

UnaTag User Guide

SWWBM1
MultiZone

unabiz

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For further support, please contact the Salesperson or mail us: unaconnect-support@unabiz.com

FCC 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.

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.

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

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and a human body.

NCC Statement

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Installation Instructions

After the activation, you can install your devices with the recommended instructions below.



- A. Assets with tapped holes:**
Use screws or bolts through the fixation holes
- B. Assets with bars or rods:**
Use Cable ties to run over the grooves
- C. Assets with flat and smooth surfaces:**
Use strong double-sided tape on the bottom of the devices

Caution:

1. *The installation of UnaTag devices onto the assets must be implemented by corporate professionals or dedicated personnel to follow the proper instructions.*
2. *The UnaTag devices must be installed with the UnaTag logo facing outwards and away from metal or obstacles. This allows optimal Sigfox communication quality from the device.*

1. PRODUCT INTRODUCTION



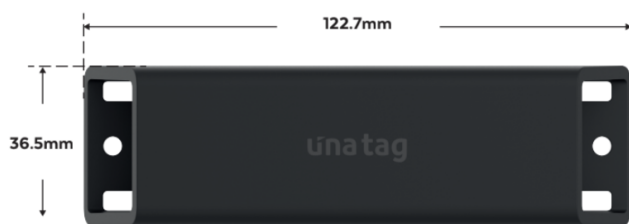
UnaTag is a **ready-to-deploy** asset tracking solution seamlessly integrated with UnaConnect, a secure and reliable IOT device management cloud platform developed by UnaBiz.

The asset tracking solution uses WiFi technology to detect the geolocation of your assets and transmits data via the **energy-efficient** and **cost-effective** Sigfox network. The device can measure and send temperature data, or detect abnormal temperatures based on predefined thresholds. With a built-in accelerometer, it can also detect impact or tilt, providing key insights on your asset status

1.1 Features

- **WiFi Geolocation** for asset tracking in urban and suburban areas
- **Multiple Sensors** on Your Assets: geolocation, accelerometer, temperature
- **Multi-Zone Sigfox communication** to track your assets within multiple regions
- **Firmware Over-the-Air (FOTA) via Bluetooth** to update device firmware
- **Dedicated Mobile App with NFC commands** for on-the-field activation and configurations
- **Smart Modes:**
 - **Start to Stop Tracking** to collect asset data once movement starts and continue till the asset is static at its destination
 - **Timer Mode Tracking** to collect temperature, location and impact data at pre-configured intervals
- **Device Features:**
 - **Event Alert Notifications** to receive alert notification about specific events such as asset temperature out of pre-configured thresholds

1.2 Specifications



CONNECTIVITY

Sigfox Regions Multi Zone (RCZ 1-7)

Sigfox Radiation Class Sigfox Class Ou

SHORT RANGE

NFC For NFC commands with dedicated mobile app

Bluetooth 5.2 For Firmware Over-the-Air (FOTA)

MECHANICAL

Weight

Mounting Method Screws, Tapes, Ties

Operating Temperature -10°C to +60°C

Operating Humidity 10% to 90% RH

IP Rating IP66

IK Rating IK08

Casing Colour Black

SENSORS

Geolocation WiFi Sniffing based on RSSI (WiFi SoC, 2.4GHz, 802.11b/g/n)

Temperature Internal Temperature Sensor (Accuracy $\pm 0.5^{\circ}\text{C}$)

Accelerometer Movement, Tilt, Impact Detection (down to 1.3mg RMS in low-power mode)

BATTERY

Type Lithium 1x4000mAh

Battery Rating 3.6V, 0.2A

Battery Life 5 years with 5 messages/day

FLASH MEMORY

Memory Space 2 MB for FOTA Recovery

CUSTOMISATION

Casing, battery, antenna, firmware and sensor

1.3 Monitor and Configure the Product

The **UnaConnect** platform helps you to monitor and configure your product:

Device data			EXPORT
Time	Data	Raw Message	
2022/06/16 02:25 PM	<pre>{ "batteryVoltage": float 3.8 "highestTemperature": int 23 "lowestTemperature": int 21 "shockFlag": bool false "status": int 1 "statusString": string "passive" "temperature": int 23 "type": int 4 }</pre>	6417171526	
2022/06/16 02:25 PM	<pre>{ "macAddresses": [...] 2 items "type": int 1 }</pre>	fa8fca328184e4c32a043f03	

The **UnaConnect Docs**(<https://docs.unaconnect.io/>) provides detailed information on each of the main functionalities on UnaConnect:

unaconnect docs

Quick Start Guides API Reference

Tutorial

First Steps

Setting up Sigfox Callbacks

Creating a Group

Adding a Device

Setting up a Device

Implementing a Connector to a Server

Enabling a Notification

Learning More...

Additional Resources

Using the Documentation

Apps using UnaConnect API

Introduction to UnaConnect

UnaConnect is a Middleware Cloud Platform for IoT Device Management developed and maintained by UnaBiz.

UnaConnect allows you to remotely onboard and update a large and diverse fleet of IoT devices, to collect and process data across different networks. Simplify devices integration and deliver aggregated data to multiple end platforms in a secure, reliable and cost-efficient manner.

Being a cloud-based serverless solution, UnaConnect allows millions of devices to safely and reliably communicate. Its API and graphical user interfaces ([UnaConnect Console](#), [UnaConnect Mobile iOS](#) and [UnaConnect Mobile Android](#)) offer all the tools to transform your infrastructure into a fully-featured IoT solution.

