

Teensy 4.1 GrbiHAL Pin Assignments for PII CMB V2

09/29/24

TEENSY 4.1, GrbiHAL, & PII CMB V2 COMPARISON & POSSIBILITIES					
PII CMB V2 GrbiHAL/TEENSY 4.1 PINOUT				NXP iMXRT1060RM	
PIN #	STANDARD (CMB BOARD)	ALTERNATE	SIDE	PIN #	FUNCTIONS (NOT ALL)
0	RX-RS485	NONE (FIXED)	L	AD_B0_03	PWM; RX6(LPUART6); CS1; CRX2; USB_OTG1_OC; WDOG2_RESET; XBAR17
1	TX-RS485	NONE (FIXED)	L	AD_B0_02	PWM; TX6(LPUART6); MISO1; CTX2; USB_OTG1_PWR; XBAR16
2	STEP X	NONE (FIXED)	L	EMC_04	PWM2_A; FLEXIO; XBAR6
3	DIRECTION X	NONE (FIXED)	L	EMC_05	PWM2_B; FLEXIO; XBAR7
4	STEP Y	NONE (FIXED)	L	EMC_06	PWM0_A; FLEXIO; XBAR8
5	DIRECTION Y	NONE (FIXED)	L	EMC_08	PWM; FLEXIO; XBAR17
6	STEP Z	NONE (FIXED)	L	B0_10	PWM; FLEXIO
7	DIRECTION Z	NONE (FIXED)	L	B1_01	PWM3_B; RX4(LPUART4); FLEXIO; XBAR15
8	STEP A	NONE (FIXED)	L	B1_00	PWM3_A; TX4(LPUART4); FLEXIO; XBAR14
9	DIRECTION A	NONE (FIXED)	L	B0_11	PWM; FLEXIO
10	SPINDLE DIRECTION	AUX OUT 5	L	B0_00	PWM; TMR1_TIM0; MQSR; CS; FLEXIO
11	SPINDLE ENABLE	AUX OUT 6	L	B0_02	PWM; TMR1_TIM2; CANTX1; MOSI; FLEXIO
12	SPINDLE PWM	AUX OUT 7	L	B0_01	PWM; TMR1_TIM1; MQSL; MISO; FLEXIO
13	ENCODER INDEX	**SPINDLE INDEX or AUX IN 5	R	B0_03	PWM; TMR2_TIM0; CANRX1; LED; SCK; FLEXIO
14	ENCODER B	** SPINDLE PULSE or AUX IN 6	R	AD_B1_02	PWM; TMR3_TIM2; TX2(LPUART2); GPT2_CLK; A0; FLEXIO; USB_OTG1_ID
15	ENCODER A	AUX IN 4	R	AD_B1_03	PWM; TMR3_TIM3; RX2(LPUART2); GPT2_CAP1; A1; FLEXIO; USB_OTG1_OC
16	RX1-BLUETOOTH	NONE (FIXED)	R	AD_B1_07	TX3(LPUART3); SCL3; GPT2_COMP3; A2; FLEXIO
17	TX1-BLUETOOTH	NONE (FIXED)	R	AD_B1_06	RX3(LPUART3); SDA3; GPT2_COMP2; A3; FLEXIO
18	ESTOP	NONE (FIXED)	R	AD_B1_01	PWM; TMR3_TIM1; RTS2(LPUART2); SDA1; A4; FLEXIO; USB_OTG1_PWR
19	PROBE	AUX IN 2	R	AD_B1_00	PWM; TMR3_TIM0; CTS2(LPUART2); SCL1; A5; FLEXIO; WDOG1_B
20	FEED/HOLD	NONE (FIXED)	R	AD_B1_10	TX8(LPUART8); A6; FLEXIO; WDOG1_B
21	CYCLE/START	NONE (FIXED)	R	AD_B1_11	RX8(LPUART8); A7; FLEXIO
22	AUX IN 1	HEART BEAT LED (ETH-YELLOW)	R	AD_B1_08	PWM0_A; CANTX1; A8; FLEXIO
23	AUX IN 0	MOTOR FAULT INT	R	AD_B1_09	PWM1_A; TMR2_TIM3; CANRX1; A9; FLEXIO
24	SCL2	NONE (FIXED)	L	AD_B0_12	PWM; SCL4; TX1(LPUART1); A10; WDOG2_B
25	SDA2	NONE (FIXED)	L	AD_B0_13	PWM; SDA4; RX1(LPUART1);

