GOODS TRACKING WITH BLE BEACONS AND SENSORS

INTRO

The shift in the global economy has triggered not only the online shopping surge and the demand for delivery services but the major challenges too. To remain competitive and profitable, delivery businesses have to look for innovative and efficient solutions. Wireless Bluetooth technology combined with process monitoring and automation opens up new horizons in the vehicle telematics industry, making a significant difference.

CHALLENGE

Shifting customer preferences, time constraints, unstable market prices, managing customer expectations, improper shipment handling, logistics route optimisation are the biggest challenges faced by delivery and courier companies every single day. Even more, according to BSI and TT Club Cargo report, theft of cargo in transit was highest amongst all cargo theft in 2020 - 71%. Losses from warehouses and other storage facilities increased to 25%.

To satisfy market demand, stay afloat, keep customers updated and optimise everyday costs, the present-day logistics business requires not only to track and manage vehicle fleet but also the goods being delivered - parcels, packets, pallets, boxes, livestock, food, pharmaceuticals, etc.

That is why **tracking proximity** to identify lost and found events or monitor goods loading and unloading events becomes an essential procedure in the freight delivery industry. Sure enough, it is vital to monitor the route, track delivery time and record the last known location of goods. This optimises the delivery process and greatly reduces operational costs.

Additionally, fleet managers have to efficiently manage the conditions of the goods during the transportation process to ensure timely delivery to the right destination. Especially, critical parameters such as cargo temperature, humidity, and even item shock detection. All this data and events must be tracked, recorded, and sent at once to the fleet tracking software application if transportation conditions are being violated, a parcel has been lost or delivered to the wrong address.

But there is a **major technical difficulty** here - GPS signals often are not accurate enough to be practical indoors or in narrow streets as they diminish and scatter by surrounding structures - roofs and walls. Even more, the location error range of some GPS chips can be greater than the indoor space itself. The good news is, these challenges can be effectively tackled utilising wireless Bluetooth technology, brand new Teltonika EYE Beacons and/or EYE Sensors, and vehicle GPS trackers.

SOLUTION

All Teltonika GPS trackers based on the FMB platform support wireless Bluetooth 4.X LE connectivity, so they can effectively communicate with Bluetooth devices such as beacons and sensors. A tracker should be installed in a vehicle and configured the usual way in the spot where the Bluetooth antenna is not covered by large metal parts nearby.

If it is enough just to monitor delivering **package location**, vehicle trackers and beacons combo should be used. Alternatively, in cases where it is required to get location and **additional cargo data**, such as temperature, humidity, magnet detection, movement, accidental delivery item crash, shock, fall on floor or tarmac events, it is advised to use vehicle tracker and EYE Sensor sets.

How it works - for the sake of example, we use the Teltonika vehicle tracker FMB140 model. The small and lightweight EYE Beacon or EYE Sensor should be attached to every delivery item to be tracked and monitored - the parcel, packet, box, pallet, etc. Because each EYE Beacon and EYE Sensor has a unique ID number transmitted over the air at configurable intervals, GPS trackers read, identify them and send this data as iBeacon or Eddystone profile, combined with its GNSS location details, to a server for analysis.

Dedicated software developed by a telematics service provider determines and shows all beacons and/or sensors (thus, tagged items) location based on proximity to the closest tracker, helps with BLE accessories assignment procedure management and so on. Consequently, delivery goods monitoring conveniently accessible via PC, laptop or smartphone greatly improving business efficiency.

To bring maximum value, these devices have two handy features to be considered - 'Proximity Event' and 'Detection By Filters'. Let's review the special firmware features which, in combination with the new Teltonika products EYE Beacons and EYE Sensors, make it a perfect choice for two prominent goods delivery use cases.

