Connecting, Securing, Managing and Analyzing the Digital World
Gemalto Cinterion products are at the heart of the Internet of Things. For more than two decades, Gemalto has been pioneering market-leading M2M and IoT products and services that keep customers on the leading edge of innovation. As a part of the Thales group, we offer all the end-to-end technology bricks needed to drive digital transformation and leverage advanced analytics and artificial intelligence to support customers in decisive moments. Our IoT products and services simplify and speed IoT application design and development, ensure reliable wireless connectivity and provide lifecycle management and steadfast security that allows people to trust in our digital world. Our comprehensive portfolio of solutions, services and software platforms connect assets, secure devices and data, and provide analytics and intelligence to support improved decision making and better business outcomes.

Delivering Reliable, Secure IoT Cellular Connectivity
Cinterion products deliver cellular IoT connectivity with unparalleled performance, reliability and scalability to meet specific application demands.

As a trusted partner to more than 450 global Mobile Network Operators, Cinterion IoT connectivity solutions evolve in sync with wireless networks to provide leading edge capabilities. Each family shares a product footprint allowing seamless evolution from 2G all the way through 5G. Optional embedded system Java and Linux adds processing power and lowers Total Cost of Ownership (TCO) while simplifying design and speeding development.

Cinterion products integrate seamlessly with SIMs and eSIMs ensuring security, design simplicity and streamlined manufacturing logistics. All products come with full type approval (FTA) and are pre-certified by all major network operators which speeds development cycles. Extensive testing capabilities, including GCF/PTCRB pre-tests also help reduce time to market for new solutions.

Managing the Lifecycle of IoT Devices
Cinterion Module Services are built into the core of Cinterion Modules and Terminals to optimize and secure device deployments throughout their long lifespan. This unique global IoT device lifecycle management solution simplifies the IoT journey by ensuring:
- Reliable and continuously optimized device connectivity
- Remote, instant, widespread fleet software maintenance
- Device scalability and forward evolution
- Trust in devices and secure data-to-cloud transfers

Supporting Design, Development and IoT Innovation
Gemalto customers are supported with expert design consulting, local market engineering assistance and a skilled support line to ensure IoT project success. A suite of development tools along with our online Developer Community simplifies IoT innovation helping customers transform ideas into prototypes in just hours.

Ensuring Trust in the IoT
As the global leader in digital security, Gemalto offers unprecedented IoT security expertise and market leading solutions and software that enable trust in the IoT. Guided by a security by design principle, we help customers build security into the roots of connected products and ecosystems to protect devices, data integrity, data confidentiality and to ensure IoT infrastructures are defended against cyberattacks.
Cinterion Automotive IoT Solutions: Custom Connectivity for New Mobility Innovation

Vehicles of the future need a variety of technologies to stay seamlessly and securely connected. These include 5G and 4G cellular solutions that securely connect vehicles to the cloud, infotainment and online services. In today’s automotive market, connectivity is driving a massive paradigm shift in which traditional automotive features are taking a backseat to the end-to-end mobility experience. Buying a car is becoming less about style and performance, and more about selecting a package of connected car services and software that extends far beyond leather trim and heated seats.

New mobility services are changing how people perceive and engage with their vehicles, enhancing the transportation experience, improving vehicle and road safety and influencing how vehicles are used and shared. Inherent in this transformation is the need for reliable 24-7 mobile connectivity as well as the ability to securely manage and share data. Gemalto Cinterion Automotive IoT Modules offer the solution and a reliable path to the future.

The Road Ahead Relies on Seamless Connectivity

Vehicles need a variety of technologies to stay seamlessly and securely connected. These range from 5G and 4G cellular solutions that securely connect vehicles to the cloud and online services, as well as 3G and Low Power Wide Area (LPWAN) solutions including NB-IoT and LTE-M that connect intelligent road systems, smart city applications and other vehicles. The ability to deliver and manage reliable connectivity and ensure quality of service is crucial to success and Gemalto delivers.

