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Gemalto Cinterion® IoT Products

Portfolio Overview

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Delivering Reliable, Secure IoT Cellular Connectivity

Gemalto products are at the heart the Internet of Things. For more than two decades, Gemalto has been pioneering market-leading M2M and IoT products that keep customers on the leading edge of innovation. We provide the technology bricks needed to simplify and speed IoT design and development, while ensuring reliable connectivity and steadfast security for the long life of IoT technology. Our comprehensive portfolio of solutions, services and software platforms allow customers to Connect, Secure and Monetize our swiftly expanding connected world.

Delivering Reliable, Secure IoT Cellular Connectivity

As a trusted partner to more than 450 global Mobile Network Operators, our Cinterion IoT Modules, Terminals and custom embedded connectivity solutions evolve in sync with wireless networks to provide leading edge capabilities. Offered in four product families - Automotive, Industrial Plus, Industrial and Terminals - and covering the full spectrum of cellular standards, Cinterion products deliver unparalleled performance, reliabil-ityand scalability. A shared product footprint allows seamless evolution and updates for the lifespan of IoT devices. Optional embedded system variants leveraging Java and Linux simplify and speed development while adding processing power and lowering Total Cost of Ownership (TCO).

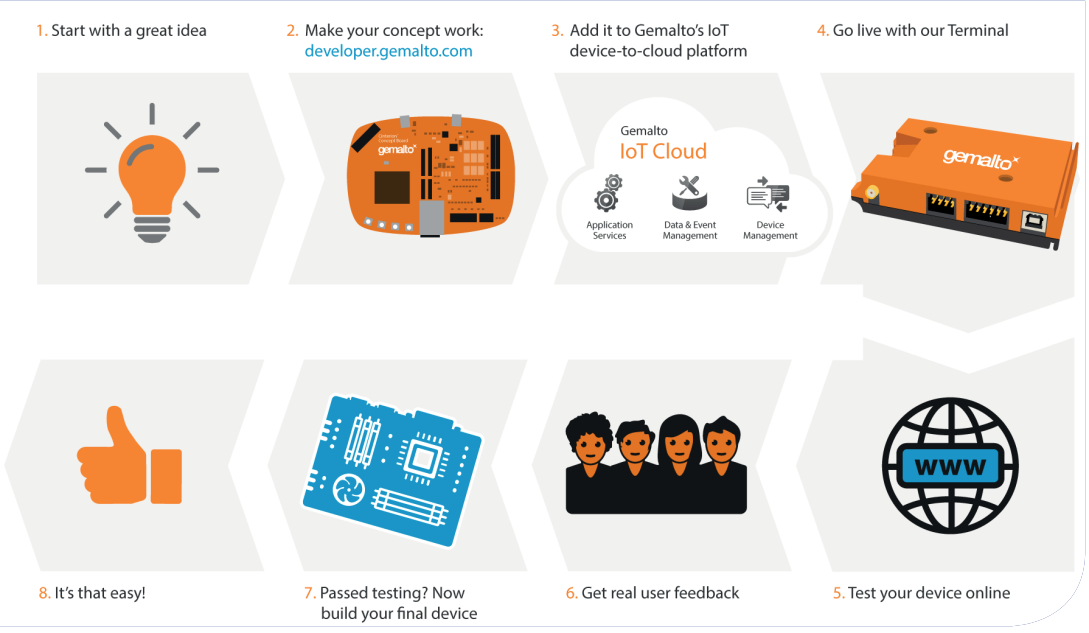
The Gemalto Advantage: End-to-End Support for the IoT Journey

Cinterion products integrate seamlessly with MIMs, SIMs and embedded UICCs to ensure security and to simplify IoT solution design, development and manufacturing logistics. In addition, they come with full type approval (FTA) and they are pre-certified by all global network operators to speed and streamline development cycles. Extensive testing capabilities, including GCF/PTCRB pre-tests, also speed time to market for new solutions.

Supported by expert design consulting, local market engineering assistance and a skilled 24/7 help desk, Gemalto customers receive all that is needed to ensure IoT project success. An all-in-one development kit and online Developer Community helps customers transform ideas into prototypes in just hours. As the global leader in digital security, Gemalto offers unprecedented IoT security expertise along with market leading solutions that enable trust in the IoT. In addition, innovative Software as a Service (SaaS) platforms ensure Quality of Service, up-to-the-moment cost efficient connectivity packages and product lifecycle management that protects IoT technology investments for the long haul.

