Product Summary

LARA-R3121 module

LTE Cat 1 module using u-blox LTE chipset with built-in GPS receiver

Standard

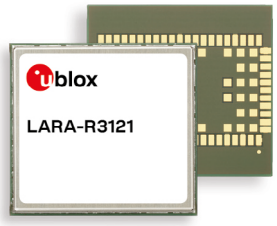
Professional

Automotive

Connectivity, positioning, and timing solution: all in one module

- Supports 3GPP Rel. 12 Power Saving Mode for long battery life
- Provides position data and timing, indoors and outdoors
- Features end-to-end trusted domain security
- Provides signal optimization and congestion control
- Enables easy migration from other u-blox module form factors and technologies

24.0 × 26.0 × 2.6 mm



Product description

The LARA-R3121 LTE Cat 1 module is a pioneer, as the only module designed from the ground up for IoT applications. At its core is the UBX-R3 chipset, u-blox's own cellular modem with silicon-integrated GPS receiver.

The UBX-R3 platform provides a wide range of features for secure and robust operation, such as secure boot, transport layer security, embedded FOTA client for secure software updates over the air, jamming and spoofing detection, and an integrated security agent for monitoring and detecting security threats.

Based on u-blox's innovative software-defined modem engine, LARA-R3121 offers advanced 3GPP features, such as Rel. 12 Power Saving Mode for long battery life, Extended Access Barring (EAB) feature for signaling optimization/ congestion control.

Thanks to the integration of a u-blox 8 GPS receiver directly in the UBX-R3 chipset, LARA-R3 cost-effectively provides highly reliable and accurate positioning data both indoors and outdoors. In addition, LARA-R3121 offers practical hybrid positioning, in which GPS position is enhanced with u-blox CellLocate® location data. Uniquely, it also provides a robust and accurate timing reference, CellTime™, which is obtained from available GPS or LTE base stations, allowing simple and cost efficient implementation of timing solutions.

The LARA-R3121 comes in a compact LGA package with several interfaces and a fully embedded IP stack, making it easy to integrate in size-restricted designs and suitable for a wide range of medium data rate applications.

LARA-R3121 modules are perfectly suited for use in industrial IoT applications, including asset/vehicle tracking, smart meter gateways, mobile digital signage, connected health applications, and low latency applications such as point-of-sale systems. Its data rate enables bi-directional video streaming, as necessary for security and video surveillance.

The LARA form factor enables straightforward migration from u-blox SARA (2G and 3G) and TOBY (LTE) modules, maximizing reuse of previous hardware investments. And USB drivers and RIL software for Linux, Android and Microsoft are available free of charge, optimizing time-to-market and product cost.

	LARA-R3121
Grade	
Automotive	
Professional	•
Standard	
Regions	
	Europe
Access Technology	
LTE bands	3, 7, 20
Data rate	Cat 1
Positioning	
GPS receiver	•
GNSS via modem §	•
AssistNow Software	•
CellLocate®	•
Interfaces	
UART	1
USB	1
HSIC	H
DDC (I²C)	1
SDIO (Master)	H
GPIO	10
Features	
Antenna detection	•
Secure boot	□
Embedded TCP/UDP	•
Embedded FTP/HTTP	•
Embedded TLS 1.2	•
Power Save Mode Rel.12	□
FW update via serial	•
FOTA	•
LWM2M	□
Rx diversity	•
Dual stack IPv4/IPv6	•

Cat 1 = LTE Cat 1 (10 Mb/s DL, 5 Mb/s UL)
§ = external GNSS can be controlled via the modem

H = Hardware-ready
□ = Available in future FW version

LARA-R3121 module

Features

LTE	Cat 1 (10 Mbit/s DL, 5 Mbit/s UL) 3GPP Release 10 Power Saving Mode, Release 12 [1] Extended Access Barring (EAB) Enhancements
FDD bands	LARA-R3121: Bands 3, 7, 20 (Europe) All channel bandwidths: 1.4 – 20 MHz Rx diversity Public Warning System (PWS) [1]
SMS	MT/MO PDU/Text mode
Network	Status Indication via LED
Protocols	Dual stack IPv4 / IPv6 Embedded TCP/IP, UDP/IP HTTP/FTP, HTTPS/FTPS
Security / Robustness	Security agent [1], secure boot [1], transport layer security (TLS1.2), secure debug interface, FOTA, jamming and spoofing [1] detection
Device Management	LWM2M [1]

Positioning features

GNSS receiver	72-channel u-blox 8 engine GPS/QZSS L1 C/A
Assistance GNSS	AssistNow Online AssistNow Offline OMA SUPL & 3GPP compliant [1]
Acquisition	Cold: 30 s / Aided: 3 s / Reacquisition: 1 s
Max nav. update rate	Up to 10 Hz
CellLocate®	Cell tower location data to supplement positioning receiver data

Interfaces

Serial	1 UART 1 USB 2.0 (high-speed, 480 Mbit/s) 1 HSIC [1] 1 SDIO [1] 1 DDC (I^2C) Time pulse (via GPIO)
GPIO	Up to 10 configurable GPIOs
USIM	Supports 1.8 V and 3.0 V, SIM toolkit

1 = Available in future FW version

Package

100 pin LGA (Land Grid Array): 26.0 x 24.0 x 2.6 mm < 4 g

Electrical data

Power supply	3.3 V to 4.4 V
Power consumption	TBD

Environmental data, quality & reliability

Operating temperature –40 °C to +85 °C (extended range)

RoHS compliant (lead-free)

REACH compliant

Manufactured in ISO/TS 16949 certified production sites

Certifications and approvals

LARA-R3121	GCF, RED (formerly known as R&TTE)

Support products

EVK-R3121	Evaluation kit for LARA-R3121
RIL software	Available for Android
USB driver	Available for Windows 10 (standard and IoT), Windows 7, 8

Product variants

LARA-R3121	LTE Cat 1, Bands 3, 7, 20 (Europe)

Further information

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

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