



ThingSpace

Critical Asset Sensor

User Guide

Important – Please Read

Verizon Confidential & Proprietary.

© 2018 Verizon. All rights reserved.

Restricted and Controlled Distribution. Not to be used, copied, reproduced in whole or in part, nor its contents revealed in any manner to others without the express written permission of Verizon.

All information herein is subject to change without notice. The information provided was considered accurate at the time the document(s) were developed, and Verizon disclaims and makes no guaranty or warranty, express or implied, as to the accuracy or completeness of any information contained or referenced herein.

VERIZON DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

Verizon does not guarantee or warrant the availability of the network nor the compatibility of a network with any device, service or product. Verizon disclaims liability for any damages or losses of any nature whatsoever whether direct, indirect, special or consequential resulting from the use of or reliance on any information contained or referenced herein.

Technical data contained in this document may be subject to U.S. and international export, re-export, or transfer ("export") laws. Diversion contrary to U.S. and international law is strictly prohibited.

Verizon and Verizon logos are trademarks of Verizon. Other product and brand names may be trademarks or registered trademarks of their respective owners.

Contents

Welcome	3
Device overview	4
Sensor information.....	5
Unpacking your device	6
Setting up	7
Charging the device.....	7
Turning ON device	8
Turning OFF device	8
Device placement	9

Welcome

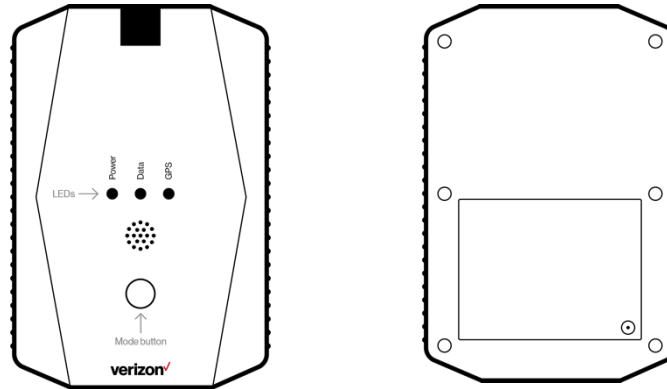
The Verizon Critical Asset Sensor is an IoT plug and play solution for quick deployment across multiple IoT use cases. It packages a device, ThingSpace platform with ThingSpace Services, and a Verizon M2M connectivity plan. It includes the following sensors: GPS, temperature, humidity, 3 axis accelerometer (shock and vibration), gyroscope (tilt), pressure, humidity, and light. It comes bundled with ThingSpace, a suite of services, and the ability to plug into a customer's platform of choice.



Simple to implement even in harsh conditions, the Critical Asset Sensor allows you to capture the data you need so you can turn it into meaningful business solutions including:

- Seven environmental sensors, GPS and an IP-66 rating
- Configurable reporting and sensor read frequency
- Flexibility to connect to your existing IoT platform (Amazon, Azure, or any private cloud)
- Optimized for reliable IoT cellular networks
- Connectivity, device management and warranty are included

Device overview

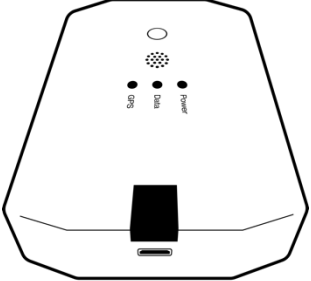
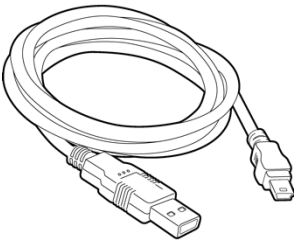
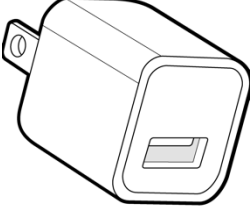


Capability	Status	Description
Network		LTE CATM1 (3GPP Release 9) LTE Bands: 13, 4 (ready)
Battery		4400 mAh battery
		Power LED display battery capacity range Power LED display device charging
		Power LED provide visual feedback for capacitive button touch detection (when LED is not displaying status)
(Capacitive) MODE Button		Short press of MODE button Touch MODE button for 3 seconds is a short press. If short press is detected, the POWER LED and GPS LED will toggle (fast flicker) to provide visual cue of short press action detection. When the device is off (default state when received from factory), short press powers on the device. When the LED is not showing status, short press will turn on LED display for a short period of time.
		Long press of MODE button Touch MODE button for 5 seconds is a long press. <i>Long press resets the device when device is ON.</i>

