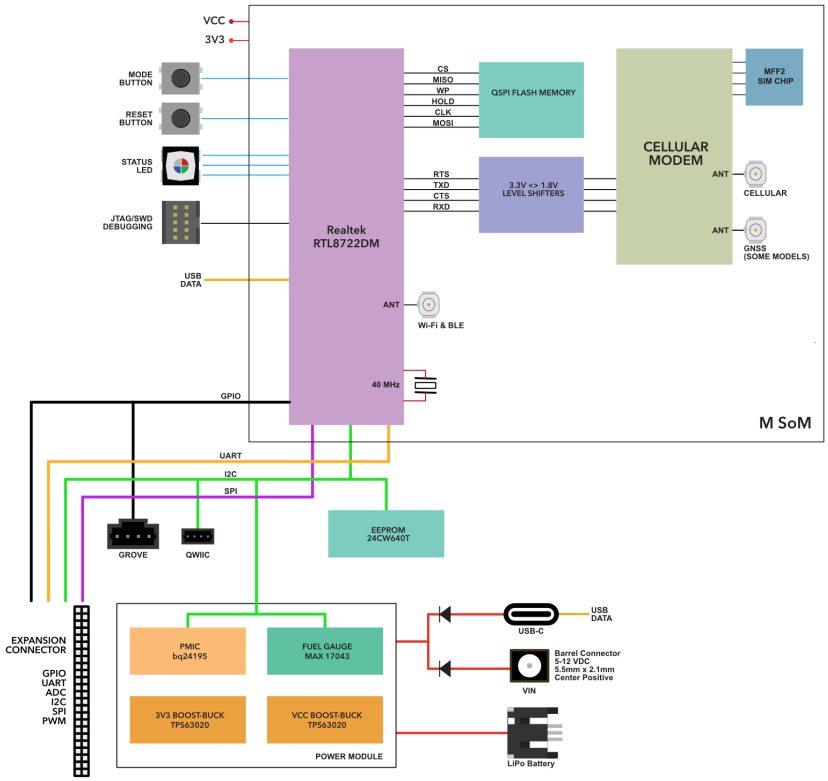
{{title}}

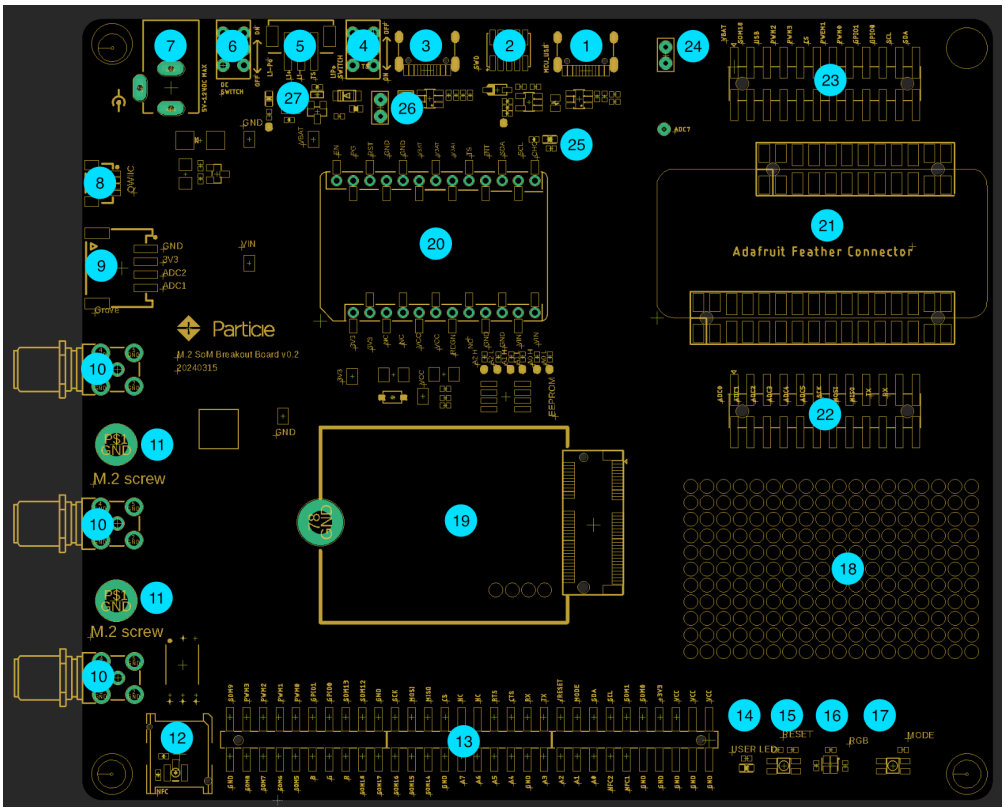
This is a preliminary datasheet based on pre-release version of the hardware. Changes are expected.

The M.2 breakout board is a convenient way to prototype with the B-SoM and M-SoM modules.

