GND	2	VDD_3V3_SYS
3	SPI0_MOSI_3V3	4	SPI0_SCK_3V3

PIN	Signal Name	PIN	Signal Name
5	SPI0_MISO_3V3	6	SPI0_CS0_3V3
7	SPI0_CS1_3V3	8	GPIO_13_3V3
9	GPIO_07_3V3		

SIM Card Holder (W29)

PIN	Signal Name	PIN	Signal Name
1	USIM_VDD	2	USIM_RST
3	USIM_CLK	4	USIM_DET
5	GND	6	USIM_VDD
7	USIM_DATA	8	GND

M.2 KEY_B (W30)

PIN	Signal Name	PIN	Signal Name
1	NC	2	VDD_3V8
3	GND	4	VDD_3V8
5	GND	6	POWER_ON
7	USB_DP	8	W_DISABLE1#
9	USB_DN	10	STATUS
11	GND	20	NC
21	NC	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	USB_SSRX_N	30	USIM_RST
31	USB_SSRX_P	32	USIM_CLK
33	GND	34	USIM_DATA
35	USB_SSTX_N	36	USIM_VDD

PIN	Signal Name	PIN	Signal Name
37	USB_SSTX_P	38	NC
39	GND	40	NC
41	NC	42	NC
43	NC	44	NC
45	GND	46	NC
47	NC	48	NC
49	NC	50	NC
51	GND	52	NC
53	NC	54	NC
55	NC	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	USIM_DET
67	RESET	68	NC
69	NC	70	VDD_3V8
71	GND	71	VDD_3V8
73	GND	74	VDD_3V8

M.2 KEY M (W31)

PIN	Signal Name	PIN	Signal Name
1	GND	2	VDD_3V3
3	GND	4	VDD_3V3
5	UPHY0_RX4_N	6	NC
7	UPHY0_RX4_P	8	NC
9	GND	10	NC

PIN	Signal Name	PIN	Signal Name
11	UPHY0_TX4_N	12	VDD_3V3
13	UPHY0_TX4_P	14	VDD_3V3
15	GND	16	VDD_3V3
17	UPHY0_RX5_N	18	VDD_3V3
19	UPHY0_RX5_P	20	NC
21	GND	22	NC
23	UPHY0_TX5_N	24	NC
25	UPHY0_TX5_P	26	NC
27	GND	28	NC
29	UPHY_RX10_N	30	NC
31	UPHY_RX10_P	32	NC
33	GND	34	NC
35	UPHY_TX10_N	36	NC
37	UPHY_TX10_P	38	NC
39	GND	40	I2C_GP2_CLK
41	UPHY_RX11_N	42	I2C_GP2_DAT
43	UPHY_RX11_P	44	GPIO34_M2_KEYM_ALERT
45	GND	46	NC
47	UPHY_TX11_N	48	NC
49	UPHY_TX11_P	50	PCIE4_RST_N
51	GND	52	PCIE4_CLKREQ_N
53	PCIE4_CLK_N	54	PCIE_WAKE_N
55	PCIE4_CLK_P	56	UFS0_REF_CLK
57	GND	58	UFS0_RST_N
59	NC	60	32.768KHZ
61	NC	62	VDD_3V3
63	GND	64	VDD_3V3

PIN	Signal Name	PIN	Signal Name
65	GND	66	VDD_3V3
67	GND	68	GND