

reComputer J101

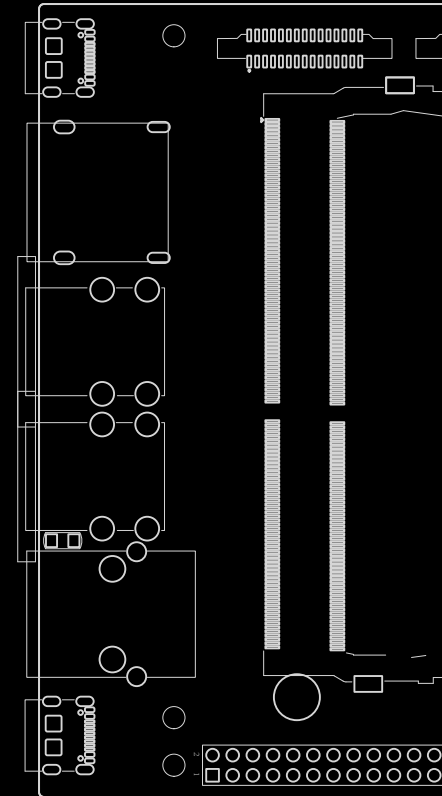
Introduction

J101 is a cost-effective, high-performance, interface rich NVIDIA Jetson Nano compatible carrier board, providing SD card function(CLK frequency 48MHz), HDMI 2.0, Gigabit Ethernet, USB3.0, USB2.0, M.2 key E WIFI / BT, CSI cameras, GPIO, I2C, I2S, Fan, and other rich peripheral interfaces. It has nearly the same functional design and exact the same size as the carrier board of NVIDIA® Jetson Nano™ 2GB DEVELOPER KIT.

Note: We provide SD card function on carrier board, which supports CLK Frequency 48MHz. Increasing CLK by yourself might cause certificates (such as CE/FCC) failure!

