Building the IoT with SIERRA WIRELESS
GLYN Wireless Solutions

For more than 17 years GLYN is actively supporting customers in the selection and development of wireless products.

During this time we have assisted you to enhance your products with wireless M2M communication quickly and smoothly.

The wealth of knowledge we have collected in more than 28,000 hours is invaluable. We gladly share this experience with you by providing our expertise in active design-in support. This is GLYN First-Class PREMIUM Support.

Use our experience in wireless M2M communication and benefit from professional consulting and intensive technical support to enjoy short development times for your products and a faster time-to-market.

Because time is money…

SUPPORT IS RED!

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Wireless Products for IoT

Founded in 1993, the Canadian company SIERRA WIRELESS is the global leader for cellular communication technology in M2M devices. Over the past 25 years they have developed and marketed innovative products and solutions for their customers. SIERRA WIRELESS offers the most comprehensive portfolio of solutions for machine-to-machine wireless communication. They provide a wide selection of wireless embedded modules and gateways for modern M2M applications. In addition, they extend their offer with seamlessly integrated M2M cloud services, software frameworks and services, providing a powerful solution for easy M2M communication.

More than 150 million M2M devices have been sold to customers worldwide, including OEMs and mobile network operators. SIERRA WIRELESS products make M2M communication simple, scalable and secure, enabling customers to easily create innovative M2M applications.

**AirPrime® embedded wireless modules**

SIERRA WIRELESS AirPrime embedded modules are designed to meet your M2M challenges. Simple to integrate, easy to program, secure and scalable, AirPrime modules get your solution to market faster and reduce your total costs.

**AirLink® intelligent gateways: Get connected. Stay connected.**

AirLink gateways can be deployed out-of-the-box with no programming required and are built with the intelligence to always stay connected. They securely and reliably connect people, equipment and services for enterprise and M2M applications.

**AirVantage® secure M2M cloud platform**

AirVantage M2M cloud offers a simple, scalable and secure way to connect people and enterprise systems with machine data. It allows easy development and deployment of M2M systems, enabling innovation in products and faster time to market.
Cellular Communication

For widely distributed applications needing wireless connectivity, it is usually the best option to use the established cellular networks. This allows easy and global connectivity. Depending on application requirements, cellular communication offers a range of solutions from cost-efficient 2G connectivity up to 4G high speed communication.

New LPWA technologies like LTE-M and NB-IoT provide a future-proof and cost-efficient way for M2M and IoT applications to use current 4G networks when high speed communication is not required.

Bluetooth

Bluetooth was designed as a short-range wireless cable replacement for mobile phones. It quickly was adopted as a common solution for industrial applications as well. Bluetooth provide a wide variety of profiles to transfer data between devices.

Bluetooth Low Energy (BLE) was added with version 4.0 of the standard. It is especially designed for low power consumption. This enables new markets such as wearables and health devices.

Wi-Fi

Also known as W-LAN, Wi-Fi is designed as wireless replacement for ethernet local area networks. Based on the IEEE 802.11 standards, it allows easy networking with multiple devices.

Although Wi-Fi is mainly known for its use in computer networking. Industrial applications also use this technology to connect embedded devices.

GNSS – Global Navigation Satellite Systems

GNSS technology uses navigation data received from global networks of satellites to determine exact position and movement data. This enables location-based services like tracking and fleet management.

The US-american Navstar GPS is the most widely known system in use. However, russian GLONASS, european Galileo and chinese Beidou system provide the same kind of service. Using multiple GNSS systems can accelerate time to first fix and improve accuracy.
Scalable Modules for maximum Flexibility

Simple, scalable and secure Solution for M2M

SIERRA WIRELESS’ family of AirPrime embedded modules offer the industry’s broadest portfolio of wireless M2M technologies. They support cellular 2G, 3G, 4G and LPWA, short range Bluetooth and Wi-Fi as well as GNSS for positioning. Choose from ultra-compact footprints or standard form factors, essential features or powerful application processing. AirPrime modules make it easy to develop scalable and secure M2M applications while achieving faster time-to-market and lower development and deployment costs.

Technology and scalability considerations

M2M applications typically have a life time of 5 to 10 years or more, so in addition to technical requirements, you also have to consider long term scalability and technology upgrades.

2G GSM/GPRS/EDGE is a proven and cost efficient technology which is still widely used for M2M applications. However, some markets have started to a transition to newer technologies. 3G UMTS/HSxPA offer higher data rates and multi-band modules enable global deployments. 4G LTE networks are currently deployed all over the world. With new LTE Advanced and LTE Advanced Pro technology, they offer even higher data rates leading the way to 5G. LPWA technologies LTE-M and NB-IoT use current 4G networks at reduced technical complexity and data rates. This offers a cost efficient and future-proof alternative for M2M applications. Bluetooth and Wi-Fi provide standard short range connectivity for IoT applications.

CF3 – Common flexible form factor for AirPrime® modules

SIERRA WIRELESS has developed the unique CF3 common flexible form factor to allow easy scalability for wireless modules. Modules can be easily exchanged on the same hardware to switch technologies. HL and WP Series share the same size and core functions are pin-compatible. This enables easy scalability between 2G, 3G, 4G and LPWA technology and between "essential" and "smart" modules. Other CF3 variants like smaller BX module can be easily integrated into one common layout. This extends flexibility even between different module series.
AirPrime® HL Series

Compact 2G, 3G, 4G and LPWA Modules for Essential M2M Connectivity

Key benefits
► Small and easy to use
► Reliable, proven M2M connectivity
► Scalable: one footprint across 2G, 3G, 4G, and LPWA technologies; ensures easy migration path

SIERRA WIRELESS AirPrime HL Series are compact and easy-to-integrate modules for voice and data connectivity. They provide everything device manufacturers need to meet essential connectivity requirements for machine-to-machine (M2M) applications.