The Developer Journey with Gemalto

We've got you covered from idea/POC to lifecycle management of your solution at scale!



Cinterion Automotive IoT Modules: 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.

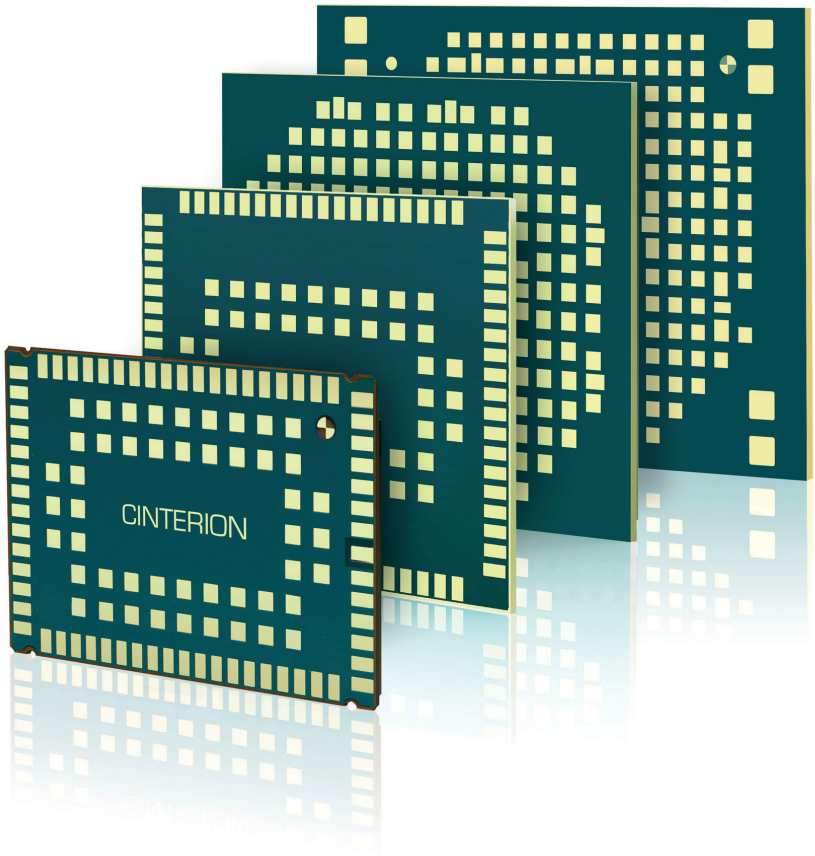
New mobility services are changing how people perceive and engage with their vehicles, enhancing the transportation experience, improving vehicle and road safety and influencing how vehicles are used and shared. Inherent in this transformation is the need for reliable 24-7 mobile connectivity as well 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 such including NB-IoT, LTE M, Bluetooth and LoRa that connect vehicles to smartphones, 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 eMIM
- Gemalto security
- Seamless integration with optimal services including
  Life Cycle Management
  Trusted Key Management
  Connectivity Smart Saver

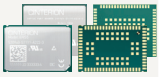


Engineered for Long Life in Extreme Conditions

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.

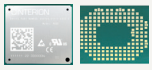
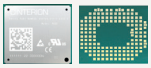
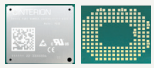
Cinterion Industrial IoT Modules: Efficiency Meets Longevity

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 and 3G, 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.

