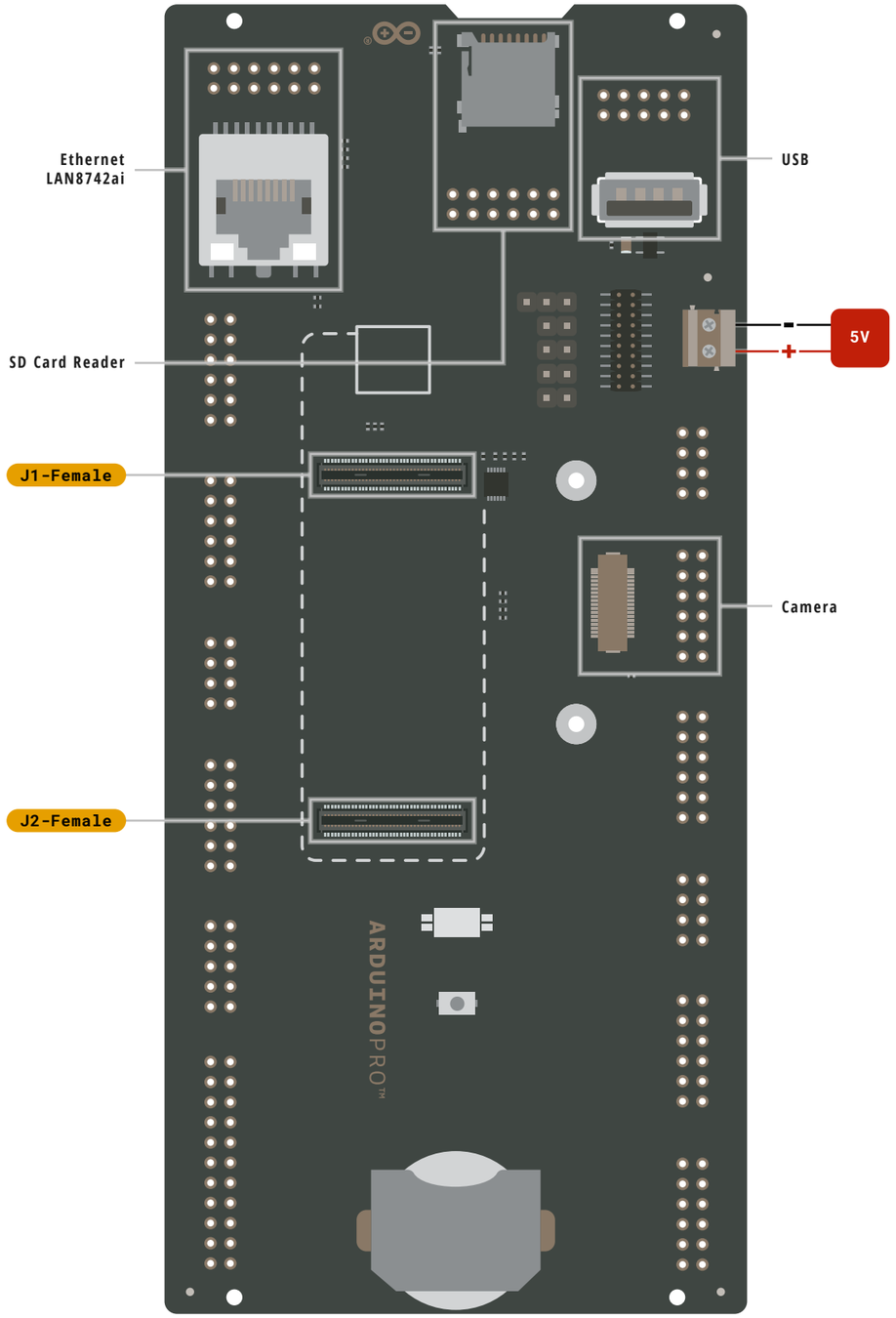
TOP VIEW



Legend:

- Power
- Ground
- Power Input
- Power Output
- GPIO Digital External
- Analog External
- Main Part
- High Density Connector pin
- Internal Component
- Other Pins (Reset, System Control, Debugging)
- LED
- RGB LED
- Short Circuit allowed functions

POWER LIMITS
depend on the board used

CIPO/COPI have previously been referred to as MISO/MOSI

ARDUINO **PORTENTA BREAKOUT**

SKU code: ASX00031
Full Pinout - Page 1 of 7
Last update: 28 Nov, 2022

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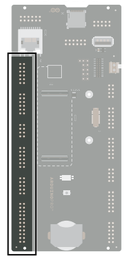
TOP VIEW

