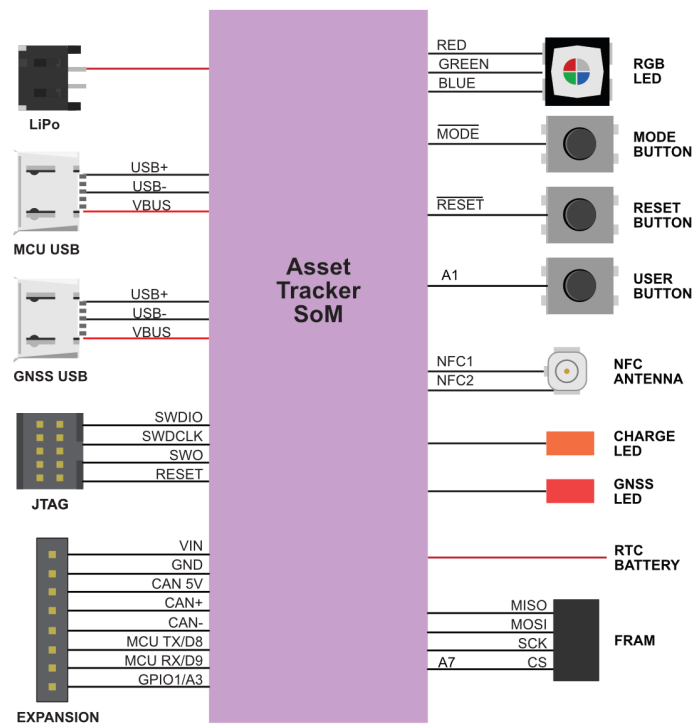


# Asset Tracker SoM Carrier Board

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

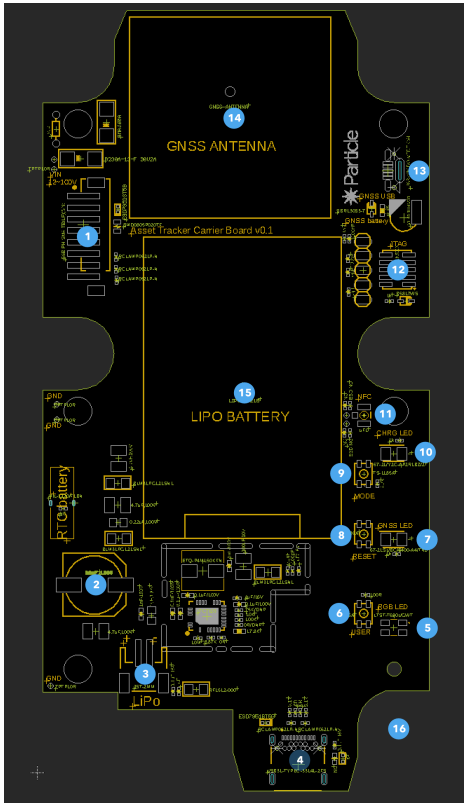
- **Ready to go** with IP67 rated enclosure.
- **GNSS Antenna Onboard:** convenient high-gain GNSS antenna for easy access to GNSS signals.
- **Flexible Power Supply:** easily add your asset tracker to most devices. 4.5-105V power supply copes with most power delivery systems. Also accepts 5V supply 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 - 105VDC)	I
2	GND	
3	CAN 5V (800mA maximum)	O
4	CAN+	IO

5	CAN-	IO
6	MCU TX	IO <sup>1</sup>
7	MCU RX	IO <sup>1</sup>
8	GPIO1	IO <sup>1</sup>

<sup>1</sup>MCU GPIO is limited to 3.3V maximum

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

## ADDITIONAL PERIPHERALS

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

## 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 GPS fix status:

TODO: Fix status

## Basic Setup

**TODO: Update this as necessary**

# Evaluation Board Schematics

**TODO: Add schematics**

# Mechanical specifications

## DIMENSIONS AND WEIGHT

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TODO: Update this

Parameter	Value
Width	
Length	
Thickness	
Weight	



# Revision history

Revision	Date	Author	Comments
pre	20 Apr 2020	RK	Preview Release