EBOOK

u-blox

Symmetry ELECTRONICS

The Ultimate Guidebook to Developing

INDUSTRIAL ASSET MONITORING SOLUTIONS

Get your project off the ground in a market expected to grow to $14.4 Billion by 2029

- Ultra-low-power, highly accurate, & pre-certified GNSS modules
- Bluetooth low energy asset tracking modules
- MQTT Anywhere cellular connectivity + CloudLocate cloud positioning
- Technical engineering support, documentation, & tools
- Industry applications & use cases

Our Components. Your Innovation.

www.SymmetryElectronics.com | info@symmetryelectronics.com | (866) 506-8829

CONTENTS

ABOUT u-blox

u-blox is a global technology leader in positioning and wireless communication in automotive, industrial, healthcare and consumer markets. Our smart and reliable solutions, services and products let people, vehicles, and machines determine their precise position and communicate better-quality data wirelessly over cellular and short-range networks. We enable customers to locate their devices and connect them from silicon to cloud. With a broad portfolio of GNSS, Bluetooth, Wi-Fi and cellular chips, modules, secure data services and connectivity, u-blox is uniquely positioned to empower its customers to develop innovative and reliable solutions for the Internet of Things, quickly and cost effectively. With headquarters in Thalwil, Switzerland, the company is globally present with offices in Europe, Asia Pacific, and the USA.

ABOUT SYMMETRY ELECTRONICS

Established in 1998, Symmetry Electronics is a focused global distributor of wireless connectivity solutions, sensors, and audio-video technologies. Offering comprehensive design support and available-to-ship inventory, Symmetry is committed to helping engineers accelerate time to market, reduce costs, and offer modern solutions for their IoT designs. Acquired by the Berkshire Hathaway company TTI, Inc. in 2017, Symmetry Electronics is part of the Exponential Technology Group (XTG) – a supergroup of electronic component distributors and engineering services firms working together to accelerate the growth of the electronics industry.

SYMMETRY ELECTRONICS

info@symmetryelectronics.com
222 N. Pacific Coast Highway
10th Floor El Segundo, CA 90245

The Ultimate Guidebook to Developing
INDUSTRIAL ASSET MONITORING SOLUTIONS

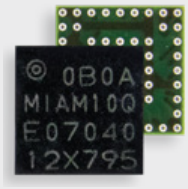
Industrial asset tracking is one of the fastest growing markets in the world of industrial Internet of Things (IIoT). With the industrial asset management market expected to reach $14.4 billion by 2029, there is huge market potential for developing solutions in this space. Some key industrial asset tracking segments include: energy and power, manufacturing, pharmaceuticals, food and beverage, construction, and more.

u-blox stands out as a reliable development resource to assist engineers in deploying successful industrial asset tracking solutions. Offering ultra-precise, long-term compatible, and globally certified modules like their MIA-M10 Series, SARA-R5 Series, SARA-R5AWS module, and LEXI-R422 module–u-blox offers an extensive line of highly-reliable GNSS modules to set developers up for success.

Additionally, u-blox's line of Nordic Semiconductor-based Bluetooth Low Energy modules including their BMD-series, NINA-series, ANNA-series, and NORA-series, are the optimal solution for short-range asset tracking applications. Pair u-blox's award-winning technologies with their MQTT Anywhere IoT communication service and CloudLocate cloud positioning and you have a one-stop-shop to deploy your next successful industrial asset tracking solution.

We are u-blox - reliable. smart. secure.

Ultra-Low-Power, Highly Accurate, & Pre-Certified GNSS Modules



MIA-M10 SERIES

Ultra-low-power GNSS module for miniature asset tracking devices

- Compact Design: 4.5 x 4.5 mm module requiring no external components
- Low Power Consumption: Consumes less than 25 mW of power without compromising on GNSS performance.
- Extended Battery Life: Twice the battery life by leveraging optimized power saving modes.
- High Position Availability: Concurrent reception of signals from up to 4 GNSS systems.

LEARN MORE ›

SARA-R5 SERIES

Designed to last an IoT lifetime: 5G-ready with the u-blox UBX-R5 chipset

- Product Longevity & Support: u-blox LTE and GNSS chipsets are built to be long-term interoperable.
- Accurate Positioning with u-blox M8 GNSS & CloudLocate: Rely on precise location data, ensuring optimal performance in diverse applications regardless of geographical location.
- Ultra-low-power Consumption: Crucial for energy-efficient operation, extending device battery life while maintaining reliable functionality.
- Cost-Effective IoT Communication: Cost-effective and power-efficient IoT communication solutions through MQTT Anywhere and MQTT Flex.