Device Name (Linux)	GPIO Linux	HDC pins			HDC pins	GPIO Linux	Device Name (Linux)
/sys/bus/iio/devices/iio:device0/in_voltage0_raw	179‖167	J1-34‖J2-73	+3V3 OUT		OUT +3V3		
/dev/ttyX0	127	J1-36	UART0_TX		UART1_TX	J1-33	128	/dev/ttymxc1
	126	J1-38	UART0_RX		UART1_RX	J1-35	127	
	125	J1-40	UART0_RTS		UART1_RTS	J1-37	126	
			UART0_CTS		UART1_CTS	J1-39	125	
			GND		GND			
			DISPLAY_D3P		DISPLAY_D3N			
			DISPLAY_D2P		DISPLAY_D2N			
			DISPLAY_D1P	READ ONLY	DISPLAY_D1N			READ ONLY
			DISPLAY_D0P		DISPLAY_D0N			
			DISPLAY_CLKP		DISPLAY_CLKN			
			GND		GND			
			+5V OUT		OUT +5V			
can0 (network)	177		CAN0_TX		CAN1_TX	J1-49	177	can1 (network)
	178		CAN0_RX		CAN1_RX	J1-51	178	
			GND		GND			
			+3V3 OUT		GND			
/dev/i2c-2		J1-43	I2C0_SDA		I2C0_SCL	J1-45		/dev/i2c-2
			+3V3 OUT		GND			
/dev/i2c-1	145	J1-44	I2C1_SDA		I2C1_SCL	J1-46	144	/dev/i2c-1
			+3V3 OUT		GND			
/dev/i2c-3 ‖ /dev/video0	149‖N/A	J2-45‖J2-10	I2C2_SDA		I2C2_SCL	J2-12‖J2-47	N/A‖148	/dev/i2c-3 ‖ /dev/video0
			+3V3 OUT		GPIO_0	J2-46	160	
	161	J2-48	GPIO_1		GPIO_2	J2-50	162	
	163	J2-52	GPIO_3		GPIO_4	J2-54	164	
	165	J2-56	GPIO_5		GPIO_6	J2-58	166	
			GND		GND			

Pins from ANALOG_A1 to ANALOG_A4 are READ ONLY

			GND	GND			
		J2-72	ANALOG_REFN	PWM0	J2-59	183	/sys/class/pwm/pwmchip0/pwm0
		J2-71	ANALOG_REFP	PWM1	J2-61	184	/sys/class/pwm/pwmchip0/pwm1
/dev/ttyX0 ‖ /sys/bus/iio/devices/iio:device0/in_voltage0_raw	179‖167	J1-34‖J2-73	ANALOG_A0	PWM2	J2-63	185	/sys/class/pwm/pwmchip0/pwm2
/sys/bus/iio/devices/iio:device0/in_voltage1_raw	168	J2-75	ANALOG_A1	PWM3	J2-65	186	/sys/class/pwm/pwmchip0/pwm3
N/A ‖ /sys/bus/iio/devices/iio:device0/in_voltage4_raw ‖ /sys/bus/iio/devices/iio:device0/in_voltage2_raw	136‖171‖169	J2-40‖J2-74‖J2-77	ANALOG_A2	PWM4	J2-67	187	/sys/class/pwm/pwmchip0/pwm4
				PWM5	J2-60	188	/sys/class/pwm/pwmchip0/pwm5
N/A ‖ /sys/bus/iio/devices/iio:device0/in_voltage5_raw ‖ /sys/bus/iio/devices/iio:device0/in_voltage3_raw	135‖172‖170	J2-42‖J2-76‖J2-79	ANALOG_A3	PWM6	J2-62	189	/sys/class/pwm/pwmchip0/pwm6
				PWM7	J2-64	190	/sys/class/pwm/pwmchip0/pwm7
N/A ‖ /sys/bus/iio/devices/iio:device0/in_voltage4_raw ‖ /sys/bus/iio/devices/iio:device0/in_voltage2_raw	136‖171‖169	J2-40‖J2-74‖J2-77	ANALOG_A4	PWM8	J2-66	191	/sys/class/pwm/pwmchip0/pwm8
				PWM9	J2-68	192	/sys/class/pwm/pwmchip0/pwm9
N/A ‖ /sys/bus/iio/devices/iio:device0/in_voltage5_raw ‖ /sys/bus/iio/devices/iio:device0/in_voltage3_raw	135‖172‖170	J2-42‖J2-76‖J2-79	ANALOG_A5				
/sys/bus/iio/devices/iio:device0/in_voltage6_raw	173	J2-22‖J2-78	ANALOG_A6				
/dev/video0 ‖ /sys/bus/iio/devices/iio:device0/in_voltage7_raw	N/A‖174	J2-20‖J2-80	ANALOG_A7				