This documentation is divided into 3 sections :

- [Quick Start Tutorial](#)
- [Guides](#)
- [API Reference](#)

If you are a first time user, we recommend following the tutorial designed to walk you through the process of creating your first device group, and adding and configuring a device. Once these steps are completed, UnaConnect will start collecting the messages sent from the device and be ready to deliver them to you through the connectors as defined by the user. Please refer to the Guides section for further in-depth information on the main features of UnaConnect.

If you are a developer, you may find all the information required to use our GraphQL API in the API Reference section.

2. DEVICE OPERATION

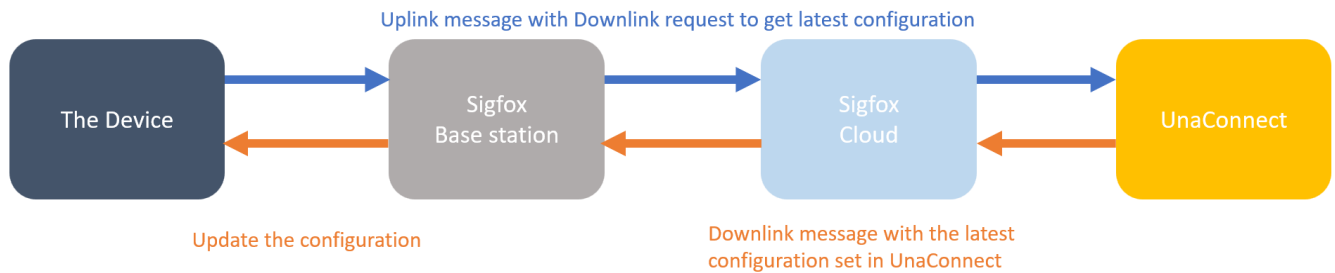
2.1 Glossary

Uplink (UL)	An uplink message is sent from the device to the cloud platform
Downlink (DL)	A downlink message is sent from the cloud platform to the device
Movement	A force above 78mgf for at least 20 seconds in the last 60 seconds
Active State	The state when the device accelerometer detects a movement
Passive State	The state when the device accelerometer does not detect any movement
Active Interval (AI)	The time interval to send data while the device is active or in movement
Passive Interval (PI)	The time interval to send data while no movement is detected
Downlink Interval (DI)	The time interval for the device to initiate the downlink process
Start Delay (STD)	The time duration between when the device detects movement to switching from Passive to Active state
Stop Delay (SD)	The time duration between when the device no longer detects movement to switching from Active to Passive state
Shock Event Delay (SED)	The on/off setting for the device to ignore shock out-of-threshold events in the duration as defined in the Temperature Event Delay
Temperature Event Delay (TED)	The duration for the device to ignore temperature out-of-threshold events
Temperature Interval (TI)	The time interval to read and log the detected temperature
Payload Profile	The message types and data based on user profile
Event Option (EO)	Flags for events and alerts
Data Network	The network used for data transmission
Logging Upload Time (LUT)	<i>This parameter is non-functional for UnaTag MultiZone</i>
Shock Threshold (ST)	A threshold value which is a minimum force detected by the device that would trigger a shock alert notification message
UL Types (M1, M2, M3, M4, M5, M6)	Different types of uplink messages with different data formats sent by the device in specific situations

2.2 Message Type

2.2.1 Downlink Messages

A downlink message is sent from the UnaConnect platform to UnaTag; the device initiates the downlink process by sending an uplink message with current device information to the cloud platform for downlink request, when the cloud platform receives the downlink request, it will send a downlink message to update the latest configuration set in UnaConnect to the device.



All the configurations for UnaTag can be defined on the UnaConnect platform. The Downlink Interval (DI) defines how often the device performs a downlink process with the cloud platform to update the configurations.

2.2.2 Parameters Information

Parameter	Default Config.	Unit	Option/Range
Downlink Interval	168 hrs (7 days)	N/A	• 1, 2, 6, 12, 18, 24, 36, 48, 72 hrs • 7, 14, 30, 60 days
Passive Interval	24 hrs	N/A	• 10, 15, 20, 30 mins • 1, 2, 3, 4, 6, 12, 18, 24, 36, 48, 96 hrs • Disabled
Active Interval	2 hrs	N/A	• 5, 10, 15, 20, 30 mins • 1, 2, 3, 4, 6, 12, 18, 24, 36, 48, 96 hrs
Temperature Interval	1 hr	N/A	• 1, 2, 3, 5, 10, 15, 20, 30 mins • 1, 1.5, 2 hrs • Disabled
Start Delay	20 secs	N/A	• 20, 30 secs • 1, 2, 3, 5, 10, 15, 20, 30 mins • 1, 2 hrs
Stop Delay	10 mins	N/A	• 5, 10, 15, 20, 30 secs • 1, 2, 3, 5, 10, 15, 20, 30 mins • 1, 2 hrs • Disabled
Shock Event Delay*	0 (off)	N/A	ON/OFF
Temperature Event Delay	60 mins	N/A	• 30, 60, 90, 120, 150, 180, 210 mins • Disabled
Event Option	1, 0, 0, 0	N/A	• WiFi Filtering (On or Off) • Update UCSC Key (On or Off) • Shock Alert (On or Off) • Temperature Alert (On or Off)
Payload Profile	Profile 3	N/A	1. Temperature Monitoring 2. Geolocation Focused 3. Temperature & Geolocation
Data Network	Sigfox Only	N/A	1. Sigfox Only 2. WiFi Only (<i>Non-functional for UnaTag MultiZone</i>) 3. Sigfox & WiFi (<i>Non-functional for UnaTag MultiZone</i>)
Shock Threshold	2714.4 mgf	31.2 mgf	55-118 multiples of 31.2 mgf
Temperature Min Threshold	0°C	5 °C	-20, -15, -10, -5, 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 °C
Temperature Max Threshold	50°C	5 °C	-20, -15, -10, -5, 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 °C
Logging Upload Time (LUT)	<i>This parameter is non-functional for UnaTag MultiZone</i>		

*If the Shock Event Delay is set to 1 (enabled), the value of shock event delay is the same as the temperature event delay.