LEARN MORE ›

SARA-R510AWS MODULE

Designed to directly access AWS IoT Services securely over LTE-M

- Hardware-Based Security: AWS IoT cloud access secured through a hardware-based root of trust.
- Accelerated Time-to-Market: User-friendly AT command set, simplifying the development process.
- Offloading Connectivity & Cryptography: Efficiently offloads the host processor to enhance system performance.
- OTA Firmware Updates: Over-the-Air (OTA) updates enable the direct updating of host microcontroller firmware through AWS Jobs service.
- Access to AWS Services: Gain access to AWS IoT Device and Fleet management along with more than 200 optional AWS services.

LEARN MORE ›

LEXI-R422 MODULE

Feature-rich IoT connectivity in smallest form factor with 2G fallback

- Enhanced Coverage: 23 dBm output power to ensure robust signal strength in various environments.
- Cost-Effective IoT Communication: End-to-end IoT communication through MQTT Anywhere and MQTT Flex.
- Ubiquitous Location Services: u-blox CellLocate® ensures location accuracy and availability, delivering precise position data consistently regardless of the device's location.
- Improved RF Performance: Configurable dynamic antenna tuning interface that optimizes communication quality and reliability.

LEARN MORE ›

QUESTIONS? CONTACT SYMMETRY ELECTRONICS, TODAY!

6 WAYS IoT IMPACTS FLEET ASSET MANAGEMENT

Also known as telematics, fleet asset management revolves around the organized tracking of groups of vehicles and industrial equipment. Fleet asset management provides advanced analytics that aid companies in monitoring fleet performance, maintenance, and more. Incorporating an IoT into your telematics solution provides enhanced connectivity that enables a broad range of data around route, performance, passengers, drivers, and cargo that businesses can turn into actionable insights.

6 Ways IoT Impacts
Fleet Asset Management

FLEET ASSET MANAGEMENT THROUGH IoT

Relying on the interconnection between devices, machines, sensors, and objects to transmit/receive data, integrating IoT into telematics solutions provides enhanced automation and intelligence fleet logistics, worker safety, cost-efficiency, and productivity. Historically, cellular and satellite technology have been common connectivity methods of asset management platforms but as technology evolves, more sophisticated forms of technology have entered the market.

According to the LoRa® Alliance, LoRaWAN® solutions are the 'logical choice' in asset tracking connectivity. Leveraging low power wide area networks (LPWANs), LoRa® and LoRaWAN® wireless technology provide consistent and reliable connectivity in a variety of regions from dense urban environments to remote farms. When combined with smart IoT sensors used in asset tracking devices, LoRa-enabled fleet management systems **(Figure 1)** are optimal asset tracking solutions in industrial internet-of-things (IIoT) markets like manufacturing, distribution, and construction.

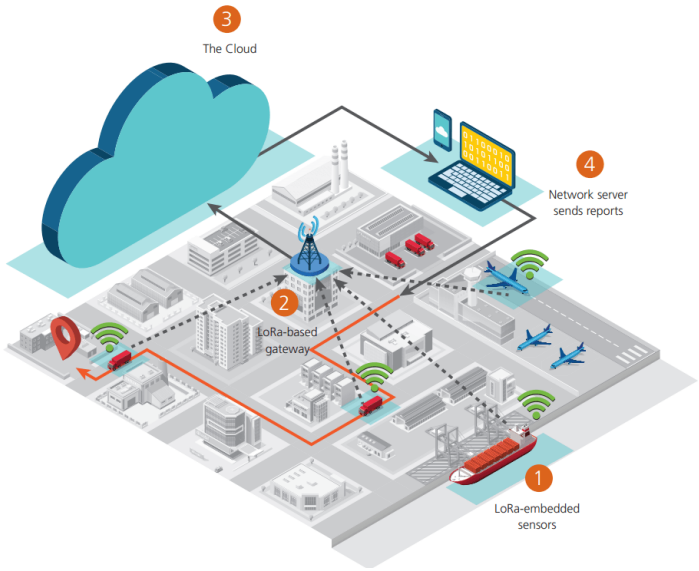


Figure 1: LoRaWAN in Fleet Telematics
Source: Navixy Talks

BENEFITS OF IoT IN FLEET ASSET MANAGEMENT SYSTEMS:

The combination of IoT in telematics makes for powerful fleet management solutions. IoT in fleet monitoring enables cost-efficiency in its ability to provide improved maintenance, logistics, safety, productivity, and loss mitigation. The following are benefits of IoT within fleet management solutions.

ENHANCED LOGISTICS:

The type of data that IoT sensors collect in fleet monitoring includes routes, mileage, power consumption can be analyzed to optimize logistics efficiency. The power of big data analytics within fleet management systems equips organizations with the intelligence to enhance route efficiency in accordance with fuel use, worker needs, and maintenance. According to Verizon Connect in 2021, “an average of 8% drop in fuel cost was reported by the users of fleet tracking technology.”

PREDICTIVE MAINTENANCE:

IoT technology in fleet maintenance solutions allows companies to mitigate equipment failure through predictive maintenance insights. Through fleet monitoring, businesses are capable of addressing maintenance emergencies before they occur.