SD Card



TOP VIEW

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ARDUINO PORTENTA BREAKOUT

SKU code: ASX00031
Full Pinout - Page 2 of 7
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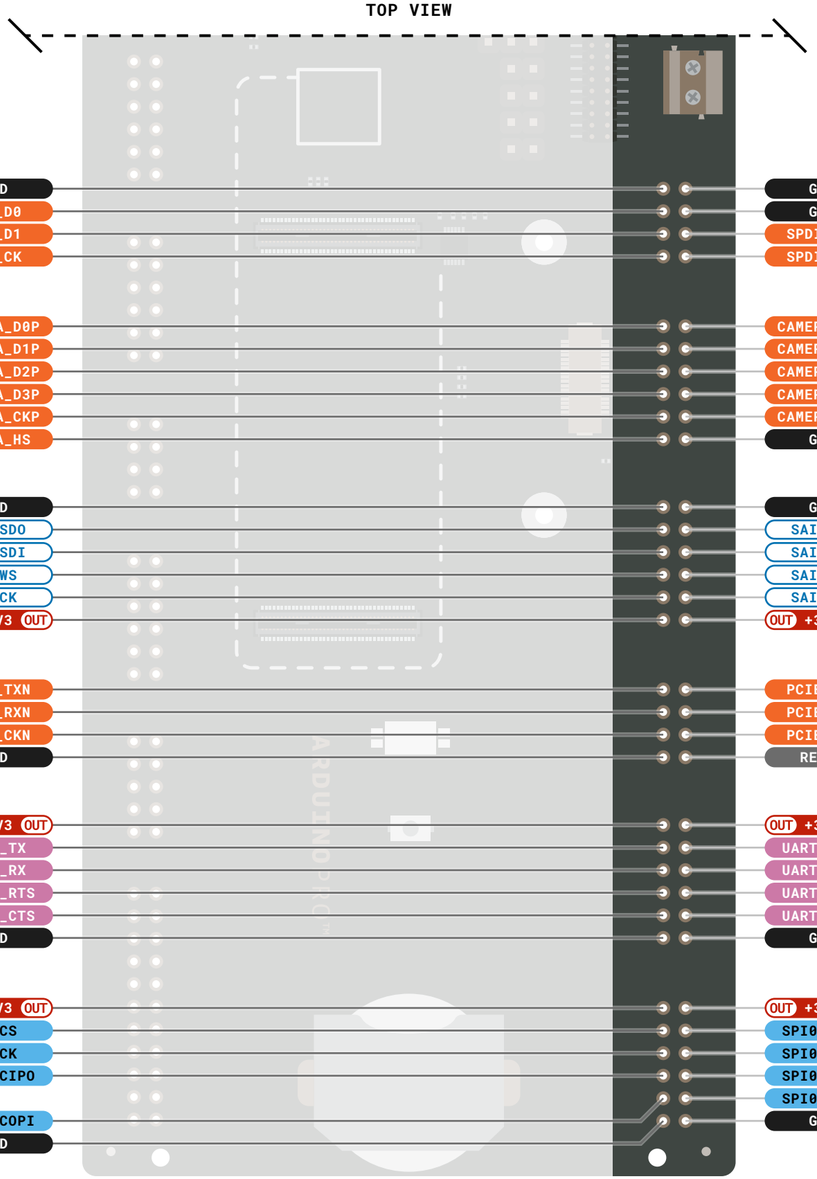
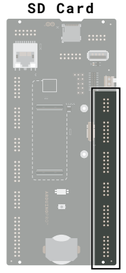
TOP VIEW



GPIO Linux	HDC pins				GPIO Linux	
		GND		GND		
178	J1-68	PDM_D0		GND		
SAI 178	J1-70	PDM_D1		SPDIF_RX		178
SAI5_RXC 178	J1-66	PDM_CK		SPDIF_TX		178