2.2.3 Uplink Messages

An uplink message is sent from the UnaTag device to the cloud platform which contains state, geolocation, temperature, battery voltage or shot data; there are six types of uplink messages depending on the scenario:

Type	Data Description	Scenario
M1	2 MAC addresses with the strongest signal strengths (RSSI)	M1 is sent when the device is able to scan and find 2 MAC addresses.
M2	• Device state (Active, Passive etc.) • 1 MAC address with the strongest RSSI • Temperature data (current, max, min) • Battery voltage	M2 is sent when the device can only scan and find 1 MAC address due to poor WiFi signal nearby.
M3	• Device state (Active, Passive etc.) • Temperature data (current, max, min) • Battery voltage	M3 is sent when the MAC address found is the same as the previous scan.
M4	• Device state (Active, Passive etc.) • Temperature data (current, max, min) • Battery voltage	M4 is sent when no MAC address is found by the device.
M5	• Device state (Active, Passive etc.) • Current temperature reading • Battery voltage	M5 is sent when the device detects a temperature value that exceeds the predefined thresholds.
M6	• Device state (Active, Passive etc.) • Shock value • Battery voltage	M6 is sent when the device detects a shock value that exceeds the predefined threshold.

2.3 Device States

The operational states of UnaTag represent the various conditions happening to the asset such as asset in motion during transport, short stopping at traffic lights or static in storage.

Value	State	Description
0	Active	The device state remains Active as long as movements are detected by the device (defined as a force above 78mgf for at least 20 seconds in the last 60 seconds).
1	Passive	The device state remains Passive when no movement is detected by the device (defined as a force above 78mgf for at least 20 seconds in the last 60 seconds).
2	Start Delay	This is a transitory state when the device counts down from the configured Start Delay duration.
3	Stop Delay	This is a transitory state when the device counts down from the configured Stop Delay duration.
4	Passive to Start Delay	When the static device that is in Passive state detects a movement, it immediately changes from Passive to Start Delay state.
5	Start Delay to Active	When the Start Delay countdown timer reaches its end and detects a movement, the device changes its state from Start Delay to Active and sends its first uplink message at Active Intervals.
6	Start Delay to Passive	When the Start Delay countdown timer reaches its end and no movement is detected, the device changes its state from Start Delay to Passive.
7	Active to Stop Delay	When the device that is in Active state no longer detects a movement, it immediately changes from Active to Stop Delay state.
8	Stop Delay to Passive	When the Stop Delay countdown timer reaches its end and no movement is detected, the device changes its state from Stop Delay to Passive and sends its first uplink message at Passive Intervals.
9	Stop Delay to Active	When the Stop Delay countdown timer reaches its end and detects a movement, the device changes its state from Stop Delay to Active.

The Start Delay is a transitory state from Passive to Active states and acts as a countdown timer to distinguish short movements such as moving the asset within a site (e.g. between aisles within the same warehouse) apart from the real transport movement where the asset and device are moved from location A to location B.

The Stop Delay is a transitory state from Active to Passive states and acts as a countdown timer to distinguish short stops such as traffic lights on a route apart from arriving at a destination where the asset and device will remain static in storage for some period of time.

2.4 Payload Profile

UnaTag offers different payloads or message types to be sent based on the different user profiles so that users receive the most important data for them to monitor their assets and manage their operations. The following profiles are available for the user to select:

2.4.1 Temperature Monitoring

If continuous temperature data is critical to the customer operations such as cold chain logistics, this profile can be used to provide temperature data (current, maximum detected in an interval) in the messages sent by the device. Maximum and minimum thresholds can also be configured to trigger an instant event alert notification if the temperature reading is out of threshold.

2.4.2 Geolocation Focused

In other asset tracking for high value goods where temperature is not important, the location of the asset is critical to the user so the device always sends M1 messages whenever it can scan 2 MAC addresses to provide geolocation information with better accuracy. For example, in active, passive states, the device always sends M1 message type with 2 MAC addresses.

2.4.3 Temperature & Geolocation

For customers who wish to monitor the asset temperature while it is in transport and receive more accurate geolocation data when the asset arrives at its destination, this profile can be used, which sends M2 message types containing temperature data while the asset is in transport (Active state) and it sends M1 messages with 2 MAC addresses to provide geolocation information with better accuracy when the asset has come to rest (Passive state).

Note: the actual message type (M1, M2, M3 or M4) sent would depend on the number of MAC addresses (0, 1, 2, or the same addresses as the previous scan) available at the time of scanning.

Profile	State	Default UL Type	State	MAC1	MAC2	Current Temp	Max Temp	Min Temp	Battery Voltage
Temperature Monitoring	Passive	M2	Y	Y		Y	Y	Y	Y
	SPD-Passive	M2	Y	Y		Y	Y	Y	Y
	Active	M2	Y	Y		Y	Y	Y	Y
	STD-Active	M2	Y	Y		Y	Y	Y	Y
Geolocation Focused	Passive	M1		Y	Y				
	SPD-Passive	M1		Y	Y				
	Active	M1		Y	Y				
	STD-Active	M1		Y	Y				
Temperature & Geolocation	Passive	M1		Y	Y				
	SPD-Passive	M1+M4	Y	Y	Y	Y	Y	Y	Y
	Active	M2	Y	Y		Y	Y	Y	Y
	STD-Active	M2	Y	Y		Y	Y	Y	Y

2.5 Device Modes

The following sections will introduce the 2 modes and behaviors of the solution:

- Start to Stop Tracking
- Timer Mode Tracking

The default mode is Start to Stop Tracking. You could set the device in one mode only.