Features including compact size, high-quality, low power consumption, and enhanced RF performance make these 2G, 3G, 4G and LPWA modules ideal for use in designs where size, power consumption and worldwide coverage are key differentiators. These modules are ideal for applications in healthcare, point of sale terminals, fleet management, tracking, and consumer electronics.

AirPrime® HL Series: The smallest 2G to LPWA form factor on the market

The AirPrime HL Series is the smallest, scalable, flexible solution across 2G, 3G, 4G and LPWA technologies, and optionally contains GNSS. The HL Series provides device manufacturers with the ability to serve different regions, across multiple network technologies, with one device design.

Key features
► CF3 (common flexible form factor) package: LGA 23 × 22 mm / 18 × 15 mm (HL78xx)
► Pin-compatible scalable family from GSM/GPRS up to LTE and LPWA
► CF3 package compatible with WP Series for easy scalability
► Integrated TCP/IP stack including FTP and HTTP/HTTPS for easy IP connectivity
► Optional GNSS (GPS + GLONASS)
► Dual SIM technology for maximum network connectivity
► Industrial temperature range: -40 to 85 °C
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- Supported feature ○ Dependent on module variant

**Development tools**

**HL DK – Development kit for HL Series**
- Development board with HL Snap-In socket
- Power supply, antenna, cables and accessories

**CF3 form factor compatibility**

AirPrime WP Series in compatible CF3 form factor provides 3G / 4G connectivity and embedded application CPU with Legato embedded Linux for your application.
AirPrime® WP Series

Expect more, do more with the Next-Generation WP

Key benefits
► CF3 form factor enables easy scalability for different network technologies and requirements
► Linux-based Legato software platform simplifies application development
► AirVantage cloud platform accelerates time-to-market

SIERRA WIRELESS AirPrime WP Series provides an integrated device-to-cloud architecture enabling IoT developers to build a Linux-based product on a single module and seamlessly send valuable user and product data to the cloud. Offering an application processor running the open source Legato platform, GNSS receiver, and cellular modem with an ultra-low power domain, WP modules reduce system complexity and get you to market faster.

Simplify system development with a Device-to-Cloud architecture
► All the key hardware components of your connected product in a compact form factor to save board space and reduce total BOM (bill of materials)
► Integrated Legato platform that maintains your Linux distribution and includes an application framework, Development tools, and community support
► Integrated AirVantage cloud services make it easy to access product and user data into your backend enterprise applications

Future-proof your product designs
► CF3™ (common flexible form factor) module design provides worldwide coverage on 2G, 3G, 4G and LPWA networks, is compatible with HL Series of modules, and capable of supporting new wireless technologies
► The professionally maintained open source Legato platform for IoT enables you to reuse software components and applications in future designs with no vendor lock-in
► AirVantage cloud services with big data storage grows with your deployments and can power future revenue-generating services as your business evolves

Keep your products deployed for years in the field
► New ultra-low power domain can reduce power consumption by 200x opening new use-cases for cellular where 100 % connectivity to the network is not required
► Application sandbox within the Legato platform hosts your proprietary software and provides a secure place for 3rd party applications to enable future services for your customers
► Unlimited FOTA (firmware over-the-air) powered by AirVantage maintains optimized connectivity as networks evolve and keeps your data transmission protected as new security threats arise
Key features

► CF3 (common flexible form factor) package: 22 × 23 mm LGA
► Scalable family for 3G, 4G and LPWA
► CF3 package compatible with HL Series for easy scalability
► Extended temperature range -40 to 85 °C to support industrial applications
► Multiple interfaces including USB, UART, SPI, I2C, HSIC and GPIO

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● Supported feature ○ Dependent on module variant

Development tools

WP DK – Development kit for WP Series

► Development board
► Power supply, antennas, cables and accessories

Project mangOH™

► Open hardware reference design for WP Series
► Ethernet, UART and USB interfaces
► Extension connectors: IoT modules, Arduino

Legato®

► Open Source Software Platform for WP Series
► Based on Linux OS

CF3 form factor compatibility

AirPrime HL Series in compatible CF3 form factor provides 2G / 3G / 4G / LPWA connectivity without application processor.
Legato® Software Platform

Open Source Embedded Platform built on Linux designed to simplify M2M Application Development

Key benefits
► Get started immediately: Legato is pre-loaded on AirPrime WP Series modules
► Use existing software and skills with multi-language support and customizable components
► Easily integrate device data to enterprise with AirVantage M2M Cloud
► Simplify the development of your M2M application
► Future proof and extendable

The Legato platform gives embedded M2M development a head start and is ready to run, build, and connect out-of-the-box. Made up of a tightly integrated application framework, fully tested Linux distribution, and feature rich development environment, the open source Legato platform accelerates application level development of connected devices.

Ready-to-run

Start developing immediately with the Legato platform that has been integrated, tested and validated. The Linux distribution supports next generation AirPrime WP Series of smart modules, so Legato comes ready-to-run without any porting.

Ready-to-build

Available in open source, Legato future-proofs software investments by easily porting the stack to any module or application processor as product requirements evolve. With security and connectivity built in and customizable middleware components, the platform simplifies development by enabling OEMs to just focus on the value-add applications.

Ready-to-connect

Designed for connected products, the Legato platform makes it easy to get device data to the enterprise thanks to seamless integration with the AirVantage M2M Cloud. For devices, Legato provides access to device peripherals like USB or Ethernet out-of-the-box. And robust API’s make it easy to connect to any cloud or network – whether mobile, wired, or personal.
Components and Features of the Legato® Platform

**Application Framework**
- Middleware Components
- Connectivity
- Multi-language Support
- C-based Runtime Library

**Linux Distribution**
- LTS Linux Kernel
- Free Open Source Packages
- BSP

**Linux Applications**
- Application Framework
- Development Environment

**Development Environment**
- Eclipse-based IDE
- Command Line
- Diagnostic Tools
- Yocto Build Tools
- Multi-Language Support