Part list

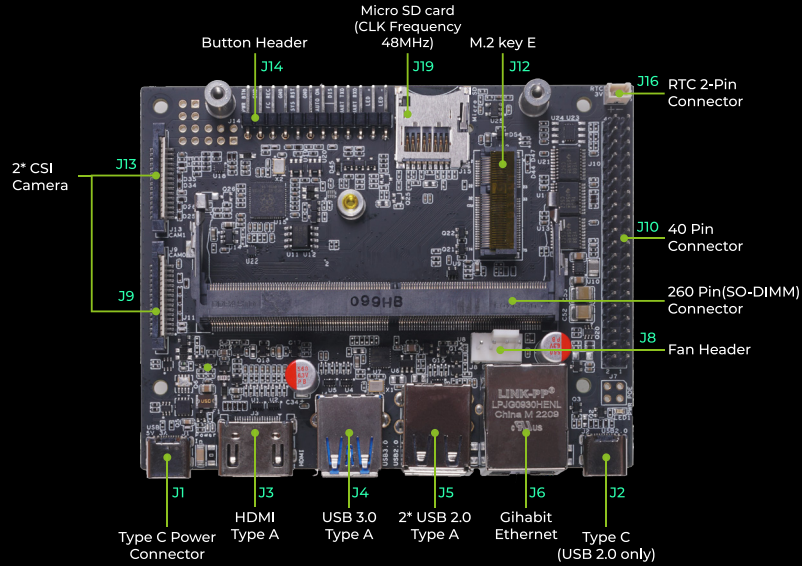
- reComputer J101 x1



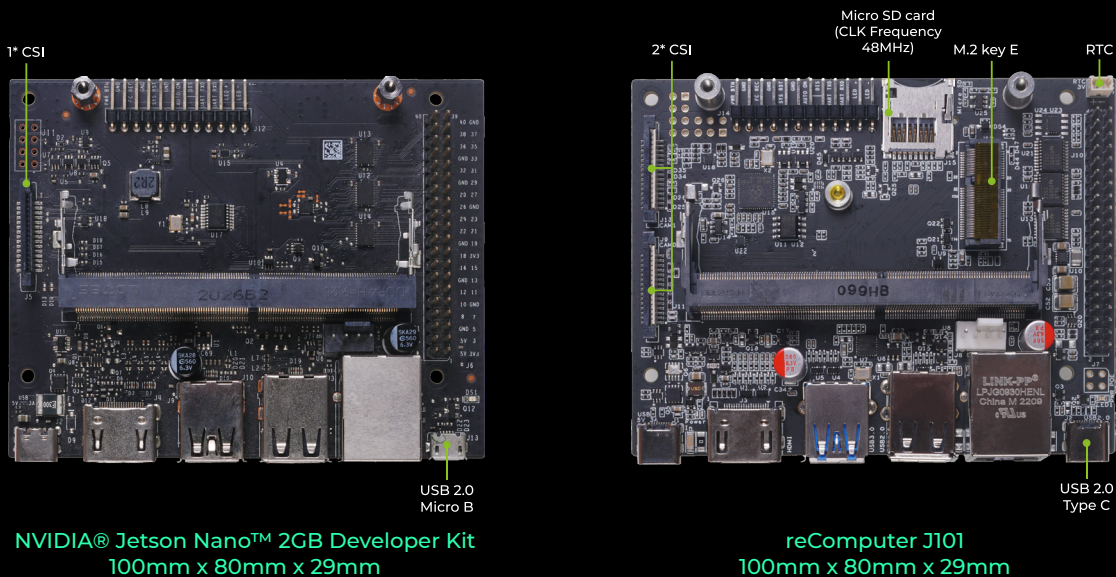
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Product Details



It has nearly the same functional design and same size as the carrier board of NVIDIA® Jetson Nano™ 2GB Developer Kit. Here is the difference between the two carrier boards as shown below.



The reComputer J101 provides several connectors with industry standard pin outs to support additional functionality beyond what is integrated on the main platform board. This includes:

- USB 2.0: Type A Stacked Connectors, Type C Connectors x2
- USB 3.0: Type A Connector
- Gigabit Ethernet: RJ45 Connector
- HDMI: HDMI Type A Connector
- M.2 Key E Socket
- Micro SD card slot

USB Port

The carrier board supports Five Connectors. One is a USB 2.0 Type C connector for Power In, another one is a USB 2.0 Type C connector supports Device mode only (including USB Recovery). There are also one dual stacked USB 2.0 Type A connectors and one USB 3.0 Type A connectors which supports Host mode only. A single load switch supplies VBUS to all USB Type A ports and is limited to 2A of output current.

USB 2.0 Type C power in only - J1:

Pin #	Module Pin Name	Module Pin #	Net Name	Usage/Description	Type/Dir Default
A4/B9	-	-	-	VBUS Supply	Power
A9/B4	-	-	-		Power
A5	-	-	PWR_CC1	-	-
B5	-	-	PWR_CC2	-	-
A7	-	-	USB 2.0_DN	Test Point Only	-
B7	-	-			-
A6	-	-	USB 2.0_DP	Test Point Only	-
B6	-	-			-
A8	-	-	-	-	-
B8	-	-	-	-	-
A1/B12	-	-	-	Ground	Ground
A12/B1	-	-	-		Ground

USB 2.0 Type C data only - J2:

Pin #	Module Pin Name	Module Pin #	Net Name	Usage/Description	Type/Dir Default
A4/B9	GPIO00 (USB_VBUS_EN0)	87	USB0_VBUS_DET*	VBUS Supply	Power
A9/B4					
A5	-	-	DAT_CC1	-	-
B5	-	-	DAT_CC2	-	-
A7	USB0_D_N	109	Type C_USB_DN	USB 2.0 #0 Data	Bidir
B7					
A6	USB0_D_P	111	Type C_USB_DP		
B6					
A8	-	-	-	-	-
B8	-	-	-	-	-
A1/B12	-	-	-	Ground	Ground
A12/B1	-	-	-		Ground

Note:
In the Type/Dir column, Output is to USB connector. Input is from USB connector. Bidir is for bidirectional signals.

