

# LENA-R8 series



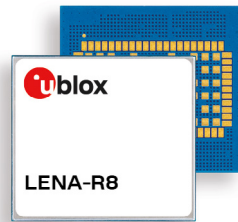
## Multi-mode LTE Cat 1bis modules

### 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 and MQTT Flex connectivity
- 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 with 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 broad band support and fallback to 2G networks, the modules provide the best possible roaming coverage and make global tracking with a single product SKU possible.

The LENA-R8 series is highly integrated, providing out-of-the box support for MQTT Anywhere and MQTT Flex services on the Thingstream platform, enabling seamless global roaming. The modules can enable a wide range of applications with GNSS requirements, ranging from high performance stand-alone solutions to a simple out-of-box experience via 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.

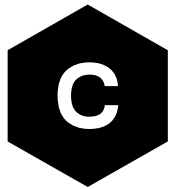
LENA-R8 modules are small in size and pin-compatible with other u-blox form factors, thereby simplifying migration to LTE Cat 1 from legacy 2G or 3G technologies, which are sunsetting on many MNO networks around the world.

	LENA-R8001	LENA-R8001M10
<b>Grade</b>		
Automotive		
Professional		
Standard	•	•
<b>Regions</b>		
	Global	
<b>Access Technology</b>		
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	
<b>Positioning</b>		
External GNSS control via modem	•	
Integrated GNSS receiver		•
Dedicated GNSS antenna interface		•
<b>Compatible with u-blox Services</b>		
MQTT Anywhere, MQTT Flex	•	•
AssistNow™	•	•
CellLocate®	•	•
<b>Interfaces</b>		
UART	2	3
USB	1	1
I2C	1	1
I2S	1	1
GPIO	•	•
<b>Features</b>		
MQTT / MQTT-SN	•	•
TCP/IP, UDP/IP, HTTP/FTP	•	•
TLS	•	•
Secure boot / update	•	•
Dual stack IPv4/IPv6	•	•
FW update via serial (FOAT)	•	•
FOTA	•	•
Jamming detection	•	•
Antenna and SIM detection	•	•
CSFB / VoLTE □	•	•

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

□ = VoLTE available in future FW

# LENA-R8 series



## 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 <sup>1</sup> or CSFB

## Compatible with u-blox services

Communication	MQTT Anywhere MQTT Flex
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 <sup>2</sup> (GPS, GLONASS, BeiDou, Galileo) Dedicated GNSS antenna interface <sup>2</sup> External GNSS control via modem <sup>3</sup>
Firmware upgrade	Via UART (FOAT) and USB (FOAT and EasyFlash) 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
--------------	--

1 = Available in future firmware

2 = On LENA-R8001M10

3 = On LENA-R8001

## 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

## Interfaces

Serial 2 UART for the modem  
1 UART for GNSS<sup>2</sup>  
1 USB 2.0 (high-speed, 480 Mbit/s)  
1 I2C

GPIO Configurable

(U)SIM Supports 1.8 V and 3.0 V, SIM toolkit

## Support products

EVK-R8 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

## Further information

For contact information, see [www.u-blox.com/contact-u-blox](http://www.u-blox.com/contact-u-blox).

For more product details and ordering information, see the [product data sheet](#).

## Legal Notice:

u-blox or third parties may hold intellectual property rights in the products, names, logos and designs included in this document. Copying, reproduction, or modification of this document or any part thereof is only permitted with the express written permission of u-blox. Disclosure to third parties is permitted for clearly public documents only.

The information contained herein is provided "as is". No warranty of any kind, either express or implied, is made in relation to the accuracy, reliability, fitness for a particular purpose or content of this document. This document may be revised by u-blox at any time. For most recent documents, please visit [www.u-blox.com](http://www.u-blox.com).  
Copyright © 2022, u-blox AG