Product	BGS1/BGS2	BGS5	EHS5/6/8	ELS31	ELS61	ELS81	EMS31	ENS22
								
Radio technology 2G - 4G	**GPRS**	**GPRS**	**HSPA**	**LTE Cat 1**	**LTE Cat 1**	**LTE Cat 4**	**LTE Cat M**	**LTE Cat NB1**
Regional focus	BGS1/BGS2-E **EMEA/APAC** BGS2-W **Global**	**Global**	EHS6/8 **Global** EHS5-E **EMEA/APAC** EHS5-US **NORAM**	ELS31-V **NORAM** ELS31-VA **NORAM** ELS31-JK **(Japan KDDI)** ELS31-J **(NTT Docomo)**	ELS61-E **EMEA/APAC** ELS61-US/-USA **NORAM** ELS61-AUS **Australia**	ELS81-E **EMEA/APAC** ELS81-US **NORAM**	EMS31-V/-US **NORAM** EMS31-X **NORAM** EMS31-J **Japan** EMS31-W **Global, incl. Japan & Australia**	ENS22-E **EMEA/APAC** ENS22-C **China**
Frequency bands	BGS1/BGS2-E **2G Dual Band** BGS2-W **2G Quad Band**	**2G Quad Band**	EHS6/8 **3G (1,2,5,6,8) 2G Quad Band** EHS5-E **3G (1,8) 2G Dual Band** EHS5-US **3G (2,5) 2G Dual Band**	ELS31-V/-VA **LTE (4,13)** ELS31-JK **(1,18)** ELS31-J **(1,19)**	ELS61-E **LTE (1,3,8,20,28) 3G (1,8) 2G Dual Band** ELS61-US/-USA **LTE (2,4,5,12) 3G (2,4,5)** ELS61-AUS **LTE (3,5,8,28) 3G (1,5,8)**	ELS81-E **LTE (1,3,8,20,28) 3G (1,8) 2G Dual Band** ELS81-US **LTE (2,4,5,12) 3G (2,4,5)**	EMS31-V/-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**	ENS22-E **LTE (3,5,8,20,28)** ENS22-C **LTE (3,5,8,20,28)**
max. Data Rate DL / UL	Multislot Class 10 85.6 /42.8 kbps (DL / UL)	Multislot Class 12 85.6 / 85.6 kbps (DL / UL)	7.2 / 5.7 Mbps (DL / UL)	Cat 1 10.3 / 5.2 Mbps (DL / UL)	Cat 1 10.3 / 5.2 Mbps (DL / UL)	Cat 4 150 / 50 Mbps (DL / UL)	Cat M 300 / 375 kbps (DL / UL)	Cat NB 1 27 / 63 kbps (DL / UL)
Dimensions / Mounting	27.6 x 18.8 x 2.7mm, LGA	27.6 x 18.8 x 2.7mm, LGA	27.6 x 18.8 / 25.4 x 2.3mm, LGA	27.6 x 18.8 x 2.1mm, LGA	27.6 x 25.4 x 2.2mm, LGA	27.6 x 25.4 x 2.2mm, LGA	27.6 x 18.8 x 2.1mm, LGA	27.6 x 18.8 x 2.7mm, LGA
Temperature range	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Features								
FOTA		•	•	•	•	•	•	•
Embedded Processing		Java	Java		Java	Java		
Embedded IP services	•	•	•	•	•	•	•	•
Voice support	•	•	•	VoLTE (-VA only)	VoLTE (-USA only) CSFB (-E only)			
Location based services			GPS (EHS8 only)		On demand cell location service	On demand cell location service		
Advanced Temperature Management	•	•	•	•	•	•	•	•
RLS-Monitoring (Jamming Detection)	•	•	•	•	•	•	•	
Interfaces								
USB		USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0		
Serial interfaces	UART, I²C	UART, I²C, SPI	UART, I²C, SPI	UART, I²C, SPI	UART, I²C, SPI	UART, I²C, SPI	2 x UART	2 x UART
Audio	Digital (PCM), Analog	Digital (I²S, PCM), Analog	Digital (I²S, PCM), Analog	Digital (I²S, PCM) (-VA only)	Digital (I²S, PCM) (-VA only)			
ADC / DAC	•	•	•	•	•	•	•	
Multiple GPIOs	•	•	•	•	•	•	•	•
Ethernet/WiFi								

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, CDMA, LTE and LTE Advanced, 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.

