

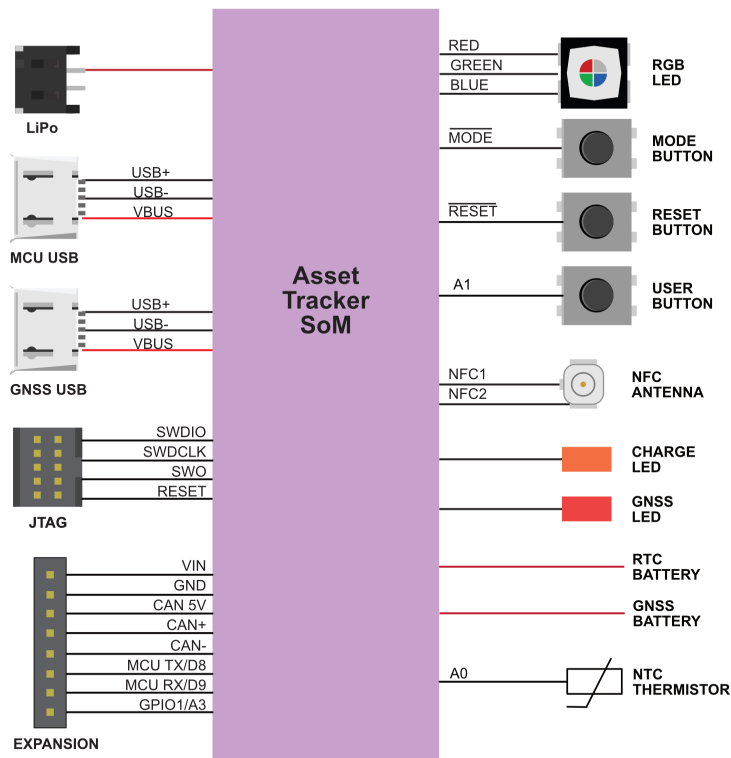
Tracker One⁽⁰¹⁸⁾

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 6-30V power supply copes with most power delivery systems. Also accepts 5V supply via USB-C. LiPo battery connector with charge LED. Supports up to 90V 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.
- **RGB LED** for use as both a user-configurable device as well as Particle status information.



Block Diagram



Description



| Num | ID | Description |
|-----|----------|---|
| 1 | | GNSS Antenna |
| 2 | | Wi-Fi Antenna (mounted on side of case) |
| 3 | | NFC Antenna (mounted on lid) ¹ |
| 4 | | Power and I/O connector (B8B-PH) |
| 5 | | BLE Antenna (mounted on side of case) |
| 6 | | LiPo Connector |
| 7 | | M8 8-pin male connector (mounted on side of case) |
| 8 | | USB-C ² |
| 9 | | NFC connector (connects to NFC antenna on lid) |
| 10 | | RGB Status LED |
| 11 | GNSS LED | GNSS Status LED |
| 12 | CHRG | LiPo charge status LED |
| 13 | USER | User Button |
| 14 | RESET | RESET Button |
| 15 | MODE | MODE button |
| 16 | | Cellular Antenna (mounted on side of case) |
| 17 | | USB-C switch ³ |
| 18 | | Thermistor |
| 19 | | JTAG connector (not populated) ⁴ |

¹When disassembling the Tracker One, be careful when removing the lid. The NFC antenna and LiPo battery are mounted on the lid, and the NFC antenna cable is short. Carefully remove the NFC U.FL connector before fully removing the lid of the case. Reconnect to (9).

²The USB-C connector is normally connected to the nRF52840 MCU. It can be connected to the GNSS module by using the USB-C switch (17).

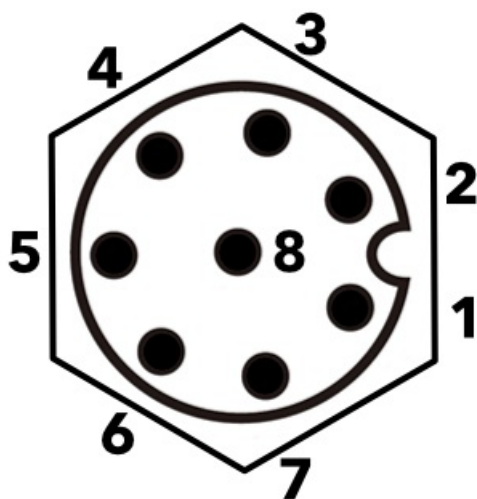
³The normal state is 1-4 OFF and 5-6 ON to connect the USB to the nRF52840. To connect the USB-C to the u-blox GNSS, turn 1-4 ON and 5-6 OFF. Disconnect the USB-C and the LiPo battery before changing the switch settings.

⁴The JTAG connector is not populated at the factory. The connector is a [Samtec FTS-105-01-F-DV-K](#) 10 position (2x5), 1.27mm pitch.

POWER AND I/O CONNECTOR (M8)

| M8 Pin | Function | Function | Function | I/O | Color |
|--------|---------------------|-----------|----------|-----------------|--------|
| 1 | CAN_P | | | IO ² | Yellow |
| 2 | VIN ³ | | | I | Red |
| 3 | Analog A3 | | GPIO D3 | IO ¹ | White |
| 4 | Serial1 RX | Wire3 SDA | GPIO D9 | IO ¹ | Green |
| 5 | Serial1 TX | Wire3 SCL | GPIO D8 | IO ¹ | Brown |
| 6 | CAN_5V ⁴ | | CAN_PWR | O | Orange |
| 7 | CAN_N | | | IO ² | Blue |
| 8 | GND | | | | Black |

The IP67 M8, 8-pin, male pins with threaded barrel connector is accessible from the outside of the enclosure.