SMART FEATURES TO STAND OUT

Proximity Events. The practical Teltonika GPS tracker configuration application allows choosing different settings and scenarios to satisfy company needs. Thanks to this, a vehicle tracker can generate location related events, lost and found item events depending on Bluetooth signal strength.
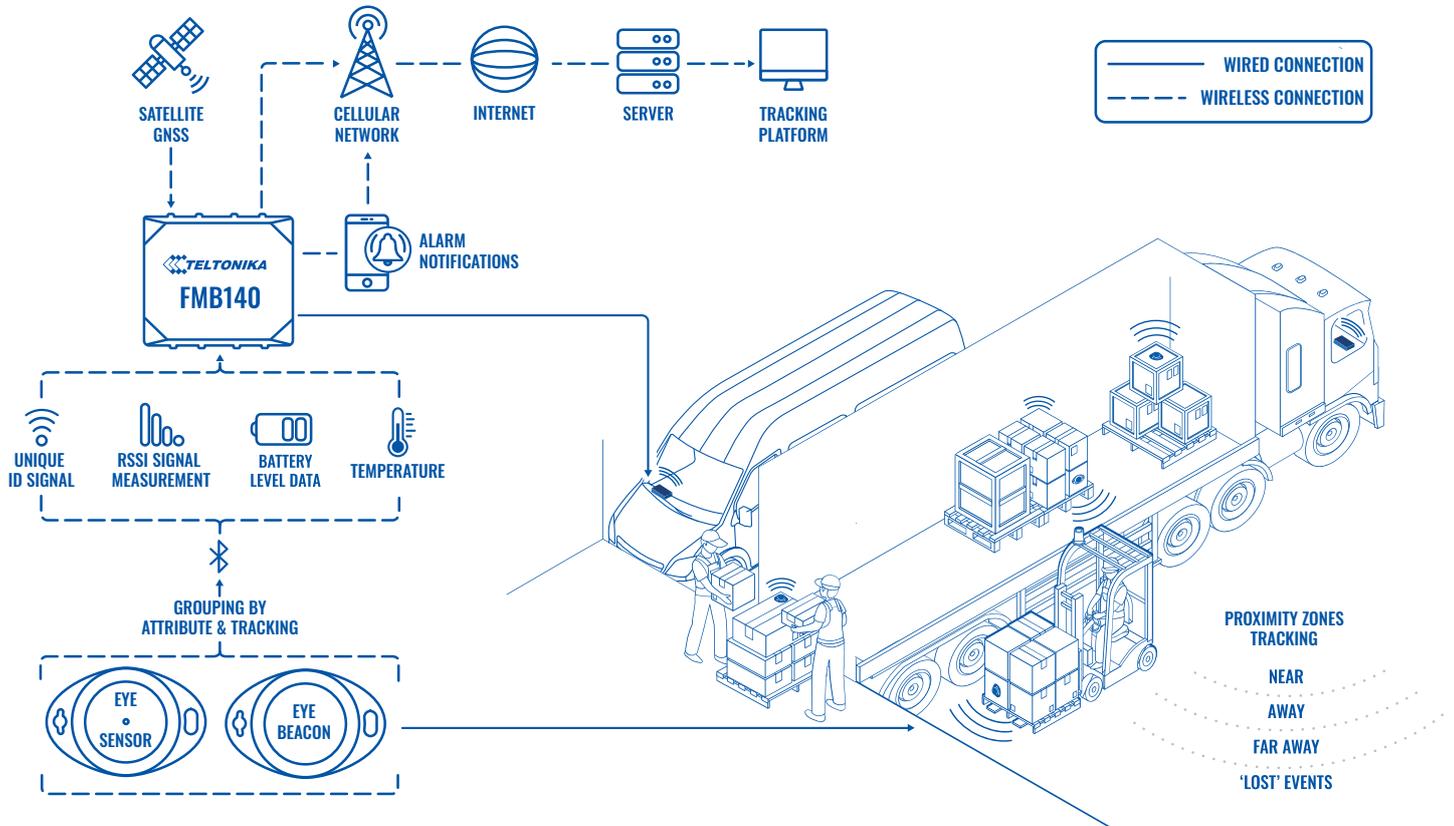
Here, FMB140 can generate asset proximity events depending on Bluetooth signal strength received from beacons. This allows to determine timely and accurately each moving beacon or sensor (so, the item of interest) locations grouped into 'Near', 'Away', and 'Far Away' zones.