2.5.1 Start to Stop Tracking

UnaTag sends uplink messages at different time intervals based on the states of the asset being tracked:

Time Interval	State
Passive Interval	Passive
	Passive to Start Delay
	Start Delay
	Start Delay to Passive
Active Interval	Active
	Active to Stop Delay
	Stop Delay
	Stop Delay to Active

Uplink messages are only sent at the following states and intervals:

- Passive state - uplink at passive intervals
- Stop Delay to Passive - this is the first uplink sent in Passive state and the start of the Passive Interval
- Active state - uplink at active intervals
- Start Delay to Active - this is the first message sent in Active state and the start of the Active Interval

The examples in this section are based on the configuration below:

Parameter	Configuration
Passive Interval (PI)	24 hrs
Active Interval (AI)	2 hrs
Start Delay (STD)	20 sec
Stop Delay (SPD)	10 mins
Temperature Interval (TI)	1 hr
Downlink Interval (DI)	168 hrs (7 days)

Passive State

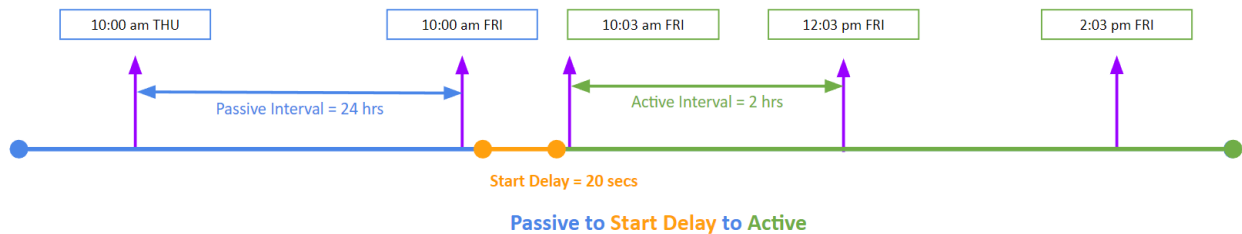
In Passive state where the accelerometer does not detect any movement, the device sends messages at *Passive Intervals (PI)*.



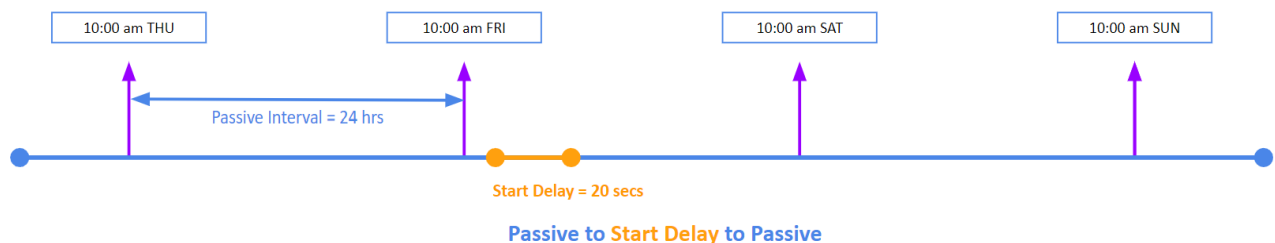
Passive to Start Delay to Passive or Active States

When UnaTag detects a movement, the device immediately changes its state from Passive to Start Delay, and the Start Delay duration starts to countdown. Uplink messages are still sent at Passive Intervals during the Start Delay.

If a movement is detected by the accelerometer when the Start Delay countdown reaches its end, UnaTag changes from Start Delay to Active state and sends the first uplink message in Active state, which marks the start of the Active Intervals.

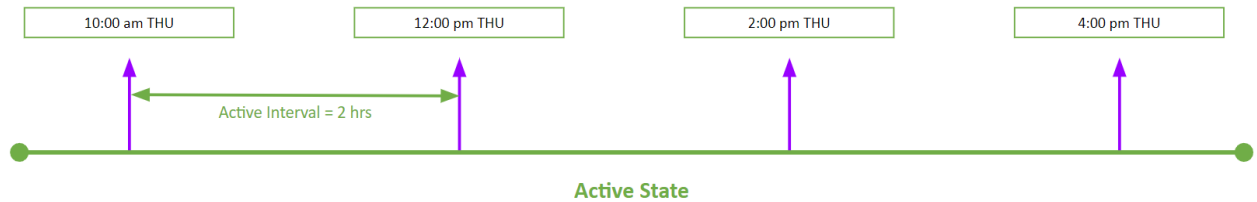


If no movement is detected by the accelerometer when the Start Delay countdown reaches its end (default configuration = 20 sec), UnaTag changes from Start Delay to Passive state and continues to send uplink messages based at Passive Intervals.