Device Name (Linux)				HDC pins		Device Name (Linux)
/dev/video0		J2-14	CAMERA_D0P	CAMERA_D0N	J2-16	/dev/video0
/dev/video0 || /dev/i2c-3	N/A||149	J2-10||J2-45	CAMERA_D1P	CAMERA_D1N	J2-12||J2-47 N/A||148	/dev/video0 || /dev/i2c-3
/dev/video0		J2-6	CAMERA_D2P	CAMERA_D2N	J2-8	/dev/video0
/dev/video0 || N/A	N/A||106	J2-2 ||J2-51	CAMERA_D3P	CAMERA_D3N	J2-4 ||J2-53 N/A||108	/dev/video0 || N/A
/dev/video0 || N/A	N/A||107	J2-18||J2-49	CAMERA_CKP	CAMERA_CKN	J2-20||J2-80 N/A||174	/dev/video0 || /sys/bus/iio/devices/iio:device0/in_voltage7_raw
/sys/bus/iio/devices/iio:device0/in_voltage6_raw	173	J2-22||J2-78	CAMERA_HS	GND		

SD Card



TOP VIEW

		GND		GND		
178	J1-62	I2S_SDO		SAI_D0	J2-4 ||J2-53	
178	J1-60	I2S_SDI		SAI_D1	J2-55 N/A||108	/dev/video0 || N/A
178	J1-58	I2S_WS		SAI_FS	J2-2 ||J2-51 106	/dev/video0 || N/A
178	J1-56	I2S_CK		SAI_SCK	J2-18||J2-49 N/A||107	/dev/video0 || N/A
		+3V3 OUT		OUT +3V3		

		PCIE_TXN		PCIE_TXP		
		PCIE_RXN		PCIE_RXP		
		PCIE_CKN		PCIE_CKP		
		GND		RESET		

		+3V3 OUT		OUT +3V3		
/dev/ttymxc3 157	J2-25	UART3_TX		UART2_TX	J2-26 155	/dev/ttymxc2 (Linux Console)
/dev/ttymxc3 156	J2-27	UART3_RX		UART2_RX	J2-28 154	/dev/ttymxc2 (Linux Console)
		UART3_RTS		UART2_RTS		
		UART3_CTS		UART2_CTS		
		GND		GND		

		+3V3 OUT		OUT +3V3		
	137 J2-36		SPI1_CS		SPI0_CS	
	134 J2-38		SPI1_CK		SPI0_CK	
N/A || /sys/bus/iio/devices/iio:device0/in_voltage4_raw || /sys/bus/iio/devices/iio:device0/in_voltage2_raw	136||171||169	J2-40||J2-74||J2-77	SPI1_CIPO		SPI0_CIPO	
					SPI0_COPI	
N/A || /sys/bus/iio/devices/iio:device0/in_voltage5_raw || /sys/bus/iio/devices/iio:device0/in_voltage3_raw	135||172||170	J2-42||J2-76||J2-79	SPI1_COPI		GND	
		GND				

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POWER LIMITS
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ARDUINO PORTENTA BREAKOUT

SKU code: ASX00031
Full Pinout - Page 3 of 7
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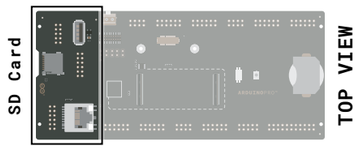