USB 3.0 - J4:

Pin #	Module Pin Name ¹	Module Pin #	Net Name	Usage/Description	Type/Dir ²
USB 3.0 Type A					
1	-	-	-	VBUS Supply	Power
2	USB1_D_N	115	HUB_USB3_DM	USB 2.0 #3 Data from hub	Bidir
3	USB1_D_P	117	HUB_USB3_DP		
4	-	-	-	Ground	Ground
5	USBSS_RX_N	161	USBSS_RX6_N	USB 3.0 Receive Data from module	Input
6	USBSS_RX_P	163	USBSS_RX6_P		
7	-	-	-	Ground	Ground
8	USBSS_TX_N	166	USBSS_TX6_N	USB 3.0 Transmit Data from module	Output
9	USBSS_TX_P	168	USBSS_TX6_P		

Note:
1. The module pin names not directly connected to the USB connector pins but are routed to the input of the USB hub.
2. In the Type/Dir column, Output is to USB connectors. Input is from USB connectors. Bidir is for bidirectional signals.

Dual stacked USB 2.0 - J5 :

Pin #	Module Pin Name1	Module Pin #	Net Name	Usage/Description	Type/Dir2
USB 2.0 Type A					
1	-	-	-	VBUS Supply	Power
2	USB1_D_N	115	HUB_USB1_DM	USB 2.0 #1 Data from hub	Bidir
3	USB1_D_P	117	HUB_USB1_DP		
4	-	-	-	Ground	Ground
1	-	-	-	VBUS Supply	Power
2	USB1_D_N	115	HUB_USB2_DM	USB 2.0 #2 Data from hub	Bidir
3	USB1_D_P	117	HUB_USB2_DP		
4	-	-	-	Ground	Ground

Note:

1. The module pin names not directly connected to the USB connector pins but are routed to the input of the USB hub.
2. In the Type/Dir column, Output is to USB connectors. Input is from USB connectors. Bidir is for bidirectional signals.

Gigabit Ethernet - J6

Pin #	Module Pin Name	Module Pin #	Net Name	Usage/Description	Type/Dir
1	GBE_MDI0_P	186	GBE_MDI0_P	Gigabit Ethernet MDI 0+	Bidir
2	GBE_MDI0_N	184	GBE_MDI0_N	Gigabit Ethernet MDI 0-	Bidir
3	GBE_MDI1_P	192	GBE_MDI1_P	Gigabit Ethernet MDI 1+	Bidir
4	-	-	-	MCT	-
5	-	-	-	MCT	-
6	GBE_MDI1_N	190	GBE_MDI1_N	Gigabit Ethernet MDI 1-	Bidir
7	GBE_MDI2_P	198	GBE_MDI2_P	Gigabit Ethernet MDI 2+	Bidir
8	GBE_MDI2_N	196	GBE_MDI2_N	Gigabit Ethernet MDI 2-	Bidir
9	GBE_MDI3_P	204	GBE_MDI3_P	Gigabit Ethernet MDI 3+	Bidir
10	GBE_MDI3_N	202	GBE_MDI3_N	Gigabit Ethernet MDI 3-	Bidir
11	-	-	-	Power-Over-Ethernet	Power
12					
13					
14					
15	-	-	-	Green LED Anode	Input
16	GBE_LED_LINK	188	GBE_LED_LINK	Green LED Cathode. On for 1000Mbps link. Off for 10/100Mbps.	Output
17	-	-	-	Yellow LED Anode	Input
18	GBE_LED_ACT	194	GBE_LED_ACT	Yellow LED Cathode. On indicates activity.	Output
19	-	-		Shield Ground	Ground
20					

Note:
In the Type/Dir column, Output is to RJ45 connector. Input is from RJ45 connector. Bidir is for bidirectional signals.

HDMI - J3

HDMI Connector Pin Description

Pin #	Module Pin Name	Module Pin #	Net Name	Usage/Description	Type/Dir
1	DPI_TXD0_P	65	HDMI_TXD2_P	HDMI Transmit Data 2+	Output
2	-	-		Ground	Ground
3	DPI_TXD0_N	63	HDMI_TXD2_N	HDMI Transmit Data 2-	Output
4	DPI_TXD1_P	71	HDMI_TXD1_P	HDMI Transmit Data 1+	Output
5	-	-		Ground	Ground
6	DPI_TXD1_N	69	HDMI_TXD1_N	HDMI Transmit Data 1-	Output
7	DPI_TXD2_P	77	HDMI_TXD0_P	HDMI Transmit Data 0+	Output
8	-	-		Ground	Ground
9	DPI_TXD2_N	75	HDMI_TXD0_N	HDMI Transmit Data 0-	Output
10	DPI_TXD3_P	83	HDMI_TXC_P	HDMI Transmit Clock+	Output
11	-	-		Ground	Ground
12	DPI_TXD3_N	81	HDMI_TXC_N	HDMI Transmit Clock-	Output
13	HDMI_CEC	94	HDMI_CEC	HDMI CEC	Bidir
14	-	-		Unused	Unused
15	DPI_AUX_P	100	HDMI_DDC_SCL_PO	HDMI DDC Clock	Output /OD
16	DPI_AUX_N	98	HDMI_DDC_SDA_POL	HDMI DDC Data	Bidir/OD
17	-	-		Ground	Ground
18	-	-		HDMI 5V Power	Power
19	DPI_HPD	96	HDMI_HPD	HDMI Hot Plug Detect	Input