Sensor information

- Sensor temperature range: -20 to 75 degrees Celsius.
- **Shock, Tilt, and Vibration**
 - ◆ Shock is measured along 3 axis (X, Y, Z)
 - ◆ Shock range: up to 8g, values above are truncated
 - ◆ Tilt is measured relatively to horizon for the x (pitch) and y (roll) axis.
 - ◆ Tilt range: 0... 360 degrees
 - ◆ Vibration is measured as two single taps in a short well-defined period of time.
- **Out-of-cellular coverage operation**
 - ◆ Environmental sensor data (temperature, shock, tilt, vibration) is collected and stored while out-of-cellular coverage. Once the device reconnects to the cellular network the stored data are forwarded.

Unpacking your device

<p>CATM1 Tracking Device (Note, the battery is inside the unit) Dimensions: 115 x 75 x 23.5 mm</p>	
<p>USB Cable</p>	
<p>USB Power Plug</p>	

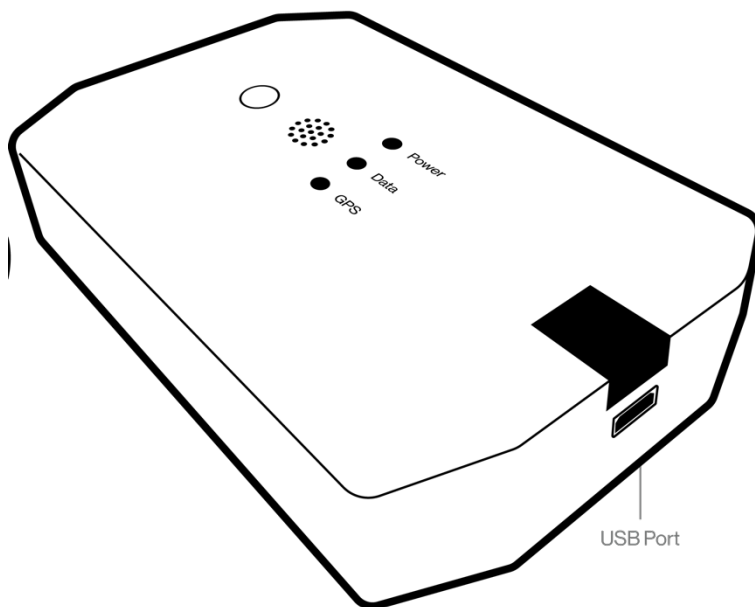
Setting up

For best results follow the set-up order below.

Charging the device

1. Connect the AC adapter and USB cable.
2. Connect the micro USB cable to the charger.

CATM1 Device: Attach the USB to the edge (Port is under plastic fold out cover.)



3. Plug the AC adapter into an outlet.

NOTE: It can take up to 12 hours to fully charge for the first time.

Charging batteries

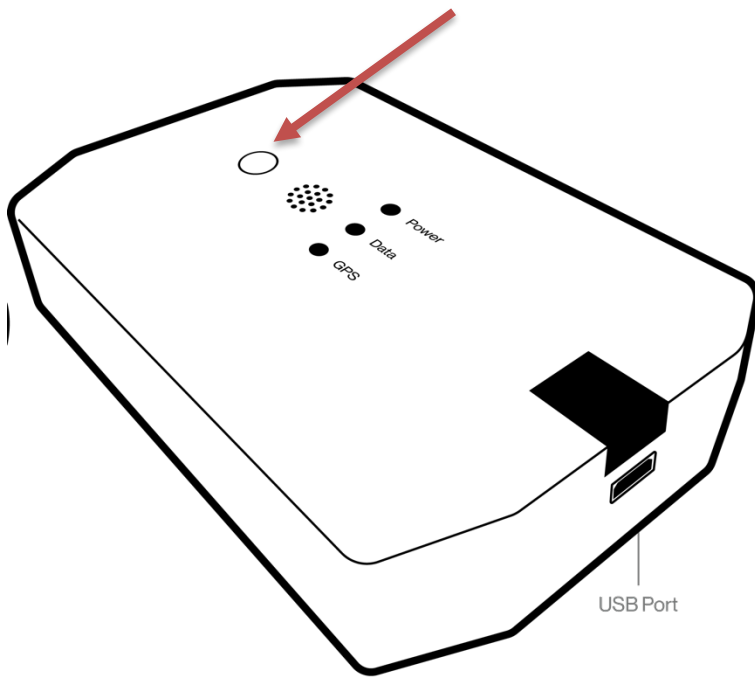
All batteries should be charged for 12 hours before use. Fully charge the device when you receive it and prior to the first shipment.