Product	PDS5/6	PLS8	PLS62-W	PLAS9
				
Radio technology 2G - 4G	**HSPA**	**LTE Cat 3**	**LTE Cat 1**	**LTE Adv. Cat 6**
Regional focus	PDS5-E **EMEA/APAC** PDS5-US **NORAM** PDS6 **Global** PDS6-J **Japan**	PLS8-E **EMEA** PLS8-US **NORAM** PLS8-J **Japan**	**Global**	PLAS9-X **NORAM** PLAS9-W **EMEA/APAC**
Frequency bands	PDS5-E **3G (8,1)** **2G Dual Band** PDS5-US **3G (5,2)** **2G Dual Band** PDS6 **3G (1,2,5,6,8)** **2G Quad Band** PDS6-J **3G (1,5,6,8,19)**	PLS8-E **LTE (20,8,3,1,7)** **3G (8,3,1)** **2G Dual Band** PLS8-US **LTE (17,5,4,2)** **3G (5,4,2)** **2G Quad Band** PLS8-J **LTE (1,3,19)** **3G (1,19)**	**LTE** **(1, 2, 3, 4, 5, 7, 8, 12 (17), 18, 19, 20, 28)** **3G** **(1, 2, 4, 5, 8, 9, 19)** **2G** **Quad Band**	PLAS9-X **LTE (2, 4, 5, 12/17, 13, 29)** **3G (2,4,5)** **2G Quad Band** PLAS9-W **LTE (1, 3, 5, 7, 8, 18, 20, 28)** **3G (1, 3, 5, 6, 8)** **2G Dual Band** **Quad-Band LTE-Advanced TDD:** **1900 MHz (B39), 2300 MHz (B40),** **2500 MHz (B41), 2600 MHz (B38)**
max. Data Rate DL / UL	7.2 / 5.7 Mbps (DL / UL)	Cat 3 100 / 50 Mbps (DL / UL)	Cat 1 10.3 / 5.2 Mbps (DL / UL)	Cat 6 300 / 50 Mbps (DL / UL)
Dimensions / Mounting	33 x 29 x 2.4mm, LGA	33 x 29 x 2.3mm, LGA	33 x 29 x 2.4mm, LGA	40 x 32 x 2.8mm, LGA
Temperature range	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +95°C
Features				
FOTA	•		•	•
Embedded Processing	Java		Java	
Embedded IP services	•	•	•	
Voice support	•	VoLTE, CSFB *		
Location based services		GNSS	On demand cell location service	On demand cell location service
Advanced Temperature Management	•	•	•	•
RLS-Monitoring (Jamming Detection)	•	•	•	•
Interfaces				
USB	USB 2.0	USB 2.0	USB 2.0	USB 3.0
Serial interfaces	UART, I²C, SPI	UART	UART, I²C, SPI	
Audio	Digital (PCM), Analog (PDS6 only)	Digital		
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 small-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 wide variety of industrial interfaces and easy mounting schemes to speed implementation time-lines.