View as looking into the M8 connector on the outside of the enclosure.

Note: Version 003 and earlier of this datasheet had a different pin numbering for M8 connector that didn't match the connector manufacturer's numbering. Only the numbering has changed; the function of the pin at a given location is unchanged and the change should not affect existing designs.

¹MCU GPIO is limited to 3.3V maximum.

²CAN Bus specifications can be found in the [Tracker SoM datasheet](#).

³6.0 to 30 VDC at 2A when using the M8 connector. 6.0 - 90 VDC at 2A when connecting directly to the board.

⁴5V, 370 mA maximum. Controlled by the CAN_PWR GPIO.

Additional information on M8 cables and connectors can be found in the [M8 Accessories Datasheet](#).

You must enable CAN_5V in order to use GPIO on M8 pins 3, 4, and 5 (A3, D9/RX/SDA, D8/TX/SCL) on the Tracker One. If CAN_5V is not powered, these pins are isolated from the MCU starting with version 1.1 of the Tracker One/Tracker Carrier Board (September 2020 and later). This is necessary to prevent an issue with shipping mode, see technical advisory note [TAN002](#).

CARRIER BOARD POWER AND I/O CONNECTOR

The connector on the carrier board itself is is a [JST B8B-PH-SM4-TB\(LF\)\(SN\)](#), 8-position, 2mm pitch, male pins, shrouded. The mating connector is the [JST PHR-8](#). The female sockets are available plain, with leads, and in pre-manufactured ribbon cable formats.

| | | | | | | | | | | | | | | |
|-----------|--------|----------|-------|-------|-----------|--------|---------|---------|-------|-----------|-------|-----|---|--|
| PHR-8 Pin | M8 Pin | Function | Color | | :-----: | :----: | :-----: | :-----: | | 1 | 2 | VIN | | |
| Red | | 2 | 1 | CAN_P | Yellow | | 3 | 7 | CAN_N | Blue | | 4 | 6 | |
| CAN_5V | Orange | | 5 | 5 | TX_SCL_D8 | Brown | | 6 | 4 | RX_SDA_D9 | Green | | | |
| | | 7 | 3 | A3 | White | | 8 | 8 | GND | Black | | | | |

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 |
| MCU TX | TX | MCU serial TX, GPIO D8, Wire3 SCL |
| MCU RX | RX | MCU serial RX, GPIO D9, Wire3 SDA |

Note: While the USER button exists inside the Tracker One, the Tracker One is a sealed unit and opening it will void the warranty and may affect certifications, thus it is not practical to use. It can be used with the Tracker Carrier Board.

POWERING THE TRACKER CARRIER BOARD

There are several options for powering the carrier board:

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

The **VIN** connector (6 to 30 VDC at 2A on the M8 connector, or 6 to 90 VDC at 2A to the B8B-PH connector on the board). This is useful with an external power supply.

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

USB CONNECTOR

There is a single USB C connector on the carrier board. On the Tracker One, this exits the enclosure and is IP67 rated.

A set of DIP switches on the carrier board allow this port to be connected to either the MCU (normal) or u-blox GNSS (for firmware updates). The normal state is 1-4 OFF and 5-6 ON to connect the USB to the nRF52840. To connect the USB-C to the u-blox GNSS, turn 1-4 ON and 5-6 OFF. Disconnect the USB-C and the LiPo battery before changing the switch settings.

LED INDICATORS

The **RGB LED** default behavior is:

- Red breathing: Attempting to connect to the cellular network
- Yellow breathing: Connecting to the cloud, weaker cellular signal
- Green breathing: Connecting to the cloud, good cellular signal
- Yellow solid: Connected to the cloud, weaker cellular signal
- Green solid: Connected to the cloud, good cellular signal

Alternatively the LED can be configured to the typical Particle color scheme (blinking green, blinking cyan, breathing cyan) via device or cloud configuration. Custom device firmware can provide other color schemes if desired.

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:

