

Adafruit Feather M0 RFM95 LoRa Radio UpGoV Application

SAMD21G18A 48 pins			Not available / Used Internally		GND / PWR		Used by UpGoV Project					
Device Pin #	Feather M0 Pin # / Function	UpGoV Project Function	Pad Name	A	B					C	D	E
				EIC	REF	ADC	AC	PTC	DAC	SERCOM	SERCOM-ALT	TC/TCC
1	External 32k crystal		PA00	EXTINT[0]							SERCOM 1 Pad[0]	TCC2 WO[0]
2	External 32k crystal		PA01	EXTINT[1]							SERCOM 1 Pad[1]	TCC2 WO[1]
3	A0	In-Flight event LiPo battery voltage monitor	PA02	EXTINT[2]		AIN[0]		Y[0]	VOUT			
4	AREF	ADC Reference Voltage	PA03	EXTINT[3]	VREFA	AIN[1]		Y[1]				
5	GND		GNDANA									
6	+3V3		VDDANA									
7	A1	In-Flight Event 1 Output	PB08	EXTINT[8]		AIN[2]		Y[14]			SERCOM 4 Pad[0]	TC 4 WO[0]
8	A2	In-Flight Event 2 Output	PB09	EXTINT[9]		AIN[3]		Y[15]			SERCOM 4 Pad[1]	TC 4 WO[1]
9	A3	In-Flight Event 3 Output	PA04	EXTINT[4]	VREFB	AIN[4]	AIN[0]	Y[2]			SERCOM 0 Pad[0]	TCC 0 WO[0]
10	A4	In-Flight Event 4 Output	PA05	EXTINT[5]		AIN[5]	AIN[1]	Y[3]			SERCOM 0 Pad[1]	TCC 0 WO[1]
11	D8 RFM95 SPI CS	RFM95 LoRa radio chip select	PA06	EXTINT[6]		AIN[6]	AIN[2]	Y[4]			SERCOM 0 Pad[2]	TCC 1 WO[0]
12	D9 VBAT IN	Main LiPo battery voltage monitor input	PA07	EXTINT[7]		AIN[7]	AIN[3]	Y[5]				
13	D4 RFM95 RST	RFM95 LoRa radio reset	PA08	NMI		AIN[16]		X[0]		SERCOM 0 Pad[0]	SERCOM 2 Pad[0]	TCC 0 WO[0]
14	D3 RFM95 IRQ	RFM95 LoRa radio interrupt	PA09	EXTINT[9]		AIN[17]		X[1]		SERCOM 0 Pad[1]	SERCOM 2 Pad[1]	TCC 0 WO[1]
15	D1	GPS Serial bus	PA10	EXTINT[10]		AIN[18]		X[2]		SERCOM 0 Pad[2]	SERCOM 2 Pad[2]	TCC 1 WO[0]
16	D0	GPS Serial bus	PA11	EXTINT[10]		AIN[19]		X[3]		SERCOM 0 Pad[3]	SERCOM 2 Pad[3]	TCC 1 WO[1]
17	+3V3		VDDIO									
18	GND		GND									
19	MOSI (SPI)	RFM95 LoRa Radio and SD Card SPI bus	PB10	EXTINT[10]							SERCOM 4 Pad[2]	TC 5 WO[0]
20	SCK (SPI)	RFM95 LoRa Radio and SD Card SPI bus	PB11	EXTINT[11]							SERCOM 4 Pad[3]	TC 5 WO[1]
21	MISO (SPI)	RFM95 LoRa Radio and SD Card SPI bus	PA12	EXTINT[12]						SERCOM 2 Pad[0]	SERCOM 4 Pad[0]	TCC 2 WO[0]
22	Not connected		PA13	EXTINT[13]						SERCOM 2 Pad[1]	SERCOM 4 Pad[1]	TCC 2 WO[1]
23	D2 Not connected		PA14	EXTINT[14]						SERCOM 2 Pad[2]	SERCOM 4 Pad[2]	TC 3 WO[0]
24	D5	BMP390 chip select	PA15	EXTINT[15]						SERCOM 2 Pad[3]	SERCOM 4 Pad[3]	TC 3 WO[1]
25	D11	Sensor SPI bus MISO	PA16	EXTINT[0]				X[4]		SERCOM 1 Pad[0]	SERCOM 3 Pad[0]	TCC 2 WO[0]