Block diagram



Board features



Label	Description
1	MCU USB-C (use this one)
2	SWD debugging connector
3	Cellular modem USB-C (not normally used)
4	LiPo battery power switch
5	LiPo battery connector (3-pin, with temperature sensor)
6	DC power switch
7	DC power barrel connector, 5-12 VDC (5.5mm x 2.1mm, center positive)
8	QWIIC (3.3V I2C connector)
9	Grove expansion connector
10	U.FL to SMA connectors
11	Spare M.2 SoM screws
12	NFC U.FL connector (B-SoM only, not available on M-SoM)
13	Expansion connector
14	D7 User LED (blue)
15	RESET button
16	RGB status LED
17	MODE button
18	Prototyping area
19	M.2 SoM socket for B-SoM or M-SoM
20	Power module
21	Adafruit Feather connector (for accessories)
22	Feather connector jumpers
23	Feather connector jumpers
24	VUSB jumper (only used on B-SoM)

25	LiPo charge LED (yellow)
26	LiPo temperature sensor bypass jumper (TS)
27	Power LED (red)
28	Power LED disable (cut trace to disable, can reenable with solder)

POWERING THE BOARD

The M.2 breakout can be powered by:

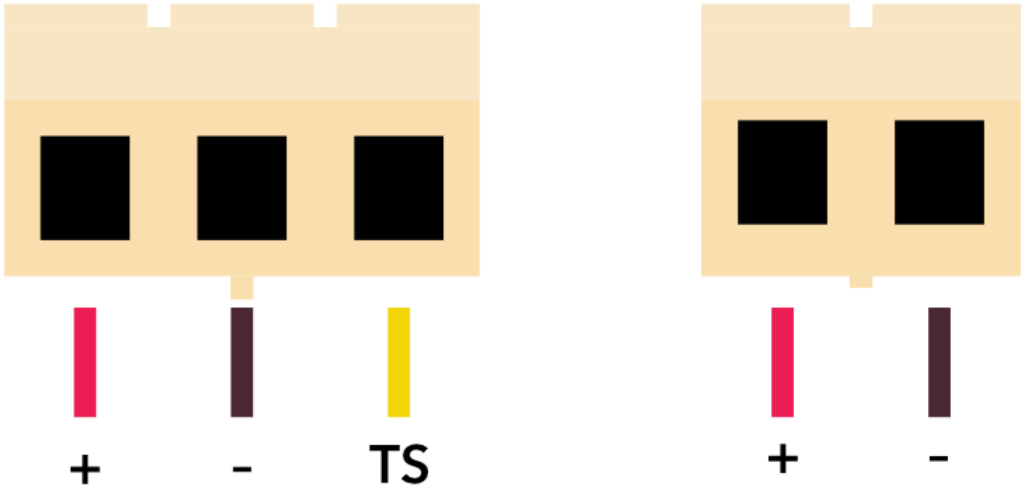
Num	Description
1	USB-C ("MCU USB") (see below)
5	LiPo battery (3.7V LiPo with 3-pin JST-PH connector)
7	VIN barrel connector 5-12 VDC (5.5mm x 2.1mm, center positive)

When powering by USB-C ("MCU USB") (1) a LiPo Battery (5) is also required when powering the B523, B524, or any M-Series module (M404, M523, or M635).

- There are two USB-C connectors on the breakout board, be sure to use connector 1 "MCU USB".
- When powering by VIN (barrel connector), 5-12 VDC is recommended, but up to 17 VDC can be supplied.
- Minimum power requirements are 5VDC @500mA (when using the LiPo battery) or 5VDC @2000mA (without LiPo battery).
- If purchasing a LiPo battery from a 3rd-party supplier, beware as the polarity of the JST-PH connector is not standardized and may be reversed. Permanent damage to the breakout board can occur if powered by reverse polarity on the JST connector. See the battery guide for additional information.

LiPo connector

Note that the M.2 breakout board includes a 3-pin JST-PH connector (left), not the 2-pin JST-PH connector on some other Particle devices (right). The TS pin is expected to be connected to a 10K NTC thermistor in the battery pack.



Looking at the exposed end of the connector attached to the battery

Setup

The basic setup for the B-SoM or M-SoM to be operational is shown below:

- Plug the cellular antenna into the U.FL connector labeled **CELL** on the SoM. Remember never to power up this board without the antenna being connected. There is potential to damage the transmitter of the u-blox module if no antenna is connected.
- If you are going to use BLE, connect the 2.4 GHz antenna (the smaller one) to the **BT** U.FL connector on the SoM.
- Connect power the USB (1) or a LiPo battery (2).
- Turn on the appropriate power switches (4, 6).

Onboard peripherals

QWIIC (8)

The SparkFun Qwiic system provides an easy way to expand and test various sensors, input devices, and displays. Multiple peripherals can be daisy-chained to a single port. The Adafruit Stemma QT are compatible with Qwiic and can be mixed and matched as well.

For more information, see Qwiic.

GROVE CONNECTOR (9)