Cinterion Automotive IoT Modules offer automotive OEMs and Tier 1 suppliers an advanced embedded connectivity solution custom designed to enrich “on the road” experiences for drivers and passengers alike. Leveraging more than two decades of expertise delivering automotive and telematics solutions, Gemalto’s feature rich Automotive Modules offer high-speed, low latency connectivity and a suite of advanced services and features including:

- Secure vehicle-to-cloud connections
- Mobile Wi-Fi and onboard embedded gateways
- High bandwidth computing
- Simultaneous voice and data services
- Internet radio
- Web services
- Advanced navigation systems
- Advanced temperature management
- Embedded processing
- Prepared for Automotive grade eUICC
- Gemalto security
- Seamless integration with services including Life Cycle Management, Trusted Key Management, Connectivity Smart Saver

Engineered for Long Life in Extreme Conditions

Cinterion Automotive IoT Modules provide secure mobile connectivity for all global wireless networks and they are engineered to withstand rugged environments common to life on the road including extreme temperatures, excessive vibration and severe weather and humidity. They offer full support for automotive capabilities and including eCall and GLONASS and they are manufactured according to VDA 6.2 and TS16949 quality standards meeting stringent automotive specifications and quality processes including APQP, PPAP, PCN and 8D.
Cinterion Industrial IoT Modules: Efficiency Meets Longevity

Cinterion Industrial IoT Modules deliver highly efficient network connectivity, sophisticated power management and long product lifecycles. Offered in a range of cellular standards from 2G, 3G and 4G to the latest Machine Type Communication LPWAN (Low Power Wide Area Network) standards including LTE Cat. M and LTE NB-IoT, they are ideal for remote applications that require efficiency and extended battery life.

<table>
<thead>
<tr>
<th>Product</th>
<th>BGS1/BGS2</th>
<th>ELS31</th>
<th>ELS61</th>
<th>ELS81</th>
<th>EMS31</th>
<th>ENS22</th>
<th>EXS62/EXS82</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio technology 2G - 4G</td>
<td>GPRS</td>
<td>LTE Cat 1</td>
<td>LTE Cat 1</td>
<td>LTE Cat 4</td>
<td>LTE Cat M</td>
<td>LTE Cat NB1/NB2 LTE Cat M1 2G *)</td>
<td></td>
</tr>
<tr>
<td>Frequency bands</td>
<td>BGS1/BGS2-E 2G Dual Band BGS2-W 2G Quad Band</td>
<td>ELS31-W-VA LTE (1,4,13) ELS31-JK (1,18) ELS31-J (1,19)</td>
<td>ELS61-E LTE [1,3,8,20,28] 3G [1,8] 2G Dual Band ELS81-US/-USA LTE (2,4,5,12) 3G (2,4,5)</td>
<td>ELS81-E LTE [1,3,8,20,28] 3G [1,8] 2G Dual Band ELS81-US/-USA LTE (2,4,5,12) 3G (2,4,5)</td>
<td>EMS31-W-US LTE (4,13) / (2,4,12) EMS31-X LTE (2,4,12,13) EMS31-J LTE (1,8,18,19) EMS31-W LTE Multiband</td>
<td>ENS22-E LTE (3,5,8,20,28) ENS22-C LTE (3,5,8,20,28)</td>
<td>LTE [1, 2, 3, 4, 5, 8, 12(17), 13, 14, 18, 19, 20, 25, 26, 27, 28, 66, 71, 85] 2G Quad Band *)</td>
</tr>
<tr>
<td>max. Data Rate (DL / UL)</td>
<td>Multislot Class 10 85.6 / 42.8 kbps</td>
<td>Cat 1 10.3 / 5.2 Mbps</td>
<td>Cat 1 10.3 / 5.2 Mbps</td>
<td>Cat 4 150 / 50 Mbps</td>
<td>Cat M 300 / 375 kbps</td>
<td>Cat NB 1 27 / 63 kbps</td>
<td>Cat M1 300 kbps/1.1 Mbps Cat:NB1 27/33kcs Cat:NB2 124kps/158kps 2G 85.6 /42.8kbps *)</td>
</tr>
<tr>
<td>Dimensions / Mounting</td>
<td>27.6 x 18.8 x 2.7mm, LGA</td>
<td>27.6 x 18.8 x 2.1mm, LGA</td>
<td>27.6 x 25.4 x 2.2mm, LGA</td>
<td>27.6 x 25.4 x 2.2mm, LGA</td>
<td>27.6 x 18.8 x 2.1mm, LGA</td>
<td>27.6 x 18.8 x 2.7mm, LGA</td>
<td>27.6 x 18.8 x 2.1mm, LGA</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-40°C to +85°C</td>
<td>-40°C to +85°C</td>
<td>-40°C to +85°C</td>
<td>-40°C to +85°C</td>
<td>-40°C to +85°C</td>
<td>-40°C to +85°C</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Features</td>
<td>FOTA</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Embedded Processing</td>
<td>Java</td>
<td></td>
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<tr>
<td>Embedded IP services</td>
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<td></td>
</tr>
<tr>
<td>Voice support</td>
<td></td>
<td>VoLTE (-VA only)</td>
<td>VoLTE [USA only] CSFB (-E only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Location based services</td>
<td>On demand cell location service</td>
<td>On demand cell location service</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Advanced Temperature Management</td>
<td></td>
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</tr>
<tr>
<td>RLS-Monitoring (Jamming)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interfaces</td>
<td>USB</td>
<td>USB 2.0</td>
<td>USB 2.0</td>
<td>USB 2.0</td>
<td>USB 2.0</td>
<td>USB 2.0</td>
<td>USB 2.0</td>
</tr>
<tr>
<td>Audio</td>
<td>Digital (PCM), Analog</td>
<td>Digital (I²S, PCM)[-VA only]</td>
<td>Digital (I²S, PCM)[-VA only]</td>
<td></td>
<td></td>
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<tr>
<td>ADC/DAC</td>
<td></td>
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<tr>
<td>Multiple GPIOs</td>
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<tr>
<td>Ethernet/WiFi</td>
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</tbody>
</table>
Cinterion Industrial Plus IoT Modules: High Performance Goes Global

