User Manual

Asset Tracker

Gen 4 Ultra Short

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CHEP Asset Tracker User Guide

CHEP Asset Tracker

Global location tracking device with the longest battery life

Key benefits

Helps track the pallets and goods loaded on Asset by providing real time location and environment sensing data.

Customer can use the data generated to get more insight into their supply chain flow and take actions to improve the efficiency of operation.

Device can be controlled and configured using BRIX platform and APIs provided. Customer need to get license to BRIX platform to access data from the devices.

Customer can visualize the device and hence Asset of their asset on BXB Enterprise application call BRIX.

Customizable User Interface and interface data visualization tool on BRIX can be used by customer to generate information as relevant to their specific use case.

Each Ultra device fitted with replaceable battery and last for >5yrs with 12 standard AA Alkaline batteries.

How is it used

Use CHEP Asset Tracker location tracking

Platform and API to Track your valuable assets

Track your shipments

How it works

CHEP Pallet Tracker is intended for enterprise customers wanting to track their assets. Customers with BRIX enterprise license will get access to **Device management** application to configure the device operation rules like logging frequency, ping transmit frequency and can choose the sensor to use like temperature, motion and magneto meter etc. Device can report sensor data every 5min. to once in 3day. Customer can enable the GPS if pallet is expected to work under clear sky. More reports per day – shorter the battery life.

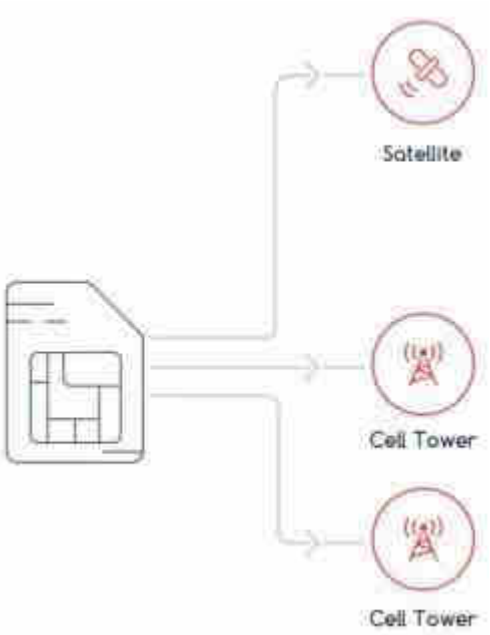
CHEP Asset tracker reports its current location on the scheduled interval along with sensor data. Each communication report from tracker to BRIX is called “Ping” and BRIX uses these “Ping” to create the journey using it preoperatory Asset journey algorithm. Customer can login on **Asset tracking application** module in the BRIX and visualize the complete journey on the map. Please in-between each “Ping” CHEP Asset Tracker is in the sleep State, preserving the battery.

Customer can monitor 1000s of devices in a comprehensive view on BRIX dashboard and can take corrective actions. CHEP Asset tracker uses Cellular, Wifi or GPS to determine it’s location and accuracy of location goes from coarse to accurate in the order. Customer can monitor the # of times each tracker has used Cellular, Wifi or GPS. Customer can see the data for only the devices allocated to it’s own account only but once the customer cancels it’s account, tracker data will no longer be visible even though device will continue to work & report data.

Connectivity

CHEP Asset Tracker comes with technology specific global SIM card pre-installed. This SIM card works in designated countries on CatM or NB network while for other countries with no coverage for CatM or NB, it falls back to GSM coverage. Device can also communicate on Wifi provided the credentials for access are sent to device thru profile configuration.