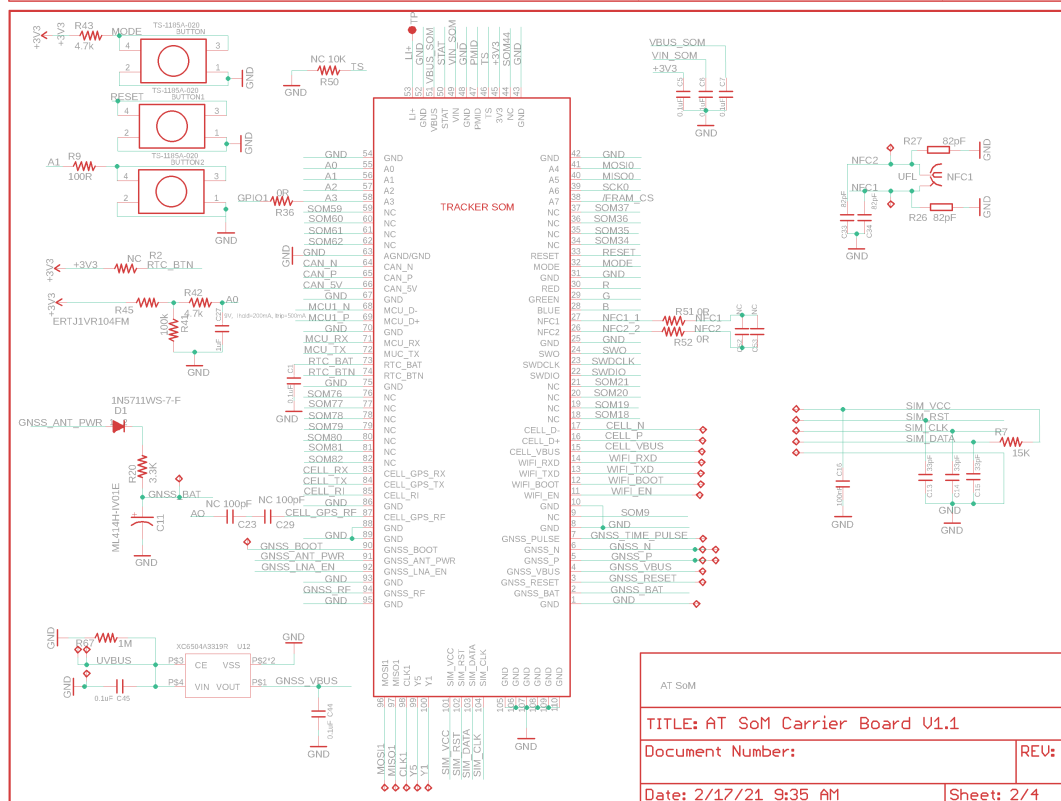
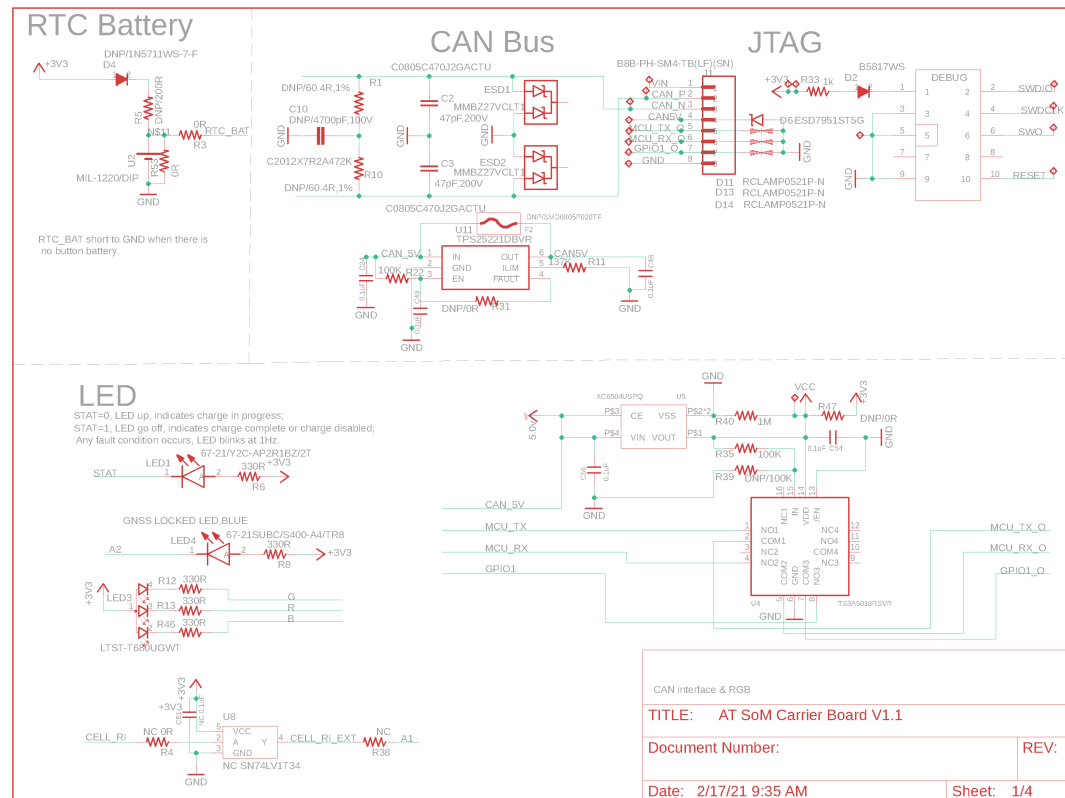
- Off: GNSS is powered off.
- Blinking (1 Hz): Attempting to get a GNSS fix
- On: Has a GNSS fix.