Active State

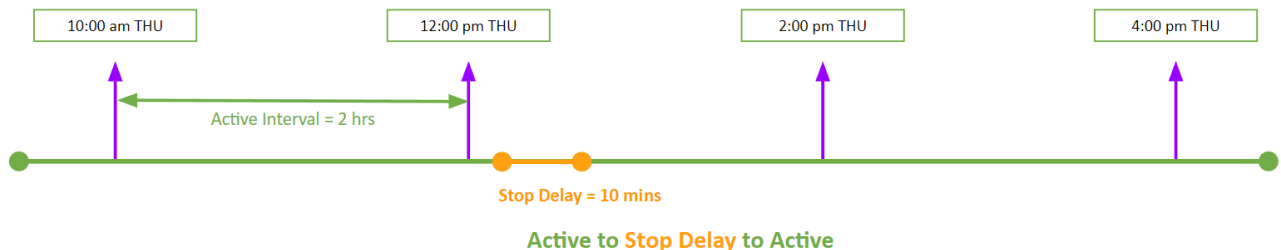
UnaTag remains in Active state when the accelerometer continues to detect movement (defined as a force above 78mgf for at least 20 seconds in the last 60 seconds). In Active state, the device sends messages at Active Intervals (AI).



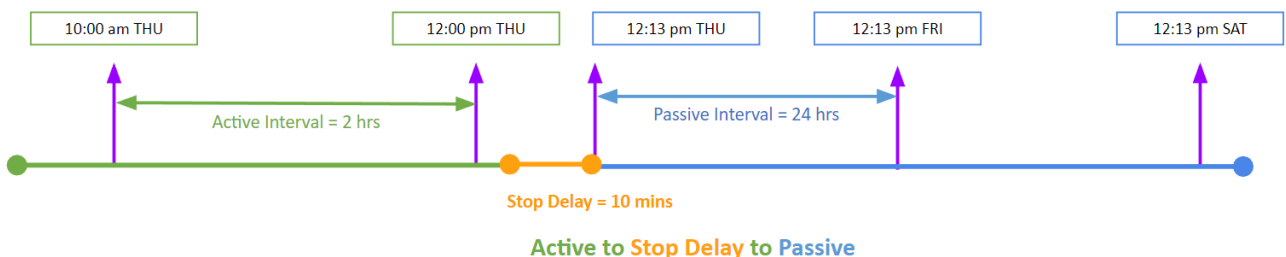
Active to Stop Delay to Active or Passive States

When the accelerometer does not detect any movement (defined as a force above 78mgf for at least 20 seconds in the last 60 seconds), the device immediately changes its state from Active to Stop Delay, and the Stop Delay duration starts to countdown.

Uplink messages are still sent at Active Intervals during the Stop Delay. If a movement is detected by the accelerometer when the Stop Delay countdown reaches its end, UnaTag changes from Stop Delay to Active state and the Active Interval remains in effect.



If no movement is detected by the accelerometer when the Stop Delay countdown reaches its end (default configuration = 10 mins), UnaTag changes from Stop Delay to Passive state and sends its first uplink message in Passive state, which also marks the start of the Passive Interval.



Temperature Data

For users using the “Temperature Monitoring” and “Temperature & Geolocation” payload profiles, UnaTag detects and sends temperature data to provide a constant stream of time-stamped temperature conditions experienced by your assets:

- UnaTag wakes up and detects the current temperature just before sending an UL message
- UnaTag reads temperature data according to the Temperature Interval (TI)* (default configuration = 1 hour), and stores the maximum or minimum temperature values for the duration of the Active or Passive Intervals
- At each Active or Passive Interval, the current, max and min temperature data are sent

*Note: The Temperature Interval should always be shorter than the Active or Passive Intervals, otherwise it is possible that the max and min temperature values are not covering the entire Active or Passive Interval. If the TI is longer than AI or PI, the max and min temperature values sent in the uplink message are equal to current temperature.

Battery Data

UnaTag detects and sends battery voltage data to help monitor and manage the batteries and lifecycle of the devices in your operations.

For users using the “Temperature Monitoring” and “Temperature & Geolocation” payload profiles, the battery voltage readings are contained in M2, M3 and M4 message types sent by the device at each Active or Passive Intervals.

For users using the “Geolocation Focused” payload profile, the battery voltage readings are included in the Downlink Request messages sent by the device when initiating the downlink process at Downlink Intervals.

2.5.2 Timer Mode Tracking

The timer mode tracking can be used to receive messages containing the required data (e.g. geolocation, temperature or shock flag) at a configurable interval regardless of the movement or state of the asset.

The timer mode tracking can be configured by selecting Passive Interval = Disable on UnaConnect. This disables the Passive Interval, Start Delay and Stop Delay parameters. The device will remain in Active state and send messages at regular intervals defined as the Active Interval.

After a downlink has been successfully performed and the configuration updated to the device, the UnaTag will remain in Active state and continue to send messages at the user defined Active Interval.

2.6 Device Features

The following sections will introduce the listed device features:

- WiFi Filtering
- Event Alert Notification
- FOTA Bluetooth

The device features could work jointly or separately with Start to Stop Tracking or Timer Mode Tracking modes.

2.6.1 WiFi Filtering

This device feature can be enabled by toggling on the WiFi Filtering parameter in the device configuration page on UnaConnect.

When this feature is enabled, the device filters the MAC addresses scanned with some criteria such as filter out SSID with keywords such as “iPhone”, “Samsung” or “Huawei”, which are likely to be hotspots of mobile devices. Addresses that are multicast, reserved, _nomap or locally administered are also filtered out.

It is recommended to enable the WiFi filtering for outdoor geolocation use cases and disable it for indoor geolocation tracking.

2.6.2 Event Alert Notification

The event alert notification can be turned on/off while the device operates in Start to Stop or Timer Mode tracking modes. This is used to provide alert notification messages immediately upon detection of a temperature out-of-threshold or shock event.

