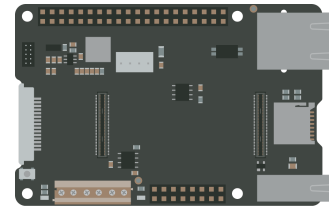# Pinout Table - Portenta Hat Carrier

Description

This document shows a detailed pinout table for the Portenta Hat Carrier sorted by its main connectors.

Raspberry PI 40-Pins Connector (J5)					
Pin number	Silkscreen	Power Net	Portenta HD Standard Pin	High-Density Pin	Interface
1	3V3	+3V3_PORTENTA	VCC	J2-23, J2-34, J2-43, J2-69	
2	5V	+5V	VIN / USB0_VBUS	J1-21, J1-24, J1-32, J1-41, J1-48	
3	I2C2 SDA			J2-45	I2C 2 SDA
4	5V	+5V	VIN	J1-21, J1-24, J1-32, J1-41, J1-48	
5	I2C2 SCL		I2C2_SCL	J2-47	I2C 2 SCL
6	GND	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
7	PWM0		PWM_0	J2-59	
8	TX3		SERIAL3_TX	J2-25	UART 3 TX
9	GND	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
10	RX3		SERIAL3_RX	J2-27	UART 3 RX
11	GPIO2		GPIO2	J2-50	
12	I2S CK		I2S_CK	J1-56	I2S CK
13	GPIO6		GPIO_6	J2-58	
14	GND	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
15	SAI D0		SAI_D0	J2-53	SAI D0
16	SAI CK		SAI_CK	J2-49	SAI CK
17	3V3	+3V3_PORTENTA	VCC	J2-23, J2-34, J2-43, J2-69	
18	SAI FS		SAI_FS	J2-51	SAI FS
19	SPI1 COPI		SPI1_MOSI	J2-42	SPI 1 MOSI
20	GND	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
21	SPI1 CIPO		SPI1_MISO	J2-40	SPI 1 MISO
22	PWM1		PWM_1	J2-61	
23	SPI1 SCK		SPI1_CK	J2-38	SPI 1 CK
24	SPI1 CE		SPI1_CS	J2-36	SPI 1 CS
25	GND	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	

26	PWM2		PWM_2	J2-63	
27	I2C0 SDA		I2C0_SDA	J1-44	I2C 0 SDA
28	I2C0 SCL		I2C0_SCL	J1-46	I2C 0 SCL
29	RX1		SERIAL1_RX	J1-35	UART 1 RX
30	GND	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
31	PWM3		PWM_3	J2-65	
32	TX1		SERIAL1_TX	J1-33	UART 1 TX
33	PWM4		PWM_4	J2-67	
34	GND	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
35	I2S WS		I2S_WS	J1-58	I2S WS
36	PWM5		PWM_5	J2-60	
37	PWM6		PWM_6	J2-62	
38	I2S SDI		I2S_SDI	J1-60	I2S SDI
39	GND	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
40	I2S SDO		I2S_SDO	J1-62	I2S SDO

Analog 16-Pin Header (J6)					
Pin number	Silkscreen	Power Net	Portenta HD Standard Pin	High-Density Pin	Interface
1	A0		ANALOG_A0	J2-73	
2	A1		ANALOG_A1	J2-75	
3	A2		ANALOG_A2	J2-77	
4	A3		ANALOG_A3	J2-79	
5	A4		ANALOG_A4	J2-74	
6	A5		ANALOG_A5	J2-76	
7	A6		ANALOG_A6	J2-78	
8	A7		ANALOG_A7	J2-80	
9	PWM7		PWM_7	J2-64	
10	PWM8		PWM_8	J2-66	
11	LICELL		LICELL	J2-7	RTC Power Source
12	PWM4		GPIO_0	J2-46	
13	3V3	+3V3_PORTENTA	VCC	J2-23, J2-34, J2-43, J2-69	
14	TX2		SERIAL2_TX	J2-26	UART 2 TX
15	GND	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
16	RX2		SERIAL2_RX	J2-28	UART 2 RX