Antennas

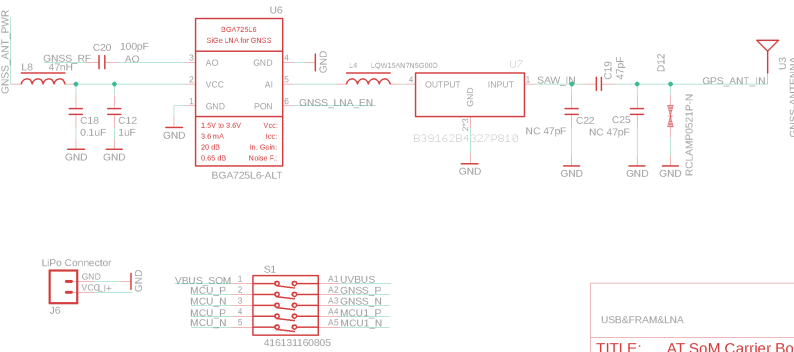
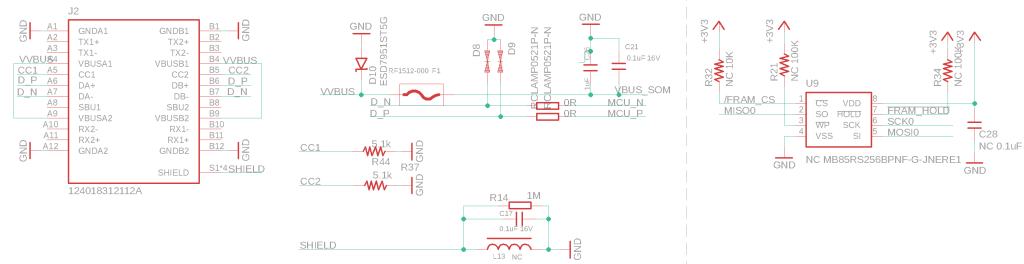
| Antenna | Location |
|----------|-----------------------------------|
| GNSS | Carrier Board (faces top of case) |
| Wi-Fi | Left Side |
| BLE | Left Side |
| NFC | Top |
| Cellular | Right Side |



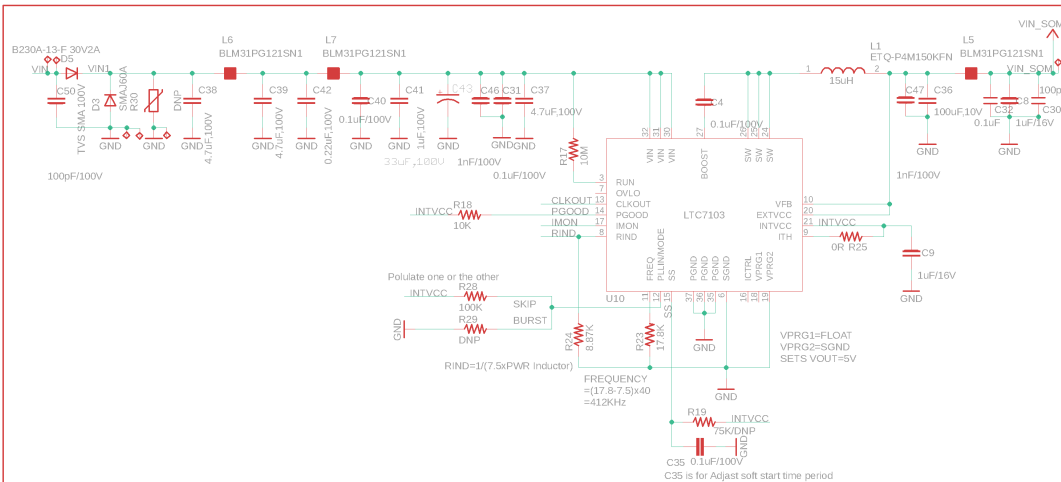
As the GNSS antenna faces the top of the case, you also want the top of the case facing the sky to the greatest extent possible. You will likely be unable to get a GNSS lock with the top facing down.



MCU USB-C



| | |
|----------------------------------|------------|
| USB&FRAM&LNA | |
| TITLE: AT SoM Carrier Board V1.1 | |
| Document Number: | REV: |
| Date: 2/17/21 9:35 AM | Sheet: 3/4 |

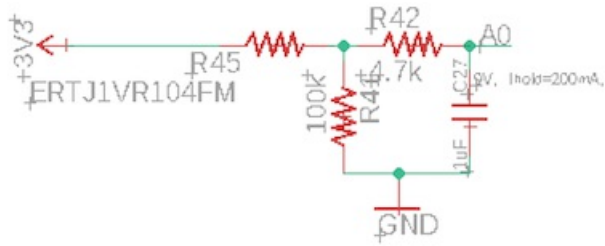


| | |
|----------------------------------|------------|
| POWER | |
| TITLE: AT SoM Carrier Board V1.1 | |
| Document Number: | REV: |
| Date: 2/17/21 9:35 AM | Sheet: 4/4 |

Peripheral Details

THERMISTOR

The Tracker Carrier Board contains a 100K NTC thermistor, connected to A0. It is a [Panasonic ERT-J1VR104FM](#) connected high-side.



It can be read using the [getTemperature\(\)](#) API. Note that this is the temperature on the board, within the enclosure, and will typically be several degrees warmer than the ambient temperature.

Design Files

The Tracker Carrier Board in the Tracker One is open-source and the Eagle CAD design files are available in Github:

<https://github.com/particle-iot/tracker-hardware>

Mechanical specifications

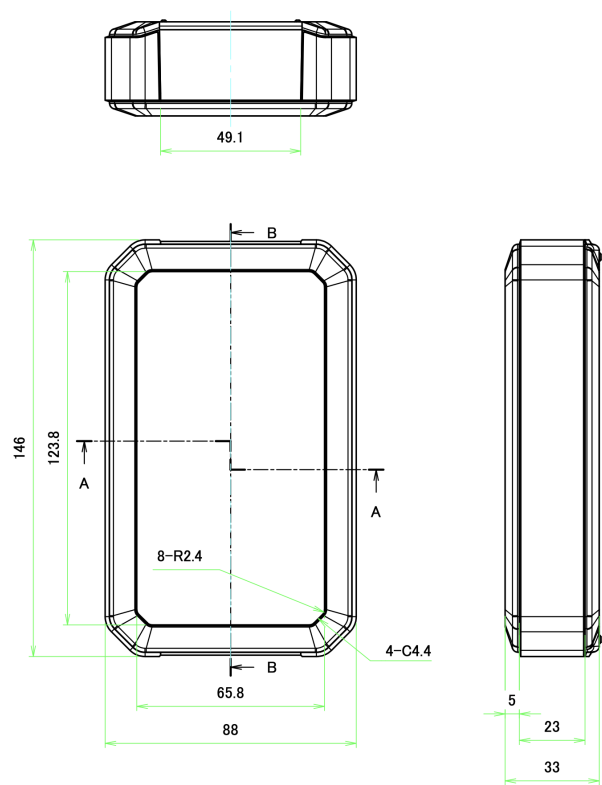
OPERATING TEMPERATURE

| Parameter | Minimum | Maximum | Units |
|--------------------------|---------|---------|-------|
| Operating temperature | -10 | 60 | °C |
| Battery charging enabled | 0 | 50 | °C |

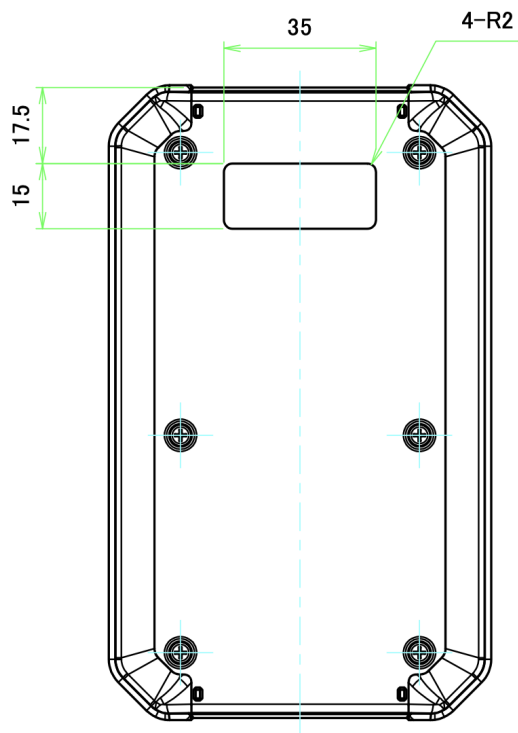
DIMENSIONS AND WEIGHT

| Parameter | Value | Units |
|---------------------------------|-------|-------|
| Width | 88 | mm |
| Length (case only) | 146 | mm |
| Length (including M8 connector) | 154 | mm |
| Thickness | 33 | mm |
| Weight | 290 | g |

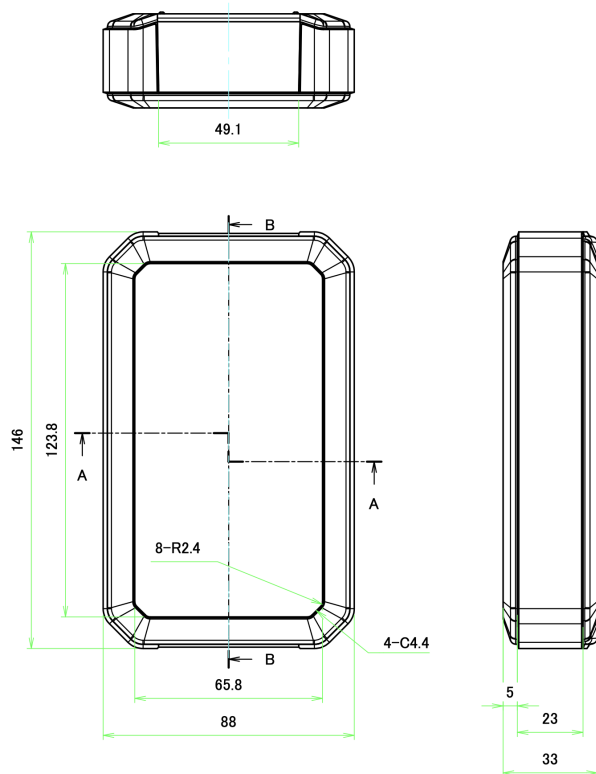
Case Dimensions (mm):



Bottom:



Maximum Carrier Board Dimensions (mm):



Note: The Tracker Carrier Board has a smaller bottom tab to provide space for the M8 connector.

POWER CONSUMPTION (TRACKER ONE 402)

