TELEMATICS FOR THE AGRICULTURE AND FARMING INDUSTRY

INTRO

To meet the growing demand for agricultural produce and the many challenges facing the industry, today's farmers need to be more innovative, efficient and competitive, while conserving resources. As a result, comprehensive, affordable and customisable solutions for tracking agricultural machinery, combined with process monitoring and automation, are becoming not just an attractive option, but a necessity.

CHALLENGE

The world's population continues to grow by around 83 million people every year. To get an idea of the scale of this process, consider that it has grown from 1 billion in 1800 to 7.8 billion in 2020, so agriculture is essential to our existence and must find a way to perform at its best with the least waste of time and effort.

There are many issues affecting agriculture - weather and climate change, economic, environmental and political factors, supply and demand concerns. One of the biggest challenges in large-scale farming - agricultural machinery, such as tillage, planting, harvesting/post-harvesting, and any industry-specific equipment or accessories attached for a specific purpose - is the efficient automation of management and tracking. Traditional paper records and/or printed maps used for many years are neither practical nor in line with today's farming requirements and practices.

Furthermore, if farmers have a bad year because of agriculture issues that led to a poor harvest and significant financial losses, it affects many people in the country or region and that effect may even last for years to come. Did you know, according to the State of Food and Agriculture (SOFA) report, food loss and waste reached over 15% in North America and Europe, and over 20% in Central and South Asia in 2019? So, how can modern farm owners solve this challenge of efficient machinery tracking and management once and for all, with minimum effort and maximum results?

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SOLUTION

Thanks to the fast-developing IoT technologies, agriculture-specific equipment, farming implements, and/or accessories tracking and management can be successfully achieved by combining GPS devices, CAN bus data adaptors, and Bluetooth® Low Energy 4.X (BLE) ID beacons. The preferred choice for this matter is the vehicle GPS tracker Teltonika FMB140 with a built-in CAN data reading feature and advanced software version supporting agriculture-type vehicles (aka ALL-CAN300 option).

ID beacons are small radio transmitters that broadcast their unique identifier signal utilising wireless Bluetooth® connectivity which has proven to have low cost, high energy efficiency, accuracy, and low interference. Beacons are easy to install, deploy, and integrate into the existing ecosystem and are swiftly replaceable if broken or stolen.

They can be configured to exact customer needs, signal strength and data transmitting intervals can be easily integrated into virtually any size and form environment. Here to say, Teltonika GPS trackers support up to 100 beacons at a time and each of them will continuously work, depending on the model, for around 4 to 10 years on a single battery transmitting a signal up to 500 m range.

Here is how it works - Bluetooth® LE ID beacons had to be attached to various non-motorised farming implements, agricultural machinery, attachments, and accessories to be monitored and accounted for. Thanks to the wireless communication principle, the installation process is effortless, fast, and low-cost.

At the same time, Teltonika FMB140 trackers should be mounted on agricultural vehicles, such as tractors, harvesters, loaders, round balers, farm utility and all-terrain vehicles, etc. Each ID beacon transmits a unique signal and GPS devices read and identify them all. The FMB140 then sends this data, along with its GNSS location details, to a server for analysis.

Dedicated software determines the location of all beacons (i.e., tagged agricultural assets) based on their proximity to the nearest Teltonika tracker mounted on an agricultural vehicle. Conveniently, there is no need to log in, authenticate or take any other action - all tracking and recording are done automatically in real time and are available to farmers 24/7/365 from any modern device with internet access.

As a result, they know exactly what works were done in what fields and can plan their further actions accordingly which makes it a comprehensive and indispensable choice. No more the old-fashioned ‘pen and paper’ methods whatsoever which are known to be inconvenient, impractical, and error-prone. To bring even more value and benefits to farming businesses, Bluetooth® ID beacon usage can be successfully extended to many indoor tracking solutions in warehouses, farming houses, barns, mills, dairy buildings, etc.