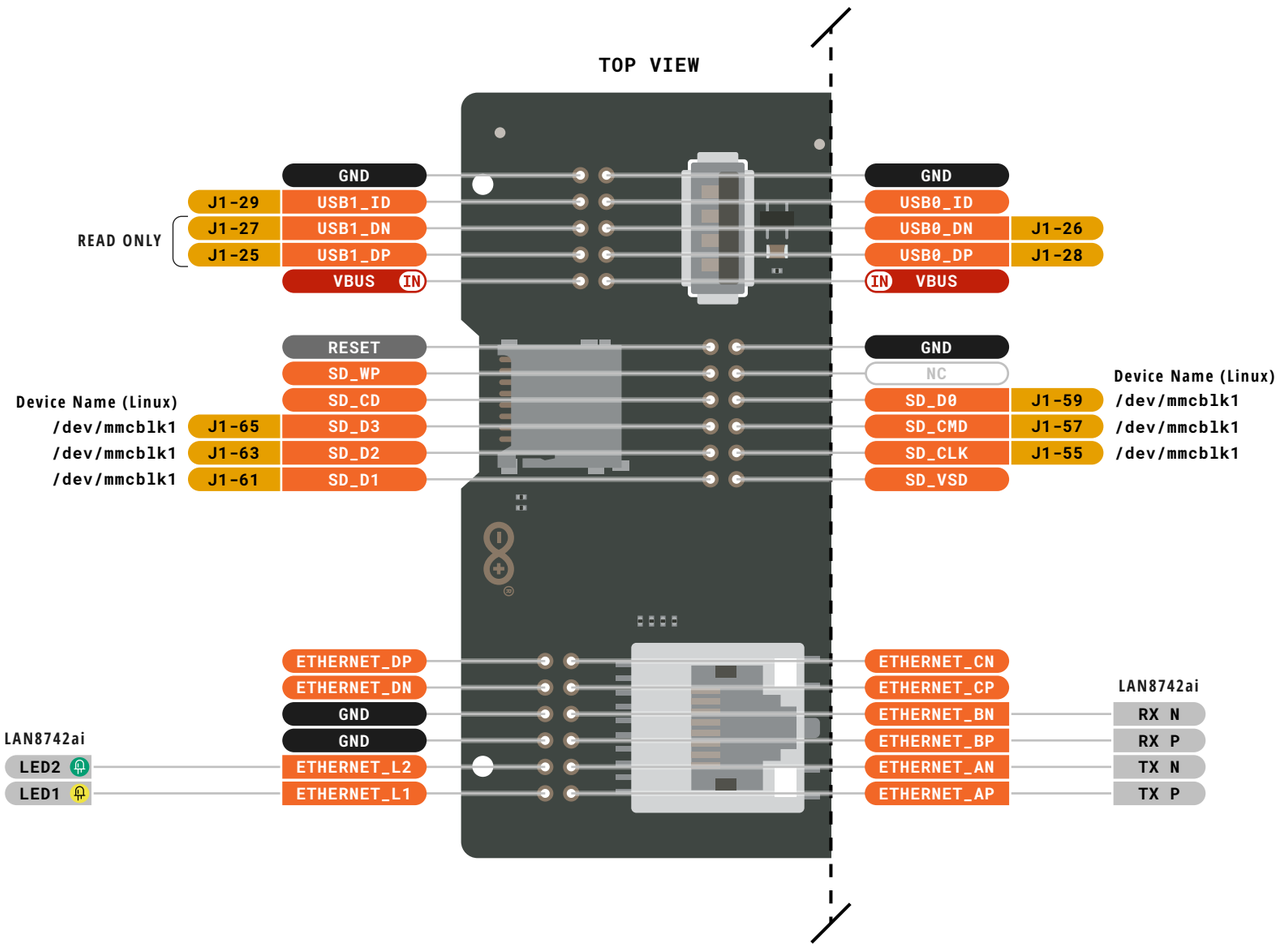

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ARDUINO

PORTENTA BREAKOUT