| Parameter | Symbol | Min | Typ | Peak | Unit |
|--|--------------------------------|------|------|------|------|
| Operating Current (uC on, peripherals and radio disabled) | I_{startup} | | | | mA |
| Operating Current (uC on, cellular connecting to cloud) | $I_{\text{cell_conn_cloud}}$ | | | | mA |
| Operating Current (uC on, cellular connected but idle) | $I_{\text{cloud_idle}}$ | | | | mA |
| Operating Current (uC on, cellular connected and transmitting) | $I_{\text{cloud_pub}}$ | | | | mA |
| STOP mode sleep, GPIO wake-up | $I_{\text{stop_gpio}}$ | 911 | 1140 | 1530 | uA |
| STOP mode sleep, analog wake-up | $I_{\text{stop_analog}}$ | 920 | 1120 | 1480 | uA |
| STOP mode sleep, RTC wake-up | $I_{\text{stop_intrtc}}$ | 919 | 1130 | 1500 | uA |
| STOP mode sleep, BLE wake-up, advertising | $I_{\text{stop_ble_adv}}$ | 136 | 1190 | 2880 | uA |
| STOP mode sleep, BLE wake-up, connected | $I_{\text{stop_ble_conn}}$ | 772 | 1180 | 1790 | uA |
| STOP mode sleep, serial wake-up | $I_{\text{stop_usart}}$ | 993 | 1120 | 1510 | uA |
| STOP mode sleep, cellular wake-up | $I_{\text{stop_cell}}$ | 11.2 | 17.3 | 116 | mA |
| STOP mode sleep, IMU wake-up | $I_{\text{stop_imu}}$ | 850 | 1150 | 1590 | uA |
| STOP mode sleep, CAN wake-up | $I_{\text{stop_can}}$ | 981 | 1200 | 1600 | uA |
| STOP mode sleep, GPS wake-up | $I_{\text{stop_gps}}$ | 29.3 | 36.1 | 50.2 | mA |
| ULP mode sleep, GPIO wake-up | $I_{\text{ulp_gpio}}$ | | 201 | 552 | uA |
| ULP mode sleep, analog wake-up | $I_{\text{ulp_analog}}$ | | 190 | 593 | uA |
| ULP mode sleep, RTC wake-up | $I_{\text{ulp_intrtc}}$ | | 188 | 558 | uA |
| ULP mode sleep, BLE wake-up, advertising | $I_{\text{ulp_ble_adv}}$ | | 270 | 2150 | uA |
| ULP mode sleep, BLE wake-up, connected | $I_{\text{ulp_ble_conn}}$ | | 258 | 990 | uA |
| ULP mode sleep, serial wake-up | $I_{\text{ulp_usart}}$ | 638 | 842 | 1200 | uA |
| ULP mode sleep, cellular wake-up | $I_{\text{ulp_cell}}$ | 13.9 | 16.9 | 86.0 | mA |
| ULP mode sleep, IMU wake-up | $I_{\text{imu_imu}}$ | | 225 | 642 | uA |
| ULP mode sleep, CAN wake-up | $I_{\text{can_can}}$ | 75.3 | 270 | 631 | uA |
| ULP mode sleep, GPS wake-up | $I_{\text{ulp_gps}}$ | 28.0 | 35.3 | 49.5 | mA |
| HIBERNATE mode sleep, GPIO wake-up | $I_{\text{hib_gpio}}$ | | 161 | 564 | uA |
| HIBERNATE mode sleep, analog wake-up | $I_{\text{hib_analog}}$ | | 151 | 557 | uA |
| HIBERNATE mode sleep, external RTC wake-up | $I_{\text{hib_extrtc}}$ | | 151 | 562 | uA |
| HIBERNATE mode sleep, IMU wake-up | $I_{\text{hib_imu}}$ | | 185 | 669 | uA |
| HIBERNATE mode sleep, CAN wake-up | $I_{\text{hib_can}}$ | | 230 | 636 | uA |

¹The min, and particularly peak, values may consist of very short transients. The typical (typ) values are the best indicator of overall power consumption over time. The peak values indicate the absolute minimum capacity of the power supply necessary, not overall consumption.

POWER CONSUMPTION (TRACKER ONE 523)

| Parameter | Symbol | Min | Typ | Peak | Unit |
|--|------------------------------|------|------|------|------|
| Operating Current (uC on, peripherals and radio disabled) | I _{startup} | 24.2 | 132 | 689 | mA |
| Operating Current (uC on, cellular connecting to cloud) | I _{cell_conn_cloud} | 51.2 | 112 | 594 | mA |
| Operating Current (uC on, cellular connected but idle) | I _{cloud_idle} | 50.9 | 60.2 | 197 | mA |
| Operating Current (uC on, cellular connected and transmitting) | I _{cloud_pub} | 57.2 | 173 | 702 | mA |
| STOP mode sleep, GPIO wake-up | I _{stop_gpio} | 778 | 1010 | 1390 | uA |
| STOP mode sleep, analog wake-up | I _{stop_analog} | 740 | 995 | 1390 | uA |
| STOP mode sleep, RTC wake-up | I _{stop_intrtc} | 758 | 993 | 1420 | uA |
| STOP mode sleep, BLE wake-up, advertising | I _{stop_ble_adv} | | 1050 | 2500 | uA |
| STOP mode sleep, BLE wake-up, connected | I _{stop_ble_conn} | 521 | 1050 | 1920 | uA |
| STOP mode sleep, serial wake-up | I _{stop_usart} | 729 | 995 | 1390 | uA |
| STOP mode sleep, cellular wake-up | I _{stop_cell} | 19.2 | 21.5 | 151 | mA |
| STOP mode sleep, IMU wake-up | I _{stop_imu} | 741 | 1020 | 1460 | uA |
| STOP mode sleep, CAN wake-up | I _{stop_can} | 884 | 1080 | 1490 | uA |
| STOP mode sleep, GPS wake-up | I _{stop_gps} | 28.0 | 34.8 | 49.0 | mA |
| ULP mode sleep, GPIO wake-up | I _{ulp_gpio} | | 172 | 556 | uA |
| ULP mode sleep, analog wake-up | I _{ulp_analog} | | 165 | 526 | uA |
| ULP mode sleep, RTC wake-up | I _{ulp_intrtc} | | 164 | 561 | uA |
| ULP mode sleep, BLE wake-up, advertising | I _{ulp_ble_adv} | | 228 | 1810 | uA |
| ULP mode sleep, BLE wake-up, connected | I _{ulp_ble_conn} | | 231 | 1100 | uA |
| ULP mode sleep, serial wake-up | I _{ulp_usart} | 503 | 731 | 1169 | uA |
| ULP mode sleep, cellular wake-up | I _{ulp_cell} | 18.6 | 20.9 | 212 | mA |
| ULP mode sleep, IMU wake-up | I _{imu_imu} | | 194 | 534 | uA |
| ULP mode sleep, CAN wake-up | I _{can_can} | 45.1 | 247 | 609 | uA |
| ULP mode sleep, GPS wake-up | I _{ulp_gps} | 27.4 | 33.9 | 48.0 | mA |
| HIBERNATE mode sleep, GPIO wake-up | I _{hib_gpio} | | 148 | 519 | uA |
| HIBERNATE mode sleep, analog wake-up | I _{hib_analog} | | 141 | 515 | uA |
| HIBERNATE mode sleep, external RTC wake-up | I _{hib_extrtc} | | 140 | 525 | uA |
| HIBERNATE mode sleep, IMU wake-up | I _{hib_imu} | | 178 | 544 | uA |
| HIBERNATE mode sleep, CAN wake-up | I _{hib_can} | | 222 | 608 | uA |