Power Block CAN bus (J9)					
Pin number	Silkscreen	Power Net	Portenta HD Standard Pin	High-Density Pin	Interface
1	VIN 7-32VDC	INPUT_7V-32V			
2	GND	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
3	GND	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
4	5V	+5V	VIN	J1-21, J1-24, J1-32, J1-41, J1-48	
5	CANH			J1-49 (Through U1)	CAN BUS - CANH
6	CANL			J1-51 (Through U1)	CAN BUS - CANL

FAN PWM Header (J11)					
Pin number	Silkscreen	Power Net	Portenta HD Standard Pin	High-Density Pin	Interface
1	PWM9		PWM_9	J2-68	
2	N/A				
3	5V	+5V	VIN	J1-21, J1-24, J1-32, J1-41, J1-48	
4	GND	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	

JTAG Header (J3)					
Pin number	Silkscreen	Power Net	Portenta HD Standard Pin	High-Density Pin	Interface
1	N/A	+3V3_PORTENTA	VCC	J2-23, J2-34, J2-43, J2-69	
2	N/A		JTAG_SWD	J1-75	JTAG SWD
3	N/A	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
4	N/A		JTAG_SCK	J1-77	JTAG SCK
5	N/A	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
6	N/A		JTAG_SWO	J1-79	JTAG SWO
7	N/A		NC	NC	
8	N/A		JTAG_TDI	J1-78	JTAG TDI
9	N/A		JTAG_TRST	J1-80	JTAG TRST
10	N/A		JTAG_RST	J1-73	JTAG RST

Pin number	Silkscreen	Power Net	Portenta HD Standard Pin	High-Density Pin	Interface
MIPI Camera (J10)					
1	N/A	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
2	N/A		CAM_D0_D0_N	J2-16	
3	N/A		CAM_D1_D0_P	J2-14	
4	N/A	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
5	N/A		CAM_D2_D1_N	J2-12	
6	N/A		CAM_D3_D1_P	J2-10	
7	N/A	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
8	N/A		CAM_CK_CK_N	J2-20	
9	N/A		CAM_VS_CK_P	J2-18	
10	N/A	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
11	N/A		GPIO_5	J2-56	
12	N/A		NC	NC	
13	N/A		I2C1_SCL	J1-45	I2C 1 SCL
14	N/A		I2C1_SDA	J1-43	I2C 1 SDA
15	N/A	+3V3_PORTENTA	VCC	J2-23, J2-34, J2-43, J2-69	

Pin number	Silkscreen	Power Net	Portenta HD Standard Pin	High-Density Pin	Interface
USB-A (J4)					
1	N/A	+5V	VIN / USB0_VBUS	J1-21, J1-24, J1-32, J1-41, J1-48	
2	N/A		USB0_D_N	J1-28	USB D-
3	N/A		USB0_D_P	J1-26	USB D+
4	N/A	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	

Ethernet (J8)					
Pin number	Silkscreen	Power Net	Portenta HD Standard Pin	High-Density Pin	Interface
1	N/A	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
2	ETH CENTER TAP				
3	N/A		ETH_D_P	J1-13	
4	N/A		ETH_D_N	J1-15	
5	N/A		ETH_C_P	J1-9	
6	N/A		ETH_C_N	J1-11	
7	N/A		ETH_B_P	J1-5	
8	N/A		ETH_B_N	J1-7	
9	N/A		ETH_A_P	J1-1	
10	N/A		ETH_A_N	J1-3	
11	N/A		ETH_LED2	J1-19	
12	N/A	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
13	N/A		N/A		
14	N/A		ETH_LED1	J1-17	

SD Card Slot (J7)					
Pin number	Silkscreen	Power Net	Portenta HD Standard Pin	High-Density Pin	Interface
1	N/A		SDC_D2	J1-63	
2	N/A		SDC_D3	J1-65	
3	N/A		SDC_CMD	J1-57	
4	N/A	VDD_SDCARD	VSD	J1-72	
5	N/A		SDC_CLK	J1-55	
6	N/A	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	
7	N/A		SDC_D0	J1-59	
8	N/A		SDC_D1	J1-61	
CD1	N/A		SDC_CD	J1-67	
CD2	N/A	GND	GND	J1-22, J1-31, J1-42, J1-47, J1-54 J2-24, J2-33, J2-44, J2-57, J2-70	