The message types that are sent as an event alert notification by the device may be one of the following:

Temperature alert message (uplink message type M5): sent when temperature detected is out of pre-defined thresholds and the data in this message including state, battery voltage and current temperature value.

Shock alert message (uplink message type M6): sent when shock detected is out of pre-defined thresholds and the data in this message including state, battery voltage and current shock value.

To avoid over-triggering by the out of threshold temperature or shock situations, the user may also use the Event Delay parameter to configure a duration for the device to ignore the out of threshold events. If the Shock Event Delay is set to 1 (enabled), the value of shock event delay is the same as the temperature event delay.

If you wish to receive real-time temperature or shock alert notifications on your email address, UnaConnect Mobile App or Slack, please refer to [UnaConnect Documentation - Notification](#).

As a quick demo/test, please follow the documentation and enter the following in the body of the notification message:

The device {deviceId} has detected that a {type=5:temperature} threshold was exceeded. Its current temperature is {temperature}C

2.6.3 FOTA Bluetooth

This section outlines the overall process to perform the Firmware Over-the-Air (FOTA) Bluetooth feature and provides information on the behind-the-scenes tasks executed in between the device, UnaInside mobile app and the UnaConnect platform.

1. Prior to performing the FOTA Bluetooth feature on the UnaInside mobile app, you will need to add the new firmware file on the UnaConnect platform.
2. When you are ready to deploy FOTA to your devices, use the Update Firmware command in the UnaInside mobile app to perform FOTA, during which the following tasks will be executed in the background:
 - a. UnaInside mobile app uses NFC to read the Device ID of the device and sends it to the UnaConnect platform to check for the device type and firmware version.
 - b. UnaInside compares the firmware version loaded on the cloud platform to the firmware on the device and if a new firmware is available on UnaConnect, UnaInside activates Bluetooth on the device.
 - c. Once Bluetooth between the device and the smartphone is connected, UnaInside starts the FOTA process.
3. When the device executes the firmware update, the logs of the Update Firmware command are displayed in the Show/Hide Logs in the UnaInside command screen.

If the FOTA process has failed or been interrupted, then it would trigger the FOTA recovery process below to compare and restore the correct firmware version to the device so that it remains operational:

1. If application and backup memories are both blank, turn on Bluetooth and wait for the FOTA Troubleshooting NFC command from UnaInside mobile app.
2. If the application layer is blank, and backup memory has a previous firmware version, then restore the backup to the application memory.
3. If the firmware version in the application layer is newer than the backup, then update the firmware to the backup memory.
4. If the firmware version in the application layer is older than the backup, then no action to the backup memory is required.