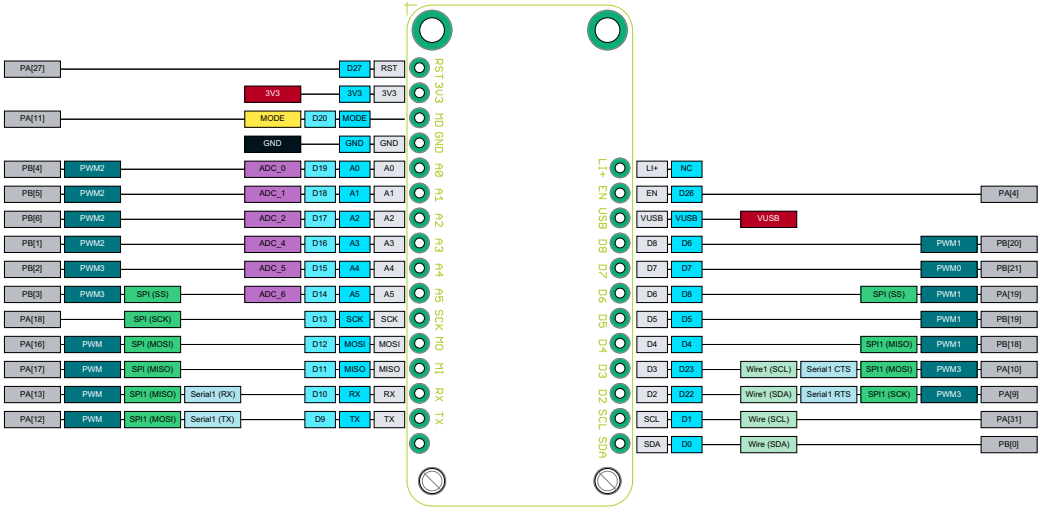
Additionally, Grove system of sensors and peripherals from Seeed Systems is another easy way to add peripheral devices. The M.2 breakout board has one Grove connectors connected to pins A1 and A2 that can be used as GPIO or analog inputs. This port cannot be used with I2C or Serial Grove peripherals.

| J11 | SoM Pin | SoM Pin Number | | :---: | :---: | :---: | :---: | | GND | | | | 3V3 | | | | ADC2 | A2 | 35 | | ADC1 | A1 | 33 |

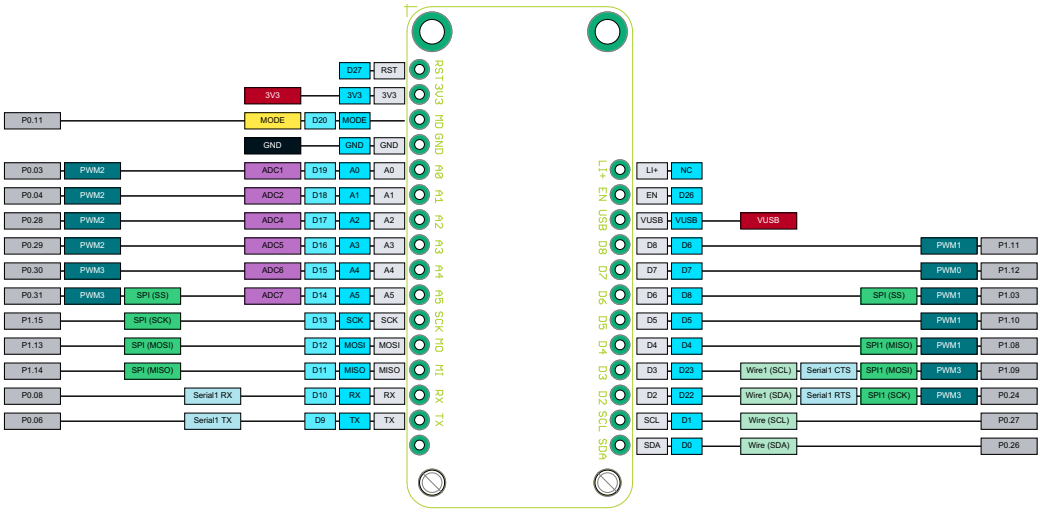
FEATHER CONNECTOR (21)

The Feather connector can be used for Adafruit FeatherWings, such as displays, sensors, and Ethernet. You cannot plug a Feather MCU into this socket!

FEATHER PIN MAPPING - M-SOM



FEATHER PIN MAPPING - B-SOM



JUMPERS (22)

These jumpers connect the Feather A pin side to the M.2 connector. They can also be used to remap pins by using jumper wires instead of solid jumpers.

JUMPERS (23)

These jumpers connect the Feather D pin side to the M.2 connector. They can also be used to remap pins by using jumper wires instead of solid jumpers.

POWER MODULE

The M.2 breakout board comes with the PMIC power module that includes the bq24195 PMIC and MAX17043 fuel gauge chips.

The following pins are used by the power module.

Power module	SoM Pin	SoM Pin Number
FUEL_INT	A6	45
SDA	D0	22
SCL	D1	20
Power enable	D23 / GPIO1	50
Power status	D4 / PWM0	52

USING ETHERNET

The M.2 breakout board does not contain Ethernet like the previous B-Series Eval board. You can, however, add it using the Adafruit Ethernet FeatherWing in the Feather socket.

Be sure to connect the nRESET and nINTERRUPT pins (on the small header on the short side) to pins D3 and D4 with jumper wires. These are required for proper operation.

The default mapping for the B-SoM and the original B-SoM eval board is listed below, but you may want to use Ethernet pin remapping to reassign the pins.

Particle Pin	M.2 Pin	Ethernet Pin
D8	CS	ETH_CS

A7	RESERVED	ETH_RESET
SCK	SCK	ETH_CLK
MISO	MISO	ETH_MISO
MOSI	MOSI	ETH_MOSI
D22	GPIO0	ETH_INT

USING SD CARD

The M.2 breakout board does not contain a Micro SD card socket as the previous B-Series Eval board did. You can, however, add it using the Adafruit Feather connector.

The Adalogger FeatherWing - RTC + SD Add-on For All Feather Boards contains a Micro SD card socket.