IMPROVED WORKER SAFETY:

The benefits of IoT-enhanced telematics solutions improve worker safety through the benefits of predictive maintenance and improved logistics. When vehicles are properly maintained and routes are streamlined, fleet operators are more protected in their positions. Worker proximity can be monitored in factory settings, drivers will be less fatigued with route efficiency, and businesses can ensure that only authorized users are operating fleet equipment.

PREVENT ASSET LOSS & THEFT:

Fleet asset management provides increased asset security. IoT sensors and edge-based solutions provide increased visibility surrounding equipment. Workers are more aware of cargo loads and data can be utilized for enhanced training. IoT-enabled fleet management means knowing where your assets are in a real-time environment.

IMPROVED PRODUCTIVITY:

Enhanced logistics, predictive maintenance, safer work environments, and loss prevention provide reduced downtime in the workplace. Businesses are able to see improved productivity when equipment is functioning properly and logistics are streamlined in a safe work environment.

GREATER SAVINGS:

The top benefit of IoT within fleet asset management is a culmination of all its other advantages. Enhanced logistics, predictive maintenance, improved worker safety, loss mitigation, and reduced downtime all lead to greater savings!

USE CASES FOR IoT-ENABLED FLEET MANAGEMENT:

In the industrial sector, IoT-enabled fleet asset management systems support a wide range of applications and use cases including:

- Driver management
- Fleet maintenance
- Asset and cargo management
- Vehicle monitoring
- Passenger information

Are you ready to integrate IoT solutions into your fleet asset management system?
Contact Symmetry Electronics today!

ABOUT THE AUTHOR

JARI HAISTON

Jari Haiston is a valued member of the expanding digital marketing team at the Exponential Technology Group (XTG). With a foundation in technical writing and event coordination, Jari brings a unique blend of skills to her current role. She excels in content creation and social media management. As a dedicated writer, Jari's primary goal is to craft captivating content that remains approachable and informative for a diverse audience.

BY JARI HAISTON
TECHNICAL MARKETING
CONTENT SPECIALIST

IS IoT ASSET TRACKING THE ANSWER TO FOOD SUPPLY CHAIN ISSUES?

In what some are calling the 'end of days,' supply shortages are ravaging food systems globally. Shortages affect some of our pantry favorites like beer, Sriracha, and popcorn. More importantly, food supply chain issues are affecting staples of local economies like wheat and sugar (sugarcane). Even infants are affected by food supply chain issues. In May 2022, 43% of infant formula products were out of stock nationwide. Many consumers have the luxury of selecting alternatives when their favorite products aren't available at the grocery store, but the larger percentage of the world does not. That's where the internet of things (IoT) comes in. IoT-enabled asset tracking systems are the solution that the food supply chain so desperately requires.

Is IoT Asset Tracking the Answer to Food Supply Chain Issues?

WHAT IS THE FOOD SUPPLY CHAIN?

In the crux of industry 4.0, supply chain is one of the 11 pillars of the fourth industrial revolution. On a more focused level, supply chain within industry 4.0 refers to the digitization of production flows. Digitization of supply chains improves transparency and creates integrated ecosystems within supply chains by removing barriers between product development, marketing, sales, and distribution.

The food supply chain, also referred to as a food system, revolves around the process in which food from a source (like a farm or ranch) ends up on our plate. Food supply chain processes **(Figure 1)** include production, processing, distribution, consumption, and even disposal.

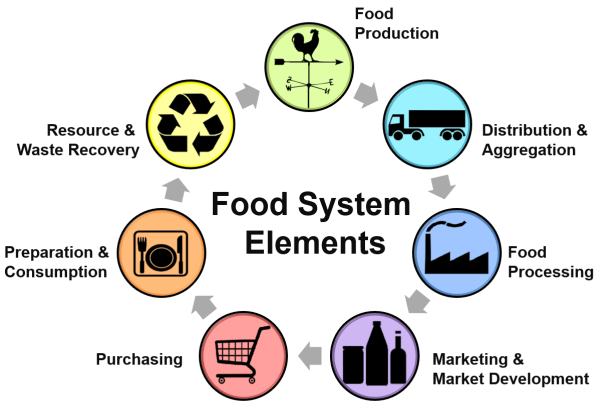


Figure 1: Food supply chain processes
Source: NC State Extension

COLD CHAIN

Within overall food systems lay smaller subsets of supply chains. The cold chain refers to the management of refrigerated perishables from their point of origin to their destination. Proper management of cold chain supplies is imperative in maintaining quality and safety around perishable products like meat, fish, poultry, dairy, eggs, etc. The cold chain accounts for a significant portion of the food supply chain. According to a Markets and Markets report, "The global cold chain market size is estimated to be valued at USD 233.8 billion in 2020 and is projected to reach USD 340.3 billion by 2025."