Note:

In the Type/Dir column, Output is to HDMI connector. Input is from HDMI connector. Bidir is for bidirectional signals.

M.2 Key E

Pin #	Module Pin Name	Usage/Description	Type/Dir	Pin #	Module Pin Name	Usage/Description	Type/Dir			
1	-	Ground	Ground	-	-	-	-			
3	USB2_D_P	USB 2.0 Data	Bidir	2	-	Main 3.3V Supply	Power			
5	USB2_D_N			4	-					
7	-	Ground	Ground	6	-	Unused	Unused			
9	-	Unused	Unused	8	I2S1_CLK	I2S #1 Clock	Bidir			
11				10	I2S1_FS	I2S #1 Left/Right Clock	Bidir			
13				12	I2S1_DIN	I2S #1 Data In	Input			
15				14	I2S1_DOUT	I2S #1 Data Out	Bidir			
17				16	-	Unused	Unused			
19				18	-	Ground	Ground			
21				20	GPIO2	Bluetooth Wake AP	Input			
23				22	UART0_RXD	UART #0 Receive	Input			
25				-	Key	Unused	24	-	Key	Unused
27							26			
29	28									
31	30									
33	-	Ground	Ground	32	UART0_TXD	UART #0 Transmit	Output			
35	PEX0_TX0_P	PCIe #0 Transmit Lane 0	Output	34	UART0_CTS*	UART #0 Clear to Send	Input			
37	PEX0_TX0_N			36	UART0_RTS*	UART #0 Request to Send	Output			
39	-	Ground	Ground	38	-	Unused	Unused			
41	PEX0_RX0_P	PCIe #0 Receive Lane 0	Input	40						
43	PEX0_RX0_N			42						
45	-	Ground	Ground	44						
47	PEX0_CLK_P	PCIe #0 Reference clock	Output	46						
49	PEX0_CLK_N			48						
51	-	Ground	Ground	50	CLK_32K_OUT	Suspend Clock (32KHz)	Output			
53	PEX0_CLKREQ*	PCIe #0 Clock Request	Bidir	52	PEX0_RST*	PCIe #0 Reset	Output			
55	PEX_WAKE*	PCIe Wake	Input	54	-	Unused	Unused			
57	-	Ground	Ground	56	-	Unused	Unused			
59	-	Unused	Unused	58	I2C2_SDA	I2C #2	Bidir/OD			
61	-			60	I2C2_SCL	I2C #2	Bidir/OD			
63	-	Ground	Ground	62	GPIO10	M.2, Key E Connector Alert	Input			
65	-	Unused	Unused	64	-	Unused	Unused			
67	-			66						
69	-	Ground	Ground	68	-	-	-			
71	-	Unused	Unused	70	-	-	-			
73	-			72	-	Main 3.3V Supply	Power			
75	-	Ground	Ground	74	-			-	-	

Note:
In the Type/Dir column, Output is to M.2 module. Input is from M.2 module. Bidir is for bidirectional signals.