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**Application Framework - Designed with security and connectivity in mind**
- Application Sandbox – secure environment to run and control multiple applications
- Robust Connectivity APIs – access cloud and network services such as voice calls, SMS, data, radio controls
- Customizable middleware components – select building blocks such as configuration, DB, resource arbitration, secure IPC
- Multi-language support – use embedded applications in different programming languages
- C-based runtime library – fast, efficient system designed to maximize processing power and user application space

**Linux Distribution - Customizable with built-in M2M features**
- Free open source packages – validated by the Linux Foundation that include BusyBox, OpenSSL, DHCP, PPP, and OpenSSH
- Long-term supported Linux kernel (LTSI) – hosted by the Linux Foundation and maintained by the embedded systems industry
- Board support package (BSP) – enables hardware interfaces and power management, validated on AirPrime WP smart modules

**Development Environment - Flexible to simplify application-level development**
- Eclipse-based integrated development environment (IDE) – extensible and familiar toolset with built-in API awareness
- Command Line – automate builds and integrate into any tool chain
- Robust diagnostic tools – local and remote debugging, monitoring and profiling
- Yocto build tools – rebuild and tailor the Linux distribution for any project
- Multi-language support – code using your favorite programming language AirPrime WP Series
AirPrime® EM Series and MC Series

High-Speed Connectivity in a future-proof Form Factor

Key benefits
► Easy to integrate: Standard PCIe M.2 or MiniCard
► High-speed cellular connectivity with the latest technologies and multi-operator support
► Easy upgrade path to new network technologies

SIERRA WIRELESS AirPrime EM and MC Series supports the latest 4G and 3G networks in North America, Europe, and Asia. The standard PCI Express M.2 or MiniCard form factor allows easy integration into devices. Optimized for low power consumption, the EM and MC Series are ideal for today’s mobile computing, networking and industrial IoT applications.

Deploy on the world’s fastest LTE networks

The EM and MC Series Series support 3G and 4G global networks, including LTE Advanced and LTE Advanced Pro, with automatic fallback to 3G.

Enable location based services

GNSS tracking lets you locate, monitor, and deploy location-based applications and services. The modules support multiple GNSS including GPS, GLONASS, Beidou, and Galileo satellite systems.

Incorporate cloud connected solutions

AirVantage cloud services enable easy firmware updates and device management over-the-air. In addition, you can manage application data with AirVantage cloud connectivity.

Switch networks anytime

Up to three different firmware variants can be stored on the module, simplifying logistics and supply chain management. You can install a single product in your device and switch the firmware based on carrier selection when deploying to the field.

Key features
► Support 4G LTE Advanced and LTE Advanced Pro connectivity with 3G fallback
► Standard PCI Express form factor with standard antenna connectors
► EM Series : M.2 form factor 42 × 30 mm, with 3 x HSC/MHF-4 antenna connector
► MC Series : MiniCard form factor 51 × 30 mm, with 3 x U.FL antenna connector
► For industrial applications and mobile computing
► USB 3.0 interface to application CPU
► Antenna Diversity and/or MIMO for improved RF performance and high data rates
► Supports Windows® 7, Windows® 8, Windows® 10, Linux and Android operating systems
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- ● Supported feature  ○ Dependent on module variant

**Development tools**

**EM DK – Development kit for EM Series**
- Development Board with M.2 connector
- Power supply, antennas, cables and accessories

**MC DK – Development Kit for MC Series**
- Development board with mPCIe connector
- Power supply, antennas, cables and accessories

**QMI software development kits for Host OS**
- Set of APIs for customer application
- Available from SIERRA WIRELESS on request
BC and BX Series

Bluetooth and Wi-Fi Connectivity

**Key benefits**
- Very compact and easy to use
- Easily add Bluetooth and Wi-Fi connectivity
- BX3100 module in CF3 form factor allows easy scalability to other wireless technologies

AirPrime BC and BX Series modules provide short range communication solutions with Bluetooth and Wi-Fi technology. The industrial-grade modules enable OEMs and system integrators to easily add wireless connectivity to their products. The modules are fully certified with embedded protocol stack and easy-to-use UART interfaces.

For RF integration, the modules are available with integrated antennas to simplify RF design or RF pads to connect a custom antenna solution.

**BX310x – Wi-Fi and Bluetooth combined**

Combining Wi-Fi and Bluetooth in a single, compact module, the BX310x easily add wireless connectivity to a variety of devices. Typical applications include home automation and security, tracking and telematics, personal health devices, industrial controls or street lighting.

The BX310x module includes embedded Wi-Fi and Bluetooth and TCP/IP protocol stack software and is easily controlled by AT commands.

**Key features**
- Wi-Fi 802.11 b/g/n at 2.4 GHz
- Bluetooth 4.2 Dual Mode supporting Bluetooth “classic” and Low Energy
- Embedded TCP/IP and Bluetooth stack with simple UART interface
- Ultra-compact module: 11.5 × 9.5 mm (BX3100) / 11.5 × 13.5 mm (BX3105)
- Supports multiple connections to external codecs with UART, I2S, I2C and SPI interfaces
- Secure boot and over-the-air firmware upgrade
- CF3 compatible form factor for easy scalability and flexibility, including cellular technology
- Integrated antenna (BX3105) or RF pad for custom antenna (BX3100)
BC127 – Bluetooth Dual Mode and Audio

The BC127 is a Bluetooth Dual Mode module supporting both Bluetooth “classic” and Low Energy communication. This allows easy connection to a wide variety of other Bluetooth devices, including Smart Phones and Tablet PCs. BC127 also supports high quality audio streaming with analog and digital audio interface. This enables applications like Smart Phone controlled accessories, wireless speakers and headsets, Bluetooth gateways, wireless docks and audio applications.

**Key features:**
- Embedded Bluetooth Dual Mode stack supporting Bluetooth “classic” and Low Energy
- Simple UART interface for command and control
- High quality audio
- Supports multiple interfaces to external audio codecs with I2S, PCM and SPDIF interfaces

BC118 – Bluetooth Low Energy

The BC118 module is an ideal solution for applications that require the most power efficient Bluetooth Low Energy solution to connect to other modules of Smart Phone/Table PC devices. Typical applications include industrial sensors and controls, health and fitness application and Bluetooth Low Energy gateway functions.