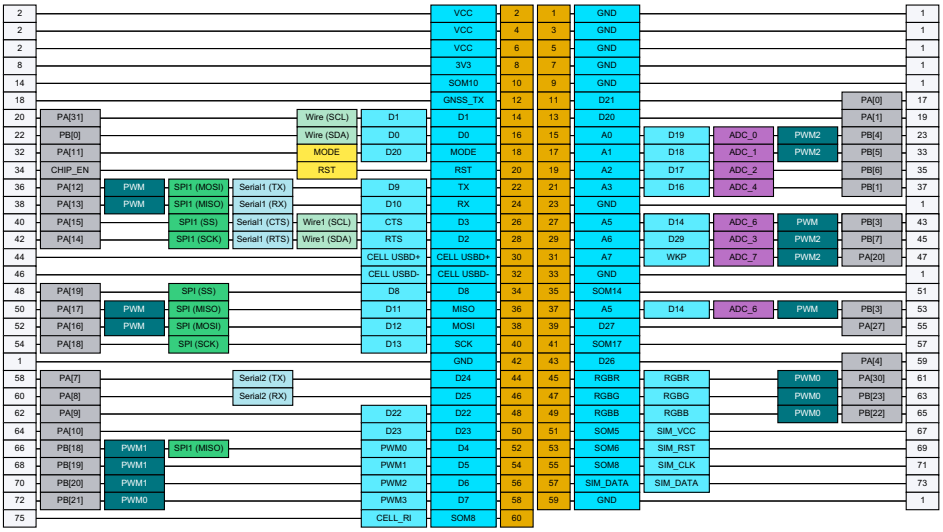
SD Card Pin	Feather Pin	Description
SCK	SCK	SPI Clock
MOSI	MOSI	Data (MCU to SD card)
MISO	MISO	Data (SD card to MCU)
SDCS	D5	Chip select

It is also possible to cut the a trace jumper for SDCS and use a different pin for SDCS. Note that this will use `SPI` (primary SPI) but the B-Series Eval board use `SPI1` so your SD card initialization code will be different.

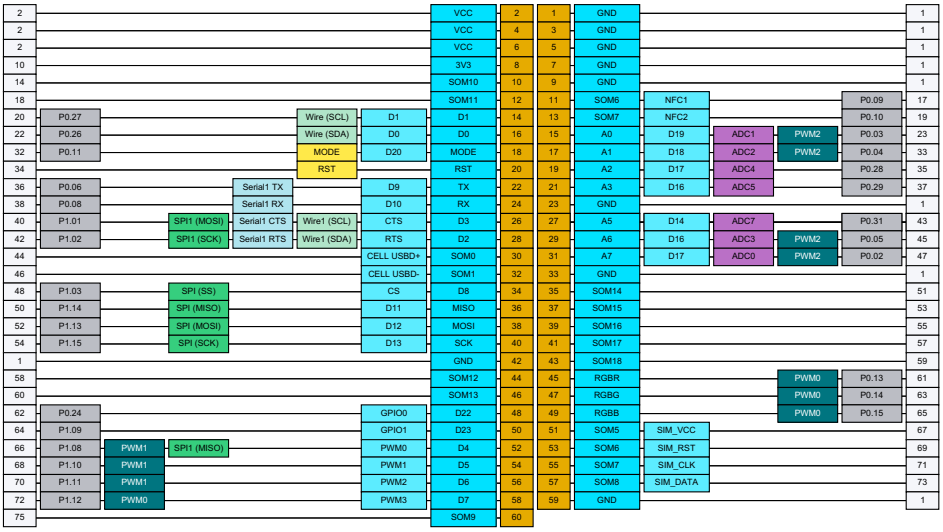
See the Adafruit tutorial for additional information.

Expansion header

EXPANSION HEADER - M-SOM



EXPANSION HEADER - B-SOM



FULL PIN LISTING

Skip past this section (the full pin listing is long)

Module Pin 1 (GND)

	Unchanged between B-SoM and M-SoM
Pin Number	1
Pin Name	GND

Description	Ground.

Module Pin 2 (VCC)

	Unchanged between B-SoM and M-SoM
Pin Number	2
Pin Name	VCC
Description	Cellular modem power. Typically 3.9V, can be 3.6V to 4.2V

Module Pin 3 (GND)

	Unchanged between B-SoM and M-SoM
Pin Number	3
Pin Name	GND
Description	Ground.

Module Pin 4 (VCC)

	Unchanged between B-SoM and M-SoM
Pin Number	4
Pin Name	VCC
Description	Cellular modem power. Typically 3.9V, can be 3.6V to 4.2V

Module Pin 5 (GND)

	Unchanged between B-SoM and M-SoM
Pin Number	5
Pin Name	GND
Description	Ground.

Module Pin 6 (VCC)

	Unchanged between B-SoM and M-SoM
Pin Number	6
Pin Name	VCC
Description	Cellular modem power. Typically 3.9V, can be 3.6V to 4.2V

Module Pin 7 (GND)

	Unchanged between B-SoM and M-SoM
Pin Number	7
Pin Name	GND
Description	Ground.

Module Pin 8 (3V3)

	Unchanged between B-SoM and M-SoM
Pin Number	8
Pin Name	3V3
Description	3.3V used to power MCU

Module Pin 9 (GND)

	Unchanged between B-SoM and M-SoM
Pin Number	9
Pin Name	GND
Description	Ground.

