

## EMS31



LTE Cat.M  
Multi Band  
variants



Multi Design  
Capability  
(LGA)



Bearer  
Independent  
Protocol



Embedded  
TCP/IP Stack



embedded  
MIM



Highly  
Compact  
Size



Advanced  
Temperature  
Management



## MTC LTE

Cinterion® EMS31 Wireless Module

LTE Cat. M1 for Highly Efficient 4G Connectivity

# Cinterion® EMS31 Wireless Module Delivering Highly Efficient LTE Cat. M1 Connectivity

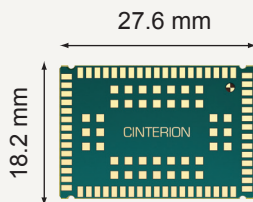
Gemalto's Cinterion® EMS31 wireless module opens new possibilities for Internet of Things (IoT) solutions. Based on new LTE low-power wide area (LPWA) standards, it is the first module truly designed for industrial IoT use cases. It brings new technology for optimal radio coverage (up to 15 db enhancement), enhanced power management (up to 10 years battery life), and a new radio concept that allows one global hardware variant in the future, while delivering market proven Industrial Grade M2M features expected from Gemalto.

EMS31 integrates the latest CAT M1 technology features to transform LTE for M2M markets. Optimized connectivity is achieved through an Enhanced Coverage feature, which uses a special algorithm to allow for deep penetration into difficult coverage areas for example basements and warehouses. In addition, advanced power saving features help battery operated devices achieve up to 10 year lifetime. Power management is further increased through the module's clever wake-up/sleep mechanism. EMS31 features a new single antenna radio concept that reduces device complexity and saves costs.

The EMS31 also comes with a suite of Gemalto special features which have evolved through our 20 years of experience to help customers in all stages and aspects of implementation: from production, to network troubleshooting, to security and connectivity. EMS31 is ideal for a variety of applications including smart meters, industrial trackers, healthcare, and industrial sensors, where safe, reliable connectivity and longevity are more important than high data rate.

The Cinterion EMS31 wireless module is part of Gemalto's proven Industrial family, which offers reliability, M2M-optimized features and extreme efficiency for a range of cellular standards from 2G to MTC standards such as CAT1 and NB-IoT. Benefits include flexibility, backward and forward compatibility to support network evolution, and product longevity to maximize your technology investment. EMS31 is compatible with Gemalto's broad portfolio of trusted solutions and services that Connect, Secure and Monetize™ the entire industrial IoT ecosystem.

## LTE Cat. M1: Highly Efficient 4G for IoT



### Advanced Power Saving

In addition to standard 3GPP power saving capabilities, a clever fast wake-up mechanism provides suspend and resume in approximately 1 second. This reduced startup time saves significant power for many IoT devices.

### Optional embedded MIM or eUICC

When integrating an embedded MIM - a trusted Gemalto core competency - the module provides integrated subscription and connectivity with the potential for full life cycle management through On Demand Connectivity (ODC) capabilities. Benefits of eMIMs and ODC include: ease in integration, simplified manufacturing, simplified logistics, and smaller size.

### Flexible RF

A unique RF design allows flexible regional band configuration. While initial designs support 2 bands, the evolving flexible RF design will support global multiband variants up to 12 bands. This enables a single hardware design for global deployments along with simplified asset creation, easy logistics chain and improved management.

### Gemalto M2M Support includes:

- > Personal design-in consulting for hardware and software
- > Extensive RF test capabilities
- > GCF/PTCRB conform pretests to validate approval readiness
- > Regular training workshops



Local engineers, a competent helpdesk, a dedicated team of R&D specialists and an advanced development center are the hallmarks of our leading support offer.

# Cinterion® EMS31 Features

## GENERAL FEATURES

- > LTE (FDD) 3GPP Release 13:
  - EMS31-V: LTE (4,13)
  - EMS31-US: LTE (2,4,12)
  - EMS31-X: LTE (2,4,12,13)
  - EMS31/51-W: LTE Multiband
- > Compatible with Cinterion® Industrial module footprint
- > Control via AT commands (3GPP TS 27.007 and 27.005)
- > Cinterion® AT commands
- > Supply voltage range 3.3 .. 4.5 V
- > Dimensions: 27.6 x 18.8 x 2.1 mm
- > Operating temperature Range
  - > -40°C to +85°C
- > IP services transparent and nontransparent TCP/UDP-client & server, HTTP/FTP/SMP client, TLS support for TCP/UDP/HTTP/FTP/SMTP clients
- > Weight: ca. 2.7 g
- > Full Gemalto M2M AT command set and services
- > Control via AT commands (Hayes, 3GPP TS 27.007 and 27.005)
- > SIM Application Toolkit, Rel. 99

## SPECIFICATIONS

- > LTE Cat. M1, single antenna, half duplex
- > DL/UL max: 300 kbps / 375 kbps
- > SMS via NAS
- > SMS text and PDU mode
- > PBL Client
- > Verizon APN class handling

## SPECIAL FEATURES

- > Embedded MIM prepared
- > Firmware updatable via application and Over the Air (OTA)
- > LWM2M support
- > eDRX
- > Power Saving Mode (PSM)

## INTERFACES (LGA PADS)

- > Pads for primary LTE Antenna
- > High speed 8-line serial interface
- > 2 UICC and U/SIM card interfaces 1.8V / 3V (one for embedded SIM)
- > I2C, ADC interface
- > 2x Serial interface:
  - High-Speed Serial Interface (9 lines, 920 kbps)
  - Secondary High-Speed Serial Interface (4-wires, 920 kbp)

## DRIVERS

- > Driver for Windows® 7 / Windows® 8 / Windows 10

## APPROVALS

- > FCC, GCF, IC, UL, PTCRB
- > Mobile Operator Approvals: Verizon, AT&T certification
- > California RoHS
- > Further MNO approvals t.b.d.

## Connect. Secure. Monetize.™

Gemalto's complementary offering of solutions, services and solid identity management helps enterprises unleash the power of the IoT, providing a solid foundation of Trust based on three key pillars:

**Connect.** The backbone of any IoT solution, Cinterion M2M Modules, SIM/MIMs, Terminals and secure services provide future-proof, reliable connectivity for all vertical market IoT solutions.

**Secure.** Gemalto's end-to-end security solutions protect devices, the network and the cloud while managing the entire application lifecycle.

**Monetize.** Our agile Sentinel monetization solutions enable innovative business models and new revenue streams through embedded licensing, while the secure SensorLogic Application Enablement Platform speeds time to market.

### About Gemalto

Gemalto is the global leader in digital security. We bring trust to an increasingly connected world. We deliver easy to use technologies and services to businesses and governments, authenticating identities and protecting data so they stay safe and enable services in personal devices, connected objects, the cloud and in between.

Our solutions are at the heart of modern life, from payment to enterprise security and the Internet of Things. We authenticate people, transactions and objects, encrypt data and create value for software – enabling our clients in more than 190 countries to deliver secure digital services for billions of individuals and things.

For more information, please visit [www.gemalto.com/m2m](http://www.gemalto.com/m2m), [developer.gemalto.com](http://developer.gemalto.com), [blog.gemalto.com](http://blog.gemalto.com), or follow @gemaltoIoT on twitter.

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**Gemalto M2M GmbH**  
Werinherstraße 81  
81541 Munich  
Germany

