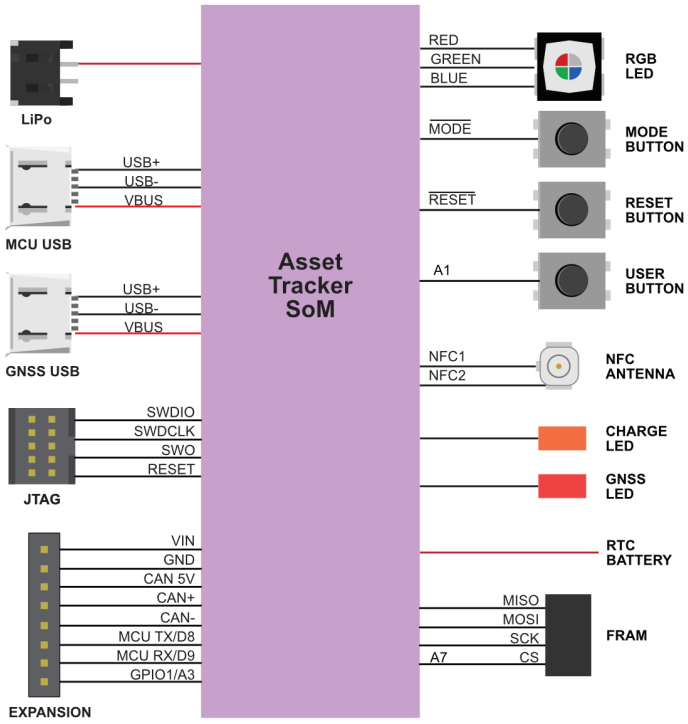
Asset Tracker SoM Carrier Board

The carrier board is a ready-to-go carrier board for the Particle Asset Tracker SoM.

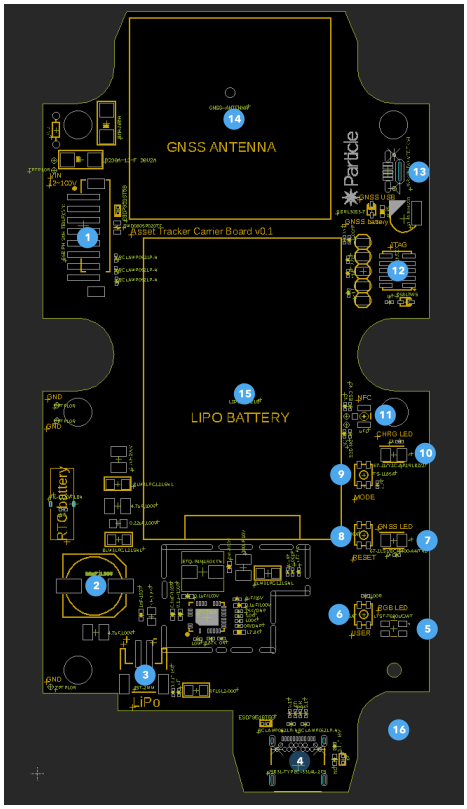
- **Ready to go** with IP67 rated enclosure.
- **GNSS Antenna Onboard:** convenient high-gain GNSS antenna for easy access to GNSS signals.
- **Flexible Power Supply:** easily add your asset tracker to most devices. 4.5-105V power supply copes with most power delivery systems. Also accepts 5V supply via USB-C. Switched LiPo battery connector, charge LED, backup battery for GPS and battery-backed RTC.
- **High-precision Thermistor** with accuracy to 1%.
- **Extensible:** IP67-rated M8 connector includes CAN Bus, UART, GPIO ,and power for simple expansion.
- **USB-C**for flashing, debugging and power with higher charging rates than micro-USB or for use without an internal battery.
- **RGB LED** for use as both a user-configurable device as well as Particle status information.
- **Backup Battery** for RTC and GNSS.
- **32 Kbyte SPI FRAM:** MB85RS256 non-volatile ferroelectric RAM for data storage.

Block Diagram



Description

TODO: Update board picture with actual photo



Num	ID	Description
1	J1	Power and I/O connector
2		RTC Battery
3		LiPo Connector
4		MCU USB-C
5		RGB Status LED
6	USER	User Button
7	GNSS LED	GNSS Status LED
8	RESET	RESET Button
9	MODE	MODE button
10	CHRG	LiPo charge status LED
11		NFC
12		JTAG/SWD debugging connector for nRF52 MCU
13	GNSS USB	u-blox GNSS USB connection (Micro USB)
14		GNS Antenna
15		LiPo Battery
16		Asset Tracker SoM (on back side)

POWER AND I/O CONNECTOR

Pin	Description	I/O
1	VIN (4.5 - 105 VDC)[3]	I
2	GND	
3	CAN 5V (800mA maximum)	O

4	CAN+	IO[2]
5	CAN-	IO[2]
6	MCU TX/D9	IO[1]
7	MCU RX/D8	IO[1]
8	GPIO1/A3	IO[1]

This connector attaches to the IP67 M8 connector, accessible from the outside of the enclosure.

[1]MCU GPIO is limited to 3.3V maximum

[2]CAN Bus specifications can be found in the Asset Tracker SoM datasheet.

[3]4.5 to 30 VDC when using the M8 connector. 4.5 - 105 VDC when connecting directly to the board.

ADDITIONAL PERIPHERALS

Signal	Device OS	Description
THERM	A0	NTC Thermistor
USER	A1	USER button
GPIO1	A3	GPIO on power and I/O connector
FRAM_CS	A7	Chip select for MB85RS256 SPI FRAM
MCU TX	TX	MCU serial TX or GPIO D9
MCU RX	RX	MCU serial RX or GPIO D8

POWERING THE ASSET TRACKER SOM EVALUATION BOARD

There are several options for powering the evaluation board:

The **MCU USB** connector (USB-C). If using a laptop with a 500 mA USB port, you should also use the LiPo battery. With a 2A tablet charger, you can power only by USB.

The **VIN** connector (5-12 VDC). This is useful with an external power supply.

The **LiPo** connector. This is typically used with a LiPo battery.

USB CONNECTORS

There are two USB connectors on the carrier board, however you most commonly will only use the **MCU USB** connector.

The **MCU USB** connector is connected to the nRF52 MCU and can be used for Serial debugging, flashing code, and setup by USB. It can also power the AssetTracker SoM. If using a laptop with a 500 mA USB port, you should also use the LiPo battery. With a 2A tablet charger, you can power only by USB.

The **GNSS USB** connector is connected to the u-blox NEO-M8U GNSS. It can be used for firmware upgrades or with the u-blox u-center application.

LED INDICATORS

The **CHRG** LED indicates the charge status:

- Off: Not charging or no power
- On: Charging
- Blinking: Charge fault
- Flickering: No battery

The **GNSS** LED indicates the GNSS fix status:

- Blinking (1 Hz): Attempting to get a GNSS fix
- Off: Has a GNSS fix, or GNSS is turned off.

Basic Setup

Will be provided at a later date.

Evaluation Board Schematics

Will be provided at a later date.

Mechanical specifications

DIMENSIONS AND WEIGHT

Will be provided at a later date.

Parameter	Value
Width	
Length	
Thickness	
Weight	

Revision history

Revision	Date	Author	Comments
pre	20 Apr 2020	RK	Preview Release