Module Pin 10 (SOM10)

	Unchanged between B-SoM and M-SoM
Pin Number	10
Pin Name	SOM10
Description	Not currently used, leave unconnected.

Module Pin 11 (SOM6 / D21)

	B-SoM	M-SoM
Pin Number	11	11
Δ Pin Name	SOM6	D21
Δ Pin Alternate Name	NFC1	n/a
Δ Description	NFC Antenna 1.	D21 GPIO. Is NFC1 on B-SoM.
Δ Supports digitalRead	n/a	Yes
Δ Supports digitalWrite	n/a	Yes
Δ Supports attachInterrupt	n/a	Yes
Δ Internal pull resistance	n/a	22K. No internal pull up or pull down in HIBERNATE sleep mode.

Module Pin 12 (SOM11 / GNSS_TX)

	B-SoM	M-SoM
Pin Number	12	12
Δ Pin Name	SOM11	GNSS_TX
Δ Description	Not currently used, leave unconnected.	Cellular modem GNSS UART TX

Module Pin 13 (SOM7 / D20)

	B-SoM	M-SoM
Pin Number	13	13
Δ Pin Name	SOM7	D20
Δ Pin Alternate Name	NFC2	n/a
Δ Description	NFC Antenna 2. NFC2 is the center pin.	D20 GPIO. Is NFC2 on B-SoM.
Δ Supports digitalRead	n/a	Yes
Δ Supports digitalWrite	n/a	Yes
Δ Supports attachInterrupt	n/a	Yes
Δ Internal pull resistance	n/a	???

Module Pin 14 (D1)

	B-SoM	M-SoM
Pin Number	14	14
Pin Name	D1	D1
Pin Alternate Name	D1	D1
Description	I2C SCL. Cannot be used as GPIO.	I2C SCL. Cannot be used as GPIO.

	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
Δ	I2C interface	SCL. Use Wire object.	SCL. Use Wire object. Use 1.5K to 10K external pull-up resistor.
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	???

Module Pin 15 (A0)

		B-SoM	M-SoM
	Pin Number	15	15
	Pin Name	A0	A0
	Pin Alternate Name	D19	D19
	Description	A0 Analog in, GPIO, PWM	A0 Analog in, GPIO, PWM
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
	Supports analogRead	Yes	Yes
	Supports analogWrite (PWM)	Yes	Yes
Δ	Supports tone	A0, A1, A6, and A7 must have the same frequency.	Yes
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	42K

Module Pin 16 (D0)

		B-SoM	M-SoM
	Pin Number	16	16
	Pin Name	D0	D0
	Pin Alternate Name	D0	D0
	Description	I2C SDA. Cannot be used as GPIO.	I2C SDA. Cannot be used as GPIO.
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
Δ	I2C interface	SDA. Use Wire object.	SDA. Use Wire object. Use 1.5K to 10K external pull-up resistor.
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	???

Module Pin 17 (A1)

		B-SoM	M-SoM
	Pin Number	17	17
	Pin Name	A1	A1
	Pin Alternate Name	D18	D18
	Description	A1 Analog in, GPIO, PWM	A1 Analog in, GPIO, PWM
	Supports digitalRead	Yes	Yes

	Supports digitalWrite	Yes	Yes
	Supports analogRead	Yes	Yes
	Supports analogWrite (PWM)	Yes	Yes
Δ	Supports tone	A0, A1, A6, and A7 must have the same frequency.	Yes
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	???

Module Pin 18 (MODE)

		B-SoM	M-SoM
	Pin Number	18	18
	Pin Name	MODE	MODE
	Pin Alternate Name	D20	D20
Δ	Description	MODE button, has internal pull-up	MODE button. Pin number constant is BTN. External pull-up required!
Δ	Supports attachInterrupt	n/a	Yes

Module Pin 19 (A2)

		B-SoM	M-SoM
	Pin Number	19	19
	Pin Name	A2	A2
	Pin Alternate Name	D17	D17
	Description	A2 Analog in, GPIO	A2 Analog in, GPIO
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
	Supports analogRead	Yes	Yes
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	22K

Module Pin 20 (RST)

		B-SoM	M-SoM
	Pin Number	20	20
	Pin Name	RST	RST
Δ	Description	Hardware reset, active low.	Hardware reset, active low. External pull-up required.

Module Pin 21 (A3)

		B-SoM	M-SoM
	Pin Number	21	21
	Pin Name	A3	A3
	Pin Alternate Name	D16	D16
	Description	A3 Analog in, GPIO	A3 Analog in, GPIO
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
	Supports analogRead	Yes	Yes
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	2.1K

Module Pin 22 (TX)

		B-SoM	M-SoM
	Pin Number	22	22
	Pin Name	TX	TX
	Pin Alternate Name	D9	D9
Δ	Description	Serial TX, GPIO	Serial TX, PWM, GPIO, SPI1 MOSI
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
Δ	Supports analogWrite (PWM)	No	Yes
Δ	Supports tone	No	Yes
	UART serial	TX. Use Serial1 object.	TX. Use Serial1 object.
Δ	SPI interface	n/a	MOSI. Use SPI1 object.
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	2.1K

Module Pin 23 (GND)

	Unchanged between B-SoM and M-SoM
Pin Number	23
Pin Name	GND
Description	Ground.