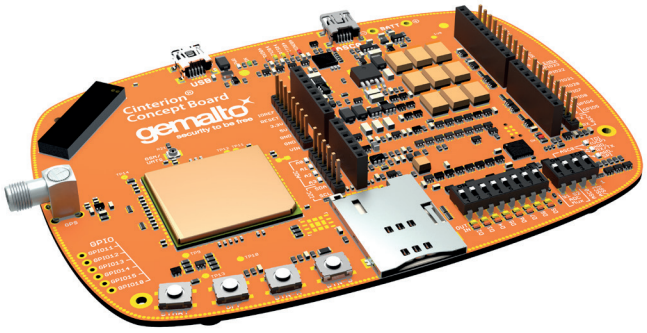
Product	BGS2T	BGS5T	EHS5T	EHS6T-USB/-LAN	ELS31T/ELS61T-LAN	PLS62T-USB/-LAN
Radio technology 2G - 4G	**GPRS**	**GPRS**	**HSPA**	**HSPA**	**LTE Cat 1**	**LTE Cat 1**
Regional focus	**EMEA APAC**	**EMEA APAC**	**EMEA APAC**	**Global**	**EMEA USA Australia Japan**	**Global**
Frequency bands	**2G Quad Band**	**2G Quad Band**	**3G (1,8) 2G Dual Band**	**3G (1,2,5,6,8) 2G Quad Band**	ELS61T-E **LTE (1,3,8,20,28) 3G (1,8) 2G Dual Band** ELS61T-US **LTE (2,4,5,12) 3G (2,4)** ELS61T-AUS **LTE (3,5,8,28) 3G (1,5,8)** ELS31T-V **LTE (4,13)** ELS31T-J **LTE (1,18,19)**	**LTE (1, 2, 3, 4, 5, 7, 8, 12, (17), 18, 19, 20, 28) 3G (1, 2, 4, 5, 8, 9, 19) 2G Quad Band**
max. Data Rate DL / UL	Multislot Class 10 85.6 /42.8 kbps (DL / UL)	Multislot Class 12 85.6 /42.8 kbps (DL / UL)	7.2 / 5.7 Mbps (DL / UL)	7.2 / 5.7 Mbps (DL / UL)	Cat 1 10.3 / 5.2 Mbps (DL / UL)	Cat 1 10.3 / 5.2 Mbps (DL / UL)
Dimensions/ Mounting	80 x 55 x 23mm ex. connector	115 x 86 x 26mm	115 x 86 x 26mm	115 x 86 x 26mm	115 x 86 x 26mm	115 x 86 x 26mm
Temperature range	-30°C to +75°C	-30°C to +65°C	-30°C to +65°C	-30°C to +65°C	-30°C to +65°C	-30°C to +65°C
Features						
FOTA		•	•	•	•	•
Embedded Processing		Java	Java	Java	Java (ELS61T only)	Java
Embedded IP services	•	•	•	•	•	•
Voice support						
Location based services		On-Demand Geo Location Service	On-Demand Geo Location Service	On-Demand Geo Location Service	On-Demand Geo Location Service	On-Demand Geo Location Service
Advanced Temperature Management	•	•	•	•	•	•
RLS-Monitoring (Jamming Detection)		•	•	•	•	•
Interfaces						
USB		USB 2.0	USB 2.0	USB 2.0 (-USB variant only)		USB 2.0
Serial interfaces	RS232 or RS485	RS232	RS485	RS232	RS232	RS232
Audio						
ADC/DAC			•	•	•	•
Multiple GPIOs		•	•	•	•	•
Ethernet				• (-LAN variant only)	•	

Gemalto Cinterion 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.

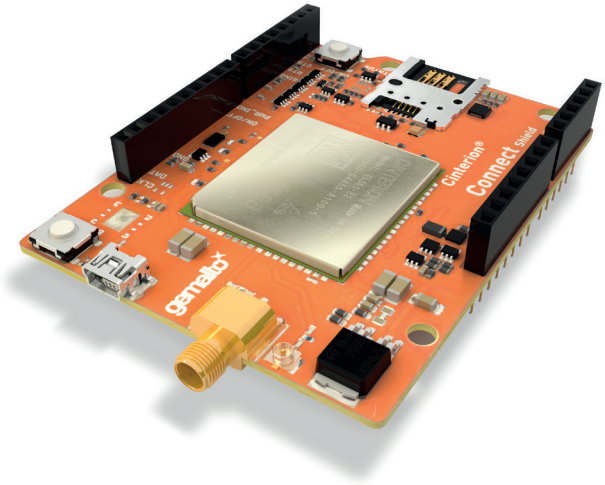
The Cinterion Concept Board: An IoT Innovation Incubator

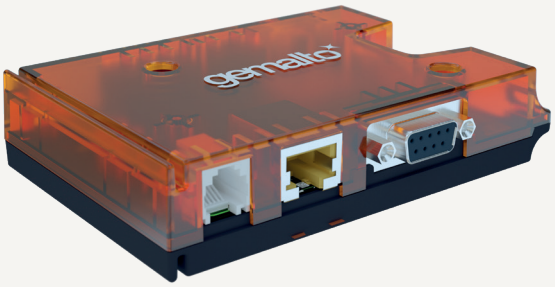
The Cinterion Concept Board is a user-friendly extendable development kit leveraging Java and IoT Modules Services platform to allow quick IoT application design and prototyping, as well as simplified remote device monitoring. The all in one kit provides a simple environment with everything needed to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



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 or integrated with the Cinterion Concept Board, 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 LTE Cat 1 Terminal with 2G / 3G Fallback for Seamless Global Connectivity Cinterion IoT Terminals work out of the box to quickly and easily add connectivity to smart enterprise applications.

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 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

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