**Key features:**
- Embedded Bluetooth Low Energy 4.1 protocol stack
- Simple UART interface for command and control
- Transparent and command mode for I2C and UART
- Can run as standalone or controlled by host
- Secure over-the-air firmware upgrade

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● Supported feature ○ Dependent on module variant
XM and XA Series

GNSS Positioning Modules for Internet of Things

Key benefits

► Ultra-compact form factor
► Unrivaled positioning performance with low power consumption
► Available with integrated antenna or external antenna interface

With SIERRA WIRELESS AirPrime XM and XA Series modules, you can easily add location-based services to your application. The modules are industrial grade and offer high performance GNSS positioning and tracking. With ultra-compact size and low power consumption, they are especially suited for compact and battery powered applications.

The modules support operation with a selection of different GNSS systems, including American NAVSTAR GPS, Russian GLONASS, European Galileo or Chinese Beidou.

Typical applications for these modules include Fleet Management, Navigation, Automotive, Timing Synchronization, Personal Tracking and Search & Rescue.

The modules include an integrated patch antenna or an RF pad to connect an external antenna.

Key features

► Ultra-compact standalone GNSS modules
► Unrivaled positioning performance with low power consumption
► Support multiple GNSS systems including GPS, GLONASS, Galileo or Beidou
► Multi-interface support with UART, SPI, and I2C
► Includes all components including TCXO, RTC crystal, SMPS, SAW filter and LNA
► Antenna Interface:
  ► XM Series: RF pad for external antenna
  ► XA Series: Integrated patch antenna and RF pad with automatic antenna switching
► Compact form factor:
  ► XM Series: 9.0 x 9.5 x 2.1 mm
  ► XA Series: 12.5 x 12.5 x 6.8 mm
XM Series - Standalone GNSS module

The XM Series are ultra-compact GNSS modules. They have an external antenna interface to offer the flexibility to choose the right antenna for your application.

XA Series - GNSS modules with antenna

The XA Series modules feature an integrated patch antenna. This allows an economic solution, saving space and reducing overall development time. In addition, the XA modules also have an interface for external antenna with automatic antenna switching circuit.

<table>
<thead>
<tr>
<th>Product</th>
<th>GNSS Technology</th>
<th>Interface</th>
<th>Antenna</th>
<th>Size mm</th>
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</table>

● Supported feature ○ Dependent on module variant
What you need for IoT

You are ready for the Internet of Things

You recognize how data from the field can deliver new value to your business and your customers. Now you want to use IoT technology for your applications. But where do you begin? What is really needed and which technology requirements are important?

► **Security** is required to protect your communication and data in a world where new cyber threats emerge every day.
► **Scalability** is an important design requirement, so you can deploy your application beyond the prototyping stage to a large scale quickly and easily.
► **Time-to-Market** is a key factor for generating revenue and profit from your application quickly.

IoT Building Blocks

All IoT solutions consist of the same basic building blocks:

► **Applications, Analytics & Systems** that provide the user experience for the connected products
► **Operational Applications** to remotely monitor, maintain and update deployed products
► **Cloud Data Platform** to securely collect, store, organize and analyze the data making it easy to build value added applications
► **Connectivity** allowing the deployed products secure and global network access for data transmission and remote management
► **Connected Device** to collect that data from attached or nearby sensors or other connected elements

Key Technology Considerations

► **Device Selection:** Do you use an out-of-the-box gateway or develop your own hardware using a module solution?
► **Feature Selection:** What features do you need for your device? Do you want a smart device in the field or just a simple communication device?
► **Connectivity:** What kind of connectivity is required? Data volume? Global, regional, local? Additional connectivity options?
► **Cloud Data Platform:** What cloud platform offers the right features for your service? Is it scalable from proto-type to large scale deployments? Is it secure?
► **Operations Management:** What kind of operations management is required for monitoring, maintenance and upgrades?
► **Systems Integration:** What work is needed to integrate all the building blocks into your IoT system securely and reliably?

This is probably the most important question of all. Especially if components from different vendors need to be combined, it can be difficult or time-consuming to get everything working together.

However, GLYN and SIERRA WIRELESS can help you accelerating your IoT journey...
AirVantage® IoT Platform

All-in-One Device-to-Cloud Solution

Build, deploy and manage complete IoT solutions. No other platform can get your IoT service to market faster. AirVantage is much more than an IoT application enablement platform. It is purpose built to provide all of the platform services you need to build unique, global wireless IoT Services.

Application enablement
When building your IoT application systems you need a high performance platform, tools and a development community that will get your service to market faster. Focus on your customer experience and leave your IoT infrastructure to SIERRA WIRELESS. AirVantage powers some of the largest wireless IoT deployments in the industry. It is trusted by startups and fortune 500 companies alike to securely connect their remote machines.

Device management
Getting to market quickly only matters if you can deliver an amazing, always-on user experience to your customers. With AirVantage Device Management console and API you can monitor and manage your SIERRA WIRELESS gateways, modules and even standards-based 3rd party hardware. Reacting to possible problems before they occur helps to keep your services running reliably.

AirVantage FOTA
Do you simply want the security and operational benefits of updating SIERRA WIRELESS modules firmware over the air? Then free cloud-based AirVantage FOTA may be perfect for you.

Connectivity management
Simplify your SIM fleet management with an operator-agnostic platform that offers everything you need for tracking all your SIM cards. AirVantage Connectivity Management is the single place to order, track and manage all your SIERRA WIRELESS SIM cards and subscriptions. In addition, the platform can manage SIM cards from many other global operators as well.

SIERRA WIRELESS connectivity – Smart SIM card
When selecting connectivity for IoT applications, you should focus on solutions designed for IoT. SIERRA WIRELESS Smart SIM offers multi-operator connectivity for best in class coverage.

