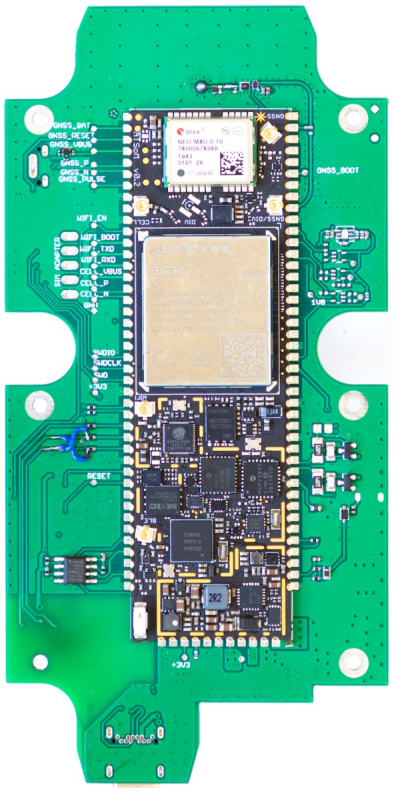
Tracker One

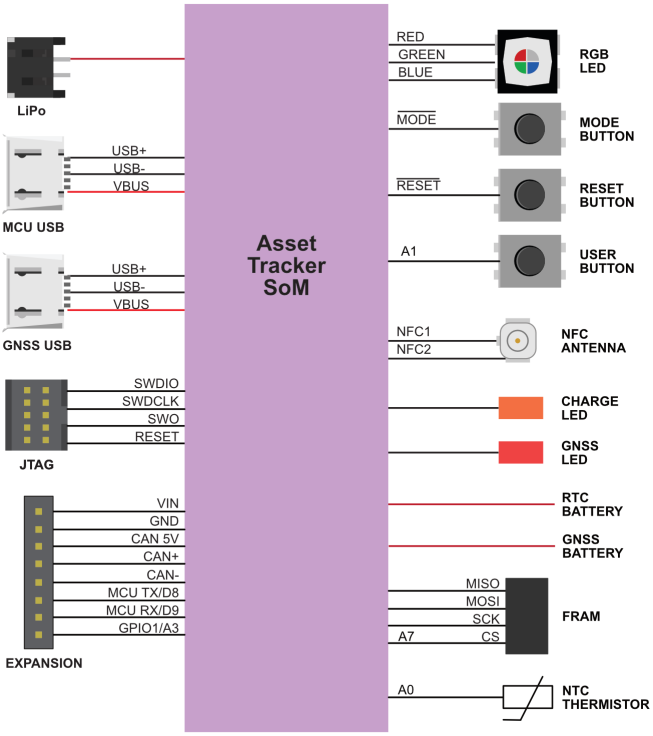
The Tracker One is a ready-to-go Tracker SoM carrier board with optional weatherproof enclosure.

- **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 asset tracking to most devices. A wide 4.5-30V power supply copes with most power delivery systems. Also accepts 5V supply via USB-C. LiPo battery connector, charge LED, backup battery for GPS and battery-backed RTC. Supports up to 105V when connecting directly to the carrier board.
- **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 ferroelectric RAM for non-volatile data storage.

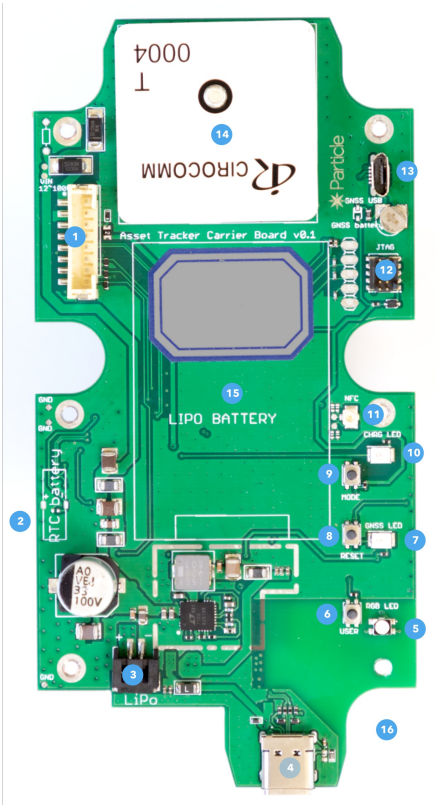

0004
CIRCUITOMM
Asset Tracker Carrier Board v0.1
Particle
LIPO Battery
RGB LED


GNSS_BOOT
WIFI_EN
WIFI_BOOT
WIFI_TXD
WIFI_RXD
CELL_VBUS
CELL_P
CELL_N
SWDIO
SWDCLK
RESET
+3V3

Block Diagram



Description



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		GNSS Antenna
15		LiPo Battery
16		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 (500mA 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 Tracker SoM datasheet. CAN Bus termination is provided on the carrier board.

[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
GNSS_LOCK	A2	GNSS lock indicator
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 TRACKER CARRIER 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 (5-30 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 **RGB LED** default behavior is to display cellular signal quality:

- Red blinking: Attempting to connect to the cellular network
- Red: poor cellular signal
- Yellow: average cellular signal
- Green: good cellular signal

It will fast blink when connecting to the cellular network, and slow blink when connecting to the Particle cloud. This behavior can be overridden by custom application firmware.

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
- On: Has a GNSS fix.

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	

Ordering Information

SKU	Description	Packaging
ONE402M	Tracker One LTE M1/2G (NorAm), [x1]	Each
ONE523M	Tracker One LTE CAT1/3G/2G (Europe), [x1]	Each
TCAR	Tracker Carrier Board, [x1]	Each

Revision history

Revision	Date	Author	Comments
pre	20 Apr 2020	RK	Preview Release