As a result, lists of tracked delivery items in each zone can be generated or specific event notifications can be initiated. As an example, if an item has left all trackable zones (aka 'Lost' event), a GPS device will register this fact, determine and record the last known location coordinates and the exact time of the event. All that is done to suit business needs as efficiently as technically possible.

Detection By Filter. This custom filtering feature allows to group and name assets by a specific attribute or property meaningful to business operations (e.g., domestic delivery items or export; top priority or low priority goods; hazardous items, damaged items, etc.). The option helps to monitor and manage items or interest sorting, warehousing, loading/unloading procedures and optimise corporate fleet use even more efficiently, this way avoiding costly mistakes, saving time, and company resources resulting in maximum efficiency.

To sum up, Bluetooth connectivity has low-cost, high-energy efficiency and accuracy, works independently of the network and has less interference, easy to install and deploy. Teltonika beacons and sensors with configurable to exact customer need signal strength and data transmitting intervals can be easily integrated into virtually any size and form environment. This altogether will result in noticeable project variety and profitability, improved business reputation, competitiveness, and investment return.

TOPOLOGY

WIRED CONNECTION
WIRELESS CONNECTION

SATELLITE GNSS

CELLULAR NETWORK

INTERNET

SERVER

TRACKING PLATFORM

TELTONIKA
FMB140

ALARM NOTIFICATIONS

UNIQUE ID SIGNAL

RSSI SIGNAL MEASUREMENT

BATTERY LEVEL DATA

TEMPERATURE

GROUPING BY ATTRIBUTE & TRACKING

EYE SENSOR

EYE BEACON

PROXIMITY ZONES TRACKING

NEAR

AWAY

FAR AWAY

'LOST' EVENTS

BENEFITS

• **Customisable settings for every project** - to get the maximum value out of it, Teltonika BLE beacon and sensor signal strength and data transmitting intervals can be configured to exact project application needs and used in, practically, any form and size buildings.

• **Precise delivery goods location and status monitoring** – 100% accountability of everything important to the delivery business - goods, valuable assets, processes, patterns, and personnel actions are being tracked, monitored, and optimised.

• **Value-adding EYE Beacon and EYE Sensor features** - abundant smart and practical event scenarios helping to track, monitor, manage and optimise cargo deliveries with outstanding efficiency.

• **Wireless and affordable** - Bluetooth connectivity ensures fast installation and setup, low interference, power consumption and is inexpensive. If damaged, lost or stolen, the Teltonika BLE accessory can be quickly replaced.

• **Improved profitability and competitiveness** - considerable cost savings because of cutting goods, valuable asset loss expenses, anti-theft protection to boost profits, improved cash-flow and investment/expansion opportunities.

WHY TELTONIKA?

To successfully resolve delivery tracking challenges, we offer an indispensable combo from Teltonika - Bluetooth LE technology-based brand-new ID beacons and sensors, functional Android/iOS mobile apps, and the most sophisticated vehicle GPS trackers for a wide range of projects to help your business thrive.

From the start of the company 23 years ago until today, Teltonika 1,700 strong and growing team has manufactured 15.5 million IoT devices, helped to succeed thousands of customers and partners in over 160 countries around the world. We are the right place to get all you need to succeed - an impressive variety of certified GPS trackers, accessories, and solutions for any use case imaginable in vehicle telematics. Our innovative approach, extensive global market knowledge, state-of-the-art production facilities with automated robotic assembly lines and customer support meeting your expectations give us a competitive edge and make Teltonika Telematics a business partner of choice.

FEATURED PRODUCT

FMB140

RECOMMENDED PRODUCTS

FMC001, FMM001, FMC125, FMC130, FMC640, FMM125, FMM130, FMM640, FMU125, FMU126, FMU130, FMB122, FMB125, FMB202, FMB204, FMB208, FMT100, FMB110, FMB120, FMB130, FMB140, FMB001, FMB002, FMB003, FMB020, FMB010, FMB900, FMB920, MTB100, FMB910

RECOMMENDED ACCESSORIES

EYE BEACON, EYE SENSOR