Cinterion Industrial Plus IoT Modules leverage the latest wireless technologies to deliver IoT optimized data speeds, advanced features and Multi Band capabilities ensuring seamless worldwide coverage. Offered in local and global variants including 2G, 3G, 4G LTE, LTE Advanced and LTE Advanced Pro, they are designed for sophisticated IoT applications that require high speed and performance plus customized features and capabilities including voice and data, SIM Access Profile and more.

<table>
<thead>
<tr>
<th>Product</th>
<th>PLS8</th>
<th>PLS62-W</th>
<th>PLAS9</th>
<th>PLPS9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Radio technology 2G - 4G</strong></td>
<td>LTE Cat 3</td>
<td>LTE Cat 1</td>
<td>LTE Adv. Cat 6</td>
<td>LTE Adv. Pro Cat 16</td>
</tr>
<tr>
<td><strong>Regional focus</strong></td>
<td>PLS8-E EMEA</td>
<td>PLS62-W</td>
<td>PLAS9-X NORAM</td>
<td>PLPS9-X NORAM</td>
</tr>
<tr>
<td></td>
<td>PLS8-US NORAM</td>
<td>PLAS9-W EMEA/APAC</td>
<td>PLPS9-W EMEA/APAC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PLS8-J Japan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PLS8-J LTE [1,3,19] 3G [1,19]</td>
<td></td>
<td>PLPS9-W LTE [1, 3, 5, 7, 8, 18, 20, 26, 28, 32, 34, 38, 39, 40, 41] 3G [1, 3, 5, 4, 8, 19] 2G Dual Band</td>
<td></td>
</tr>
<tr>
<td><strong>max. Data Rate (DL / UL)</strong></td>
<td>Cat 3 100 / 50 Mbps</td>
<td>Cat 1 10.3 / 5.2 Mbps</td>
<td>Cat 6 300 / 50 Mbps</td>
<td>Cat 16 1 Gbps / 150 Mbps</td>
</tr>
<tr>
<td>Dimensions / Mounting</td>
<td>33 x 29 x 2.3mm, LGA</td>
<td>33 x 29 x 2.4mm, LGA</td>
<td>40 x 32 x 2.8mm, LGA</td>
<td>48 x 36 x 3mm, LGA</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-40°C to +85°C</td>
<td>-40°C to +85°C</td>
<td>-40°C to +95°C</td>
<td>-40°C to +95°C</td>
</tr>
</tbody>
</table>