IoT ASSET MANAGEMENT AS FOOD SUPPLY CHAIN SOLUTION

Jim Dudlicek, Director of Communications and External Affairs of The National Grocers Association, comments that supply chain issues can be attributed to the fact that there aren't enough people to "make the goods, move the goods and sell the goods." IoT-enabled asset management systems offer a comprehensive solution to this issue. The combination of real-time notifications from IoT sensors/devices with asset management systems provides food manufacturers, distributors, and consumers benefits of the following:

INCREASED PRODUCTIVITY

Food and beverage manufacturers are looking to asset management solutions to gain greater intelligence through the increased actionable insights of IoT data collection and analysis. Companies are utilizing big data collection to map factory equipment performance, analyze lifecycle costs, and organize maintenance records.

ENHANCED FOOD LOGISTICS

Distributors are able to utilize IoT-enabled asset management solutions to enhance logistics in fleet equipment. IoT fleet monitoring enables optimization in routes, mileage, and power consumption (fuel). In food systems, this means that time-sensitive deliveries like cold chain products get to their destination faster. Additionally, worker safety is improved as operators are protected from fatigue and overwork through increased route efficiency.

WASTE PREVENTION

When IoT sensors and devices are implemented in food stock, especially in the transportation of goods, spoilage and contamination are prevented. Devices like temperature and humidity sensors can monitor assets and provide real-time notifications as to when measurements are out of optimal range.

INCREASED FOOD SAFETY

In addition to loss mitigation, some food and beverage companies are utilizing IoT-enabled asset management as a way to prevent counterfeited goods. Barilla, a pasta manufacturer, has collaborated with Cisco Systems in creating 'digital passports' for their products in an effort to improve safety. Information is

stored within their ‘Safety 4 Food’ cloud platform and also provides customers with insights as to where the wheat used in their pasta was grown – ‘from farm to fork,’ as they say.

EXPANDED TRANSPARENCY

Digitization of asset management solutions within global food systems ensures that products get to their destinations quickly and safely. Along with wider selection availability at the grocery store, consumers also benefit from the expanded transparency of a digitized food supply chain. Consumers will soon be able to streamline checkouts through QR codes, smart pantries will automatically reorder home goods in low stock, and smart refrigerators will inform users of product recalls. In some Whole Foods stores, you can already pay with the palm of your hand.

THE FUTURE OF ASSET MONITORING IN FOOD SYSTEMS

Such is nature, the demand for food will continue to rise. Harvard business review says that “Food demand is expected to increase anywhere between 59% to 98% by 2050.” IoT-enabled asset management solutions can make a significant impact on resolving global food crises and blend consumer convenience at the same time.

Interested in integrating IoT Asset Tracking in your operation? Connect with one of Symmetry Electronics’ experienced Applications Engineers for a free consultation to begin building your asset tracking solution!

BY JARI HAISTON
TECHNICAL MARKETING
CONTENT SPECIALIST

SARA-R5 SERIES

- Product longevity and best support guaranteed by u-blox LTE and GNSS chipsets
- Acurrate and reliable positioning, always and everywhere, with u-blox M8 GNSS receiver and CloudLocate
- Optimized ultra-low-power consumption
- Cost-effective, power efficient, end-to-end IoT communication with MQTT Anywhere and MQTT Flex

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SARA-R510AWS MODULE

- Direct AWS IoT cloud access secured with hardware-based root of trust
- Optimized, easy-to-use AT command set for accelerated time-to-market
- Unburden the host processor from connectivity and cryptography tasks
- Host OTA to update host microcontroller firmware directly from AWS Jobs service
- Access to AWS IoT Device and Fleet management and 200+ optional AWS services

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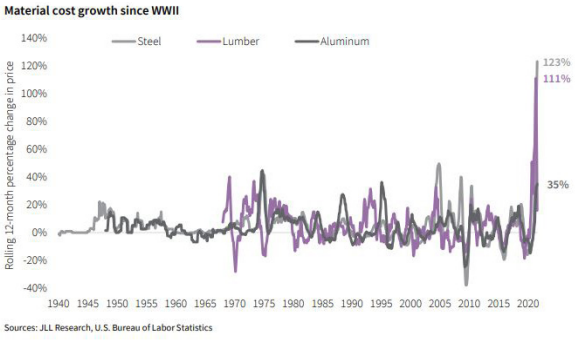
BROWSE U-BLOX’S PRODUCT PORTFOLIO FOR INDUSTRIAL ASSET TRACKING APPLICATIONS

THE TOWERING DEMAND FOR CONSTRUCTION ASSET TRACKING

At the beginning of 2022, the price of lumber nearly tripled. The cost of concrete has steadily increased since the beginning of the COVID-19 pandemic. Home improvement project costs have increased an average of 15% since 2020 and, overall, material costs in the construction industry have experienced a 23.1% total price increase **(Figure 1)**. There is no one factor to blame for inflation in the construction industry. The pandemic, rising labor costs/shortages, and supply chain disruptions have all played a role in the construction sector's skyrocketing rate of inflation. That is why it's more important than ever that construction companies protect valuable materials by integrating comprehensive methods of asset tracking.