Camera Connectors

CSI - J9

Pin #	Module Pin Name	Usage/Description	Type/Dir	Pin #	Module Pin Name	Usage/Description	Type/Dir
1	-	Ground	Ground	16	-	Not Used	-
2	CSI0_D0_N	CSI 0 Data 0	Input	17	-		
3	CSI0_D0_P			18	-		
4	-	Ground	Ground	19	-		
5	CSI0_D1_N	CSI 0 Data 1	Input	20	-		
6	CSI0_D1_P			21	-		
7	-	Ground	Ground	22	-		
8	CSI0_CLK_N	CSI 0 Clock	Input	23	-		
9	CSI0_CLK_P			24	-		
10	-	Ground	Ground	25	-		
11	CAM0_PWDN	Camera #0 Power-down	Output	26	-		
12	CAM0_MCLK	Camera #0 Master Clock	Output	27	-		
13	CAM0_I2C_SCL	Camera I2C. 2.2kΩ pull-ups on module. 1.6kΩ pull-ups on the carrier board. The module CAM_I2C pins connect to an I2C mux. The camera connector #1 receives the I2C from the mux (1st output)	Output	28	-		
14	CAM0_I2C_SDA		Bidir	29	-		
15	-	+3.3V	Power	30	-		

CSI - J13

Pin #	Module Pin Name	Usage/Description	Type/Dir	Pin #	Module Pin Name	Usage/Description	Type/Dir
1	-	Ground	Ground	16	-	Not Used	-
2	CSI2_D0_N	CSI 2 Data 0	Input	17	-		
3	CSI2_D0_P			18	-		
4	-	Ground	Ground	19	-		
5	CSI2_D1_N	CSI 2 Data 1	Input	20	-		
6	CSI2_D1_P			21	-		
7	-	Ground	Ground	22	-		
8	CSI2_CLK_N	CSI 2 Clock	Input	23	-		
9	CSI2_CLK_P			24	-		
10	-	Ground	Ground	25	-		
11	CAM1_PWDN	Camera #1 Power-down	Output	26	-		
12	CAM1_MCLK	Camera #1 Master Clock	Output	27	-		
13	CAM1_I2C_SCL	Camera I2C. 2.2kΩ pull-ups on module. 1.6kΩ pull-ups on the carrier board. The module CAM_I2C pins connect to an I2C mux. The camera connector #1 receives the I2C from the mux (1st output)	Output	28	-		
14	CAM1_I2C_SDA		Bidir	29	-		
15	-	+3.3V	Power	30	-		

40-Pin Expansion Header - J10

40-Pin part 1

Header Pin #	Module Pin Name	Module Pin #	Tegra Pin name	Default Usage / Description	Alternate Functionality
1	-	-	-	Main 3.3V Supply	-
2	-	-	-	Main 5.0V Supply	-
3	I2C1_SDA	191	GEN2_I2C_SDA	I2C #1 Data	GPIO
4	-	-	-	Main 5.0V Supply	-
5	I2C1_SCL	189	GEN2_I2C_SCL	I2C #1 Clock	GPIO
6	-	-	-	Ground	-
7	GPIO09	211	AUD_MCLK	GPIO	Audio Master Clock
8	UART1_TXD	203	UART2_TXD	UART #1 Transmit	GPIO
9	-	-	-	Ground	-
10	UART1_RXD	205	UART2_RXD	UART #1 Receive	GPIO
11	UART1_RTS*	207	UART2_RTS	GPIO	UART #2 Request to Send
12	I2S0_SCLK	199	DAP4_SCLK	GPIO	Audio I2S #0 Clock
13	SPI1_SCK	106	SPI2_SCK	GPIO	SPI #1 Shift Clock
14	-	-	-	Ground	-
15	GPIO12	218	LCD_TE	GPIO	-
16	SPI1_CS1*	112	SPI2_CS1	GPIO	SPI #1 Chip Select #1
17	-	-	-	Main 3.3V Supply	-
18	SPI1_CS0*	110	SPI2_CS0	GPIO	SPI #0 Chip Select #0
19	SPI0_MOSI	89	SPI1_MOSI	GPIO	SPI #0 Master Out/Slave In
20	-	-	-	Ground	-
21	SPI0_MISO	93	SPI1_MISO	GPIO	SPI #0 Master In/Slave Out
22	SPI1_MISO	108	SPI2_MISO	GPIO	SPI #1 Master In/Slave Out
23	SPI0_SCK	91	SPI1_SCK	GPIO	SPI #0 Shift Clock
24	SPI0_CS0*	95	SPI1_CS0	GPIO	SPI #0 Chip Select #0
25	-	-	-	Ground	-
26	SPI0_CS1*	97	SPI1_CS1	GPIO	SPI #0 Chip Select #1
27	I2C0_SDA	187	GEN1_I2C_SDA	I2C #0 Data	GPIO
28	I2C0_SCL	185	GEN1_I2C_SCL	I2C #0 Clock	GPIO
29	GPIO01	118	CAM_AF_EN	GPIO	Camera MCLK #2
30	-	-	-	Ground	-
31	GPIO11	216	GPIO_PZ0	GPIO	Camera MCLK #3
32	GPIO07	206	LCD_BL_PWM	GPIO	PWM
33	GPIO13	228	GPIO_PE6	GPIO	PWM
34	-	-	-	Ground	-
35	I2S0_FS	197	DAP4_FS	GPIO	Audio I2S #0 Field Select
36	UART1_CTS*	209	UART2_CTS*	GPIO	UART #1 Clear to Send
37	SPI1_MOSI	104	SPI2_MOSI	GPIO	SPI #1 Master Out/Slave In
38	I2S0_DIN	195	DAP4_DIN	GPIO	Audio I2S #0 Data in
39	-	-	-	Ground	-
40	I2S0_DOUT	193	DAP4_DOUT	GPIO	Audio I2S #0 Data Out