Module Pin 24 (RX)

		B-SoM	M-SoM
	Pin Number	24	24
	Pin Name	RX	RX
	Pin Alternate Name	D10	D10
Δ	Description	Serial RX, GPIO	Serial RX, PWM, GPIO, SPI1 MISO
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
Δ	Supports analogWrite (PWM)	No	Yes
Δ	Supports tone	No	Yes
	UART serial	RX. Use Serial1 object.	RX. Use Serial1 object.
Δ	SPI interface	n/a	MISO. Use SPI1 object.
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	2.1K

Module Pin 25 (A4)

	B-SoM	M-SoM
Pin Number	25	25
Pin Name	A4	A4
Pin Alternate Name	D15	D15
Description	A4 Analog in, GPIO	A4 Analog in, GPIO
Supports digitalRead	Yes	Yes
Supports digitalWrite	Yes	Yes

	Supports analogRead	Yes	Yes
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	2.1K

Module Pin 26 (D3)

		B-SoM	M-SoM
	Pin Number	26	26
	Pin Name	D3	D3
	Pin Alternate Name	CTS	CTS
Δ	Description	SPI1 MOSI, Serial1 CTS, GPIO, Wire1 SCL	D3 GPIO, Serial1 CTS flow control (optional), SPI1 SS
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
	UART serial	CTS. Use Serial1 object.	CTS. Use Serial1 object.
Δ	SPI interface	MOSI. Use SPI1 object.	SS. Use SPI1 object.
	I2C interface	SCL. Use Wire1 object.	SCL. Use Wire1 object.
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	???

Module Pin 27 (A5)

		B-SoM	M-SoM
	Pin Number	27	27
	Pin Name	A5	A5
	Pin Alternate Name	D14	D14
Δ	Description	A5 Analog in, GPIO	A5 Analog in, PWM, GPIO, shared with pin 53
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
	Supports analogRead	Yes	Yes
Δ	Supports analogWrite (PWM)	No	Yes
Δ	Supports tone	No	Yes
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	???
Δ	SWD interface	n/a	SWCLK. 40K pull-down at boot.
Δ	Signal used at boot	n/a	SWCLK. 40K pull-down at boot.

Module Pin 28 (D2)

		B-SoM	M-SoM
	Pin Number	28	28
	Pin Name	D2	D2
	Pin Alternate Name	RTS	RTS
Δ	Description	SPI1 SCK, Serial1 RTS, PWM, GPIO, Wire1 SDA	D2 GPIO, Serial RTS flow control (optional), SPI1 SCK

	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
	UART serial	RTS. Use Serial1 object.	RTS. Use Serial1 object.
	SPI interface	SCK. Use SPI1 object.	SCK. Use SPI1 object.
	I2C interface	SDA. Use Wire1 object.	SDA. Use Wire1 object.
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	???

Module Pin 29 (A6)

		B-SoM	M-SoM
	Pin Number	29	29
	Pin Name	A6	A6
Δ	Pin Alternate Name	D16	D29
Δ	Description	A6 Analog in, PWM, GPIO	A6 Analog in, GPIO, PWM, M.2 eval PMIC INT
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
	Supports analogRead	Yes	Yes
	Supports analogWrite (PWM)	Yes	Yes
Δ	Supports tone	A0, A1, A6, and A7 must have the same frequency.	Yes
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	???

Module Pin 30 (SOM0 / CELL USBD+)

		B-SoM	M-SoM
	Pin Number	30	30
Δ	Pin Name	SOM0	CELL USBD+
	Pin Alternate Name	CELL USBD+	CELL USBD+
Δ	Description	Cellular Modem USB Data+.	Cellular Modem USB Data+
	Input is 5V Tolerant	Yes	Yes

Module Pin 31 (A7)

		B-SoM	M-SoM
	Pin Number	31	31
	Pin Name	A7	A7
Δ	Pin Alternate Name	D17	WKP
Δ	Description	A7 Analog in, GPIO	A7 Analog In, WKP, GPIO D28
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
	Supports analogRead	Yes	Yes
Δ	Supports analogWrite (PWM)	Yes	No

Δ	Supports tone	A0, A1, A6, and A7 must have the same frequency.	No
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	???

Module Pin 32 (SOM1 / CELL USBD-)

		B-SoM	M-SoM
	Pin Number	32	32
Δ	Pin Name	SOM1	CELL USBD-
	Pin Alternate Name	CELL USBD-	CELL USBD-
Δ	Description	Cellular Modem USB Data-.	Cellular Modem USB Data-
	Input is 5V Tolerant	Yes	Yes

Module Pin 33 (GND)

	Unchanged between B-SoM and M-SoM
Pin Number	33
Pin Name	GND
Description	Ground.

Module Pin 34 (D8)

		B-SoM	M-SoM
	Pin Number	34	34
	Pin Name	D8	D8
Δ	Pin Alternate Name	CS	D8
Δ	Description	GPIO, SPI SS	D8 GPIO, SPI SS
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
Δ	SPI interface	SS. Use SPI object. This is only the default SS/CS pin, you can use any GPIO instead.	Default SS for SPI.
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	2.1K

Module Pin 35 (SOM14)

	Unchanged between B-SoM and M-SoM
Pin Number	35
Pin Name	SOM14
Description	M.2 pin 51. Not currently used, leave unconnected.