The Towering Demand for Construction Asset Tracking



Material cost growth since WWII. Chart courtesy of JLL Research, U.S. Bureau of Labor Statistics

Figure 1: Material cost growth in construction sector since WWII
Source: Commercial Property Executive

BENEFITS OF THE INTERNET OF THINGS IN CONSTRUCTION

The U.S. construction sector is valued at 1.6 trillion dollars and continues to rise. Digitization of asset tracking through internet of things (IoT) devices and sensors provides construction companies with a broad range of benefits including:

REDUCED THEFT AND ENHANCED EQUIPMENT MANAGEMENT

IoT sensors and edge-based solutions offer enhanced visibility surrounding equipment and other company assets. IoT-enabled asset management solutions enable awareness of cargo loads and other valuable assets in a real-time environment.

ENHANCED LOGISTICS AND INCREASED PRODUCTIVITY

IoT-enabled asset management solutions provide companies with increased intelligence and actionable insights that maximize resource efficiency. Asset tracking offers valuable data regarding routes, fuel use, maintenance, and worker needs that can be used to streamline logistics and reduce downtime within an organization.

IMPROVED SAFETY AND PREDICTIVE MAINTENANCE

Enhanced logistics allow businesses to take worker health data into consideration. Conditions like fatigue and worker/machine proximity can be closely monitored through IoT-enabled wearables. Businesses can also have confidence that only authorized users are operating equipment through IoT asset tracking solutions. Additionally, predictive maintenance insights bolster workplace safety as businesses can mitigate maintenance emergencies before they occur.

MAXIMIZED SAVINGS

Greater money savings is a combined benefit of the advantages of IoT-enhanced asset management. Theft mitigation, enhanced equipment management, predictive maintenance, improved safety, and increased productivity work hand-in-hand to provide businesses with maximized resource efficiency.

HARNESSING IoT SENSORS IN CONSTRUCTION

As experts in IoT, Symmetry Electronics is a great resource to support developers in designing an indoor/outdoor industrial asset tracking solution that is suitable for businesses in the construction sector. IoT-enabled asset tracking solutions rely on the interconnection of sensors, devices, and equipment to transmit data. Connectivity protocol also plays a crucial role in the efficiency of an asset tracking system.

When selecting an ideal protocol for an asset tracking solution, developers should consider the following technologies depending on the physical environment (indoor/outdoor, area size), the quantity, and desired accuracy of assets managed:

- LoRa® is a Low Power Wide Area Network (LPWAN) that features enhanced indoor transmission, cost efficiency, and extended battery life.
- Ultra-Wide Band (UWB) provides indoor real-time location services (RTLS) and provides an accuracy range of 1m-10cm.
- Bluetooth Low Energy (BLE) Beacons can be affixed to physical assets to wirelessly transmit data at very low power levels.

- Global Positioning Systems (GPS) is known for providing comprehensive accuracy (10-50 ft.) in outdoor asset tracking use cases.

There are a wide range of connectivity protocols that may be ideally suited for your device's specific use case. Our expert team of Applications Engineers are ready to provide the support you need in developing your industrial asset tracking system. Consultation is free and our service is unparalleled! Contact Symmetry Electronics today!

ABOUT THE AUTHOR

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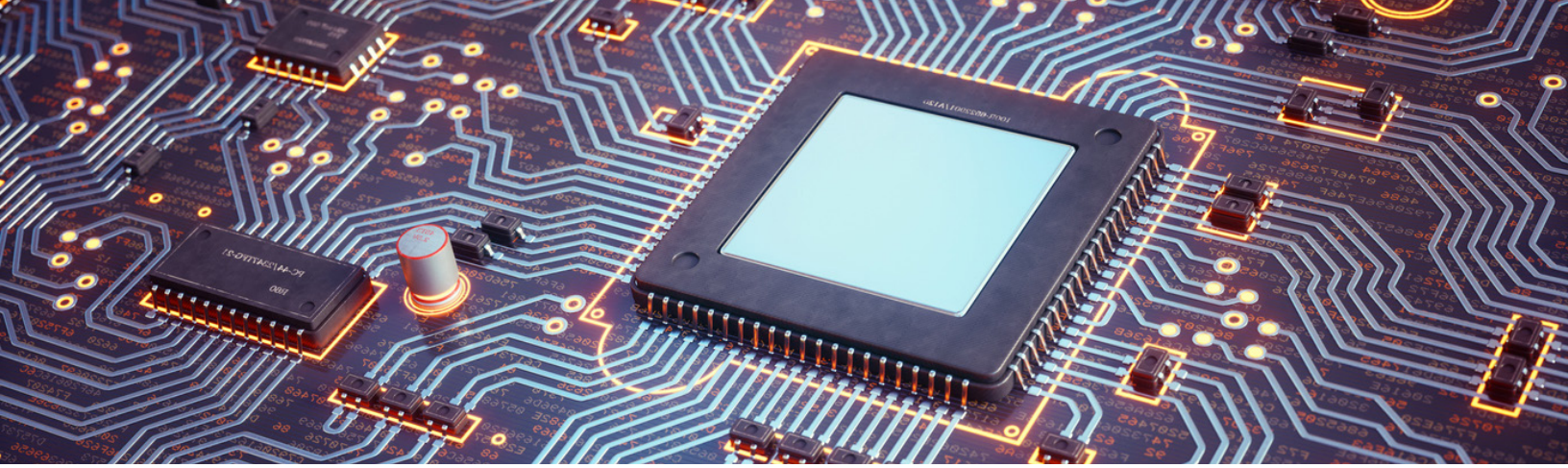