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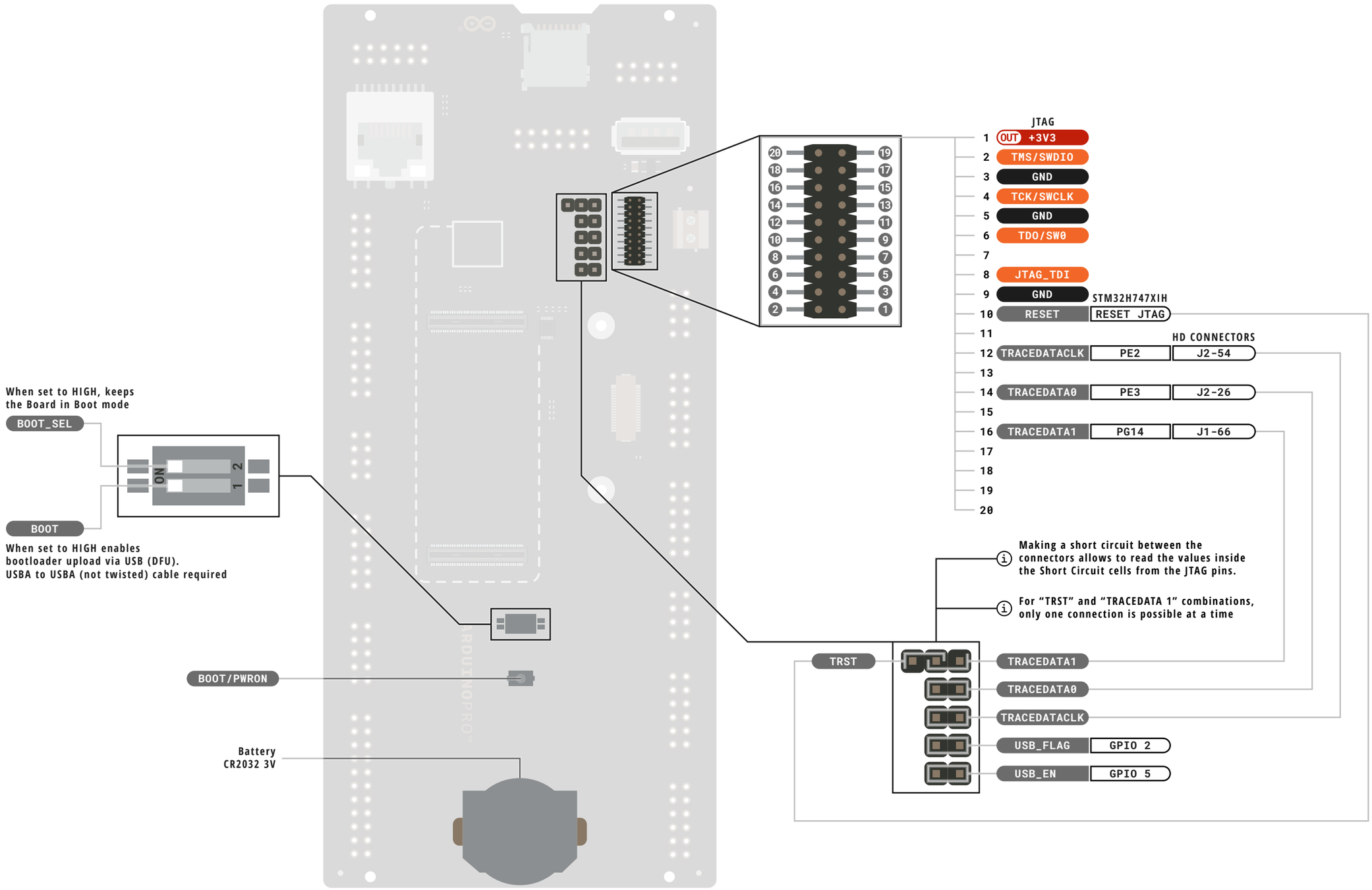
TOP VIEW