FMB140 model, like any Teltonika GPS tracking device, offers multiple additional functions that are just as useful as

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live tracking such as Green Driving, Jamming detection, Excessive Idling detection, Immobilizer, Unplug detection, Towing detection, Crash detection, Auto/Manual Geofence, Trip, trackers configuration and firmware remote update via FOTA WEB tool.

For instance, geofences are virtual boundaries a farmer can draw on a digital map in a relevant software application that is used in location-aware events and various alarms. This handy feature can be used for setting up events and receiving notifications when an agricultural vehicle or attachment enters or leaves a predetermined area. Even greater, it allows drawing zones around farming fields, warehouses, various sites of importance, secure areas, etc.

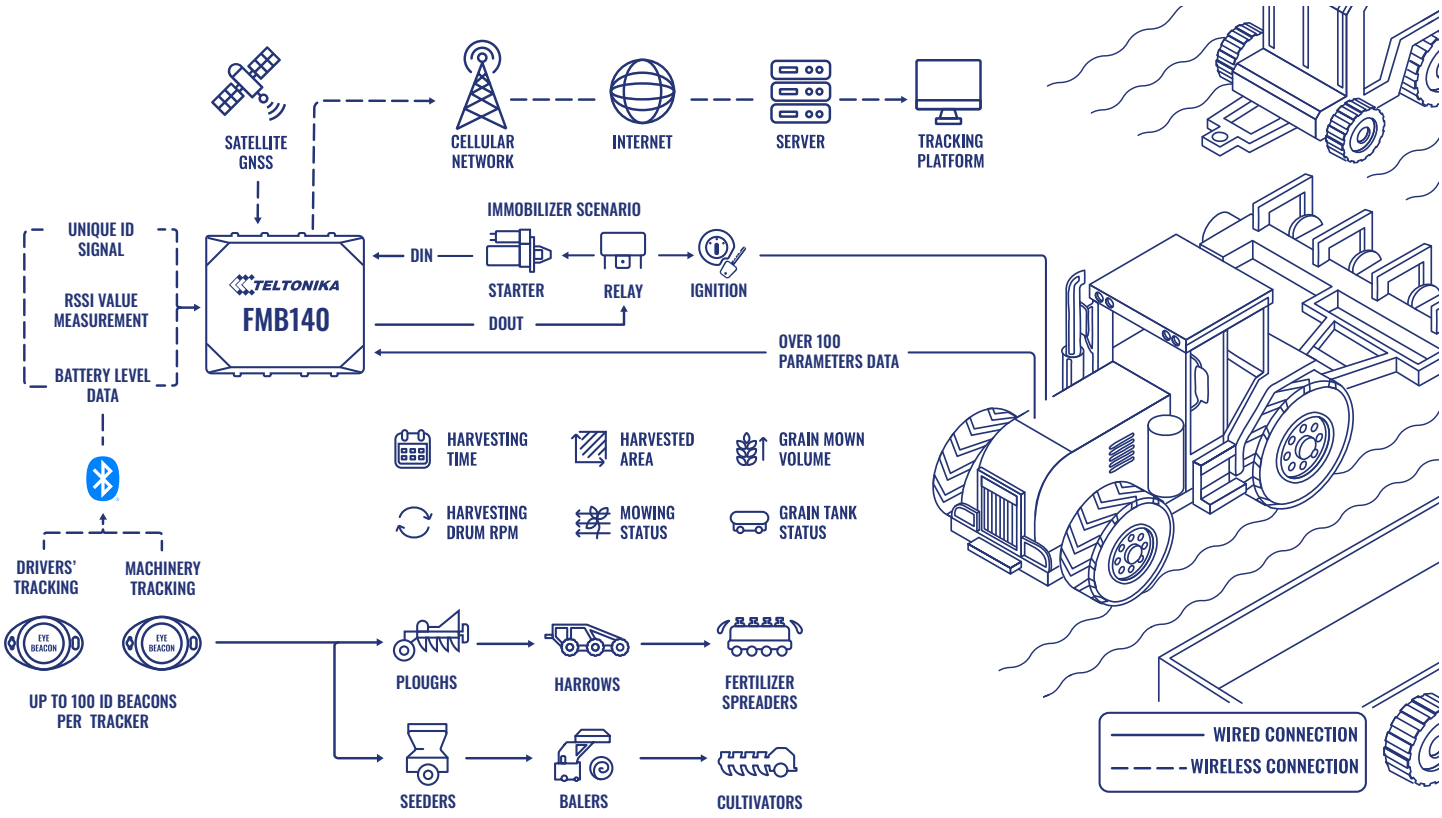
Keep in mind, ID beacons allow tracking and simplify drivers' authentication solutions too. If the authentication fails, a vehicle ignition starter will remain disconnected to prevent undesirable actions. Altogether, this ensures automated hassle-free fleet drivers' time, location, action tracking, monitoring, and management.