Module Pin 36 (MISO)

	B-SoM	M-SoM
Pin Number	36	36
Pin Name	MISO	MISO
Pin Alternate Name	D11	D11

Δ	Description	SPI MISO, GPIO	D11 GPIO, PWM, SPI MISO
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
Δ	Supports analogWrite (PWM)	No	Yes
Δ	Supports tone	No	Yes
	SPI interface	MISO. Use SPI object.	MISO. Use SPI object.
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	2.1K

Module Pin 37 (SOM15 / A5)

		B-SoM	M-SoM
	Pin Number	37	37
Δ	Pin Name	SOM15	A5
Δ	Pin Alternate Name	n/a	D14
Δ	Description	M.2 pin 53. Not currently used, leave unconnected.	A5 Analog in, PWM, GPIO, SWCLK, shared with pin 43
Δ	Supports digitalRead	n/a	Yes
Δ	Supports digitalWrite	n/a	Yes
Δ	Supports analogRead	n/a	Yes
Δ	Supports analogWrite (PWM)	n/a	Yes
Δ	Supports tone	n/a	Yes
Δ	Supports attachInterrupt	n/a	Yes
Δ	Internal pull resistance	n/a	42K
Δ	SWD interface	n/a	SWCLK. 40K pull-down at boot.
Δ	Signal used at boot	n/a	SWCLK. 40K pull-down at boot.

Module Pin 38 (MOSI)

		B-SoM	M-SoM
	Pin Number	38	38
	Pin Name	MOSI	MOSI
	Pin Alternate Name	D12	D12
Δ	Description	SPI MOSI, GPIO	D12 GPIO, PWM, SPI MOSI
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
Δ	Supports analogWrite (PWM)	No	Yes
Δ	Supports tone	No	Yes
	SPI interface	MOSI. Use SPI object.	MOSI. Use SPI object.
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	2.1K

Module Pin 39 (SOM16 / D27)

		B-SoM	M-SoM
	Pin Number	39	39
Δ	Pin Name	SOM16	D27

Δ	Description	M.2 pin 55. Not currently used, leave unconnected.	D27 GPIO, SWDIO (SWD_DATA), do not pull down at boot
Δ	Supports digitalRead	n/a	Yes
Δ	Supports digitalWrite	n/a	Yes
Δ	Supports attachInterrupt	n/a	Yes
Δ	Internal pull resistance	n/a	42K
Δ	SWD interface	n/a	SWDIO. 40K pull-up at boot.
Δ	Signal used at boot	n/a	SWDIO. 40K pull-up at boot. Low at boot triggers MCU test mode.

Module Pin 40 (SCK)

		B-SoM	M-SoM
	Pin Number	40	40
	Pin Name	SCK	SCK
	Pin Alternate Name	D13	D13
Δ	Description	SPI SCK, GPIO	D13 GPIO, SPI SCK
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
	SPI interface	SCK. Use SPI object.	SCK. Use SPI object.
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	2.1K

Module Pin 41 (SOM17)

	Unchanged between B-SoM and M-SoM
Pin Number	41
Pin Name	SOM17
Description	M.2 pin 57. Not currently used, leave unconnected.

Module Pin 42 (GND)

	Unchanged between B-SoM and M-SoM
Pin Number	42
Pin Name	GND
Description	Ground.

Module Pin 43 (SOM18 / D26)

		B-SoM	M-SoM
	Pin Number	43	43
Δ	Pin Name	SOM18	D26
Δ	Description	M.2 pin 59. Not currently used, leave unconnected.	D26 GPIO
Δ	Supports digitalRead	n/a	Yes
Δ	Supports digitalWrite	n/a	Yes
Δ	Supports attachInterrupt	n/a	Yes
Δ	Internal pull resistance	n/a	???

Module Pin 44 (SOM12 / D24)

		B-SoM	M-SoM
	Pin Number	44	44
Δ	Pin Name	SOM12	D24
Δ	Description	M.2 pin 58. Not currently used, leave unconnected.	D24 GPIO, Serial2 TX, do not pull down at boot
Δ	Supports digitalRead	n/a	Yes
Δ	Supports digitalWrite	n/a	Yes
Δ	UART serial	n/a	TX. Use Serial2 object.
Δ	Supports attachInterrupt	n/a	Yes
Δ	Internal pull resistance	n/a	42K
Δ	Signal used at boot	n/a	Low at boot triggers ISP flash download

Module Pin 45 (RGBR)

		B-SoM	M-SoM
	Pin Number	45	45
	Pin Name	RGBR	RGBR
Δ	Pin Alternate Name	n/a	RGBR
	Description	RGB LED Red	RGB LED Red
Δ	Signal used at boot	n/a	Low at boot triggers trap mode

Module Pin 46 (SOM13 / D25)

		B-SoM	M-SoM
	Pin Number	46	46
Δ	Pin Name	SOM13	D25
Δ	Description	M.2 pin 60. Not currently used, leave unconnected.	GPIO25, Serial2 RX
Δ	Supports digitalRead	n/a	Yes
Δ	Supports digitalWrite	n/a	Yes
Δ	UART serial	n/a	RX. Use Serial2 object.
Δ	Supports attachInterrupt	n/a	Yes
Δ	Internal pull resistance	n/a	42K
Δ	Signal used at boot	n/a	Goes high at boot

Module Pin 47 (RGBG)

		B-SoM	M-SoM
	Pin Number	47	47
	Pin Name	RGBG	RGBG
Δ	Pin Alternate Name	n/a	RGBG
	Description	RGB LED Green	RGB LED Green

Module Pin 48 (D22)

	B-SoM	M-SoM
Pin Number	48	48
Pin Name	D22	D22

Δ	Pin Alternate Name	GPIO0	D22
Δ	Description	GPIO D22	D22 GPIO
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	???

