Product summary

LENA-R8 series
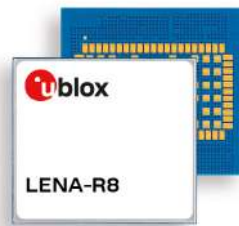
Multi-mode LTE Cat 1bis modules

Standard

Professional

Automotive

Simple global connectivity with location options

- Global LTE and 2G bands for simple roaming anywhere in the world
- Small size creates more design flexibility
- Out-of-the box, global MQTT Anywhere
- Choose between integrated or stand-alone GNSS, as well as CellLocate®
- Easy migration between u-blox form factors due to pin-compatible form factor

27.0 x 30.0 x 2.7 mm

Product description

LENA-R8 modules offer simple global LTE Cat 1 connectivity thanks to 14 LTE and four 2G bands, reducing logistics complexity for IoT devices that may be deployed in different regions requiring different band combinations.

The module series is ideal for value-oriented IoT products, targeting the tracking and telematics markets or other applications requiring broad global coverage. With broadband support and fallback to 2G networks, the modules provide the best possible roaming coverage and make possible global tracking with a single product SKU.

The LENA-R8 series is highly integrated, providing out-of-the-box support for the MQTT Anywhere service on the Thingstream platform, enabling seamless global roaming.

The modules are ideal for a wide range of applications with GNSS requirements, ranging from high performance stand-alone solutions to a simple out-of-the-box experience with LENA-R8001M10. This product variant includes integrated GNSS based on the u-blox M10 platform. The cellular modem and GNSS subsystems are accessible via dedicated interfaces for great usage flexibility. Both subsystems can be operated fully independently, facilitating the optimization of usage patterns to achieve the highest performances with the most efficient power consumption. The modules also support CellLocate, a network-based cellular location service.
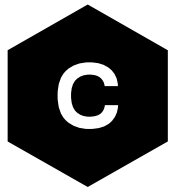
LENA-R8 modules are small in size and pin-compatible with other u-blox form factors, thereby simplifying migration to LTE Cat 1bis from legacy 2G or 3G technologies, which are sunsetting on many MNO networks around the world.

	LENA-R8001	LENA-R8001M10
Grade		
Automotive		
Professional		
Standard	•	•
Regions		
	Global	
Access Technology		
LTE FDD bands	1, 2, 3, 4, 5, 7, 8, 12, 20, 28, 66	
LTE TDD bands	38, 40, 41	
2G bands	Q	
Data rate	Cat 1	
Positioning		
External GNSS control via modem	•	
Integrated GNSS receiver		•
Dedicated GNSS antenna interface		•
Compatible with u-blox Services		
MQTT Anywhere	•	•
AssistNow™	•	•
CellLocate®	•	•
Interfaces		
UART	1	2
USB	1	1
I2C	1	
GPIO	6	6
Features		
MQTT / MQTT-SN	•	•
TCP/IP, UDP/IP, HTTP/ FTP	•	•
DTLS/TLS	•	•
Secure boot / update	•	•
Dual stack IPv4/IPv6	•	•
FW update via serial (FOAT)	•	•
FOTA	•	•
Jamming detection	•	•
Antenna detection	•	•
CSFB / VoLTE□	•	•

Cat 1 = 10 Mbit/s DL, 5 Mbit/s UL
Q = Quad-band

□ = Voice call setup supported without Audio

Advance Information

LENA-R8 series

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Features

LTE	LTE Cat 1bis (10 Mbit/s DL, 5 Mbit/s UL)
	3GPP Release 13
GSM (2G)	GPRS multi-slot class 12
	Bands (in MHz): 850/900/1800/1900
SMS	MT/MO PDU / Text mode
	SMS over IMS and via SMS-C
Voice	VoLTE or CSFB

Compatible u-blox services

Communication	MQTT Anywhere
Location	AssistNow
	CellLocate

Software features

Protocols	Dual stack IPv4 and IPv6
	Embedded TCP/IP, UDP/IP, FTP, HTTP
	Embedded MQTT and MQTT-SN
	eSIM and Bearer Independent Protocol
Positioning	Integrated u-blox M10 chip with concurrent GNSS [1] (GPS, GLONASS, BeiDou, Galileo)
	Dedicated GNSS antenna interface [1]
	External GNSS control via modem [2]
Firmware upgrade	Via UART (FOAT) and USB (FOAT)
	FOTA (Firmware upgrade Over the Air)

Electrical data

Power supply	Separate supply inputs for modem and GNSS systems:
	3.8 V nominal for the modem
	1.8 V nominal for the GNSS

Package

100 pin LGA (Land Grid Array): 27.0 x 30.0 x 2.7 mm

Environmental data, quality & reliability

Operating temperature	–40 °C to +85 °C
RoHS compliant (lead-free)	
Qualified as u-blox standard grade products	

Certifications and approvals

| LENA-R8001 and LENA-R8001M10 | GCF, FCC, ISED, RED, UKCA, RCM |

Interfaces

Serial	1 UART for the modem
	1 UART for GNSS [1]
	1 USB 2.0 (high-speed, 480 Mbit/s)
	1 I2C [2]
GPIO	6
(U)SIM	Supports 1.8 V and 3.0 V, SIM toolkit

Support products

| EVK-R8001 EVK-R8001M10 | Evaluation kits for LENA-R8 series |
| | RIL software available for Android 12.0 and previous versions |

Product variants

| LENA-R8001 | LTE Cat 1bis module with global coverage |
| LENA-R8001M10 | LTE Cat 1bis module with global coverage and integrated u-blox M10 GNSS |

1 = On LENA-R8001M10
2 = On LENA-R8001

Further information

For contact information, see **www.u-blox.com/contact-u-blox**.

For more product details and ordering information, see the product data sheet.