**Features**

- FOTA
- Embedded Processing: Java, Embedded Linux
- Embedded IP services
- Voice support: VoLTE, CSFB*
- Location based services: GNSS, On demand cell location service
- Advanced Temperature Management
- RLS-Monitoring (Jamming)

**Interfaces**

- USB: USB 2.0, USB 3.0
- Serial interfaces: UART, UART, I²C, SPI
- Audio: Digital, I²S, PCM
- ADC/DAC
- Multiple GPIOs
- Ethernet/WiFi: optional, via PCIe

*) PLS8-US only
Cinterion IoT Terminals: Plug and Play Simplicity and Speed

Cinterion IoT Terminals are designed to jumpstart new IoT solutions and deliver easy, plug-and-play IoT connectivity to new developers and smaller-scale implementations. With virtually zero design time, no added approvals and minimal integration effort, Cinterion Terminals work out-of-the-box to quickly connect industrial applications. All Terminals come with a wide variety of industrial interfaces and easy mounting schemes to speed implementation timelines.

<table>
<thead>
<tr>
<th>Product</th>
<th>BG52T</th>
<th>EXS82T-W</th>
<th>ELS31T/ELS61T-LAN</th>
<th>PLS62T-USB/-LAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio technology 2G - 4G</td>
<td>2G</td>
<td>LTE Cat NB1/NB2 LTE Cat M1 2G</td>
<td>LTE Cat 1</td>
<td>LTE Cat 1</td>
</tr>
<tr>
<td>Regional focus</td>
<td>EMEA</td>
<td>APAC</td>
<td>Global</td>
<td>Global</td>
</tr>
<tr>
<td>max. Data Rate (DL / UL)</td>
<td>Multislot Class 10 85.6 /42.8 kbps</td>
<td>Cat.M1 300 kbps/1.1 Mbps Cat.NB1 27/65kbps Cat.NB2 124kbps/158kbps 2G 85.6 /42.8kbps</td>
<td>Cat 1 10.3 / 5.2 Mbps</td>
<td>Cat 1 10.3 / 5.2 Mbps</td>
</tr>
<tr>
<td>Dimensions (excl. connectors)</td>
<td>80 x 55 x 23mm</td>
<td>80 x 55 x 23mm</td>
<td>115 x 86 x 26mm</td>
<td>115 x 86 x 26mm</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-30°C to +75°C</td>
<td>-30°C to +75°C</td>
<td>-30°C to +65°C</td>
<td>-30°C to +65°C</td>
</tr>
</tbody>
</table>

### Features

- **FOTA**
  - BG52T
  - EXS82T-W
  - ELS61T-LAN
  - PLS62T-USB/LAN

- **Embedded Processing**
  - BG52T
  - EXS82T-W
  - ELS61T-LAN
  - PLS62T-USB/LAN

- **Embedded IP services**
  - BG52T
  - EXS82T-W
  - ELS61T-LAN
  - PLS62T-USB/LAN

- **Voice support**
  - BG52T
  - EXS82T-W
  - ELS61T-LAN
  - PLS62T-USB/LAN

- **Location based services**
  - BG52T
  - EXS82T-W
  - ELS61T-LAN
  - PLS62T-USB/LAN

- **Advanced Temperature Management**
  - BG52T
  - EXS82T-W
  - ELS61T-LAN
  - PLS62T-USB/LAN

- **RLS-Monitoring (Jamming)**
  - BG52T
  - EXS82T-W
  - ELS61T-LAN
  - PLS62T-USB/LAN

### Interfaces

- **USB**
  - BG52T
  - EXS82T-W
  - PLS62T-USB/LAN
  - USB 2.0

- **Serial interfaces**
  - BG52T
  - EXS82T-W
  - ELS61T-LAN
  - PLS62T-USB/LAN
  - RS232 or RS485