INDUSTRIAL ASSET TRACKING HARDWARE

ELECTRONIC COMPONENT CATALOG

U-BLOX TECHNOLOGIES AVAILABLE AT SYMMETRY ELECTRONICS

ACHIEVE ACCURATE & RELIABLE POSITIONING WITH U-BLOX'S GNSS MODULES

MIA-M10 SERIES

- 4.5 x 4.5 mm chip-sized module requiring no external components
- Less than 25 mW power consumption without compromising GNSS performance
- Twice the battery life by leveraging optimized power save modes
- Maximum position availability with concurrent reception of 4 GNSS
- Proven excellent performance, even with small antennas

LEARN MORE ›

SARA-R5 SERIES

- Product longevity and best support guaranteed by u-blox LTE and GNSS chipsets
- Acurrate and reliable positioning, always and everywhere, with u-blox M8 GNSS receiver and CloudLocate
- Optimized ultra-low-power consumption
- Cost-effective, power efficient, end-to-end IoT communication with MQTT Anywhere and MQTT Flex

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- Host OTA to update host microcontroller firmware directly from AWS Jobs service
- Access to AWS IoT Device and Fleet management and 200+ optional AWS services

LEARN MORE ›

LEXI-R422 MODULE

- Guaranteed best coverage with 23 dBm output power
- Cost-effective, power efficient, end-to-end IoT communication with MQTT Anywhere and MQTT Flex
- Always and everywhere location, with u-blox CellLocate®
- Better RF performance with configurable dynamic antenna tuning interface

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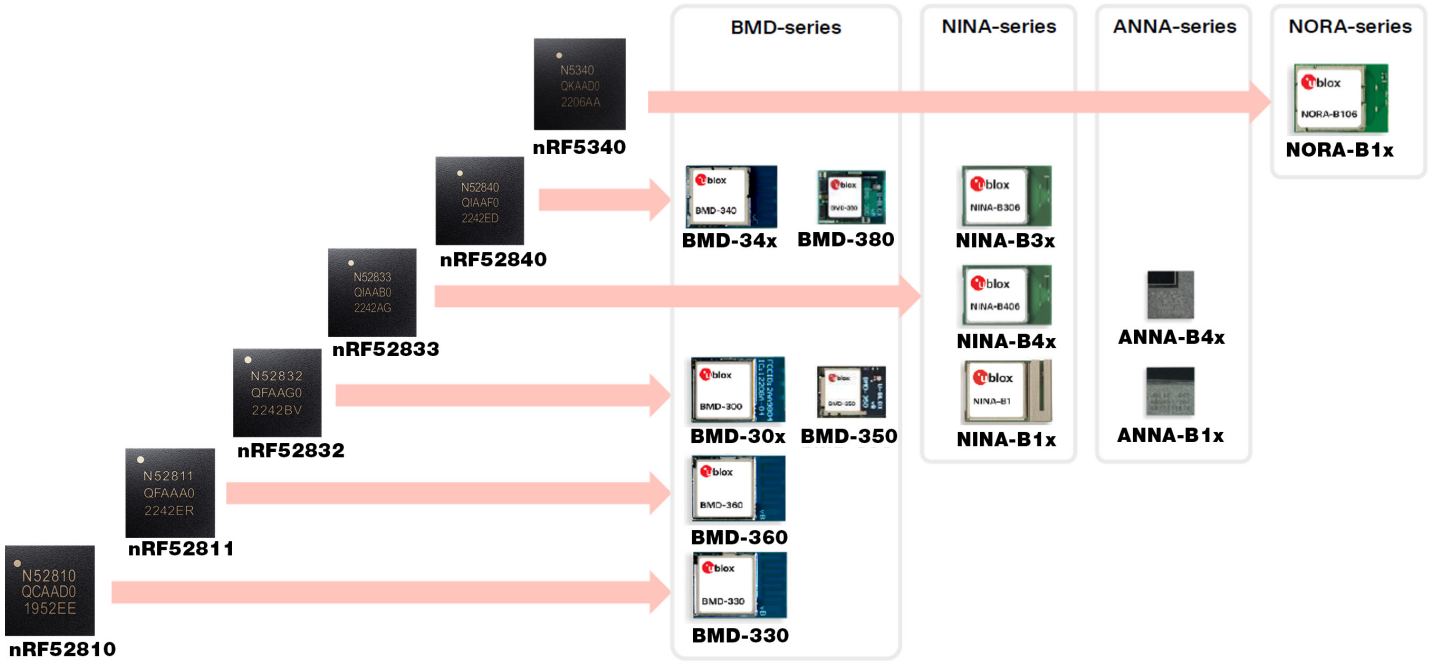
BLUETOOTH LOW ENERGY ASSET TRACKING: SHORT RANGE SOLUTIONS