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PORTENTA BREAKOUT

ARDUINO

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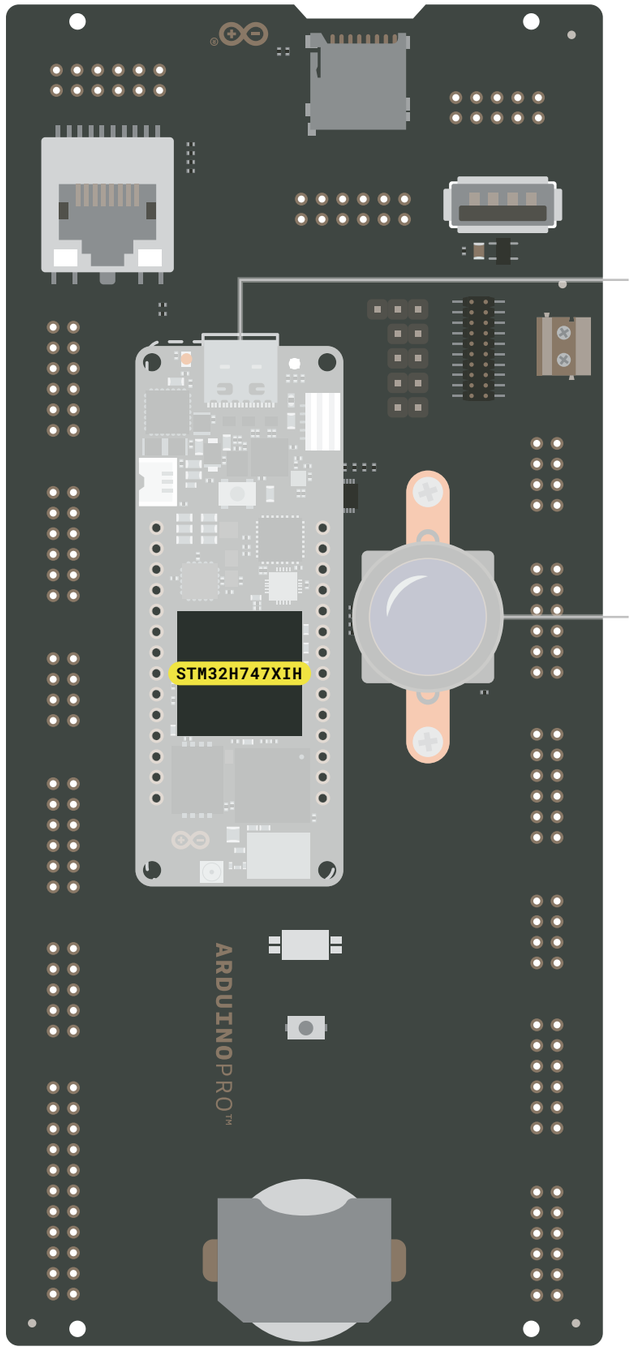
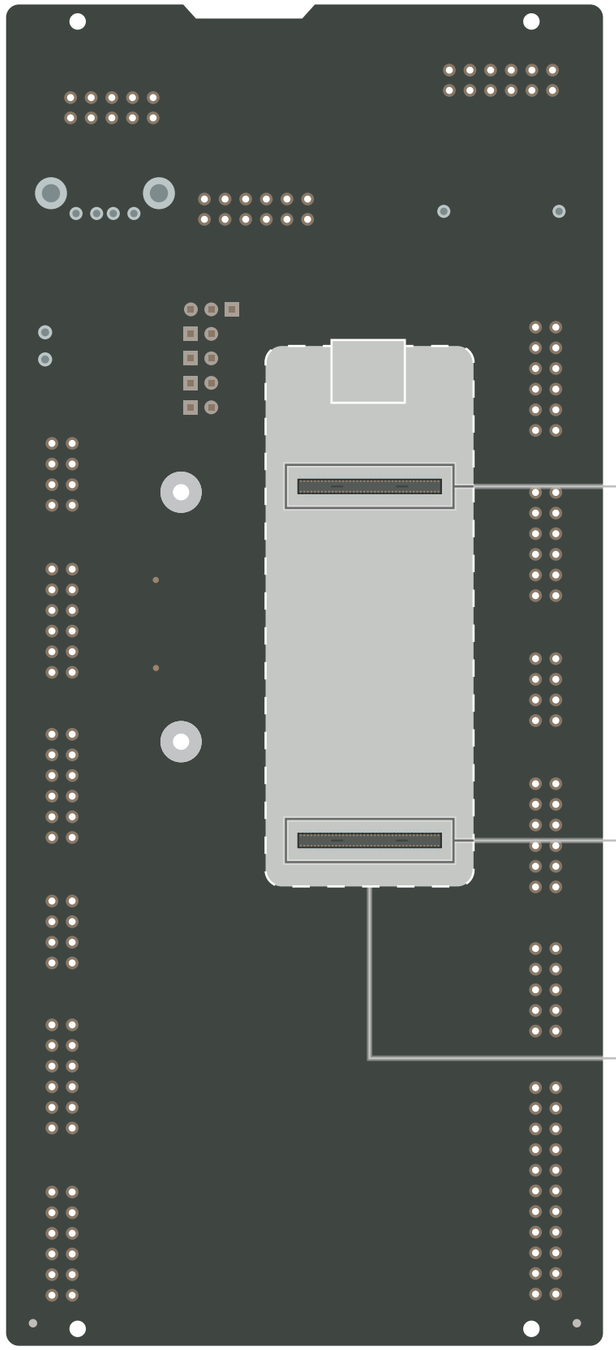


BOTTOM VIEW



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ARDUINO **PORTENTA BREAKOUT**