Turning ON device

Disconnect the CATM1 Tracker from the USB charger before Turning ON the device.

1. Touch the MODE button (see pointing arrow) for 3 second (short press).

NOTE: The Power LED will light up on touch detection.



2. The POWER LED and GPS LED will toggle (fast flicker) on detecting short press. The device is turned ON.
3. All three (3) status LED will display status for a short duration.

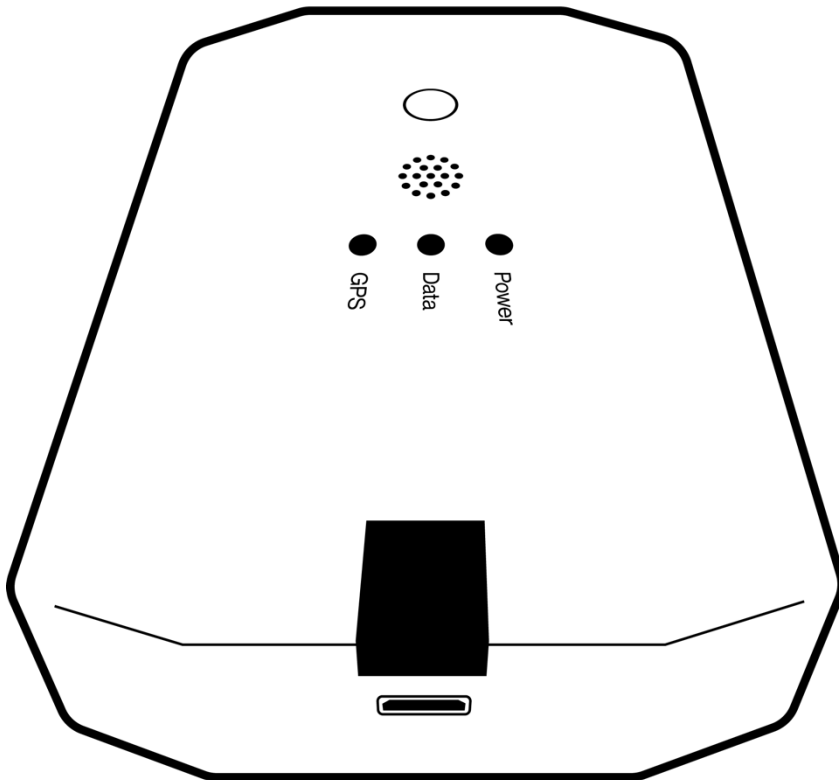
Turning OFF device

The device can not be turned off physically.

Device placement

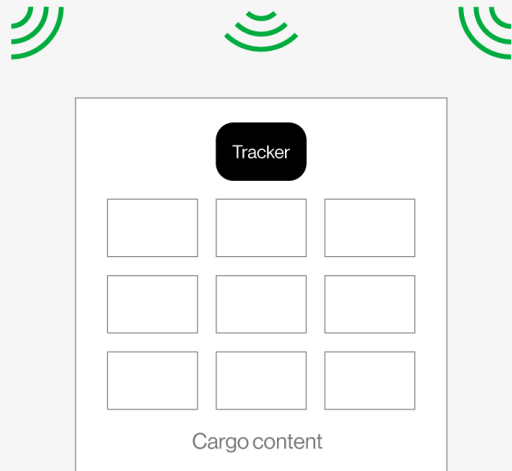
Considerations for the best GPS performance:

- The device has an Omni-directional antenna for GPS and receives GPS signals from all 6 sides.
- Connection to a satellite receiving longitude and latitude coordinates is required to receive GPS location data.
- The best GPS performance is achieved when the device is placed flat above cargo, avoiding obstructions from surrounding items.