SIERRA WIRELESS modules and gateways – Ready for AirVantage
SIERRA WIRELESS modules and gateways are pre-integrated with AirVantage and provide the fastest time to market. The devices can connect to AirVantage service “out-of-the-box”. All device parameters can be configured and monitored through the operations management service.

Intelligence to the edge – Application frameworks
With embedded application frameworks Legato, ALEOS-AF and Open AT, you can add extra intelligence to SIERRA WIRELESS modules and gateways, enabling smarter applications.
AirVantage® Device Management and FOTA

Monitor and manage global IoT Solutions

The AirVantage web-based operations console provides an intuitive and customizable user interface to configure, monitor and manage your deployed edge devices without any IT development required. Use it out of the box or use RESTful API to integrate IoT operations capabilities into your existing network operations tools.

Device monitoring & management
AirVantage communicates natively with SIERRA WIRELESS’ pre-integrated hardware. It allows users to access the actual cellular connectivity status and the gateway’s firmware data. Both data is useful information for businesses where continuous connectivity is critical.

Command and control
AirVantage facilitates bi-directional communication over-the-air with the connected hardware. You can send control instructions and actively interact with your machines. This remote diagnosis and operation will help you to provide a much more responsive service and reduce on site visits.

Over-the-Air firmware update
Upgrade SIERRA WIRELESS module and gateway firmware over-the-air (OTA) ensuring you stay up to date with firmware feature and security patches. This can be done for individual devices or in batch campaigns with complete status reporting.

Deployment configuration
Configuration templates and advanced reporting features are available for batch deployment and configuration of newly deployed devices.

Edge application lifecycle management
AirVantage is integrated with SIERRA WIRELESS’ Legato, OpenAT and ALEOS Application Framework. It allows users to update, activate and suspend the edge application over-the-air directly from the operations console or with the APIs.

AirVantage® FOTA edition
Keep your deployments optimized on the mobile network and updated with the latest security patches using AirVantage FOTA edition. This free cloud-based service is available for the life of your deployments and makes it easy to update your module firmware over-the-air anytime. New firmware updates are automatically published inside the portal. Delta-based updates save airtime costs. You can easily update devices in groups or individually and monitor your upgrade campaigns in real time.
AirVantage® Application Enablement

Build and scale your IoT Application Quickly

AirVantage offers a comprehensive set of web service APIs and tools for acquiring data from a massive Series of connected devices.

Web service API
AirVantage provides HTTP-based RESTful APIs for integrating IoT data into your application or service. The API provides bi-directional access allowing you to retrieve data from and send control instructions to your machines. The API is designed for you to build your IoT applications directly against AirVantage as well as integrate data into your enterprise software systems such as CRM, Billing and ERP.

Big data storage & analytics
AirVantage stores all raw time-series data it acquires so you always have access to 100% of your IoT data. Beyond raw data storage, AirVantage generates aggregated data sets for you based on the raw data. These aggregated data sets provide access to summarized information across your fleet and over time. The aggregated data APIs are excellent for driving trend visualization such as average speeds over time or limit visualizations such as maximum and minimum sensor values.

Alert rules engine & notifications
AirVantage provides a sophisticated rules engine that can easily be configured to generate custom alerts upon a variety of data conditions. Access to alerts can be via email for operational alerts or by integrating the notification directly into your existing applications via a webhook.

Device communication & protocol support
AirVantage communicates natively with the pre-integrated SIERRA WIRELESS hardware and the related application frameworks including: Legato, OpenAT and ALEOS Application Framework. It allows AirVantage to retrieve the application data as well as the wireless gateway firmware parameters for populating your data visualization or analytics tools. In general, AirVantage communicates with all devices that support the standard protocols: Lightweight M2M (LWM2M), MQTT and HTTP(S).
SIERRA WIRELESS Smart SIM

Your IoT Passport to the World

IoT deployments are fundamentally different than roaming smartphones, so you’ll need a solution designed for machines, not people. The SIERRA WIRELESS Smart SIM and Connectivity Service deliver multi-operator coverage, superior data service quality and resilience to outages, whether your application is global, regional or local. It is specifically designed for mission critical mobile and fixed IoT use cases. When combined with the world class AirVantage IoT Platform, you can quickly and easily deploy and support global IoT implementations.

Multi-operator connectivity for best in class coverage
SIERRA WIRELESS Smart SIM holds multiple operator agreements on a single card. This allows access to more MNO networks than any single roaming SIM. Your devices benefit from improved up-time and coverage.

Smart network selection for superior data service quality
Access to more networks truly becomes game-changing when you always select the best network at any given time. Standard roaming SIMs select some preferred partner network. The Smart SIM always selects the best available network to ensure best in class coverage. It also tests and monitors the data connection and can change networks quickly if needed.

eSIM/eUICC ready for maximum flexibility and future-proof applications
SIERRA WIRELESS SIM card with eSIM/eUICC unlock maximum flexibility and enable new use cases for your applications. You can easily provision the best operator subscriptions remotely with GSMA eSIM/eUICC. This simplifies global deployments and maximizes long term connectivity, as you can easily select the best subscription even after field delivery. SIERRA WIRELESS uniquely provides modules, SIM cards and a remote provisioning platform that takes the risk out of implementing a multi-vendor eSIM solution. SIERRA WIRELESS eUICC compatible SIM cards are available as standard 2FF, 3FF and 4FF “plug-in” cards or as “solder-down” in MFF2 and WLCSP packages.

Managed by SIERRA WIRELESS AirVantage IoT platform
All of the global SIM & connectivity management capabilities you would expect are built into Sierra Wireless AirVantage IoT Platform. Combined with industry leading device management capabilities this platform is unique in its ability to manage all aspects of your deployment.
AirLink® GL Series

Compact Plug-and-Play Modem

**Key benefits**
► Plug-and-Play 3G and 4G modems
► Easily connects to systems with serial or USB interface
► Compact and robust

Among the world’s smallest ready-to-go cellular modems, the GL Series modems plug into any IoT system and provides 3G or 4G connectivity. Designed to operate in harsh environments, the GL Series modems easily add wireless connectivity to industrial applications.