¹The min, and particularly peak, values may consist of very short transients. The typical (typ) values are the best indicator of overall power consumption over time. The peak values indicate the absolute minimum capacity of the power supply necessary, not overall consumption.

Country compatibility

| Country | Model | Technologies | Carriers |
|------------------------|--------|--------------|--|
| Albania | ONE524 | 2G, 3G, Cat1 | ALBtelecom, Telekom, Vodafone |
| Australia | ONE524 | 3G, Cat1 | Optus, Telstra, Vodafone |
| Austria | ONE524 | 2G, 3G, Cat1 | 3 (Drei), A1, T-Mobile |
| Belarus | ONE524 | 2G, 3G, Cat1 | A1 |
| Belgium | ONE524 | 2G, 3G, Cat1 | Base, Orange, Proximus |
| Bosnia and Herzegovina | ONE524 | 2G, 3G | BH Telecom, HT Eronet |
| Bulgaria | ONE524 | 2G, 3G | A1, Telenor, Vivacom |
| Canada | ONE404 | M1 | Bell Mobility, Rogers Wireless, Telus |
| Croatia | ONE524 | 2G, 3G, Cat1 | Hrvatski Telekom, Tele2 |
| Czechia | ONE524 | 2G, 3G, Cat1 | O2, T-Mobile, Vodafone |
| Denmark | ONE524 | 2G, 3G, Cat1 | 3 (Tre), TDC, Telenor, Telia |
| Estonia | ONE524 | 2G, 3G, Cat1 | Elisa, Tele2, Telia |
| Faroe Islands | ONE524 | 2G, 3G | Faroese Telecom, Vodafone |
| Finland | ONE524 | 2G, 3G, Cat1 | DNA, Elisa, Telia |
| France | ONE524 | 2G, 3G, Cat1 | Bouygues, Free Mobile, Orange, SFR |
| Germany | ONE524 | 2G, 3G, Cat1 | O2, Telekom, Vodafone |
| Gibraltar | ONE524 | 2G, 3G, Cat1 | Gibtel |
| Greece | ONE524 | 2G, 3G, Cat1 | Cosmote, Vodafone, Wind |
| Hungary | ONE524 | 2G, 3G, Cat1 | Magyar Telekom, Telenor, Vodafone |
| Iceland | ONE524 | 2G, 3G, Cat1 | Nova, Siminn, Vodafone |
| Ireland | ONE524 | 2G, 3G, Cat1 | 3 (Tre), Meteor, O2, Vodafone |
| Italy | ONE524 | 2G, 3G, Cat1 | TIM, Vodafone, Wind |
| Latvia | ONE524 | 2G, 3G, Cat1 | Bite, LMT, Tele2 |
| Liechtenstein | ONE524 | 2G, 3G, Cat1 | Mobilkom, Orange |
| Lithuania | ONE524 | 2G, 3G, Cat1 | Bite, Omnitel, Tele2 |
| Luxembourg | ONE524 | 2G, 3G, Cat1 | Orange, POST, Tango |
| Malta | ONE524 | 2G, 3G, Cat1 | Go Mobile, Vodafone |
| Mexico | ONE404 | M1 | AT&T |
| Moldova | ONE524 | 2G, 3G, Cat1 | Moldcell, Orange |
| Montenegro | ONE524 | 2G, 3G, Cat1 | Mtel, T-Mobile, Telenor |
| Netherlands | ONE524 | 2G, 3G, Cat1 | KPN, T-Mobile, Vodafone |
| New Zealand | ONE524 | 2G, 3G, Cat1 | 2degrees, Spark, Vodafone |
| Norway | ONE524 | 2G, 3G, Cat1 | TDC, Telenor, Telia |
| Poland | ONE524 | 2G, 3G, Cat1 | Orange, Play, Plus, T-Mobile |
| Portugal | ONE524 | 2G, 3G, Cat1 | NOS, TMN, Vodafone |
| Romania | ONE524 | 2G, 3G, Cat1 | DigiMobil, Orange, Telekom Romania, Vodafone |
| Serbia | ONE524 | 2G, 3G, Cat1 | Telenor, VIP |
| Slovakia | ONE524 | 2G, 3G, Cat1 | O2, Orange, Telekom |
| Slovenia | ONE524 | 2G, 3G, Cat1 | A1, Mobitel |
| Spain | ONE524 | 2G, 3G, Cat1 | Orange, Telefonica, Vodafone, Yoigo |
| Sweden | ONE524 | 2G, 3G, Cat1 | 3 (Tre), Tele2, Telenor, Telia |
| Switzerland | ONE524 | 2G, 3G, Cat1 | Salt, Sunrise, Swisscom |

| | | | |
|----------------|--------|--------------|---------------------------------|
| United Kingdom | ONE524 | 2G, 3G, Cat1 | 3, EE, Manx, O2, Sure, Vodafone |
| United States | ONE404 | M1 | AT&T |