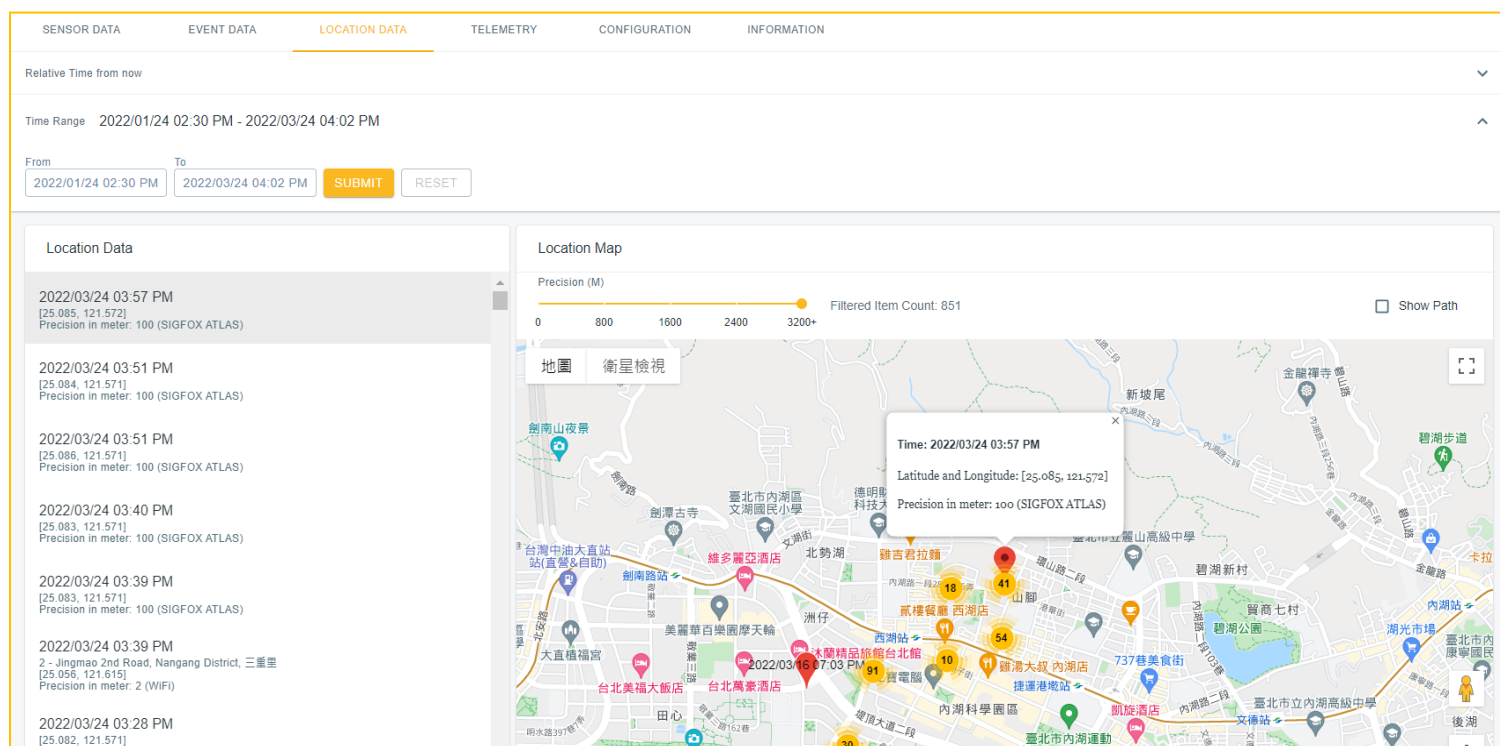
2.7 Data Information

2.7.1 Location Data

The Location data section displays the timestamp of each message with the latitude, longitude and radius of precision (in meters) of the location data which has three types of data: Sigfox Atlas (only if included in the Sigfox contract), UnaConnect Service Locate WiFi, and Certified Location (Add on service from UnaConnect)

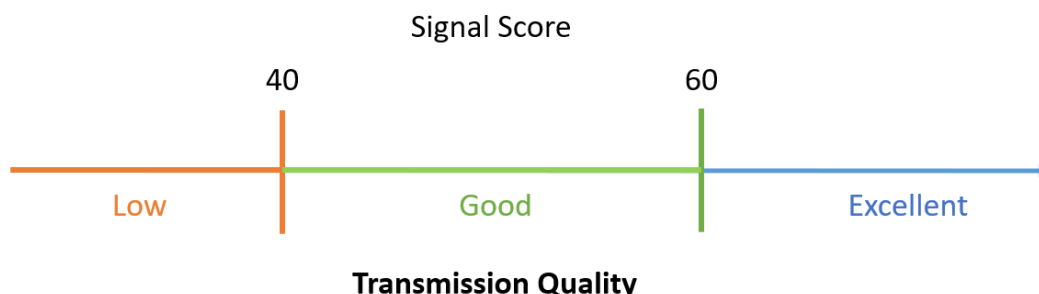
Click on the Show Path checkbox to visually see a projected path between the markers tracking the location of the device along with the message sent

Click on the Precision slider to change the filter by the range of precision that is applied to the location data of the messages



2.7.2 Telemetry Data

The Telemetry Data tab displays the messages containing the quality of the signal measured by the number of Sigfox network base stations that received the messages, the RSSI (Received Signal Strength Indicator) for each message and the radio configuration zone.

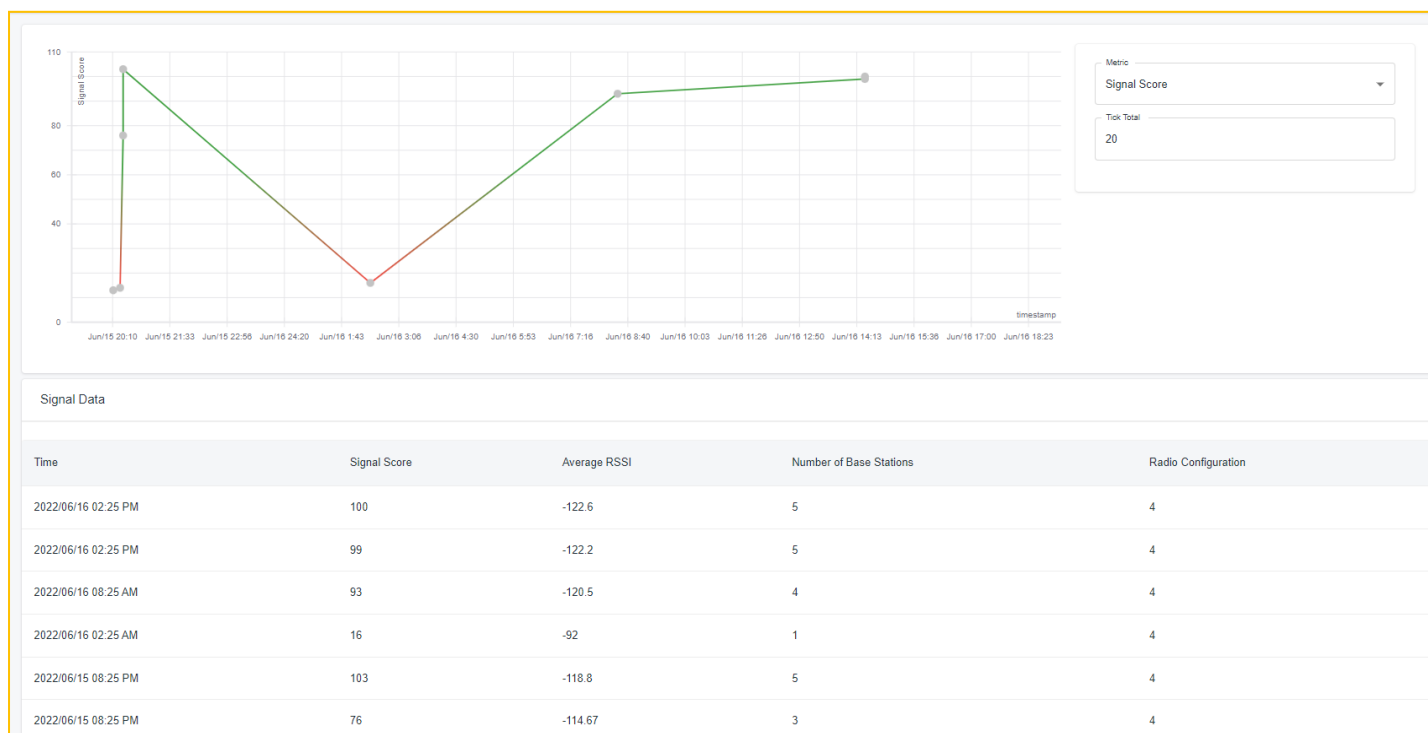


In the Graph section:

- Click on the Metrics dropdown menu to select if you want to visualize signal score, number of base stations or average RSSI
- Enter the Tick Total value to change the scale of the horizontal axis

In the Signal data section:

- The table displays the timestamp of each message, the signal score, average RSSI, number of Sigfox base stations and the radio configuration for each message sent from the device
- The data and raw messages are based on the different device types, modes and events that triggered each of the messages to be sent from the device



3. TROUBLESHOOTING

3.1 Reset System

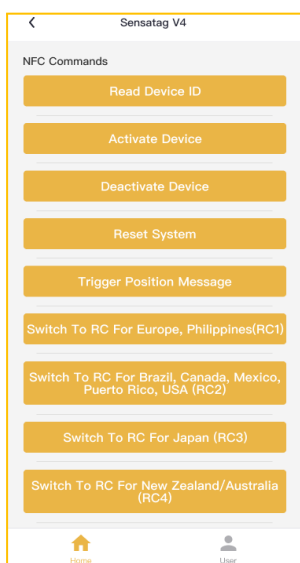
You may use the **Reset System** command to reboot the device with UnaInside Mobile App if needed. In an area with Sigfox Coverage, the device will perform a downlink immediately so that its configurations are reset to the same values as the previous successful downlink as configured on the UnaConnect platform.

1. Open UnaInside Mobile App with NFC-enabled mobile phone
2. Tap on the command '**Reset System**'
3. Scan the NFC chip which is located near the QR code on the device
4. Hold your mobile phone for 2-5 seconds to scan successfully

3.2 Switch RC Zones

The device should be switched to the local frequency to connect to the Sigfox network first, then it could process downlinks. You may use the **Switch To RC For the RC of the desired Country** (Example: Switch to For Japan) command to use the device in other regions to communicate messages in the appropriate frequency according to the Sigfox bands available in the region with UnaInside Mobile App if needed, then you can use other NFC commands like activate or reset.

1. Open UnaInside Mobile App with NFC-enabled mobile phone
2. Tap on the command '**Switch To RC For The desired Region**'
3. Scan the NFC chip which is located near the QR code on the device
4. Hold your mobile phone for 2-5 seconds to scan successfully



NFC Commands List



Scanning the NFC chip

3.3 FAQ

1. What are NFC and BLE used for on UnaTag?

NFC and BLE are equipped in the UnaTag tracker. While NFC is mainly used for device activation and configuration with the UnaInside mobile app and BLE is mainly used for firmware updates, they can also be utilized in different ways required by special use cases.

2. How wide or far is the connectivity coverage?

UnaTag uses Sigfox wide area network to transmit and communicate data, which can cover a range between 10km* in urban areas up to 40km in rural areas depending on the density of the base stations and the obstructions such as buildings in the area. A benefit of the Sigfox network is that the networks are built and maintained by local network operators around the globe so that users of the Sigfox network avoid the high upfront investment in the network infrastructure.

**Coverage may vary between different countries*

3. How does UnaTag track geolocations of my assets?

The geolocation functionality on UnaTag is based on WiFi sniffing on the tracker to detect the surrounding WiFi access point information, alongside the proprietary algorithms by UnaConnect Locate on the cloud. The geolocations of your assets can be viewed on both UnaConnect and any third-party dashboard via the robust UnaConnect connectors.

4. What is the distance/range of geolocation accuracy?

Typically for geolocation using WiFi, the positioning accuracy of this technology is within 10m to 100m and may vary depending on the density and interference of WiFi signals in the environment, for example the accuracies are generally higher in urban areas compared to rural areas where WiFi are sparse. The WiFi geolocation accuracy may be adequate and suitable if the tracking use case is for logistics such as tracking asset movements between restaurants, supermarkets, warehouses.

5. Does UnaTag support both indoor and outdoor positioning?

UnaTag supports both indoor and outdoor geolocations.

6. What are the key events that can be detected?

The set of events that can be detected by the UnaTag tracker include:

- Movement - for example, a container being lifted or a roll cage being transported in a truck.
- Shock - for example, a severe impact being detected on fragile assets.
- Temperature Out of Threshold - for example, high temperature is observed in a refrigerated container in which fresh goods are being transported.

If there are specific events in your use case that need to be identified, we could provide customization service in the device firmware to program the device to detect such events if its conditions can be well defined for example:

- Tilt - use the accelerometer to detect the tilting of an asset beyond specific angles.
- High Temperature Cleaning - if your assets are washed or cleaned with a high temperature process, this can be identified as an event by the device.
- Craning - the craning of assets at the ports may also be identified as an event.

All of the key event parameters can be configured on the UnaConnect platform.

7. How long does the battery in UnaTag last?

Based on the default configuration behavior, the UnaTag tracker battery life can last up to 5 years with 5 messages per day or 8 years with 2 messages per day. The actual battery life depends on the frequency of sensor readings and communication with network base stations.

8. Is the battery replaceable/rechargeable?

The battery in the UnaTag tracker is not designed to be replaceable or rechargeable. Replacing or recharging batteries involve very resource intensive tasks that need to be managed on a regular basis. For example, the user will need to schedule and handle retrieval of the trackers, detach from the assets, replace/recharge the batteries, reinstall and redeploy them back into operations. All costs involved are a lot higher than acquiring new trackers.