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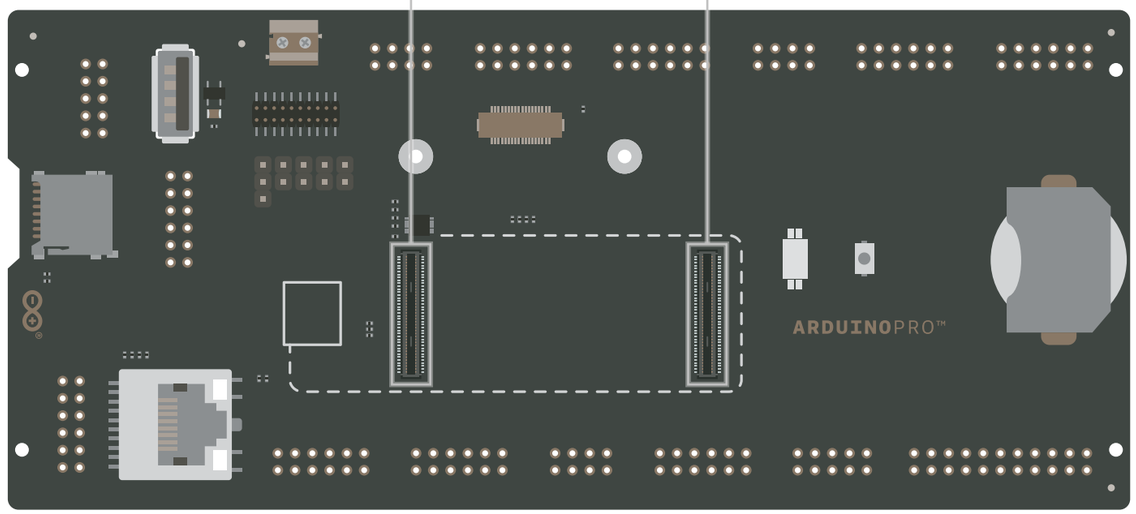
J1-Female

SWO	79	80			
SWCK	77	78			
SWDIO	75	76			
RESET	73	74			
	71	72	OUT	V-SDCARD	
	69	70			
	67	68		DMIC D0	
SDC D3	65	66		DMIC CK	
SDC D2	63	64	OUT	VSYS	
SDC D1	61	62		I2S DO	
SDC D0	59	60		I2S DI	
SDC CMD	57	58		I2S WS	
SDC CLK	55	56		I2S MCK	
VSYS	OUT 53	54		GND	
CAN1 RX	51	52			
CAN1 TX	49	50			
GND	47	48	IN	VIN	
I2C1 SD6	45	46		I2C0 SCL	
I2C1 SDA	43	44		I2C0 SDA	
VIN	IN 41	42		GND	
UART1 CTS	39	40		UART0 CTS	
UART1 RTS	37	38		UART0 RTS	
UART1 RX	35	36		UART0 RX	
UART1 TX	33	34		UART0 TX	
GND	31	32	IN	VIN	
USB1 ID	29	30			
USB1 D-	27	28		USB0 D-	
USB1 D+	25	26		USB0 D+	
USB1 VBUS	OUT 23	24			
VIN	IN 21	22		GND	
ETH L2	19	20		DSI CK-	
ETH L1	17	18		DSI CK+	
	15	16		DSI D0-	
	13	14		DSI D0+	
	11	12		DSI D1-	
	9	10		DSI D1+	
ETH B-	7	8			
ETH B+	5	6			
ETH A-	3	4			
ETH A+	1	2			

SD Card



TOP VIEW

J2-Female

CAM D7	2	1		FORCE_BOOTLOADER	
CAM D6	4	3		BOOT_SOURCE	
CAM D5	6	5		POWER_ON_REQ	
CAM D4	8	7		COINCELL	
CAM D3	10	9			
CAM D2	12	11			
CAM D1	14	13			
CAM D0	16	15			
CAM VS	18	17			
CAM CLK	20	19			
CAM HS	22	21			
GND	24	23	OUT	VCC/+3V3	
UART2 TX	26	25		UART3 TX	
UART2 RX	28	27		UART3 RX	
	30	29			
	32	31			
VCC	OUT 34	33		GND	
SPI1 CS	36	35			
SPI1 CK	38	37			
SPI1 CIPO	40	39			
SPI1 COPI	42	41			
GND	44	43	OUT	VCC/+3V3	
GPIO 0	46	45		I2C2 SDA	
GPIO 1	48	47		I2C2 SCL	
GPIO 2	50	49		SAI CK	
GPIO 3	52	51		SAI FS	
GPIO 4	54	53		SAI D0	
GPIO 5	56	55			
GPIO 6	58	57		GND	
PWM 6	60	59		PWM 1	
PWM 7	62	61		PWM 2	
PWM 8	64	63		PWM 3	
PWM 9	66	65		PWM 4	
PWM 10	68	67		PWM 5	
GND	70	69	OUT	VCC/+3V3	
ADC VREF-	OUT 72	71	OUT	ADC VREF+	
ADC A4	74	73		ADC A0	
ADC A5	76	75		ADC A1	
ADC A6	78	77		ADC A2	
ADC A7	80	79		ADC A3	

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