- **Audio**
  - BG52T
  - EXS82T-W
  - ELS61T-LAN
  - PLS62T-USB/LAN

- **ADC/DAC**
  - BG52T
  - EXS82T-W
  - ELS61T-LAN
  - PLS62T-USB/LAN

- **Multiple GPIOs**
  - BG52T
  - EXS82T-W
  - ELS61T-LAN
  - PLS62T-USB/LAN

- **Ethernet**
  - BG52T
  - EXS82T-W
  - ELS61T-LAN
  - PLS62T-USB/LAN
  - (●)
Development Tools and Support

Whether you’re an experienced wireless developer or just dabbling in IoT for the first time, Gemalto’s Cinterion Development Tools and online Developer Community provides everything you need to quickly transform concepts into prototypes and prototypes into market-ready integrated solutions. Our unique one-stop-shop approach to IoT streamlines the development process and reduces complexity, significantly shortening project timelines.

The Cinterion Concept Board: An IoT Innovation Incubator
The Cinterion Concept Board is a user-friendly extendable development kit leveraging Java to allow quick IoT application design and prototyping, as well as simplified remote device monitoring. The all-in-one kit provides a simple environment with everything needed to take an idea and transform it into a market-ready IoT application in just hours versus weeks or months. This includes Arduino-style connectors, cellular connectivity enabled by a powerful Cinterion IoT Module, and a SIM card holder.

The Cinterion Connect Shield: IoT Prototyping Made Easy with Arduino
The Cinterion Connect Shield is a simple maker board that combines flexible Arduino open source platform with Gemalto’s reliable and highly efficient cellular connectivity. Easily mounted to an existing Arduino stack, it gives inventors of all levels the opportunity to play in the global cellular ecosystem and experience the benefits, diversity and scalability first hand.

The Cinterion LGA DevKit: One Socket Simplicity
The Cinterion® LGA DevKit is an easy-to-use, flexible prototyping board specifically for Cinterion Industrial and Industrial Plus LGA modules. It leverages our unique LGA socket, eliminating the need for multiple sockets and heritage evaluation boards. The kit works out of the box and includes two dedicated base PCBs, one each for Cinterion Industrial and Industrial Plus modules, fixing frames and everything needed to start inventing immediately. The kit supports current and future LGA footprints making evaluation modules unnecessary. The simplified concept comes with sophisticated options such as minimized hardware impacts, great module compatibility, and deep hardware level analysis.

The Gemalto Developer Community: The Definitive Source of IoT Expertise
The Gemalto Developer community is your definitive online source for IoT development support and inspiration and an ideal place to begin a DIY project, clear a development roadblock, sell your success or help other developers. It offers a solid knowledge base for beginners and an interactive forum where you can get advice and share your expertise. You can also visit a library of current IoT applications and use cases for project inspiration and even download sample code and re-usable drivers to expedite your project timeline. Register for free today and get your project started! https://developer.gemalto.com/
Gemalto Services and Platforms to Support Your IoT Solutions

Leveraging decades of leadership in M2M, IoT and digital security, Gemalto, a Thales company, provides customers with industry unique expertise and a suite of complementary solutions, services and platforms to ensure that connected assets remain trusted, that connectivity is reliable, and that fleets of devices can scale seamlessly as business grows.

- **On Demand Connectivity**: Securely manages the lifecycle of cellular subscriptions and provides instant connectivity on the first use of a device to simplify deployment and logistics

- **Embedded SIM (also called eSIM or eUICC)**: A secure element designed to remotely manage multiple mobile network operator subscriptions, providing flexibility for OEMs

- **IoT Connectivity Smart Saver**: Monitors IoT device connectivity in real time helping to right-size cellular data plans and save on your connectivity bill

- **Cinterion Modules Services**: Provides remote device lifecycle management including firmware updates, connectivity monitoring and easy device on-boarding to IoT cloud platforms

- **Trusted Key Manager**: Advanced security solution to expertly manage secure key provisioning, remote authentication and security lifecycle management

- **Customer Support Packages**: Customized consulting, testing and training services to support any and all IoT development needs from approvals and security consulting to RF testing, audio measurements and more