

LENA-R8 series



Multi-mode LTE Cat 1 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



Standard

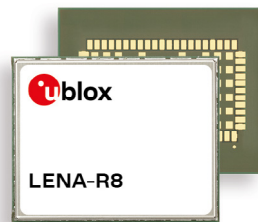


Professional



Automotive

27.0 x 30.0 mm



Product description

LENA-R8 modules offer simple global LTE Cat 1 connectivity with 13 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
Grade		
Automotive		
Professional		
Standard	•	•
Regions		
	Global	
Access Technology		
LTE FDD bands	1, 2, 3, 4, 5, 7, 8, 12, 20, 28	
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, MQTT Flex	•	•
AssistNow™	•	•
CellLocate®	•	•
Interfaces		
UART	2	2
USB	1	1
I2C	1	1
I2S	1	1
GPIO	9	9
Features		
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	•	•
VoLTE/CSFB	□	□

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

□ = Available in future FW



Features

LTE	LTE Cat 1 (10 Mbit/s DL, 5 Mbit/s UL) 3GPP Release 10
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 ¹

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 ² (GPS, GLONASS, BeiDou, Galileo) Dedicated GNSS antenna interface ² External GNSS control via modem ³
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
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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 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, ISSED, RED
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Interfaces

Serial	2 UART 1 USB 2.0 (high-speed, 480 Mbit/s) 1 I2C 1 I2S
GPIO	Up to 9 GPIOs, configurable
(U)SIM	Supports 1.8 V and 3.0 V, SIM toolkit
Audio	1 digital

Support products

EVK-R8	Evaluation kits for LENA-R8 series RIL software available for Android 12.0 and previous versions
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Product variants

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

Further information

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

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

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