The modems enable you to securely and easily connect new or existing systems to cellular networks in the world. This enables application like remote monitoring and control of widely deployed assets.

**Key features**
► Multi-Band 3G or 4G modem with serial interface
► Additional USB interface on GL7500 and GL7600
► Power supply 4.75 – 32 V
► Compact device: 67 × 52 × 24 mm

<table>
<thead>
<tr>
<th>Product</th>
<th>Region</th>
<th>Technology</th>
<th>Bands</th>
<th>Fallback</th>
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<tr>
<td>GL8200</td>
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<td>UMTS/HSPA</td>
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<td>GL7500</td>
<td>Americas</td>
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<td>LTE Cat 1</td>
<td>3, 8, 20</td>
<td>2G</td>
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</table>
AirLink® LS300

Small rugged and intelligent 3G Gateway

**Key benefits**
- Best-in-class session persistence to ensure reliable connections
- AirVantage Management Platform for remote over-the-air management and deployment
- Possible to add custom logic with ALEOS Application Framework

The AirLink LS300 gateway has a small footprint for easy installation and a rugged, military spec design (MIL-STD 810) that enables it to withstand extreme temperature changes, humidity, shock and vibration. Certified for hazardous environments (Class I, Div 2), the LS300 is ideal for industrial deployments.

**Key features**
- Multi-Band UMTS/HSPA+ or CDMA/EV-DO gateway
- Multiple interfaces: Ethernet, RS-232, USB
- Extensive set of security features including VPN client, port filtering, MAC address filtering
- Compact, rugged device: 76 × 90 × 25 mm
- Operating temperature: -30 to 70 °C
AirLink® ES450

Enterprise 4G LTE Gateway and Terminal Server

Key benefits
► Improved internet uptime to keep your remote operations online
► Seamless failover for continuous uptime of mission critical applications
► Reduced field visits for network equipment reset and updates
► High speed LTE network, faster than DSL

The AirLink ES450 enterprise gateway delivers mission-critical 4G LTE connectivity when primary landline connections are unavailable. Deployed with an enterprise router, the ES450 supports a best-in-class business continuity strategy by enabling out-of-band management (OOBM) capability to network operations while leveraging the router’s instant failover and firewall features.

In addition, the ES450 can be configured to send its management data via the DSL/cable gateway using reliable static route protocol to reduce wireless network costs.

Out-of-Band management (OOBM)

Using the AirLink ES450’s serial port to connect to the console port of the router, IT administrators can troubleshoot and repair network equipment over wireless wide area networks (WWAN). This terminal server capability allows operation centers to remotely reboot, configure and update a router via the ES450 using Reverse Telnet and SSH protocols. As a result, remote personnel no longer need to manually reset their networking equipment and IT administrators can dramatically reduce the number of field visits.

Key features
► Reliable 4G LTE connectivity
► Maximum Data Rate 100 Mbps Downlink, 50 Mbps Uplink
► Ethernet, USB and RS-232 interface
► Compact casing 142 × 98 × 40 mm
► Extensive set of security features including VPN client
AirLink® LX40

Compact LTE Router for IoT Applications

Key benefits
► Out-of-Box LTE connectivity
► 150 Mbps LTE with optional Wi-Fi and LTE-M/NB-IoT option
► Enables edge processing with ALEOS application framework
► Supports Power-Over Ethernet powered device (PD) mode

The AirLink LX40 is a compact LTE and LTE-M/NB-IoT router for IoT or M2M applications. It offers “out-of-the-box” connectivity that is easy to install and manage. LX40 provides secure, managed LTE networking for applications such as Camera, Security, Point-of-Sale terminals and Smart Lockers. The LX40 is also ideal to connect industrial, data logging and sensor equipment. As part of the AirLink Essential series, the LX40 is designed to meet the environmental and performance requirements for these applications. These are typically installed in fixed indoor or protected outdoor environments. LX40 is also available with option Wi-Fi Dual Band 802.11 b/g/n/ac function. This can be used to connect to local Wi-Fi networks or provide Access Point function for other devices. For Low Power applications, the LX40 can also be powered over the Ethernet interface as a Power-over-Ethernet Powered Device (PD). A variant of LX40 provides global LPWA connectivity in LTE-M and NB-IoT networks. This is ideal for applications that need lower data rates at the benefit of enhanced cellular coverage and global deployments.

Key features
► LTE Cat 4 or LTE-M/NB-IoT connectivity
► Ethernet and Micro-USB interface
► Dual-Band Wi-Fi 802.11 b/g/n/ac option with Access Point or Client mode
► Extensive set of security features including VPN client, port and MAC address filtering
► ALEOS Application Framework enables custom software for Edge Processing
► Compact size: 103 x 79 x 25 mm

Interface options available with extension boards:

<table>
<thead>
<tr>
<th>Product</th>
<th>Region</th>
<th>Technology</th>
<th>Bands</th>
<th>Fallback</th>
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<td>4, 13</td>
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<td>LX40 AT&amp;T</td>
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<td>2G</td>
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</tbody>
</table>

○ Wi-Fi option available for LX40 LTE variants
AirLink® LX60

Dual Ethernet LTE Router

Key benefits
► Out-of-Box LTE connectivity
► Dual Ethernet, RS232, RS485 and multiple I/O to connect wide variety of equipment
► Enables edge processing with ALEOS application framework
► 150 Mbps LTE with optional Wi-Fi and LTE-M/NB-IoT option

The AirLink LX 60 is designed for Commercial and Enterprise LTE network connectivity. With Dual Ethernet, RS232, RS485 and I/Os provide the interfaces to connect to a wide variety of machines and equipment. LX60 offers secure, reliable and managed cellular LTE networking, either a primary or backup network connectivity. Typical applications include Building Automation, digital Signage, Taxis, ATMs, Kiosks and Point-of-Sale Terminals. The AirLink LX60 can be extended with Dual-Band Wi-Fi and 48 channel GNSS. For use in commercial fleet and taxi applications, the LX60 can run on typical vehicle power supplies and conforms to MIL-STD-810G for shock, vibration, thermal shock and humidity. For IoT applications with lower data rates, a variant of LX60 can support LTE-M and NB-IoT network connectivity. This allows global deployments with a single product and enhanced cellular coverage.