U-BLOX BLUETOOTH LOW ENERGY MODULES - BASED ON NORDIC SEMICONDUCTOR CHIPSETS!

u-blox has partnered with Bluetooth solution industry leader, Nordic Semiconductor, to leverage the ultimate benefits of their Bluetooth Low Energy chipsets, including combining Nordic's Bluetooth Direction Finding capabilities with u-blox's u-connectLocate Bluetooth Angle-of-Arrival (AoA) angle data processing to deliver u-blox's BMD-series, NINA-series, ANNA-series, and NORA-series modules–all designed to support precise, Bluetooth Low Energy asset tracking applications.



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QUESTIONS?

CONTACT
SYMMETRY ELECTRONICS, TODAY!

INDUSTRIAL ASSET TRACKING DEPLOYMENT SERVICES

MQTT ANYWHERE

IoT communication service operating across 600+ cellular network carriers in 190 countries around the world without the need for cellular data.

- Enables long-life, low-power devices
- Simplifies IoT systems integration
- Fixed, low-cost, global connectivity
- Globally ubiquitous, seamless roaming

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CLOUDLOCATE

Extends the life of energy constrained IoT applications. Up to 10x energy savings over stand-alone GNSS power savings approach.

- Expand market reach by building enterprise solutions that leverage CloudLocate
- Globally available and backed by our warranty and support
- End-to-end solution works with any connectivity technology
- Increase device fielded lifetime and lower operational burdens

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QUESTIONS? CONTACT SYMMETRY ELECTRONICS, TODAY!

LOW POWER GNSS FOR TRACKING APPLICATIONS

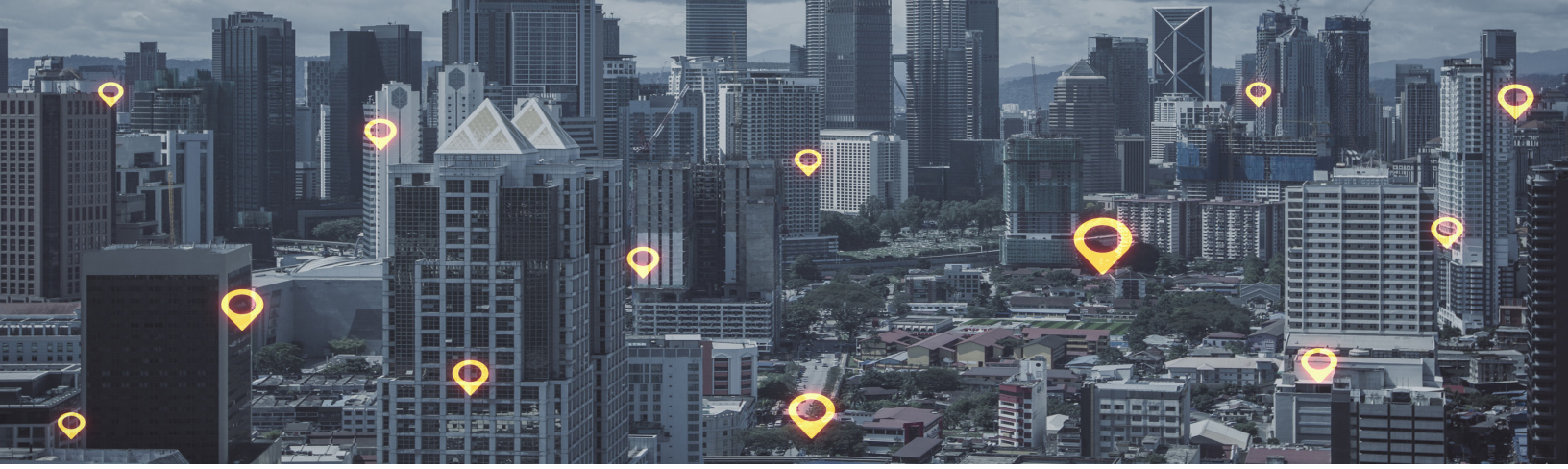
WHITE PAPER

ABSTRACT

Global availability and high accuracy have made satellite-based positioning a key enabler for a growing number of consumer, industrial, and automotive tracking applications. Meanwhile, users continue to expect ever more of the technology in terms of performance, size, power demand, and cost. Optimally balancing these characteristics to meet the needs of a specific application or use case requires a deep understanding of the technology, hardware, software, and services used. In this white paper, we offer our insights into strategies to reduce the power consumption of GNSS-based tracking devices, which we gained in the twentysome years of innovating in this area.