40-Pin part 2

Header Pin #	Type/Direction	Pin Drive or Power Pin Max Current	Tegra GPIO Port #	Power- on Default	PU/PD on Module	Notes
1	Power (input)	1A	-	-	-	1
2	Power (input/output)	1A	-	-	-	1
3	Bidir/OD	1mA / -1mA	PJ.03	z	2.2KΩ PU	2
4	Power	1A	-	-	-	-
5	Bidir/OD	1mA / -1mA	PJ.02	z	2.2KΩ PU	2
6	Ground	-	-	-	-	-
7	Bidir/Output	20uA / -20uA	PBB.00	pd		3
8	Bidir/Output	20uA / -20uA	PG.00	pd		3
9	Ground	-	-	-	-	-
10	Bidir/Input	20uA / -20uA	PG.01	pu		3
11	Bidir/Output	20uA / -20uA	PG.02	pd		3
12	Bidir	20uA / -20uA	PJ.07	pd		3
13	Bidir/Output	20uA / -20uA	PB.06	pd		3
14	Ground	-	-	-	-	-
15	Bidir	20uA / -20uA	PY.02	pd		3
16	Bidir/Output	20uA / -20uA	PDD.00	pu		3
17	Power	1A	-	-	-	1
18	Bidir/Output	20uA / -20uA	PB.07	pu		3
19	Bidir/Output	20uA / -20uA	PC.00	pd		3
20	Ground	-	-	-	-	-
21	Bidir/Input	20uA / -20uA	PC.01	pd		3
22	Bidir/Input	20uA / -20uA	PB.05	pd		3
23	Bidir/Output	20uA / -20uA	PC.02	pd		3
24	Bidir/Output	20uA / -20uA	PC.03	pu		3
25	Ground	-	-	-	-	-
26	Bidir/Output	20uA / -20uA	PC.01	pu		3
27	Bidir/OD	1mA / -1mA	PB.05	z	2.2KΩ PU	2
28	Bidir/OD	1mA / -1mA	PC.02	z	2.2KΩ PU	2
29	Bidir/Output	20uA / -20uA	PC.03	pd		3
30	Ground	-	-	-	-	-
31	Bidir/Output	20uA / -20uA	PZ.00	pd		3
32	Bidir/Output	20uA / -20uA	PV.00	pd		3
33	Bidir/Output	20uA / -20uA	PE.06	pd		3
34	Ground	-	-	-	-	-
35	Bidir	20uA / -20uA	PJ.04	pd		3
36	Bidir/Input	20uA / -20uA	PG.03	pd		3
37	Bidir/Output	20uA / -20uA	PB.04	pd		3
38	Bidir/Input	20uA / -20uA	PJ.05	pd		3
39	Ground	-	-	-	-	-
40	Bidir/Output	20uA / -20uA	PJ.06	pd		3

Note:

1. This is current capability per power pin.
2. These pins are connected to NVIDIA® Tegra® directly. They are open-drain (either pulled up or driven low by Tegra when configured as outputs). The max drive that meets the data sheet VOL is 1 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. In the Type/Dir column, output is to expansion header. Input is from expansion header. Bidir is for bidirectional signals. Where two directions are shown, the first is for the primary function (mostly GPIOs) and the second is for the alternate function.
5. Where the signal direction is input or output in Table 3-3, this matches the typical special function usage (e.g. SPI, I2S, etc.). The direction is bidirectional if these are configured as GPIOs.
6. All signals on the 40-pin header are 3.3V levels.