Key features
► LTE Cat 4 or LTE-M/NB-IoT connectivity
► Dual Gigabit Ethernet, RS232, RS485 and I/O interface
► Option for Dual Band Wi-Fi and 48 channel GNSS:
  Dual-Band Wi-Fi 802.11 b/g/n/ac supports Access Point or Client mode
► Extensive set of security features including VPN client, port and MAC address filtering
► ALEOS Application Framework enables custom software for Edge Processing
► Compact size: 146 x 100 x 32 mm

Interface options available with extension boards:

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<tr>
<th>Product</th>
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<th>Fallback</th>
<th>WiFi + GNSS</th>
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<td>LX60 ANZ</td>
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<td>LX60 LTE-M</td>
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</tbody>
</table>

Wi-Fi + GNSS option available for LX60 LTE variants
AirLink® GX450

Rugged intelligent mobile 4G Gateways

Key benefits
- Persistent reliable network connectivity for mission-critical information
- Remote management allows easy maintenance
- Programmable with ALEOS Application Framework
- Hardware extension option for extra flexibility

The AirLink GX Series mobile gateways deliver high performance, mission-critical cellular communication and GPS location. Their rugged military spec design (MIL-STD 810) and water-resistant aluminum casing (IP-64 rating) enables it to resist harsh environmental conditions. This makes the GX Series an ideal choice for in-vehicle applications connecting police cars, fire trucks, ambulances, public transit, taxis or any other fleet application.

Key features
- Multi-Band 4G LTE gateway
- Ethernet, RS-232 and USB interface
- Extensive set of security features including VPN client
- Compact, rugged design 143 × 96 × 44 mm
- Temperature range -30 to 75 °C

Interface options available with extension boards:

<table>
<thead>
<tr>
<th>GX400/450 Variant</th>
<th>Hardware Interfaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>GX450 base model</td>
<td>Ethernet, RS-232, USB, 1 digital I/O</td>
</tr>
<tr>
<td>GX450 with Wi-Fi option</td>
<td>Adds 802.11b/g/n Wi-Fi hotspot with simultaneous client mode</td>
</tr>
<tr>
<td>GX400/450 and I/O extension card</td>
<td>Adds 4 digital I/O, 4 analog I/O and second RS-232 serial port</td>
</tr>
<tr>
<td>GX450 and Ethernet extension card</td>
<td>Adds 2 more Ethernet ports for a total of 3</td>
</tr>
</tbody>
</table>
AirLink® RV50X

Rugged 4G Industrial Gateway

Key benefits
► LTE performance at 2G power consumption
► Most rugged AirLink industrial gateway
► Ideal for solar-powered applications
► Remote Management via AirLink Management Service (ALMS)

The AirLink Raven RV50X is the industry’s lowest power LTE gateway. Simple to install and easy to manage, the Raven RV50X industrial gateway is designed to connect critical assets and infrastructure. Ideal for industrial-grade applications in energy, utilities and smart-city infrastructure, the Raven RV50X provides real-time remote connectivity for SCADA, distribution management systems and metering.

With LTE-Advanced coverage on major global networks, the Raven RV50X brings the benefits of broadband connectivity to the most challenging environments, where servicing is not an option and power is often scarce. It is the industry’s only fully operational 4G gateway with 2G power consumption. LTE bandwidth makes it a viable alternative to costly wired and wireless technologies, providing a future-proof solution that protects investment.

Key features
► Multi-Band 4G LTE-Advanced Gateway
► Multiple Interfaces: Ethernet, RS-232, USB
► Extensive set of security features including VPN client, Port filtering, MAC address filtering
► Compact, rugged device: 119 × 34 × 85 mm
► Operating temperature: -30 to +70 °C

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<tr>
<th>Product</th>
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<td>APAC</td>
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<td>●</td>
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</tbody>
</table>

● Supported feature
AirLink® MP70

High Performance Vehicle Router

Key benefits
► High speed connectivity to LTE networks world wide
► Enables working with multiple connected devices (wired and wireless)
► Ideal for security-critical applications
► Remote Management via AirLink Management Service (ALMS)

Vehicle Grade, LTE-Advanced, Gigabit Wi-Fi

The AirLink MP70 is a high performance, LTE-Advanced vehicle router developed specifically for mobile mission critical applications in public safety, transit and field services. Offering high power, long range Gigabit Wi-Fi and Gigabit Ethernet, and up to 300 Mbps downlink speed over LTE-Advanced, the AirLink MP70 unites the fleet with the enterprise network and enables multiple field applications to work simultaneously, further and faster from the vehicle than ever before. The MP70 supports advanced remote visibility and instant insight into the vehicle area network (VAN), field applications and assets, and the mobile workforce. Purpose built for the vehicle, the MP70 delivers superior reliability and uninterrupted operation in harsh mobile environments.

Key features
► LTE-Advanced with Carrier Aggregation, up to 300 Mbps
► State-of-the-art: supports 21 LTE bands worldwide
► 4-Port Gigabit Ethernet and IEEE 802.11ac Gigabit Wi-Fi
► Remote Management and Monitoring with AirLink Management Service (ALMS)
► Sealed rugged casing: IP 64 and exceeds MIL-STD-810G specification for shock, vibration, temperature and humidity
► Precision Geo-location via GNSS and Inertial Navigation System
► Supports up to 5 VPN tunnels for secure cellular communications
► Support for AirLink Vehicle Telemetry to collect OBD-II vehicle telemetry data
AirLink® MG90

High Performance Multi-Network Vehicle Router

Key benefits
► Selects best available network based on user-defined policies
► Seamless network handover and sub-second network switching
► Consolidated security with the AirLink Connection Manager (ACM)
► Remote, real-time network insight and control with the AirLink Mobility Manager (AMM)
► Purpose built for vehicles

The AirLink MG90 is a high performance LTE-Advanced vehicle multi-networking platform, purpose built to provide secure, always-on connectivity for mission critical applications in public safety, transit and field services. With extensible multi-network connectivity, the MG90 offers dual LTE-Advanced with Band 14 option, Dual Concurrent Gigabit Wi-Fi and Gigabit Ethernet, with extensions to Land Mobile Radio (LMR) and satellite systems.