CLICK HERE TO VIEW WHITE PAPER

BROWSE U-BLOX PRODUCT PORTFOLIO FOR INDUSTRIAL ASSET TRACKING APPLICATIONS



INDUSTRIAL ASSET TRACKING SOLUTIONS

RESOURCE LIBRARY

GNSS MODULES

MIA-M10Q

- MIA-M10Q Data Sheet
- MIA-M10Q Product Summary
- Standard Precision Positioning

SARA-R5

- SARA-R5 Data Sheet
- SARA-R5 Product Summary
- SARA-R5 Application Development Guide

SARA-R510AWS

- SARA-R510AWS Product Summary
- SARA-R510AWS Data Sheet

LEXI-R422

- LEXI-R422 Module Product Summary

BLUETOOTH LOW ENERGY MODULES

- u-blox Short Range Radio Product Overview
- u-blox Short Range Bluetooth Modules Line Card
- Integrating Bluetooth Direction Finding with u-blox and Nordic Semiconductor - Video

SERVICES

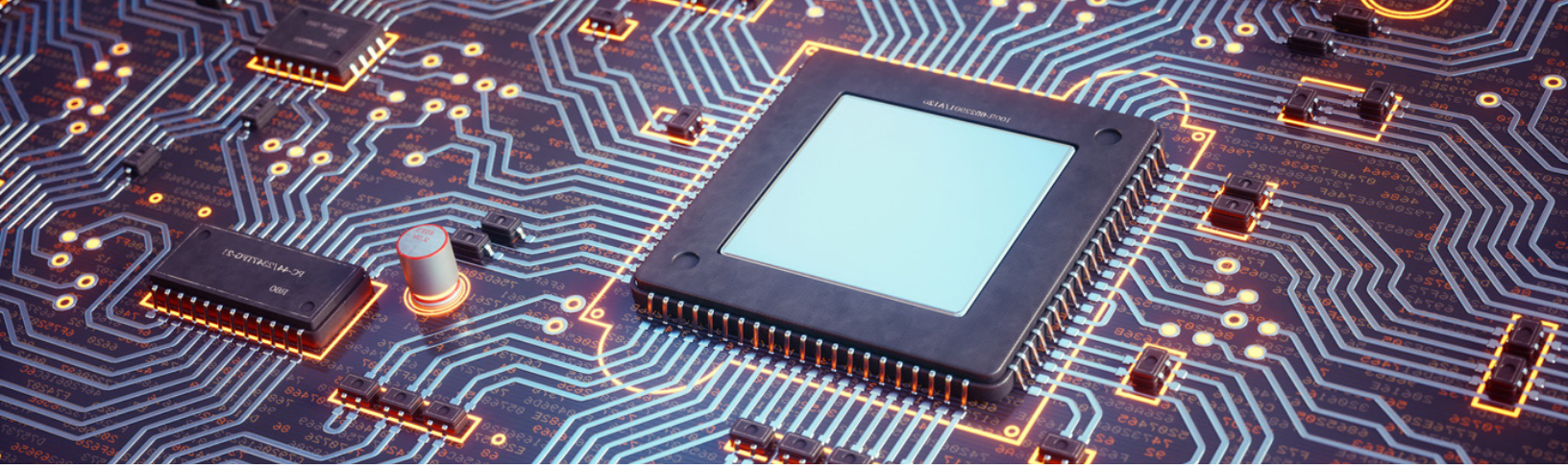
MQTT ANYWHERE

- MQTT Anywhere Product Summary
- MQTT Anywhere - Video

CLOUDLOCATE

- CloudLocate Product Summary
- Slash Your GNSS Power Consumption by up to 90% with CloudLocate - Video

BROWSE U-BLOX'S PRODUCT PORTFOLIO FOR INDUSTRIAL ASSET TRACKING APPLICATIONS



TECHNICAL ENGINEERING SUPPORT

Symmetry Electronics employs experienced Applications Engineers to provide complementary design engineering consulting to our customers. In combination with our Application Engineering support, we offer product samples when available along with useful design resources like data sheets, product selector guides, technology-focused articles, and product demo videos to set engineers off on the right design path. Additionally, benefit from a comprehensive device development services offering with access to anechoic chamber pre-compliance testing and product manufacturing services from sister companies in our Exponential Technology Group (XTG) ecosystem.

IN-HOUSE APPLICATIONS ENGINEERS

PRODUCT SAMPLES

(When available)

DESIGN RESOURCES

Data sheets, product selector guides, tech-focused articles, product demo videos

COMPREHENSIVE DEVICE DEVELOPMENT SERVICES

Anechoic chamber pre-compliance testing & product manufacturing services from from XTG Electronic Services (XTG ES)

QUESTIONS?

CONTACT SYMMETRY ELECTRONICS, TODAY!

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