Ordering Information

| SKU | Description | Region | Modem | EtherSIM | Lifecycle | Replacement |
|-----------|---|--------|---------|----------|-----------|-------------|
| ONE404MEA | Tracker One LTE M1 (NorAm), [x1] | NORAM | BG96-MC | ✓ | GA | |
| ONE404MTY | Tracker One LTE M1 (NorAm), Bulk [x40] | NORAM | BG96-MC | ✓ | GA | |
| ONE524MEA | Tracker One LTE CAT1/3G/2G (Europe), [x1] | EMEAA | EG91-EX | ✓ | GA | |
| ONE524MTY | Tracker One CAT1/3G/2G (Europe), Bulk [x40] | EMEAA | EG91-EX | ✓ | GA | |
| ONE402MEA | Tracker One LTE M1 (NorAm), [x1] | NORAM | BG96-MC | | NRND | ONE404MEA |
| ONE402MTY | Tracker One LTE M1 (NorAm), Bulk [x40] | NORAM | BG96-MC | | NRND | ONE404MTY |
| ONE523MEA | Tracker One LTE CAT1/3G/2G (Europe), [x1] | EMEAA | EG91-EX | | NRND | ONE524MEA |
| ONE523MTY | Tracker One CAT1/3G/2G (Europe), Bulk [x40] | EMEAA | EG91-EX | | NRND | ONE524MTY |

Product Handling

FCC INTERFERENCE STATEMENT

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To comply with FCC's RF radiation exposure limits for general population/uncontrolled exposure, this device must be installed to provide a separation distance of at least 20cm from all persons.

WARNING: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device must not be collocated or operating in conjunction with any other antenna or transmitter.

IC INTERFERENCE STATEMENT

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

- this device may not cause interference.
- this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- l'appareil ne doit pas produire de brouillage, et
- l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter, except tested built-in radios.

Cet appareil et son antenne ne doivent pas être situés ou fonctionner en conjonction avec une autre antenne ou un autre émetteur, exception faites des radios intégrées qui ont été testées.

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

ESD PRECAUTIONS

The Tracker SoM contains highly sensitive electronic circuitry and is an Electrostatic Sensitive Device (ESD). Handling an module without proper ESD protection may destroy or damage it permanently. Proper ESD handling and packaging procedures must be applied throughout the processing, handling and operation of any application that incorporates the module. ESD precautions should be implemented on the application board where the B series is mounted. Failure to observe these precautions can result in severe damage to the module!

BATTERY WARNING

CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

DISPOSAL



This device must be treated as Waste Electrical & Electronic Equipment (WEEE) when disposed of.

Any WEEE marked waste products must not be mixed with general household waste, but kept separate for the treatment, recovery and recycling of the materials used. For proper treatment, recovery and recycling; please take all WEEE marked waste to your Local Authority Civic waste site, where it will be accepted free of charge. If all consumers dispose of Waste Electrical & Electronic Equipment correctly, they will be helping to save valuable resources and preventing any potential negative effects upon human health and the environment of any hazardous materials that the waste may contain.

Revision history

| Revision | Date | Author | Comments |
|----------|-------------|--------|---|
| pre1 | 2020 Apr 20 | RK | Preview Release1 |
| pre2 | 2020 May 12 | RK | Added partial dimensions |
| 001 | 2020 Jun 29 | RK | First release |
| 002 | 2020 Jun 30 | RK | CAN 5V is limited to 400 mA, not 500 mA |
| 003 | 2020 Jul 16 | RK | Corrected M8 pinouts |
| 004 | 2020 Aug 06 | RK | Corrected M8 pin numbering |
| 005 | 2020 Aug 09 | RK | Updated VIN voltages |
| 006 | 2020 Aug 10 | RK | Updated carrier board diagram |
| 007 | 2020 Sep 01 | RK | Added antenna diagram |
| 008 | 2020 Sep 08 | RK | Corrected USB connector description |
| 009 | 2020 Sep 25 | RK | Add battery warning |
| 010 | 2020 Oct 14 | RK | Add temperature range |
| 011 | 2020 Nov 05 | RK | Add power usage |
| 012 | 2020 Dec 09 | RK | CAN termination resistor is not present |
| 013 | 2021 Feb 03 | RK | Change M8 CAN output current to 370 mA |
| 014 | 2021 Feb 17 | RK | Tracker One v1.1 GPIO note, update schematics |
| 015 | 2021 Mar 15 | RK | Updated model, carrier, ordering information |
| 016 | 2021 Mar 23 | RK | Added FCC and IC interference statements |
| 017 | 2021 Mar 29 | RK | D8 and D9 were reversed in some tables |
| 018 | 2021 Sep 10 | RK | Changed wording of peak vs. max current |