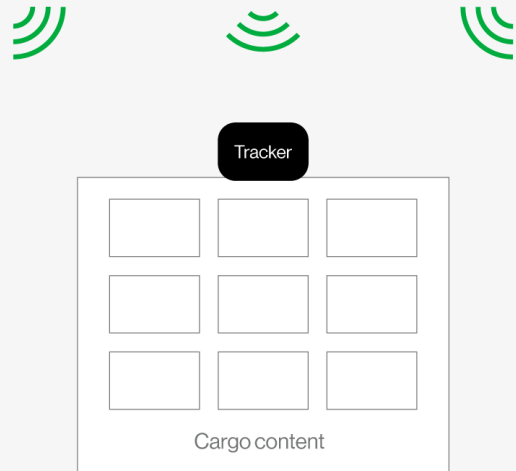
Good performance

Tracker is placed on the top of contents inside the cargo. GPS signals may reach device from above and side directions.



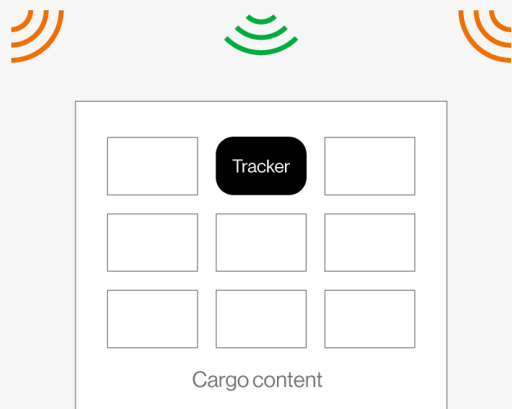
Best performance

Tracker is mounted on the top of the cargo. GPS signals may reach device from above and side directions.



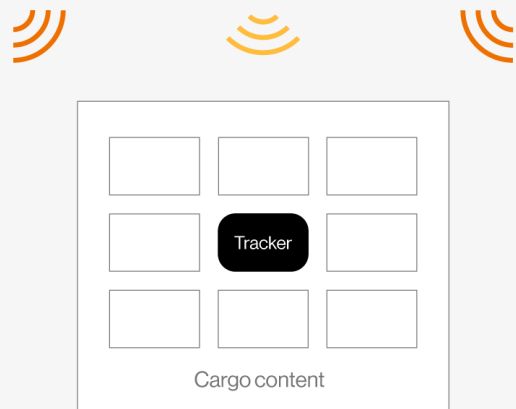
Degraded performance

Tracker is placed flat on the top of contents inside the cargo, but surrounded by items. GPS signals may reach device from above only.



Worst performance

Tracker is placed vertical on the top of contents inside the cargo, but surrounded by items. GPS signals may reach device from above only. In 3 of 4 possible vertical orientations, the GPS will be almost fully blocked (when antenna is on the lower side).



- ◆ **Location: Tracking GPS location of a pallet shipment on a truck or ground based transportation.**
 - For best reception, place device closest to the end of the truck/transport, near the door.
 - Do not enclose in a metal based package or material, as this can interfere with cellular and GPS signals.

- If using shipping pallets, secure the device to the top or side of the preferred pallet using stretch plastic pallet wrap. Pack this pallet last on the truck, if possible for better reception.
- Alternative placement is to secure the device to the side of the truck wall, closet to the door, and as close to the ceiling as possible.
- Placement of the return device envelope: insert tracking device in padded envelope with return address then secure to pallet, truck or box.
- Consider including a short instructional note to the receiver asking them to remove the return addressed envelope and drop it in the mail.
- ♦ **Location: Tracking GPS location of a box for shipping (overnight, next day, etc.).**
 - Place device inside and at the top / center of the box before sealing it (see best performance chart above).
 - Placement of the return device envelope for location (see below for temperature): Insert tracking device in padded envelope with return address then place inside the box before sealing it.
 - Do not enclose device in a metal based package or material, as this can interfere with cellular and GPS signals.
- ♦ **Temperature: Tracking temperature of the ambient environment around the device.**
 - The device needs to be associated with the specific truck, pallet, case, or box to track its ambient temperature.
 - For a specific box or case, place the device inside, at the top before sealing the box.
 - Placement of the return device envelope: Include a padded envelope with a return address, but do not insert tracking device. Inserting the device in the padded envelope could impact the temp accuracy above 1-2 degrees Celsius.

NOTE: Your data frequency settings can impact the heat generated inside the device. This may impact the reading of the device temperature.