Wireless external fuel/liquid level sensors (aka FLS or LLS) can be utilised to measure current fuel volume and its changes in a fuel tank. They are used as a part of a vehicle telematics system and provide accurate data measuring remaining liquid, fuel tank fill-up, and draining volumes. Also, it helps a farming fleet to stay accountable, economical, and prevent fuel thefts from motorised farming machinery tanks. Wireless communication eliminates the risk of cable vandalism and significantly simplifies the installation process.

Thanks to Jamming detection, Immobilizer, Unplug detection, Towing detection feature combo, drivers' and agricultural vehicles safely will be substantially increased. Even more, farmers can implement automated drivers' identification and working hours measuring solution utilising 1-Wire technology, GPS trackers mounted on vehicles and relevant accessories for this matter.

Built-in CAN bus data adaptor reads over 100 parameters to ensure timely fleet maintenance schedules and service; highly efficient, comprehensive, and automated management helps to save fuel, and time, avoid downtime, farm running costs increase, and overheads. All this contributes to the ultimate goal that every farmer looks for – the growth of productivity and output with a minimum effort.

TOPOLOGY



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BENEFITS

- **Smart farming and outstanding efficiency** - 100% accountability for everything that matters to the farm business: equipment, valuable assets, processes and patterns are tracked, monitored and optimised. Maximum results with minimum effort and no more messy paper notes or printed maps.
- **Low-cost Bluetooth® ID beacons set up** – adding wireless identification functionality to agricultural machinery is a simple and quick process for current users of our telematics solutions. If broken or stolen, they can be quickly replaced.
- **Customisable solutions for every business need** - customisable solutions for every business need - to get the most out of them, ID beacons can be configured with signal strength and data transmission intervals to suit your exact needs and can be used in any shape or size of farm field or site.
- **Efficient fleet maintenance, safety, and timely service** – fleet owners can be confident that their agricultural vehicles are kept in perfect condition, safe and fully operational. Tracking vehicle maintenance schedules becomes a hassle-free, automated process, saving valuable time and resources.
- **Extensive Teltonika GPS tracker FMB140 functionality to serve farming needs** - integrated CAN bus data reading, flexible configuration, multiple-use scenarios and a wealth of benefits to optimise fleet management, reduce running costs, and improve ROI.

WHY TELTONIKA?

Teltonika Telematics is one of the world's leading manufacturers in the telematics industry, offering comprehensive solutions to meet even the most demanding agricultural requirements, utilising the benefits of comprehensive GPS tracking and Bluetooth® wireless connectivity. We research, design, develop, manufacture, innovate, supply products and provide impeccable customer service to our customers and business partners in over 160 countries worldwide.

Built on a foundation of innovation, reliability, and sustainability, our IoT solutions are designed to give farmers the tools they need to succeed in an ever-evolving industry. Teltonika Telematics commitment to sustainable agriculture is reflected in our energy-efficient equipment, durable materials, and software tools that promote optimal use of resources. By partnering with us, you invest in a farming future and contribute to a more sustainable and food-secure world.

FEATURED PRODUCT

FMB140

RELATED PRODUCTS

FMB150, FMC150, FMM150

RELATED ACCESSORIES

EYE Beacon, EYE Sensor

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