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				EIC	REF	ADC	AC	PTC	DAC	SERCOM	SERCOM-ALT	TC/TCC
26	D13 Red LED	On-Board LED Interrupt timing measurement	PA17	EXTINT[1]				X[5]		SERCOM 1 Pad[1]	SERCOM 3 Pad[1]	TCC 2 WO[1]
27	D10	Sensor SPI bus MOSI	PA18	EXTINT[2]				X[6]		SERCOM 1 Pad[2]	SERCOM 3 Pad[2]	TC 3 WO[0]
28	D12	Sensor SPI bus clock	PA19	EXTINT[3]				X[7]		SERCOM 1 Pad[3]	SERCOM 3 Pad[3]	TC 3 WO[1]
29	D6	LSM6DSO32 chip select	PA20	EXTINT[4]				X[8]		SERCOM 5 Pad[2]	SERCOM 3 Pad[2]	TC 7 WO[0]
30	D7 Not connected		PA21	EXTINT[5]				X[9]		SERCOM 5 Pad[3]	SERCOM 3 Pad[3]	TC 7 WO[1]
31	SDA (I2C)	H3LIS331 chip select	PA22	EXTINT[6]				X[10]		SERCOM 3 Pad[0]	SERCOM 5 Pad[0]	TC 4 WO[0]
32	SCL (I2C)	GPS enable	PA23	EXTINT[7]				X[11}		SERCOM 3 Pad[1]	SERCOM 5 Pad[1]	TC 4 WO[1]
33	D- USB Data		PA24	EXTINT[12]						SERCOM 3 Pad[2]	SERCOM 5 Pad[2]	TC 5 WO[0]
34	D+ USB Data		PA25	EXTINT[13]						SERCOM 3 Pad[3]	SERCOM 5 Pad[3]	TC 5 WO[1]
35	+3V3		GND									
36	GND		VDDIO									
37	Not connected		PB22	EXTINT[6]							SERCOM 5 Pad[2]	TC 7 WO[0]
38	Not connected		PB23	EXTINT[7]							SERCOM 5 Pad[3]	TC 7 WO[1]
39	TXLED		PA27	EXTINT[15]								
40	Reset Button		Reset									
41	USB Host Enable		PA28	EXTINT[8]								
42	GND		GND									
43	Capacitor		VDDCORE									
44	+3V3		VDDIN									
45	SWCLK (TP1)		PA30	EXTINT[10]							SERCOM 1 Pad[2]	TCC 1 WO[0]
46	SWDIO (TP2)		PA31	EXTINT[11]							SERCOM 1 Pad[3]	TCC 1 WO[1]
47	A5	SD card chip select	PB02	EXTINT[2]		AIN[10]		Y[8]			SERCOM 5 Pad[0]	TC 6 WO[0]
48	RXLED		PB03	EXTINT[3]		AIN[11]		Y[9]			SERCOM 5 Pad[1]	TC 6 WO[1]

SAMD21 48 pins				
Device Pin #	F	G	H	Notes
	TCC	COM	AC/GCLK	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				100k ohm voltage divider from VBat to ground attached to this pin
13	TCC 1 WO[2]	I2S SD[1]		
14	TCC 1 WO[3]	I2S MCK[0]		
15	TCC 0 WO[2]	I2S SCK[0]	GCLK_IO[4]	
16	TCC 0 WO[3]	I2S FS[0]	GCLK_IO[5]	
17				
18				
19	TCC 0 WO[4]	I2S MCK[1]	GCLK_IO[4]	Connected internally to on-board RFM95 LoRa radio chip
20	TCC 0 WO[5]	I2S SCK[1]	GCLK_IO[5]	Connected internally to on-board RFM95 LoRa radio chip
21	TCC 0 WO[6]		AC COMP[0]	Connected internally to on-board RFM95 LoRa radio chip
22	TCC 0 WO[7]		AC COMP[1]	
23	TCC 0 WO[4]		GCLK_IO[0]	
24	TCC 0 WO[5]		GCLK_IO[1]	
25	TCC 0 WO[6]		GCLK_IO[2]	

SAMD21 48 pins				
Device Pin #	F	G	H	Notes
	TCC	COM	AC/GCLK	
26	TCC 0 WO[7]		GCLK_IO[3]	2.2K ohm resistor through LED to ground
27	TCC 0 WO[2]		AC COMP[0]	
28	TCC 0 WO[3]	I2S SD[0]	AC COMP[1]	
29	TCC 0 WO[6]	I2S SCK[0]	GCLK_IO[4]	
30	TCC 0 WO[7]	I2S FS[0]	GCLK_IO[5]	
31	TCC 0 WO[4]		GCLK_IO[6]	
32	TCC 0 WO[5]	USB/ SOF	GCLK_IO[7]	
33	TCC 1 WO[2]	USB/ DM		
34	TCC 1 WO[3]	USB/DP		
35				
36				
37			GCLK_IO[0]	
38			GCLK_IO[1]	
39			GCLK_IO[0]	
40				
41			GCLK_IO[0]	
42				
43				
44				
45		SWCLK	GCLK_IO[0]	
46		SWDIO		
47				
48				