Button Header - J14

Pin #	Module Pin Name	Module Pin #	Signal Name	Usage/Description	Type/Dir Default
1	-	-	PC_LED-	Connects to LED Cathode to indicate System Sleep/Wake (Off when system in sleep mode)	Input
2	-	-	PC_LED+	Connects to LED Anode (see Pin 1)	Output
3	UART2_RXD (DEBUG)		UART2_RXD_LS	UART #2 Receive	Input
4	UART1_TXD (DEBUG)		UART2_TXD_LS	UART #2 Transmit	Output
5	-		BMCU_ACOK	Connect Pin 5 and Pin 6 to disable Auto-Power-On and require power automation press.	Input
6	-		LEDAUTO_ON_DIS	Auto Power-on disable: Pulled to GND. See Pin 5.	na
7	-		GND	Ground	Ground
8	SYS_RESET	239	SYS_RST*	Temporarily connect Pin 7 and Pin 8 to reset system	Input
9	-		GND	Ground	Ground
10	FORCE_RECOVERY	214	FORCE_RECOVERY*	Connect Pin 9 and Pin 10 during power-on to put system in USB Force Recovery mode.	Input
11	-		GND	Ground	Ground
12	SLEEP/WAKE	240	PWR_BTN*	Connect Pin 11 and Pin 12 to initiate power-on if Auto-Power-On disabled (Pin 5 and Pin	Input

Note:

In the Type/Dir column, Output is to automation header. Input is from automation header. Bidir is for bidirectional signals.

SDIO Pin Descriptions - J19

Pin #	Module Pin Name	Module Pin #	Net Name	Usage/Description	Type/Dir Default
1	SDIO_D2	223	SDMMC_DAT2	SD Card or SDIO Data 2	Bidir
2	SDIO_D3	225	SDMMC_DAT3	SD Card or SDIO Data 3	Bidir
3	SDIO_CMD	227	SDMMC_CMD	SD Card or SDIO Command	Bidir
4	-	-	-	1.8V/3.3V	Power
5	SDIO_CLK	229	SDMMC_CLK	SD Card or SDIO Clock	Output
6	-	-	-	Ground	Ground
7	SDIO_D0	219	SDMMC_DAT0	SD Card or SDIO Data 0	Bidir
8	SDIO_D1	221	SDMMC_DAT1	SD Card or SDIO Data 1	Bidir

Notes:

1. In the Type/Dir column, Output is from Jetson Nano. Input is to Jetson Nano. Bidir is for Bidirectional signals.
2. The direction shown in the table above for SDMMC_CLK is true when used for that function. If used as a GPIO, the pin supports input or output (bidirectional).
3. If the SDMMC pins are connected to a 1.8V only device, the interface voltage should be configured for 1.8V operation in the Pinmux.

Fan Connector - J8

Pin #	Module Pin Name	Module Pin #	Net Name	Usage/Description	Type/Dir Default
1	–	–	–	Ground	Ground
2	–	–	–	Main 5.0V Supply	Power
3	GPIO08 (SDMMC_CD)	208	FAN_TACH	Fan Tachometer signal	Input
4	GPIO14 (PWM)	230	FAN_PWM	Fan Pulse Width Modulation signal	Output

Note:

In the Type/Dir column, Output is to camera module. Input is from camera module. Bidir is for bidirectional signals.

RTC-Coin Cell Batter Holder - J18

Pin #	Module Pin Name	Module Pin #	Net Name	Usage/Description	Type/Dir Default
1	–	–	–	Ground	Ground
2	PMIC_BBAT	235	BBAT	RTC Back-up battery power	Power

RTC-Pin Header - J16

Pin #	Module Pin Name	Module Pin #	Net Name	Usage/Description	Type/Dir Default
1	–	–	–	Ground	Ground
2	PMIC_BBAT	235	BBAT	RTC Back-up battery power	Power

More information

Please check our Wiki and ask question at our Forum or Discord community. For more information, you can also refer to NVIDIA official Jetson Download Center