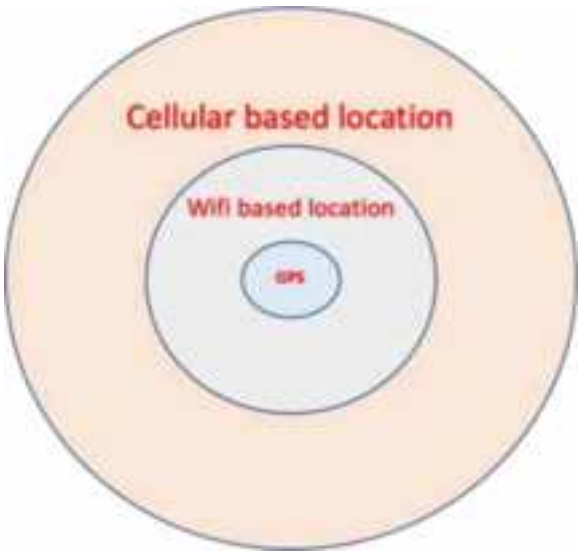
User can not originate the connection to CHEP Asset tracker unless device wakes-up and contacts the cloud application over Wifi or Cellular. When tracker is not connected to network, it continues to store the data off-line into it's memory. Onboard memory on device can store the data worth 6months of sensor logs.



Location tracking technologies

CHEP Asset tracker acquires location using Cellular, Wifi and GPS. Logic is built into the device to attempt Wifi first, followed by Cellular and only if both don't result into any valid data, GPS is attempted. This logic is implemented to save power as GPS attempt is most power consuming.

Wifi & Cell tower triangulation technology calculates the location of the device based on the location of the nearby cell towers or Wifi hotspots. These are not very accurate, an approximate horizontal positioning error for each type is showsn in the picture here. GPS is the most accurate but takes time and higher power to get a location fix.



This product is connected to the cloud platform through BT, wifi, wwan and will go into sleep mode after uploads the location information. It will go into sleep mode within 5 minutes after waking up, unless it is woken up again.

Technical specifications

Overview

Ultra-Short provides location and environment sensing for Brambles platform as clip-on device thru harness.

Dimension

- Enclosure: 184mm x 16mm x 35mm

Serial Number

- US/NA Series: 1190125xxxxx
- EU/Spain Series: 1193425xxxxx

Operation the device

- Single tap button^ to Power-ON
- Hold button for 5s & release to Power-OFF
- Hold button for 10s to clear battery counters (Power button accessible when enclosure is open)

LED Indications

- Green LED when Power-ON
- Red LED when Power-OFF
- Flashing Red LED for device failure
- Flashing Blue LED when firmware upgrade

Battery

- AA Batteries: 4 cells
- Type: Lithium/Iron disulfide (Li/FeS2) AA
  6.5 years* with 12 hours publish interval

- Battery life depends on device config, Network availability, Signal Strength, Ping Type, Log Frequency, Extreme Temp, and Battery brand used
- Expected battery life presented above is based on device communicating through LTE-M network. This varies significantly if device communicates through GSM network

Tracking

- GNSS: fully capable GNSS tracking module
- Network triangulation based on Cell ID
- Triangulation based on CAT-M/NB-IoT cell info
- Triangulation based 2G when CAT-M not available
- Wi-Fi MAC IDs capture for location triangulation
- BLE beacon sniffing

Physical Aspects

- Weight: 150g
- Enclosure Material: ABS + PC

Certifications

- FCC, CE, IC-ID, CE-UK

Sensors

- Temperature (Resolution: 0.1°C, Accuracy: ±1.5°C, Range: -40 to +125°C)
- Accelerometer 3-axis, ±16G
- Magnetometer 3-axis, ±50 Gauss

Communication

- CAT-M/NB-IoT with 2G fallback
- Wi-Fi and BLE
- RFID with EPC C1G2 (ISO 18000-6c) standard

Configuration Update

- Key parameters can be configured through BRIX
- Publish Interval: 60 minutes to 24 hours
- Log Interval: 60 minutes to 24 hours

Data transmission and storage

- Streams sensor data to BRIX cloud real-time^
- Offline logging of sensor data on built-in memory for up to 6 months when no network connectivity