Key features
► Extensible, high performance multi-network connectivity to guarantee secure, uninterrupted communications for mission critical workforces in public safety, transit and field services
► End-to-end, future-proof vehicle networking solution with the capacity to operate both on today’s networks, and migrate to FirstNet Band 14 LTE
► High speed, concurrent connectivity for all devices and mission critical applications in and around the vehicle, with data offload over enterprise Wi-Fi networks
► Industry’s fastest multi-networking capabilities, with millisecond network switching and seamless network handover, providing always-on, assured connectivity to minimize down-time, increase productivity and reduce costs
► Simplified deployment with mobile, multi-network security for multiple high bandwidth in-vehicle applications and assets
► Advanced network management with instant, rich network insight to enable real-time control, troubleshooting and network maintenance, deployable in the cloud or in the enterprise data center
► Purpose built for vehicles to provide superior reliability and uninterrupted operation in harsh vehicle environments
► Proven reliability with over 2 million AirLink gateways deployed
► Industry leading warranty includes support, software updates and advance replacement
SIERRA WIRELESS FX30

Programmable IoT Gateway

Key benefits
► Global 3G/2G connectivity in a single device, scale to LTE with full hardware and software compatibility
► Compact device fits into any machine
► Connect to any machine with built-in interfaces and extension option
► Enables smart embedded applications with Legato
► Protect your investment with device management and cloud platform

Setting a new standard for IoT Embedded Platforms

The FX30 is the most innovative programmable IoT gateway. The FX30 provides cellular connectivity with a programmable Linux-based application framework, industrial grade hardware and IoT card expansion slot that allow unparalleled flexibility. A small and rugged aluminum form factor together with wide environmental specifications enable the FX30 to be embedded in any industrial machine, even in harsh conditions. The Linux-based Legato open source application framework allows for efficient low level C programming, making FX30 the essential link in distributed IoT systems. An IoT Connector opens the FX30 to unlimited hardware extensions, allowing it to be interfaced to any kind of sensors, wired or wireless local networks. The FX30 programmable IoT gateway can be used as a simple USB or serial modem, but its full potential is realized as an embedded cellular platform for IoT applications, setting a new standard as a connectivity building block for IoT applications for any connected machine.

Key features
► Programmable IoT Gateway supporting worldwide 3G or 4G networks
► Dedicated application processor for customer software on Embedded Linux Legato
► Multiple built-in interfaces: USB, 3 I/O, Ethernet (FX30) or Serial RS-232/485 (FX30S)
► IoT Connector slot for unlimited hardware expansion
► Compact and strong aluminium casing: 75 × 60 × 32 mm
► Temperature Range: -30 to 75 °C

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<th>Region</th>
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● Supported feature
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- **Supported feature**
- ○ Dependent on module variant
### Product Overview - Bluetooth & Wi-Fi Modules

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- Supported feature
- Dependent on module variant

### Product Overview - GNSS Modules

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- **Supported feature**
- ○ dependent on product variant / GX450 and MP70 available with Wi-Fi option
Global Support Network

Germany

GLYN GmbH & Co. KG
Head Office

Am Wörtzgarten 8
D-65510 Idstein
www.glyn.de

Tel.: +49 6126 590-222
sales@glyn.de

International

Nettetal
Tel.: +49 2157 124-222
nettetal@glyn.de

Norderstedt
Tel.: +49 40 3204699-0
norderstedt@glyn.de

Pforzheim
Tel.: +49 7231 42441-00
pforzheim@glyn.de

Recklinghausen
Tel.: +49 2361 909027-0
recklinghausen@glyn.de

Unterhaching
Tel.: +49 89 3216 4957-0
unterhaching@glyn.de

Australia
GLYN Ltd.
Tel.: +61 2 8850-0320
www.glyn.com.au
sales@glyn.com.au

Austria & Eastern Europe
GLYN GmbH & Co. KG (Germany)
Tel.: +43 2236 311112-0
www.glyn.at
sales@glyn.at

Benelux
GLYN GmbH & Co. KG (Germany)
Tel.: +31 6 10930497
www.glyn.com
benelux@glyn.com

Denmark
GLYN GmbH & Co. KG (Germany)
Tel.: +45 7020 1633
www.glyn-nordic.dk
sales@glyn-nordic.dk

Hungary
GLYN GmbH & Co. KG (Germany)
Tel.: +36 1 204 9571
www.glyn.hu
sales@glyn.hu

New Zealand
GLYN Ltd.
Tel.: +64 9 415-9150
www.glyn.co.nz
sales@glyn.co.nz

Norway
Link Nordic AS
Tel.: +47 6988-9899
www.linknordic.com
sales@linknordic.com

Poland
GLYN GmbH & Co. KG (Germany)
Tel.: +48 71 7828-758
www.glyn.pl
sales@glyn.pl

Sweden
GLYN GmbH & Co. KG (Germany)
Tel.: +46 203 300-84
www.glyn.se
sales@glyn.se

Switzerland
GLYN GmbH & Co. KG
Branch Office
CH-8133 Esslingen / Egg
Tel.: +41 44 944 55-00
www.glyn.ch
sales@glyn.ch

Austria & Eastern Europe
GLYN GmbH & Co. KG
Tel.: +43 2236 311112-0
www.glyn.at
sales@glyn.at

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We will gladly provide you with further products from our manufacturers on request. Please note that in some countries, specific or restrictive agreements have been reached with various manufacturers.

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