Module Pin 49 (RGBB)

		B-SoM	M-SoM
	Pin Number	49	49
	Pin Name	RGBB	RGBB
Δ	Pin Alternate Name	n/a	RGBB
	Description	RGB LED Blue	RGB LED Blue

Module Pin 50 (D23)

		B-SoM	M-SoM
	Pin Number	50	50
	Pin Name	D23	D23
Δ	Pin Alternate Name	GPIO1	D23
Δ	Description	GPIO D23	D23 GPIO
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	???

Module Pin 51 (SOM5)

		B-SoM	M-SoM
	Pin Number	51	51
	Pin Name	SOM5	SOM5
	Pin Alternate Name	SIM_VCC	SIM_VCC
Δ	Description	Leave unconnected. External SIM support is not available on B-SoM.	Leave unconnected, 1.8V/3V SIM Supply Output from R410M.

Module Pin 52 (D4)

		B-SoM	M-SoM
	Pin Number	52	52
	Pin Name	D4	D4
	Pin Alternate Name	PWM0	PWM0
Δ	Description	SPI1 MISO, PWM, GPIO D4	D4 GPIO, PWM
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
	Supports analogWrite (PWM)	Yes	Yes
Δ	Supports tone	D4, D5, and D6 must have the same frequency.	Yes
	SPI interface	MISO. Use SPI1 object.	MISO. Use SPI1 object.
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes

Δ	Internal pull resistance	13K	???

Module Pin 53 (SOM6)

		B-SoM	M-SoM
	Pin Number	53	53
	Pin Name	SOM6	SOM6
	Pin Alternate Name	SIM_RST	SIM_RST
Δ	Description	Leave unconnected. External SIM support is not available on B-SoM.	Leave unconnected, 1.8V/3V SIM Reset Output from cellular modem.

Module Pin 54 (D5)

		B-SoM	M-SoM
	Pin Number	54	54
	Pin Name	D5	D5
	Pin Alternate Name	PWM1	PWM1
Δ	Description	PWM, GPIO D5	D5 GPIO, PWM
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
	Supports analogWrite (PWM)	Yes	Yes
Δ	Supports tone	D4, D5, and D6 must have the same frequency.	Yes
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	???

Module Pin 55 (SOM7 / SOM8)

		B-SoM	M-SoM
	Pin Number	55	55
Δ	Pin Name	SOM7	SOM8
	Pin Alternate Name	SIM_CLK	SIM_CLK
Δ	Description	Leave unconnected, 1.8V/3V SIM Clock Output from R410M.	Leave unconnected, 1.8V/3V SIM Clock Output from cellular modem.

Module Pin 56 (D6)

		B-SoM	M-SoM
	Pin Number	56	56
	Pin Name	D6	D6
	Pin Alternate Name	PWM2	PWM2
Δ	Description	PWM, GPIO D6	D6 GPIO, PWM
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
	Supports analogWrite (PWM)	Yes	Yes
Δ	Supports tone	D4, D5, and D6 must have the same frequency.	Yes
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	???

Module Pin 57 (SOM8 / SIM_DATA)

		B-SoM	M-SoM
	Pin Number	57	57
Δ	Pin Name	SOM8	SIM_DATA
	Pin Alternate Name	SIM_DATA	SIM_DATA
Δ	Description	Leave unconnected. External SIM support is not available on B-SoM.	Leave unconnected, 1.8V/3V SIM Data I/O of cellular modem with internal 4.7 k pull-up.

Module Pin 58 (D7)

		B-SoM	M-SoM
	Pin Number	58	58
	Pin Name	D7	D7
	Pin Alternate Name	PWM3	PWM3
Δ	Description	PWM, GPIO D7, Blue LED	D7 GPIO, PWM
	Supports digitalRead	Yes	Yes
	Supports digitalWrite	Yes	Yes
Δ	Supports analogWrite (PWM)	PWM is shared with the RGB LED, you can specify a different duty cycle but should not change the frequency.	Yes
Δ	Supports tone	No	Yes
Δ	Supports attachInterrupt	Yes. You can only have 8 active interrupt pins.	Yes
Δ	Internal pull resistance	13K	???

Module Pin 59 (GND)

	Unchanged between B-SoM and M-SoM
Pin Number	59
Pin Name	GND
Description	Ground.

Module Pin 60 (SOM9 / SOM8)

		B-SoM	M-SoM
	Pin Number	60	60
Δ	Pin Name	SOM9	SOM8
Δ	Pin Alternate Name	n/a	CELL_RI
Δ	Description	M.2 pin 75. Not currently used, leave unconnected.	CELL_RI, ring indicator output, leave unconnected.

Schematics

To be provided at a later date.

Mechanical specifications

DIMENSIONS AND WEIGHT

To be provided at a later date.

Revision history

Revision	Date	Author	Comments
pre	2024-03-18	RK	Initial Release (based on board v0.2 20240315)
	2024-03-19	RK	USB-C power limitations