Operating Temperature

- -40°C to +60°C

Built-in Antenna

- Cellular: SMD antenna with -2dBm gain
- BLE and Wi-Fi: PCB antenna with -2.95dBi gain

Capabilities and Durability

- Device aware of its state when in
- CHEP SC | Non-CHEP Dwell | Transit
- Periodic capture of sensor data based on log frequency
- Secure log file transmission over Wi-Fi and Cellular
- Efficient power management with smart logic for location determination
- Over the air firmware upgrade: Wi-Fi
- Publish based on event triggers
- Accelerometer: Impact and movement trigger
- Temperature: out of bound condition

Security

- Encrypted communication between device & cloud
- Encrypted bootloader and application firmware
- X.509 Public/Private key for device authentication
- SSL/TSL v1.1 based security over network

* Battery life can vary depending on Network availability, Signal Strength, Ping Type, Log Frequency, extreme temp and battery brand used.

The product goes into sleep mode as long as it generates valid traffic. Wakeup mode will not work for more than 5 minutes, Otherwise, it goes into sleep mode

Danger: Never insert batteries on wrong polarity

Always insert recommended batteries with correct polarity in the Ultra devices. Wrong polarity can lead to device heating up and potentially damaging the pallet and goods on it.

Danger: Don’t put devices in Microwave

Devices should never be put in microwave, it will damage the device permanently and can lead to a fire or explosion.

Warning: Always put devices in dormant mode for Air shipment

Federal Aviation laws require all cellular devices must turn off cellular function for the entire flight duration. To comply, we must put devices in Dormant mode before shipment by air.

Warning: Never throw devices in the fire

Under any scenario, do not throw devices in fire. Devices are not designed to withstand excessive heat and if thrown into fire, may explode.

Caution: Always use specified torque to mount the device

Device is designed to withstand a specified mounting torque without cracking. Never apply more than the specified torque to mount/unmount devices and always use specific screw for fastening.

Caution: Always attach the devices flushed to pallet edge

Device must be mounted from the front and right at the edge (flushed) of the pallet. This allows the internal antenna to get maximum cellular signal for better communication.

ISED Notice
This device complies with Innovation, Science and Economic Development Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:
(1) this device may not cause interference, and
(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:
(1) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en

CAN ICES-3 (B)/NMB-3(B)
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.

ISED Radiation Exposure Statement
This EUT is compliance with SAR for general population/uncontrolled exposure limits in ISED RSS-102 and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528 and IEC 62209. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet appareil est conforme aux limites d'exposition DAS incontrôlée pour la population générale de la norme CNR-102 d'Industrie Canada et a été testé en conformité avec les méthodes de mesure et procédures spécifiées dans IEEE 1528 et IEC 62209. Cet appareil doit être installé et utilisé avec une distance minimale de 20 cm entre l' émetteur et votre corps. Cet appareil et sa ou ses antennes ne doivent pas être co-localisés ou fonctionner en conjonction avec tout autre antenne ou transmetteur.

Hereby, CHEP declare that the radio equipment type Asset Tracker is compliance with Directive 2014/53/EU.

It also complies with the UK Radio Equipment Regulation 2017(RER 2017(SI 2017/1206)).

The product supplied by AA alkaline batteries

For this device, it should keep at least 20cm separation distance and the prohibition of operating to a person.

Caution:

For Battery: Risk of explosion battery is replaced by an incorrect type, dispose of used batteries according to the instructions.

Operating Frequency Range	The maximum RF Output Power
GSM 900 /1800	Max. 33dbm / Max.30dbm
Cat M1 Band B1/3/8/20/28	23dbm
NB-IOT Band 1/3/8/20/28	23dbm
Bluetooth LE 2402 - 2480 MHz	-2.5 dBm EIRP
WiFi 2412 - 2472 MHz	16 dBm EIRP
GPS 1559-1610 MHz	/

FCC Caution.

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.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: 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.

RF warning for Mobile device:

This equipment complies with FCC 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.