26	I2C STROBE	AUX IN 7	L	AD_B1_14	MOSI1; A12; FLEXIO
27	ENABLE X	NONE (FIXED)	L	AD_B1_15	SCK1; A13; FLEXIO
28	ENABLE Y	NONE (FIXED)	L	EMC_32	PWM1_B; RX7(LPUART7)
29	ENABLE Z	NONE (FIXED)	L	EMC_31	PWM1_A; TX7(LPUART7)
30	ENABLE A	NONE (FIXED)	L	EMC_37	CANRX3; GPT1_COMP3; XBAR23
31	MPG MODE (MANUALLY SWITCHED)	AUX IN 3	L	EMC_36	CANTX3; GPT1_COMP2; XBAR22
32	AUX OUT 0	NONE	L	B0_12	OUT1B; FLEXIO
33	AUX OUT 1	NONE	R	EMC_07	PWM0_B; MCLK2; FLEXIO
34	AUX OUT 2	NONE	R	B1_13	RX5(LPUART5); FLEXIO; WDOG1_B
35	FLOOD	NONE (FIXED)	R	B1_12	TX5(LPUART5); FLEXIO
36	LIMIT A	NONE (FIXED)	R	B1_02	PWM; CS; FLEXIO; XBAR16
37	LIMIT Z	NONE (FIXED)	R	B1_03	PWM; CS; FLEXIO; XBAR17
38	LIMIT Y	NONE (FIXED)	R	AD_B1_12	IN1; CS1; A14; FLEXIO
39	LIMIT X	NONE (FIXED)	R	AD_B1_13	OUT1A; MISO1; A15; FLEXIO
40	CTS1-BLUETOOTH	NONE (FIXED) (HC-05/STATE PIN)	R	AD_B1_04	CTS3(LPUART3); GPT2_CAP2; A16; FLEXIO
41	RTS1-BLUETOOTH	NONE (FIXED) (HC-05/EN PIN)	R	AD_B1_05	RTS3(LPUART3); GPT2_COMP1; A17; FLEXIO
FIXED PIN ASSIGNMENTS					
42	GND	NONE	N	VSS	
43	+3V3 (OUT)	NONE (**N/C)	N	VDD	250mA MAX.
44	GND	NONE	N	VSS	
45	+5V (VIN)	NONE	N	VDD	
46	GND	NONE	N	VSS	
47	+3V3 (OUT)	NONE (**N/C)	N	VDD	250mA MAX.
48	RX+	NONE	N	B1_05	
49	RX-	NONE	N	B1_04	
50	TX+	NONE	N	B1_08	
51	TX-	NONE	N	B1_07	
52	ETHERNET LED (GREEN)	NONE	N	-	
53	GND (ETHERNET)	NONE	N	-	
54	GND	NONE	N	VSS	
55	+3V3 (OUT)	NONE (**N/C)	N	VDD	250mA MAX.
56	VBAT (+3V)	NONE (RETAINED MEMORY)	N	VDD_SNV5_IN	**DEDICATED CONNECTOR ON PII CMB V2
57	ON/OFF	NONE (TEENSY ON/OFF)	N	ON/OFF	**DEDICATED BUTTON PII CMB V2
58	PROGRAM	(SEE TEENSY BUTTON)	N	-	
59	GND (USB HOST)	NONE	N	VSS	
60	GND (USB HOST)	NONE	N	VSS	
61	D+ (USB HOST)	NONE	N	USB2_DP	
62	D- (USB HOST)	NONE	N	USB2_DN	
63	+5V (USB HOST)	NONE	N	N/C	500mA MAX.
64	+5V	NONE	N	N/C	

Audio	Prop	Native	GPIO	Audio	FlexIO	Xbar	I2C	CAN	SPI	Serial	Analog	PWM	Digital	Digital	PWM	Analog	Serial	SPI	CAN	I2C	Xbar	FlexIO	Audio	GPIO	Native	Prop	Audio	
G	GND																											
		AD_B0_03	1.3			17		RX2	CS1	RX1		1X1	0													5V		
		AD_B0_02	1.2			16		TX2	MISO1	TX1		1X0	1													G	G	
	S	EMC_04	4.4	O2	1:4	6						4A2	2															
M		EMC_05	4.5	LR2	1:5	7						4B2	3															
A		EMC_06	4.6	BCL2	1:6	8						2A0	4															
A	A-EN	EMC_08	4.8	IN2	1:8	17						2A1	5															
	M-CS	B0_10	2.10	O1D	2:10							2A2, Q41	6													S	C	
	L-EN	B1_01	2.17	O1A	2:17, 3:17	15				RX2		1B3	7														S	C
		B1_00	2.16	IN1	2:16, 3:16	14	sda0			TX2		1A3	8															
		B0_11	2.11	O1C	2:11							2B2, Q42	9															
	S	B0_00	2.0	MQR	2:0				CS0			Q10	10														V	
SM	M/L	B0_02	2.2		2:2			TX1	MOSI0			Q12	11															
SM	M	B0_01	2.1	MLQ	2:1				MISO0			Q11	12													M	SM	
		AD_B0_12	1.12				SCL2			TX6	A10-1	1X2	24												1.21	AD_B1_05	CS1_MCLK	
		AD_B0_13	1.13				SDA2			RX6	A11-1	1X3	25												1.20	AD_B1_04	CS1_PXCLK	
	CS1_D3	AD_B1_14	1.30		3:14				MOSI1		A12-2		26												1.29	AD_B1_13	CS1_D4	
	CS1_D2	AD_B1_15	1.31		3:15				SCK1		A13-2		27												1.28	AD_B1_12	CS1_D5	
		EMC_32	3.18							RX7		3B1	28												2.19, 3:19	2.19	B1_03	
		EMC_31	4.31							TX7		3A1	29												2.18, 3:18	2.18	B1_02	
		EMC_37	3.23			23						G13	30												2.28, 3:28	2.28	B1_12	CS1_PXCLK
		EMC_36	3.22			22		TX3				G12	31												2.29, 3:29	2.29	B1_13	CS1_VSYNC
		B0_12	2.12	O1B	2:12	10							32															
		SD_B0_03	3.15	DATA1	7				MISO2			1B1	42												3.16	SD_B0_04		
		SD_B0_02	3.14	DATA0	6				MOSI2	CTSS		1A1	43											3.17	SD_B0_05			
																								3.12	SD_B0_00			
		SD_B0_01	3.13	CLK	5	SDA1		CS2				1B0	44															